VOLUME II. APPENDICES

Note: This is a reference cited in *AP 42, Compilation of Air Pollutant Emission Factors, Volume I Stationary Point and Area Sources.* AP42 is located on the EPA web site at www.epa.gov/ttn/chief/ap42/

The file name refers to the reference number, the AP42 chapter and section. The file name "ref02_c01s02.pdf" would mean the reference is from AP42 chapter 1 section 2. The reference may be from a previous version of the section and no longer cited. The primary source should always be checked.

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APPENDIX A. RESULT TABLES

- Results

  M5/TSO/M202
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  Continuous Emissions Monitoring

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M5/TSO/M202

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack 1

		I-1-S1-M5M-1	I-2-S1-M5M-2	I-3-S1-M5M-3
	Test Date	10/29/91	10/30/91	10/31/91
	Run Start Time	1741	1752	1719
	Run Finish Time	2009	2010	1932
	Net Traversing Points	24	24	24
Theta	Net Run Time, Minutes	120.00	120.00	120.00
Dia	Nozzle Diameter, Inches	0.506	0.500	0.500
Cp	Pitot Tube Coefficient	0.84	0.84	0.84
Y	Dry Gas Meter Calibration Factor	1.0095	1.0095	1.0095
Pbar	Barometric Pressure, Inches Hg	29.0	29.0	29.0
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H2O	1.043	0.96	0.92
Vm	Volume Of Metered Gas Sample, Dry ACF	69.780	66.062	63.890
tm	Dry Gas Meter Temperature, Degrees F	88	83	96
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	65.933	62.981	59.480
Vlc	Total Liquid Collected In Impingers & Silica Gel, grams	234.5	252.5	211.0
Vwstd	Volume of Water Vapor, SCF*	11.038	11.885	9.932
%H2O	Moisture Content, Percent by Volume	14.3	15.9	14.3
Mfd	Dry Mole Fraction	0.857	0.841	0.857
%CO2	Carbon Dioxide, Percent By Volume, Dry	6.0	6.4	6.5
%O2	Oxygen, Percent By Volume, Dry	11.2	11.2	10.6
%CO+N2	CO + N2, Percent By Volume, Dry	82.8	82.4	82.9
Md	Gas Molecular Weight, Lb/Lb-Mole, Dry	29.41	29.47	29.46
Ms	Gas Molecular Weight, Lb/Lb-Mole, Wet	27.78	27.65	27.82
Pg	Flue Gas Static Pressure, Inches H2O	-0.08	-0.08	-0.08
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99	28.99	28.99
ts	Flue Gas Temperature, Degrees F	1,581	1,561	1,506
Delta-p	Average Velocity Head, Inches H2O	0.0790	0.0749	0.0631
vs	Flue Gas Velocity, Feet/Second	32.13	31.21	28.16
A	Stack/Duct Area, Square Inches	7,698	7,698	7,698
Qsd	Volumetric Air Flow Rate, Dry SCFM*	22,137	21,310	20,142
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	627	603	570
Qaw	Volumetric Air Flow Rate, Wet ACFM	103,053	100,102	90,320
%I	Isokinetic Sampling Rate, Percent	95.0	96.6	96.5

* 68 Degrees F (20 Degrees C) -- 29.92 Inches of Mercury (Hg)

(continued next page)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack 1

		I-1-S1-M5M-1	I-2-S1-M5M-2	I-3-S1-M5M-3
	Particulate*			
mg	Catch Weight, milligrams	222.7	181.1	164.3
mg/DSCM	Concentration, mg/DSCM**	119	102	97.5
mg/ACM	Concentration, mg/ACM	25.6	21.6	21.8
gr/DSCF	Concentration, grains/DSCF**	0.0521	0.0444	0.0426
gr/ACF	Concentration, grains/ACF	0.0112	0.00945	0.00951
lb/hr	Emission Rate, lb/hr	9.89	8.11	7.36
g/hr	Emission Rate, grams/hr	4,486	3,677	3,338
	Particulate* + Toluene Rinse			
mg	Catch Weight, milligrams	222.7	181.1	164.3
mg	Toluene Rinse Catch Weight, milligrams	2.0	1.7	1.7
mg	Total Catch Weight, milligrams	224.7	182.8	166
mg/DSCM	Concentration, mg/DSCM**	120	102	99
mg/ACM	Concentration, mg/ACM	25.9	21.8	22.0
gr/DSCF	Concentration, grains/DSCF**	0.0526	0.045	0.043
gr/ACF	Concentration, grains/ACF	0.0113	0.0095	0.0096
lb/hr	Emission Rate, lb/hr	9.98	8.2	7.4
g/hr	Emission Rate, grams/hr	4,527	3,711	3,373
	Condensible Particulate			
mg	Catch Weight, milligrams	89.8	43.6	33.9
mg/DSCM	Concentration, mg/DSCM**	48.1	24.4	20.1
mg/ACM	Concentration, mg/ACM	10.3	5.20	4.49
gr/DSCF	Concentration, grains/DSCF**	0.0210	0.0107	0.00880
gr/ACF	Concentration, grains/ACF	0.00452	0.00227	0.00196
lb/hr	Emission Rate, lb/hr	3.99	1.95	1.52
g/hr	Emission Rate, grams/hr	1,809	885	689
	Toluene Soluble Organics			
mg	Toluene Soluble Organics Catch, milligrams	1.09	0.67	0.87
mg/DSCM	Concentration, mg/DSCM**	0.584	0.376	0.516
mg/ACM	Concentration, mg/ACM	0.125	0.0800	0.115
gr/DSCF	Concentration, grains/DSCF**	0.000255	0.000164	0.000226
gr/ACF	Concentration, grains/ACF	0.0000548	0.0000350	0.0000503
lb/hr	Emission Rate, lb/hr	0.0484	0.0300	0.0390
g/hr	Emission Rate, grams/hr	22.0	13.6	17.7

* As specified in EPA Method 5.
** 68 Degrees F (20 Degrees C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack 1

		II-0-S1-M5M-0
	Test Date	10/28/91
	Run Start Time	2210
	Run Finish Time	300
	Net Traversing Points	24
Theta	Net Run Time, Minutes	240.00
Dia	Nozzle Diameter, Inches	0.506
Cp	Pitot Tube Coefficient	0.84
Y	Dry Gas Meter Calibration Factor	1.0095
Pbar	Barometric Pressure, Inches Hg	29.0
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H2O	0.88
Vm	Volume Of Metered Gas Sample, Dry ACF	130.008
tm	Dry Gas Meter Temperature, Degrees F	89
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	122.566
Vlc	Total Liquid Collected In Impingers & Silica Gel, grams	644.5
Vwstd	Volume of Water Vapor, SCF*	30.337
%H2O	Moisture Content, Percent by Volume	19.8
Mfd	Dry Mole Fraction	0.802
%CO2	Carbon Dioxide, Percent By Volume, Dry	8.4
%O2	Oxygen, Percent By Volume, Dry	7.2
%CO+N2	CO + N2, Percent By Volume, Dry	84.4
Md	Gas Molecular Weight, Lb/Lb-Mole, Dry	29.63
Ms	Gas Molecular Weight, Lb/Lb-Mole, Wet	27.33
Pg	Flue Gas Static Pressure, Inches H2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99
ts	Flue Gas Temperature, Degrees F	1,557
Delta-p	Average Velocity Head, Inches H2O	0.0581
vs	Flue Gas Velocity, Feet/Second	27.62
A	Stack/Duct Area, Square Inches	7,698
Qsd	Volumetric Air Flow Rate, Dry SCFM*	18,020
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	510
Qaw	Volumetric Air Flow Rate, Wet ACFM	88,588
%I	Isokinetic Sampling Rate, Percent	108.5

* 68 Degrees F (20 Degrees C) -- 29.92 Inches of Mercury (Hg)

(continued next page)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack 1

		II-0-S1-M5M-0
	Particulate*	
mg	Catch Weight, milligrams	391.0
mg/DSCM	Concentration, mg/DSCM**	113
mg/ACM	Concentration, mg/ACM	22.9
gr/DSCF	Concentration, grains/DSCF**	0.0492
gr/ACF	Concentration, grains/ACF	0.0100
lb/hr	Emission Rate, lb/hr	7.60
g/hr	Emission Rate, grams/hr	3,449
	Particulate* + Toluene Rinse	
mg	Catch Weight, milligrams	391.0
mg	Toluene Rinse Catch Weight, milligrams	3.9
mg	Total Catch Weight, milligrams	394.9
mg/DSCM	Concentration, mg/DSCM**	114
mg/ACM	Concentration, mg/ACM	23.1
gr/DSCF	Concentration, grains/DSCF**	0.0497
gr/ACF	Concentration, grains/ACF	0.0101
lb/hr	Emission Rate, lb/hr	7.68
g/hr	Emission Rate, grams/hr	3,484
	Condensible Particulate	
mg	Catch Weight, milligrams	255.4
mg/DSCM	Concentration, mg/DSCM**	73.6
mg/ACM	Concentration, mg/ACM	15.0
gr/DSCF	Concentration, grains/DSCF**	0.0322
gr/ACF	Concentration, grains/ACF	0.00654
lb/hr	Emission Rate, lb/hr	4.97
g/hr	Emission Rate, grams/hr	2,253
	Toluene Soluble Organics	
mg	Toluene Soluble Organics Catch, milligrams	5.72
mg/DSCM	Concentration, mg/DSCM**	1.65
mg/ACM	Concentration, mg/ACM	0.335
gr/DSCF	Concentration, grains/DSCF**	0.000720
gr/ACF	Concentration, grains/ACF	0.000147
lb/hr	Emission Rate, lb/hr	0.111
g/hr	Emission Rate, grams/hr	50.5

* As specified in EPA Method 5.
** 68 Degrees F (20 Degrees C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack 1

		II-1-S1-M5M-1	II-2-S1-M5M-2	II-3-S1-M5M-3
	Test Date	10/29/91	10/30/91	10/31/91
	Run Start Time	2157	2202	2205
	Run Finish Time	323	305	249
	Net Traversing Points	24	24	24
Theta	Net Run Time, Minutes	270.00	270.00	270.00
Dia	Nozzle Diameter, Inches	0.515	0.500	0.500
Cp	Pitot Tube Coefficient	0.84	0.84	0.84
Y	Dry Gas Meter Calibration Factor	1.0095	1.0095	1.0095
Pbar	Barometric Pressure, Inches Hg	29.0	29.0	29.0
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H2O	0.77	0.73	0.95
Vm	Volume Of Metered Gas Sample, Dry ACF	134.438	129.633	149.602
tm	Dry Gas Meter Temperature, Degrees F	74	78	83
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	130.266	124.663	142.622
Vlc	Total Liquid Collected In Impingers & Silica Gel, grams	432.0	469.0	597.0
Vwstd	Volume of Water Vapor, SCF*	20.334	22.076	28.101
%H2O	Moisture Content, Percent by Volume	13.5	15.0	16.5
Mfd	Dry Mole Fraction	0.865	0.850	0.835
%CO2	Carbon Dioxide, Percent By Volume, Dry	6.3	7.8	7.9
%O2	Oxygen, Percent By Volume, Dry	10.7	9.0	8.9
%CO+N2	CO + N2, Percent By Volume, Dry	83.0	83.2	83.2
Md	Gas Molecular Weight, Lb/Lb-Mole, Dry	29.44	29.61	29.62
Ms	Gas Molecular Weight, Lb/Lb-Mole, Wet	27.90	27.87	27.70
Pg	Flue Gas Static Pressure, Inches H2O	-0.10	-0.08	-0.08
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99	28.99	28.99
ts	Flue Gas Temperature, Degrees F	1,549	1,473	1,483
Delta-p	Average Velocity Head, Inches H2O	0.0555	0.0557	0.0693
vs	Flue Gas Velocity, Feet/Second	26.66	26.21	29.41
A	Stack/Duct Area, Square Inches	7,698	7,698	7,698
Qsd	Volumetric Air Flow Rate, Dry SCFM*	18,835	18,911	20,739
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	533	536	587
Qaw	Volumetric Air Flow Rate, Wet ACFM	85,509	84,065	94,329
%I	Isokinetic Sampling Rate, Percent	94.7	95.7	99.9

* 68 Degrees F (20 Degrees C) -- 29.92 Inches of Mercury (Hg)

(continued next page)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack 1

		II-1-S1-M5M-1	II-2-S1-M5M-2	II-3-S1-M5M-3
	Particulate*			
mg	Catch Weight, milligrams	448.9	232.1	430.8
mg/DSCM	Concentration, mg/DSCM**	122	65.7	107
mg/ACM	Concentration, mg/ACM	26.8	14.8	23.4
gr/DSCF	Concentration, grains/DSCF**	0.0532	0.0287	0.0466
gr/ACF	Concentration, grains/ACF	0.0117	0.00646	0.0102
lb/hr	Emission Rate, lb/hr	8.59	4.66	8.29
g/hr	Emission Rate, grams/hr	3,894	2,113	3,759
	Particulate* + Toluene Rinse			
mg	Catch Weight, milligrams	448.9	232.1	430.8
mg	Toluene Rinse Catch Weight, milligrams	1.2	3.0	1.4
mg	Total Catch Weight, milligrams	450.1	235.1	432.2
mg/DSCM	Concentration, mg/DSCM**	122	66.6	107
mg/ACM	Concentration, mg/ACM	26.9	15.0	23.5
gr/DSCF	Concentration, grains/DSCF**	0.0533	0.0291	0.0468
gr/ACF	Concentration, grains/ACF	0.0117	0.00655	0.0103
lb/hr	Emission Rate, lb/hr	8.61	4.72	8.31
g/hr	Emission Rate, grams/hr	3,905	2,140	3,771
	Condensible Particulate			
mg	Catch Weight, milligrams	70.0	112.7	47.4
mg/DSCM	Concentration, mg/DSCM**	19.0	31.9	11.7
mg/ACM	Concentration, mg/ACM	4.18	7.18	2.58
gr/DSCF	Concentration, grains/DSCF**	0.00829	0.0140	0.00513
gr/ACF	Concentration, grains/ACF	0.00183	0.00314	0.00113
lb/hr	Emission Rate, lb/hr	1.34	2.26	0.912
g/hr	Emission Rate, grams/hr	607	1,026	414
	Toluene Soluble Organics			
mg	Toluene Soluble Organics Catch, milligrams	0.99	0.15	0.4
mg/DSCM	Concentration, mg/DSCM**	0.268	0.0425	0.0990
mg/ACM	Concentration, mg/ACM	0.0591	0.00956	0.0218
gr/DSCF	Concentration, grains/DSCF**	0.000117	0.0000186	0.0000433
gr/ACF	Concentration, grains/ACF	0.0000258	0.00000418	0.00000952
lb/hr	Emission Rate, lb/hr	0.0189	0.00301	0.00769
g/hr	Emission Rate, grams/hr	8.59	1.37	3.49

* As specified in EPA Method 5.
** 68 Degrees F (20 Degrees C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack 1

		III-1-S1-M5M-1	III-2-S1-M5M-2	III-3-S1-M5M-3
	Test Date	10/30/91	10/31/91	11/01/91
	Run Start Time	555	505	421
	Run Finish Time	948	923	919
	Net Traversing Points	24	24	24
Theta	Net Run Time, Minutes	192.00	240.00	288.00
Dia	Nozzle Diameter, Inches	0.515	0.500	0.500
Cp	Pitot Tube Coefficient	0.84	0.84	0.84
Y	Dry Gas Meter Calibration Factor	1.0095	1.0095	1.0095
Pbar	Barometric Pressure, Inches Hg	29.0	28.8	28.7
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H2O	0.75	0.65	0.53
Vm	Volume Of Metered Gas Sample, Dry ACF	92.008	109.272	116.348
tm	Dry Gas Meter Temperature, Degrees F	64	84	71
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	90.849	103.188	112.135
Vlc	Total Liquid Collected In Impingers & Silica Gel, grams	292.5	341.0	356.0
Vwstd	Volume of Water Vapor, SCF*	13.768	16.051	16.757
%H2O	Moisture Content, Percent by Volume	13.2	13.5	13.0
Mfd	Dry Mole Fraction	0.868	0.865	0.870
%CO2	Carbon Dioxide, Percent By Volume, Dry	5.7	7.4	7.2
%O2	Oxygen, Percent By Volume, Dry	11.8	9.0	9.5
%CO+N2	CO + N2, Percent By Volume, Dry	82.5	83.6	83.3
Md	Gas Molecular Weight, Lb/Lb-Mole, Dry	29.38	29.54	29.53
Ms	Gas Molecular Weight, Lb/Lb-Mole, Wet	27.88	27.98	28.03
Pg	Flue Gas Static Pressure, Inches H2O	-0.08	-0.08	-0.07
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99	28.79	28.69
ts	Flue Gas Temperature, Degrees F	1,503	1,492	1,460
Delta-p	Average Velocity Head, Inches H2O	0.0545	0.0499	0.0385
vs	Flue Gas Velocity, Feet/Second	26.13	24.97	21.77
A	Stack/Duct Area, Square Inches	7,698	7,698	7,698
Qsd	Volumetric Air Flow Rate, Dry SCFM*	18,959	18,031	16,019
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	537	511	454
Qaw	Volumetric Air Flow Rate, Wet ACFM	83,809	80,088	69,824
%I	Isokinetic Sampling Rate, Percent	92.2	93.5	95.3

* 68 Degrees F (20 Degrees C) -- 29.92 Inches of Mercury (Hg)

(continued next page)

PLANT: Jewell Coal and Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack 1

		III-1-S1-M5M-1	III-2-S1-M5M-2	III-3-S1-M5M-3
	Particulate*			
mg	Catch Weight, milligrams	209.7	361.7	321.2
mg/DSCM	Concentration, mg/DSCM**	81.5	124	101
mg/ACM	Concentration, mg/ACM	18.4	27.9	23.2
gr/DSCF	Concentration, grains/DSCF**	0.0356	0.0541	0.0442
gr/ACF	Concentration, grains/ACF	0.00806	0.0122	0.0101
lb/hr	Emission Rate, lb/hr	5.79	8.36	6.07
g/hr	Emission Rate, grams/hr	2,626	3,792	2,753
	Particulate* + Toluene Rinse			
mg	Catch Weight, milligrams	1,209.7	361.7	321.2
mg	Toluene Rinse Catch Weight, milligrams	14.5	2.5	2.1
mg	Total Catch Weight, milligrams	1224.2	364.2	323.3
mg/DSCM	Concentration, mg/DSCM**	476	125	102
mg/ACM	Concentration, mg/ACM	108	28.1	23.4
gr/DSCF	Concentration, grains/DSCF**	0.208	0.0545	0.0445
gr/ACF	Concentration, grains/ACF	0.0470	0.0123	0.0102
lb/hr	Emission Rate, lb/hr	33.8	8.42	6.11
g/hr	Emission Rate, grams/hr	15,328	3,818	2,771
	Condensible Particulate			
mg	Catch Weight, milligrams	40.5	27.3	29.3
mg/DSCM	Concentration, mg/DSCM**	15.7	9.34	9.23
mg/ACM	Concentration, mg/ACM	3.56	2.10	2.12
gr/DSCF	Concentration, grains/DSCF**	0.00688	0.00408	0.00403
gr/ACF	Concentration, grains/ACF	0.00156	0.000919	0.000925
lb/hr	Emission Rate, lb/hr	1.12	0.631	0.554
g/hr	Emission Rate, grams/hr	507	286	251
	Toluene Soluble Organics			
mg	Toluene Soluble Organics Catch, milligrams	2.05	0.85	3.33
mg/DSCM	Concentration, mg/DSCM**	0.797	0.291	1.05
mg/ACM	Concentration, mg/ACM	0.180	0.0655	0.241
gr/DSCF	Concentration, grains/DSCF**	0.000348	0.000127	0.000458
gr/ACF	Concentration, grains/ACF	0.0000788	0.0000286	0.000105
lb/hr	Emission Rate, lb/hr	0.0566	0.0196	0.0629
g/hr	Emission Rate, grams/hr	25.7	8.91	28.5

* As specified in EPA Method 5.
** 68 Degrees F (20 Degrees C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack 1

		IV-1-S1-M5M-1	IV-2-S1-M5M-2	IV-3-S1-M5M-3
	Test Date	10/30/91	10/31/91	11/01/91
	Run Start Time	1200	1100	1030
	Run Finish Time	1456	1428	1440
	Net Traversing Points	24	24	24
Theta	Net Run Time, Minutes	144.00	192.00	240.00
Dia	Nozzle Diameter, Inches	0.500	0.500	0.500
Cp	Pitot Tube Coefficient	0.84	0.84	0.84
Y	Dry Gas Meter Calibration Factor	1.0095	1.0095	1.0095
Pbar	Barometric Pressure, Inches Hg	29.0	28.8	28.7
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H2O	0.55	0.63	0.66
Vm	Volume Of Metered Gas Sample, Dry ACF	60.177	86.895	111.212
tm	Dry Gas Meter Temperature, Degrees F	94	101	90
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	56.173	79.566	103.516
Vlc	Total Liquid Collected In Impingers & Silica Gel, grams	155.0	239.0	309.5
Vwstd	Volume of Water Vapor, SCF*	7.296	11.250	14.568
%H2O	Moisture Content, Percent by Volume	11.5	12.4	12.3
Mfd	Dry Mole Fraction	0.885	0.876	0.877
%CO2	Carbon Dioxide, Percent By Volume, Dry	7.1	7.9	7.5
%O2	Oxygen, Percent By Volume, Dry	9.5	8.2	8.5
%CO+N2	CO + N2, Percent By Volume, Dry	83.4	83.9	84.0
Md	Gas Molecular Weight, Lb/Lb-Mole, Dry	29.52	29.59	29.54
Ms	Gas Molecular Weight, Lb/Lb-Mole, Wet	28.20	28.15	28.12
Pg	Flue Gas Static Pressure, Inches H2O	-0.08	-0.08	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99	28.79	28.69
ts	Flue Gas Temperature, Degrees F	1,520	1,511	1,508
Delta-p	Average Velocity Head, Inches H2O	0.0416	0.0443	0.0479
vs	Flue Gas Velocity, Feet/Second	22.79	23.57	24.55
A	Stack/Duct Area, Square Inches	7,698	7,698	7,698
Qsd	Volumetric Air Flow Rate, Dry SCFM*	16,714	17,070	17,766
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	473	483	503
Qaw	Volumetric Air Flow Rate, Wet ACFM	73,096	75,598	78,741
%I	Isokinetic Sampling Rate, Percent	91.5	95.2	95.2

* 68 Degrees F (20 Degrees C) -- 29.92 Inches of Mercury (Hg)

(continued next page)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack 1

		IV-1-S1-M5M-1	IV-2-S1-M5M-2	IV-3-S1-M5M-3
	Particulate*			
mg	Catch Weight, milligrams	199.2	286.5	275.4
mg/DSCM	Concentration, mg/DSCM**	125	127	93.9
mg/ACM	Concentration, mg/ACM	28.6	28.7	21.2
gr/DSCF	Concentration, grains/DSCF**	0.0547	0.0556	0.0411
gr/ACF	Concentration, grains/ACF	0.0125	0.0125	0.00926
lb/hr	Emission Rate, lb/hr	7.84	8.13	6.25
g/hr	Emission Rate, grams/hr	3,556	3,688	2,836
	Particulate* + Toluene Rinse			
mg	Catch Weight, milligrams	199.2	286.5	275.4
mg	Toluene Rinse Catch Weight, milligrams	1.2	1.9	1.6
mg	Total Catch Weight, milligrams	200.4	288.4	277
mg/DSCM	Concentration, mg/DSCM**	126	128	94.5
mg/ACM	Concentration, mg/ACM	28.8	28.9	21.3
gr/DSCF	Concentration, grains/DSCF**	0.0551	0.0559	0.0413
gr/ACF	Concentration, grains/ACF	0.0126	0.0126	0.00932
lb/hr	Emission Rate, lb/hr	7.89	8.18	6.29
g/hr	Emission Rate, grams/hr	3,578	3,712	2,852
	Condensible Particulate			
mg	Catch Weight, milligrams	38.2	24.0	17.6
mg/DSCM	Concentration, mg/DSCM**	24.0	10.7	6.00
mg/ACM	Concentration, mg/ACM	5.49	2.41	1.35
gr/DSCF	Concentration, grains/DSCF**	0.0105	0.00465	0.00262
gr/ACF	Concentration, grains/ACF	0.00240	0.00105	0.000592
lb/hr	Emission Rate, lb/hr	1.50	0.681	0.400
g/hr	Emission Rate, grams/hr	682	309	181
	Toluene Soluble Organics			
mg	Toluene Soluble Organics Catch, milligrams	2.61	3.84	1.87
mg/DSCM	Concentration, mg/DSCM**	1.64	1.70	0.638
mg/ACM	Concentration, mg/ACM	0.375	0.385	0.144
gr/DSCF	Concentration, grains/DSCF**	0.000717	0.000745	0.000279
gr/ACF	Concentration, grains/ACF	0.000164	0.000168	0.0000629
lb/hr	Emission Rate, lb/hr	0.103	0.109	0.0425
g/hr	Emission Rate, grams/hr	46.6	49.4	19.3

* As specified in EPA Method 5.
** 68 Degrees F (20 Degrees C) -- 29.92 Inches of Mercury (Hg)

Multiple Metals

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 1

RUN #	DATE	OPERATOR
II-O-S1-MMTL-O	10/28/91	Rodney W. Miller

		II-O-S1-MMTL-O
	Run Start Time	2210
	Run Finish Time	0100
	Net Traversing Points	24
Theta	Net Run Time, Minutes	240.00
Dia	Nozzle Diameter, Inches	0.498
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9842
Pbar	Barometric Pressure, Inches Hg	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.725
Vm	Volume Of Metered Gas Sample, Dry ACF	109.562
tm	Dry Gas Meter Temperature, Degrees F	82
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	101.936
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	537.0
Vwstd	Volume of Water Vapor, SCF*	25.277
$\%H_2O$	Moisture Content, Percent by Volume	19.9
Mfd	Dry Mole Fraction	0.801
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	8.4
$\%O_2$	Oxygen, Percent By Volume, Dry	7.2
Fo	Fuel Factor	1.631
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.63
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.32
Pg	Flue Gas Static Pressure, Inches H_2O	-0.09
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99
ts	Flue Gas Temperature, Degrees F	1520
Delta-p	Average Velocity Head, Inches H_2O	0.0426
vs	Flue Gas Velocity, Feet/Second	23.43
A	Stack/Duct Area, Square Inches	7,620
Qsd	Volumetric Air Flow Rate, Dry SCFM*	15,407
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	436
Qaw	Volumetric Air Flow Rate, Wet ACFM	74,398
%I	Isokinetic Sampling Rate, Percent	107.8
%EA	Excess Air, Percent	48

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		II-0-S1-MMTL-0
	Antimony	
fwt	Formula Weight, lb/lb-Mole	121.75
ug	Catch Weight, Micrograms	29.92
mg/DSCM	Concentration, mg/DSCM *	0.0104
mg/ACM	Concentration, mg/ACM	0.00215
ug/DSCM	Concentration, ug/DSCM *	10.4
ug/ACM	Concentration, ug/ACM	2.15
ng/DSCM	Concentration, ng/DSCM *	10,364
ng/ACM	Concentration, ng/ACM	2,146
ppmvd	Concentration, ppmvd	0.00205
lb/hr	Emission Rate, lb/hr	5.98E-004
g/hr	Emission Rate, grams/hour	0.271
	Arsenic	
fwt	Formula Weight, lb/lb-Mole	74.92
ug	Catch Weight, Micrograms	586.74
mg/DSCM	Concentration, mg/DSCM *	0.203
mg/ACM	Concentration, mg/ACM	0.0421
ug/DSCM	Concentration, ug/DSCM *	203
ug/ACM	Concentration, ug/ACM	42.1
ng/DSCM	Concentration, ng/DSCM *	203,247
ng/ACM	Concentration, ng/ACM	42,090
ppmvd	Concentration, ppmvd	0.0653
lb/hr	Emission Rate, lb/hr	0.0117
g/hr	Emission Rate, grams/hour	5.32
	Barium	
fwt	Formula Weight, lb/lb-Mole	137.33
ug	Catch Weight, Micrograms	43.41
mg/DSCM	Concentration, mg/DSCM *	0.0150
mg/ACM	Concentration, mg/ACM	0.00311
ug/DSCM	Concentration, ug/DSCM *	15.0
ug/ACM	Concentration, ug/ACM	3.11
ng/DSCM	Concentration, ng/DSCM *	15,037
ng/ACM	Concentration, ng/ACM	3,114
ppmvd	Concentration, ppmvd	0.00263
lb/hr	Emission Rate, lb/hr	8.68E-004
g/hr	Emission Rate, grams/hour	0.394
	Beryllium	
fwt	Formula Weight, lb/lb-Mole	9.01
ug	Catch Weight, Micrograms	10.26
mg/DSCM	Concentration, mg/DSCM *	0.00355
mg/ACM	Concentration, mg/ACM	7.36E-004
ug/DSCM	Concentration, ug/DSCM *	3.55
ug/ACM	Concentration, ug/ACM	0.736
ng/DSCM	Concentration, ng/DSCM *	3,554
ng/ACM	Concentration, ng/ACM	736
ppmvd	Concentration, ppmvd	0.00949
lb/hr	Emission Rate, lb/hr	2.05E-004
g/hr	Emission Rate, grams/hour	0.0930

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		II-O-S1-MMTL-O
	Cadmium	
fwt	Formula Weight, lb/lb-Mole	112.41
ug	Catch Weight, Micrograms	83.11
mg/DSCM	Concentration, mg/DSCM *	0.0288
mg/ACM	Concentration, mg/ACM	0.00596
ug/DSCM	Concentration, ug/DSCM *	28.8
ug/ACM	Concentration, ug/ACM	5.96
ng/DSCM	Concentration, ng/DSCM *	28,789
ng/ACM	Concentration, ng/ACM	5,962
ppmvd	Concentration, ppmvd	0.00616
lb/hr	Emission Rate, lb/hr	0.00166
g/hr	Emission Rate, grams/hour	0.754
	Chromium	
fwt	Formula Weight, lb/lb-Mole	52.00
ug	Catch Weight, Micrograms	398.53
mg/DSCM	Concentration, mg/DSCM *	0.138
mg/ACM	Concentration, mg/ACM	0.0286
ug/DSCM	Concentration, ug/DSCM *	138
ug/ACM	Concentration, ug/ACM	28.6
ng/DSCM	Concentration, ng/DSCM *	138,051
ng/ACM	Concentration, ng/ACM	28,589
ppmvd	Concentration, ppmvd	0.0639
lb/hr	Emission Rate, lb/hr	0.00797
g/hr	Emission Rate, grams/hour	3.61
	Copper	
fwt	Formula Weight, lb/lb-Mole	63.55
ug	Catch Weight, Micrograms	1214.22
mg/DSCM	Concentration, mg/DSCM *	0.421
mg/ACM	Concentration, mg/ACM	0.0871
ug/DSCM	Concentration, ug/DSCM *	421
ug/ACM	Concentration, ug/ACM	87.1
ng/DSCM	Concentration, ng/DSCM *	420,606
ng/ACM	Concentration, ng/ACM	87,102
ppmvd	Concentration, ppmvd	0.159
lb/hr	Emission Rate, lb/hr	0.0243
g/hr	Emission Rate, grams/hour	11.0
	Lead	
fwt	Formula Weight, lb/lb-Mole	207.19
ug	Catch Weight, Micrograms	934.99
mg/DSCM	Concentration, mg/DSCM *	0.324
mg/ACM	Concentration, mg/ACM	0.0671
ug/DSCM	Concentration, ug/DSCM *	324
ug/ACM	Concentration, ug/ACM	67.1
ng/DSCM	Concentration, ng/DSCM *	323,881
ng/ACM	Concentration, ng/ACM	67,072
ppmvd	Concentration, ppmvd	0.0376
lb/hr	Emission Rate, lb/hr	0.0187
g/hr	Emission Rate, grams/hour	8.48

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		II-0-S1-MMTL-0
	Manganese	
fwt	Formula Weight, lb/lb-Mole	54.94
ug	Catch Weight, Micrograms	78.5
mg/DSCM	Concentration, mg/DSCM *	0.0272
mg/ACM	Concentration, mg/ACM	0.00563
ug/DSCM	Concentration, ug/DSCM *	27.2
ug/ACM	Concentration, ug/ACM	5.63
ng/DSCM	Concentration, ng/DSCM *	27,192
ng/ACM	Concentration, ng/ACM	5,631
ppmvd	Concentration, ppmvd	0.0119
lb/hr	Emission Rate, lb/hr	0.00157
g/hr	Emission Rate, grams/hour	0.712
	Mercury	
fwt	Formula Weight, lb/lb-Mole	200.59
ug	Catch Weight, Micrograms	76.4403
mg/DSCM	Concentration, mg/DSCM *	0.0265
mg/ACM	Concentration, mg/ACM	0.00548
ug/DSCM	Concentration, ug/DSCM *	26.5
ug/ACM	Concentration, ug/ACM	5.48
ng/DSCM	Concentration, ng/DSCM *	26,479
ng/ACM	Concentration, ng/ACM	5,483
ppmvd	Concentration, ppmvd	0.00318
lb/hr	Emission Rate, lb/hr	0.00153
g/hr	Emission Rate, grams/hour	0.693
	Nickel	
fwt	Formula Weight, lb/lb-Mole	58.71
ug	Catch Weight, Micrograms	285.95
mg/DSCM	Concentration, mg/DSCM *	0.0991
mg/ACM	Concentration, mg/ACM	0.0205
ug/DSCM	Concentration, ug/DSCM *	99.1
ug/ACM	Concentration, ug/ACM	20.5
ng/DSCM	Concentration, ng/DSCM *	99,053
ng/ACM	Concentration, ng/ACM	20,513
ppmvd	Concentration, ppmvd	0.0406
lb/hr	Emission Rate, lb/hr	0.00572
g/hr	Emission Rate, grams/hour	2.59
	Phosphorus	
fwt	Formula Weight, lb/lb-Mole	30.97
ug	Catch Weight, Micrograms	4837.36
mg/DSCM	Concentration, mg/DSCM *	1.68
mg/ACM	Concentration, mg/ACM	0.347
ug/DSCM	Concentration, ug/DSCM *	1,676
ug/ACM	Concentration, ug/ACM	347
ng/DSCM	Concentration, ng/DSCM *	1,675,664
ng/ACM	Concentration, ng/ACM	347,009
ppmvd	Concentration, ppmvd	1.30
lb/hr	Emission Rate, lb/hr	0.0967
g/hr	Emission Rate, grams/hour	43.9

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		II-0-S1-MMTL-0
	Selenium	
fwt	Formula Weight, lb/lb-Mole	78.96
ug	Catch Weight, Micrograms	141.04
mg/DSCM	Concentration, mg/DSCM *	0.0489
mg/ACM	Concentration, mg/ACM	0.0101
ug/DSCM	Concentration, ug/DSCM *	48.9
ug/ACM	Concentration, ug/ACM	10.1
ng/DSCM	Concentration, ng/DSCM *	48,856
ng/ACM	Concentration, ng/ACM	10,118
ppmvd	Concentration, ppmvd	0.0149
lb/hr	Emission Rate, lb/hr	0.00282
g/hr	Emission Rate, grams/hour	1.28
	Silver	
fwt	Formula Weight, lb/lb-Mole	107.87
ug	Catch Weight, Micrograms	11.97
mg/DSCM	Concentration, mg/DSCM *	0.00415
mg/ACM	Concentration, mg/ACM	8.59E-004
ug/DSCM	Concentration, ug/DSCM *	4.15
ug/ACM	Concentration, ug/ACM	0.859
ng/DSCM	Concentration, ng/DSCM *	4,146
ng/ACM	Concentration, ng/ACM	859
ppmvd	Concentration, ppmvd	9.25E-004
lb/hr	Emission Rate, lb/hr	2.39E-004
g/hr	Emission Rate, grams/hour	0.109
	Thallium	
fwt	Formula Weight, lb/lb-Mole	204.37
ug	Catch Weight, Micrograms	59.88
mg/DSCM	Concentration, mg/DSCM *	0.0207
mg/ACM	Concentration, mg/ACM	0.00430
ug/DSCM	Concentration, ug/DSCM *	20.7
ug/ACM	Concentration, ug/ACM	4.30
ng/DSCM	Concentration, ng/DSCM *	20,742
ng/ACM	Concentration, ng/ACM	4,296
ppmvd	Concentration, ppmvd	0.00244
lb/hr	Emission Rate, lb/hr	0.00120
g/hr	Emission Rate, grams/hour	0.543
	Zinc	
fwt	Formula Weight, lb/lb-Mole	65.38
ug	Catch Weight, Micrograms	2173.76
mg/DSCM	Concentration, mg/DSCM *	0.753
mg/ACM	Concentration, mg/ACM	0.156
ug/DSCM	Concentration, ug/DSCM *	753
ug/ACM	Concentration, ug/ACM	156
ng/DSCM	Concentration, ng/DSCM *	752,992
ng/ACM	Concentration, ng/ACM	155,935
ppmvd	Concentration, ppmvd	0.277
lb/hr	Emission Rate, lb/hr	0.0435
g/hr	Emission Rate, grams/hour	19.7

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 1

RUN #	DATE	OPERATOR
I-1-S1-MMTL-1	10/29/91	Rodney W. Miller
I-3-S1-MMTL-3	10/31/91	Rodney W. Miller

		I-1-S1-MMTL-1	I-3-S1-MMTL-3
	Run Start Time	1741	1719
	Run Finish Time	2009	1932
	Net Traversing Points	24	24
Theta	Net Run Time, Minutes	120.00	120.00
Dia	Nozzle Diameter, Inches	0.498	0.498
Cp	Pitot Tube Coefficient	0.840	0.840
Y	Dry Gas Meter Calibration Factor	0.9842	0.9842
Pbar	Barometric Pressure, Inches Hg	29.00	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	1.02	0.952
Vm	Volume Of Metered Gas Sample, Dry ACF	70.362	68.108
tm	Dry Gas Meter Temperature, Degrees F	80	89
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	65.753	62.627
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	244.0	245.5
Vwstd	Volume of Water Vapor, SCF*	11.485	11.556
$\%H_2O$	Moisture Content, Percent by Volume	14.9	15.6
Mfd	Dry Mole Fraction	0.851	0.844
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	6.0	6.5
$\%O_2$	Oxygen, Percent By Volume, Dry	11.2	10.6
Fo	Fuel Factor	1.617	1.585
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.41	29.46
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.71	27.68
Pg	Flue Gas Static Pressure, Inches H_2O	-0.07	-0.08
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99	28.99
ts	Flue Gas Temperature, Degrees F	1583	1511
Delta-p	Average Velocity Head, Inches H_2O	0.0842	0.0697
vs	Flue Gas Velocity, Feet/Second	33.23	29.72
A	Stack/Duct Area, Square Inches	7,620	7,620
Qsd	Volumetric Air Flow Rate, Dry SCFM*	22,494	20,672
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	637	585
Qaw	Volumetric Air Flow Rate, Wet ACFM	105,493	94,348
%I	Isokinetic Sampling Rate, Percent	95.3	98.8
%EA	Excess Air, Percent	105	94

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		I-1-S1-MMTL-1	I-3-S1-MMTL-3
	Antimony		
fwt	Formula Weight, lb/lb-Mole	121.75	121.75
ug	Catch Weight, Micrograms	16.8	37.08
mg/DSCM	Concentration, mg/DSCM *	0.00902	0.0209
mg/ACM	Concentration, mg/ACM	0.00192	0.00458
ug/DSCM	Concentration, ug/DSCM *	9.02	20.9
ug/ACM	Concentration, ug/ACM	1.92	4.58
ng/DSCM	Concentration, ng/DSCM *	9,022	20,907
ng/ACM	Concentration, ng/ACM	1,924	4,581
ppmvd	Concentration, ppmvd	0.00178	0.00413
lb/hr	Emission Rate, lb/hr	7.60E-004	1.62E-003
g/hr	Emission Rate, grams/hour	0.345	0.734
	Arsenic		
fwt	Formula Weight, lb/lb-Mole	74.92	74.92
ug	Catch Weight, Micrograms	400.87	387.28
mg/DSCM	Concentration, mg/DSCM *	0.215	0.218
mg/ACM	Concentration, mg/ACM	0.0459	0.0478
ug/DSCM	Concentration, ug/DSCM *	215	218
ug/ACM	Concentration, ug/ACM	45.9	47.8
ng/DSCM	Concentration, ng/DSCM *	215,274	218,359
ng/ACM	Concentration, ng/ACM	45,903	47,844
ppmvd	Concentration, ppmvd	0.0691	0.0701
lb/hr	Emission Rate, lb/hr	0.0181	0.0169
g/hr	Emission Rate, grams/hour	8.23	7.67
	Barium		
fwt	Formula Weight, lb/lb-Mole	137.33	137.33
ug	Catch Weight, Micrograms	43.53	30.56
mg/DSCM	Concentration, mg/DSCM *	0.0234	0.0172
mg/ACM	Concentration, mg/ACM	0.00498	0.00378
ug/DSCM	Concentration, ug/DSCM *	23.4	17.2
ug/ACM	Concentration, ug/ACM	4.98	3.78
ng/DSCM	Concentration, ng/DSCM *	23,376	17,231
ng/ACM	Concentration, ng/ACM	4,985	3,775
ppmvd	Concentration, ppmvd	0.00409	0.00302
lb/hr	Emission Rate, lb/hr	0.00197	0.00133
g/hr	Emission Rate, grams/hour	0.894	0.605
	Beryllium		
fwt	Formula Weight, lb/lb-Mole	9.01	9.01
ug	Catch Weight, Micrograms	2.31	3.95
mg/DSCM	Concentration, mg/DSCM *	0.00124	0.00223
mg/ACM	Concentration, mg/ACM	2.65E-004	4.88E-004
ug/DSCM	Concentration, ug/DSCM *	1.24	2.23
ug/ACM	Concentration, ug/ACM	0.265	0.488
ng/DSCM	Concentration, ng/DSCM *	1,241	2,227
ng/ACM	Concentration, ng/ACM	265	488
ppmvd	Concentration, ppmvd	0.00331	0.00595
lb/hr	Emission Rate, lb/hr	1.05E-004	1.72E-004
g/hr	Emission Rate, grams/hour	0.0474	0.0782

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		I-1-S1-MMTL-1	I-3-S1-MMTL-3
	Cadmium		
fwt	Formula Weight, lb/lb-Mole	112.41	112.41
ug	Catch Weight, Micrograms	25.15	15.56
mg/DSCM	Concentration, mg/DSCM *	0.0135	0.00877
mg/ACM	Concentration, mg/ACM	0.00288	0.00192
ug/DSCM	Concentration, ug/DSCM *	13.5	8.77
ug/ACM	Concentration, ug/ACM	2.88	1.92
ng/DSCM	Concentration, ng/DSCM *	13,506	8,773
ng/ACM	Concentration, ng/ACM	2,880	1,922
ppmvd	Concentration, ppmvd	0.00289	0.00188
lb/hr	Emission Rate, lb/hr	1.14E-003	6.79E-004
g/hr	Emission Rate, grams/hour	0.516	0.308
	Chromium		
fwt	Formula Weight, lb/lb-Mole	52.00	52.00
ug	Catch Weight, Micrograms	84.54	85.48
mg/DSCM	Concentration, mg/DSCM *	0.0454	0.0482
mg/ACM	Concentration, mg/ACM	0.00968	0.0106
ug/DSCM	Concentration, ug/DSCM *	45.4	48.2
ug/ACM	Concentration, ug/ACM	9.68	10.6
ng/DSCM	Concentration, ng/DSCM *	45,399	48,196
ng/ACM	Concentration, ng/ACM	9,681	10,560
ppmvd	Concentration, ppmvd	0.0210	0.0223
lb/hr	Emission Rate, lb/hr	0.00383	0.00373
g/hr	Emission Rate, grams/hour	1.74	1.69
	Copper		
fwt	Formula Weight, lb/lb-Mole	63.55	63.55
ug	Catch Weight, Micrograms	370.48	625.67
mg/DSCM	Concentration, mg/DSCM *	0.199	0.353
mg/ACM	Concentration, mg/ACM	0.0424	0.0773
ug/DSCM	Concentration, ug/DSCM *	199	353
ug/ACM	Concentration, ug/ACM	42.4	77.3
ng/DSCM	Concentration, ng/DSCM *	198,954	352,770
ng/ACM	Concentration, ng/ACM	42,424	77,294
ppmvd	Concentration, ppmvd	0.0753	0.134
lb/hr	Emission Rate, lb/hr	0.0168	0.0273
g/hr	Emission Rate, grams/hour	7.60	12.4
	Lead		
fwt	Formula Weight, lb/lb-Mole	207.19	207.19
ug	Catch Weight, Micrograms	547.45	865.84
mg/DSCM	Concentration, mg/DSCM *	0.294	0.488
mg/ACM	Concentration, mg/ACM	0.0627	0.107
ug/DSCM	Concentration, ug/DSCM *	294	488
ug/ACM	Concentration, ug/ACM	62.7	107
ng/DSCM	Concentration, ng/DSCM *	293,990	488,184
ng/ACM	Concentration, ng/ACM	62,688	106,964
ppmvd	Concentration, ppmvd	0.0341	0.0567
lb/hr	Emission Rate, lb/hr	0.0248	0.0378
g/hr	Emission Rate, grams/hour	11.2	17.1

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		I-1-S1-MMTL-1	I-3-S1-MMTL-3
	Manganese		
fwt	Formula Weight, lb/lb-Mole	54.94	54.94
ug	Catch Weight, Micrograms	18.23	22.15
mg/DSCM	Concentration, mg/DSCM *	0.00979	0.0125
mg/ACM	Concentration, mg/ACM	0.00209	0.00274
ug/DSCM	Concentration, ug/DSCM *	9.79	12.5
ug/ACM	Concentration, ug/ACM	2.09	2.74
ng/DSCM	Concentration, ng/DSCM *	9,790	12,489
ng/ACM	Concentration, ng/ACM	2,088	2,736
ppmvd	Concentration, ppmvd	0.00429	0.00547
lb/hr	Emission Rate, lb/hr	8.25E-004	9.67E-004
g/hr	Emission Rate, grams/hour	0.374	0.439
	Mercury		
fwt	Formula Weight, lb/lb-Mole	200.59	200.59
ug	Catch Weight, Micrograms	70.27	83.1101
mg/DSCM	Concentration, mg/DSCM *	0.0377	0.0469
mg/ACM	Concentration, mg/ACM	0.00805	0.0103
ug/DSCM	Concentration, ug/DSCM *	37.7	46.9
ug/ACM	Concentration, ug/ACM	8.05	10.3
ng/DSCM	Concentration, ng/DSCM *	37,736	46,860
ng/ACM	Concentration, ng/ACM	8,047	10,267
ppmvd	Concentration, ppmvd	0.00453	0.00562
lb/hr	Emission Rate, lb/hr	0.00318	0.00363
g/hr	Emission Rate, grams/hour	1.44	1.65
	Nickel		
fwt	Formula Weight, lb/lb-Mole	58.71	58.71
ug	Catch Weight, Micrograms	65.95	94.25
mg/DSCM	Concentration, mg/DSCM *	0.0354	0.0531
mg/ACM	Concentration, mg/ACM	0.00755	0.0116
ug/DSCM	Concentration, ug/DSCM *	35.4	53.1
ug/ACM	Concentration, ug/ACM	7.55	11.6
ng/DSCM	Concentration, ng/DSCM *	35,416	53,141
ng/ACM	Concentration, ng/ACM	7,552	11,643
ppmvd	Concentration, ppmvd	0.0145	0.0218
lb/hr	Emission Rate, lb/hr	0.00298	0.00412
g/hr	Emission Rate, grams/hour	1.35	1.87
	Phosphorus		
fwt	Formula Weight, lb/lb-Mole	30.97	30.97
ug	Catch Weight, Micrograms	2529.15	2906.64
mg/DSCM	Concentration, mg/DSCM *	1.36	1.64
mg/ACM	Concentration, mg/ACM	0.290	0.359
ug/DSCM	Concentration, ug/DSCM *	1,358	1,639
ug/ACM	Concentration, ug/ACM	290	359
ng/DSCM	Concentration, ng/DSCM *	1,358,198	1,638,843
ng/ACM	Concentration, ng/ACM	289,612	359,080
ppmvd	Concentration, ppmvd	1.05	1.27
lb/hr	Emission Rate, lb/hr	0.114	0.127
g/hr	Emission Rate, grams/hour	51.9	57.6

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

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FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		I-1-S1-MMTL-1	I-3-S1-MMTL-3
	Selenium		
fwt	Formula Weight, lb/lb-Mole	78.96	78.96
ug	Catch Weight, Micrograms	80	46.51
mg/DSCM	Concentration, mg/DSCM *	0.0430	0.0262
mg/ACM	Concentration, mg/ACM	0.00916	0.00575
ug/DSCM	Concentration, ug/DSCM *	43.0	26.2
ug/ACM	Concentration, ug/ACM	9.16	5.75
ng/DSCM	Concentration, ng/DSCM *	42,961	26,224
ng/ACM	Concentration, ng/ACM	9,161	5,746
ppmvd	Concentration, ppmvd	0.0131	0.00799
lb/hr	Emission Rate, lb/hr	0.00362	0.00203
g/hr	Emission Rate, grams/hour	1.64	0.921
	Silver		
fwt	Formula Weight, lb/lb-Mole	107.87	107.87
ug	Catch Weight, Micrograms	16.85	8.17
mg/DSCM	Concentration, mg/DSCM *	0.00905	0.00461
mg/ACM	Concentration, mg/ACM	0.00193	0.00101
ug/DSCM	Concentration, ug/DSCM *	9.05	4.61
ug/ACM	Concentration, ug/ACM	1.93	1.01
ng/DSCM	Concentration, ng/DSCM *	9,049	4,606
ng/ACM	Concentration, ng/ACM	1,929	1,009
ppmvd	Concentration, ppmvd	0.00202	0.00103
lb/hr	Emission Rate, lb/hr	7.63E-004	3.57E-004
g/hr	Emission Rate, grams/hour	0.346	0.162
	Thallium		
fwt	Formula Weight, lb/lb-Mole	204.37	204.37
ug	Catch Weight, Micrograms	33.35	40.16
mg/DSCM	Concentration, mg/DSCM *	0.0179	0.0226
mg/ACM	Concentration, mg/ACM	0.00382	0.00496
ug/DSCM	Concentration, ug/DSCM *	17.9	22.6
ug/ACM	Concentration, ug/ACM	3.82	4.96
ng/DSCM	Concentration, ng/DSCM *	17,910	22,643
ng/ACM	Concentration, ng/ACM	3,819	4,961
ppmvd	Concentration, ppmvd	0.00211	0.00267
lb/hr	Emission Rate, lb/hr	0.00151	0.00175
g/hr	Emission Rate, grams/hour	0.685	0.795
	Zinc		
fwt	Formula Weight, lb/lb-Mole	65.38	65.38
ug	Catch Weight, Micrograms	965.36	1376.65
mg/DSCM	Concentration, mg/DSCM *	0.518	0.776
mg/ACM	Concentration, mg/ACM	0.111	0.170
ug/DSCM	Concentration, ug/DSCM *	518	776
ug/ACM	Concentration, ug/ACM	111	170
ng/DSCM	Concentration, ng/DSCM *	518,415	776,193
ng/ACM	Concentration, ng/ACM	110,543	170,068
ppmvd	Concentration, ppmvd	0.191	0.286
lb/hr	Emission Rate, lb/hr	0.0437	0.0601
g/hr	Emission Rate, grams/hour	19.8	27.3

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 1

RUN #	DATE	OPERATOR
II-1-S1-MMTL-1	10/29/91	Rodney W. Miller
II-2-S1-MMTL-2	10/30/91	Rodney W. Miller

		II-1-S1-MMTL-1	II-2-S1-MMTL-2
	Run Start Time	2157	2202
	Run Finish Time	0323	0305
	Net Traversing Points	24	24
Theta	Net Run Time, Minutes	270.00	270.00
Dia	Nozzle Diameter, Inches	0.498	0.498
Cp	Pitot Tube Coefficient	0.840	0.840
Y	Dry Gas Meter Calibration Factor	0.9842	0.9842
Pbar	Barometric Pressure, Inches Hg	29.00	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.700	0.709
Vm	Volume Of Metered Gas Sample, Dry ACF	129.940	131.254
tm	Dry Gas Meter Temperature, Degrees F	82	82
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	121.066	122.168
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	405.0	376.0
Vwstd	Volume of Water Vapor, SCF*	19.063	17.698
$\%H_2O$	Moisture Content, Percent by Volume	13.6	12.7
Mfd	Dry Mole Fraction	0.864	0.873
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	6.3	7.8
$\%O_2$	Oxygen, Percent By Volume, Dry	10.7	9.0
Fo	Fuel Factor	1.619	1.526
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.44	29.61
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.88	28.14
Pg	Flue Gas Static Pressure, Inches H_2O	-0.06	-0.07
Ps	Absolute Flue Gas Pressure, Inches Hg	29.00	28.99
ts	Flue Gas Temperature, Degrees F	1550	1461
Delta-p	Average Velocity Head, Inches H_2O	0.0570	0.0548
vs	Flue Gas Velocity, Feet/Second	27.03	25.79
A	Stack/Duct Area, Square Inches	7,620	7,620
Qsd	Volumetric Air Flow Rate, Dry SCFM*	18,879	19,055
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	535	540
Qaw	Volumetric Air Flow Rate, Wet ACFM	85,832	81,899
%I	Isokinetic Sampling Rate, Percent	92.9	92.9
%EA	Excess Air, Percent	95	69

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

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FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		II-1-S1-MMTL-1	II-2-S1-MMTL-2
	Antimony		
fwt	Formula Weight, lb/lb-Mole	121.75	121.75
ug	Catch Weight, Micrograms	42.78	24.88
mg/DSCM	Concentration, mg/DSCM *	0.0125	0.00719
mg/ACM	Concentration, mg/ACM	0.00274	0.00167
ug/DSCM	Concentration, ug/DSCM *	12.5	7.19
ug/ACM	Concentration, ug/ACM	2.74	1.67
ng/DSCM	Concentration, ng/DSCM *	12,477	7,191
ng/ACM	Concentration, ng/ACM	2,744	1,673
ppmvd	Concentration, ppmvd	0.00247	0.00142
lb/hr	Emission Rate, lb/hr	8.82E-004	5.13E-004
g/hr	Emission Rate, grams/hour	0.400	0.233
	Arsenic		
fwt	Formula Weight, lb/lb-Mole	74.92	74.92
ug	Catch Weight, Micrograms	263.36	189.81
mg/DSCM	Concentration, mg/DSCM *	0.0768	0.0549
mg/ACM	Concentration, mg/ACM	0.0169	0.0128
ug/DSCM	Concentration, ug/DSCM *	76.8	54.9
ug/ACM	Concentration, ug/ACM	16.9	12.8
ng/DSCM	Concentration, ng/DSCM *	76,813	54,862
ng/ACM	Concentration, ng/ACM	16,895	12,764
ppmvd	Concentration, ppmvd	0.0247	0.0176
lb/hr	Emission Rate, lb/hr	0.00543	0.00392
g/hr	Emission Rate, grams/hour	2.46	1.78
	Barium		
fwt	Formula Weight, lb/lb-Mole	137.33	137.33
ug	Catch Weight, Micrograms	28	15.06
mg/DSCM	Concentration, mg/DSCM *	0.00817	0.00435
mg/ACM	Concentration, mg/ACM	0.00180	0.00101
ug/DSCM	Concentration, ug/DSCM *	8.17	4.35
ug/ACM	Concentration, ug/ACM	1.80	1.01
ng/DSCM	Concentration, ng/DSCM *	8,167	4,353
ng/ACM	Concentration, ng/ACM	1,796	1,013
ppmvd	Concentration, ppmvd	1.43E-003	7.62E-004
lb/hr	Emission Rate, lb/hr	5.78E-004	3.11E-004
g/hr	Emission Rate, grams/hour	0.262	0.141
	Beryllium		
fwt	Formula Weight, lb/lb-Mole	9.01	9.01
ug	Catch Weight, Micrograms	3.83	4.2
mg/DSCM	Concentration, mg/DSCM *	0.00112	0.00121
mg/ACM	Concentration, mg/ACM	2.46E-004	2.82E-004
ug/DSCM	Concentration, ug/DSCM *	1.12	1.21
ug/ACM	Concentration, ug/ACM	0.246	0.282
ng/DSCM	Concentration, ng/DSCM *	1,117	1,214
ng/ACM	Concentration, ng/ACM	246	282
ppmvd	Concentration, ppmvd	0.00298	0.00324
lb/hr	Emission Rate, lb/hr	7.90E-005	8.67E-005
g/hr	Emission Rate, grams/hour	0.0358	0.0393

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

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FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		II-1-S1-MMTL-1	II-2-S1-MMTL-2
	Cadmium		
fwt	Formula Weight, lb/lb-Mole	112.41	112.41
ug	Catch Weight, Micrograms	29.25	23.33
mg/DSCM	Concentration, mg/DSCM *	0.00853	0.00674
mg/ACM	Concentration, mg/ACM	0.00188	0.00157
ug/DSCM	Concentration, ug/DSCM *	8.53	6.74
ug/ACM	Concentration, ug/ACM	1.88	1.57
ng/DSCM	Concentration, ng/DSCM *	8,531	6,743
ng/ACM	Concentration, ng/ACM	1,876	1,569
ppmvd	Concentration, ppmvd	0.00183	0.00144
lb/hr	Emission Rate, lb/hr	6.03E-004	4.81E-004
g/hr	Emission Rate, grams/hour	0.274	0.218
	Chromium		
fwt	Formula Weight, lb/lb-Mole	52.00	52.00
ug	Catch Weight, Micrograms	685.93	73.45
mg/DSCM	Concentration, mg/DSCM *	0.200	0.0212
mg/ACM	Concentration, mg/ACM	0.0440	0.00494
ug/DSCM	Concentration, ug/DSCM *	200	21.2
ug/ACM	Concentration, ug/ACM	44.0	4.94
ng/DSCM	Concentration, ng/DSCM *	200,061	21,230
ng/ACM	Concentration, ng/ACM	44,005	4,939
ppmvd	Concentration, ppmvd	0.0926	0.00982
lb/hr	Emission Rate, lb/hr	0.0141	0.00152
g/hr	Emission Rate, grams/hour	6.42	0.687
	Copper		
fwt	Formula Weight, lb/lb-Mole	63.55	63.55
ug	Catch Weight, Micrograms	15.97	369.81
mg/DSCM	Concentration, mg/DSCM *	0.00466	0.107
mg/ACM	Concentration, mg/ACM	0.00102	0.0249
ug/DSCM	Concentration, ug/DSCM *	4.66	107
ug/ACM	Concentration, ug/ACM	1.02	24.9
ng/DSCM	Concentration, ng/DSCM *	4,658	106,888
ng/ACM	Concentration, ng/ACM	1,025	24,868
ppmvd	Concentration, ppmvd	0.00176	0.0405
lb/hr	Emission Rate, lb/hr	3.29E-004	7.63E-003
g/hr	Emission Rate, grams/hour	0.149	3.46
	Lead		
fwt	Formula Weight, lb/lb-Mole	207.19	207.19
ug	Catch Weight, Micrograms	868.47	528.19
mg/DSCM	Concentration, mg/DSCM *	0.253	0.153
mg/ACM	Concentration, mg/ACM	0.0557	0.0355
ug/DSCM	Concentration, ug/DSCM *	253	153
ug/ACM	Concentration, ug/ACM	55.7	35.5
ng/DSCM	Concentration, ng/DSCM *	253,302	152,665
ng/ACM	Concentration, ng/ACM	55,715	35,519
ppmvd	Concentration, ppmvd	0.0294	0.0177
lb/hr	Emission Rate, lb/hr	0.0179	0.0109
g/hr	Emission Rate, grams/hour	8.13	4.94

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		II-1-S1-MMTL-1	II-2-S1-MMTL-2
	Manganese		
fwt	Formula Weight, lb/lb-Mole	54.94	54.94
ug	Catch Weight, Micrograms	63.03	27.16
mg/DSCM	Concentration, mg/DSCM *	0.0184	0.00785
mg/ACM	Concentration, mg/ACM	0.00404	0.00183
ug/DSCM	Concentration, ug/DSCM *	18.4	7.85
ug/ACM	Concentration, ug/ACM	4.04	1.83
ng/DSCM	Concentration, ng/DSCM *	18,384	7,850
ng/ACM	Concentration, ng/ACM	4,044	1,826
ppmvd	Concentration, ppmvd	0.00805	0.00344
lb/hr	Emission Rate, lb/hr	1.30E-003	5.60E-004
g/hr	Emission Rate, grams/hour	0.590	0.254
	Mercury		
fwt	Formula Weight, lb/lb-Mole	200.59	200.59
ug	Catch Weight, Micrograms	58.1131	80.2406
mg/DSCM	Concentration, mg/DSCM *	0.0169	0.0232
mg/ACM	Concentration, mg/ACM	0.00373	0.00540
ug/DSCM	Concentration, ug/DSCM *	16.9	23.2
ug/ACM	Concentration, ug/ACM	3.73	5.40
ng/DSCM	Concentration, ng/DSCM *	16,950	23,192
ng/ACM	Concentration, ng/ACM	3,728	5,396
ppmvd	Concentration, ppmvd	0.00203	0.00278
lb/hr	Emission Rate, lb/hr	0.00120	0.00166
g/hr	Emission Rate, grams/hour	0.544	0.751
	Nickel		
fwt	Formula Weight, lb/lb-Mole	58.71	58.71
ug	Catch Weight, Micrograms	356.08	73.71
mg/DSCM	Concentration, mg/DSCM *	0.104	0.0213
mg/ACM	Concentration, mg/ACM	0.0228	0.00496
ug/DSCM	Concentration, ug/DSCM *	104	21.3
ug/ACM	Concentration, ug/ACM	22.8	4.96
ng/DSCM	Concentration, ng/DSCM *	103,856	21,305
ng/ACM	Concentration, ng/ACM	22,844	4,957
ppmvd	Concentration, ppmvd	0.0426	0.00873
lb/hr	Emission Rate, lb/hr	0.00735	0.00152
g/hr	Emission Rate, grams/hour	3.33	0.690
	Phosphorus		
fwt	Formula Weight, lb/lb-Mole	30.97	30.97
ug	Catch Weight, Micrograms	3150.56 3,150.53	2278.56
mg/DSCM	Concentration, mg/DSCM *	0.919	0.659
mg/ACM	Concentration, mg/ACM	0.202	0.153
ug/DSCM	Concentration, ug/DSCM *	919	659
ug/ACM	Concentration, ug/ACM	202	153
ng/DSCM	Concentration, ng/DSCM *	918,905	658,581
ng/ACM	Concentration, ng/ACM	202,118	153,225
ppmvd	Concentration, ppmvd	0.714	0.512
lb/hr	Emission Rate, lb/hr	0.0650	0.0470
g/hr	Emission Rate, grams/hour	29.5	21.3

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		II-1-S1-MMTL-1	II-2-S1-MMTL-2
	Selenium		
fwt	Formula Weight, lb/lb-Mole	78.96	78.96
ug	Catch Weight, Micrograms	59.86	43.1
mg/DSCM	Concentration, mg/DSCM *	0.0175	0.0125
mg/ACM	Concentration, mg/ACM	0.00384	0.00290
ug/DSCM	Concentration, ug/DSCM *	17.5	12.5
ug/ACM	Concentration, ug/ACM	3.84	2.90
ng/DSCM	Concentration, ng/DSCM *	17,459	12,457
ng/ACM	Concentration, ng/ACM	3,840	2,898
ppmvd	Concentration, ppmvd	0.00532	0.00380
lb/hr	Emission Rate, lb/hr	1.23E-003	8.89E-004
g/hr	Emission Rate, grams/hour	0.560	0.403
	Silver		
fwt	Formula Weight, lb/lb-Mole	107.87	107.87
ug	Catch Weight, Micrograms	4.53	3.82
mg/DSCM	Concentration, mg/DSCM *	0.00132	0.00110
mg/ACM	Concentration, mg/ACM	2.91E-004	2.57E-004
ug/DSCM	Concentration, ug/DSCM *	1.32	1.10
ug/ACM	Concentration, ug/ACM	0.291	0.257
ng/DSCM	Concentration, ng/DSCM *	1,321	1,104
ng/ACM	Concentration, ng/ACM	291	257
ppmvd	Concentration, ppmvd	2.95E-004	2.46E-004
lb/hr	Emission Rate, lb/hr	9.34E-005	7.88E-005
g/hr	Emission Rate, grams/hour	0.0424	0.0357
	Thallium		
fwt	Formula Weight, lb/lb-Mole	204.37	204.37
ug	Catch Weight, Micrograms	34.37	25.76
mg/DSCM	Concentration, mg/DSCM *	0.0100	0.00745
mg/ACM	Concentration, mg/ACM	0.00220	0.00173
ug/DSCM	Concentration, ug/DSCM *	10.0	7.45
ug/ACM	Concentration, ug/ACM	2.20	1.73
ng/DSCM	Concentration, ng/DSCM *	10,024	7,446
ng/ACM	Concentration, ng/ACM	2,205	1,732
ppmvd	Concentration, ppmvd	1.18E-003	8.76E-004
lb/hr	Emission Rate, lb/hr	7.09E-004	5.31E-004
g/hr	Emission Rate, grams/hour	0.322	0.241
	Zinc		
fwt	Formula Weight, lb/lb-Mole	65.38	65.38
ug	Catch Weight, Micrograms	1215.44	698.54
mg/DSCM	Concentration, mg/DSCM *	0.355	0.202
mg/ACM	Concentration, mg/ACM	0.0780	0.0470
ug/DSCM	Concentration, ug/DSCM *	355	202
ug/ACM	Concentration, ug/ACM	78.0	47.0
ng/DSCM	Concentration, ng/DSCM *	354,500	201,902
ng/ACM	Concentration, ng/ACM	77,974	46,974
ppmvd	Concentration, ppmvd	0.130	0.0743
lb/hr	Emission Rate, lb/hr	0.0251	0.0144
g/hr	Emission Rate, grams/hour	11.4	6.54

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 1

RUN #	DATE	OPERATOR
III-1-S1-MMTL-1	10/30/91	Danny L. Speer
III-2-S1-MMTL-2	10/31/91	Danny L. Speer

		III-1-S1-MMTL-1	III-2-S1-MMTL-2
	Run Start Time	0555	0505
	Run Finish Time	0948	0923
	Net Traversing Points	24	24
Theta	Net Run Time, Minutes	192.00	240.00
Dia	Nozzle Diameter, Inches	0.498	0.498
Cp	Pitot Tube Coefficient	0.840	0.840
Y	Dry Gas Meter Calibration Factor	0.9842	0.9842
Pbar	Barometric Pressure, Inches Hg	29.00	28.80
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.653	0.662
Vm	Volume Of Metered Gas Sample, Dry ACF	88.591	112.578
tm	Dry Gas Meter Temperature, Degrees F	71	80
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	84.188	104.494
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	268.0	331.0
Vwstd	Volume of Water Vapor, SCF*	12.615	15.580
$\%H_2O$	Moisture Content, Percent by Volume	13.0	13.0
Mfd	Dry Mole Fraction	0.870	0.870
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	5.7	7.4
$\%O_2$	Oxygen, Percent By Volume, Dry	11.8	9.0
Fo	Fuel Factor	1.596	1.608
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.38	29.54
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.90	28.05
Pg	Flue Gas Static Pressure, Inches H_2O	-0.07	-0.08
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99	28.79
ts	Flue Gas Temperature, Degrees F	1501	1491
Delta-p	Average Velocity Head, Inches H_2O	0.0529	0.0521
vs	Flue Gas Velocity, Feet/Second	25.71	25.47
A	Stack/Duct Area, Square Inches	7,620	7,620
Qsd	Volumetric Air Flow Rate, Dry SCFM*	18,529	18,336
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	525	519
Qaw	Volumetric Air Flow Rate, Wet ACFM	81,641	80,884
%I	Isokinetic Sampling Rate, Percent	92.6	92.8
%EA	Excess Air, Percent	118	69

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		III-1-S1-MMTL-1	III-2-S1-MMTL-2
	Antimony		
fwt	Formula Weight, lb/lb-Mole	121.75	121.75
ug	Catch Weight, Micrograms	35.97	50.87
mg/DSCM	Concentration, mg/DSCM *	0.0151	0.0172
mg/ACM	Concentration, mg/ACM	0.00342	0.00390
ug/DSCM	Concentration, ug/DSCM *	15.1	17.2
ug/ACM	Concentration, ug/ACM	3.42	3.90
ng/DSCM	Concentration, ng/DSCM *	15,087	17,190
ng/ACM	Concentration, ng/ACM	3,424	3,897
ppmvd	Concentration, ppmvd	0.00298	0.00340
lb/hr	Emission Rate, lb/hr	0.00105	0.00118
g/hr	Emission Rate, grams/hour	0.475	0.536
	Arsenic		
fwt	Formula Weight, lb/lb-Mole	74.92	74.92
ug	Catch Weight, Micrograms	390.91	508.02
mg/DSCM	Concentration, mg/DSCM *	0.164	0.172
mg/ACM	Concentration, mg/ACM	0.0372	0.0389
ug/DSCM	Concentration, ug/DSCM *	164	172
ug/ACM	Concentration, ug/ACM	37.2	38.9
ng/DSCM	Concentration, ng/DSCM *	163,957	171,670
ng/ACM	Concentration, ng/ACM	37,212	38,917
ppmvd	Concentration, ppmvd	0.0526	0.0551
lb/hr	Emission Rate, lb/hr	0.0114	0.0118
g/hr	Emission Rate, grams/hour	5.16	5.35
	Barium		
fwt	Formula Weight, lb/lb-Mole	137.33	137.33
ug	Catch Weight, Micrograms	39.72	24.51
mg/DSCM	Concentration, mg/DSCM *	0.0167	0.00828
mg/ACM	Concentration, mg/ACM	0.00378	0.00188
ug/DSCM	Concentration, ug/DSCM *	16.7	8.28
ug/ACM	Concentration, ug/ACM	3.78	1.88
ng/DSCM	Concentration, ng/DSCM *	16,660	8,282
ng/ACM	Concentration, ng/ACM	3,781	1,878
ppmvd	Concentration, ppmvd	0.00292	0.00145
lb/hr	Emission Rate, lb/hr	1.16E-003	5.69E-004
g/hr	Emission Rate, grams/hour	0.525	0.258
	Beryllium		
fwt	Formula Weight, lb/lb-Mole	9.01	9.01
ug	Catch Weight, Micrograms	7.39	8.08
mg/DSCM	Concentration, mg/DSCM *	0.00310	0.00273
mg/ACM	Concentration, mg/ACM	7.03E-004	6.19E-004
ug/DSCM	Concentration, ug/DSCM *	3.10	2.73
ug/ACM	Concentration, ug/ACM	0.703	0.619
ng/DSCM	Concentration, ng/DSCM *	3,100	2,730
ng/ACM	Concentration, ng/ACM	703	619
ppmvd	Concentration, ppmvd	0.00828	0.00729
lb/hr	Emission Rate, lb/hr	2.15E-004	1.88E-004
g/hr	Emission Rate, grams/hour	0.0976	0.0851

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		III-1-S1-MMTL-1	III-2-S1-MMTL-2
	Cadmium		
fwt	Formula Weight, lb/lb-Mole	112.41	112.41
ug	Catch Weight, Micrograms	63.44	73.17
mg/DSCM	Concentration, mg/DSCM *	0.0266	0.0247
mg/ACM	Concentration, mg/ACM	0.00604	0.00561
ug/DSCM	Concentration, ug/DSCM *	26.6	24.7
ug/ACM	Concentration, ug/ACM	6.04	5.61
ng/DSCM	Concentration, ng/DSCM *	26,608	24,726
ng/ACM	Concentration, ng/ACM	6,039	5,605
ppmvd	Concentration, ppmvd	0.00569	0.00529
lb/hr	Emission Rate, lb/hr	0.00185	0.00170
g/hr	Emission Rate, grams/hour	0.838	0.770
	Chromium		
fwt	Formula Weight, lb/lb-Mole	52.00	52.00
ug	Catch Weight, Micrograms	106.97	155.37
mg/DSCM	Concentration, mg/DSCM *	0.0449	0.0525
mg/ACM	Concentration, mg/ACM	0.0102	0.0119
ug/DSCM	Concentration, ug/DSCM *	44.9	52.5
ug/ACM	Concentration, ug/ACM	10.2	11.9
ng/DSCM	Concentration, ng/DSCM *	44,866	52,503
ng/ACM	Concentration, ng/ACM	10,183	11,902
ppmvd	Concentration, ppmvd	0.0208	0.0243
lb/hr	Emission Rate, lb/hr	0.00311	0.00361
g/hr	Emission Rate, grams/hour	1.41	1.64
	Copper		
fwt	Formula Weight, lb/lb-Mole	63.55	63.55
ug	Catch Weight, Micrograms	1046	1251.09
mg/DSCM	Concentration, mg/DSCM *	0.439	0.423
mg/ACM	Concentration, mg/ACM	0.0996	0.0958
ug/DSCM	Concentration, ug/DSCM *	439	423
ug/ACM	Concentration, ug/ACM	99.6	95.8
ng/DSCM	Concentration, ng/DSCM *	438,719	422,769
ng/ACM	Concentration, ng/ACM	99,573	95,840
ppmvd	Concentration, ppmvd	0.166	0.160
lb/hr	Emission Rate, lb/hr	0.0305	0.0290
g/hr	Emission Rate, grams/hour	13.8	13.2
	Lead		
fwt	Formula Weight, lb/lb-Mole	207.19	207.19
ug	Catch Weight, Micrograms	967.05	1718.1
mg/DSCM	Concentration, mg/DSCM *	0.406	0.581
mg/ACM	Concentration, mg/ACM	0.0921	0.132
ug/DSCM	Concentration, ug/DSCM *	406	581
ug/ACM	Concentration, ug/ACM	92.1	132
ng/DSCM	Concentration, ng/DSCM *	405,605	580,581
ng/ACM	Concentration, ng/ACM	92,058	131,616
ppmvd	Concentration, ppmvd	0.0471	0.0674
lb/hr	Emission Rate, lb/hr	0.0282	0.0399
g/hr	Emission Rate, grams/hour	12.8	18.1

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		III-1-S1-MMTL-1	III-2-S1-MMTL-2
	Manganese		
fwt	Formula Weight, lb/lb-Mole	54.94	54.94
ug	Catch Weight, Micrograms	176.69	78.21
mg/DSCM	Concentration, mg/DSCM *	0.0741	0.0264
mg/ACM	Concentration, mg/ACM	0.0168	0.00599
ug/DSCM	Concentration, ug/DSCM *	74.1	26.4
ug/ACM	Concentration, ug/ACM	16.8	5.99
ng/DSCM	Concentration, ng/DSCM *	74,108	26,429
ng/ACM	Concentration, ng/ACM	16,820	5,991
ppmvd	Concentration, ppmvd	0.0324	0.0116
lb/hr	Emission Rate, lb/hr	0.00514	0.00182
g/hr	Emission Rate, grams/hour	2.33	0.823
	Mercury		
fwt	Formula Weight, lb/lb-Mole	200.59	200.59
ug	Catch Weight, Micrograms	93.931	106.88
mg/DSCM	Concentration, mg/DSCM *	0.0394	0.0361
mg/ACM	Concentration, mg/ACM	0.00894	0.00819
ug/DSCM	Concentration, ug/DSCM *	39.4	36.1
ug/ACM	Concentration, ug/ACM	8.94	8.19
ng/DSCM	Concentration, ng/DSCM *	39,397	36,117
ng/ACM	Concentration, ng/ACM	8,942	8,188
ppmvd	Concentration, ppmvd	0.00472	0.00433
lb/hr	Emission Rate, lb/hr	0.00273	0.00248
g/hr	Emission Rate, grams/hour	1.24	1.13
	Nickel		
fwt	Formula Weight, lb/lb-Mole	58.71	58.71
ug	Catch Weight, Micrograms	140.74	185.16
mg/DSCM	Concentration, mg/DSCM *	0.0590	0.0626
mg/ACM	Concentration, mg/ACM	0.0134	0.0142
ug/DSCM	Concentration, ug/DSCM *	59.0	62.6
ug/ACM	Concentration, ug/ACM	13.4	14.2
ng/DSCM	Concentration, ng/DSCM *	59,030	62,569
ng/ACM	Concentration, ng/ACM	13,398	14,184
ppmvd	Concentration, ppmvd	0.0242	0.0256
lb/hr	Emission Rate, lb/hr	0.00410	0.00430
g/hr	Emission Rate, grams/hour	1.86	1.95
	Phosphorus		
fwt	Formula Weight, lb/lb-Mole	30.97	30.97
ug	Catch Weight, Micrograms	4040.57	4257.11
mg/DSCM	Concentration, mg/DSCM *	1.69	1.44
mg/ACM	Concentration, mg/ACM	0.385	0.326
ug/DSCM	Concentration, ug/DSCM *	1,695	1,439
ug/ACM	Concentration, ug/ACM	385	326
ng/DSCM	Concentration, ng/DSCM *	1,694,716	1,438,565
ng/ACM	Concentration, ng/ACM	384,639	326,117
ppmvd	Concentration, ppmvd	1.32	1.12
lb/hr	Emission Rate, lb/hr	0.118	0.0988
g/hr	Emission Rate, grams/hour	53.4	44.8

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		III-1-S1-MMTL-1	III-2-S1-MMTL-2
	Selenium		
fwt	Formula Weight, lb/lb-Mole	78.96	78.96
ug	Catch Weight, Micrograms	84.92	175.87
mg/DSCM	Concentration, mg/DSCM *	0.0356	0.0594
mg/ACM	Concentration, mg/ACM	0.00808	0.0135
ug/DSCM	Concentration, ug/DSCM *	35.6	59.4
ug/ACM	Concentration, ug/ACM	8.08	13.5
ng/DSCM	Concentration, ng/DSCM *	35,618	59,430
ng/ACM	Concentration, ng/ACM	8,084	13,473
ppmvd	Concentration, ppmvd	0.0109	0.0181
lb/hr	Emission Rate, lb/hr	0.00247	0.00408
g/hr	Emission Rate, grams/hour	1.12	1.85
	Silver		
fwt	Formula Weight, lb/lb-Mole	107.87	107.87
ug	Catch Weight, Micrograms	10.37	16.67
mg/DSCM	Concentration, mg/DSCM *	0.00435	0.00563
mg/ACM	Concentration, mg/ACM	9.87E-004	1.28E-003
ug/DSCM	Concentration, ug/DSCM *	4.35	5.63
ug/ACM	Concentration, ug/ACM	0.987	1.28
ng/DSCM	Concentration, ng/DSCM *	4,349	5,633
ng/ACM	Concentration, ng/ACM	987	1,277
ppmvd	Concentration, ppmvd	9.70E-004	1.26E-003
lb/hr	Emission Rate, lb/hr	3.02E-004	3.87E-004
g/hr	Emission Rate, grams/hour	0.137	0.176
	Thallium		
fwt	Formula Weight, lb/lb-Mole	204.37	204.37
ug	Catch Weight, Micrograms	52.75	71.31
mg/DSCM	Concentration, mg/DSCM *	0.0221	0.0241
mg/ACM	Concentration, mg/ACM	0.00502	0.00546
ug/DSCM	Concentration, ug/DSCM *	22.1	24.1
ug/ACM	Concentration, ug/ACM	5.02	5.46
ng/DSCM	Concentration, ng/DSCM *	22,125	24,097
ng/ACM	Concentration, ng/ACM	5,022	5,463
ppmvd	Concentration, ppmvd	0.00260	0.00284
lb/hr	Emission Rate, lb/hr	0.00154	0.00166
g/hr	Emission Rate, grams/hour	0.697	0.751
	Zinc		
fwt	Formula Weight, lb/lb-Mole	65.38	65.38
ug	Catch Weight, Micrograms	1620.81	1624.57
mg/DSCM	Concentration, mg/DSCM *	0.680	0.549
mg/ACM	Concentration, mg/ACM	0.154	0.124
ug/DSCM	Concentration, ug/DSCM *	680	549
ug/ACM	Concentration, ug/ACM	154	124
ng/DSCM	Concentration, ng/DSCM *	679,808	548,976
ng/ACM	Concentration, ng/ACM	154,292	124,451
ppmvd	Concentration, ppmvd	0.250	0.202
lb/hr	Emission Rate, lb/hr	0.0472	0.0377
g/hr	Emission Rate, grams/hour	21.4	17.1

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 1

RUN #	DATE	OPERATOR
IV-1-S1-MMTL-1	10/30/91	Stuart R. Davis
IV-2-S1-MMTL-2	10/31/91	Stuart R. Davis

		IV-1-S1-MMTL-1	IV-2-S1-MMTL-2
	Run Start Time	1200	1100
	Run Finish Time	1456	1428
	Net Traversing Points	24	24
Theta	Net Run Time, Minutes	144.00	192.00
Dia	Nozzle Diameter, Inches	0.498	0.498
Cp	Pitot Tube Coefficient	0.840	0.840
Y	Dry Gas Meter Calibration Factor	0.9842	0.9842
Pbar	Barometric Pressure, Inches Hg	29.00	28.80
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.490	0.598
Vm	Volume Of Metered Gas Sample, Dry ACF	58.570	87.389
tm	Dry Gas Meter Temperature, Degrees F	93	96
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	53.411	78.775
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	178.5	249.5
Vwstd	Volume of Water Vapor, SCF*	8.402	11.744
$\%H_2O$	Moisture Content, Percent by Volume	13.6	13.0
Mfd	Dry Mole Fraction	0.864	0.870
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	7.1	7.9
$\%O_2$	Oxygen, Percent By Volume, Dry	9.5	8.2
Fo	Fuel Factor	1.606	1.608
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.52	29.59
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.95	28.09
Pg	Flue Gas Static Pressure, Inches H_2O	-0.07	-0.09
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99	28.79
ts	Flue Gas Temperature, Degrees F	1525	1510
Delta-p	Average Velocity Head, Inches H_2O	0.0381	0.0431
vs	Flue Gas Velocity, Feet/Second	21.93	23.27
A	Stack/Duct Area, Square Inches	7,620	7,620
Qsd	Volumetric Air Flow Rate, Dry SCFM*	15,515	16,585
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	439	470
Qaw	Volumetric Air Flow Rate, Wet ACFM	69,645	73,869
%I	Isokinetic Sampling Rate, Percent	93.5	96.8
%EA	Excess Air, Percent	76	59

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		IV-1-S1-MMTL-1	IV-2-S1-MMTL-2
	Antimony		
fwt	Formula Weight, lb/lb-Mole	121.75	121.75
ug	Catch Weight, Micrograms	25.03	28.25
mg/DSCM	Concentration, mg/DSCM *	0.0165	0.0127
mg/ACM	Concentration, mg/ACM	0.00369	0.00284
ug/DSCM	Concentration, ug/DSCM *	16.5	12.7
ug/ACM	Concentration, ug/ACM	3.69	2.84
ng/DSCM	Concentration, ng/DSCM *	16,548	12,663
ng/ACM	Concentration, ng/ACM	3,686	2,843
ppmvd	Concentration, ppmvd	0.00327	0.00250
lb/hr	Emission Rate, lb/hr	9.62E-004	7.87E-004
g/hr	Emission Rate, grams/hour	0.436	0.357
	Arsenic		
fwt	Formula Weight, lb/lb-Mole	74.92	74.92
ug	Catch Weight, Micrograms	189.71	360.93
mg/DSCM	Concentration, mg/DSCM *	0.125	0.162
mg/ACM	Concentration, mg/ACM	0.0279	0.0363
ug/DSCM	Concentration, ug/DSCM *	125	162
ug/ACM	Concentration, ug/ACM	27.9	36.3
ng/DSCM	Concentration, ng/DSCM *	125,421	161,786
ng/ACM	Concentration, ng/ACM	27,941	36,323
ppmvd	Concentration, ppmvd	0.0403	0.0519
lb/hr	Emission Rate, lb/hr	0.00729	0.0101
g/hr	Emission Rate, grams/hour	3.31	4.56
	Barium		
fwt	Formula Weight, lb/lb-Mole	137.33	137.33
ug	Catch Weight, Micrograms	38.59	28.76
mg/DSCM	Concentration, mg/DSCM *	0.0255	0.0129
mg/ACM	Concentration, mg/ACM	0.00568	0.00289
ug/DSCM	Concentration, ug/DSCM *	25.5	12.9
ug/ACM	Concentration, ug/ACM	5.68	2.89
ng/DSCM	Concentration, ng/DSCM *	25,513	12,892
ng/ACM	Concentration, ng/ACM	5,684	2,894
ppmvd	Concentration, ppmvd	0.00447	0.00226
lb/hr	Emission Rate, lb/hr	1.48E-003	8.01E-004
g/hr	Emission Rate, grams/hour	0.673	0.363
	Beryllium		
fwt	Formula Weight, lb/lb-Mole	9.01	9.01
ug	Catch Weight, Micrograms	4.06	7.94
mg/DSCM	Concentration, mg/DSCM *	0.00268	0.00356
mg/ACM	Concentration, mg/ACM	5.98E-004	7.99E-004
ug/DSCM	Concentration, ug/DSCM *	2.68	3.56
ug/ACM	Concentration, ug/ACM	0.598	0.799
ng/DSCM	Concentration, ng/DSCM *	2,684	3,559
ng/ACM	Concentration, ng/ACM	598	799
ppmvd	Concentration, ppmvd	0.00717	0.00950
lb/hr	Emission Rate, lb/hr	1.56E-004	2.21E-004
g/hr	Emission Rate, grams/hour	0.0708	0.100

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		IV-1-S1-MMTL-1	IV-2-S1-MMTL-2
	Cadmium		
fwt	Formula Weight, lb/lb-Mole	112.41	112.41
ug	Catch Weight, Micrograms	37.52	69.07
mg/DSCM	Concentration, mg/DSCM *	0.0248	0.0310
mg/ACM	Concentration, mg/ACM	0.00553	0.00695
ug/DSCM	Concentration, ug/DSCM *	24.8	31.0
ug/ACM	Concentration, ug/ACM	5.53	6.95
ng/DSCM	Concentration, ng/DSCM *	24,805	30,961
ng/ACM	Concentration, ng/ACM	5,526	6,951
ppmvd	Concentration, ppmvd	0.00531	0.00663
lb/hr	Emission Rate, lb/hr	0.00144	0.00192
g/hr	Emission Rate, grams/hour	0.654	0.872
	Chromium		
fwt	Formula Weight, lb/lb-Mole	52.00	52.00
ug	Catch Weight, Micrograms	78.89	100.24
mg/DSCM	Concentration, mg/DSCM *	0.0522	0.0449
mg/ACM	Concentration, mg/ACM	0.0116	0.0101
ug/DSCM	Concentration, ug/DSCM *	52.2	44.9
ug/ACM	Concentration, ug/ACM	11.6	10.1
ng/DSCM	Concentration, ng/DSCM *	52,156	44,932
ng/ACM	Concentration, ng/ACM	11,619	10,088
ppmvd	Concentration, ppmvd	0.0241	0.0208
lb/hr	Emission Rate, lb/hr	0.00303	0.00279
g/hr	Emission Rate, grams/hour	1.38	1.27
	Copper		
fwt	Formula Weight, lb/lb-Mole	63.55	63.55
ug	Catch Weight, Micrograms	636.76	1220.77
mg/DSCM	Concentration, mg/DSCM *	0.421	0.547
mg/ACM	Concentration, mg/ACM	0.0938	0.123
ug/DSCM	Concentration, ug/DSCM *	421	547
ug/ACM	Concentration, ug/ACM	93.8	123
ng/DSCM	Concentration, ng/DSCM *	420,975	547,208
ng/ACM	Concentration, ng/ACM	93,783	122,856
ppmvd	Concentration, ppmvd	0.159	0.207
lb/hr	Emission Rate, lb/hr	0.0245	0.0340
g/hr	Emission Rate, grams/hour	11.1	15.4
	Lead		
fwt	Formula Weight, lb/lb-Mole	207.19	207.19
ug	Catch Weight, Micrograms	617.36	1019.86
mg/DSCM	Concentration, mg/DSCM *	0.408	0.457
mg/ACM	Concentration, mg/ACM	0.0909	0.103
ug/DSCM	Concentration, ug/DSCM *	408	457
ug/ACM	Concentration, ug/ACM	90.9	103
ng/DSCM	Concentration, ng/DSCM *	408,149	457,151
ng/ACM	Concentration, ng/ACM	90,926	102,637
ppmvd	Concentration, ppmvd	0.0474	0.0531
lb/hr	Emission Rate, lb/hr	0.0237	0.0284
g/hr	Emission Rate, grams/hour	10.8	12.9

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		IV-1-S1-MMTL-1	IV-2-S1-MMTL-2
	Manganese		
fwt	Formula Weight, lb/lb-Mole	54.94	54.94
ug	Catch Weight, Micrograms	98.54	59.67
mg/DSCM	Concentration, mg/DSCM *	0.0651	0.0267
mg/ACM	Concentration, mg/ACM	0.0145	0.00601
ug/DSCM	Concentration, ug/DSCM *	65.1	26.7
ug/ACM	Concentration, ug/ACM	14.5	6.01
ng/DSCM	Concentration, ng/DSCM *	65,147	26,747
ng/ACM	Concentration, ng/ACM	14,513	6,005
ppmvd	Concentration, ppmvd	0.0285	0.0117
lb/hr	Emission Rate, lb/hr	0.00379	0.00166
g/hr	Emission Rate, grams/hour	1.72	0.754
	Mercury		
fwt	Formula Weight, lb/lb-Mole	200.59	200.59
ug	Catch Weight, Micrograms	85.905	93.7768
mg/DSCM	Concentration, mg/DSCM *	0.0568	0.0420
mg/ACM	Concentration, mg/ACM	0.0127	0.00944
ug/DSCM	Concentration, ug/DSCM *	56.8	42.0
ug/ACM	Concentration, ug/ACM	12.7	9.44
ng/DSCM	Concentration, ng/DSCM *	56,793	42,035
ng/ACM	Concentration, ng/ACM	12,652	9,438
ppmvd	Concentration, ppmvd	0.00681	0.00504
lb/hr	Emission Rate, lb/hr	0.00330	0.00261
g/hr	Emission Rate, grams/hour	1.50	1.18
	Nickel		
fwt	Formula Weight, lb/lb-Mole	58.71	58.71
ug	Catch Weight, Micrograms	99.13	177.83
mg/DSCM	Concentration, mg/DSCM *	0.0655	0.0797
mg/ACM	Concentration, mg/ACM	0.0146	0.0179
ug/DSCM	Concentration, ug/DSCM *	65.5	79.7
ug/ACM	Concentration, ug/ACM	14.6	17.9
ng/DSCM	Concentration, ng/DSCM *	65,537	79,712
ng/ACM	Concentration, ng/ACM	14,600	17,896
ppmvd	Concentration, ppmvd	0.0269	0.0327
lb/hr	Emission Rate, lb/hr	0.00381	0.00495
g/hr	Emission Rate, grams/hour	1.73	2.25
	Phosphorus		
fwt	Formula Weight, lb/lb-Mole	30.97	30.97
ug	Catch Weight, Micrograms	2844.17	5281.5
mg/DSCM	Concentration, mg/DSCM *	1.88	2.37
mg/ACM	Concentration, mg/ACM	0.419	0.532
ug/DSCM	Concentration, ug/DSCM *	1,880	2,367
ug/ACM	Concentration, ug/ACM	419	532
ng/DSCM	Concentration, ng/DSCM *	1,880,337	2,367,424
ng/ACM	Concentration, ng/ACM	418,895	531,521
ppmvd	Concentration, ppmvd	1.46	1.84
lb/hr	Emission Rate, lb/hr	0.109	0.147
g/hr	Emission Rate, grams/hour	49.6	66.7

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION
(Continued)

PLANT: Jewell Coal and Coke Company, Vansant, VA

		IV-1-S1-MMTL-1	IV-2-S1-MMTL-2
	Selenium		
fwt	Formula Weight, lb/lb-Mole	78.96	78.96
ug	Catch Weight, Micrograms	59.4	101.5
mg/DSCM	Concentration, mg/DSCM *	0.0393	0.0455
mg/ACM	Concentration, mg/ACM	0.00875	0.0102
ug/DSCM	Concentration, ug/DSCM *	39.3	45.5
ug/ACM	Concentration, ug/ACM	8.75	10.2
ng/DSCM	Concentration, ng/DSCM *	39,271	45,497
ng/ACM	Concentration, ng/ACM	8,749	10,215
ppmvd	Concentration, ppmvd	0.0120	0.0139
lb/hr	Emission Rate, lb/hr	0.00228	0.00283
g/hr	Emission Rate, grams/hour	1.04	1.28
	Silver		
fwt	Formula Weight, lb/lb-Mole	107.87	107.87
ug	Catch Weight, Micrograms	12.12	13.8
mg/DSCM	Concentration, mg/DSCM *	0.00801	0.00619
mg/ACM	Concentration, mg/ACM	0.00179	0.00139
ug/DSCM	Concentration, ug/DSCM *	8.01	6.19
ug/ACM	Concentration, ug/ACM	1.79	1.39
ng/DSCM	Concentration, ng/DSCM *	8,013	6,186
ng/ACM	Concentration, ng/ACM	1,785	1,389
ppmvd	Concentration, ppmvd	0.00179	0.00138
lb/hr	Emission Rate, lb/hr	4.66E-004	3.84E-004
g/hr	Emission Rate, grams/hour	0.211	0.174
	Thallium		
fwt	Formula Weight, lb/lb-Mole	204.37	204.37
ug	Catch Weight, Micrograms	35.5	57.04
mg/DSCM	Concentration, mg/DSCM *	0.0235	0.0256
mg/ACM	Concentration, mg/ACM	0.00523	0.00574
ug/DSCM	Concentration, ug/DSCM *	23.5	25.6
ug/ACM	Concentration, ug/ACM	5.23	5.74
ng/DSCM	Concentration, ng/DSCM *	23,470	25,568
ng/ACM	Concentration, ng/ACM	5,229	5,740
ppmvd	Concentration, ppmvd	0.00276	0.00301
lb/hr	Emission Rate, lb/hr	0.00136	0.00159
g/hr	Emission Rate, grams/hour	0.619	0.721
	Zinc		
fwt	Formula Weight, lb/lb-Mole	65.38	65.38
ug	Catch Weight, Micrograms	974.9	2037.68
mg/DSCM	Concentration, mg/DSCM *	0.645	0.913
mg/ACM	Concentration, mg/ACM	0.144	0.205
ug/DSCM	Concentration, ug/DSCM *	645	913
ug/ACM	Concentration, ug/ACM	144	205
ng/DSCM	Concentration, ng/DSCM *	644,526	913,387
ng/ACM	Concentration, ng/ACM	143,585	205,068
ppmvd	Concentration, ppmvd	0.237	0.336
lb/hr	Emission Rate, lb/hr	0.0375	0.0567
g/hr	Emission Rate, grams/hour	17.0	25.7

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

Modified Method Five

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
II-O-S2-MM5-OA	10/28/91	Matthew L. Hamilton

		II-O-S2-MM5-OA
	Run Start Time	2225
	Run Finish Time	0025
	Net Traversing Points	12
Theta	Net Run Time, Minutes	120.00
Dia	Nozzle Diameter, Inches	0.499
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9842
Pbar	Barometric Pressure, Inches Hg	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	1.33
Vm	Volume Of Metered Gas Sample, Dry ACF	78.304
tm	Dry Gas Meter Temperature, Degrees F	93
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	71.512
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	435.5
Vwstd	Volume of Water Vapor, SCF*	20.499
$\%H_2O$	Moisture Content, Percent by Volume	22.3
Mfd	Dry Mole Fraction	0.777
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	8.4
$\%O_2$	Oxygen, Percent By Volume, Dry	7.2
Fo	Fuel Factor	1.631
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.63
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.04
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99
ts	Flue Gas Temperature, Degrees F	1586
Delta-p	Average Velocity Head, Inches H_2O	0.0878
vs	Flue Gas Velocity, Feet/Second	34.37
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	20,150
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	571
Qaw	Volumetric Air Flow Rate, Wet ACFM	103,669
%I	Isokinetic Sampling Rate, Percent	109.5
%EA	Excess Air, Percent	48

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
II-O-S2-MM5-OB	10/28/91	Jeffrey D. Kunstling

		II-O-S2-MM5-OB
	Run Start Time	2225
	Run Finish Time	0025
	Net Traversing Points	12
Theta	Net Run Time, Minutes	120.00
Dia	Nozzle Diameter, Inches	0.499
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9823
Pbar	Barometric Pressure, Inches Hg	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	1.31
Vm	Volume Of Metered Gas Sample, Dry ACF	78.001
tm	Dry Gas Meter Temperature, Degrees F	92
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	71.309
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	416.5
Vwstd	Volume of Water Vapor, SCF*	19.605
$\%H_2O$	Moisture Content, Percent by Volume	21.6
Mfd	Dry Mole Fraction	0.784
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	8.4
$\%O_2$	Oxygen, Percent By Volume, Dry	7.2
Fo	Fuel Factor	1.631
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.63
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.12
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99
ts	Flue Gas Temperature, Degrees F	1586
Delta-p	Average Velocity Head, Inches H_2O	0.0879
vs	Flue Gas Velocity, Feet/Second	34.34
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	20,316
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	575
Qaw	Volumetric Air Flow Rate, Wet ACFM	103,569
%I	Isokinetic Sampling Rate, Percent	108.3
%EA	Excess Air, Percent	48

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
I-1-S2-MM5-1	10/29/91	Matthew L. Hamilton

		I-1-S2-MM5-1A
	Run Start Time	1720
	Run Finish Time	2020
	Net Traversing Points	12
Theta	Net Run Time, Minutes	180.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9842
Pbar	Barometric Pressure, Inches Hg	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	1.10
Vm	Volume Of Metered Gas Sample, Dry ACF	106.263
tm	Dry Gas Meter Temperature, Degrees F	90
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	97.669
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	351.0
Vwstd	Volume of Water Vapor, SCF*	16.522
$\%H_2O$	Moisture Content, Percent by Volume	14.5
Mfd	Dry Mole Fraction	0.855
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	6.0
$\%O_2$	Oxygen, Percent By Volume, Dry	11.2
Fo	Fuel Factor	1.617
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.41
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.76
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99
ts	Flue Gas Temperature, Degrees F	1564
Delta-p	Average Velocity Head, Inches H_2O	0.0832
vs	Flue Gas Velocity, Feet/Second	32.85
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	21,421
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	607
Qaw	Volumetric Air Flow Rate, Wet ACFM	99,066
%I	Isokinetic Sampling Rate, Percent	93.4
%EA	Excess Air, Percent	105

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
I-1-S2-MM5-1B	10/29/91	Jeffrey D. Kunstling

		I-1-S2-MM5-1B
	Run Start Time	1720
	Run Finish Time	2020
	Net Traversing Points	12
Theta	Net Run Time, Minutes	180.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9823
Pbar	Barometric Pressure, Inches Hg	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	1.07
Vm	Volume Of Metered Gas Sample, Dry ACF	107.135
tm	Dry Gas Meter Temperature, Degrees F	88
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	98.622
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	349.0
Vwstd	Volume of Water Vapor, SCF*	16.427
$\%H_2O$	Moisture Content, Percent by Volume	14.3
Mfd	Dry Mole Fraction	0.857
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	6.0
$\%O_2$	Oxygen, Percent By Volume, Dry	11.2
Fo	Fuel Factor	1.617
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.41
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.78
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99
ts	Flue Gas Temperature, Degrees F	1564
Delta-p	Average Velocity Head, Inches H_2O	0.0832
vs	Flue Gas Velocity, Feet/Second	32.83
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	21,461
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	608
Qaw	Volumetric Air Flow Rate, Wet ACFM	99,027
%I	Isokinetic Sampling Rate, Percent	94.1
%EA	Excess Air, Percent	105

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

ENTROPY

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
I-2-S2-MM5-2	10/30/91	Matthew L. Hamilton

		I-2-S2-MM5-2A
	Run Start Time	1821
	Run Finish Time	2045
	Net Traversing Points	12
Theta	Net Run Time, Minutes	144.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9842
Pbar	Barometric Pressure, Inches Hg	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	1.32
Vm	Volume Of Metered Gas Sample, Dry ACF	92.733
tm	Dry Gas Meter Temperature, Degrees F	89
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	85.324
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	389.5
Vwstd	Volume of Water Vapor, SCF*	18.334
$\%H_2O$	Moisture Content, Percent by Volume	17.7
Mfd	Dry Mole Fraction	0.823
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	7.3
$\%O_2$	Oxygen, Percent By Volume, Dry	9.5
Fo	Fuel Factor	1.562
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.55
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.51
Pg	Flue Gas Static Pressure, Inches H_2O	-1.15 all other static around -.1
Ps	Absolute Flue Gas Pressure, Inches Hg	28.92
ts	Flue Gas Temperature, Degrees F	1566
Delta-p	Average Velocity Head, Inches H_2O	0.1007
vs	Flue Gas Velocity, Feet/Second	36.37
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	22,742
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	644
Qaw	Volumetric Air Flow Rate, Wet ACFM	109,685
%I	Isokinetic Sampling Rate, Percent	96.0
%EA	Excess Air, Percent	76

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
I-3-S2-MM5-3	10/31/91	Matthew L. Hamilton

		I-3-S2-MM5-3A
	Run Start Time	1715
	Run Finish Time	2015
	Net Traversing Points	12
Theta	Net Run Time, Minutes	180.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9842
Pbar	Barometric Pressure, Inches Hg	28.70
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	1.12
Vm	Volume Of Metered Gas Sample, Dry ACF	108.471
tm	Dry Gas Meter Temperature, Degrees F	95
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	97.663
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	370.0
Vwstd	Volume of Water Vapor, SCF*	17.416
$\%H_2O$	Moisture Content, Percent by Volume	15.1
Mfd	Dry Mole Fraction	0.849
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	7.8
$\%O_2$	Oxygen, Percent By Volume, Dry	9.4
Fo	Fuel Factor	1.474
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.62
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.86
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.69
ts	Flue Gas Temperature, Degrees F	1621
Delta-p	Average Velocity Head, Inches H_2O	0.0861
vs	Flue Gas Velocity, Feet/Second	34.00
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	21,170
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	600
Qaw	Volumetric Air Flow Rate, Wet ACFM	102,532
%I	Isokinetic Sampling Rate, Percent	94.5
%EA	Excess Air, Percent	75

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
I-3-S2-MM5-3B	10/31/91	Jeffrey D. Kunstling

		I-3-S2-MM5-3B
	Run Start Time	1715
	Run Finish Time	2015
	Net Traversing Points	12
Theta	Net Run Time, Minutes	180.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9823
Pbar	Barometric Pressure, Inches Hg	28.70
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	1.08
Vm	Volume Of Metered Gas Sample, Dry ACF	107.552
tm	Dry Gas Meter Temperature, Degrees F	85
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	98.436
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	370.5
Vwstd	Volume of Water Vapor, SCF*	17.439
$\%H_2O$	Moisture Content, Percent by Volume	15.1
Mfd	Dry Mole Fraction	0.849
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	7.8
$\%O_2$	Oxygen, Percent By Volume, Dry	9.4
Fo	Fuel Factor	1.474
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.62
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.87
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.69
ts	Flue Gas Temperature, Degrees F	1621
Delta-p	Average Velocity Head, Inches H_2O	0.0861
vs	Flue Gas Velocity, Feet/Second	33.99
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	21,187
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	600
Qaw	Volumetric Air Flow Rate, Wet ACFM	102,517
%I	Isokinetic Sampling Rate, Percent	95.2
%EA	Excess Air, Percent	75

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
II-1-S2-MM5-1A	10/29/91	Matthew L. Hamilton

		II-1-S2-MM5-1A
	Run Start Time	2212
	Run Finish Time	0326
	Net Traversing Points	12
Theta	Net Run Time, Minutes	288.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9842
Pbar	Barometric Pressure, Inches Hg	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.885
Vm	Volume Of Metered Gas Sample, Dry ACF	151.591
tm	Dry Gas Meter Temperature, Degrees F	74
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	143.222
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	623.0
Vwstd	Volume of Water Vapor, SCF*	29.325
$\%H_2O$	Moisture Content, Percent by Volume	17.0
Mfd	Dry Mole Fraction	0.830
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	8.9
$\%O_2$	Oxygen, Percent By Volume, Dry	7.3
Fo	Fuel Factor	1.528
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.72
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.72
Pg	Flue Gas Static Pressure, Inches H_2O	-0.11
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99
ts	Flue Gas Temperature, Degrees F	1558
Delta-p	Average Velocity Head, Inches H_2O	0.0689
vs	Flue Gas Velocity, Feet/Second	29.87
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	18,954
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	537
Qaw	Volumetric Air Flow Rate, Wet ACFM	90,084
%I	Isokinetic Sampling Rate, Percent	96.7
%EA	Excess Air, Percent	49

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
II-1-S2-MM5-1B	10/29/91	Jeffrey D. Kunstling

		II-1-S2-MM5-1B
	Run Start Time	2212
	Run Finish Time	0326
	Net Traversing Points	12
Theta	Net Run Time, Minutes	288.00
Dia	Nozzle Diameter, Inches	0.499
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9823
Pbar	Barometric Pressure, Inches Hg	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.869
Vm	Volume Of Metered Gas Sample, Dry ACF	153.179
tm	Dry Gas Meter Temperature, Degrees F	74
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	144.407
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	547.5
Vwstd	Volume of Water Vapor, SCF*	25.771
$\%H_2O$	Moisture Content, Percent by Volume	15.1
Mfd	Dry Mole Fraction	0.849
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	8.9
$\%O_2$	Oxygen, Percent By Volume, Dry	7.3
Fo	Fuel Factor	1.528
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.72
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.94
Pg	Flue Gas Static Pressure, Inches H_2O	-0.11
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99
ts	Flue Gas Temperature, Degrees F	1558
Delta-p	Average Velocity Head, Inches H_2O	0.0689
vs	Flue Gas Velocity, Feet/Second	29.75
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	19,302
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	547
Qaw	Volumetric Air Flow Rate, Wet ACFM	89,733
%I	Isokinetic Sampling Rate, Percent	96.1
%EA	Excess Air, Percent	49

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
II-2-S2-MM5-2A	10/30/91	Matthew L. Hamilton

		II-2-S2-MM5-2A
	Run Start Time	2300
	Run Finish Time	0300
	Net Traversing Points	12
Theta	Net Run Time, Minutes	240.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9842
Pbar	Barometric Pressure, Inches Hg	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.934
Vm	Volume Of Metered Gas Sample, Dry ACF	129.808
tm	Dry Gas Meter Temperature, Degrees F	72
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	123.213
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	523.0
Vwstd	Volume of Water Vapor, SCF*	24.618
$\%H_2O$	Moisture Content, Percent by Volume	16.7
Mfd	Dry Mole Fraction	0.833
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	8.1
$\%O_2$	Oxygen, Percent By Volume, Dry	8.9
Fo	Fuel Factor	1.481
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.65
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.71
Pg	Flue Gas Static Pressure, Inches H_2O	-0.11
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99
ts	Flue Gas Temperature, Degrees F	1559
Delta-p	Average Velocity Head, Inches H_2O	0.0740
vs	Flue Gas Velocity, Feet/Second	30.97
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	19,727
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	559
Qaw	Volumetric Air Flow Rate, Wet ACFM	93,391
%I	Isokinetic Sampling Rate, Percent	95.9
%EA	Excess Air, Percent	68

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
II-2-S2-MM5-2B	10/30/91	Jeffrey D. Kunstling

		II-2-S2-MM5-2B
	Run Start Time	2300
	Run Finish Time	0300
	Net Traversing Points	12
Theta	Net Run Time, Minutes	240.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9823
Pbar	Barometric Pressure, Inches Hg	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.921
Vm	Volume Of Metered Gas Sample, Dry ACF	130.845
tm	Dry Gas Meter Temperature, Degrees F	68
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	124.755
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	537.0
Vwstd	Volume of Water Vapor, SCF*	25.277
$\%H_2O$	Moisture Content, Percent by Volume	16.8
Mfd	Dry Mole Fraction	0.832
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	8.1
$\%O_2$	Oxygen, Percent By Volume, Dry	8.9
Fo	Fuel Factor	1.481
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.65
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.69
Pg	Flue Gas Static Pressure, Inches H_2O	-0.11
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99
ts	Flue Gas Temperature, Degrees F	1559
Delta-p	Average Velocity Head, Inches H_2O	0.0740
vs	Flue Gas Velocity, Feet/Second	30.98
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	19,689
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	558
Qaw	Volumetric Air Flow Rate, Wet ACFM	93,430
%I	Isokinetic Sampling Rate, Percent	97.3
%EA	Excess Air, Percent	68

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
II-3-S2-MM5-3B	10/31/91	Jeffrey D. Kunstling

		II-3-S2-MM5-3B
	Run Start Time	2300
	Run Finish Time	0300
	Net Traversing Points	12
Theta	Net Run Time, Minutes	240.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9823
Pbar	Barometric Pressure, Inches Hg	28.70
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.714
Vm	Volume Of Metered Gas Sample, Dry ACF	116.058
tm	Dry Gas Meter Temperature, Degrees F	75
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	108.109
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	483.5
Vwstd	Volume of Water Vapor, SCF*	22.758
$\%H_2O$	Moisture Content, Percent by Volume	17.4
Mfd	Dry Mole Fraction	0.826
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	9.1
$\%O_2$	Oxygen, Percent By Volume, Dry	7.4
Fo	Fuel Factor	1.484
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.75
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.71
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.69
ts	Flue Gas Temperature, Degrees F	1549
Delta-p	Average Velocity Head, Inches H_2O	0.0560
vs	Flue Gas Velocity, Feet/Second	27.01
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	16,965
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	480
Qaw	Volumetric Air Flow Rate, Wet ACFM	81,465
%I	Isokinetic Sampling Rate, Percent	97.9
%EA	Excess Air, Percent	51

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
III-1-S2-MM5-1A	10/30/91	Kevin B. Baird

		III-1-S2-MM5-1A
	Run Start Time	0623
	Run Finish Time	0937
	Net Traversing Points	12
Theta	Net Run Time, Minutes	192.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9842
Pbar	Barometric Pressure, Inches Hg	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.630
Vm	Volume Of Metered Gas Sample, Dry ACF	85.399
tm	Dry Gas Meter Temperature, Degrees F	60
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	82.791
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	301.0
Vwstd	Volume of Water Vapor, SCF*	14.168
$\%H_2O$	Moisture Content, Percent by Volume	14.6
Mfd	Dry Mole Fraction	0.854
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	5.7
$\%O_2$	Oxygen, Percent By Volume, Dry	11.8
Fo	Fuel Factor	1.596
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.38
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.72
Pg	Flue Gas Static Pressure, Inches H_2O	-0.11
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99
ts	Flue Gas Temperature, Degrees F	1533
Delta-p	Average Velocity Head, Inches H_2O	0.0502
vs	Flue Gas Velocity, Feet/Second	25.33
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	16,752
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	474
Qaw	Volumetric Air Flow Rate, Wet ACFM	76,406
%I	Isokinetic Sampling Rate, Percent	94.9
%EA	Excess Air, Percent	118

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

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FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
III-1-S2-MM5-1B	10/30/91	William E. Morgan

		III-1-S2-MM5-1B
	Run Start Time	0623
	Run Finish Time	0937
	Net Traversing Points	12
Theta	Net Run Time, Minutes	192.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9823
Pbar	Barometric Pressure, Inches Hg	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.624
Vm	Volume Of Metered Gas Sample, Dry ACF	87.001
tm	Dry Gas Meter Temperature, Degrees F	59
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	84.373
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	342.0
Vwstd	Volume of Water Vapor, SCF*	16.098
$\%H_2O$	Moisture Content, Percent by Volume	16.0
Mfd	Dry Mole Fraction	0.840
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	5.7
$\%O_2$	Oxygen, Percent By Volume, Dry	11.8
Fo	Fuel Factor	1.596
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.38
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.56
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99
ts	Flue Gas Temperature, Degrees F	1533
Delta-p	Average Velocity Head, Inches H_2O	0.0502
vs	Flue Gas Velocity, Feet/Second	25.41
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	16,523
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	468
Qaw	Volumetric Air Flow Rate, Wet ACFM	76,629
%I	Isokinetic Sampling Rate, Percent	98.0
%EA	Excess Air, Percent	118

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

ENTROPY

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
III-2-S2-MM5-2A	10/31/91	W. Todd Langdon

		III-2-S2-MM5-2A
	Run Start Time	0515
	Run Finish Time	0915
	Net Traversing Points	12
Theta	Net Run Time, Minutes	240.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9842
Pbar	Barometric Pressure, Inches Hg	28.80
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.851
Vm	Volume Of Metered Gas Sample, Dry ACF	124.683
tm	Dry Gas Meter Temperature, Degrees F	71
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	117.789
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	435.0
Vwstd	Volume of Water Vapor, SCF*	20.475
$\%H_2O$	Moisture Content, Percent by Volume	14.8
Mfd	Dry Mole Fraction	0.852
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	7.4
$\%O_2$	Oxygen, Percent By Volume, Dry	9.0
Fo	Fuel Factor	1.608
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.54
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.83
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.79
ts	Flue Gas Temperature, Degrees F	1546
Delta-p	Average Velocity Head, Inches H_2O	0.0673
vs	Flue Gas Velocity, Feet/Second	29.47
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	19,182
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	543
Qaw	Volumetric Air Flow Rate, Wet ACFM	88,886
%I	Isokinetic Sampling Rate, Percent	94.3
%EA	Excess Air, Percent	69

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

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FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
III-2-S2-MM5-2B	10/31/91	Kevin B. Baird

		III-2-S2-MM5-2B
	Run Start Time	0515
	Run Finish Time	0915
	Net Traversing Points	12
Theta	Net Run Time, Minutes	240.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9823
Pbar	Barometric Pressure, Inches Hg	28.80
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.850
Vm	Volume Of Metered Gas Sample, Dry ACF	124.990
tm	Dry Gas Meter Temperature, Degrees F	69
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	118.210
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	448.5
Vwstd	Volume of Water Vapor, SCF*	21.111
$\%H_2O$	Moisture Content, Percent by Volume	15.2
Mfd	Dry Mole Fraction	0.848
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	7.4
$\%O_2$	Oxygen, Percent By Volume, Dry	9.0
Fo	Fuel Factor	1.608
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.54
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.79
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.79
ts	Flue Gas Temperature, Degrees F	1545
Delta-p	Average Velocity Head, Inches H_2O	0.0675
vs	Flue Gas Velocity, Feet/Second	29.53
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	19,149
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	542
Qaw	Volumetric Air Flow Rate, Wet ACFM	89,072
%I	Isokinetic Sampling Rate, Percent	94.8
%EA	Excess Air, Percent	69

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

ENTROPY

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
III-3-S2-MM5-3B	11/01/91	Kevin B. Baird

		III-3-S2-MM5-3B
	Run Start Time	0500
	Run Finish Time	0900
	Net Traversing Points	12
Theta	Net Run Time, Minutes	240.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9823
Pbar	Barometric Pressure, Inches Hg	28.70
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.803
Vm	Volume Of Metered Gas Sample, Dry ACF	121.839
tm	Dry Gas Meter Temperature, Degrees F	68
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	114.998
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	447.5
Vwstd	Volume of Water Vapor, SCF*	21.064
$\%H_2O$	Moisture Content, Percent by Volume	15.5
Mfd	Dry Mole Fraction	0.845
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	8.6
$\%O_2$	Oxygen, Percent By Volume, Dry	7.2
Fo	Fuel Factor	1.593
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.66
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.86
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.69
ts	Flue Gas Temperature, Degrees F	1574
Delta-p	Average Velocity Head, Inches H_2O	0.0610
vs	Flue Gas Velocity, Feet/Second	28.29
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	17,952
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	508
Qaw	Volumetric Air Flow Rate, Wet ACFM	85,335
%I	Isokinetic Sampling Rate, Percent	98.4
%EA	Excess Air, Percent	48

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

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FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
IV-1-S2-MM5-1A	10/30/91	W. Todd Langdon

		IV-1-S2-MM5-1A
	Run Start Time	1315
	Run Finish Time	1627
	Net Traversing Points	12
Theta	Net Run Time, Minutes	192.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9842
Pbar	Barometric Pressure, Inches Hg	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.720
Vm	Volume Of Metered Gas Sample, Dry ACF	94.415
tm	Dry Gas Meter Temperature, Degrees F	97
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	85.507
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	263.0
Vwstd	Volume of Water Vapor, SCF*	12.379
$\%H_2O$	Moisture Content, Percent by Volume	12.6
Mfd	Dry Mole Fraction	0.874
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	7.1
$\%O_2$	Oxygen, Percent By Volume, Dry	9.5
Fo	Fuel Factor	1.606
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.52
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	28.06
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99
ts	Flue Gas Temperature, Degrees F	1571
Delta-p	Average Velocity Head, Inches H_2O	0.0547
vs	Flue Gas Velocity, Feet/Second	26.53
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	17,614
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	499
Qaw	Volumetric Air Flow Rate, Wet ACFM	80,026
%I	Isokinetic Sampling Rate, Percent	93.2
%EA	Excess Air, Percent	76

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
IV-1-S2-MM5-1B	10/30/91	Reginald F. Holt

		IV-1-S2-MM5-1B
	Run Start Time	1315
	Run Finish Time	1627
	Net Traversing Points	12
Theta	Net Run Time, Minutes	192.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9823
Pbar	Barometric Pressure, Inches Hg	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.716
Vm	Volume Of Metered Gas Sample, Dry ACF	94.895
tm	Dry Gas Meter Temperature, Degrees F	93
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	86.408
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	266.5
Vwstd	Volume of Water Vapor, SCF*	12.544
$\%H_2O$	Moisture Content, Percent by Volume	12.7
Mfd	Dry Mole Fraction	0.873
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	7.1
$\%O_2$	Oxygen, Percent By Volume, Dry	9.5
Fo	Fuel Factor	1.606
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.52
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	28.06
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99
ts	Flue Gas Temperature, Degrees F	1570
Delta-p	Average Velocity Head, Inches H_2O	0.0547
vs	Flue Gas Velocity, Feet/Second	26.54
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	17,609
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	499
Qaw	Volumetric Air Flow Rate, Wet ACFM	80,029
%I	Isokinetic Sampling Rate, Percent	94.2
%EA	Excess Air, Percent	76

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
IV-2-S2-MM5-2A	10/31/91	W. Todd Langdon

		IV-2-S2-MM5-2A
	Run Start Time	1035
	Run Finish Time	1345
	Net Traversing Points	12
Theta	Net Run Time, Minutes	192.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9842
Pbar	Barometric Pressure, Inches Hg	28.80
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.901
Vm	Volume Of Metered Gas Sample, Dry ACF	105.339
tm	Dry Gas Meter Temperature, Degrees F	101
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	94.126
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	315.0
Vwstd	Volume of Water Vapor, SCF*	14.827
$\%H_2O$	Moisture Content, Percent by Volume	13.6
Mfd	Dry Mole Fraction	0.864
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	7.9
$\%O_2$	Oxygen, Percent By Volume, Dry	8.2
Fo	Fuel Factor	1.608
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.59
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	28.01
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.79
ts	Flue Gas Temperature, Degrees F	1557
Delta-p	Average Velocity Head, Inches H_2O	0.0637
vs	Flue Gas Velocity, Feet/Second	28.66
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	18,810
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	533
Qaw	Volumetric Air Flow Rate, Wet ACFM	86,445
%I	Isokinetic Sampling Rate, Percent	96.1
%EA	Excess Air, Percent	59

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

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FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
IV-2-S2-MM5-2B	10/31/91	Kevin B. Baird

		IV-2-S2-MM5-2B
	Run Start Time	1035
	Run Finish Time	1345
	Net Traversing Points	12
Theta	Net Run Time, Minutes	192.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9823
Pbar	Barometric Pressure, Inches Hg	28.80
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.894
Vm	Volume Of Metered Gas Sample, Dry ACF	104.959
tm	Dry Gas Meter Temperature, Degrees F	96
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	94.470
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	320.9
Vwstd	Volume of Water Vapor, SCF*	15.105
$\%H_2O$	Moisture Content, Percent by Volume	13.8
Mfd	Dry Mole Fraction	0.862
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	7.9
$\%O_2$	Oxygen, Percent By Volume, Dry	8.2
Fo	Fuel Factor	1.608
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.59
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.99
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.79
ts	Flue Gas Temperature, Degrees F	1557
Delta-p	Average Velocity Head, Inches H_2O	0.0637
vs	Flue Gas Velocity, Feet/Second	28.67
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	18,779
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	532
Qaw	Volumetric Air Flow Rate, Wet ACFM	86,476
%I	Isokinetic Sampling Rate, Percent	96.6
%EA	Excess Air, Percent	59

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

ENTROPY

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
IV-3-S2-MM5-3A	10/31/91	Kevin B. Baird

		IV-3-S2-MM5-3A
	Run Start Time	1026
	Run Finish Time	1532
	Net Traversing Points	12
Theta	Net Run Time, Minutes	288.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9823
Pbar	Barometric Pressure, Inches Hg	28.70
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.800
Vm	Volume Of Metered Gas Sample, Dry ACF	148.020
tm	Dry Gas Meter Temperature, Degrees F	86
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	135.147
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	455.5
Vwstd	Volume of Water Vapor, SCF*	21.440
$\%H_2O$	Moisture Content, Percent by Volume	13.7
Mfd	Dry Mole Fraction	0.863
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	7.9
$\%O_2$	Oxygen, Percent By Volume, Dry	8.0
Fo	Fuel Factor	1.633
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.58
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	28.00
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.69
ts	Flue Gas Temperature, Degrees F	1575
Delta-p	Average Velocity Head, Inches H_2O	0.0589
vs	Flue Gas Velocity, Feet/Second	27.74
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	17,964
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	509
Qaw	Volumetric Air Flow Rate, Wet ACFM	83,663
%I	Isokinetic Sampling Rate, Percent	96.3
%EA	Excess Air, Percent	56

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	139.530	113.440	156.480	409.450
Concentration, ppb, Dry	13.200	10.700	14.800	38.700
Concentration, ug/DSCM *	50.400	41.000	56.600	148.000
Emission Rate, 1,000 * (Pounds/Hour)	4.050	3.290	4.540	11.880
Emission Rate, Milligrams/Second	0.510	0.415	0.572	1.497
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.410)	ND (0.410)	ND (0.410)	ND (0.000)
Concentration, ug/DSCM *	ND (1.810)	ND (1.810)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.145)	ND (0.145)	ND (0.145)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0183)	ND (0.0183)	ND (0.0183)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.000)	5.830	ND (5.000)	ND (5.830)
Concentration, ppb, Dry	ND (0.000)	0.539	ND (0.462)	ND (0.539)
Concentration, ug/DSCM *	ND (0.000)	2.110	ND (1.810)	ND (2.110)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	0.169	ND (0.145)	ND (0.169)
Emission Rate, Milligrams/Second	ND (0.000)	0.0213	ND (0.0183)	ND (0.0213)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (0.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.402)	ND (0.000)	ND (0.402)	ND (0.000)
Concentration, ug/DSCM *	ND (1.810)	ND (0.000)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.145)	ND (0.000)	ND (0.145)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0183)	ND (0.000)	ND (0.0183)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.339)	ND (0.339)	ND (0.339)	ND (0.000)
Concentration, ug/DSCM *	ND (1.810)	ND (1.810)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.145)	ND (0.145)	ND (0.145)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0183)	ND (0.0183)	ND (0.0183)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.172)	ND (0.172)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (1.810)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.145)	ND (0.145)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0183)	ND (0.0183)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

EV - Estimated Value. Indicates the measured value, shown in brackets [ ], is below the quantitation limit.

* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	187.590	168.280	101.460	457.330
Concentration, ppb, Dry	17.500	15.700	9.480	42.680
Concentration, ug/DSCM *	67.200	60.300	36.300	163.800
Emission Rate, 1,000 * (Pounds/Hour)	5.400	4.840	2.920	13.160
Emission Rate, Milligrams/Second	0.680	0.610	0.368	1.658
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.406)	ND (0.406)	ND (0.406)	ND (0.000)
Concentration, ug/DSCM *	ND (1.790)	ND (1.790)	ND (1.790)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.144)	ND (0.144)	ND (0.144)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0181)	ND (0.0181)	ND (0.0181)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.458)	ND (0.458)	ND (0.458)	ND (0.000)
Concentration, ug/DSCM *	ND (1.790)	ND (1.790)	ND (1.790)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.144)	ND (0.144)	ND (0.144)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0181)	ND (0.0181)	ND (0.0181)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.398)	ND (0.398)	ND (0.398)	ND (0.000)
Concentration, ug/DSCM *	ND (1.790)	ND (1.790)	ND (1.790)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.144)	ND (0.144)	ND (0.144)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0181)	ND (0.0181)	ND (0.0181)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	26.730	ND (5.000)	ND (26.730)
Concentration, ppb, Dry	ND (0.336)	1.800	ND (0.336)	ND (1.800)
Concentration, ug/DSCM *	ND (1.790)	9.570	ND (1.790)	ND (9.570)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.144)	0.769	ND (0.144)	ND (0.769)
Emission Rate, Milligrams/Second	ND (0.0181)	0.0969	ND (0.0181)	ND (0.0969)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.171)	ND (0.171)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (1.790)	ND (1.790)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.144)	ND (0.144)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0181)	ND (0.0181)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	46.070	118.030	94.230	258.330
Concentration, ppb, Dry	4.980	12.800	10.200	27.980
Concentration, ug/DSCM *	19.100	48.800	39.000	106.900
Emission Rate, 1,000 * (Pounds/Hour)	1.620	4.160	3.320	9.100
Emission Rate, Milligrams/Second	0.205	0.524	0.419	1.148
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.469)	ND (0.469)	ND (0.469)	ND (0.000)
Concentration, ug/DSCM *	ND (2.070)	ND (2.070)	ND (2.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.176)	ND (0.176)	ND (0.176)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0222)	ND (0.0222)	ND (0.0222)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.529)	ND (0.529)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (2.070)	ND (2.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.176)	ND (0.176)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0222)	ND (0.0222)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.460)	ND (0.460)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (2.070)	ND (2.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.176)	ND (0.176)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0222)	ND (0.0222)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.388)	ND (0.388)	ND (0.388)	ND (0.000)
Concentration, ug/DSCM *	ND (2.070)	ND (2.070)	ND (2.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.176)	ND (0.176)	ND (0.176)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0222)	ND (0.0222)	ND (0.0222)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.197)	ND (0.197)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (2.070)	ND (2.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.176)	ND (0.176)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0222)	ND (0.0222)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	189.550	84.800	64.740	339.090
Concentration, ppb, Dry	17.900	8.000	6.110	32.010
Concentration, ug/DSCM *	68.500	30.700	23.400	122.600
Emission Rate, 1,000 * (Pounds/Hour)	5.440	2.430	1.860	9.730
Emission Rate, Milligrams/Second	0.685	0.306	0.234	1.225
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.410)	ND (0.410)	ND (0.410)	ND (0.000)
Concentration, ug/DSCM *	ND (1.810)	ND (1.810)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.143)	ND (0.143)	ND (0.143)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0181)	ND (0.0181)	ND (0.0181)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	8.500	ND (5.000)	ND (8.500)
Concentration, ppb, Dry	ND (0.462)	0.786	ND (0.462)	ND (0.786)
Concentration, ug/DSCM *	ND (1.810)	3.070	ND (1.810)	ND (3.070)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.143)	0.244	ND (0.143)	ND (0.244)
Emission Rate, Milligrams/Second	ND (0.0181)	0.0307	ND (0.0181)	ND (0.0307)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.402)	ND (0.402)	ND (0.402)	ND (0.000)
Concentration, ug/DSCM *	ND (1.810)	ND (1.810)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.143)	ND (0.143)	ND (0.143)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0181)	ND (0.0181)	ND (0.0181)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	5.270	ND (5.000)	ND (5.270)
Concentration, ppb, Dry	ND (0.339)	0.358	ND (0.339)	ND (0.358)
Concentration, ug/DSCM *	ND (1.810)	1.910	ND (1.810)	ND (1.910)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.143)	0.151	ND (0.143)	ND (0.151)
Emission Rate, Milligrams/Second	ND (0.0181)	0.0190	ND (0.0181)	ND (0.0190)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.172)	ND (0.172)	ND (0.172)	ND (0.000)
Concentration, ug/DSCM *	ND (1.810)	ND (1.810)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.143)	ND (0.143)	ND (0.143)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0181)	ND (0.0181)	ND (0.0181)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

EV - Estimated Value. Indicates the measured value, shown in brackets [ ], is below the quantitation limit.

* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	46.070	118.030	94.230	258.330
Concentration, ppb, Dry	2.970	7.600	6.070	16.640
Concentration, ug/DSCM *	11.400	29.100	23.200	63.700
Emission Rate, 1,000 * (Pounds/Hour)	0.806	2.070	1.650	4.526
Emission Rate, Milligrams/Second	0.102	0.260	0.208	0.570
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.279)	ND (0.279)	ND (0.279)	ND (0.000)
Concentration, ug/DSCM *	ND (1.230)	ND (1.230)	ND (1.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0875)	ND (0.0875)	ND (0.0875)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0110)	ND (0.0110)	ND (0.0110)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.315)	ND (0.315)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (1.230)	ND (1.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.0875)	ND (0.0875)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0110)	ND (0.0110)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.274)	ND (0.274)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (1.230)	ND (1.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.0875)	ND (0.0875)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0110)	ND (0.0110)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.231)	ND (0.231)	ND (0.231)	ND (0.000)
Concentration, ug/DSCM *	ND (1.230)	ND (1.230)	ND (1.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0875)	ND (0.0875)	ND (0.0875)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0110)	ND (0.0110)	ND (0.0110)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.118)	ND (0.118)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (1.230)	ND (1.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.0875)	ND (0.0875)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0110)	ND (0.0110)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

EV - Estimated Value. Indicates the measured value, shown in brackets [ ], is below the quantitation limit.

* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	74.380	146.230	141.900	362.510
Concentration, ppb, Dry	4.750	9.340	9.060	23.150
Concentration, ug/DSCM *	18.200	35.800	34.700	88.700
Emission Rate, 1,000 * (Pounds/Hour)	1.320	2.590	2.510	6.420
Emission Rate, Milligrams/Second	0.166	0.326	0.316	0.808
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.277)	ND (0.277)	ND (0.277)	ND (0.000)
Concentration, ug/DSCM *	ND (1.220)	ND (1.220)	ND (1.220)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0884)	ND (0.0884)	ND (0.0884)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.0111)	ND (0.0111)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	108.050	196.070	304.120
Concentration, ppb, Dry	ND (0.313)	6.750	12.300	19.050
Concentration, ug/DSCM *	ND (1.220)	26.400	47.900	74.300
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0884)	1.910	3.470	5.380
Emission Rate, Milligrams/Second	ND (0.0111)	0.241	0.437	0.678
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.272)	ND (0.272)	ND (0.272)	ND (0.000)
Concentration, ug/DSCM *	ND (1.220)	ND (1.220)	ND (1.220)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0884)	ND (0.0884)	ND (0.0884)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.0111)	ND (0.0111)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	33.370	ND (5.000)	ND (33.370)
Concentration, ppb, Dry	ND (0.229)	1.530	ND (0.229)	ND (1.530)
Concentration, ug/DSCM *	ND (1.220)	8.160	ND (1.220)	ND (8.160)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0884)	0.590	ND (0.0884)	ND (0.590)
Emission Rate, Milligrams/Second	ND (0.0111)	0.0743	ND (0.0111)	ND (0.0743)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.117)	ND (0.117)	ND (0.117)	ND (0.000)
Concentration, ug/DSCM *	ND (1.220)	ND (1.220)	ND (1.220)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0884)	ND (0.0884)	ND (0.0884)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.0111)	ND (0.0111)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

EV - Estimated Value. Indicates the measured value, shown in brackets [ ], is below the quantitation limit.

* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	86.320	281.280	961.580	1329.180
Concentration, ppb, Dry	6.460	21.000	71.900	99.360
Concentration, ug/DSCM *	24.700	80.600	276.000	381.300
Emission Rate, 1,000 * (Pounds/Hour)	1.830	5.960	20.400	28.190
Emission Rate, Milligrams/Second	0.230	0.751	2.570	3.551
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.325)	ND (0.325)	ND (0.325)	ND (0.000)
Concentration, ug/DSCM *	ND (1.430)	ND (1.430)	ND (1.430)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.106)	ND (0.106)	ND (0.106)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0133)	ND (0.0133)	ND (0.0133)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	5.850	ND (5.000)	ND (5.850)
Concentration, ppb, Dry	ND (0.366)	0.429	ND (0.366)	ND (0.429)
Concentration, ug/DSCM *	ND (1.430)	1.680	ND (1.430)	ND (1.680)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.106)	0.124	ND (0.106)	ND (0.124)
Emission Rate, Milligrams/Second	ND (0.0133)	0.0156	ND (0.0133)	ND (0.0156)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.319)	ND (0.319)	ND (0.319)	ND (0.000)
Concentration, ug/DSCM *	ND (1.430)	ND (1.430)	ND (1.430)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.106)	ND (0.106)	ND (0.106)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0133)	ND (0.0133)	ND (0.0133)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	4.910	ND (5.000)	ND (4.910)
Concentration, ppb, Dry	ND (0.269)	0.264	ND (0.269)	ND (0.264)
Concentration, ug/DSCM *	ND (1.430)	1.410	ND (1.430)	ND (1.410)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.106)	0.104	ND (0.106)	ND (0.104)
Emission Rate, Milligrams/Second	ND (0.0133)	0.0131	ND (0.0133)	ND (0.0131)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.137)	ND (0.137)	ND (0.137)	ND (0.000)
Concentration, ug/DSCM *	ND (1.430)	ND (1.430)	ND (1.430)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.106)	ND (0.106)	ND (0.106)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0133)	ND (0.0133)	ND (0.0133)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	98.420	107.880	252.000	458.300
Concentration, ppb, Dry	7.270	7.970	18.600	33.840
Concentration, ug/DSCM *	27.900	30.500	71.300	129.700
Emission Rate, 1,000 * (Pounds/Hour)	2.050	2.250	5.260	9.560
Emission Rate, Milligrams/Second	0.259	0.284	0.663	1.206
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.321)	ND (0.321)	ND (0.321)	ND (0.000)
Concentration, ug/DSCM *	ND (1.420)	ND (1.420)	ND (1.420)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0132)	ND (0.0132)	ND (0.0132)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.362)	ND (0.362)	ND (0.362)	ND (0.000)
Concentration, ug/DSCM *	ND (1.420)	ND (1.420)	ND (1.420)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0132)	ND (0.0132)	ND (0.0132)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.315)	ND (0.315)	ND (0.315)	ND (0.000)
Concentration, ug/DSCM *	ND (1.420)	ND (1.420)	ND (1.420)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0132)	ND (0.0132)	ND (0.0132)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.266)	ND (0.266)	ND (0.266)	ND (0.000)
Concentration, ug/DSCM *	ND (1.420)	ND (1.420)	ND (1.420)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0132)	ND (0.0132)	ND (0.0132)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.135)	ND (0.135)	ND (0.135)	ND (0.000)
Concentration, ug/DSCM *	ND (1.420)	ND (1.420)	ND (1.420)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0132)	ND (0.0132)	ND (0.0132)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-3-S2-MM5-3B

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	195.920	129.200	105.760	430.880
Concentration, ppb, Dry	16.700	11.000	9.020	36.720
Concentration, ug/DSCM *	64.000	42.200	34.500	140.700
Emission Rate, 1,000 * (Pounds/Hour)	4.070	2.680	2.200	8.950
Emission Rate, Milligrams/Second	0.512	0.338	0.277	1.127
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.370)	ND (0.370)	ND (0.370)	ND (0.000)
Concentration, ug/DSCM *	ND (1.630)	ND (1.630)	ND (1.630)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0131)	ND (0.0131)	ND (0.0131)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.417)	ND (0.417)	ND (0.417)	ND (0.000)
Concentration, ug/DSCM *	ND (1.630)	ND (1.630)	ND (1.630)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0131)	ND (0.0131)	ND (0.0131)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.363)	ND (0.363)	ND (0.363)	ND (0.000)
Concentration, ug/DSCM *	ND (1.630)	ND (1.630)	ND (1.630)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0131)	ND (0.0131)	ND (0.0131)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	10.930	ND (5.000)	ND (10.930)
Concentration, ppb, Dry	ND (0.307)	0.670	ND (0.307)	ND (0.670)
Concentration, ug/DSCM *	ND (1.630)	3.570	ND (1.630)	ND (3.570)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	0.227	ND (0.104)	ND (0.227)
Emission Rate, Milligrams/Second	ND (0.0131)	0.0286	ND (0.0131)	ND (0.0286)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.156)	ND (0.156)	ND (0.156)	ND (0.000)
Concentration, ug/DSCM *	ND (1.630)	ND (1.630)	ND (1.630)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0131)	ND (0.0131)	ND (0.0131)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	160.250	109.920	156.650	426.820
Concentration, ppb, Dry	17.800	12.200	17.400	47.400
Concentration, ug/DSCM *	68.300	46.900	66.800	182.000
Emission Rate, 1,000 * (Pounds/Hour)	4.290	2.940	4.190	11.420
Emission Rate, Milligrams/Second	0.540	0.371	0.528	1.439
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.483)	ND (0.483)	ND (0.483)	ND (0.000)
Concentration, ug/DSCM *	ND (2.130)	ND (2.130)	ND (2.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.134)	ND (0.134)	ND (0.134)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0169)	ND (0.0169)	ND (0.0169)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.545)	ND (0.545)	ND (0.545)	ND (0.000)
Concentration, ug/DSCM *	ND (2.130)	ND (2.130)	ND (2.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.134)	ND (0.134)	ND (0.134)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0169)	ND (0.0169)	ND (0.0169)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.474)	ND (0.474)	ND (0.474)	ND (0.000)
Concentration, ug/DSCM *	ND (2.130)	ND (2.130)	ND (2.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.134)	ND (0.134)	ND (0.134)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0169)	ND (0.0169)	ND (0.0169)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.400)	ND (0.400)	ND (0.400)	ND (0.000)
Concentration, ug/DSCM *	ND (2.130)	ND (2.130)	ND (2.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.134)	ND (0.134)	ND (0.134)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0169)	ND (0.0169)	ND (0.0169)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.203)	ND (0.203)	ND (0.203)	ND (0.000)
Concentration, ug/DSCM *	ND (2.130)	ND (2.130)	ND (2.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.134)	ND (0.134)	ND (0.134)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0169)	ND (0.0169)	ND (0.0169)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	115.600	150.870	371.330	637.800
Concentration, ppb, Dry	12.600	16.500	40.600	69.700
Concentration, ug/DSCM *	48.400	63.100	155.000	266.500
Emission Rate, 1,000 * (Pounds/Hour)	2.990	3.910	9.620	16.520
Emission Rate, Milligrams/Second	0.377	0.492	1.210	2.079
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.474)	ND (0.474)	ND (0.474)	ND (0.000)
Concentration, ug/DSCM *	ND (2.090)	ND (2.090)	ND (2.090)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.130)	ND (0.130)	ND (0.130)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0163)	ND (0.0163)	ND (0.0163)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	44.900	ND (0.000)	177.320	222.220
Concentration, ppb, Dry	4.800	ND (0.000)	19.000	23.800
Concentration, ug/DSCM *	18.800	ND (0.000)	74.200	93.000
Emission Rate, 1,000 * (Pounds/Hour)	1.160	ND (0.000)	4.590	5.750
Emission Rate, Milligrams/Second	0.147	ND (0.000)	0.579	0.726
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.465)	ND (0.465)	ND (0.465)	ND (0.000)
Concentration, ug/DSCM *	ND (2.090)	ND (2.090)	ND (2.090)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.130)	ND (0.130)	ND (0.130)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0163)	ND (0.0163)	ND (0.0163)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	25.770	ND (5.000)	ND (25.770)
Concentration, ppb, Dry	ND (0.393)	2.020	ND (0.393)	ND (2.020)
Concentration, ug/DSCM *	ND (2.090)	10.800	ND (2.090)	ND (10.800)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.130)	0.668	ND (0.130)	ND (0.668)
Emission Rate, Milligrams/Second	ND (0.0163)	0.0841	ND (0.0163)	ND (0.0841)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.200)	ND (0.200)	ND (0.200)	ND (0.000)
Concentration, ug/DSCM *	ND (2.090)	ND (2.090)	ND (2.090)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.130)	ND (0.130)	ND (0.130)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0163)	ND (0.0163)	ND (0.0163)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

EV - Estimated Value. Indicates the measured value, shown in brackets [ ], is below the quantitation limit.

* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	94.390	99.380	219.880	413.650
Concentration, ppb, Dry	7.390	7.780	17.200	32.370
Concentration, ug/DSCM *	28.300	29.800	65.900	124.000
Emission Rate, 1,000 * (Pounds/Hour)	2.030	2.140	4.740	8.910
Emission Rate, Milligrams/Second	0.256	0.270	0.597	1.123
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.340)	ND (0.340)	ND (0.340)	ND (0.000)
Concentration, ug/DSCM *	ND (1.500)	ND (1.500)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.108)	ND (0.108)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0136)	ND (0.0136)	ND (0.0136)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.383)	ND (0.383)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (1.500)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.108)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0136)	ND (0.0136)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.333)	ND (0.333)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (1.500)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.108)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0136)	ND (0.0136)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.281)	ND (0.281)	ND (0.281)	ND (0.000)
Concentration, ug/DSCM *	ND (1.500)	ND (1.500)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.108)	ND (0.108)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0136)	ND (0.0136)	ND (0.0136)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.143)	ND (0.143)	ND (0.143)	ND (0.000)
Concentration, ug/DSCM *	ND (1.500)	ND (1.500)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.108)	ND (0.108)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0136)	ND (0.0136)	ND (0.0136)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

EV - Estimated Value. Indicates the measured value, shown in brackets [ ], is below the quantitation limit.

* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	74.310	196.850	286.820	557.980
Concentration, ppb, Dry	5.800	15.400	22.400	43.600
Concentration, ug/DSCM *	22.200	58.800	85.700	166.700
Emission Rate, 1,000 * (Pounds/Hour)	1.590	4.220	6.150	11.960
Emission Rate, Milligrams/Second	0.201	0.531	0.774	1.506
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.338)	ND (0.338)	ND (0.338)	ND (0.000)
Concentration, ug/DSCM *	ND (1.490)	ND (1.490)	ND (1.490)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.107)	ND (0.107)	ND (0.107)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0135)	ND (0.0135)	ND (0.0135)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	11.580	ND (5.000)	ND (11.580)
Concentration, ppb, Dry	ND (0.382)	0.884	ND (0.382)	ND (0.884)
Concentration, ug/DSCM *	ND (1.490)	3.460	ND (1.490)	ND (3.460)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.107)	0.248	ND (0.107)	ND (0.248)
Emission Rate, Milligrams/Second	ND (0.0135)	0.0313	ND (0.0135)	ND (0.0313)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.332)	ND (0.332)	ND (0.332)	ND (0.000)
Concentration, ug/DSCM *	ND (1.490)	ND (1.490)	ND (1.490)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.107)	ND (0.107)	ND (0.107)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0135)	ND (0.0135)	ND (0.0135)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	16.980	ND (5.000)	ND (16.980)
Concentration, ppb, Dry	ND (0.280)	0.952	ND (0.280)	ND (0.952)
Concentration, ug/DSCM *	ND (1.490)	5.070	ND (1.490)	ND (5.070)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.107)	0.364	ND (0.107)	ND (0.364)
Emission Rate, Milligrams/Second	ND (0.0135)	0.0458	ND (0.0135)	ND (0.0458)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	7.500	ND (5.000)	ND (5.000)	ND (7.500)
Concentration, ppb, Dry	0.214	ND (0.142)	ND (0.142)	ND (0.214)
Concentration, ug/DSCM *	2.240	ND (1.490)	ND (1.490)	ND (2.240)
Emission Rate, 1,000 * (Pounds/Hour)	0.161	ND (0.107)	ND (0.107)	ND (0.161)
Emission Rate, Milligrams/Second	0.0202	ND (0.0135)	ND (0.0135)	ND (0.0202)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

III-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	238.600	169.190	251.140	658.930
Concentration, ppb, Dry	19.100	13.600	20.100	52.800
Concentration, ug/DSCM *	73.300	52.000	77.100	202.400
Emission Rate, 1,000 * (Pounds/Hour)	4.930	3.490	5.190	13.610
Emission Rate, Milligrams/Second	0.621	0.440	0.653	1.714
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.348)	ND (0.348)	ND (0.348)	ND (0.000)
Concentration, ug/DSCM *	ND (1.540)	ND (1.540)	ND (1.540)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.103)	ND (0.103)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.0130)	ND (0.0130)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.392)	ND (0.392)	ND (0.392)	ND (0.000)
Concentration, ug/DSCM *	ND (1.540)	ND (1.540)	ND (1.540)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.103)	ND (0.103)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.0130)	ND (0.0130)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.342)	ND (0.342)	ND (0.342)	ND (0.000)
Concentration, ug/DSCM *	ND (1.540)	ND (1.540)	ND (1.540)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.103)	ND (0.103)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.0130)	ND (0.0130)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.288)	ND (0.288)	ND (0.288)	ND (0.000)
Concentration, ug/DSCM *	ND (1.540)	ND (1.540)	ND (1.540)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.103)	ND (0.103)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.0130)	ND (0.0130)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.146)	ND (0.146)	ND (0.146)	ND (0.000)
Concentration, ug/DSCM *	ND (1.540)	ND (1.540)	ND (1.540)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.103)	ND (0.103)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.0130)	ND (0.0130)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	106.590	236.530	104.350	447.470
Concentration, ppb, Dry	11.500	25.500	11.300	48.300
Concentration, ug/DSCM *	44.000	97.700	43.100	184.800
Emission Rate, 1,000 * (Pounds/Hour)	2.900	6.450	2.840	12.190
Emission Rate, Milligrams/Second	0.366	0.812	0.358	1.536
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.468)	ND (0.468)	ND (0.468)	ND (0.000)
Concentration, ug/DSCM *	ND (2.060)	ND (2.060)	ND (2.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.136)	ND (0.136)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0172)	ND (0.0172)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.528)	ND (0.528)	ND (0.528)	ND (0.000)
Concentration, ug/DSCM *	ND (2.060)	ND (2.060)	ND (2.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.136)	ND (0.136)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0172)	ND (0.0172)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.459)	ND (0.459)	ND (0.459)	ND (0.000)
Concentration, ug/DSCM *	ND (2.060)	ND (2.060)	ND (2.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.136)	ND (0.136)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0172)	ND (0.0172)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.388)	ND (0.388)	ND (0.388)	ND (0.000)
Concentration, ug/DSCM *	ND (2.060)	ND (2.060)	ND (2.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.136)	ND (0.136)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0172)	ND (0.0172)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.197)	ND (0.197)	ND (0.197)	ND (0.000)
Concentration, ug/DSCM *	ND (2.060)	ND (2.060)	ND (2.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.136)	ND (0.136)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0172)	ND (0.0172)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	206.480	185.160	263.810	655.450
Concentration, ppb, Dry	22.000	19.800	28.100	69.900
Concentration, ug/DSCM *	84.400	75.700	108.000	268.100
Emission Rate, 1,000 * (Pounds/Hour)	5.570	4.990	7.110	17.670
Emission Rate, Milligrams/Second	0.701	0.629	0.896	2.226
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.463)	ND (0.463)	ND (0.463)	ND (0.000)
Concentration, ug/DSCM *	ND (2.040)	ND (2.040)	ND (2.040)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.135)	ND (0.135)	ND (0.135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0170)	ND (0.0170)	ND (0.0170)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.522)	ND (0.522)	ND (0.522)	ND (0.000)
Concentration, ug/DSCM *	ND (2.040)	ND (2.040)	ND (2.040)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.135)	ND (0.135)	ND (0.135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0170)	ND (0.0170)	ND (0.0170)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.455)	ND (0.455)	ND (0.455)	ND (0.000)
Concentration, ug/DSCM *	ND (2.040)	ND (2.040)	ND (2.040)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.135)	ND (0.135)	ND (0.135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0170)	ND (0.0170)	ND (0.0170)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.383)	ND (0.383)	ND (0.383)	ND (0.000)
Concentration, ug/DSCM *	ND (2.040)	ND (2.040)	ND (2.040)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.135)	ND (0.135)	ND (0.135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0170)	ND (0.0170)	ND (0.0170)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.195)	ND (0.195)	ND (0.195)	ND (0.000)
Concentration, ug/DSCM *	ND (2.040)	ND (2.040)	ND (2.040)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.135)	ND (0.135)	ND (0.135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0170)	ND (0.0170)	ND (0.0170)	ND (0.000)

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EV - Estimated Value. Indicates the measured value, shown in brackets [ ], is below the quantitation limit.

* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	145.470	196.180	111.030	452.680
Concentration, ppb, Dry	14.200	19.200	10.900	44.300
Concentration, ug/DSCM *	54.600	73.600	41.700	169.900
Emission Rate, 1,000 * (Pounds/Hour)	3.850	5.190	2.930	11.970
Emission Rate, Milligrams/Second	0.485	0.653	0.370	1.508
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.425)	ND (0.425)	ND (0.425)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (1.880)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.132)	ND (0.132)	ND (0.132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0167)	ND (0.0167)	ND (0.0167)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.479)	ND (0.479)	ND (0.479)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (1.880)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.132)	ND (0.132)	ND (0.132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0167)	ND (0.0167)	ND (0.0167)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.417)	ND (0.417)	ND (0.417)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (1.880)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.132)	ND (0.132)	ND (0.132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0167)	ND (0.0167)	ND (0.0167)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.352)	ND (0.352)	ND (0.352)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (1.880)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.132)	ND (0.132)	ND (0.132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0167)	ND (0.0167)	ND (0.0167)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.179)	ND (0.179)	ND (0.179)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (1.880)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.132)	ND (0.132)	ND (0.132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0167)	ND (0.0167)	ND (0.0167)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

EV - Estimated Value. Indicates the measured value, shown in brackets [ ], is below the quantitation limit.

* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	149.260	234.400	312.250	695.910
Concentration, ppb, Dry	14.600	22.900	30.500	68.000
Concentration, ug/DSCM *	55.800	87.600	117.000	260.400
Emission Rate, 1,000 * (Pounds/Hour)	3.920	6.160	8.210	18.290
Emission Rate, Milligrams/Second	0.495	0.777	1.030	2.302
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.423)	ND (0.423)	ND (0.423)	ND (0.000)
Concentration, ug/DSCM *	ND (1.870)	ND (1.870)	ND (1.870)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.131)	ND (0.131)	ND (0.131)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0166)	ND (0.0166)	ND (0.0166)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.478)	ND (0.478)	ND (0.478)	ND (0.000)
Concentration, ug/DSCM *	ND (1.870)	ND (1.870)	ND (1.870)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.131)	ND (0.131)	ND (0.131)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0166)	ND (0.0166)	ND (0.0166)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.416)	ND (0.416)	ND (0.416)	ND (0.000)
Concentration, ug/DSCM *	ND (1.870)	ND (1.870)	ND (1.870)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.131)	ND (0.131)	ND (0.131)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0166)	ND (0.0166)	ND (0.0166)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	9.690	ND (5.000)	ND (9.690)
Concentration, ppb, Dry	ND (0.351)	0.680	ND (0.351)	ND (0.680)
Concentration, ug/DSCM *	ND (1.870)	3.620	ND (1.870)	ND (3.620)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.131)	0.255	ND (0.131)	ND (0.255)
Emission Rate, Milligrams/Second	ND (0.0166)	0.0321	ND (0.0166)	ND (0.0321)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.178)	ND (0.178)	ND (0.178)	ND (0.000)
Concentration, ug/DSCM *	ND (1.870)	ND (1.870)	ND (1.870)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.131)	ND (0.131)	ND (0.131)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0166)	ND (0.0166)	ND (0.0166)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

EV - Estimated Value. Indicates the measured value, shown in brackets [ ], is below the quantitation limit.

* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	76.340	145.720	363.610	585.670
Concentration, ppb, Dry	5.210	9.940	24.800	39.950
Concentration, ug/DSCM *	19.900	38.100	95.000	153.000
Emission Rate, 1,000 * (Pounds/Hour)	1.340	2.560	6.390	10.290
Emission Rate, Milligrams/Second	0.169	0.323	0.806	1.298
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.296)	ND (0.296)	ND (0.296)	ND (0.000)
Concentration, ug/DSCM *	ND (1.310)	ND (1.310)	ND (1.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0879)	ND (0.0879)	ND (0.0879)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.0111)	ND (0.0111)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (0.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.334)	ND (0.000)	ND (0.334)	ND (0.000)
Concentration, ug/DSCM *	ND (1.310)	ND (0.000)	ND (1.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0879)	ND (0.000)	ND (0.0879)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.000)	ND (0.0111)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (0.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.291)	ND (0.000)	ND (0.291)	ND (0.000)
Concentration, ug/DSCM *	ND (1.310)	ND (0.000)	ND (1.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0879)	ND (0.000)	ND (0.0879)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.000)	ND (0.0111)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	1.960	ND (5.000)	ND (1.960)
Concentration, ppb, Dry	ND (0.245)	0.0961	ND (0.245)	ND (0.0961)
Concentration, ug/DSCM *	ND (1.310)	0.512	ND (1.310)	ND (0.512)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0879)	0.0345	ND (0.0879)	ND (0.0345)
Emission Rate, Milligrams/Second	ND (0.0111)	0.00434	ND (0.0111)	ND (0.00434)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (0.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.125)	ND (0.000)	ND (0.125)	ND (0.000)
Concentration, ug/DSCM *	ND (1.310)	ND (0.000)	ND (1.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0879)	ND (0.000)	ND (0.0879)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.000)	ND (0.0111)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

EV - Estimated Value. Indicates the measured value, shown in brackets [ ], is below the quantitation limit.

* - 68 Deg. F -- 29.92 inches Hg

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FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
IV-1-S2-MM5-1A	10/30/91	W. Todd Langdon

		IV-1-S2-MM5-1A
	Run Start Time	1315
	Run Finish Time	1627
	Net Traversing Points	12
Theta	Net Run Time, Minutes	192.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9842
Pbar	Barometric Pressure, Inches Hg	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.720
Vm	Volume Of Metered Gas Sample, Dry ACF	94.415
tm	Dry Gas Meter Temperature, Degrees F	97
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	85.507
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	263.0
Vwstd	Volume of Water Vapor, SCF*	12.379
$\%H_2O$	Moisture Content, Percent by Volume	12.6
Mfd	Dry Mole Fraction	0.874
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	7.1
$\%O_2$	Oxygen, Percent By Volume, Dry	9.5
Fo	Fuel Factor	1.606
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.52
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	28.06
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99
ts	Flue Gas Temperature, Degrees F	1571
Delta-p	Average Velocity Head, Inches H_2O	0.0547
vs	Flue Gas Velocity, Feet/Second	26.53
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	17,614
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	499
Qaw	Volumetric Air Flow Rate, Wet ACFM	80,026
%I	Isokinetic Sampling Rate, Percent	93.2
%EA	Excess Air, Percent	76

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
IV-1-S2-MM5-1B	10/30/91	Reginald F. Holt

		IV-1-S2-MM5-1B
	Run Start Time	1315
	Run Finish Time	1627
	Net Traversing Points	12
Theta	Net Run Time, Minutes	192.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9823
Pbar	Barometric Pressure, Inches Hg	29.00
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.716
Vm	Volume Of Metered Gas Sample, Dry ACF	94.895
tm	Dry Gas Meter Temperature, Degrees F	93
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	86.408
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	266.5
Vwstd	Volume of Water Vapor, SCF*	12.544
$\%H_2O$	Moisture Content, Percent by Volume	12.7
Mfd	Dry Mole Fraction	0.873
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	7.1
$\%O_2$	Oxygen, Percent By Volume, Dry	9.5
Fo	Fuel Factor	1.606
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.52
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	28.06
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.99
ts	Flue Gas Temperature, Degrees F	1570
Delta-p	Average Velocity Head, Inches H_2O	0.0547
vs	Flue Gas Velocity, Feet/Second	26.54
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	17,609
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	499
Qaw	Volumetric Air Flow Rate, Wet ACFM	80,029
%I	Isokinetic Sampling Rate, Percent	94.2
%EA	Excess Air, Percent	76

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
IV-2-S2-MM5-2A	10/31/91	W. Todd Langdon

		IV-2-S2-MM5-2A
	Run Start Time	1035
	Run Finish Time	1345
	Net Traversing Points	12
Theta	Net Run Time, Minutes	192.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9842
Pbar	Barometric Pressure, Inches Hg	28.80
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.901
Vm	Volume Of Metered Gas Sample, Dry ACF	105.339
tm	Dry Gas Meter Temperature, Degrees F	101
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	94.126
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	315.0
Vwstd	Volume of Water Vapor, SCF*	14.827
$\%H_2O$	Moisture Content, Percent by Volume	13.6
Mfd	Dry Mole Fraction	0.864
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	7.9
$\%O_2$	Oxygen, Percent By Volume, Dry	8.2
Fo	Fuel Factor	1.608
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.59
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	28.01
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.79
ts	Flue Gas Temperature, Degrees F	1557
Delta-p	Average Velocity Head, Inches H_2O	0.0637
vs	Flue Gas Velocity, Feet/Second	28.66
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	18,810
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	533
Qaw	Volumetric Air Flow Rate, Wet ACFM	86,445
%I	Isokinetic Sampling Rate, Percent	96.1
%EA	Excess Air, Percent	59

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
IV-2-S2-MM5-2B	10/31/91	Kevin B. Baird

		IV-2-S2-MM5-2B
	Run Start Time	1035
	Run Finish Time	1345
	Net Traversing Points	12
Theta	Net Run Time, Minutes	192.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9823
Pbar	Barometric Pressure, Inches Hg	28.80
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.894
Vm	Volume Of Metered Gas Sample, Dry ACF	104.959
tm	Dry Gas Meter Temperature, Degrees F	96
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	94.470
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	320.9
Vwstd	Volume of Water Vapor, SCF*	15.105
$\%H_2O$	Moisture Content, Percent by Volume	13.8
Mfd	Dry Mole Fraction	0.862
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	7.9
$\%O_2$	Oxygen, Percent By Volume, Dry	8.2
Fo	Fuel Factor	1.608
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.59
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	27.99
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.79
ts	Flue Gas Temperature, Degrees F	1557
Delta-p	Average Velocity Head, Inches H_2O	0.0637
vs	Flue Gas Velocity, Feet/Second	28.67
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	18,779
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	532
Qaw	Volumetric Air Flow Rate, Wet ACFM	86,476
%I	Isokinetic Sampling Rate, Percent	96.6
%EA	Excess Air, Percent	59

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal and Coke Company, Vansant, VA

LOCATION: Stack 2

RUN #	DATE	OPERATOR
IV-3-S2-MM5-3A	10/31/91	Kevin B. Baird

		IV-3-S2-MM5-3A
	Run Start Time	1026
	Run Finish Time	1532
	Net Traversing Points	12
Theta	Net Run Time, Minutes	288.00
Dia	Nozzle Diameter, Inches	0.500
Cp	Pitot Tube Coefficient	0.840
Y	Dry Gas Meter Calibration Factor	0.9823
Pbar	Barometric Pressure, Inches Hg	28.70
Delta-H	Avg. Pressure Differential of Orifice Meter, Inches H_2O	0.800
Vm	Volume Of Metered Gas Sample, Dry ACF	148.020
tm	Dry Gas Meter Temperature, Degrees F	86
Vmstd	Volume Of Metered Gas Sample, Dry SCF*	135.147
Vlc	Total Volume of Liquid Collected in Impingers & Silica Gel, ml	455.5
Vwstd	Volume of Water Vapor, SCF*	21.440
$\%H_2O$	Moisture Content, Percent by Volume	13.7
Mfd	Dry Mole Fraction	0.863
$\%CO_2$	Carbon Dioxide, Percent By Volume, Dry	7.9
$\%O_2$	Oxygen, Percent By Volume, Dry	8.0
Fo	Fuel Factor	1.633
Md	Gas Molecular Weight, lb/lb-Mole, Dry	29.58
Ms	Gas Molecular Weight, lb/lb-Mole, Wet	28.00
Pg	Flue Gas Static Pressure, Inches H_2O	-0.10
Ps	Absolute Flue Gas Pressure, Inches Hg	28.69
ts	Flue Gas Temperature, Degrees F	1575
Delta-p	Average Velocity Head, Inches H_2O	0.0589
vs	Flue Gas Velocity, Feet/Second	27.74
A	Stack/Duct Area, Square Inches	7,238
Qsd	Volumetric Air Flow Rate, Dry SCFM*	17,964
Qmsd	Volumetric Air Flow Rate, Dry SCMM*	509
Qaw	Volumetric Air Flow Rate, Wet ACFM	83,663
%I	Isokinetic Sampling Rate, Percent	96.3
%EA	Excess Air, Percent	56

* 68° F (20° C) -- 29.92 Inches of Mercury (Hg)

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	106.590	236.530	104.350	447.470
Concentration, ppb, Dry	11.500	25.500	11.300	48.300
Concentration, ug/DSCM *	44.000	97.700	43.100	184.800
Emission Rate, 1,000 * (Pounds/Hour)	2.900	6.450	2.840	12.190
Emission Rate, Milligrams/Second	0.366	0.812	0.358	1.536
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.468)	ND (0.468)	ND (0.468)	ND (0.000)
Concentration, ug/DSCM *	ND (2.060)	ND (2.060)	ND (2.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.136)	ND (0.136)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0172)	ND (0.0172)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.528)	ND (0.528)	ND (0.528)	ND (0.000)
Concentration, ug/DSCM *	ND (2.060)	ND (2.060)	ND (2.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.136)	ND (0.136)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0172)	ND (0.0172)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.459)	ND (0.459)	ND (0.459)	ND (0.000)
Concentration, ug/DSCM *	ND (2.060)	ND (2.060)	ND (2.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.136)	ND (0.136)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0172)	ND (0.0172)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.388)	ND (0.388)	ND (0.388)	ND (0.000)
Concentration, ug/DSCM *	ND (2.060)	ND (2.060)	ND (2.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.136)	ND (0.136)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0172)	ND (0.0172)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.197)	ND (0.197)	ND (0.197)	ND (0.000)
Concentration, ug/DSCM *	ND (2.060)	ND (2.060)	ND (2.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.136)	ND (0.136)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0172)	ND (0.0172)	ND (0.000)

only rounded to 2 dec. places; ~~rounded~~ the 0 in 3rd place due to rounding to 2nd

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	145.470	196.180	111.030	452.680
Concentration, ppb, Dry	14.200	19.200	10.900	44.300
Concentration, ug/DSCM *	54.600	73.600	41.700	169.900
Emission Rate, 1,000 * (Pounds/Hour)	3.850	5.190	2.930	11.970
Emission Rate, Milligrams/Second	0.485	0.653	0.370	1.508
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.425)	ND (0.425)	ND (0.425)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (1.880)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.132)	ND (0.132)	ND (0.132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0167)	ND (0.0167)	ND (0.0167)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.479)	ND (0.479)	ND (0.479)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (1.880)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.132)	ND (0.132)	ND (0.132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0167)	ND (0.0167)	ND (0.0167)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.417)	ND (0.417)	ND (0.417)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (1.880)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.132)	ND (0.132)	ND (0.132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0167)	ND (0.0167)	ND (0.0167)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.352)	ND (0.352)	ND (0.352)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (1.880)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.132)	ND (0.132)	ND (0.132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0167)	ND (0.0167)	ND (0.0167)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.179)	ND (0.179)	ND (0.179)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (1.880)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.132)	ND (0.132)	ND (0.132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0167)	ND (0.0167)	ND (0.0167)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	76.340	145.720	363.610	585.670
Concentration, ppb, Dry	5.210	9.940	24.800	39.950
Concentration, ug/DSCM *	19.900	38.100	95.000	153.000
Emission Rate, 1,000 * (Pounds/Hour)	1.340	2.560	6.390	10.290
Emission Rate, Milligrams/Second	0.169	0.323	0.806	1.298
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.296)	ND (0.296)	ND (0.296)	ND (0.000)
Concentration, ug/DSCM *	ND (1.310)	ND (1.310)	ND (1.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0879)	ND (0.0879)	ND (0.0879)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.0111)	ND (0.0111)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (0.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.334)	ND (0.000)	ND (0.334)	ND (0.000)
Concentration, ug/DSCM *	ND (1.310)	ND (0.000)	ND (1.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0879)	ND (0.000)	ND (0.0879)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.000)	ND (0.0111)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (0.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.291)	ND (0.000)	ND (0.291)	ND (0.000)
Concentration, ug/DSCM *	ND (1.310)	ND (0.000)	ND (1.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0879)	ND (0.000)	ND (0.0879)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.000)	ND (0.0111)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	1.960	ND (5.000)	ND (1.960)
Concentration, ppb, Dry	ND (0.245)	0.0961	ND (0.245)	ND (0.0961)
Concentration, ug/DSCM *	ND (1.310)	0.512	ND (1.310)	ND (0.512)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0879)	0.0345	ND (0.0879)	ND (0.0345)
Emission Rate, Milligrams/Second	ND (0.0111)	0.00434	ND (0.0111)	ND (0.00434)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (0.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.125)	ND (0.000)	ND (0.125)	ND (0.000)
Concentration, ug/DSCM *	ND (1.310)	ND (0.000)	ND (1.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0879)	ND (0.000)	ND (0.0879)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.000)	ND (0.0111)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (1.910)	ND (7.400)	ND (4.170)	ND (0.000)
Concentration, ppb, Dry	ND (0.111)	ND (0.430)	ND (0.242)	ND (0.000)
Concentration, ug/DSCM *	ND (0.499)	ND (1.930)	ND (1.090)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0336)	ND (0.130)	ND (0.0733)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00423)	ND (0.0164)	ND (0.00924)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (2.020)	ND (7.790)	ND (10.180)	ND (0.000)
Concentration, ppb, Dry	ND (0.0389)	ND (0.150)	ND (0.196)	ND (0.000)
Concentration, ug/DSCM *	ND (0.528)	ND (2.040)	ND (2.660)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0355)	ND (0.137)	ND (0.179)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00448)	ND (0.0173)	ND (0.0226)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (1.230)	ND (4.760)	ND (1.720)	ND (0.000)
Concentration, ppb, Dry	ND (0.0521)	ND (0.202)	ND (0.0729)	ND (0.000)
Concentration, ug/DSCM *	ND (0.321)	ND (1.240)	ND (0.449)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0216)	ND (0.0837)	ND (0.0302)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00272)	ND (0.0105)	ND (0.00381)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (3.360)	ND (9.440)	ND (10.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.0774)	ND (0.218)	ND (0.252)	ND (0.000)
Concentration, ug/DSCM *	ND (0.878)	ND (2.470)	ND (2.860)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0591)	ND (0.166)	ND (0.192)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00744)	ND (0.0209)	ND (0.0242)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (11.160)	ND (31.330)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.474)	ND (1.330)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (2.920)	ND (8.190)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.196)	ND (0.551)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0247)	ND (0.0694)	ND (0.000)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.790)	ND (7.830)	ND (5.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.0888)	ND (0.249)	ND (0.181)	ND (0.000)
Concentration, ug/DSCM *	ND (0.729)	ND (2.050)	ND (1.490)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0491)	ND (0.138)	ND (0.100)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00618)	ND (0.0173)	ND (0.0126)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

? EV or ND

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	EV [40.920]	ND (2.090)	ND (1.030)	ND (40.920)
Concentration, ppb, Dry	EV [0.659]	ND (0.0336)	ND (0.0166)	ND (0.659)
Concentration, ug/DSCM *	EV [10.700]	ND (0.546)	ND (0.269)	ND (10.700)
Emission Rate, 1,000 * (Pounds/Hour)	EV [0.719]	ND (0.0367)	ND (0.0181)	ND (0.719)
Emission Rate, Milligrams/Second	EV [0.0907]	ND (0.00463)	ND (0.00228)	ND (0.0907)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (3.190)	ND (10.340)	ND (6.250)	ND (0.000)
Concentration, ppb, Dry	ND (0.0821)	ND (0.266)	ND (0.161)	ND (0.000)
Concentration, ug/DSCM *	ND (0.833)	ND (2.700)	ND (1.630)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0561)	ND (0.182)	ND (0.110)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00707)	ND (0.0229)	ND (0.0138)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-82-MM5-1B

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (2.560)	ND (4.870)	ND (3.140)	ND (0.000)
Concentration, ppb, Dry	ND (0.340)	ND (0.646)	ND (0.417)	ND (0.000)
Concentration, ug/DSCM *	ND (1.050)	ND (1.990)	ND (1.280)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0690)	ND (0.131)	ND (0.0846)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00869)	ND (0.0165)	ND (0.0107)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.840)	ND (1.650)	ND (1.020)	ND (0.000)
Concentration, ppb, Dry	ND (0.0687)	ND (0.135)	ND (0.0834)	ND (0.000)
Concentration, ug/DSCM *	ND (0.343)	ND (0.674)	ND (0.417)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0226)	ND (0.0445)	ND (0.0275)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00285)	ND (0.00560)	ND (0.00346)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.650)	ND (3.230)	ND (1.990)	ND (0.000)
Concentration, ppb, Dry	ND (0.119)	ND (0.233)	ND (0.144)	ND (0.000)
Concentration, ug/DSCM *	ND (0.674)	ND (1.320)	ND (0.813)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0445)	ND (0.0871)	ND (0.0536)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00560)	ND (0.0110)	ND (0.00676)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.340)	ND (2.490)	ND (1.620)	ND (0.000)
Concentration, ppb, Dry	ND (0.0967)	ND (0.180)	ND (0.117)	ND (0.000)
Concentration, ug/DSCM *	ND (0.548)	ND (1.020)	ND (0.662)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0361)	ND (0.0671)	ND (0.0437)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00455)	ND (0.00846)	ND (0.00550)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (2.380)	ND (2.040)	ND (1.830)	ND (0.000)
Concentration, ppb, Dry	ND (0.238)	ND (0.204)	ND (0.183)	ND (0.000)
Concentration, ug/DSCM *	ND (0.973)	ND (0.834)	ND (0.748)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0642)	ND (0.0550)	ND (0.0493)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00808)	ND (0.00693)	ND (0.00622)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (1.040)	ND (2.080)	ND (1.290)	ND (0.000)
Concentration, ppb, Dry	ND (0.0851)	ND (0.170)	ND (0.106)	ND (0.000)
Concentration, ug/DSCM *	ND (0.425)	ND (0.850)	ND (0.527)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0280)	ND (0.0561)	ND (0.0348)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00353)	ND (0.00706)	ND (0.00438)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2A

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (2.390)	ND (4.920)	ND (4.370)	ND (0.000)
Concentration, ppb, Dry	ND (0.291)	ND (0.599)	ND (0.532)	ND (0.000)
Concentration, ug/DSCM *	ND (0.897)	ND (1.850)	ND (1.640)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0632)	ND (0.130)	ND (0.116)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00796)	ND (0.0164)	ND (0.0146)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.780)	ND (1.670)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0586)	ND (0.125)	ND (0.113)	ND (0.000)
Concentration, ug/DSCM *	ND (0.293)	ND (0.626)	ND (0.563)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0206)	ND (0.0441)	ND (0.0397)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00260)	ND (0.00556)	ND (0.00500)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.540)	ND (3.260)	ND (2.950)	ND (0.000)
Concentration, ppb, Dry	ND (0.102)	ND (0.216)	ND (0.195)	ND (0.000)
Concentration, ug/DSCM *	ND (0.578)	ND (1.220)	ND (1.110)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0407)	ND (0.0862)	ND (0.0780)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00513)	ND (0.0109)	ND (0.00983)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.250)	ND (2.510)	ND (2.530)	ND (0.000)
Concentration, ppb, Dry	ND (0.0828)	ND (0.166)	ND (0.168)	ND (0.000)
Concentration, ug/DSCM *	ND (0.469)	ND (0.942)	ND (0.949)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0330)	ND (0.0663)	ND (0.0669)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00416)	ND (0.00836)	ND (0.00843)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (2.220)	ND (2.060)	ND (1.790)	ND (0.000)
Concentration, ppb, Dry	ND (0.204)	ND (0.189)	ND (0.165)	ND (0.000)
Concentration, ug/DSCM *	ND (0.833)	ND (0.773)	ND (0.672)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0587)	ND (0.0545)	ND (0.0473)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00739)	ND (0.00686)	ND (0.00596)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.970)	ND (2.100)	ND (1.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.0728)	ND (0.158)	ND (0.140)	ND (0.000)
Concentration, ug/DSCM *	ND (0.364)	ND (0.788)	ND (0.698)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0256)	ND (0.0555)	ND (0.0492)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00323)	ND (0.00699)	ND (0.00619)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	139.530	113.440	156.480	409.450
Concentration, ppb, Dry	13.200	10.700	14.800	38.700
Concentration, ug/DSCM *	50.400	41.000	56.600	148.000
Emission Rate, 1,000 * (Pounds/Hour)	4.050	3.290	4.540	11.880
Emission Rate, Milligrams/Second	0.510	0.415	0.572	1.497
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.410)	ND (0.410)	ND (0.410)	ND (0.000)
Concentration, ug/DSCM *	ND (1.810)	ND (1.810)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.145)	ND (0.145)	ND (0.145)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0183)	ND (0.0183)	ND (0.0183)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.000)	5.830	ND (5.000)	ND (5.830)
Concentration, ppb, Dry	ND (0.000)	0.539	ND (0.462)	ND (0.539)
Concentration, ug/DSCM *	ND (0.000)	2.110	ND (1.810)	ND (2.110)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	0.169	ND (0.145)	ND (0.169)
Emission Rate, Milligrams/Second	ND (0.000)	0.0213	ND (0.0183)	ND (0.0213)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (0.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.402)	ND (0.000)	ND (0.402)	ND (0.000)
Concentration, ug/DSCM *	ND (1.810)	ND (0.000)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.145)	ND (0.000)	ND (0.145)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0183)	ND (0.000)	ND (0.0183)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.339)	ND (0.339)	ND (0.339)	ND (0.000)
Concentration, ug/DSCM *	ND (1.810)	ND (1.810)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.145)	ND (0.145)	ND (0.145)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0183)	ND (0.0183)	ND (0.0183)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.172)	ND (0.172)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (1.810)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.145)	ND (0.145)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0183)	ND (0.0183)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	187.590	168.280	101.460	457.330
Concentration, ppb, Dry	17.500	15.700	9.480	42.680
Concentration, ug/DSCM *	67.200	60.300	36.300	163.800
Emission Rate, 1,000 * (Pounds/Hour)	5.400	4.840	2.920	13.160
Emission Rate, Milligrams/Second	0.680	0.610	0.368	1.658
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.406)	ND (0.406)	ND (0.406)	ND (0.000)
Concentration, ug/DSCM *	ND (1.790)	ND (1.790)	ND (1.790)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.144)	ND (0.144)	ND (0.144)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0181)	ND (0.0181)	ND (0.0181)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.458)	ND (0.458)	ND (0.458)	ND (0.000)
Concentration, ug/DSCM *	ND (1.790)	ND (1.790)	ND (1.790)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.144)	ND (0.144)	ND (0.144)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0181)	ND (0.0181)	ND (0.0181)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.398)	ND (0.398)	ND (0.398)	ND (0.000)
Concentration, ug/DSCM *	ND (1.790)	ND (1.790)	ND (1.790)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.144)	ND (0.144)	ND (0.144)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0181)	ND (0.0181)	ND (0.0181)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	26.730	ND (5.000)	ND (26.730)
Concentration, ppb, Dry	ND (0.336)	1.800	ND (0.336)	ND (1.800)
Concentration, ug/DSCM *	ND (1.790)	9.570	ND (1.790)	ND (9.570)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.144)	0.769	ND (0.144)	ND (0.769)
Emission Rate, Milligrams/Second	ND (0.0181)	0.0969	ND (0.0181)	ND (0.0969)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.171)	ND (0.171)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (1.790)	ND (1.790)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.144)	ND (0.144)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0181)	ND (0.0181)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	46.070	118.030	94.230	258.330
Concentration, ppb, Dry	4.980	12.800	10.200	27.980
Concentration, ug/DSCM *	19.100	48.800	39.000	106.900
Emission Rate, 1,000 * (Pounds/Hour)	1.620	4.160	3.320	9.100
Emission Rate, Milligrams/Second	0.205	0.524	0.419	1.148
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.469)	ND (0.469)	ND (0.469)	ND (0.000)
Concentration, ug/DSCM *	ND (2.070)	ND (2.070)	ND (2.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.176)	ND (0.176)	ND (0.176)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0222)	ND (0.0222)	ND (0.0222)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.529)	ND (0.529)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (2.070)	ND (2.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.176)	ND (0.176)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0222)	ND (0.0222)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.460)	ND (0.460)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (2.070)	ND (2.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.176)	ND (0.176)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0222)	ND (0.0222)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.388)	ND (0.388)	ND (0.388)	ND (0.000)
Concentration, ug/DSCM *	ND (2.070)	ND (2.070)	ND (2.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.176)	ND (0.176)	ND (0.176)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0222)	ND (0.0222)	ND (0.0222)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.197)	ND (0.197)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (2.070)	ND (2.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.176)	ND (0.176)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0222)	ND (0.0222)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	189.550	84.800	64.740	339.090
Concentration, ppb, Dry	17.900	8.000	6.110	32.010
Concentration, ug/DSCM *	68.500	30.700	23.400	122.600
Emission Rate, 1,000 * (Pounds/Hour)	5.440	2.430	1.860	9.730
Emission Rate, Milligrams/Second	0.685	0.306	0.234	1.225
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.410)	ND (0.410)	ND (0.410)	ND (0.000)
Concentration, ug/DSCM *	ND (1.810)	ND (1.810)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.143)	ND (0.143)	ND (0.143)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0181)	ND (0.0181)	ND (0.0181)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	8.500	ND (5.000)	ND (8.500)
Concentration, ppb, Dry	ND (0.462)	0.786	ND (0.462)	ND (0.786)
Concentration, ug/DSCM *	ND (1.810)	3.070	ND (1.810)	ND (3.070)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.143)	0.244	ND (0.143)	ND (0.244)
Emission Rate, Milligrams/Second	ND (0.0181)	0.0307	ND (0.0181)	ND (0.0307)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.402)	ND (0.402)	ND (0.402)	ND (0.000)
Concentration, ug/DSCM *	ND (1.810)	ND (1.810)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.143)	ND (0.143)	ND (0.143)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0181)	ND (0.0181)	ND (0.0181)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	5.270	ND (5.000)	ND (5.270)
Concentration, ppb, Dry	ND (0.339)	0.358	ND (0.339)	ND (0.358)
Concentration, ug/DSCM *	ND (1.810)	1.910	ND (1.810)	ND (1.910)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.143)	0.151	ND (0.143)	ND (0.151)
Emission Rate, Milligrams/Second	ND (0.0181)	0.0190	ND (0.0181)	ND (0.0190)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.172)	ND (0.172)	ND (0.172)	ND (0.000)
Concentration, ug/DSCM *	ND (1.810)	ND (1.810)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.143)	ND (0.143)	ND (0.143)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0181)	ND (0.0181)	ND (0.0181)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-82-MM5-1A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	46.070	118.030	94.230	258.330
Concentration, ppb, Dry	2.970	7.600	6.070	16.640
Concentration, ug/DSCM *	11.400	29.100	23.200	63.700
Emission Rate, 1,000 * (Pounds/Hour)	0.806	2.070	1.650	4.526
Emission Rate, Milligrams/Second	0.102	0.260	0.208	0.570
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.279)	ND (0.279)	ND (0.279)	ND (0.000)
Concentration, ug/DSCM *	ND (1.230)	ND (1.230)	ND (1.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0875)	ND (0.0875)	ND (0.0875)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0110)	ND (0.0110)	ND (0.0110)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.315)	ND (0.315)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (1.230)	ND (1.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.0875)	ND (0.0875)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0110)	ND (0.0110)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.274)	ND (0.274)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (1.230)	ND (1.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.0875)	ND (0.0875)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0110)	ND (0.0110)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.231)	ND (0.231)	ND (0.231)	ND (0.000)
Concentration, ug/DSCM *	ND (1.230)	ND (1.230)	ND (1.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0875)	ND (0.0875)	ND (0.0875)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0110)	ND (0.0110)	ND (0.0110)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.118)	ND (0.118)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (1.230)	ND (1.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.0875)	ND (0.0875)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0110)	ND (0.0110)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

EV - Estimated Value. Indicates the measured value, shown in brackets [ ], is below the quantitation limit.

* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	74.380	146.230	141.900	362.510
Concentration, ppb, Dry	4.750	9.340	9.060	23.150
Concentration, ug/DSCM *	18.200	35.800	34.700	88.700
Emission Rate, 1,000 * (Pounds/Hour)	1.320	2.590	2.510	6.420
Emission Rate, Milligrams/Second	0.166	0.326	0.316	0.808
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.277)	ND (0.277)	ND (0.277)	ND (0.000)
Concentration, ug/DSCM *	ND (1.220)	ND (1.220)	ND (1.220)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0884)	ND (0.0884)	ND (0.0884)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.0111)	ND (0.0111)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	108.050	196.070	304.120
Concentration, ppb, Dry	ND (0.313)	6.750	12.300	19.050
Concentration, ug/DSCM *	ND (1.220)	26.400	47.900	74.300
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0884)	1.910	3.470	5.380
Emission Rate, Milligrams/Second	ND (0.0111)	0.241	0.437	0.678
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.272)	ND (0.272)	ND (0.272)	ND (0.000)
Concentration, ug/DSCM *	ND (1.220)	ND (1.220)	ND (1.220)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0884)	ND (0.0884)	ND (0.0884)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.0111)	ND (0.0111)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	33.370	ND (5.000)	ND (33.370)
Concentration, ppb, Dry	ND (0.229)	1.530	ND (0.229)	ND (1.530)
Concentration, ug/DSCM *	ND (1.220)	8.160	ND (1.220)	ND (8.160)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0884)	0.590	ND (0.0884)	ND (0.590)
Emission Rate, Milligrams/Second	ND (0.0111)	0.0743	ND (0.0111)	ND (0.0743)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.117)	ND (0.117)	ND (0.117)	ND (0.000)
Concentration, ug/DSCM *	ND (1.220)	ND (1.220)	ND (1.220)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0884)	ND (0.0884)	ND (0.0884)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.0111)	ND (0.0111)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

EV - Estimated Value. Indicates the measured value, shown in brackets [ ], is below the quantitation limit.

* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	86.320	281.280	961.580	1329.180
Concentration, ppb, Dry	6.460	21.000	71.900	99.360
Concentration, ug/DSCM *	24.700	80.600	276.000	381.300
Emission Rate, 1,000 * (Pounds/Hour)	1.830	5.960	20.400	28.190
Emission Rate, Milligrams/Second	0.230	0.751	2.570	3.551
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.325)	ND (0.325)	ND (0.325)	ND (0.000)
Concentration, ug/DSCM *	ND (1.430)	ND (1.430)	ND (1.430)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.106)	ND (0.106)	ND (0.106)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0133)	ND (0.0133)	ND (0.0133)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	5.850	ND (5.000)	ND (5.850)
Concentration, ppb, Dry	ND (0.366)	0.429	ND (0.366)	ND (0.429)
Concentration, ug/DSCM *	ND (1.430)	1.680	ND (1.430)	ND (1.680)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.106)	0.124	ND (0.106)	ND (0.124)
Emission Rate, Milligrams/Second	ND (0.0133)	0.0156	ND (0.0133)	ND (0.0156)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.319)	ND (0.319)	ND (0.319)	ND (0.000)
Concentration, ug/DSCM *	ND (1.430)	ND (1.430)	ND (1.430)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.106)	ND (0.106)	ND (0.106)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0133)	ND (0.0133)	ND (0.0133)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	4.910	ND (5.000)	ND (4.910)
Concentration, ppb, Dry	ND (0.269)	0.264	ND (0.269)	ND (0.264)
Concentration, ug/DSCM *	ND (1.430)	1.410	ND (1.430)	ND (1.410)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.106)	0.104	ND (0.106)	ND (0.104)
Emission Rate, Milligrams/Second	ND (0.0133)	0.0131	ND (0.0133)	ND (0.0131)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.137)	ND (0.137)	ND (0.137)	ND (0.000)
Concentration, ug/DSCM *	ND (1.430)	ND (1.430)	ND (1.430)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.106)	ND (0.106)	ND (0.106)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0133)	ND (0.0133)	ND (0.0133)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	98.420	107.880	252.000	458.300
Concentration, ppb, Dry	7.270	7.970	18.600	33.840
Concentration, ug/DSCM *	27.900	30.500	71.300	129.700
Emission Rate, 1,000 * (Pounds/Hour)	2.050	2.250	5.260	9.560
Emission Rate, Milligrams/Second	0.259	0.284	0.663	1.206
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.321)	ND (0.321)	ND (0.321)	ND (0.000)
Concentration, ug/DSCM *	ND (1.420)	ND (1.420)	ND (1.420)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0132)	ND (0.0132)	ND (0.0132)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.362)	ND (0.362)	ND (0.362)	ND (0.000)
Concentration, ug/DSCM *	ND (1.420)	ND (1.420)	ND (1.420)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0132)	ND (0.0132)	ND (0.0132)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.315)	ND (0.315)	ND (0.315)	ND (0.000)
Concentration, ug/DSCM *	ND (1.420)	ND (1.420)	ND (1.420)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0132)	ND (0.0132)	ND (0.0132)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.266)	ND (0.266)	ND (0.266)	ND (0.000)
Concentration, ug/DSCM *	ND (1.420)	ND (1.420)	ND (1.420)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0132)	ND (0.0132)	ND (0.0132)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.135)	ND (0.135)	ND (0.135)	ND (0.000)
Concentration, ug/DSCM *	ND (1.420)	ND (1.420)	ND (1.420)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0132)	ND (0.0132)	ND (0.0132)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-3-S2-MM5-3B

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	195.920	129.200	105.760	430.880
Concentration, ppb, Dry	16.700	11.000	9.020	36.720
Concentration, ug/DSCM *	64.000	42.200	34.500	140.700
Emission Rate, 1,000 * (Pounds/Hour)	4.070	2.680	2.200	8.950
Emission Rate, Milligrams/Second	0.512	0.338	0.277	1.127
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.370)	ND (0.370)	ND (0.370)	ND (0.000)
Concentration, ug/DSCM *	ND (1.630)	ND (1.630)	ND (1.630)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0131)	ND (0.0131)	ND (0.0131)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.417)	ND (0.417)	ND (0.417)	ND (0.000)
Concentration, ug/DSCM *	ND (1.630)	ND (1.630)	ND (1.630)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0131)	ND (0.0131)	ND (0.0131)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.363)	ND (0.363)	ND (0.363)	ND (0.000)
Concentration, ug/DSCM *	ND (1.630)	ND (1.630)	ND (1.630)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0131)	ND (0.0131)	ND (0.0131)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	10.930	ND (5.000)	ND (10.930)
Concentration, ppb, Dry	ND (0.307)	0.670	ND (0.307)	ND (0.670)
Concentration, ug/DSCM *	ND (1.630)	3.570	ND (1.630)	ND (3.570)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	0.227	ND (0.104)	ND (0.227)
Emission Rate, Milligrams/Second	ND (0.0131)	0.0286	ND (0.0131)	ND (0.0286)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.156)	ND (0.156)	ND (0.156)	ND (0.000)
Concentration, ug/DSCM *	ND (1.630)	ND (1.630)	ND (1.630)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.104)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0131)	ND (0.0131)	ND (0.0131)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	160.250	109.920	156.650	426.820
Concentration, ppb, Dry	17.800	12.200	17.400	47.400
Concentration, ug/DSCM *	68.300	46.900	66.800	182.000
Emission Rate, 1,000 * (Pounds/Hour)	4.290	2.940	4.190	11.420
Emission Rate, Milligrams/Second	0.540	0.371	0.528	1.439
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.483)	ND (0.483)	ND (0.483)	ND (0.000)
Concentration, ug/DSCM *	ND (2.130)	ND (2.130)	ND (2.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.134)	ND (0.134)	ND (0.134)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0169)	ND (0.0169)	ND (0.0169)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.545)	ND (0.545)	ND (0.545)	ND (0.000)
Concentration, ug/DSCM *	ND (2.130)	ND (2.130)	ND (2.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.134)	ND (0.134)	ND (0.134)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0169)	ND (0.0169)	ND (0.0169)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.474)	ND (0.474)	ND (0.474)	ND (0.000)
Concentration, ug/DSCM *	ND (2.130)	ND (2.130)	ND (2.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.134)	ND (0.134)	ND (0.134)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0169)	ND (0.0169)	ND (0.0169)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.400)	ND (0.400)	ND (0.400)	ND (0.000)
Concentration, ug/DSCM *	ND (2.130)	ND (2.130)	ND (2.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.134)	ND (0.134)	ND (0.134)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0169)	ND (0.0169)	ND (0.0169)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.203)	ND (0.203)	ND (0.203)	ND (0.000)
Concentration, ug/DSCM *	ND (2.130)	ND (2.130)	ND (2.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.134)	ND (0.134)	ND (0.134)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0169)	ND (0.0169)	ND (0.0169)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	115.600	150.870	371.330	637.800
Concentration, ppb, Dry	12.600	16.500	40.600	69.700
Concentration, ug/DSCM *	48.400	63.100	155.000	266.500
Emission Rate, 1,000 * (Pounds/Hour)	2.990	3.910	9.620	16.520
Emission Rate, Milligrams/Second	0.377	0.492	1.210	2.079
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.474)	ND (0.474)	ND (0.474)	ND (0.000)
Concentration, ug/DSCM *	ND (2.090)	ND (2.090)	ND (2.090)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.130)	ND (0.130)	ND (0.130)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0163)	ND (0.0163)	ND (0.0163)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	44.900	ND (0.000)	177.320	222.220
Concentration, ppb, Dry	4.800	ND (0.000)	19.000	23.800
Concentration, ug/DSCM *	18.800	ND (0.000)	74.200	93.000
Emission Rate, 1,000 * (Pounds/Hour)	1.160	ND (0.000)	4.590	5.750
Emission Rate, Milligrams/Second	0.147	ND (0.000)	0.579	0.726
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.465)	ND (0.465)	ND (0.465)	ND (0.000)
Concentration, ug/DSCM *	ND (2.090)	ND (2.090)	ND (2.090)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.130)	ND (0.130)	ND (0.130)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0163)	ND (0.0163)	ND (0.0163)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	25.770	ND (5.000)	ND (25.770)
Concentration, ppb, Dry	ND (0.393)	2.020	ND (0.393)	ND (2.020)
Concentration, ug/DSCM *	ND (2.090)	10.800	ND (2.090)	ND (10.800)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.130)	0.668	ND (0.130)	ND (0.668)
Emission Rate, Milligrams/Second	ND (0.0163)	0.0841	ND (0.0163)	ND (0.0841)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.200)	ND (0.200)	ND (0.200)	ND (0.000)
Concentration, ug/DSCM *	ND (2.090)	ND (2.090)	ND (2.090)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.130)	ND (0.130)	ND (0.130)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0163)	ND (0.0163)	ND (0.0163)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

EV - Estimated Value. Indicates the measured value, shown in brackets [ ], is below the quantitation limit.

* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	94.390	99.380	219.880	413.650
Concentration, ppb, Dry	7.390	7.780	17.200	32.370
Concentration, ug/DSCM *	28.300	29.800	65.900	124.000
Emission Rate, 1,000 * (Pounds/Hour)	2.030	2.140	4.740	8.910
Emission Rate, Milligrams/Second	0.256	0.270	0.597	1.123
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.340)	ND (0.340)	ND (0.340)	ND (0.000)
Concentration, ug/DSCM *	ND (1.500)	ND (1.500)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.108)	ND (0.108)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0136)	ND (0.0136)	ND (0.0136)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.383)	ND (0.383)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (1.500)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.108)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0136)	ND (0.0136)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (0.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.333)	ND (0.333)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (1.500)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.108)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0136)	ND (0.0136)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.281)	ND (0.281)	ND (0.281)	ND (0.000)
Concentration, ug/DSCM *	ND (1.500)	ND (1.500)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.108)	ND (0.108)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0136)	ND (0.0136)	ND (0.0136)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.143)	ND (0.143)	ND (0.143)	ND (0.000)
Concentration, ug/DSCM *	ND (1.500)	ND (1.500)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.108)	ND (0.108)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0136)	ND (0.0136)	ND (0.0136)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

EV - Estimated Value. Indicates the measured value, shown in brackets [ ], is below the quantitation limit.

* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	74.310	196.850	286.820	557.980
Concentration, ppb, Dry	5.800	15.400	22.400	43.600
Concentration, ug/DSCM *	22.200	58.800	85.700	166.700
Emission Rate, 1,000 * (Pounds/Hour)	1.590	4.220	6.150	11.960
Emission Rate, Milligrams/Second	0.201	0.531	0.774	1.506
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.338)	ND (0.338)	ND (0.338)	ND (0.000)
Concentration, ug/DSCM *	ND (1.490)	ND (1.490)	ND (1.490)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.107)	ND (0.107)	ND (0.107)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0135)	ND (0.0135)	ND (0.0135)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	11.580	ND (5.000)	ND (11.580)
Concentration, ppb, Dry	ND (0.382)	0.884	ND (0.382)	ND (0.884)
Concentration, ug/DSCM *	ND (1.490)	3.460	ND (1.490)	ND (3.460)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.107)	0.248	ND (0.107)	ND (0.248)
Emission Rate, Milligrams/Second	ND (0.0135)	0.0313	ND (0.0135)	ND (0.0313)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.332)	ND (0.332)	ND (0.332)	ND (0.000)
Concentration, ug/DSCM *	ND (1.490)	ND (1.490)	ND (1.490)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.107)	ND (0.107)	ND (0.107)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0135)	ND (0.0135)	ND (0.0135)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	16.980	ND (5.000)	ND (16.980)
Concentration, ppb, Dry	ND (0.280)	0.952	ND (0.280)	ND (0.952)
Concentration, ug/DSCM *	ND (1.490)	5.070	ND (1.490)	ND (5.070)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.107)	0.364	ND (0.107)	ND (0.364)
Emission Rate, Milligrams/Second	ND (0.0135)	0.0458	ND (0.0135)	ND (0.0458)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	7.500	ND (5.000)	ND (5.000)	ND (7.500)
Concentration, ppb, Dry	0.214	ND (0.142)	ND (0.142)	ND (0.214)
Concentration, ug/DSCM *	2.240	ND (1.490)	ND (1.490)	ND (2.240)
Emission Rate, 1,000 * (Pounds/Hour)	0.161	ND (0.107)	ND (0.107)	ND (0.161)
Emission Rate, Milligrams/Second	0.0202	ND (0.0135)	ND (0.0135)	ND (0.0202)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

III-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	238.600	169.190	251.140	658.930
Concentration, ppb, Dry	19.100	13.600	20.100	52.800
Concentration, ug/DSCM *	73.300	52.000	77.100	202.400
Emission Rate, 1,000 * (Pounds/Hour)	4.930	3.490	5.190	13.610
Emission Rate, Milligrams/Second	0.621	0.440	0.653	1.714
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.348)	ND (0.348)	ND (0.348)	ND (0.000)
Concentration, ug/DSCM *	ND (1.540)	ND (1.540)	ND (1.540)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.103)	ND (0.103)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.0130)	ND (0.0130)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.392)	ND (0.392)	ND (0.392)	ND (0.000)
Concentration, ug/DSCM *	ND (1.540)	ND (1.540)	ND (1.540)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.103)	ND (0.103)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.0130)	ND (0.0130)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.342)	ND (0.342)	ND (0.342)	ND (0.000)
Concentration, ug/DSCM *	ND (1.540)	ND (1.540)	ND (1.540)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.103)	ND (0.103)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.0130)	ND (0.0130)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.288)	ND (0.288)	ND (0.288)	ND (0.000)
Concentration, ug/DSCM *	ND (1.540)	ND (1.540)	ND (1.540)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.103)	ND (0.103)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.0130)	ND (0.0130)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.146)	ND (0.146)	ND (0.146)	ND (0.000)
Concentration, ug/DSCM *	ND (1.540)	ND (1.540)	ND (1.540)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.103)	ND (0.103)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.0130)	ND (0.0130)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	106.590	236.530	104.350	447.470
Concentration, ppb, Dry	11.500	25.500	11.300	48.300
Concentration, ug/DSCM *	44.000	97.700	43.100	184.800
Emission Rate, 1,000 * (Pounds/Hour)	2.900	6.450	2.840	12.190
Emission Rate, Milligrams/Second	0.366	0.812	0.358	1.536
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.468)	ND (0.468)	ND (0.468)	ND (0.000)
Concentration, ug/DSCM *	ND (2.060)	ND (2.060)	ND (2.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.136)	ND (0.136)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0172)	ND (0.0172)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.528)	ND (0.528)	ND (0.528)	ND (0.000)
Concentration, ug/DSCM *	ND (2.060)	ND (2.060)	ND (2.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.136)	ND (0.136)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0172)	ND (0.0172)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.459)	ND (0.459)	ND (0.459)	ND (0.000)
Concentration, ug/DSCM *	ND (2.060)	ND (2.060)	ND (2.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.136)	ND (0.136)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0172)	ND (0.0172)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.388)	ND (0.388)	ND (0.388)	ND (0.000)
Concentration, ug/DSCM *	ND (2.060)	ND (2.060)	ND (2.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.136)	ND (0.136)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0172)	ND (0.0172)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.197)	ND (0.197)	ND (0.197)	ND (0.000)
Concentration, ug/DSCM *	ND (2.060)	ND (2.060)	ND (2.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.136)	ND (0.136)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0172)	ND (0.0172)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	206.480	185.160	263.810	655.450
Concentration, ppb, Dry	22.000	19.800	28.100	69.900
Concentration, ug/DSCM *	84.400	75.700	108.000	268.100
Emission Rate, 1,000 * (Pounds/Hour)	5.570	4.990	7.110	17.670
Emission Rate, Milligrams/Second	0.701	0.629	0.896	2.226
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.463)	ND (0.463)	ND (0.463)	ND (0.000)
Concentration, ug/DSCM *	ND (2.040)	ND (2.040)	ND (2.040)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.135)	ND (0.135)	ND (0.135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0170)	ND (0.0170)	ND (0.0170)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.522)	ND (0.522)	ND (0.522)	ND (0.000)
Concentration, ug/DSCM *	ND (2.040)	ND (2.040)	ND (2.040)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.135)	ND (0.135)	ND (0.135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0170)	ND (0.0170)	ND (0.0170)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.455)	ND (0.455)	ND (0.455)	ND (0.000)
Concentration, ug/DSCM *	ND (2.040)	ND (2.040)	ND (2.040)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.135)	ND (0.135)	ND (0.135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0170)	ND (0.0170)	ND (0.0170)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.383)	ND (0.383)	ND (0.383)	ND (0.000)
Concentration, ug/DSCM *	ND (2.040)	ND (2.040)	ND (2.040)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.135)	ND (0.135)	ND (0.135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0170)	ND (0.0170)	ND (0.0170)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.195)	ND (0.195)	ND (0.195)	ND (0.000)
Concentration, ug/DSCM *	ND (2.040)	ND (2.040)	ND (2.040)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.135)	ND (0.135)	ND (0.135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0170)	ND (0.0170)	ND (0.0170)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	145.470	196.180	111.030	452.680
Concentration, ppb, Dry	14.200	19.200	10.900	44.300
Concentration, ug/DSCM *	54.600	73.600	41.700	169.900
Emission Rate, 1,000 * (Pounds/Hour)	3.850	5.190	2.930	11.970
Emission Rate, Milligrams/Second	0.485	0.653	0.370	1.508
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.425)	ND (0.425)	ND (0.425)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (1.880)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.132)	ND (0.132)	ND (0.132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0167)	ND (0.0167)	ND (0.0167)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.479)	ND (0.479)	ND (0.479)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (1.880)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.132)	ND (0.132)	ND (0.132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0167)	ND (0.0167)	ND (0.0167)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.417)	ND (0.417)	ND (0.417)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (1.880)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.132)	ND (0.132)	ND (0.132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0167)	ND (0.0167)	ND (0.0167)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.352)	ND (0.352)	ND (0.352)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (1.880)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.132)	ND (0.132)	ND (0.132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0167)	ND (0.0167)	ND (0.0167)	ND (0.000)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.179)	ND (0.179)	ND (0.179)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (1.880)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.132)	ND (0.132)	ND (0.132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0167)	ND (0.0167)	ND (0.0167)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	149.260	234.400	312.250	695.910
Concentration, ppb, Dry	14.600	22.900	30.500	68.000
Concentration, ug/DSCM *	55.800	87.600	117.000	260.400
Emission Rate, 1,000 * (Pounds/Hour)	3.920	6.160	8.210	18.290
Emission Rate, Milligrams/Second	0.495	0.777	1.030	2.302
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.423)	ND (0.423)	ND (0.423)	ND (0.000)
Concentration, ug/DSCM *	ND (1.870)	ND (1.870)	ND (1.870)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.131)	ND (0.131)	ND (0.131)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0166)	ND (0.0166)	ND (0.0166)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.478)	ND (0.478)	ND (0.478)	ND (0.000)
Concentration, ug/DSCM *	ND (1.870)	ND (1.870)	ND (1.870)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.131)	ND (0.131)	ND (0.131)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0166)	ND (0.0166)	ND (0.0166)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.416)	ND (0.416)	ND (0.416)	ND (0.000)
Concentration, ug/DSCM *	ND (1.870)	ND (1.870)	ND (1.870)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.131)	ND (0.131)	ND (0.131)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0166)	ND (0.0166)	ND (0.0166)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	9.690	ND (5.000)	ND (9.690)
Concentration, ppb, Dry	ND (0.351)	0.680	ND (0.351)	ND (0.680)
Concentration, ug/DSCM *	ND (1.870)	3.620	ND (1.870)	ND (3.620)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.131)	0.255	ND (0.131)	ND (0.255)
Emission Rate, Milligrams/Second	ND (0.0166)	0.0321	ND (0.0166)	ND (0.0321)
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.178)	ND (0.178)	ND (0.178)	ND (0.000)
Concentration, ug/DSCM *	ND (1.870)	ND (1.870)	ND (1.870)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.131)	ND (0.131)	ND (0.131)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0166)	ND (0.0166)	ND (0.0166)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Toluene				
Formula Weight, Lb/Lb-Mole	92.14	92.14	92.14	92.14
Catch Weight, Micrograms	76.340	145.720	363.610	585.670
Concentration, ppb, Dry	5.210	9.940	24.800	39.950
Concentration, ug/DSCM *	19.900	38.100	95.000	153.000
Emission Rate, 1,000 * (Pounds/Hour)	1.340	2.560	6.390	10.290
Emission Rate, Milligrams/Second	0.169	0.323	0.806	1.298
Xylene , Total				
Formula Weight, Lb/Lb-Mole	106.17	106.17	106.17	106.17
Catch Weight, Micrograms	ND (5.000)	ND (5.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.296)	ND (0.296)	ND (0.296)	ND (0.000)
Concentration, ug/DSCM *	ND (1.310)	ND (1.310)	ND (1.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0879)	ND (0.0879)	ND (0.0879)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.0111)	ND (0.0111)	ND (0.000)
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (5.000)	ND (0.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.334)	ND (0.000)	ND (0.334)	ND (0.000)
Concentration, ug/DSCM *	ND (1.310)	ND (0.000)	ND (1.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0879)	ND (0.000)	ND (0.0879)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.000)	ND (0.0111)	ND (0.000)
Cresol , Total				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.000)	ND (0.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.291)	ND (0.000)	ND (0.291)	ND (0.000)
Concentration, ug/DSCM *	ND (1.310)	ND (0.000)	ND (1.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0879)	ND (0.000)	ND (0.0879)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.000)	ND (0.0111)	ND (0.000)
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (5.000)	1.960	ND (5.000)	ND (1.960)
Concentration, ppb, Dry	ND (0.245)	0.0961	ND (0.245)	ND (0.0961)
Concentration, ug/DSCM *	ND (1.310)	0.512	ND (1.310)	ND (0.512)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0879)	0.0345	ND (0.0879)	ND (0.0345)
Emission Rate, Milligrams/Second	ND (0.0111)	0.00434	ND (0.0111)	ND (0.00434) J
Benzo(a)pyrene				
Formula Weight, Lb/Lb-Mole	252.32	252.32	252.32	252.32
Catch Weight, Micrograms	ND (5.000)	ND (0.000)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.125)	ND (0.000)	ND (0.125)	ND (0.000)
Concentration, ug/DSCM *	ND (1.310)	ND (0.000)	ND (1.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0879)	ND (0.000)	ND (0.0879)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.000)	ND (0.0111)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-82-MM5-1A

	FH	BH	Im	TOTAL
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (1.200)	ND (3.810)	ND (0.690)	ND (0.000)
Concentration, ppb, Dry	ND (0.111)	ND (0.352)	ND (0.0638)	ND (0.000)
Concentration, ug/DSCM *	ND (0.434)	ND (1.380)	ND (0.249)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0348)	ND (0.111)	ND (0.0200)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00439)	ND (0.0139)	ND (0.00252)	ND (0.000)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (1.050)	ND (3.310)	ND (0.600)	ND (0.000)
Concentration, ppb, Dry	ND (0.0721)	ND (0.227)	ND (0.0412)	ND (0.000)
Concentration, ug/DSCM *	ND (0.380)	ND (1.200)	ND (0.217)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0305)	ND (0.0960)	ND (0.0174)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00384)	ND (0.0121)	ND (0.00219)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.630)	ND (4.970)	ND (0.900)	ND (0.000)
Concentration, ppb, Dry	ND (0.0991)	ND (0.302)	ND (0.0547)	ND (0.000)
Concentration, ug/DSCM *	ND (0.589)	ND (1.800)	ND (0.325)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0473)	ND (0.144)	ND (0.0261)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00596)	ND (0.0182)	ND (0.00329)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (3.390)	ND (10.520)	ND (1.960)	ND (0.000)
Concentration, ppb, Dry	ND (0.254)	ND (0.788)	ND (0.147)	ND (0.000)
Concentration, ug/DSCM *	ND (1.230)	ND (3.800)	ND (0.709)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0983)	ND (0.305)	ND (0.0569)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0124)	ND (0.0385)	ND (0.00716)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.880)	ND (5.760)	ND (1.040)	ND (0.000)
Concentration, ppb, Dry	ND (0.111)	ND (0.341)	ND (0.0615)	ND (0.000)
Concentration, ug/DSCM *	ND (0.680)	ND (2.080)	ND (0.376)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0545)	ND (0.167)	ND (0.0302)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00687)	ND (0.0211)	ND (0.00380)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (1.150)	ND (3.750)	ND (0.670)	ND (0.000)
Concentration, ppb, Dry	ND (0.0745)	ND (0.243)	ND (0.0434)	ND (0.000)
Concentration, ug/DSCM *	ND (0.416)	ND (1.360)	ND (0.242)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0334)	ND (0.109)	ND (0.0194)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00420)	ND (0.0137)	ND (0.00245)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.580)	ND (4.940)	ND (0.910)	ND (0.000)
Concentration, ppb, Dry	ND (0.113)	ND (0.355)	ND (0.0653)	ND (0.000)
Concentration, ug/DSCM *	ND (0.571)	ND (1.790)	ND (0.329)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0458)	ND (0.143)	ND (0.0264)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00578)	ND (0.0181)	ND (0.00333)	ND (0.000)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (6.050)	ND (18.410)	ND (3.340)	ND (0.000)
Concentration, ppb, Dry	ND (0.223)	ND (0.677)	ND (0.123)	ND (0.000)
Concentration, ug/DSCM *	ND (2.190)	ND (6.660)	ND (1.210)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.176)	ND (0.534)	ND (0.0969)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0221)	ND (0.0673)	ND (0.0122)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (4.600)	ND (14.390)	ND (2.600)	ND (0.000)
Concentration, ppb, Dry	ND (0.169)	ND (0.529)	ND (0.0955)	ND (0.000)
Concentration, ug/DSCM *	ND (1.660)	ND (5.200)	ND (0.940)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.133)	ND (0.417)	ND (0.0754)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0168)	ND (0.0526)	ND (0.00950)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (2.520)	ND (4.790)	ND (1.390)	ND (0.000)
Concentration, ppb, Dry	ND (0.205)	ND (0.389)	ND (0.113)	ND (0.000)
Concentration, ug/DSCM *	ND (0.911)	ND (1.730)	ND (0.503)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0731)	ND (0.139)	ND (0.0403)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00921)	ND (0.0175)	ND (0.00508)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (2.020)	ND (6.210)	ND (1.170)	ND (0.000)
Concentration, ppb, Dry	ND (0.162)	ND (0.499)	ND (0.0941)	ND (0.000)
Concentration, ug/DSCM *	ND (0.730)	ND (2.250)	ND (0.423)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0586)	ND (0.180)	ND (0.0339)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00738)	ND (0.0227)	ND (0.00428)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (1.270)	ND (3.730)	ND (0.720)	ND (0.000)
Concentration, ppb, Dry	ND (0.0862)	ND (0.253)	ND (0.0489)	ND (0.000)
Concentration, ug/DSCM *	ND (0.459)	ND (1.350)	ND (0.260)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0368)	ND (0.108)	ND (0.0209)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00464)	ND (0.0136)	ND (0.00263)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1A

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (2.430)	ND (5.750)	ND (1.350)	ND (0.000)
Concentration, ppb, Dry	ND (0.174)	ND (0.413)	ND (0.0969)	ND (0.000)
Concentration, ug/DSCM *	ND (0.879)	ND (2.080)	ND (0.488)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0705)	ND (0.167)	ND (0.0392)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00888)	ND (0.0210)	ND (0.00493)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.870)	ND (2.720)	ND (0.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.0547)	ND (0.171)	ND (0.0308)	ND (0.000)
Concentration, ug/DSCM *	ND (0.315)	ND (0.983)	ND (0.177)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0252)	ND (0.0789)	ND (0.0142)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00318)	ND (0.00994)	ND (0.00179)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.870)	ND (5.680)	ND (1.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.150)	ND (0.457)	ND (0.0861)	ND (0.000)
Concentration, ug/DSCM *	ND (0.676)	ND (2.050)	ND (0.387)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0543)	ND (0.165)	ND (0.0310)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00684)	ND (0.0208)	ND (0.00391)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (2.370)	ND (7.100)	ND (1.340)	ND (0.000)
Concentration, ppb, Dry	ND (0.114)	ND (0.340)	ND (0.0642)	ND (0.000)
Concentration, ug/DSCM *	ND (0.857)	ND (2.570)	ND (0.484)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0688)	ND (0.206)	ND (0.0389)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00866)	ND (0.0260)	ND (0.00490)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (3.510)	ND (11.180)	ND (2.030)	ND (0.000)
Concentration, ppb, Dry	ND (0.198)	ND (0.630)	ND (0.114)	ND (0.000)
Concentration, ug/DSCM *	ND (1.270)	ND (4.040)	ND (0.734)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.102)	ND (0.324)	ND (0.0589)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0128)	ND (0.0409)	ND (0.00742)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.720)	ND (2.200)	ND (0.410)	ND (0.000)
Concentration, ppb, Dry	ND (0.0489)	ND (0.149)	ND (0.0278)	ND (0.000)
Concentration, ug/DSCM *	ND (0.260)	ND (0.795)	ND (0.148)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0209)	ND (0.0638)	ND (0.0119)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00263)	ND (0.00804)	ND (0.00150)	ND (0.000)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (7.980)	ND (11.150)	ND (2.010)	ND (0.000)
Concentration, ppb, Dry	ND (0.564)	ND (0.787)	ND (0.142)	ND (0.000)
Concentration, ug/DSCM *	ND (2.890)	ND (4.030)	ND (0.727)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.232)	ND (0.323)	ND (0.0583)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0292)	ND (0.0408)	ND (0.00735)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (5.880)	ND (17.540)	ND (3.350)	ND (0.000)
Concentration, ppb, Dry	ND (0.196)	ND (0.585)	ND (0.112)	ND (0.000)
Concentration, ug/DSCM *	ND (2.130)	ND (6.340)	ND (1.210)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.171)	ND (0.509)	ND (0.0972)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0215)	ND (0.0641)	ND (0.0122)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (1.130)	ND (3.530)	ND (0.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.0636)	ND (0.199)	ND (0.0354)	ND (0.000)
Concentration, ug/DSCM *	ND (0.409)	ND (1.280)	ND (0.228)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0328)	ND (0.102)	ND (0.0183)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00413)	ND (0.0129)	ND (0.00230)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (2.780)	ND (8.250)	ND (1.520)	ND (0.000)
Concentration, ppb, Dry	ND (0.124)	ND (0.367)	ND (0.0676)	ND (0.000)
Concentration, ug/DSCM *	ND (1.010)	ND (2.980)	ND (0.550)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0807)	ND (0.239)	ND (0.0441)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0102)	ND (0.0302)	ND (0.00556)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (2.320)	ND (5.610)	ND (1.920)	ND (0.000)
Concentration, ppb, Dry	ND (0.135)	ND (0.327)	ND (0.112)	ND (0.000)
Concentration, ug/DSCM *	ND (0.839)	ND (2.030)	ND (0.694)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0673)	ND (0.163)	ND (0.0557)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00848)	ND (0.0205)	ND (0.00702)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1A

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (6.710)	ND (9.510)	ND (5.980)	ND (0.000)
Concentration, ppb, Dry	ND (0.540)	ND (0.765)	ND (0.481)	ND (0.000)
Concentration, ug/DSCM *	ND (2.430)	ND (3.440)	ND (2.160)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.195)	ND (0.276)	ND (0.173)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0245)	ND (0.0348)	ND (0.0219)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (4.130)	ND (23.210)	ND (3.740)	ND (0.000)
Concentration, ppb, Dry	ND (0.110)	ND (0.618)	ND (0.0997)	ND (0.000)
Concentration, ug/DSCM *	ND (1.490)	ND (8.390)	ND (1.350)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.120)	ND (0.673)	ND (0.109)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0151)	ND (0.0848)	ND (0.0137)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (1.240)	ND (3.910)	ND (0.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.0727)	ND (0.229)	ND (0.0411)	ND (0.000)
Concentration, ug/DSCM *	ND (0.448)	ND (1.410)	ND (0.253)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0360)	ND (0.113)	ND (0.0203)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00453)	ND (0.0143)	ND (0.00256)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (5.130)	ND (25.690)	ND (3.570)	ND (0.000)
Concentration, ppb, Dry	ND (0.164)	ND (0.819)	ND (0.114)	ND (0.000)
Concentration, ug/DSCM *	ND (1.850)	ND (9.290)	ND (1.290)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.149)	ND (0.745)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0188)	ND (0.0939)	ND (0.0130)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (19.260)	ND (0.000)	ND (18.120)	ND (0.000)
Concentration, ppb, Dry	ND (1.130)	ND (0.000)	ND (1.060)	ND (0.000)
Concentration, ug/DSCM *	ND (6.960)	ND (0.000)	ND (6.550)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.559)	ND (0.000)	ND (0.526)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0704)	ND (0.000)	ND (0.0662)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.570)	ND (13.390)	ND (2.230)	ND (0.000)
Concentration, ppb, Dry	ND (0.157)	ND (0.590)	ND (0.0982)	ND (0.000)
Concentration, ug/DSCM *	ND (1.290)	ND (4.840)	ND (0.806)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.388)	ND (0.0647)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.0489)	ND (0.00815)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1A

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.390)	ND (11.970)	ND (2.230)	ND (0.000)
Concentration, ppb, Dry	ND (0.149)	ND (0.527)	ND (0.0982)	ND (0.000)
Concentration, ug/DSCM *	ND (1.230)	ND (4.330)	ND (0.806)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0983)	ND (0.347)	ND (0.0647)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0124)	ND (0.0438)	ND (0.00815)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (23.810)	ND (32.920)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (1.700)	ND (2.340)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (8.610)	ND (11.900)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.691)	ND (0.955)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0870)	ND (0.120)	ND (0.000)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.350)	ND (9.130)	ND (2.150)	ND (0.000)
Concentration, ppb, Dry	ND (0.125)	ND (0.487)	ND (0.115)	ND (0.000)
Concentration, ug/DSCM *	ND (0.850)	ND (3.300)	ND (0.777)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0682)	ND (0.265)	ND (0.0624)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00859)	ND (0.0334)	ND (0.00786)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (4.710)	ND (16.540)	ND (2.980)	ND (0.000)
Concentration, ppb, Dry	ND (0.251)	ND (0.883)	ND (0.159)	ND (0.000)
Concentration, ug/DSCM *	ND (1.700)	ND (5.980)	ND (1.080)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.137)	ND (0.480)	ND (0.0865)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0605)	ND (0.0109)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.950)	ND (11.580)	ND (1.950)	ND (0.000)
Concentration, ppb, Dry	ND (0.157)	ND (0.618)	ND (0.104)	ND (0.000)
Concentration, ug/DSCM *	ND (1.070)	ND (4.190)	ND (0.705)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0856)	ND (0.336)	ND (0.0566)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0108)	ND (0.0423)	ND (0.00713)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.800)	ND (10.770)	ND (1.840)	ND (0.000)
Concentration, ppb, Dry	ND (0.149)	ND (0.575)	ND (0.0982)	ND (0.000)
Concentration, ug/DSCM *	ND (1.010)	ND (3.890)	ND (0.665)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0812)	ND (0.312)	ND (0.0534)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0102)	ND (0.0394)	ND (0.00673)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1A

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.160)	ND (4.380)	ND (0.720)	ND (0.000)
Concentration, ppb, Dry	ND (0.0619)	ND (0.234)	ND (0.0384)	ND (0.000)
Concentration, ug/DSCM *	ND (0.419)	ND (1.580)	ND (0.260)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0337)	ND (0.127)	ND (0.0209)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00424)	ND (0.0160)	ND (0.00263)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (1.060)	ND (4.070)	ND (0.690)	ND (0.000)
Concentration, ppb, Dry	ND (0.0561)	ND (0.215)	ND (0.0365)	ND (0.000)
Concentration, ug/DSCM *	ND (0.383)	ND (1.470)	ND (0.249)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0308)	ND (0.118)	ND (0.0200)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00387)	ND (0.0149)	ND (0.00252)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.970)	ND (3.520)	ND (0.590)	ND (0.000)
Concentration, ppb, Dry	ND (0.0434)	ND (0.158)	ND (0.0264)	ND (0.000)
Concentration, ug/DSCM *	ND (0.351)	ND (1.270)	ND (0.213)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0281)	ND (0.102)	ND (0.0171)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00355)	ND (0.0129)	ND (0.00216)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (3.100)	ND (11.200)	ND (1.830)	ND (0.000)
Concentration, ppb, Dry	ND (0.148)	ND (0.535)	ND (0.0874)	ND (0.000)
Concentration, ug/DSCM *	ND (1.120)	ND (4.050)	ND (0.662)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0899)	ND (0.325)	ND (0.0531)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0113)	ND (0.0409)	ND (0.00669)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (10.650)	ND (23.450)	ND (4.820)	ND (0.000)
Concentration, ppb, Dry	ND (0.503)	ND (1.110)	ND (0.228)	ND (0.000)
Concentration, ug/DSCM *	ND (3.850)	ND (8.480)	ND (1.740)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.309)	ND (0.680)	ND (0.140)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0389)	ND (0.0857)	ND (0.0176)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (7.340)	ND (16.890)	ND (3.470)	ND (0.000)
Concentration, ppb, Dry	ND (0.322)	ND (0.741)	ND (0.152)	ND (0.000)
Concentration, ug/DSCM *	ND (2.650)	ND (6.110)	ND (1.250)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.213)	ND (0.490)	ND (0.101)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0268)	ND (0.0617)	ND (0.0127)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (5.350)	ND (15.240)	ND (3.180)	ND (0.000)
Concentration, ppb, Dry	ND (0.277)	ND (0.788)	ND (0.164)	ND (0.000)
Concentration, ug/DSCM *	ND (1.930)	ND (5.510)	ND (1.150)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.155)	ND (0.442)	ND (0.0923)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0196)	ND (0.0557)	ND (0.0116)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (4.810)	ND (5.400)	ND (0.990)	ND (0.000)
Concentration, ppb, Dry	ND (0.301)	ND (0.338)	ND (0.0619)	ND (0.000)
Concentration, ug/DSCM *	ND (1.740)	ND (1.950)	ND (0.358)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.140)	ND (0.157)	ND (0.0287)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0176)	ND (0.0197)	ND (0.00362)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (7.460)	ND (27.620)	ND (4.600)	ND (0.000)
Concentration, ppb, Dry	ND (0.194)	ND (0.716)	ND (0.119)	ND (0.000)
Concentration, ug/DSCM *	ND (2.700)	ND (9.990)	ND (1.660)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.216)	ND (0.801)	ND (0.133)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0273)	ND (0.101)	ND (0.0168)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (4.070)	ND (14.340)	ND (2.570)	ND (0.000)
Concentration, ppb, Dry	ND (0.124)	ND (0.438)	ND (0.0785)	ND (0.000)
Concentration, ug/DSCM *	ND (1.470)	ND (5.180)	ND (0.929)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.118)	ND (0.416)	ND (0.0746)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0149)	ND (0.0524)	ND (0.00939)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.760)	ND (3.510)	ND (1.090)	ND (0.000)
Concentration, ppb, Dry	ND (0.0905)	ND (0.180)	ND (0.0560)	ND (0.000)
Concentration, ug/DSCM *	ND (0.636)	ND (1.270)	ND (0.394)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0511)	ND (0.102)	ND (0.0316)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00643)	ND (0.0128)	ND (0.00398)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (6.620)	ND (19.610)	ND (4.390)	ND (0.000)
Concentration, ppb, Dry	ND (0.216)	ND (0.640)	ND (0.143)	ND (0.000)
Concentration, ug/DSCM *	ND (2.390)	ND (7.090)	ND (1.590)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.192)	ND (0.569)	ND (0.127)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0242)	ND (0.0717)	ND (0.0160)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

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	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (10.920)	ND (31.770)	ND (6.560)	ND (0.000)
Concentration, ppb, Dry	ND (0.322)	ND (0.936)	ND (0.193)	ND (0.000)
Concentration, ug/DSCM *	ND (3.950)	ND (11.500)	ND (2.370)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.317)	ND (0.922)	ND (0.190)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0399)	ND (0.116)	ND (0.0240)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (2.240)	ND (6.720)	ND (1.340)	ND (0.000)
Concentration, ppb, Dry	ND (0.0978)	ND (0.293)	ND (0.0585)	ND (0.000)
Concentration, ug/DSCM *	ND (0.810)	ND (2.430)	ND (0.484)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0650)	ND (0.195)	ND (0.0389)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00819)	ND (0.0246)	ND (0.00490)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	ND (0.480)	ND (1.570)	ND (0.290)	ND (0.000)
Concentration, ppb, Dry	ND (0.0150)	ND (0.0491)	ND (0.00906)	ND (0.000)
Concentration, ug/DSCM *	ND (0.174)	ND (0.568)	ND (0.105)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0139)	ND (0.0455)	ND (0.00841)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00175)	ND (0.00574)	ND (0.00106)	ND (0.000)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.520)	ND (2.000)	ND (0.340)	ND (0.000)
Concentration, ppb, Dry	ND (0.0224)	ND (0.0860)	ND (0.0146)	ND (0.000)
Concentration, ug/DSCM *	ND (0.188)	ND (0.723)	ND (0.123)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0151)	ND (0.0580)	ND (0.00986)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00190)	ND (0.00731)	ND (0.00124)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (18.170)	ND (13.470)	ND (20.790)	ND (0.000)
Concentration, ppb, Dry	ND (0.858)	ND (0.636)	ND (0.981)	ND (0.000)
Concentration, ug/DSCM *	ND (6.570)	ND (4.870)	ND (7.520)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.527)	ND (0.391)	ND (0.603)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0664)	ND (0.0492)	ND (0.0760)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (13.730)	ND (15.020)	ND (10.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.602)	ND (0.659)	ND (0.469)	ND (0.000)
Concentration, ug/DSCM *	ND (4.960)	ND (5.430)	ND (3.860)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.398)	ND (0.436)	ND (0.310)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0502)	ND (0.0549)	ND (0.0390)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (2.040)	ND (7.050)	ND (1.400)	ND (0.000)
Concentration, ppb, Dry	ND (0.0788)	ND (0.272)	ND (0.0540)	ND (0.000)
Concentration, ug/DSCM *	ND (0.738)	ND (2.550)	ND (0.506)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0592)	ND (0.205)	ND (0.0406)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00746)	ND (0.0258)	ND (0.00512)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.780)	ND (3.340)	ND (0.520)	ND (0.000)
Concentration, ppb, Dry	ND (0.0217)	ND (0.0930)	ND (0.0145)	ND (0.000)
Concentration, ug/DSCM *	ND (0.282)	ND (1.210)	ND (0.188)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0226)	ND (0.0969)	ND (0.0151)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00285)	ND (0.0122)	ND (0.00190)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (7.460)	ND (6.150)	ND (12.320)	ND (0.000)
Concentration, ppb, Dry	ND (0.306)	ND (0.252)	ND (0.505)	ND (0.000)
Concentration, ug/DSCM *	ND (2.700)	ND (2.220)	ND (4.450)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.216)	ND (0.178)	ND (0.357)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0273)	ND (0.0225)	ND (0.0450)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (4.100)	ND (10.790)	ND (2.900)	ND (0.000)
Concentration, ppb, Dry	ND (0.133)	ND (0.351)	ND (0.0944)	ND (0.000)
Concentration, ug/DSCM *	ND (1.480)	ND (3.900)	ND (1.050)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.119)	ND (0.313)	ND (0.0841)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0150)	ND (0.0394)	ND (0.0106)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.490)	ND (2.060)	ND (0.330)	ND (0.000)
Concentration, ppb, Dry	ND (0.0187)	ND (0.0785)	ND (0.0126)	ND (0.000)
Concentration, ug/DSCM *	ND (0.177)	ND (0.745)	ND (0.119)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0142)	ND (0.0598)	ND (0.00957)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00179)	ND (0.00753)	ND (0.00121)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (2.100)	ND (6.250)	ND (1.540)	ND (0.000)
Concentration, ppb, Dry	ND (0.0722)	ND (0.215)	ND (0.0529)	ND (0.000)
Concentration, ug/DSCM *	ND (0.759)	ND (2.260)	ND (0.557)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0609)	ND (0.181)	ND (0.0447)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00768)	ND (0.0228)	ND (0.00563)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1A

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	EV [14.370]	ND (2.440)	ND (0.370)	EV (14.370)
Concentration, ppb, Dry	EV [0.320]	ND (0.0543)	ND (0.00824)	EV (0.320)
Concentration, ug/DSCM *	EV [5.200]	ND (0.882)	ND (0.134)	EV (5.200)
Emission Rate, 1,000 * (Pounds/Hour)	EV [0.417]	ND (0.0708)	ND (0.0107)	EV (0.417)
Emission Rate, Milligrams/Second	EV [0.0525]	ND (0.00892)	ND (0.00135)	EV (0.0525)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (21.670)	ND (14.800)	ND (26.110)	ND (0.000)
Concentration, ppb, Dry	ND (0.772)	ND (0.527)	ND (0.930)	ND (0.000)
Concentration, ug/DSCM *	ND (7.830)	ND (5.350)	ND (9.440)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.629)	ND (0.429)	ND (0.757)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0792)	ND (0.0541)	ND (0.0954)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1B

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (2.760)	ND (5.340)	ND (2.840)	ND (0.000)
Concentration, ppb, Dry	ND (0.321)	ND (0.621)	ND (0.330)	ND (0.000)
Concentration, ug/DSCM *	ND (0.988)	ND (1.910)	ND (1.020)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0794)	ND (0.154)	ND (0.0817)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0100)	ND (0.0194)	ND (0.0103)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.870)	ND (1.830)	ND (0.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.0623)	ND (0.131)	ND (0.0666)	ND (0.000)
Concentration, ug/DSCM *	ND (0.311)	ND (0.655)	ND (0.333)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0250)	ND (0.0527)	ND (0.0268)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00316)	ND (0.00664)	ND (0.00337)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.810)	ND (3.600)	ND (1.840)	ND (0.000)
Concentration, ppb, Dry	ND (0.114)	ND (0.228)	ND (0.116)	ND (0.000)
Concentration, ug/DSCM *	ND (0.648)	ND (1.290)	ND (0.659)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0521)	ND (0.104)	ND (0.0530)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00656)	ND (0.0131)	ND (0.00667)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.330)	ND (3.090)	ND (1.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.0841)	ND (0.195)	ND (0.0942)	ND (0.000)
Concentration, ug/DSCM *	ND (0.476)	ND (1.110)	ND (0.533)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0383)	ND (0.0889)	ND (0.0429)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00482)	ND (0.0112)	ND (0.00540)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (3.100)	ND (2.180)	ND (2.650)	ND (0.000)
Concentration, ppb, Dry	ND (0.272)	ND (0.191)	ND (0.233)	ND (0.000)
Concentration, ug/DSCM *	ND (1.110)	ND (0.781)	ND (0.949)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0892)	ND (0.0628)	ND (0.0763)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0112)	ND (0.00791)	ND (0.00961)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (1.070)	ND (2.280)	ND (1.160)	ND (0.000)
Concentration, ppb, Dry	ND (0.0767)	ND (0.163)	ND (0.0831)	ND (0.000)
Concentration, ug/DSCM *	ND (0.383)	ND (0.816)	ND (0.415)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0308)	ND (0.0656)	ND (0.0334)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00388)	ND (0.00827)	ND (0.00421)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (1.000)	ND (2.100)	ND (1.050)	ND (0.000)
Concentration, ppb, Dry	ND (0.0915)	ND (0.192)	ND (0.0961)	ND (0.000)
Concentration, ug/DSCM *	ND (0.358)	ND (0.752)	ND (0.376)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0288)	ND (0.0604)	ND (0.0302)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00363)	ND (0.00762)	ND (0.00381)	ND (0.000)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.880)	ND (1.830)	ND (0.910)	ND (0.000)
Concentration, ppb, Dry	ND (0.0599)	ND (0.125)	ND (0.0619)	ND (0.000)
Concentration, ug/DSCM *	ND (0.315)	ND (0.655)	ND (0.326)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0253)	ND (0.0527)	ND (0.0262)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00319)	ND (0.00664)	ND (0.00330)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.360)	ND (2.740)	ND (1.380)	ND (0.000)
Concentration, ppb, Dry	ND (0.0819)	ND (0.165)	ND (0.0831)	ND (0.000)
Concentration, ug/DSCM *	ND (0.487)	ND (0.981)	ND (0.494)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0391)	ND (0.0789)	ND (0.0397)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00493)	ND (0.00994)	ND (0.00500)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (2.840)	ND (5.810)	ND (3.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.211)	ND (0.431)	ND (0.223)	ND (0.000)
Concentration, ug/DSCM *	ND (1.020)	ND (2.080)	ND (1.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0817)	ND (0.167)	ND (0.0864)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0103)	ND (0.0211)	ND (0.0109)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.570)	ND (3.180)	ND (1.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.0920)	ND (0.186)	ND (0.0926)	ND (0.000)
Concentration, ug/DSCM *	ND (0.562)	ND (1.140)	ND (0.566)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0452)	ND (0.0915)	ND (0.0455)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00569)	ND (0.0115)	ND (0.00573)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (0.960)	ND (2.070)	ND (1.030)	ND (0.000)
Concentration, ppb, Dry	ND (0.0616)	ND (0.133)	ND (0.0661)	ND (0.000)
Concentration, ug/DSCM *	ND (0.344)	ND (0.741)	ND (0.369)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0276)	ND (0.0596)	ND (0.0296)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00348)	ND (0.00751)	ND (0.00374)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.330)	ND (2.720)	ND (1.380)	ND (0.000)
Concentration, ppb, Dry	ND (0.0946)	ND (0.193)	ND (0.0981)	ND (0.000)
Concentration, ug/DSCM *	ND (0.476)	ND (0.974)	ND (0.494)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0383)	ND (0.0783)	ND (0.0397)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00482)	ND (0.00986)	ND (0.00500)	ND (0.000)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (5.070)	ND (10.160)	ND (5.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.185)	ND (0.370)	ND (0.186)	ND (0.000)
Concentration, ug/DSCM *	ND (1.820)	ND (3.640)	ND (1.830)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.146)	ND (0.292)	ND (0.147)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0184)	ND (0.0368)	ND (0.0185)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (3.850)	ND (7.950)	ND (3.970)	ND (0.000)
Concentration, ppb, Dry	ND (0.140)	ND (0.289)	ND (0.144)	ND (0.000)
Concentration, ug/DSCM *	ND (1.380)	ND (2.850)	ND (1.420)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.111)	ND (0.229)	ND (0.114)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0140)	ND (0.0288)	ND (0.0144)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (2.110)	ND (2.640)	ND (2.120)	ND (0.000)
Concentration, ppb, Dry	ND (0.170)	ND (0.212)	ND (0.170)	ND (0.000)
Concentration, ug/DSCM *	ND (0.755)	ND (0.945)	ND (0.759)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0607)	ND (0.0760)	ND (0.0610)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00765)	ND (0.00957)	ND (0.00769)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.690)	ND (3.430)	ND (1.780)	ND (0.000)
Concentration, ppb, Dry	ND (0.135)	ND (0.273)	ND (0.142)	ND (0.000)
Concentration, ug/DSCM *	ND (0.605)	ND (1.230)	ND (0.637)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0486)	ND (0.0987)	ND (0.0512)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00613)	ND (0.0124)	ND (0.00646)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (1.070)	ND (2.060)	ND (1.090)	ND (0.000)
Concentration, ppb, Dry	ND (0.0719)	ND (0.138)	ND (0.0733)	ND (0.000)
Concentration, ug/DSCM *	ND (0.383)	ND (0.738)	ND (0.390)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0308)	ND (0.0593)	ND (0.0314)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00388)	ND (0.00747)	ND (0.00395)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1B

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (2.040)	ND (3.170)	ND (2.060)	ND (0.000)
Concentration, ppb, Dry	ND (0.145)	ND (0.225)	ND (0.146)	ND (0.000)
Concentration, ug/DSCM *	ND (0.730)	ND (1.130)	ND (0.738)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0587)	ND (0.0912)	ND (0.0593)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00740)	ND (0.0115)	ND (0.00747)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.730)	ND (1.500)	ND (0.750)	ND (0.000)
Concentration, ppb, Dry	ND (0.0455)	ND (0.0935)	ND (0.0467)	ND (0.000)
Concentration, ug/DSCM *	ND (0.261)	ND (0.537)	ND (0.269)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0210)	ND (0.0432)	ND (0.0216)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00265)	ND (0.00544)	ND (0.00272)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.570)	ND (3.140)	ND (1.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.125)	ND (0.250)	ND (0.130)	ND (0.000)
Concentration, ug/DSCM *	ND (0.562)	ND (1.120)	ND (0.584)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0452)	ND (0.0904)	ND (0.0469)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00569)	ND (0.0114)	ND (0.00591)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (1.990)	ND (3.920)	ND (2.040)	ND (0.000)
Concentration, ppb, Dry	ND (0.0945)	ND (0.186)	ND (0.0968)	ND (0.000)
Concentration, ug/DSCM *	ND (0.713)	ND (1.400)	ND (0.730)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0573)	ND (0.113)	ND (0.0587)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00722)	ND (0.0142)	ND (0.00740)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (2.940)	ND (6.170)	ND (3.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.164)	ND (0.345)	ND (0.173)	ND (0.000)
Concentration, ug/DSCM *	ND (1.050)	ND (2.210)	ND (1.110)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0846)	ND (0.178)	ND (0.0892)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0107)	ND (0.0224)	ND (0.0112)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.600)	EV [22.370]	ND (0.620)	EV (22.370)
Concentration, ppb, Dry	ND (0.0403)	EV [1.500]	ND (0.0417)	EV (1.500)
Concentration, ug/DSCM *	ND (0.215)	EV [8.010]	ND (0.222)	EV (8.010)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0173)	EV [0.644]	ND (0.0178)	EV (0.644)
Emission Rate, Milligrams/Second	ND (0.00218)	EV [0.0811]	ND (0.00225)	EV (0.0811)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (6.680)	ND (6.160)	ND (3.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.467)	ND (0.431)	ND (0.215)	ND (0.000)
Concentration, ug/DSCM *	ND (2.390)	ND (2.210)	ND (1.100)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.192)	ND (0.177)	ND (0.0884)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0242)	ND (0.0223)	ND (0.0111)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (4.930)	ND (9.680)	ND (5.110)	ND (0.000)
Concentration, ppb, Dry	ND (0.163)	ND (0.320)	ND (0.169)	ND (0.000)
Concentration, ug/DSCM *	ND (1.770)	ND (3.470)	ND (1.830)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.142)	ND (0.279)	ND (0.147)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0179)	ND (0.0351)	ND (0.0185)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.940)	ND (1.950)	ND (0.970)	ND (0.000)
Concentration, ppb, Dry	ND (0.0524)	ND (0.109)	ND (0.0540)	ND (0.000)
Concentration, ug/DSCM *	ND (0.337)	ND (0.698)	ND (0.347)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0271)	ND (0.0561)	ND (0.0279)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00341)	ND (0.00707)	ND (0.00352)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (2.330)	ND (4.550)	ND (2.320)	ND (0.000)
Concentration, ppb, Dry	ND (0.103)	ND (0.200)	ND (0.102)	ND (0.000)
Concentration, ug/DSCM *	ND (0.834)	ND (1.630)	ND (0.831)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0671)	ND (0.131)	ND (0.0668)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00845)	ND (0.0165)	ND (0.00841)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (1.940)	ND (3.100)	ND (2.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.112)	ND (0.179)	ND (0.169)	ND (0.000)
Concentration, ug/DSCM *	ND (0.695)	ND (1.110)	ND (1.050)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0558)	ND (0.0892)	ND (0.0843)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00704)	ND (0.0112)	ND (0.0106)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1B

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.620)	ND (5.250)	ND (9.130)	ND (0.000)
Concentration, ppb, Dry	ND (0.448)	ND (0.418)	ND (0.727)	ND (0.000)
Concentration, ug/DSCM *	ND (2.010)	ND (1.880)	ND (3.270)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.162)	ND (0.151)	ND (0.263)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0204)	ND (0.0190)	ND (0.0331)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (3.460)	ND (12.810)	ND (5.710)	ND (0.000)
Concentration, ppb, Dry	ND (0.0913)	ND (0.338)	ND (0.151)	ND (0.000)
Concentration, ug/DSCM *	ND (1.240)	ND (4.590)	ND (2.040)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0996)	ND (0.369)	ND (0.164)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0125)	ND (0.0465)	ND (0.0207)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (1.040)	ND (2.160)	ND (1.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.0604)	ND (0.125)	ND (0.0622)	ND (0.000)
Concentration, ug/DSCM *	ND (0.372)	ND (0.773)	ND (0.383)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0299)	ND (0.0622)	ND (0.0308)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00377)	ND (0.00783)	ND (0.00388)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (4.630)	ND (13.670)	ND (5.040)	ND (0.000)
Concentration, ppb, Dry	ND (0.146)	ND (0.432)	ND (0.159)	ND (0.000)
Concentration, ug/DSCM *	ND (1.660)	ND (4.890)	ND (1.800)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.133)	ND (0.393)	ND (0.145)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0168)	ND (0.0496)	ND (0.0183)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (17.380)	ND (0.000)	ND (25.650)	ND (0.000)
Concentration, ppb, Dry	ND (1.010)	ND (0.000)	ND (1.490)	ND (0.000)
Concentration, ug/DSCM *	ND (6.220)	ND (0.000)	ND (9.180)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.500)	ND (0.000)	ND (0.738)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0630)	ND (0.000)	ND (0.0930)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.230)	ND (7.130)	ND (3.160)	ND (0.000)
Concentration, ppb, Dry	ND (0.141)	ND (0.311)	ND (0.138)	ND (0.000)
Concentration, ug/DSCM *	ND (1.160)	ND (2.550)	ND (1.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0930)	ND (0.205)	ND (0.0910)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0117)	ND (0.0259)	ND (0.0115)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1B

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.060)	ND (6.370)	ND (3.160)	ND (0.000)
Concentration, ppb, Dry	ND (0.133)	ND (0.278)	ND (0.138)	ND (0.000)
Concentration, ug/DSCM *	ND (1.100)	ND (2.280)	ND (1.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0881)	ND (0.183)	ND (0.0910)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.0231)	ND (0.0115)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (21.490)	ND (17.520)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (1.520)	ND (1.240)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (7.690)	ND (6.270)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.619)	ND (0.504)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0779)	ND (0.0635)	ND (0.000)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.120)	ND (4.860)	ND (3.040)	ND (0.000)
Concentration, ppb, Dry	ND (0.112)	ND (0.257)	ND (0.161)	ND (0.000)
Concentration, ug/DSCM *	ND (0.759)	ND (1.740)	ND (1.090)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0610)	ND (0.140)	ND (0.0875)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00769)	ND (0.0176)	ND (0.0110)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (4.250)	ND (8.800)	ND (4.220)	ND (0.000)
Concentration, ppb, Dry	ND (0.225)	ND (0.465)	ND (0.223)	ND (0.000)
Concentration, ug/DSCM *	ND (1.520)	ND (3.150)	ND (1.510)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.122)	ND (0.253)	ND (0.121)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0154)	ND (0.0319)	ND (0.0153)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.660)	ND (6.160)	ND (2.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.141)	ND (0.326)	ND (0.146)	ND (0.000)
Concentration, ug/DSCM *	ND (0.952)	ND (2.210)	ND (0.988)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0766)	ND (0.177)	ND (0.0794)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00965)	ND (0.0223)	ND (0.0100)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.530)	ND (5.730)	ND (2.600)	ND (0.000)
Concentration, ppb, Dry	ND (0.134)	ND (0.303)	ND (0.137)	ND (0.000)
Concentration, ug/DSCM *	ND (0.906)	ND (2.050)	ND (0.931)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0728)	ND (0.165)	ND (0.0748)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00918)	ND (0.0208)	ND (0.00943)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1B

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.050)	ND (2.330)	ND (1.020)	ND (0.000)
Concentration, ppb, Dry	ND (0.0555)	ND (0.123)	ND (0.0539)	ND (0.000)
Concentration, ug/DSCM *	ND (0.376)	ND (0.834)	ND (0.365)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0302)	ND (0.0671)	ND (0.0294)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00381)	ND (0.00845)	ND (0.00370)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (0.950)	ND (2.170)	ND (0.970)	ND (0.000)
Concentration, ppb, Dry	ND (0.0498)	ND (0.114)	ND (0.0509)	ND (0.000)
Concentration, ug/DSCM *	ND (0.340)	ND (0.777)	ND (0.347)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0273)	ND (0.0625)	ND (0.0279)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00345)	ND (0.00787)	ND (0.00352)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.880)	ND (1.870)	ND (0.840)	ND (0.000)
Concentration, ppb, Dry	ND (0.0390)	ND (0.0829)	ND (0.0373)	ND (0.000)
Concentration, ug/DSCM *	ND (0.315)	ND (0.670)	ND (0.301)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0253)	ND (0.0538)	ND (0.0242)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00319)	ND (0.00678)	ND (0.00305)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (2.800)	ND (5.960)	ND (2.590)	ND (0.000)
Concentration, ppb, Dry	ND (0.132)	ND (0.282)	ND (0.122)	ND (0.000)
Concentration, ug/DSCM *	ND (1.000)	ND (2.130)	ND (0.927)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0806)	ND (0.172)	ND (0.0746)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0102)	ND (0.0216)	ND (0.00939)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (9.610)	ND (12.480)	ND (6.820)	ND (0.000)
Concentration, ppb, Dry	ND (0.450)	ND (0.584)	ND (0.319)	ND (0.000)
Concentration, ug/DSCM *	ND (3.440)	ND (4.470)	ND (2.440)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.277)	ND (0.359)	ND (0.196)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0349)	ND (0.0453)	ND (0.0247)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (6.620)	ND (8.990)	ND (4.910)	ND (0.000)
Concentration, ppb, Dry	ND (0.288)	ND (0.391)	ND (0.213)	ND (0.000)
Concentration, ug/DSCM *	ND (2.370)	ND (3.220)	ND (1.760)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.191)	ND (0.259)	ND (0.141)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0240)	ND (0.0326)	ND (0.0178)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (4.830)	ND (8.110)	ND (4.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.247)	ND (0.415)	ND (0.230)	ND (0.000)
Concentration, ug/DSCM *	ND (1.730)	ND (2.900)	ND (1.610)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.139)	ND (0.233)	ND (0.130)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0175)	ND (0.0294)	ND (0.0163)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (4.340)	ND (2.870)	ND (1.400)	ND (0.000)
Concentration, ppb, Dry	ND (0.269)	ND (0.178)	ND (0.0867)	ND (0.000)
Concentration, ug/DSCM *	ND (1.550)	ND (1.030)	ND (0.501)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.125)	ND (0.0826)	ND (0.0403)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0157)	ND (0.0104)	ND (0.00508)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (6.730)	ND (14.700)	ND (6.510)	ND (0.000)
Concentration, ppb, Dry	ND (0.173)	ND (0.378)	ND (0.167)	ND (0.000)
Concentration, ug/DSCM *	ND (2.410)	ND (5.260)	ND (2.330)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.194)	ND (0.423)	ND (0.187)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0244)	ND (0.0533)	ND (0.0236)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (3.680)	ND (7.630)	ND (3.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.111)	ND (0.231)	ND (0.110)	ND (0.000)
Concentration, ug/DSCM *	ND (1.320)	ND (2.730)	ND (1.300)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.106)	ND (0.220)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0133)	ND (0.0277)	ND (0.0132)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.590)	ND (1.870)	ND (1.540)	ND (0.000)
Concentration, ppb, Dry	ND (0.0809)	ND (0.0952)	ND (0.0784)	ND (0.000)
Concentration, ug/DSCM *	ND (0.569)	ND (0.670)	ND (0.551)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0458)	ND (0.0538)	ND (0.0443)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00577)	ND (0.00678)	ND (0.00559)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (5.980)	ND (10.430)	ND (6.210)	ND (0.000)
Concentration, ppb, Dry	ND (0.193)	ND (0.337)	ND (0.201)	ND (0.000)
Concentration, ug/DSCM *	ND (2.140)	ND (3.730)	ND (2.220)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.172)	ND (0.300)	ND (0.179)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0217)	ND (0.0378)	ND (0.0225)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (9.860)	ND (16.910)	ND (9.290)	ND (0.000)
Concentration, ppb, Dry	ND (0.288)	ND (0.493)	ND (0.271)	ND (0.000)
Concentration, ug/DSCM *	ND (3.530)	ND (6.050)	ND (3.330)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.284)	ND (0.487)	ND (0.267)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0358)	ND (0.0613)	ND (0.0337)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (2.020)	ND (3.580)	ND (1.890)	ND (0.000)
Concentration, ppb, Dry	ND (0.0873)	ND (0.155)	ND (0.0817)	ND (0.000)
Concentration, ug/DSCM *	ND (0.723)	ND (1.280)	ND (0.677)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0581)	ND (0.103)	ND (0.0544)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00733)	ND (0.0130)	ND (0.00685)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	EV [9.690]	ND (0.830)	ND (0.420)	EV (9.690)
Concentration, ppb, Dry	EV [0.300]	ND (0.0257)	ND (0.0130)	EV (0.300)
Concentration, ug/DSCM *	EV [3.470]	ND (0.297)	ND (0.150)	EV (3.470)
Emission Rate, 1,000 * (Pounds/Hour)	EV [0.279]	ND (0.0239)	ND (0.0121)	EV (0.279)
Emission Rate, Milligrams/Second	EV [0.0351]	ND (0.00301)	ND (0.00152)	EV (0.0351)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.440)	ND (0.930)	ND (0.550)	ND (0.000)
Concentration, ppb, Dry	ND (0.0187)	ND (0.0396)	ND (0.0234)	ND (0.000)
Concentration, ug/DSCM *	ND (0.158)	ND (0.333)	ND (0.197)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0127)	ND (0.0268)	ND (0.0158)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00160)	ND (0.00337)	ND (0.00199)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (15.380)	ND (6.270)	ND (33.210)	ND (0.000)
Concentration, ppb, Dry	ND (0.719)	ND (0.293)	ND (1.550)	ND (0.000)
Concentration, ug/DSCM *	ND (5.510)	ND (2.240)	ND (11.900)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.443)	ND (0.180)	ND (0.956)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0558)	ND (0.0227)	ND (0.120)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (11.620)	ND (6.990)	ND (17.060)	ND (0.000)
Concentration, ppb, Dry	ND (0.505)	ND (0.304)	ND (0.741)	ND (0.000)
Concentration, ug/DSCM *	ND (4.160)	ND (2.500)	ND (6.110)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.334)	ND (0.201)	ND (0.491)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0421)	ND (0.0254)	ND (0.0619)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (1.730)	ND (3.280)	ND (2.230)	ND (0.000)
Concentration, ppb, Dry	ND (0.0661)	ND (0.125)	ND (0.0853)	ND (0.000)
Concentration, ug/DSCM *	ND (0.619)	ND (1.170)	ND (0.798)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0498)	ND (0.0944)	ND (0.0642)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00627)	ND (0.0119)	ND (0.00809)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.660)	ND (1.550)	ND (0.830)	ND (0.000)
Concentration, ppb, Dry	ND (0.0182)	ND (0.0427)	ND (0.0229)	ND (0.000)
Concentration, ug/DSCM *	ND (0.236)	ND (0.555)	ND (0.297)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0190)	ND (0.0446)	ND (0.0239)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00239)	ND (0.00562)	ND (0.00301)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (6.310)	ND (2.860)	ND (19.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.256)	ND (0.116)	ND (0.799)	ND (0.000)
Concentration, ug/DSCM *	ND (2.260)	ND (1.020)	ND (7.050)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.182)	ND (0.0823)	ND (0.566)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0229)	ND (0.0104)	ND (0.0714)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (3.470)	ND (5.020)	ND (4.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.112)	ND (0.162)	ND (0.149)	ND (0.000)
Concentration, ug/DSCM *	ND (1.240)	ND (1.800)	ND (1.660)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0999)	ND (0.144)	ND (0.133)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0126)	ND (0.0182)	ND (0.0168)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.410)	ND (0.960)	ND (0.530)	ND (0.000)
Concentration, ppb, Dry	ND (0.0155)	ND (0.0362)	ND (0.0200)	ND (0.000)
Concentration, ug/DSCM *	ND (0.147)	ND (0.344)	ND (0.190)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0118)	ND (0.0276)	ND (0.0153)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00149)	ND (0.00348)	ND (0.00192)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (1.780)	ND (2.910)	ND (2.460)	ND (0.000)
Concentration, ppb, Dry	ND (0.0606)	ND (0.0990)	ND (0.0837)	ND (0.000)
Concentration, ug/DSCM *	ND (0.637)	ND (1.040)	ND (0.881)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0512)	ND (0.0838)	ND (0.0708)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00646)	ND (0.0106)	ND (0.00892)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1B

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	ND (0.430)	ND (1.130)	ND (0.600)	ND (0.000)
Concentration, ppb, Dry	ND (0.00948)	ND (0.0249)	ND (0.0132)	ND (0.000)
Concentration, ug/DSCM *	ND (0.154)	ND (0.405)	ND (0.215)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0124)	ND (0.0325)	ND (0.0173)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00156)	ND (0.00410)	ND (0.00218)	ND (0.000)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (18.340)	ND (6.880)	ND (41.710)	ND (0.000)
Concentration, ppb, Dry	ND (0.647)	ND (0.243)	ND (1.470)	ND (0.000)
Concentration, ug/DSCM *	ND (6.570)	ND (2.460)	ND (14.900)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.528)	ND (0.198)	ND (1.200)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0665)	ND (0.0250)	ND (0.151)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-2-S2-MM5-2A

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (26.280)	ND (37.530)	ND (1.910)	ND (0.000)
Concentration, ppb, Dry	ND (3.530)	ND (5.040)	ND (0.257)	ND (0.000)
Concentration, ug/DSCM *	ND (10.900)	ND (15.500)	ND (0.790)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.927)	ND (1.320)	ND (0.0673)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.117)	ND (0.167)	ND (0.00848)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.890)	ND (1.270)	ND (0.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.0737)	ND (0.105)	ND (0.0522)	ND (0.000)
Concentration, ug/DSCM *	ND (0.368)	ND (0.526)	ND (0.261)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0314)	ND (0.0448)	ND (0.0222)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00395)	ND (0.00564)	ND (0.00280)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.620)	ND (2.320)	ND (1.240)	ND (0.000)
Concentration, ppb, Dry	ND (0.118)	ND (0.170)	ND (0.0906)	ND (0.000)
Concentration, ug/DSCM *	ND (0.670)	ND (0.960)	ND (0.513)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0571)	ND (0.0818)	ND (0.0437)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00720)	ND (0.0103)	ND (0.00551)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (0.580)	ND (0.830)	ND (1.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.0424)	ND (0.0607)	ND (0.0731)	ND (0.000)
Concentration, ug/DSCM *	ND (0.240)	ND (0.343)	ND (0.414)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0204)	ND (0.0293)	ND (0.0353)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00258)	ND (0.00369)	ND (0.00444)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (0.580)	ND (0.830)	ND (1.780)	ND (0.000)
Concentration, ppb, Dry	ND (0.0588)	ND (0.0842)	ND (0.181)	ND (0.000)
Concentration, ug/DSCM *	ND (0.240)	ND (0.343)	ND (0.737)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0204)	ND (0.0293)	ND (0.0628)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00258)	ND (0.00369)	ND (0.00791)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (1.040)	ND (1.490)	ND (0.780)	ND (0.000)
Concentration, ppb, Dry	ND (0.0861)	ND (0.123)	ND (0.0646)	ND (0.000)
Concentration, ug/DSCM *	ND (0.430)	ND (0.617)	ND (0.323)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0367)	ND (0.0525)	ND (0.0275)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00462)	ND (0.00662)	ND (0.00346)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.850)	ND (1.220)	ND (0.710)	ND (0.000)
Concentration, ppb, Dry	ND (0.0899)	ND (0.129)	ND (0.0751)	ND (0.000)
Concentration, ug/DSCM *	ND (0.352)	ND (0.505)	ND (0.294)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0300)	ND (0.0430)	ND (0.0250)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00378)	ND (0.00542)	ND (0.00315)	ND (0.000)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.700)	ND (1.010)	ND (0.610)	ND (0.000)
Concentration, ppb, Dry	ND (0.0551)	ND (0.0794)	ND (0.0480)	ND (0.000)
Concentration, ug/DSCM *	ND (0.290)	ND (0.418)	ND (0.252)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0247)	ND (0.0356)	ND (0.0215)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00311)	ND (0.00449)	ND (0.00271)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.090)	ND (1.560)	ND (0.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.0759)	ND (0.109)	ND (0.0647)	ND (0.000)
Concentration, ug/DSCM *	ND (0.451)	ND (0.646)	ND (0.385)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0384)	ND (0.0550)	ND (0.0328)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00484)	ND (0.00693)	ND (0.00413)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (2.070)	ND (2.960)	ND (2.020)	ND (0.000)
Concentration, ppb, Dry	ND (0.177)	ND (0.254)	ND (0.173)	ND (0.000)
Concentration, ug/DSCM *	ND (0.857)	ND (1.220)	ND (0.836)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0730)	ND (0.104)	ND (0.0712)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00920)	ND (0.0131)	ND (0.00897)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.630)	ND (2.320)	ND (1.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.110)	ND (0.157)	ND (0.0725)	ND (0.000)
Concentration, ug/DSCM *	ND (0.675)	ND (0.960)	ND (0.443)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0575)	ND (0.0818)	ND (0.0377)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00724)	ND (0.0103)	ND (0.00475)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (0.990)	ND (1.420)	ND (0.690)	ND (0.000)
Concentration, ppb, Dry	ND (0.0734)	ND (0.105)	ND (0.0512)	ND (0.000)
Concentration, ug/DSCM *	ND (0.410)	ND (0.588)	ND (0.286)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0349)	ND (0.0501)	ND (0.0243)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00440)	ND (0.00631)	ND (0.00307)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.010)	ND (1.440)	ND (0.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.0830)	ND (0.118)	ND (0.0764)	ND (0.000)
Concentration, ug/DSCM *	ND (0.418)	ND (0.596)	ND (0.385)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0356)	ND (0.0508)	ND (0.0328)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00449)	ND (0.00640)	ND (0.00413)	ND (0.000)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (6.380)	ND (9.100)	ND (3.430)	ND (0.000)
Concentration, ppb, Dry	ND (0.269)	ND (0.383)	ND (0.144)	ND (0.000)
Concentration, ug/DSCM *	ND (2.640)	ND (3.770)	ND (1.420)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.225)	ND (0.321)	ND (0.121)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0283)	ND (0.0404)	ND (0.0152)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (3.060)	ND (4.370)	ND (2.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.129)	ND (0.184)	ND (0.113)	ND (0.000)
Concentration, ug/DSCM *	ND (1.270)	ND (1.810)	ND (1.110)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.108)	ND (0.154)	ND (0.0945)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0136)	ND (0.0194)	ND (0.0119)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (0.970)	ND (1.380)	ND (1.430)	ND (0.000)
Concentration, ppb, Dry	ND (0.0901)	ND (0.128)	ND (0.133)	ND (0.000)
Concentration, ug/DSCM *	ND (0.401)	ND (0.571)	ND (0.592)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0342)	ND (0.0487)	ND (0.0504)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00431)	ND (0.00613)	ND (0.00635)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.330)	ND (1.900)	ND (1.200)	ND (0.000)
Concentration, ppb, Dry	ND (0.122)	ND (0.175)	ND (0.110)	ND (0.000)
Concentration, ug/DSCM *	ND (0.550)	ND (0.786)	ND (0.497)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0469)	ND (0.0670)	ND (0.0423)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00591)	ND (0.00844)	ND (0.00533)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (0.550)	ND (0.780)	ND (0.740)	ND (0.000)
Concentration, ppb, Dry	ND (0.0427)	ND (0.0606)	ND (0.0575)	ND (0.000)
Concentration, ug/DSCM *	ND (0.228)	ND (0.323)	ND (0.306)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0194)	ND (0.0275)	ND (0.0261)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00244)	ND (0.00346)	ND (0.00329)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-2-S2-MM5-2A

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (1.400)	ND (2.000)	ND (1.390)	ND (0.000)
Concentration, ppb, Dry	ND (0.115)	ND (0.164)	ND (0.114)	ND (0.000)
Concentration, ug/DSCM *	ND (0.579)	ND (0.828)	ND (0.575)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0494)	ND (0.0705)	ND (0.0490)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00622)	ND (0.00888)	ND (0.00617)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.500)	ND (0.710)	ND (0.510)	ND (0.000)
Concentration, ppb, Dry	ND (0.0360)	ND (0.0511)	ND (0.0367)	ND (0.000)
Concentration, ug/DSCM *	ND (0.207)	ND (0.294)	ND (0.211)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0176)	ND (0.0250)	ND (0.0180)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00222)	ND (0.00315)	ND (0.00227)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (16.890)	ND (24.120)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (1.530)	ND (2.180)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (6.990)	ND (9.980)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.595)	ND (0.850)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0750)	ND (0.107)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.290)	ND (1.850)	ND (1.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.119)	ND (0.170)	ND (0.101)	ND (0.000)
Concentration, ug/DSCM *	ND (0.534)	ND (0.766)	ND (0.455)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0455)	ND (0.0652)	ND (0.0388)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00573)	ND (0.00822)	ND (0.00489)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (2.300)	ND (3.280)	ND (1.380)	ND (0.000)
Concentration, ppb, Dry	ND (0.126)	ND (0.180)	ND (0.0757)	ND (0.000)
Concentration, ug/DSCM *	ND (0.952)	ND (1.360)	ND (0.571)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0811)	ND (0.116)	ND (0.0487)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0102)	ND (0.0146)	ND (0.00613)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (1.970)	ND (2.810)	ND (2.090)	ND (0.000)
Concentration, ppb, Dry	ND (0.127)	ND (0.181)	ND (0.135)	ND (0.000)
Concentration, ug/DSCM *	ND (0.815)	ND (1.160)	ND (0.865)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0695)	ND (0.0991)	ND (0.0737)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00875)	ND (0.0125)	ND (0.00928)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.510)	ND (0.730)	ND (0.420)	ND (0.000)
Concentration, ppb, Dry	ND (0.0396)	ND (0.0567)	ND (0.0326)	ND (0.000)
Concentration, ug/DSCM *	ND (0.211)	ND (0.302)	ND (0.174)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0180)	ND (0.0257)	ND (0.0148)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00227)	ND (0.00324)	ND (0.00187)	ND (0.000)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (2.410)	ND (3.430)	ND (2.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.195)	ND (0.277)	ND (0.167)	ND (0.000)
Concentration, ug/DSCM *	ND (0.997)	ND (1.420)	ND (0.857)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0850)	ND (0.121)	ND (0.0730)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0107)	ND (0.0152)	ND (0.00920)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (3.250)	ND (4.640)	ND (3.440)	ND (0.000)
Concentration, ppb, Dry	ND (0.124)	ND (0.177)	ND (0.131)	ND (0.000)
Concentration, ug/DSCM *	ND (1.340)	ND (1.920)	ND (1.420)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.115)	ND (0.164)	ND (0.121)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0144)	ND (0.0206)	ND (0.0153)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.650)	ND (0.920)	ND (0.650)	ND (0.000)
Concentration, ppb, Dry	ND (0.0419)	ND (0.0592)	ND (0.0419)	ND (0.000)
Concentration, ug/DSCM *	ND (0.269)	ND (0.381)	ND (0.269)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0229)	ND (0.0324)	ND (0.0229)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00289)	ND (0.00409)	ND (0.00289)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (2.900)	ND (4.140)	ND (1.560)	ND (0.000)
Concentration, ppb, Dry	ND (0.148)	ND (0.211)	ND (0.0794)	ND (0.000)
Concentration, ug/DSCM *	ND (1.200)	ND (1.710)	ND (0.646)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.102)	ND (0.146)	ND (0.0550)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0129)	ND (0.0184)	ND (0.00693)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (2.160)	ND (3.080)	ND (1.970)	ND (0.000)
Concentration, ppb, Dry	ND (0.144)	ND (0.205)	ND (0.131)	ND (0.000)
Concentration, ug/DSCM *	ND (0.894)	ND (1.270)	ND (0.815)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0762)	ND (0.109)	ND (0.0695)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00960)	ND (0.0137)	ND (0.00875)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-2-S2-MM5-2A

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (1.570)	ND (2.250)	ND (6.150)	ND (0.000)
Concentration, ppb, Dry	ND (0.145)	ND (0.207)	ND (0.566)	ND (0.000)
Concentration, ug/DSCM *	ND (0.650)	ND (0.931)	ND (2.550)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0554)	ND (0.0793)	ND (0.217)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00697)	ND (0.0100)	ND (0.0273)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (1.660)	ND (2.370)	ND (3.850)	ND (0.000)
Concentration, ppb, Dry	ND (0.0506)	ND (0.0723)	ND (0.117)	ND (0.000)
Concentration, ug/DSCM *	ND (0.687)	ND (0.981)	ND (1.590)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0585)	ND (0.0836)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00737)	ND (0.0105)	ND (0.0171)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (1.010)	ND (1.450)	ND (0.720)	ND (0.000)
Concentration, ppb, Dry	ND (0.0678)	ND (0.0974)	ND (0.0484)	ND (0.000)
Concentration, ug/DSCM *	ND (0.418)	ND (0.600)	ND (0.298)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0356)	ND (0.0511)	ND (0.0254)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00449)	ND (0.00644)	ND (0.00320)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (2.510)	ND (4.060)	ND (3.790)	ND (0.000)
Concentration, ppb, Dry	ND (0.0916)	ND (0.148)	ND (0.138)	ND (0.000)
Concentration, ug/DSCM *	ND (1.040)	ND (1.680)	ND (1.570)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0885)	ND (0.143)	ND (0.134)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0112)	ND (0.0180)	ND (0.0168)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	176.900	ND (13.470)	ND (19.250)	176.900
Concentration, ppb, Dry	11.900	ND (0.905)	ND (1.290)	11.900
Concentration, ug/DSCM *	73.200	ND (5.570)	ND (7.970)	73.200
Emission Rate, 1,000 * (Pounds/Hour)	6.240	ND (0.475)	ND (0.679)	6.240
Emission Rate, Milligrams/Second	0.786	ND (0.0598)	ND (0.0855)	0.786
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.080)	ND (3.370)	ND (2.370)	ND (0.000)
Concentration, ppb, Dry	ND (0.105)	ND (0.170)	ND (0.119)	ND (0.000)
Concentration, ug/DSCM *	ND (0.861)	ND (1.390)	ND (0.981)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0733)	ND (0.119)	ND (0.0836)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00924)	ND (0.0150)	ND (0.0105)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-2-S2-MM5-2A

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.200)	ND (3.560)	ND (2.370)	ND (0.000)
Concentration, ppb, Dry	ND (0.111)	ND (0.179)	ND (0.119)	ND (0.000)
Concentration, ug/DSCM *	ND (0.910)	ND (1.470)	ND (0.981)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0776)	ND (0.126)	ND (0.0836)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00977)	ND (0.0158)	ND (0.0105)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (6.240)	ND (10.100)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.508)	ND (0.823)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (2.580)	ND (4.180)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.220)	ND (0.356)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0277)	ND (0.0449)	ND (0.000)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.400)	ND (3.890)	ND (2.280)	ND (0.000)
Concentration, ppb, Dry	ND (0.147)	ND (0.238)	ND (0.139)	ND (0.000)
Concentration, ug/DSCM *	ND (0.993)	ND (1.610)	ND (0.944)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0846)	ND (0.137)	ND (0.0804)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0107)	ND (0.0173)	ND (0.0101)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.010)	ND (3.260)	ND (3.170)	ND (0.000)
Concentration, ppb, Dry	ND (0.123)	ND (0.199)	ND (0.194)	ND (0.000)
Concentration, ug/DSCM *	ND (0.832)	ND (1.350)	ND (1.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0709)	ND (0.115)	ND (0.112)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00893)	ND (0.0145)	ND (0.0141)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (3.040)	ND (4.920)	ND (2.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.186)	ND (0.300)	ND (0.126)	ND (0.000)
Concentration, ug/DSCM *	ND (1.260)	ND (2.040)	ND (0.857)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.107)	ND (0.173)	ND (0.0730)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0135)	ND (0.0219)	ND (0.00920)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.210)	ND (3.580)	ND (1.950)	ND (0.000)
Concentration, ppb, Dry	ND (0.135)	ND (0.219)	ND (0.119)	ND (0.000)
Concentration, ug/DSCM *	ND (0.915)	ND (1.480)	ND (0.807)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0779)	ND (0.126)	ND (0.0688)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00982)	ND (0.0159)	ND (0.00866)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-2-S2-MM5-2A

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.580)	ND (4.180)	ND (0.770)	ND (0.000)
Concentration, ppb, Dry	ND (0.158)	ND (0.255)	ND (0.0470)	ND (0.000)
Concentration, ug/DSCM *	ND (1.070)	ND (1.730)	ND (0.319)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0910)	ND (0.147)	ND (0.0271)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0115)	ND (0.0186)	ND (0.00342)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (0.930)	ND (1.500)	ND (0.730)	ND (0.000)
Concentration, ppb, Dry	ND (0.0564)	ND (0.0909)	ND (0.0442)	ND (0.000)
Concentration, ug/DSCM *	ND (0.385)	ND (0.621)	ND (0.302)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0328)	ND (0.0529)	ND (0.0257)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00413)	ND (0.00666)	ND (0.00324)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.810)	ND (1.310)	ND (0.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.0415)	ND (0.0672)	ND (0.0323)	ND (0.000)
Concentration, ug/DSCM *	ND (0.335)	ND (0.542)	ND (0.261)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0286)	ND (0.0462)	ND (0.0222)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00360)	ND (0.00582)	ND (0.00280)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (2.210)	ND (3.570)	ND (1.940)	ND (0.000)
Concentration, ppb, Dry	ND (0.121)	ND (0.195)	ND (0.106)	ND (0.000)
Concentration, ug/DSCM *	ND (0.915)	ND (1.480)	ND (0.803)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0779)	ND (0.126)	ND (0.0684)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00982)	ND (0.0159)	ND (0.00862)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (13.350)	ND (21.610)	ND (5.120)	ND (0.000)
Concentration, ppb, Dry	ND (0.722)	ND (1.170)	ND (0.277)	ND (0.000)
Concentration, ug/DSCM *	ND (5.520)	ND (8.940)	ND (2.120)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.471)	ND (0.762)	ND (0.181)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0593)	ND (0.0960)	ND (0.0227)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (7.570)	ND (12.260)	ND (3.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.380)	ND (0.616)	ND (0.185)	ND (0.000)
Concentration, ug/DSCM *	ND (3.130)	ND (5.070)	ND (1.520)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.267)	ND (0.432)	ND (0.130)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0336)	ND (0.0545)	ND (0.0163)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (0.680)	ND (1.100)	ND (3.380)	ND (0.000)
Concentration, ppb, Dry	ND (0.0402)	ND (0.0651)	ND (0.200)	ND (0.000)
Concentration, ug/DSCM *	ND (0.281)	ND (0.455)	ND (1.400)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0240)	ND (0.0388)	ND (0.119)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00302)	ND (0.00489)	ND (0.0150)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (5.230)	ND (8.460)	ND (1.050)	ND (0.000)
Concentration, ppb, Dry	ND (0.374)	ND (0.605)	ND (0.0751)	ND (0.000)
Concentration, ug/DSCM *	ND (2.160)	ND (3.500)	ND (0.435)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.184)	ND (0.298)	ND (0.0370)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0232)	ND (0.0376)	ND (0.00466)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (5.720)	ND (9.260)	ND (4.890)	ND (0.000)
Concentration, ppb, Dry	ND (0.170)	ND (0.275)	ND (0.145)	ND (0.000)
Concentration, ug/DSCM *	ND (2.370)	ND (3.830)	ND (2.020)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.202)	ND (0.326)	ND (0.172)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0254)	ND (0.0411)	ND (0.0217)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (1.520)	ND (2.460)	ND (2.730)	ND (0.000)
Concentration, ppb, Dry	ND (0.0531)	ND (0.0860)	ND (0.0954)	ND (0.000)
Concentration, ug/DSCM *	ND (0.629)	ND (1.020)	ND (1.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0536)	ND (0.0867)	ND (0.0963)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00675)	ND (0.0109)	ND (0.0121)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (0.770)	ND (1.250)	ND (1.160)	ND (0.000)
Concentration, ppb, Dry	ND (0.0453)	ND (0.0735)	ND (0.0682)	ND (0.000)
Concentration, ug/DSCM *	ND (0.319)	ND (0.517)	ND (0.480)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0271)	ND (0.0441)	ND (0.0409)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00342)	ND (0.00555)	ND (0.00515)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (3.800)	ND (6.160)	ND (4.660)	ND (0.000)
Concentration, ppb, Dry	ND (0.142)	ND (0.230)	ND (0.174)	ND (0.000)
Concentration, ug/DSCM *	ND (1.570)	ND (2.550)	ND (1.930)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.134)	ND (0.217)	ND (0.164)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0169)	ND (0.0274)	ND (0.0207)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (6.990)	ND (11.320)	ND (6.970)	ND (0.000)
Concentration, ppb, Dry	ND (0.236)	ND (0.382)	ND (0.235)	ND (0.000)
Concentration, ug/DSCM *	ND (2.890)	ND (4.680)	ND (2.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.246)	ND (0.399)	ND (0.246)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0311)	ND (0.0503)	ND (0.0310)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (1.930)	ND (3.130)	ND (1.420)	ND (0.000)
Concentration, ppb, Dry	ND (0.0965)	ND (0.156)	ND (0.0710)	ND (0.000)
Concentration, ug/DSCM *	ND (0.799)	ND (1.300)	ND (0.588)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0680)	ND (0.110)	ND (0.0501)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00857)	ND (0.0139)	ND (0.00631)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	ND (0.390)	EV [21.890]	ND (0.310)	EV (21.890)
Concentration, ppb, Dry	ND (0.0139)	EV [0.783]	ND (0.0111)	EV (0.783)
Concentration, ug/DSCM *	ND (0.161)	EV [9.060]	ND (0.128)	EV (9.060)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0138)	EV [0.772]	ND (0.0109)	EV (0.772)
Emission Rate, Milligrams/Second	ND (0.00173)	EV [0.0972]	ND (0.00138)	EV (0.0972)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.260)	ND (0.320)	ND (0.370)	ND (0.000)
Concentration, ppb, Dry	ND (0.0128)	ND (0.0158)	ND (0.0182)	ND (0.000)
Concentration, ug/DSCM *	ND (0.108)	ND (0.132)	ND (0.153)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00917)	ND (0.0113)	ND (0.0130)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00115)	ND (0.00142)	ND (0.00164)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (3.540)	ND (4.440)	ND (22.370)	ND (0.000)
Concentration, ppb, Dry	ND (0.191)	ND (0.240)	ND (1.210)	ND (0.000)
Concentration, ug/DSCM *	ND (1.470)	ND (1.840)	ND (9.260)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.125)	ND (0.157)	ND (0.789)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0157)	ND (0.0197)	ND (0.0994)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (4.410)	ND (5.540)	ND (11.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.221)	ND (0.278)	ND (0.577)	ND (0.000)
Concentration, ug/DSCM *	ND (1.830)	ND (2.290)	ND (4.760)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.155)	ND (0.195)	ND (0.405)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0196)	ND (0.0246)	ND (0.0511)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (1.430)	ND (1.790)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0632)	ND (0.0791)	ND (0.0663)	ND (0.000)
Concentration, ug/DSCM *	ND (0.592)	ND (0.741)	ND (0.621)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0504)	ND (0.0631)	ND (0.0529)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00635)	ND (0.00795)	ND (0.00666)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.880)	ND (1.100)	ND (0.560)	ND (0.000)
Concentration, ppb, Dry	ND (0.0280)	ND (0.0351)	ND (0.0178)	ND (0.000)
Concentration, ug/DSCM *	ND (0.364)	ND (0.455)	ND (0.232)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0310)	ND (0.0388)	ND (0.0197)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00391)	ND (0.00489)	ND (0.00249)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (1.030)	ND (1.290)	ND (13.260)	ND (0.000)
Concentration, ppb, Dry	ND (0.0483)	ND (0.0605)	ND (0.622)	ND (0.000)
Concentration, ug/DSCM *	ND (0.426)	ND (0.534)	ND (5.490)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0363)	ND (0.0455)	ND (0.468)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00458)	ND (0.00573)	ND (0.0589)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (1.350)	ND (1.690)	ND (3.120)	ND (0.000)
Concentration, ppb, Dry	ND (0.0503)	ND (0.0630)	ND (0.116)	ND (0.000)
Concentration, ug/DSCM *	ND (0.559)	ND (0.699)	ND (1.290)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0476)	ND (0.0596)	ND (0.110)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00600)	ND (0.00751)	ND (0.0139)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.220)	ND (0.280)	ND (0.360)	ND (0.000)
Concentration, ppb, Dry	ND (0.00959)	ND (0.0122)	ND (0.0157)	ND (0.000)
Concentration, ug/DSCM *	ND (0.0910)	ND (0.116)	ND (0.149)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00776)	ND (0.00987)	ND (0.0127)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000977)	ND (0.00124)	ND (0.00160)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (0.690)	ND (0.870)	ND (1.660)	ND (0.000)
Concentration, ppb, Dry	ND (0.0271)	ND (0.0342)	ND (0.0653)	ND (0.000)
Concentration, ug/DSCM *	ND (0.286)	ND (0.360)	ND (0.687)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0243)	ND (0.0307)	ND (0.0585)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00307)	ND (0.00386)	ND (0.00737)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-2-S2-MM5-2A

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	ND (0.580)	ND (0.730)	ND (0.400)	ND (0.000)
Concentration, ppb, Dry	ND (0.0148)	ND (0.0186)	ND (0.0102)	ND (0.000)
Concentration, ug/DSCM *	ND (0.240)	ND (0.302)	ND (0.166)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0204)	ND (0.0257)	ND (0.0141)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00258)	ND (0.00324)	ND (0.00178)	ND (0.000)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (2.890)	ND (3.620)	ND (28.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.118)	ND (0.148)	ND (1.150)	ND (0.000)
Concentration, ug/DSCM *	ND (1.200)	ND (1.500)	ND (11.600)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.102)	ND (0.128)	ND (0.991)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0128)	ND (0.0161)	ND (0.125)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-3-S2-MM5-3A

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (2.880)	ND (4.350)	ND (1.910)	ND (0.000)
Concentration, ppb, Dry	ND (0.338)	ND (0.511)	ND (0.224)	ND (0.000)
Concentration, ug/DSCM *	ND (1.040)	ND (1.570)	ND (0.691)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0826)	ND (0.125)	ND (0.0548)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0104)	ND (0.0157)	ND (0.00690)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.910)	ND (1.490)	ND (0.620)	ND (0.000)
Concentration, ppb, Dry	ND (0.0658)	ND (0.108)	ND (0.0449)	ND (0.000)
Concentration, ug/DSCM *	ND (0.329)	ND (0.539)	ND (0.224)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0261)	ND (0.0427)	ND (0.0178)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00329)	ND (0.00538)	ND (0.00224)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.890)	ND (2.930)	ND (1.230)	ND (0.000)
Concentration, ppb, Dry	ND (0.121)	ND (0.187)	ND (0.0785)	ND (0.000)
Concentration, ug/DSCM *	ND (0.683)	ND (1.060)	ND (0.445)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0542)	ND (0.0840)	ND (0.0353)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00683)	ND (0.0106)	ND (0.00444)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.390)	ND (2.520)	ND (1.000)	ND (0.000
Concentration, ppb, Dry	ND (0.0887)	ND (0.161)	ND (0.0638)	ND (0.000)
Concentration, ug/DSCM *	ND (0.503)	ND (0.911)	ND (0.362)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0399)	ND (0.0723)	ND (0.0287)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00502)	ND (0.00910)	ND (0.00361)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (3.230)	ND (1.780)	ND (1.780)	ND (0.000)
Concentration, ppb, Dry	ND (0.286)	ND (0.158)	ND (0.158)	ND (0.000)
Concentration, ug/DSCM *	ND (1.170)	ND (0.644)	ND (0.644)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0926)	ND (0.0510)	ND (0.0510)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0117)	ND (0.00643)	ND (0.00643)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (1.120)	ND (1.850)	ND (0.780)	ND (0.000)
Concentration, ppb, Dry	ND (0.0810)	ND (0.134)	ND (0.0564)	ND (0.000)
Concentration, ug/DSCM *	ND (0.405)	ND (0.669)	ND (0.282)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0321)	ND (0.0530)	ND (0.0224)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00405)	ND (0.00668)	ND (0.00282)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (1.050)	EV [5.860]	ND (0.710)	EV (5.860)
Concentration, ppb, Dry	ND (0.0970)	EV [0.542]	ND (0.0656)	EV (0.542)
Concentration, ug/DSCM *	ND (0.380)	EV [2.120]	ND (0.257)	EV (2.120)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0301)	EV [0.168]	ND (0.0204)	EV (0.168)
Emission Rate, Milligrams/Second	ND (0.00379)	EV [0.0212]	ND (0.00257)	EV (0.0212)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.920)	ND (1.490)	ND (0.610)	ND (0.000)
Concentration, ppb, Dry	ND (0.0632)	ND (0.102)	ND (0.0419)	ND (0.000)
Concentration, ug/DSCM *	ND (0.333)	ND (0.539)	ND (0.221)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0264)	ND (0.0427)	ND (0.0175)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00332)	ND (0.00538)	ND (0.00220)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.420)	ND (2.230)	ND (0.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.0864)	ND (0.136)	ND (0.0566)	ND (0.000)
Concentration, ug/DSCM *	ND (0.513)	ND (0.806)	ND (0.336)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0407)	ND (0.0639)	ND (0.0267)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00513)	ND (0.00806)	ND (0.00336)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (2.970)	ND (4.730)	ND (2.010)	ND (0.000)
Concentration, ppb, Dry	ND (0.222)	ND (0.354)	ND (0.151)	ND (0.000)
Concentration, ug/DSCM *	ND (1.070)	ND (1.710)	ND (0.727)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0852)	ND (0.136)	ND (0.0576)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0107)	ND (0.0171)	ND (0.00726)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.640)	ND (2.590)	ND (1.060)	ND (0.000)
Concentration, ppb, Dry	ND (0.0970)	ND (0.153)	ND (0.0627)	ND (0.000)
Concentration, ug/DSCM *	ND (0.593)	ND (0.936)	ND (0.383)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0470)	ND (0.0743)	ND (0.0304)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00592)	ND (0.00936)	ND (0.00383)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (1.010)	ND (1.690)	ND (0.690)	ND (0.000)
Concentration, ppb, Dry	ND (0.0654)	ND (0.110)	ND (0.0447)	ND (0.000)
Concentration, ug/DSCM *	ND (0.365)	ND (0.611)	ND (0.249)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0290)	ND (0.0485)	ND (0.0198)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00365)	ND (0.00611)	ND (0.00249)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.380)	ND (2.220)	ND (0.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.0991)	ND (0.159)	ND (0.0668)	ND (0.000)
Concentration, ug/DSCM *	ND (0.499)	ND (0.803)	ND (0.336)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0396)	ND (0.0637)	ND (0.0267)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00499)	ND (0.00802)	ND (0.00336)	ND (0.000)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (5.290)	ND (8.270)	ND (3.420)	ND (0.000)
Concentration, ppb, Dry	ND (0.195)	ND (0.304)	ND (0.126)	ND (0.000)
Concentration, ug/DSCM *	ND (1.910)	ND (2.990)	ND (1.240)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.152)	ND (0.237)	ND (0.0981)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0191)	ND (0.0299)	ND (0.0124)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (4.020)	ND (6.470)	ND (2.670)	ND (0.000)
Concentration, ppb, Dry	ND (0.148)	ND (0.238)	ND (0.0981)	ND (0.000)
Concentration, ug/DSCM *	ND (1.450)	ND (2.340)	ND (0.965)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.115)	ND (0.186)	ND (0.0766)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0145)	ND (0.0234)	ND (0.00965)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (2.200)	ND (2.150)	ND (1.430)	ND (0.000)
Concentration, ppb, Dry	ND (0.179)	ND (0.175)	ND (0.116)	ND (0.000)
Concentration, ug/DSCM *	ND (0.795)	ND (0.777)	ND (0.517)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0631)	ND (0.0616)	ND (0.0410)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00795)	ND (0.00777)	ND (0.00517)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.760)	ND (2.790)	ND (1.200)	ND (0.000)
Concentration, ppb, Dry	ND (0.142)	ND (0.224)	ND (0.0965)	ND (0.000)
Concentration, ug/DSCM *	ND (0.636)	ND (1.010)	ND (0.434)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0505)	ND (0.0800)	ND (0.0344)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00636)	ND (0.0101)	ND (0.00434)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (1.110)	ND (1.680)	ND (0.730)	ND (0.000)
Concentration, ppb, Dry	ND (0.0753)	ND (0.114)	ND (0.0495)	ND (0.000)
Concentration, ug/DSCM *	ND (0.401)	ND (0.607)	ND (0.264)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0318)	ND (0.0482)	ND (0.0209)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00401)	ND (0.00607)	ND (0.00264)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-3-S2-MM5-3A

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (2.130)	ND (2.590)	ND (1.380)	ND (0.000)
Concentration, ppb, Dry	ND (0.153)	ND (0.186)	ND (0.0990)	ND (0.000)
Concentration, ug/DSCM *	ND (0.770)	ND (0.936)	ND (0.499)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0611)	ND (0.0743)	ND (0.0396)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00770)	ND (0.00936)	ND (0.00499)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.760)	ND (1.220)	ND (0.510)	ND (0.000)
Concentration, ppb, Dry	ND (0.0478)	ND (0.0768)	ND (0.0321)	ND (0.000)
Concentration, ug/DSCM *	ND (0.275)	ND (0.441)	ND (0.184)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0218)	ND (0.0350)	ND (0.0146)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00275)	ND (0.00441)	ND (0.00184)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.630)	ND (2.560)	ND (1.090)	ND (0.000)
Concentration, ppb, Dry	ND (0.131)	ND (0.206)	ND (0.0877)	ND (0.000)
Concentration, ug/DSCM *	ND (0.589)	ND (0.926)	ND (0.394)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0467)	ND (0.0734)	ND (0.0313)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00589)	ND (0.00925)	ND (0.00394)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (2.070)	ND (3.190)	ND (1.370)	ND (0.000)
Concentration, ppb, Dry	ND (0.0992)	ND (0.153)	ND (0.0657)	ND (0.000)
Concentration, ug/DSCM *	ND (0.748)	ND (1.150)	ND (0.495)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0594)	ND (0.0915)	ND (0.0393)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00748)	ND (0.0115)	ND (0.00495)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (3.060)	ND (5.030)	ND (2.080)	ND (0.000)
Concentration, ppb, Dry	ND (0.173)	ND (0.284)	ND (0.117)	ND (0.000)
Concentration, ug/DSCM *	ND (1.110)	ND (1.820)	ND (0.752)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0877)	ND (0.144)	ND (0.0596)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.0182)	ND (0.00751)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.630)	EV [4.480]	ND (0.420)	EV (4.480)
Concentration, ppb, Dry	ND (0.0428)	EV [0.304]	ND (0.0285)	EV (0.304)
Concentration, ug/DSCM *	ND (0.228)	EV [1.620]	ND (0.152)	EV (1.620)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0181)	EV [0.128]	ND (0.0120)	EV (0.128)
Emission Rate, Milligrams/Second	ND (0.00228)	EV [0.0162]	ND (0.00152)	EV (0.0162)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (6.970)	ND (5.010)	ND (2.060)	ND (0.000)
Concentration, ppb, Dry	ND (0.492)	ND (0.354)	ND (0.145)	ND (0.000)
Concentration, ug/DSCM *	ND (2.520)	ND (1.810)	ND (0.745)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.200)	ND (0.144)	ND (0.0591)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0252)	ND (0.0181)	ND (0.00744)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (5.140)	ND (7.880)	ND (3.430)	ND (0.000)
Concentration, ppb, Dry	ND (0.171)	ND (0.263)	ND (0.114)	ND (0.000)
Concentration, ug/DSCM *	ND (1.860)	ND (2.850)	ND (1.240)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.147)	ND (0.226)	ND (0.0983)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0186)	ND (0.0285)	ND (0.0124)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.980)	ND (1.590)	ND (0.650)	ND (0.000)
Concentration, ppb, Dry	ND (0.0551)	ND (0.0895)	ND (0.0366)	ND (0.000)
Concentration, ug/DSCM *	ND (0.354)	ND (0.575)	ND (0.235)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0281)	ND (0.0456)	ND (0.0186)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00354)	ND (0.00574)	ND (0.00235)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (2.430)	ND (3.710)	ND (1.560)	ND (0.000)
Concentration, ppb, Dry	ND (0.108)	ND (0.165)	ND (0.0694)	ND (0.000)
Concentration, ug/DSCM *	ND (0.879)	ND (1.340)	ND (0.564)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0697)	ND (0.106)	ND (0.0447)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00878)	ND (0.0134)	ND (0.00564)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (2.030)	ND (2.520)	ND (1.960)	ND (0.000)
Concentration, ppb, Dry	ND (0.118)	ND (0.147)	ND (0.114)	ND (0.000)
Concentration, ug/DSCM *	ND (0.734)	ND (0.911)	ND (0.709)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0582)	ND (0.0723)	ND (0.0562)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00733)	ND (0.00910)	ND (0.00708)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-3-S2-MM5-3A

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.860)	ND (4.280)	ND (6.130)	ND (0.000)
Concentration, ppb, Dry	ND (0.471)	ND (0.344)	ND (0.493)	ND (0.000)
Concentration, ug/DSCM *	ND (2.120)	ND (1.550)	ND (2.220)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.168)	ND (0.123)	ND (0.176)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0212)	ND (0.0155)	ND (0.0221)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (3.610)	ND (10.430)	ND (3.840)	ND (0.000)
Concentration, ppb, Dry	ND (0.0962)	ND (0.278)	ND (0.102)	ND (0.000)
Concentration, ug/DSCM *	ND (1.310)	ND (3.770)	ND (1.390)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.299)	ND (0.110)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.0377)	ND (0.0139)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (1.090)	ND (1.760)	ND (0.720)	ND (0.000)
Concentration, ppb, Dry	ND (0.0639)	ND (0.103)	ND (0.0422)	ND (0.000)
Concentration, ug/DSCM *	ND (0.394)	ND (0.636)	ND (0.260)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0313)	ND (0.0505)	ND (0.0206)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00394)	ND (0.00636)	ND (0.00260)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (4.820)	ND (10.880)	ND (3.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.154)	ND (0.347)	ND (0.118)	ND (0.000)
Concentration, ug/DSCM *	ND (1.740)	ND (3.930)	ND (1.340)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.138)	ND (0.312)	ND (0.106)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0174)	ND (0.0393)	ND (0.0134)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (18.080)	ND (0.000)	ND (18.790)	ND (0.000)
Concentration, ppb, Dry	ND (1.060)	ND (0.000)	ND (1.100)	ND (0.000)
Concentration, ug/DSCM *	ND (6.540)	ND (0.000)	ND (6.790)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.518)	ND (0.000)	ND (0.539)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0653)	ND (0.000)	ND (0.0679)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.360)	ND (5.670)	ND (2.320)	ND (0.000)
Concentration, ppb, Dry	ND (0.148)	ND (0.250)	ND (0.102)	ND (0.000)
Concentration, ug/DSCM *	ND (1.210)	ND (2.050)	ND (0.839)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0963)	ND (0.163)	ND (0.0665)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0121)	ND (0.0205)	ND (0.00838)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-3-S2-MM5-3A

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.180)	ND (5.070)	ND (2.320)	ND (0.000)
Concentration, ppb, Dry	ND (0.140)	ND (0.223)	ND (0.102)	ND (0.000)
Concentration, ug/DSCM *	ND (1.150)	ND (1.830)	ND (0.839)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0912)	ND (0.145)	ND (0.0665)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0115)	ND (0.0183)	ND (0.00838)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (22.360)	ND (13.950)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (1.590)	ND (0.993)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (8.080)	ND (5.040)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.641)	ND (0.400)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0808)	ND (0.0504)	ND (0.000)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.210)	ND (3.870)	ND (2.230)	ND (0.000)
Concentration, ppb, Dry	ND (0.118)	ND (0.207)	ND (0.119)	ND (0.000)
Concentration, ug/DSCM *	ND (0.799)	ND (1.400)	ND (0.806)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0634)	ND (0.111)	ND (0.0639)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00798)	ND (0.0140)	ND (0.00806)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (4.420)	ND (7.010)	ND (3.090)	ND (0.000)
Concentration, ppb, Dry	ND (0.236)	ND (0.374)	ND (0.165)	ND (0.000)
Concentration, ug/DSCM *	ND (1.600)	ND (2.530)	ND (1.120)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.127)	ND (0.201)	ND (0.0886)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0160)	ND (0.0253)	ND (0.0112)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.770)	ND (4.910)	ND (2.020)	ND (0.000)
Concentration, ppb, Dry	ND (0.148)	ND (0.262)	ND (0.108)	ND (0.000)
Concentration, ug/DSCM *	ND (1.000)	ND (1.780)	ND (0.730)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0794)	ND (0.141)	ND (0.0579)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0100)	ND (0.0177)	ND (0.00730)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.630)	ND (4.560)	ND (1.900)	ND (0.000)
Concentration, ppb, Dry	ND (0.140)	ND (0.243)	ND (0.101)	ND (0.000)
Concentration, ug/DSCM *	ND (0.951)	ND (1.650)	ND (0.687)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0754)	ND (0.131)	ND (0.0545)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00950)	ND (0.0165)	ND (0.00686)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-1-S2-MM5-1A

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (3.300)	ND (9.670)	ND (1.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.387)	ND (1.140)	ND (0.218)	ND (0.000)
Concentration, ug/DSCM *	ND (1.190)	ND (3.500)	ND (0.672)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0957)	ND (0.281)	ND (0.0540)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0121)	ND (0.0353)	ND (0.00680)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (1.040)	ND (3.310)	ND (0.610)	ND (0.000)
Concentration, ppb, Dry	ND (0.0752)	ND (0.239)	ND (0.0441)	ND (0.000)
Concentration, ug/DSCM *	ND (0.376)	ND (1.200)	ND (0.221)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0302)	ND (0.0960)	ND (0.0177)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00380)	ND (0.0121)	ND (0.00223)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (2.160)	ND (6.520)	ND (1.200)	ND (0.000)
Concentration, ppb, Dry	ND (0.138)	ND (0.416)	ND (0.0766)	ND (0.000)
Concentration, ug/DSCM *	ND (0.781)	ND (2.360)	ND (0.434)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0627)	ND (0.189)	ND (0.0348)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00790)	ND (0.0238)	ND (0.00439)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.590)	ND (5.600)	ND (0.970)	ND (0.000)
Concentration, ppb, Dry	ND (0.102)	ND (0.357)	ND (0.0619)	ND (0.000)
Concentration, ug/DSCM *	ND (0.575)	ND (2.020)	ND (0.351)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0461)	ND (0.162)	ND (0.0281)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00581)	ND (0.0205)	ND (0.00355)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (3.700)	ND (3.950)	ND (1.730)	ND (0.000)
Concentration, ppb, Dry	ND (0.328)	ND (0.350)	ND (0.153)	ND (0.000)
Concentration, ug/DSCM *	ND (1.340)	ND (1.430)	ND (0.625)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.107)	ND (0.115)	ND (0.0502)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0135)	ND (0.0144)	ND (0.00632)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (1.280)	ND (4.130)	ND (0.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.0926)	ND (0.299)	ND (0.0550)	ND (0.000)
Concentration, ug/DSCM *	ND (0.463)	ND (1.490)	ND (0.275)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0371)	ND (0.120)	ND (0.0220)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00468)	ND (0.0151)	ND (0.00278)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-3-S2-MM5-3A

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.090)	ND (1.860)	ND (0.750)	ND (0.000)
Concentration, ppb, Dry	ND (0.0582)	ND (0.0992)	ND (0.0400)	ND (0.000)
Concentration, ug/DSCM *	ND (0.394)	ND (0.672)	ND (0.271)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0313)	ND (0.0533)	ND (0.0215)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00394)	ND (0.00672)	ND (0.00271)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (0.990)	EV [16.250]	ND (0.710)	EV (16.250)
Concentration, ppb, Dry	ND (0.0524)	EV [0.860]	ND (0.0376)	EV (0.860)
Concentration, ug/DSCM *	ND (0.358)	EV [5.880]	ND (0.257)	EV (5.880)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0284)	EV [0.466]	ND (0.0204)	EV (0.466)
Emission Rate, Milligrams/Second	ND (0.00358)	EV [0.0587]	ND (0.00257)	EV (0.0587)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.910)	ND (1.490)	ND (0.610)	ND (0.000)
Concentration, ppb, Dry	ND (0.0408)	ND (0.0667)	ND (0.0273)	ND (0.000)
Concentration, ug/DSCM *	ND (0.329)	ND (0.539)	ND (0.221)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0261)	ND (0.0427)	ND (0.0175)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00329)	ND (0.00538)	ND (0.00220)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (2.910)	ND (4.750)	ND (1.890)	ND (0.000)
Concentration, ppb, Dry	ND (0.139)	ND (0.227)	ND (0.0903)	ND (0.000)
Concentration, ug/DSCM *	ND (1.050)	ND (1.720)	ND (0.683)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0834)	ND (0.136)	ND (0.0542)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0105)	ND (0.0172)	ND (0.00683)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (10.000)	ND (9.930)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.472)	ND (0.469)	ND (0.236)	ND (0.000)
Concentration, ug/DSCM *	ND (3.620)	ND (3.590)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.287)	ND (0.285)	ND (0.143)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0361)	ND (0.0359)	ND (0.0181)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (6.890)	ND (7.150)	ND (3.600)	ND (0.000)
Concentration, ppb, Dry	ND (0.302)	ND (0.314)	ND (0.158)	ND (0.000)
Concentration, ug/DSCM *	ND (2.490)	ND (2.590)	ND (1.300)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.198)	ND (0.205)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0249)	ND (0.0258)	ND (0.0130)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (5.030)	ND (6.460)	ND (3.300)	ND (0.000)
Concentration, ppb, Dry	ND (0.260)	ND (0.334)	ND (0.171)	ND (0.000)
Concentration, ug/DSCM *	ND (1.820)	ND (2.340)	ND (1.190)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.144)	ND (0.185)	ND (0.0946)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0182)	ND (0.0233)	ND (0.0119)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (4.510)	ND (2.290)	ND (1.020)	ND (0.000)
Concentration, ppb, Dry	ND (0.282)	ND (0.143)	ND (0.0638)	ND (0.000)
Concentration, ug/DSCM *	ND (1.630)	ND (0.828)	ND (0.369)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.129)	ND (0.0657)	ND (0.0292)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0163)	ND (0.00827)	ND (0.00369)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (7.000)	ND (11.700)	ND (4.770)	ND (0.000)
Concentration, ppb, Dry	ND (0.182)	ND (0.304)	ND (0.124)	ND (0.000)
Concentration, ug/DSCM *	ND (2.530)	ND (4.230)	ND (1.720)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.201)	ND (0.335)	ND (0.137)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0253)	ND (0.0423)	ND (0.0172)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (3.830)	ND (6.070)	ND (2.660)	ND (0.000)
Concentration, ppb, Dry	ND (0.117)	ND (0.185)	ND (0.0812)	ND (0.000)
Concentration, ug/DSCM *	ND (1.380)	ND (2.190)	ND (0.962)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.110)	ND (0.174)	ND (0.0763)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0138)	ND (0.0219)	ND (0.00961)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.660)	ND (1.490)	ND (1.130)	ND (0.000)
Concentration, ppb, Dry	ND (0.0853)	ND (0.0766)	ND (0.0581)	ND (0.000)
Concentration, ug/DSCM *	ND (0.600)	ND (0.539)	ND (0.409)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0476)	ND (0.0427)	ND (0.0324)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00600)	ND (0.00538)	ND (0.00408)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (6.220)	ND (8.310)	ND (4.550)	ND (0.000)
Concentration, ppb, Dry	ND (0.203)	ND (0.271)	ND (0.149)	ND (0.000)
Concentration, ug/DSCM *	ND (2.250)	ND (3.000)	ND (1.650)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.178)	ND (0.238)	ND (0.130)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0225)	ND (0.0300)	ND (0.0164)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

I-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (10.260)	ND (13.460)	ND (6.800)	ND (0.000)
Concentration, ppb, Dry	ND (0.302)	ND (0.396)	ND (0.200)	ND (0.000)
Concentration, ug/DSCM *	ND (3.710)	ND (4.870)	ND (2.460)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.294)	ND (0.386)	ND (0.195)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0371)	ND (0.0486)	ND (0.0246)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (2.100)	ND (2.850)	ND (1.390)	ND (0.000)
Concentration, ppb, Dry	ND (0.0917)	ND (0.124)	ND (0.0607)	ND (0.000)
Concentration, ug/DSCM *	ND (0.759)	ND (1.030)	ND (0.503)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0602)	ND (0.0817)	ND (0.0399)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00759)	ND (0.0103)	ND (0.00502)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	EV [18.410]	ND (0.660)	ND (0.310)	EV (18.410)
Concentration, ppb, Dry	EV [0.575]	ND (0.0206)	ND (0.00969)	EV (0.575)
Concentration, ug/DSCM *	EV [6.660]	ND (0.239)	ND (0.112)	EV (6.660)
Emission Rate, 1,000 * (Pounds/Hour)	EV [0.528]	ND (0.0189)	ND (0.00889)	EV (0.528)
Emission Rate, Milligrams/Second	EV [0.0665]	ND (0.00238)	ND (0.00112)	EV (0.0665)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.470)	ND (0.740)	ND (0.330)	ND (0.000)
Concentration, ppb, Dry	ND (0.0202)	ND (0.0318)	ND (0.0142)	ND (0.000)
Concentration, ug/DSCM *	ND (0.170)	ND (0.268)	ND (0.119)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0135)	ND (0.0212)	ND (0.00946)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00170)	ND (0.00267)	ND (0.00119)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (16.630)	ND (5.010)	ND (20.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.785)	ND (0.237)	ND (0.949)	ND (0.000)
Concentration, ug/DSCM *	ND (6.010)	ND (1.810)	ND (7.270)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.477)	ND (0.144)	ND (0.576)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0601)	ND (0.0181)	ND (0.0726)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (12.560)	ND (5.590)	ND (10.330)	ND (0.000)
Concentration, ppb, Dry	ND (0.551)	ND (0.245)	ND (0.453)	ND (0.000)
Concentration, ug/DSCM *	ND (4.540)	ND (2.020)	ND (3.730)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.360)	ND (0.160)	ND (0.296)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0454)	ND (0.0202)	ND (0.0373)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (1.870)	ND (2.620)	ND (1.350)	ND (0.000)
Concentration, ppb, Dry	ND (0.0722)	ND (0.101)	ND (0.0521)	ND (0.000)
Concentration, ug/DSCM *	ND (0.676)	ND (0.947)	ND (0.488)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0536)	ND (0.0751)	ND (0.0387)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00676)	ND (0.00947)	ND (0.00488)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.710)	ND (1.240)	ND (0.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0198)	ND (0.0345)	ND (0.0139)	ND (0.000)
Concentration, ug/DSCM *	ND (0.257)	ND (0.448)	ND (0.181)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0204)	ND (0.0356)	ND (0.0143)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00257)	ND (0.00448)	ND (0.00181)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (6.830)	ND (2.290)	ND (11.910)	ND (0.000)
Concentration, ppb, Dry	ND (0.280)	ND (0.0938)	ND (0.488)	ND (0.000)
Concentration, ug/DSCM *	ND (2.470)	ND (0.828)	ND (4.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.196)	ND (0.0657)	ND (0.341)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0247)	ND (0.00827)	ND (0.0430)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (3.750)	ND (4.010)	ND (2.800)	ND (0.000)
Concentration, ppb, Dry	ND (0.122)	ND (0.131)	ND (0.0912)	ND (0.000)
Concentration, ug/DSCM *	ND (1.360)	ND (1.450)	ND (1.010)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.108)	ND (0.115)	ND (0.0803)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0135)	ND (0.0145)	ND (0.0101)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.450)	ND (0.770)	ND (0.320)	ND (0.000)
Concentration, ppb, Dry	ND (0.0171)	ND (0.0293)	ND (0.0122)	ND (0.000)
Concentration, ug/DSCM *	ND (0.163)	ND (0.278)	ND (0.116)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0129)	ND (0.0221)	ND (0.00918)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00163)	ND (0.00278)	ND (0.00116)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (1.930)	ND (2.320)	ND (1.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.0663)	ND (0.0797)	ND (0.0512)	ND (0.000)
Concentration, ug/DSCM *	ND (0.698)	ND (0.839)	ND (0.539)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0553)	ND (0.0665)	ND (0.0427)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00697)	ND (0.00838)	ND (0.00538)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-3-S2-MM5-3A

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	ND (0.470)	EV [49.010]	ND (0.360)	EV (49.010)
Concentration, ppb, Dry	ND (0.0105)	EV [1.090]	ND (0.00802)	EV (1.090)
Concentration, ug/DSCM *	ND (0.170)	EV [17.700]	ND (0.130)	EV (17.700)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0135)	EV [1.410]	ND (0.0103)	EV (1.410)
Emission Rate, Milligrams/Second	ND (0.00170)	EV [0.177]	ND (0.00130)	EV (0.177)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (19.820)	ND (5.500)	ND (25.240)	ND (0.000)
Concentration, ppb, Dry	ND (0.706)	ND (0.196)	ND (0.899)	ND (0.000)
Concentration, ug/DSCM *	ND (7.170)	ND (1.990)	ND (9.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.568)	ND (0.158)	ND (0.724)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0716)	ND (0.0199)	ND (0.0912)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

I-3-S2-MM5-3A

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (1.940)	ND (4.620)	ND (4.050)	ND (0.000)
Concentration, ppb, Dry	ND (0.155)	ND (0.370)	ND (0.324)	ND (0.000)
Concentration, ug/DSCM *	ND (0.478)	ND (1.140)	ND (0.999)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0340)	ND (0.0809)	ND (0.0709)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00428)	ND (0.0102)	ND (0.00893)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.610)	ND (1.580)	ND (1.320)	ND (0.000)
Concentration, ppb, Dry	ND (0.0301)	ND (0.0780)	ND (0.0651)	ND (0.000)
Concentration, ug/DSCM *	ND (0.150)	ND (0.390)	ND (0.325)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0107)	ND (0.0277)	ND (0.0231)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00135)	ND (0.00348)	ND (0.00291)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.270)	ND (3.120)	ND (2.570)	ND (0.000)
Concentration, ppb, Dry	ND (0.0553)	ND (0.136)	ND (0.112)	ND (0.000)
Concentration, ug/DSCM *	ND (0.313)	ND (0.769)	ND (0.634)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0222)	ND (0.0546)	ND (0.0450)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00280)	ND (0.00688)	ND (0.00567)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (0.930)	ND (2.680)	ND (2.090)	ND (0.000)
Concentration, ppb, Dry	ND (0.0405)	ND (0.117)	ND (0.0910)	ND (0.000)
Concentration, ug/DSCM *	ND (0.229)	ND (0.661)	ND (0.515)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0163)	ND (0.0469)	ND (0.0366)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00205)	ND (0.00591)	ND (0.00461)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (2.170)	ND (1.890)	ND (2.360)	ND (0.000)
Concentration, ppb, Dry	ND (0.131)	ND (0.114)	ND (0.143)	ND (0.000)
Concentration, ug/DSCM *	ND (0.535)	ND (0.466)	ND (0.582)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0380)	ND (0.0331)	ND (0.0413)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00479)	ND (0.00417)	ND (0.00521)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.750)	ND (1.970)	ND (1.670)	ND (0.000)
Concentration, ppb, Dry	ND (0.0370)	ND (0.0972)	ND (0.0824)	ND (0.000)
Concentration, ug/DSCM *	ND (0.185)	ND (0.486)	ND (0.412)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0131)	ND (0.0345)	ND (0.0292)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00165)	ND (0.00435)	ND (0.00368)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1A

	FH	BH	Im	TOTA.
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.700)	ND (1.820)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0441)	ND (0.115)	ND (0.0945)	ND (0.000)
Concentration, ug/DSCM *	ND (0.173)	ND (0.449)	ND (0.370)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0123)	ND (0.0319)	ND (0.0263)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00154)	ND (0.00401)	ND (0.00331)	ND (0.000)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.620)	ND (1.580)	ND (1.300)	ND (0.000)
Concentration, ppb, Dry	ND (0.0290)	ND (0.0740)	ND (0.0609)	ND (0.000)
Concentration, ug/DSCM *	ND (0.153)	ND (0.390)	ND (0.321)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0109)	ND (0.0277)	ND (0.0228)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00137)	ND (0.00348)	ND (0.00287)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (0.950)	ND (2.370)	ND (1.940)	ND (0.000)
Concentration, ppb, Dry	ND (0.0394)	ND (0.0983)	ND (0.0805)	ND (0.000)
Concentration, ug/DSCM *	ND (0.234)	ND (0.584)	ND (0.478)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0166)	ND (0.0415)	ND (0.0340)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00210)	ND (0.00523)	ND (0.00428)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (1.990)	ND (5.030)	ND (4.190)	ND (0.000
Concentration, ppb, Dry	ND (0.102)	ND (0.257)	ND (0.214)	ND (0.000)
Concentration, ug/DSCM *	ND (0.491)	ND (1.240)	ND (1.030)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0348)	ND (0.0881)	ND (0.0733)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00439)	ND (0.0111)	ND (0.00924)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.100)	ND (2.750)	ND (2.270)	ND (0.000)
Concentration, ppb, Dry	ND (0.0444)	ND (0.111)	ND (0.0916)	ND (0.000)
Concentration, ug/DSCM *	ND (0.271)	ND (0.678)	ND (0.560)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0193)	ND (0.0481)	ND (0.0397)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00243)	ND (0.00607)	ND (0.00501)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (0.680)	ND (1.790)	ND (1.480)	ND (0.000)
Concentration, ppb, Dry	ND (0.0300)	ND (0.0791)	ND (0.0654)	ND (0.000)
Concentration, ug/DSCM *	ND (0.168)	ND (0.441)	ND (0.365)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0119)	ND (0.0313)	ND (0.0259)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00150)	ND (0.00395)	ND (0.00326)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (0.930)	ND (2.360)	ND (1.940)	ND (0.000)
Concentration, ppb, Dry	ND (0.0455)	ND (0.116)	ND (0.0950)	ND (0.000)
Concentration, ug/DSCM *	ND (0.229)	ND (0.582)	ND (0.478)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0163)	ND (0.0413)	ND (0.0340)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00205)	ND (0.00521)	ND (0.00428)	ND (0.000)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (3.550)	ND (8.790)	ND (7.340)	ND (0.000)
Concentration, ppb, Dry	ND (0.0891)	ND (0.221)	ND (0.184)	ND (0.000)
Concentration, ug/DSCM *	ND (0.875)	ND (2.170)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0621)	ND (0.154)	ND (0.128)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00783)	ND (0.0194)	ND (0.0162)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (2.700)	ND (6.880)	ND (5.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.0676)	ND (0.172)	ND (0.142)	ND (0.000)
Concentration, ug/DSCM *	ND (0.666)	ND (1.700)	ND (1.400)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0473)	ND (0.120)	ND (0.0994)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00596)	ND (0.0152)	ND (0.0125)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (1.480)	ND (2.290)	ND (2.370)	ND (0.000)
Concentration, ppb, Dry	ND (0.0819)	ND (0.127)	ND (0.131)	ND (0.000)
Concentration, ug/DSCM *	ND (0.365)	ND (0.565)	ND (0.584)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0259)	ND (0.0401)	ND (0.0415)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00326)	ND (0.00505)	ND (0.00523)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.180)	ND (2.970)	ND (2.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.0647)	ND (0.163)	ND (0.137)	ND (0.000)
Concentration, ug/DSCM *	ND (0.291)	ND (0.732)	ND (0.614)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0207)	ND (0.0520)	ND (0.0436)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00260)	ND (0.00655)	ND (0.00549)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (0.750)	ND (1.780)	ND (1.550)	ND (0.000)
Concentration, ppb, Dry	ND (0.0347)	ND (0.0824)	ND (0.0717)	ND (0.000)
Concentration, ug/DSCM *	ND (0.185)	ND (0.439)	ND (0.382)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0131)	ND (0.0312)	ND (0.0271)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00165)	ND (0.00393)	ND (0.00342)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1A

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (1.430)	ND (2.750)	ND (2.780)	ND (0.000)
Concentration, ppb, Dry	ND (0.0700)	ND (0.135)	ND (0.136)	ND (0.000)
Concentration, ug/DSCM *	ND (0.353)	ND (0.678)	ND (0.685)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0250)	ND (0.0481)	ND (0.0487)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00315)	ND (0.00607)	ND (0.00613)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.510)	ND (1.300)	ND (1.080)	ND (0.000)
Concentration, ppb, Dry	ND (0.0219)	ND (0.0558)	ND (0.0463)	ND (0.000)
Concentration, ug/DSCM *	ND (0.126)	ND (0.321)	ND (0.266)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00893)	ND (0.0228)	ND (0.0189)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00112)	ND (0.00287)	ND (0.00238)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.100)	ND (2.720)	ND (2.300)	ND (0.000)
Concentration, ppb, Dry	ND (0.0603)	ND (0.149)	ND (0.126)	ND (0.000)
Concentration, ug/DSCM *	ND (0.271)	ND (0.671)	ND (0.567)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0193)	ND (0.0476)	ND (0.0403)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00243)	ND (0.00600)	ND (0.00507)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (1.390)	ND (3.390)	ND (2.830)	ND (0.000)
Concentration, ppb, Dry	ND (0.0454)	ND (0.111)	ND (0.0925)	ND (0.000)
Concentration, ug/DSCM *	ND (0.343)	ND (0.836)	ND (0.698)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0243)	ND (0.0593)	ND (0.0495)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00307)	ND (0.00748)	ND (0.00624)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (2.060)	ND (5.340)	ND (4.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0792)	ND (0.205)	ND (0.173)	ND (0.000)
Concentration, ug/DSCM *	ND (0.508)	ND (1.320)	ND (1.110)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0361)	ND (0.0935)	ND (0.0788)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00454)	ND (0.0118)	ND (0.00993)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.420)	ND (1.050)	ND (0.870)	ND (0.000)
Concentration, ppb, Dry	ND (0.0194)	ND (0.0486)	ND (0.0403)	ND (0.000)
Concentration, ug/DSCM *	ND (0.104)	ND (0.259)	ND (0.214)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00735)	ND (0.0184)	ND (0.0152)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000926)	ND (0.00232)	ND (0.00192)	ND (0.000)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (4.680)	ND (5.330)	ND (4.480)	ND (0.000)
Concentration, ppb, Dry	ND (0.225)	ND (0.257)	ND (0.216)	ND (0.000)
Concentration, ug/DSCM *	ND (1.150)	ND (1.310)	ND (1.100)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0819)	ND (0.0933)	ND (0.0784)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0103)	ND (0.0118)	ND (0.00988)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (3.450)	ND (8.380)	ND (6.970)	ND (0.000)
Concentration, ppb, Dry	ND (0.0785)	ND (0.191)	ND (0.159)	ND (0.000)
Concentration, ug/DSCM *	ND (0.851)	ND (2.070)	ND (1.720)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0604)	ND (0.147)	ND (0.122)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00761)	ND (0.0185)	ND (0.0154)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.660)	ND (1.690)	ND (1.390)	ND (0.000)
Concentration, ppb, Dry	ND (0.0253)	ND (0.0648)	ND (0.0533)	ND (0.000)
Concentration, ug/DSCM *	ND (0.163)	ND (0.417)	ND (0.343)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0116)	ND (0.0296)	ND (0.0243)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00146)	ND (0.00373)	ND (0.00307)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (1.630)	ND (3.940)	ND (3.330)	ND (0.000)
Concentration, ppb, Dry	ND (0.0495)	ND (0.120)	ND (0.101)	ND (0.000)
Concentration, ug/DSCM *	ND (0.402)	ND (0.971)	ND (0.821)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0285)	ND (0.0690)	ND (0.0583)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00360)	ND (0.00869)	ND (0.00734)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (1.360)	ND (2.680)	ND (2.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.0540)	ND (0.107)	ND (0.105)	ND (0.000)
Concentration, ug/DSCM *	ND (0.335)	ND (0.661)	ND (0.648)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0238)	ND (0.0469)	ND (0.0460)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00300)	ND (0.00591)	ND (0.00580)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1A

	FH	BH	Im	TOTAl
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (3.930)	ND (4.540)	ND (5.240)	ND (0.000)
Concentration, ppb, Dry	ND (0.216)	ND (0.249)	ND (0.287)	ND (0.000)
Concentration, ug/DSCM *	ND (0.969)	ND (1.120)	ND (1.290)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0688)	ND (0.0795)	ND (0.0917)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00867)	ND (0.0100)	ND (0.0116)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (2.420)	ND (11.090)	ND (9.020)	ND (0.000)
Concentration, ppb, Dry	ND (0.0440)	ND (0.202)	ND (0.164)	ND (0.000)
Concentration, ug/DSCM *	ND (0.597)	ND (2.730)	ND (2.220)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0424)	ND (0.194)	ND (0.158)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00534)	ND (0.0245)	ND (0.0199)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (0.730)	ND (1.870)	ND (1.540)	ND (0.000)
Concentration, ppb, Dry	ND (0.0292)	ND (0.0748)	ND (0.0616)	ND (0.000)
Concentration, ug/DSCM *	ND (0.180)	ND (0.461)	ND (0.380)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0128)	ND (0.0327)	ND (0.0270)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00161)	ND (0.00412)	ND (0.00340)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (3.280)	ND (11.700)	ND (8.970)	ND (0.000)
Concentration, ppb, Dry	ND (0.0713)	ND (0.254)	ND (0.195)	ND (0.000)
Concentration, ug/DSCM *	ND (0.809)	ND (2.880)	ND (2.210)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0574)	ND (0.205)	ND (0.157)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00723)	ND (0.0258)	ND (0.0198)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (12.290)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.492)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (3.030)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.215)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0271)	ND (0.000)	ND (0.000)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.280)	ND (6.100)	ND (4.800)	ND (0.000)
Concentration, ppb, Dry	ND (0.0685)	ND (0.183)	ND (0.144)	ND (0.000)
Concentration, ug/DSCM *	ND (0.562)	ND (1.500)	ND (1.180)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0399)	ND (0.107)	ND (0.0840)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00503)	ND (0.0135)	ND (0.0106)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1A

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.160)	ND (5.450)	ND (4.800)	ND (0.000)
Concentration, ppb, Dry	ND (0.0649)	ND (0.164)	ND (0.144)	ND (0.000)
Concentration, ug/DSCM *	ND (0.533)	ND (1.340)	ND (1.180)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0378)	ND (0.0954)	ND (0.0840)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00476)	ND (0.0120)	ND (0.0106)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (15.200)	ND (15.000)	ND (23.560)	ND (0.000)
Concentration, ppb, Dry	ND (0.738)	ND (0.728)	ND (1.140)	ND (0.000)
Concentration, ug/DSCM *	ND (3.750)	ND (3.700)	ND (5.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.266)	ND (0.263)	ND (0.412)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0335)	ND (0.0331)	ND (0.0520)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.500)	ND (4.160)	ND (5.140)	ND (0.000)
Concentration, ppb, Dry	ND (0.0546)	ND (0.151)	ND (0.187)	ND (0.000)
Concentration, ug/DSCM *	ND (0.370)	ND (1.030)	ND (1.270)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0263)	ND (0.0728)	ND (0.0900)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00331)	ND (0.00918)	ND (0.0113)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (3.010)	ND (7.530)	ND (7.050)	ND (0.000)
Concentration, ppb, Dry	ND (0.110)	ND (0.274)	ND (0.257)	ND (0.000)
Concentration, ug/DSCM *	ND (0.742)	ND (1.860)	ND (1.740)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0527)	ND (0.132)	ND (0.123)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00664)	ND (0.0166)	ND (0.0155)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.880)	ND (5.280)	ND (4.330)	ND (0.000)
Concentration, ppb, Dry	ND (0.0684)	ND (0.192)	ND (0.158)	ND (0.000)
Concentration, ug/DSCM *	ND (0.464)	ND (1.300)	ND (1.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0329)	ND (0.0924)	ND (0.0758)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00415)	ND (0.0116)	ND (0.00955)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.790)	ND (4.910)	ND (4.020)	ND (0.000)
Concentration, ppb, Dry	ND (0.0651)	ND (0.179)	ND (0.146)	ND (0.000)
Concentration, ug/DSCM *	ND (0.441)	ND (1.210)	ND (0.991)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0313)	ND (0.0860)	ND (0.0704)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00395)	ND (0.0108)	ND (0.00887)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1A

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (0.740)	ND (2.000)	ND (1.640)	ND (0.000)
Concentration, ppb, Dry	ND (0.0269)	ND (0.0728)	ND (0.0597)	ND (0.000)
Concentration, ug/DSCM *	ND (0.182)	ND (0.493)	ND (0.404)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0130)	ND (0.0350)	ND (0.0287)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00163)	ND (0.00441)	ND (0.00362)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (0.670)	ND (1.850)	ND (1.550)	ND (0.000)
Concentration, ppb, Dry	ND (0.0242)	ND (0.0668)	ND (0.0560)	ND (0.000)
Concentration, ug/DSCM *	ND (0.165)	ND (0.456)	ND (0.382)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0117)	ND (0.0324)	ND (0.0271)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00148)	ND (0.00408)	ND (0.00342)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.620)	ND (1.600)	ND (1.320)	ND (0.000)
Concentration, ppb, Dry	ND (0.0189)	ND (0.0489)	ND (0.0403)	ND (0.000)
Concentration, ug/DSCM *	ND (0.153)	ND (0.394)	ND (0.325)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0109)	ND (0.0280)	ND (0.0231)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00137)	ND (0.00353)	ND (0.00291)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (1.980)	ND (5.100)	ND (4.380)	ND (0.000)
Concentration, ppb, Dry	ND (0.0645)	ND (0.166)	ND (0.143)	ND (0.000)
Concentration, ug/DSCM *	ND (0.488)	ND (1.260)	ND (1.080)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0347)	ND (0.0893)	ND (0.0767)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00437)	ND (0.0112)	ND (0.00966)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (6.800)	ND (10.680)	ND (10.080)	ND (0.000)
Concentration, ppb, Dry	ND (0.219)	ND (0.344)	ND (0.325)	ND (0.000)
Concentration, ug/DSCM *	ND (1.680)	ND (2.630)	ND (2.490)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.119)	ND (0.187)	ND (0.176)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0150)	ND (0.0236)	ND (0.0222)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (4.680)	ND (7.690)	ND (7.050)	ND (0.000)
Concentration, ppb, Dry	ND (0.140)	ND (0.230)	ND (0.211)	ND (0.000)
Concentration, ug/DSCM *	ND (1.150)	ND (1.900)	ND (1.740)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0819)	ND (0.135)	ND (0.123)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0103)	ND (0.0170)	ND (0.0155)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (3.420)	ND (6.940)	ND (6.320)	ND (0.000)
Concentration, ppb, Dry	ND (0.121)	ND (0.245)	ND (0.223)	ND (0.000)
Concentration, ug/DSCM *	ND (0.843)	ND (1.710)	ND (1.560)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0599)	ND (0.121)	ND (0.111)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00754)	ND (0.0153)	ND (0.0139)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (3.070)	ND (2.460)	ND (2.110)	ND (0.000)
Concentration, ppb, Dry	ND (0.131)	ND (0.105)	ND (0.0900)	ND (0.000)
Concentration, ug/DSCM *	ND (0.757)	ND (0.607)	ND (0.520)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0537)	ND (0.0431)	ND (0.0369)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00677)	ND (0.00543)	ND (0.00465)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (4.760)	ND (12.580)	ND (10.370)	ND (0.000)
Concentration, ppb, Dry	ND (0.0842)	ND (0.223)	ND (0.183)	ND (0.000)
Concentration, ug/DSCM *	ND (1.170)	ND (3.100)	ND (2.560)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0833)	ND (0.220)	ND (0.182)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0105)	ND (0.0277)	ND (0.0229)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (2.600)	ND (6.530)	ND (5.400)	ND (0.000)
Concentration, ppb, Dry	ND (0.0541)	ND (0.136)	ND (0.112)	ND (0.000)
Concentration, ug/DSCM *	ND (0.641)	ND (1.610)	ND (1.330)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0455)	ND (0.114)	ND (0.0945)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00573)	ND (0.0144)	ND (0.0119)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.130)	ND (1.600)	ND (1.870)	ND (0.000)
Concentration, ppb, Dry	ND (0.0396)	ND (0.0561)	ND (0.0655)	ND (0.000)
Concentration, ug/DSCM *	ND (0.279)	ND (0.394)	ND (0.461)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0198)	ND (0.0280)	ND (0.0327)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00249)	ND (0.00353)	ND (0.00412)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (4.230)	ND (8.930)	ND (7.980)	ND (0.000)
Concentration, ppb, Dry	ND (0.0942)	ND (0.199)	ND (0.178)	ND (0.000)
Concentration, ug/DSCM *	ND (1.040)	ND (2.200)	ND (1.970)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0740)	ND (0.156)	ND (0.140)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00933)	ND (0.0197)	ND (0.0176)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (6.970)	ND (14.470)	ND (13.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.140)	ND (0.291)	ND (0.263)	ND (0.000)
Concentration, ug/DSCM *	ND (1.720)	ND (3.570)	ND (3.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.122)	ND (0.253)	ND (0.229)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0154)	ND (0.0319)	ND (0.0289)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (1.430)	ND (3.060)	ND (2.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.0426)	ND (0.0911)	ND (0.0822)	ND (0.000)
Concentration, ug/DSCM *	ND (0.353)	ND (0.754)	ND (0.680)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0250)	ND (0.0536)	ND (0.0483)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00315)	ND (0.00675)	ND (0.00609)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	ND (0.310)	EV [22.870]	ND (0.620)	ND (22.870)
Concentration, ppb, Dry	ND (0.00661)	EV [0.487]	ND (0.0132)	ND (0.487)
Concentration, ug/DSCM *	ND (0.0764)	EV [5.640]	ND (0.153)	ND (5.640)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00543)	EV [0.400]	ND (0.0109)	ND (0.400)
Emission Rate, Milligrams/Second	ND (0.000684)	EV [0.0504]	ND (0.00137)	ND (0.0504)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.310)	ND (0.880)	ND (0.740)	ND (0.000)
Concentration, ppb, Dry	ND (0.00909)	ND (0.0258)	ND (0.0217)	ND (0.000)
Concentration, ug/DSCM *	ND (0.0764)	ND (0.217)	ND (0.182)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00543)	ND (0.0154)	ND (0.0130)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000684)	ND (0.00194)	ND (0.00163)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (10.900)	ND (5.960)	ND (10.540)	ND (0.000)
Concentration, ppb, Dry	ND (0.351)	ND (0.192)	ND (0.339)	ND (0.000)
Concentration, ug/DSCM *	ND (2.690)	ND (1.470)	ND (2.600)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.191)	ND (0.104)	ND (0.185)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0240)	ND (0.0131)	ND (0.0232)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (8.230)	ND (6.650)	ND (8.010)	ND (0.000)
Concentration, ppb, Dry	ND (0.246)	ND (0.199)	ND (0.240)	ND (0.000)
Concentration, ug/DSCM *	ND (2.030)	ND (1.640)	ND (1.970)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.144)	ND (0.116)	ND (0.140)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0182)	ND (0.0147)	ND (0.0177)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (1.230)	ND (3.120)	ND (2.810)	ND (0.000)
Concentration, ppb, Dry	ND (0.0324)	ND (0.0821)	ND (0.0740)	ND (0.000)
Concentration, ug/DSCM *	ND (0.303)	ND (0.769)	ND (0.693)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0215)	ND (0.0546)	ND (0.0492)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00271)	ND (0.00688)	ND (0.00620)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.470)	ND (1.480)	ND (1.180)	ND (0.000)
Concentration, ppb, Dry	ND (0.00892)	ND (0.0281)	ND (0.0224)	ND (0.000)
Concentration, ug/DSCM *	ND (0.116)	ND (0.365)	ND (0.291)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00823)	ND (0.0259)	ND (0.0207)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00104)	ND (0.00326)	ND (0.00260)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (4.470)	ND (2.720)	ND (4.150)	ND (0.000)
Concentration, ppb, Dry	ND (0.125)	ND (0.0760)	ND (0.116)	ND (0.000)
Concentration, ug/DSCM *	ND (1.100)	ND (0.671)	ND (1.020)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0783)	ND (0.0476)	ND (0.0726)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00986)	ND (0.00600)	ND (0.00915)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (2.460)	ND (4.770)	ND (4.080)	ND (0.000)
Concentration, ppb, Dry	ND (0.0546)	ND (0.106)	ND (0.0906)	ND (0.000)
Concentration, ug/DSCM *	ND (0.607)	ND (1.180)	ND (1.010)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0431)	ND (0.0835)	ND (0.0714)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00543)	ND (0.0105)	ND (0.00900)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.290)	ND (0.910)	ND (0.750)	ND (0.000)
Concentration, ppb, Dry	ND (0.00753)	ND (0.0236)	ND (0.0195)	ND (0.000)
Concentration, ug/DSCM *	ND (0.0715)	ND (0.224)	ND (0.185)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00508)	ND (0.0159)	ND (0.0131)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000640)	ND (0.00201)	ND (0.00165)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (1.260)	ND (2.770)	ND (2.370)	ND (0.000)
Concentration, ppb, Dry	ND (0.0295)	ND (0.0649)	ND (0.0555)	ND (0.000)
Concentration, ug/DSCM *	ND (0.311)	ND (0.683)	ND (0.584)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0221)	ND (0.0485)	ND (0.0415)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00278)	ND (0.00611)	ND (0.00523)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1A

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	ND (0.310)	ND (1.080)	ND (0.840)	ND (0.000)
Concentration, ppb, Dry	ND (0.00471)	ND (0.0164)	ND (0.0128)	ND (0.000)
Concentration, ug/DSCM *	ND (0.0764)	ND (0.266)	ND (0.207)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00543)	ND (0.0189)	ND (0.0147)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000684)	ND (0.00238)	ND (0.00185)	ND (0.000)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (13.000)	ND (6.550)	ND (8.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.316)	ND (0.159)	ND (0.211)	ND (0.000)
Concentration, ug/DSCM *	ND (3.210)	ND (1.610)	ND (2.140)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.228)	ND (0.115)	ND (0.152)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0287)	ND (0.0144)	ND (0.0192)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1B

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (2.530)	ND (4.430)	ND (4.620)	ND (0.000)
Concentration, ppb, Dry	ND (0.201)	ND (0.352)	ND (0.367)	ND (0.000)
Concentration, ug/DSCM *	ND (0.619)	ND (1.080)	ND (1.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0447)	ND (0.0783)	ND (0.0817)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00564)	ND (0.00987)	ND (0.0103)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.800)	ND (1.520)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0391)	ND (0.0744)	ND (0.0734)	ND (0.000)
Concentration, ug/DSCM *	ND (0.196)	ND (0.372)	ND (0.367)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0141)	ND (0.0269)	ND (0.0265)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00178)	ND (0.00339)	ND (0.00334)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.650)	ND (2.990)	ND (2.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.0712)	ND (0.129)	ND (0.127)	ND (0.000)
Concentration, ug/DSCM *	ND (0.403)	ND (0.731)	ND (0.716)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0292)	ND (0.0529)	ND (0.0518)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00368)	ND (0.00666)	ND (0.00653)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.210)	ND (2.570)	ND (2.380)	ND (0.000)
Concentration, ppb, Dry	ND (0.0522)	ND (0.111)	ND (0.103)	ND (0.000)
Concentration, ug/DSCM *	ND (0.296)	ND (0.628)	ND (0.582)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0214)	ND (0.0454)	ND (0.0421)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00270)	ND (0.00573)	ND (0.00530)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (2.830)	ND (1.810)	71.360	71.360
Concentration, ppb, Dry	ND (0.170)	ND (0.108)	4.280	4.280
Concentration, ug/DSCM *	ND (0.692)	ND (0.443)	17.400	17.400
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0500)	ND (0.0320)	1.260	1.260
Emission Rate, Milligrams/Second	ND (0.00630)	ND (0.00403)	0.159	0.159
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.980)	ND (1.890)	ND (1.900)	ND (0.000)
Concentration, ppb, Dry	ND (0.0480)	ND (0.0925)	ND (0.0930)	ND (0.000)
Concentration, ug/DSCM *	ND (0.240)	ND (0.462)	ND (0.465)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0173)	ND (0.0334)	ND (0.0336)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00218)	ND (0.00421)	ND (0.00423)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1B

	FH	BH	Im	TOTA
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.920)	55.860	80.640	136.500
Concentration, ppb, Dry	ND (0.0575)	3.490	5.040	8.530
Concentration, ug/DSCM *	ND (0.225)	13.700	19.700	33.400
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0163)	0.988	1.430	2.418
Emission Rate, Milligrams/Second	ND (0.00205)	0.124	0.180	0.304
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.800)	ND (1.520)	ND (1.480)	ND (0.000)
Concentration, ppb, Dry	ND (0.0372)	ND (0.0706)	ND (0.0688)	ND (0.000)
Concentration, ug/DSCM *	ND (0.196)	ND (0.372)	ND (0.362)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0141)	ND (0.0269)	ND (0.0262)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00178)	ND (0.00339)	ND (0.00330)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.240)	ND (2.280)	ND (2.210)	ND (0.000)
Concentration, ppb, Dry	ND (0.0510)	ND (0.0938)	ND (0.0909)	ND (0.000)
Concentration, ug/DSCM *	ND (0.303)	ND (0.558)	ND (0.540)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0219)	ND (0.0403)	ND (0.0391)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00276)	ND (0.00508)	ND (0.00492)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (2.600)	ND (4.820)	ND (4.770)	ND (0.000
Concentration, ppb, Dry	ND (0.132)	ND (0.244)	ND (0.242)	ND (0.000)
Concentration, ug/DSCM *	ND (0.636)	ND (1.180)	ND (1.170)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0460)	ND (0.0852)	ND (0.0843)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00579)	ND (0.0107)	ND (0.0106)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.440)	ND (2.640)	ND (2.590)	ND (0.000)
Concentration, ppb, Dry	ND (0.0576)	ND (0.106)	ND (0.104)	ND (0.000)
Concentration, ug/DSCM *	ND (0.352)	ND (0.646)	ND (0.633)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0255)	ND (0.0467)	ND (0.0458)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00321)	ND (0.00588)	ND (0.00577)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (0.880)	ND (1.720)	ND (1.690)	ND (0.000)
Concentration, ppb, Dry	ND (0.0386)	ND (0.0754)	ND (0.0741)	ND (0.000)
Concentration, ug/DSCM *	ND (0.215)	ND (0.421)	ND (0.413)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0156)	ND (0.0304)	ND (0.0299)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00196)	ND (0.00383)	ND (0.00376)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.210)	EV [15.430]	ND (2.210)	EV (15.430)
Concentration, ppb, Dry	ND (0.0588)	EV [0.749]	ND (0.107)	EV (0.749)
Concentration, ug/DSCM *	ND (0.296)	EV [3.770]	ND (0.540)	EV (3.770)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0214)	EV [0.273]	ND (0.0391)	EV (0.273)
Emission Rate, Milligrams/Second	ND (0.00270)	EV [0.0344]	ND (0.00492)	EV (0.0344)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (4.630)	ND (8.430)	ND (8.360)	ND (0.000)
Concentration, ppb, Dry	ND (0.115)	ND (0.210)	ND (0.208)	ND (0.000)
Concentration, ug/DSCM *	ND (1.130)	ND (2.060)	ND (2.040)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0819)	ND (0.149)	ND (0.148)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0103)	ND (0.0188)	ND (0.0186)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (3.520)	ND (6.590)	ND (6.470)	ND (0.000)
Concentration, ppb, Dry	ND (0.0875)	ND (0.164)	ND (0.161)	ND (0.000)
Concentration, ug/DSCM *	ND (0.861)	ND (1.610)	ND (1.580)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0622)	ND (0.117)	ND (0.114)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00784)	ND (0.0147)	ND (0.0144)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (1.930)	ND (2.190)	ND (2.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.106)	ND (0.120)	ND (0.148)	ND (0.000)
Concentration, ug/DSCM *	ND (0.472)	ND (0.536)	ND (0.660)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0341)	ND (0.0387)	ND (0.0477)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00430)	ND (0.00488)	ND (0.00601)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.540)	ND (2.840)	ND (2.830)	ND (0.000)
Concentration, ppb, Dry	ND (0.0838)	ND (0.154)	ND (0.154)	ND (0.000)
Concentration, ug/DSCM *	ND (0.377)	ND (0.694)	ND (0.692)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0272)	ND (0.0502)	ND (0.0500)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00343)	ND (0.00633)	ND (0.00630)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (0.970)	ND (1.710)	ND (1.770)	ND (0.000)
Concentration, ppb, Dry	ND (0.0445)	ND (0.0785)	ND (0.0812)	ND (0.000)
Concentration, ug/DSCM *	ND (0.237)	ND (0.418)	ND (0.433)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0172)	ND (0.0302)	ND (0.0313)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00216)	ND (0.00381)	ND (0.00394)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1B

	FH	BH	Im	TOTAl
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (1.860)	ND (2.630)	ND (3.170)	ND (0.000)
Concentration, ppb, Dry	ND (0.0903)	ND (0.128)	ND (0.154)	ND (0.000)
Concentration, ug/DSCM *	ND (0.455)	ND (0.643)	ND (0.775)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0329)	ND (0.0465)	ND (0.0560)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00414)	ND (0.00586)	ND (0.00706)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.660)	ND (1.250)	ND (1.230)	ND (0.000)
Concentration, ppb, Dry	ND (0.0281)	ND (0.0532)	ND (0.0523)	ND (0.000)
Concentration, ug/DSCM *	ND (0.161)	ND (0.306)	ND (0.301)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0117)	ND (0.0221)	ND (0.0217)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00147)	ND (0.00278)	ND (0.00274)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.430)	ND (2.600)	ND (2.620)	ND (0.000)
Concentration, ppb, Dry	ND (0.0778)	ND (0.141)	ND (0.143)	ND (0.000)
Concentration, ug/DSCM *	ND (0.350)	ND (0.636)	ND (0.641)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0253)	ND (0.0460)	ND (0.0463)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00319)	ND (0.00579)	ND (0.00584)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (1.820)	ND (3.250)	ND (3.230)	ND (0.000)
Concentration, ppb, Dry	ND (0.0590)	ND (0.105)	ND (0.105)	ND (0.000)
Concentration, ug/DSCM *	ND (0.445)	ND (0.795)	ND (0.790)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0322)	ND (0.0575)	ND (0.0571)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00405)	ND (0.00724)	ND (0.00720)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (2.680)	ND (5.120)	ND (5.130)	ND (0.000)
Concentration, ppb, Dry	ND (0.102)	ND (0.195)	ND (0.196)	ND (0.000)
Concentration, ug/DSCM *	ND (0.655)	ND (1.250)	ND (1.250)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0474)	ND (0.0905)	ND (0.0907)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00597)	ND (0.0114)	ND (0.0114)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.550)	EV [21.190]	ND (1.000)	EV (21.190)
Concentration, ppb, Dry	ND (0.0252)	EV [0.973]	ND (0.0459)	EV (0.973)
Concentration, ug/DSCM *	ND (0.134)	EV [5.180]	ND (0.245)	EV (5.180)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00972)	EV [0.375]	ND (0.0177)	EV (0.375)
Emission Rate, Milligrams/Second	ND (0.00123)	EV [0.0472]	ND (0.00223)	EV (0.0472)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (6.100)	ND (5.110)	ND (5.110)	ND (0.000)
Concentration, ppb, Dry	ND (0.291)	ND (0.244)	ND (0.244)	ND (0.000)
Concentration, ug/DSCM *	ND (1.490)	ND (1.250)	ND (1.250)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.108)	ND (0.0903)	ND (0.0903)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0136)	ND (0.0114)	ND (0.0114)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (4.500)	ND (8.030)	ND (7.940)	ND (0.000)
Concentration, ppb, Dry	ND (0.102)	ND (0.181)	ND (0.179)	ND (0.000)
Concentration, ug/DSCM *	ND (1.100)	ND (1.960)	ND (1.940)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0796)	ND (0.142)	ND (0.140)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0100)	ND (0.0179)	ND (0.0177)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.860)	ND (1.620)	ND (1.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.0327)	ND (0.0616)	ND (0.0601)	ND (0.000)
Concentration, ug/DSCM *	ND (0.210)	ND (0.396)	ND (0.386)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0152)	ND (0.0286)	ND (0.0279)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00192)	ND (0.00361)	ND (0.00352)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (2.130)	ND (3.780)	ND (3.800)	ND (0.000)
Concentration, ppb, Dry	ND (0.0641)	ND (0.114)	ND (0.114)	ND (0.000)
Concentration, ug/DSCM *	ND (0.521)	ND (0.924)	ND (0.929)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0377)	ND (0.0668)	ND (0.0672)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00475)	ND (0.00842)	ND (0.00847)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (1.770)	ND (2.570)	ND (3.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.0698)	ND (0.101)	ND (0.118)	ND (0.000)
Concentration, ug/DSCM *	ND (0.433)	ND (0.628)	ND (0.734)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0313)	ND (0.0454)	ND (0.0530)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00394)	ND (0.00573)	ND (0.00668)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1B

	FH	BH	Im	TOTA
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.130)	ND (4.360)	ND (5.970)	ND (0.000)
Concentration, ppb, Dry	ND (0.279)	ND (0.237)	ND (0.325)	ND (0.000)
Concentration, ug/DSCM *	ND (1.250)	ND (1.070)	ND (1.460)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0907)	ND (0.0771)	ND (0.106)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0114)	ND (0.00971)	ND (0.0133)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (3.160)	ND (10.630)	ND (10.270)	ND (0.000)
Concentration, ppb, Dry	ND (0.0569)	ND (0.192)	ND (0.185)	ND (0.000)
Concentration, ug/DSCM *	ND (0.773)	ND (2.600)	ND (2.510)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0559)	ND (0.188)	ND (0.182)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00704)	ND (0.0237)	ND (0.0229)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (0.950)	ND (1.790)	ND (1.750)	ND (0.000)
Concentration, ppb, Dry	ND (0.0377)	ND (0.0710)	ND (0.0694)	ND (0.000)
Concentration, ug/DSCM *	ND (0.232)	ND (0.438)	ND (0.428)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0168)	ND (0.0316)	ND (0.0309)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00212)	ND (0.00399)	ND (0.00390)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (4.090)	ND (10.480)	ND (10.230)	ND (0.000
Concentration, ppb, Dry	ND (0.0882)	ND (0.226)	ND (0.221)	ND (0.000)
Concentration, ug/DSCM *	ND (1.000)	ND (2.560)	ND (2.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0723)	ND (0.185)	ND (0.181)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00911)	ND (0.0233)	ND (0.0228)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (15.340)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.609)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (3.750)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.271)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0342)	ND (0.000)	ND (0.000)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.850)	ND (5.460)	ND (5.480)	ND (0.000)
Concentration, ppb, Dry	ND (0.0849)	ND (0.163)	ND (0.163)	ND (0.000)
Concentration, ug/DSCM *	ND (0.697)	ND (1.340)	ND (1.340)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0504)	ND (0.0965)	ND (0.0969)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00635)	ND (0.0122)	ND (0.0122)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1B

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.700)	ND (4.880)	ND (5.480)	ND (0.000)
Concentration, ppb, Dry	ND (0.0804)	ND (0.145)	ND (0.163)	ND (0.000)
Concentration, ug/DSCM *	ND (0.660)	ND (1.190)	ND (1.340)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0477)	ND (0.0863)	ND (0.0969)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00601)	ND (0.0109)	ND (0.0122)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (18.970)	ND (13.430)	ND (26.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.913)	ND (0.647)	ND (1.290)	ND (0.000)
Concentration, ug/DSCM *	ND (4.640)	ND (3.280)	ND (6.570)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.335)	ND (0.237)	ND (0.475)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0423)	ND (0.0299)	ND (0.0598)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.880)	ND (3.720)	ND (5.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.0678)	ND (0.134)	ND (0.211)	ND (0.000)
Concentration, ug/DSCM *	ND (0.460)	ND (0.910)	ND (1.430)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0332)	ND (0.0658)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00419)	ND (0.00829)	ND (0.0131)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (3.750)	ND (6.740)	ND (8.040)	ND (0.000)
Concentration, ppb, Dry	ND (0.135)	ND (0.243)	ND (0.290)	ND (0.000)
Concentration, ug/DSCM *	ND (0.917)	ND (1.650)	ND (1.970)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0663)	ND (0.119)	ND (0.142)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00835)	ND (0.0150)	ND (0.0179)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.350)	ND (4.720)	ND (4.940)	ND (0.000)
Concentration, ppb, Dry	ND (0.0848)	ND (0.170)	ND (0.178)	ND (0.000)
Concentration, ug/DSCM *	ND (0.575)	ND (1.150)	ND (1.210)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0415)	ND (0.0835)	ND (0.0873)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00524)	ND (0.0105)	ND (0.0110)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.230)	ND (4.390)	ND (4.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.0805)	ND (0.158)	ND (0.165)	ND (0.000)
Concentration, ug/DSCM *	ND (0.545)	ND (1.070)	ND (1.120)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0394)	ND (0.0776)	ND (0.0810)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00497)	ND (0.00978)	ND (0.0102)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1B

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (0.920)	ND (1.790)	ND (1.870)	ND (0.000)
Concentration, ppb, Dry	ND (0.0332)	ND (0.0646)	ND (0.0675)	ND (0.000)
Concentration, ug/DSCM *	ND (0.225)	ND (0.438)	ND (0.457)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0163)	ND (0.0316)	ND (0.0331)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00205)	ND (0.00399)	ND (0.00417)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (0.840)	ND (1.660)	ND (1.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.0301)	ND (0.0594)	ND (0.0630)	ND (0.000)
Concentration, ug/DSCM *	ND (0.205)	ND (0.406)	ND (0.430)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0149)	ND (0.0293)	ND (0.0311)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00187)	ND (0.00370)	ND (0.00392)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.770)	ND (1.440)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0233)	ND (0.0436)	ND (0.0454)	ND (0.000)
Concentration, ug/DSCM *	ND (0.188)	ND (0.352)	ND (0.367)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0136)	ND (0.0255)	ND (0.0265)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00172)	ND (0.00321)	ND (0.00334)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (2.470)	ND (4.570)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.0798)	ND (0.148)	ND (0.161)	ND (0.000)
Concentration, ug/DSCM *	ND (0.604)	ND (1.120)	ND (1.220)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0437)	ND (0.0808)	ND (0.0884)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00550)	ND (0.0102)	ND (0.0111)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (8.480)	ND (9.560)	ND (11.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.271)	ND (0.305)	ND (0.367)	ND (0.000)
Concentration, ug/DSCM *	ND (2.070)	ND (2.340)	ND (2.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.150)	ND (0.169)	ND (0.203)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0189)	ND (0.0213)	ND (0.0256)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (5.850)	ND (6.890)	ND (8.040)	ND (0.000)
Concentration, ppb, Dry	ND (0.174)	ND (0.205)	ND (0.239)	ND (0.000)
Concentration, ug/DSCM *	ND (1.430)	ND (1.680)	ND (1.970)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.103)	ND (0.122)	ND (0.142)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.0153)	ND (0.0179)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (4.260)	ND (6.220)	ND (7.210)	ND (0.000)
Concentration, ppb, Dry	ND (0.149)	ND (0.218)	ND (0.252)	ND (0.000)
Concentration, ug/DSCM *	ND (1.040)	ND (1.520)	ND (1.760)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0753)	ND (0.110)	ND (0.127)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00949)	ND (0.0139)	ND (0.0161)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (3.830)	ND (2.200)	ND (2.410)	ND (0.000)
Concentration, ppb, Dry	ND (0.162)	ND (0.0930)	ND (0.102)	ND (0.000)
Concentration, ug/DSCM *	ND (0.937)	ND (0.538)	ND (0.589)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0677)	ND (0.0389)	ND (0.0426)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00853)	ND (0.00490)	ND (0.00537)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (5.940)	ND (11.260)	ND (11.820)	ND (0.000)
Concentration, ppb, Dry	ND (0.104)	ND (0.198)	ND (0.207)	ND (0.000)
Concentration, ug/DSCM *	ND (1.450)	ND (2.750)	ND (2.890)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.105)	ND (0.199)	ND (0.209)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0132)	ND (0.0251)	ND (0.0263)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (3.250)	ND (5.850)	ND (6.160)	ND (0.000)
Concentration, ppb, Dry	ND (0.0671)	ND (0.121)	ND (0.127)	ND (0.000)
Concentration, ug/DSCM *	ND (0.795)	ND (1.430)	ND (1.510)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0575)	ND (0.103)	ND (0.109)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00724)	ND (0.0130)	ND (0.0137)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.410)	ND (1.430)	ND (2.130)	ND (0.000)
Concentration, ppb, Dry	ND (0.0490)	ND (0.0497)	ND (0.0740)	ND (0.000)
Concentration, ug/DSCM *	ND (0.345)	ND (0.350)	ND (0.521)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0249)	ND (0.0253)	ND (0.0377)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00314)	ND (0.00319)	ND (0.00475)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (5.280)	ND (8.000)	ND (9.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.117)	ND (0.177)	ND (0.201)	ND (0.000)
Concentration, ug/DSCM *	ND (1.290)	ND (1.960)	ND (2.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0934)	ND (0.141)	ND (0.161)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0118)	ND (0.0178)	ND (0.0203)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

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	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (8.700)	ND (12.950)	ND (14.940)	ND (0.000)
Concentration, ppb, Dry	ND (0.173)	ND (0.258)	ND (0.298)	ND (0.000)
Concentration, ug/DSCM *	ND (2.130)	ND (3.170)	ND (3.650)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.154)	ND (0.229)	ND (0.264)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0194)	ND (0.0288)	ND (0.0333)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (1.790)	ND (2.740)	ND (3.150)	ND (0.000)
Concentration, ppb, Dry	ND (0.0529)	ND (0.0809)	ND (0.0930)	ND (0.000)
Concentration, ug/DSCM *	ND (0.438)	ND (0.670)	ND (0.770)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0316)	ND (0.0484)	ND (0.0557)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00399)	ND (0.00610)	ND (0.00702)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	ND (0.380)	ND (0.640)	ND (0.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.00803)	ND (0.0135)	ND (0.0148)	ND (0.000)
Concentration, ug/DSCM *	ND (0.0929)	ND (0.156)	ND (0.171)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00672)	ND (0.0113)	ND (0.0124)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000847)	ND (0.00143)	ND (0.00156)	ND (0.000)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.420)	ND (0.770)	ND (0.850)	ND (0.000
Concentration, ppb, Dry	ND (0.0122)	ND (0.0224)	ND (0.0247)	ND (0.000)
Concentration, ug/DSCM *	ND (0.103)	ND (0.188)	ND (0.208)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00743)	ND (0.0136)	ND (0.0150)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000936)	ND (0.00172)	ND (0.00189)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (14.720)	ND (5.210)	ND (12.120)	ND (0.000)
Concentration, ppb, Dry	ND (0.470)	ND (0.166)	ND (0.387)	ND (0.000)
Concentration, ug/DSCM *	ND (3.600)	ND (1.270)	ND (2.960)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.260)	ND (0.0921)	ND (0.214)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0328)	ND (0.0116)	ND (0.0270)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (11.120)	ND (5.810)	ND (9.200)	ND (0.000)
Concentration, ppb, Dry	ND (0.330)	ND (0.172)	ND (0.273)	ND (0.000)
Concentration, ug/DSCM *	ND (2.720)	ND (1.420)	ND (2.250)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.197)	ND (0.103)	ND (0.163)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0248)	ND (0.0129)	ND (0.0205)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (1.650)	ND (2.730)	ND (3.240)	ND (0.000)
Concentration, ppb, Dry	ND (0.0431)	ND (0.0713)	ND (0.0846)	ND (0.000)
Concentration, ug/DSCM *	ND (0.403)	ND (0.668)	ND (0.792)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0292)	ND (0.0483)	ND (0.0573)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00368)	ND (0.00608)	ND (0.00722)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.630)	ND (1.290)	ND (1.360)	ND (0.000)
Concentration, ppb, Dry	ND (0.0119)	ND (0.0243)	ND (0.0256)	ND (0.000)
Concentration, ug/DSCM *	ND (0.154)	ND (0.315)	ND (0.333)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0111)	ND (0.0228)	ND (0.0240)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00140)	ND (0.00287)	ND (0.00303)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (6.040)	ND (2.380)	ND (4.770)	ND (0.000)
Concentration, ppb, Dry	ND (0.167)	ND (0.0659)	ND (0.132)	ND (0.000)
Concentration, ug/DSCM *	ND (1.480)	ND (0.582)	ND (1.170)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.107)	ND (0.0421)	ND (0.0843)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0135)	ND (0.00530)	ND (0.0106)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (3.320)	ND (4.170)	ND (4.690)	ND (0.000)
Concentration, ppb, Dry	ND (0.0731)	ND (0.0918)	ND (0.103)	ND (0.000)
Concentration, ug/DSCM *	ND (0.812)	ND (1.020)	ND (1.150)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0587)	ND (0.0737)	ND (0.0829)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00740)	ND (0.00929)	ND (0.0104)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.400)	ND (0.800)	ND (0.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.0103)	ND (0.0206)	ND (0.0222)	ND (0.000)
Concentration, ug/DSCM *	ND (0.0978)	ND (0.196)	ND (0.210)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00707)	ND (0.0141)	ND (0.0152)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000891)	ND (0.00178)	ND (0.00192)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (1.700)	ND (2.420)	ND (2.720)	ND (0.000)
Concentration, ppb, Dry	ND (0.0395)	ND (0.0562)	ND (0.0632)	ND (0.000)
Concentration, ug/DSCM *	ND (0.416)	ND (0.592)	ND (0.665)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0301)	ND (0.0428)	ND (0.0481)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00379)	ND (0.00539)	ND (0.00606)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

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II-1-S2-MM5-1B

	FH	BH	Im	TOTA
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	ND (0.410)	97.280	ND (0.960)	97.280
Concentration, ppb, Dry	ND (0.00618)	1.470	ND (0.0145)	1.470
Concentration, ug/DSCM *	ND (0.100)	23.800	ND (0.235)	23.800
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00725)	1.720	ND (0.0170)	1.720
Emission Rate, Milligrams/Second	ND (0.000913)	0.217	ND (0.00214)	0.217
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (17.540)	ND (5.720)	ND (10.010)	ND (0.000)
Concentration, ppb, Dry	ND (0.422)	ND (0.138)	ND (0.241)	ND (0.000)
Concentration, ug/DSCM *	ND (4.290)	ND (1.400)	ND (2.450)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.310)	ND (0.101)	ND (0.177)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0391)	ND (0.0127)	ND (0.0223)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2A

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (3.190)	ND (4.440)	ND (4.590)	ND (0.000)
Concentration, ppb, Dry	ND (0.297)	ND (0.413)	ND (0.427)	ND (0.000)
Concentration, ug/DSCM *	ND (0.914)	ND (1.270)	ND (1.320)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0676)	ND (0.0940)	ND (0.0972)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00851)	ND (0.0118)	ND (0.0122)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (1.010)	ND (1.520)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0579)	ND (0.0872)	ND (0.0860)	ND (0.000)
Concentration, ug/DSCM *	ND (0.289)	ND (0.436)	ND (0.430)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0214)	ND (0.0322)	ND (0.0318)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00270)	ND (0.00406)	ND (0.00400)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (2.090)	ND (2.990)	ND (2.910)	ND (0.000)
Concentration, ppb, Dry	ND (0.106)	ND (0.151)	ND (0.147)	ND (0.000)
Concentration, ug/DSCM *	ND (0.599)	ND (0.857)	ND (0.834)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0443)	ND (0.0633)	ND (0.0616)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00558)	ND (0.00798)	ND (0.00777)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.530)	ND (2.570)	ND (2.370)	ND (0.000)
Concentration, ppb, Dry	ND (0.0774)	ND (0.130)	ND (0.120)	ND (0.000)
Concentration, ug/DSCM *	ND (0.438)	ND (0.737)	ND (0.679)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0324)	ND (0.0544)	ND (0.0502)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00408)	ND (0.00686)	ND (0.00632)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (3.580)	ND (1.810)	ND (2.670)	ND (0.000)
Concentration, ppb, Dry	ND (0.251)	ND (0.127)	ND (0.188)	ND (0.000)
Concentration, ug/DSCM *	ND (1.030)	ND (0.519)	ND (0.765)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0758)	ND (0.0383)	ND (0.0565)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00955)	ND (0.00483)	ND (0.00712)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (1.240)	ND (1.890)	ND (1.890)	ND (0.000)
Concentration, ppb, Dry	ND (0.0711)	ND (0.108)	ND (0.108)	ND (0.000)
Concentration, ug/DSCM *	ND (0.355)	ND (0.542)	ND (0.542)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0263)	ND (0.0400)	ND (0.0400)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00331)	ND (0.00504)	ND (0.00504)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2A

	FH	BH	Im	TOTA
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (1.160)	EV [6.730]	ND (1.700)	EV (6.730)
Concentration, ppb, Dry	ND (0.0850)	EV [0.493]	ND (0.125)	EV (0.493)
Concentration, ug/DSCM *	ND (0.332)	EV [1.930]	ND (0.487)	EV (1.930)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0246)	EV [0.143]	ND (0.0360)	EV (0.143)
Emission Rate, Milligrams/Second	ND (0.00310)	EV [0.0180]	ND (0.00454)	EV (0.0180)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (1.010)	ND (1.520)	ND (1.470)	ND (0.000)
Concentration, ppb, Dry	ND (0.0550)	ND (0.0828)	ND (0.0801)	ND (0.000)
Concentration, ug/DSCM *	ND (0.289)	ND (0.436)	ND (0.421)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0214)	ND (0.0322)	ND (0.0311)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00270)	ND (0.00406)	ND (0.00392)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.570)	ND (2.280)	ND (2.200)	ND (0.000)
Concentration, ppb, Dry	ND (0.0757)	ND (0.110)	ND (0.106)	ND (0.000)
Concentration, ug/DSCM *	ND (0.450)	ND (0.653)	ND (0.630)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0332)	ND (0.0483)	ND (0.0466)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00419)	ND (0.00608)	ND (0.00587)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (3.280)	ND (4.830)	ND (4.740)	ND (0.000
Concentration, ppb, Dry	ND (0.195)	ND (0.287)	ND (0.281)	ND (0.000,
Concentration, ug/DSCM *	ND (0.940)	ND (1.380)	ND (1.360)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0695)	ND (0.102)	ND (0.100)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00875)	ND (0.0129)	ND (0.0126)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.810)	ND (2.640)	ND (2.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.0849)	ND (0.124)	ND (0.121)	ND (0.000)
Concentration, ug/DSCM *	ND (0.519)	ND (0.757)	ND (0.739)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0383)	ND (0.0559)	ND (0.0546)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00483)	ND (0.00704)	ND (0.00688)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (1.110)	ND (1.720)	ND (1.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.0570)	ND (0.0883)	ND (0.0863)	ND (0.000)
Concentration, ug/DSCM *	ND (0.318)	ND (0.493)	ND (0.481)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0235)	ND (0.0364)	ND (0.0356)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00296)	ND (0.00459)	ND (0.00448)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.530)	EV [12.700]	ND (2.200)	EV (12.700)
Concentration, ppb, Dry	ND (0.0871)	EV [0.723]	ND (0.125)	EV (0.723)
Concentration, ug/DSCM *	ND (0.438)	EV [3.640]	ND (0.630)	EV (3.640)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0324)	EV [0.269]	ND (0.0466)	EV (0.269)
Emission Rate, Milligrams/Second	ND (0.00408)	EV [0.0339]	ND (0.00587)	EV (0.0339)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (5.850)	ND (8.450)	ND (8.310)	ND (0.000)
Concentration, ppb, Dry	ND (0.171)	ND (0.246)	ND (0.242)	ND (0.000)
Concentration, ug/DSCM *	ND (1.680)	ND (2.420)	ND (2.380)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.124)	ND (0.179)	ND (0.176)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0156)	ND (0.0225)	ND (0.0222)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (4.440)	ND (6.610)	ND (6.430)	ND (0.000)
Concentration, ppb, Dry	ND (0.129)	ND (0.192)	ND (0.187)	ND (0.000)
Concentration, ug/DSCM *	ND (1.270)	ND (1.890)	ND (1.840)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0940)	ND (0.140)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0118)	ND (0.0176)	ND (0.0172)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (2.430)	ND (2.200)	ND (2.690)	ND (0.000)
Concentration, ppb, Dry	ND (0.156)	ND (0.142)	ND (0.173)	ND (0.000)
Concentration, ug/DSCM *	ND (0.696)	ND (0.630)	ND (0.771)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0515)	ND (0.0466)	ND (0.0570)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00648)	ND (0.00587)	ND (0.00718)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.950)	ND (2.850)	ND (2.820)	ND (0.000)
Concentration, ppb, Dry	ND (0.124)	ND (0.182)	ND (0.180)	ND (0.000)
Concentration, ug/DSCM *	ND (0.559)	ND (0.817)	ND (0.808)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0413)	ND (0.0604)	ND (0.0597)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00520)	ND (0.00760)	ND (0.00752)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (1.230)	ND (1.710)	ND (1.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.0662)	ND (0.0920)	ND (0.0947)	ND (0.000)
Concentration, ug/DSCM *	ND (0.352)	ND (0.490)	ND (0.504)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0260)	ND (0.0362)	ND (0.0373)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00328)	ND (0.00456)	ND (0.00470)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2A

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (2.350)	ND (2.640)	ND (3.150)	ND (0.000)
Concentration, ppb, Dry	ND (0.134)	ND (0.150)	ND (0.179)	ND (0.000)
Concentration, ug/DSCM *	ND (0.673)	ND (0.757)	ND (0.903)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0498)	ND (0.0559)	ND (0.0667)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00627)	ND (0.00704)	ND (0.00841)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.840)	ND (1.250)	ND (1.220)	ND (0.000)
Concentration, ppb, Dry	ND (0.0419)	ND (0.0624)	ND (0.0609)	ND (0.000)
Concentration, ug/DSCM *	ND (0.241)	ND (0.358)	ND (0.350)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0178)	ND (0.0265)	ND (0.0258)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00224)	ND (0.00334)	ND (0.00326)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.810)	ND (2.610)	ND (2.600)	ND (0.000
Concentration, ppb, Dry	ND (0.115)	ND (0.166)	ND (0.166)	ND (0.000)
Concentration, ug/DSCM *	ND (0.519)	ND (0.748)	ND (0.745)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0383)	ND (0.0553)	ND (0.0551)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00483)	ND (0.00696)	ND (0.00694)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (2.290)	ND (3.260)	ND (3.210)	ND (0.000)
Concentration, ppb, Dry	ND (0.0870)	ND (0.124)	ND (0.122)	ND (0.000)
Concentration, ug/DSCM *	ND (0.656)	ND (0.934)	ND (0.920)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0485)	ND (0.0690)	ND (0.0680)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00611)	ND (0.00870)	ND (0.00857)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (3.390)	ND (5.130)	ND (5.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.152)	ND (0.229)	ND (0.228)	ND (0.000)
Concentration, ug/DSCM *	ND (0.972)	ND (1.470)	ND (1.460)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0718)	ND (0.109)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00905)	ND (0.0137)	ND (0.0136)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.700)	EV [6.900]	ND (0.990)	EV (6.900)
Concentration, ppb, Dry	ND (0.0377)	EV [0.371]	ND (0.0533)	EV (0.371)
Concentration, ug/DSCM *	ND (0.201)	EV [1.980]	ND (0.284)	EV (1.980)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0148)	EV [0.146]	ND (0.0210)	EV (0.146)
Emission Rate, Milligrams/Second	ND (0.00187)	EV [0.0184]	ND (0.00264)	EV (0.0184)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (7.710)	ND (5.120)	ND (5.080)	ND (0.000)
Concentration, ppb, Dry	ND (0.432)	ND (0.287)	ND (0.284)	ND (0.000)
Concentration, ug/DSCM *	ND (2.210)	ND (1.470)	ND (1.460)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.163)	ND (0.108)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0206)	ND (0.0137)	ND (0.0136)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (5.680)	ND (8.050)	ND (7.900)	ND (0.000)
Concentration, ppb, Dry	ND (0.150)	ND (0.213)	ND (0.209)	ND (0.000)
Concentration, ug/DSCM *	ND (1.630)	ND (2.310)	ND (2.260)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.120)	ND (0.170)	ND (0.167)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0152)	ND (0.0215)	ND (0.0211)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (1.090)	ND (1.620)	ND (1.570)	ND (0.000)
Concentration, ppb, Dry	ND (0.0486)	ND (0.0722)	ND (0.0700)	ND (0.000)
Concentration, ug/DSCM *	ND (0.312)	ND (0.464)	ND (0.450)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0231)	ND (0.0343)	ND (0.0332)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00291)	ND (0.00432)	ND (0.00419)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (2.690)	ND (3.790)	ND (3.780)	ND (0.000)
Concentration, ppb, Dry	ND (0.0949)	ND (0.134)	ND (0.133)	ND (0.000)
Concentration, ug/DSCM *	ND (0.771)	ND (1.090)	ND (1.080)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0570)	ND (0.0803)	ND (0.0801)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00718)	ND (0.0101)	ND (0.0101)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (2.240)	ND (2.570)	ND (2.980)	ND (0.000)
Concentration, ppb, Dry	ND (0.103)	ND (0.119)	ND (0.138)	ND (0.000)
Concentration, ug/DSCM *	ND (0.642)	ND (0.737)	ND (0.854)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0474)	ND (0.0544)	ND (0.0631)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00598)	ND (0.00686)	ND (0.00795)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2A

	FH	BH	Im	TOTA.
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (6.480)	ND (4.360)	ND (5.940)	ND (0.000)
Concentration, ppb, Dry	ND (0.413)	ND (0.278)	ND (0.379)	ND (0.000)
Concentration, ug/DSCM *	ND (1.860)	ND (1.250)	ND (1.700)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.137)	ND (0.0923)	ND (0.126)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0173)	ND (0.0116)	ND (0.0159)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (3.990)	ND (10.650)	ND (10.220)	ND (0.000)
Concentration, ppb, Dry	ND (0.0843)	ND (0.225)	ND (0.216)	ND (0.000)
Concentration, ug/DSCM *	ND (1.140)	ND (3.050)	ND (2.930)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0845)	ND (0.226)	ND (0.216)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0106)	ND (0.0284)	ND (0.0273)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (1.200)	ND (1.790)	ND (1.740)	ND (0.000)
Concentration, ppb, Dry	ND (0.0558)	ND (0.0832)	ND (0.0809)	ND (0.000)
Concentration, ug/DSCM *	ND (0.344)	ND (0.513)	ND (0.499)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0254)	ND (0.0379)	ND (0.0369)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00320)	ND (0.00478)	ND (0.00464)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (5.210)	ND (10.320)	ND (10.210)	ND (0.000
Concentration, ppb, Dry	ND (0.132)	ND (0.261)	ND (0.258)	ND (0.000)
Concentration, ug/DSCM *	ND (1.490)	ND (2.960)	ND (2.930)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.110)	ND (0.219)	ND (0.216)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0139)	ND (0.0275)	ND (0.0272)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (19.530)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.909)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (5.600)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.414)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0521)	ND (0.000)	ND (0.000)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.620)	ND (5.380)	ND (5.470)	ND (0.000)
Concentration, ppb, Dry	ND (0.126)	ND (0.188)	ND (0.191)	ND (0.000)
Concentration, ug/DSCM *	ND (1.040)	ND (1.540)	ND (1.570)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0767)	ND (0.114)	ND (0.116)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00966)	ND (0.0144)	ND (0.0146)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2A

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.440)	ND (4.810)	ND (5.470)	ND (0.000)
Concentration, ppb, Dry	ND (0.120)	ND (0.168)	ND (0.191)	ND (0.000)
Concentration, ug/DSCM *	ND (0.986)	ND (1.380)	ND (1.570)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0729)	ND (0.102)	ND (0.116)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00918)	ND (0.0128)	ND (0.0146)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (24.150)	ND (13.230)	ND (26.810)	ND (0.000)
Concentration, ppb, Dry	ND (1.360)	ND (0.747)	ND (1.510)	ND (0.000)
Concentration, ug/DSCM *	ND (6.920)	ND (3.790)	ND (7.680)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.511)	ND (0.280)	ND (0.568)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0644)	ND (0.0353)	ND (0.0715)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.390)	ND (3.670)	ND (5.850)	ND (0.000)
Concentration, ppb, Dry	ND (0.101)	ND (0.155)	ND (0.247)	ND (0.000)
Concentration, ug/DSCM *	ND (0.685)	ND (1.050)	ND (1.680)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0506)	ND (0.0777)	ND (0.124)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00638)	ND (0.00979)	ND (0.0156)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (4.780)	ND (6.640)	ND (8.020)	ND (0.000)
Concentration, ppb, Dry	ND (0.202)	ND (0.281)	ND (0.339)	ND (0.000)
Concentration, ug/DSCM *	ND (1.370)	ND (1.900)	ND (2.300)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.101)	ND (0.141)	ND (0.170)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0128)	ND (0.0177)	ND (0.0214)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.990)	ND (4.650)	ND (4.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.126)	ND (0.197)	ND (0.209)	ND (0.000)
Concentration, ug/DSCM *	ND (0.857)	ND (1.330)	ND (1.410)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0633)	ND (0.0985)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00798)	ND (0.0124)	ND (0.0132)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.840)	ND (4.330)	ND (4.570)	ND (0.000)
Concentration, ppb, Dry	ND (0.120)	ND (0.183)	ND (0.193)	ND (0.000)
Concentration, ug/DSCM *	ND (0.814)	ND (1.240)	ND (1.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0601)	ND (0.0917)	ND (0.0968)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00758)	ND (0.0116)	ND (0.0122)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2A

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.180)	ND (1.760)	ND (1.870)	ND (0.000)
Concentration, ppb, Dry	ND (0.0499)	ND (0.0744)	ND (0.0791)	ND (0.000)
Concentration, ug/DSCM *	ND (0.338)	ND (0.504)	ND (0.536)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0250)	ND (0.0373)	ND (0.0396)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00315)	ND (0.00470)	ND (0.00499)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (1.070)	ND (1.630)	ND (1.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.0449)	ND (0.0684)	ND (0.0739)	ND (0.000)
Concentration, ug/DSCM *	ND (0.307)	ND (0.467)	ND (0.504)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0227)	ND (0.0345)	ND (0.0373)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00286)	ND (0.00435)	ND (0.00470)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.980)	ND (1.410)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0348)	ND (0.0501)	ND (0.0533)	ND (0.000)
Concentration, ug/DSCM *	ND (0.281)	ND (0.404)	ND (0.430)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0208)	ND (0.0299)	ND (0.0318)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00262)	ND (0.00376)	ND (0.00400)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (3.150)	ND (4.500)	ND (4.990)	ND (0.000
Concentration, ppb, Dry	ND (0.119)	ND (0.170)	ND (0.189)	ND (0.000)
Concentration, ug/DSCM *	ND (0.903)	ND (1.290)	ND (1.430)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0667)	ND (0.0953)	ND (0.106)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00841)	ND (0.0120)	ND (0.0133)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (10.800)	ND (9.420)	ND (11.470)	ND (0.000)
Concentration, ppb, Dry	ND (0.404)	ND (0.353)	ND (0.429)	ND (0.000)
Concentration, ug/DSCM *	ND (3.100)	ND (2.700)	ND (3.290)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.229)	ND (0.199)	ND (0.243)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0288)	ND (0.0251)	ND (0.0306)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (7.440)	ND (6.780)	ND (8.020)	ND (0.000)
Concentration, ppb, Dry	ND (0.259)	ND (0.236)	ND (0.279)	ND (0.000)
Concentration, ug/DSCM *	ND (2.130)	ND (1.940)	ND (2.300)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.158)	ND (0.144)	ND (0.170)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0199)	ND (0.0181)	ND (0.0214)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

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II-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (5.430)	ND (6.120)	ND (7.200)	ND (0.000)
Concentration, ppb, Dry	ND (0.223)	ND (0.251)	ND (0.295)	ND (0.000)
Concentration, ug/DSCM *	ND (1.560)	ND (1.750)	ND (2.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.115)	ND (0.130)	ND (0.152)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0145)	ND (0.0163)	ND (0.0192)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (4.880)	ND (2.170)	ND (2.410)	ND (0.000)
Concentration, ppb, Dry	ND (0.242)	ND (0.108)	ND (0.119)	ND (0.000)
Concentration, ug/DSCM *	ND (1.400)	ND (0.622)	ND (0.691)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.103)	ND (0.0460)	ND (0.0510)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.00579)	ND (0.00643)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (7.560)	ND (11.090)	ND (11.800)	ND (0.000)
Concentration, ppb, Dry	ND (0.155)	ND (0.228)	ND (0.243)	ND (0.000)
Concentration, ug/DSCM *	ND (2.170)	ND (3.180)	ND (3.380)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.160)	ND (0.235)	ND (0.250)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0202)	ND (0.0296)	ND (0.0315)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (4.130)	ND (5.760)	ND (6.150)	ND (0.000)
Concentration, ppb, Dry	ND (0.100)	ND (0.139)	ND (0.149)	ND (0.000)
Concentration, ug/DSCM *	ND (1.180)	ND (1.650)	ND (1.760)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0875)	ND (0.122)	ND (0.130)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0110)	ND (0.0154)	ND (0.0164)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.790)	ND (1.410)	ND (2.130)	ND (0.000)
Concentration, ppb, Dry	ND (0.0729)	ND (0.0574)	ND (0.0868)	ND (0.000)
Concentration, ug/DSCM *	ND (0.513)	ND (0.404)	ND (0.610)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0379)	ND (0.0299)	ND (0.0451)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00478)	ND (0.00376)	ND (0.00568)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (6.720)	ND (7.880)	ND (9.090)	ND (0.000)
Concentration, ppb, Dry	ND (0.174)	ND (0.204)	ND (0.235)	ND (0.000)
Concentration, ug/DSCM *	ND (1.930)	ND (2.260)	ND (2.610)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.142)	ND (0.167)	ND (0.193)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0179)	ND (0.0210)	ND (0.0243)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

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II-2-S2-MM5-2A

	FH	BH	Im	TOTA
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (11.080)	ND (12.760)	ND (14.910)	ND (0.000)
Concentration, ppb, Dry	ND (0.259)	ND (0.298)	ND (0.348)	ND (0.000)
Concentration, ug/DSCM *	ND (3.180)	ND (3.660)	ND (4.270)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.235)	ND (0.270)	ND (0.316)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0296)	ND (0.0340)	ND (0.0398)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (2.270)	ND (2.700)	ND (3.150)	ND (0.000)
Concentration, ppb, Dry	ND (0.0786)	ND (0.0934)	ND (0.109)	ND (0.000)
Concentration, ug/DSCM *	ND (0.651)	ND (0.774)	ND (0.903)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0481)	ND (0.0572)	ND (0.0667)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00606)	ND (0.00720)	ND (0.00841)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	EV [10.890]	EV [37.840]	ND (0.700)	EV (48.730)
Concentration, ppb, Dry	EV [0.270]	EV [0.937]	ND (0.0173)	EV (1.207)
Concentration, ug/DSCM *	EV [3.120]	EV [10.800]	ND (0.201)	EV (13.920)
Emission Rate, 1,000 * (Pounds/Hour)	EV [0.231]	EV [0.801]	ND (0.0148)	EV (1.032)
Emission Rate, Milligrams/Second	EV [0.0291]	EV [0.101]	ND (0.00187)	EV (0.130)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.520)	ND (0.700)	ND (0.870)	ND (0.000'
Concentration, ppb, Dry	ND (0.0177)	ND (0.0239)	ND (0.0297)	ND (0.000,
Concentration, ug/DSCM *	ND (0.149)	ND (0.201)	ND (0.249)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0110)	ND (0.0148)	ND (0.0184)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00139)	ND (0.00187)	ND (0.00232)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (18.460)	ND (4.730)	ND (12.280)	ND (0.000)
Concentration, ppb, Dry	ND (0.691)	ND (0.177)	ND (0.460)	ND (0.000)
Concentration, ug/DSCM *	ND (5.290)	ND (1.360)	ND (3.520)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.391)	ND (0.100)	ND (0.260)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0493)	ND (0.0126)	ND (0.0328)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (13.940)	ND (5.280)	ND (9.330)	ND (0.000)
Concentration, ppb, Dry	ND (0.485)	ND (0.184)	ND (0.324)	ND (0.000)
Concentration, ug/DSCM *	ND (3.990)	ND (1.510)	ND (2.670)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.295)	ND (0.112)	ND (0.198)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0372)	ND (0.0141)	ND (0.0249)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (2.080)	ND (2.480)	ND (3.280)	ND (0.000)
Concentration, ppb, Dry	ND (0.0637)	ND (0.0759)	ND (0.100)	ND (0.000)
Concentration, ug/DSCM *	ND (0.596)	ND (0.711)	ND (0.940)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0441)	ND (0.0525)	ND (0.0695)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00555)	ND (0.00662)	ND (0.00875)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.790)	ND (1.170)	63.080	63.080
Concentration, ppb, Dry	ND (0.0174)	ND (0.0258)	1.390	1.390
Concentration, ug/DSCM *	ND (0.226)	ND (0.335)	18.100	18.100
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0167)	ND (0.0248)	1.340	1.340
Emission Rate, Milligrams/Second	ND (0.00211)	ND (0.00312)	0.168	0.168
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (7.580)	ND (2.160)	ND (4.830)	ND (0.000)
Concentration, ppb, Dry	ND (0.246)	ND (0.0701)	ND (0.157)	ND (0.000)
Concentration, ug/DSCM *	ND (2.170)	ND (0.619)	ND (1.380)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.161)	ND (0.0457)	ND (0.102)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0202)	ND (0.00576)	ND (0.0129)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (4.170)	ND (3.790)	ND (4.750)	ND (0.000)
Concentration, ppb, Dry	ND (0.108)	ND (0.0978)	ND (0.123)	ND (0.000)
Concentration, ug/DSCM *	ND (1.200)	ND (1.090)	ND (1.360)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0883)	ND (0.0803)	ND (0.101)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.0101)	ND (0.0127)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.500)	ND (0.720)	ND (0.880)	ND (0.000)
Concentration, ppb, Dry	ND (0.0151)	ND (0.0217)	ND (0.0266)	ND (0.000)
Concentration, ug/DSCM *	ND (0.143)	ND (0.206)	ND (0.252)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0106)	ND (0.0152)	ND (0.0186)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00133)	ND (0.00192)	ND (0.00235)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (2.140)	ND (2.200)	ND (2.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.0583)	ND (0.0599)	ND (0.0752)	ND (0.000)
Concentration, ug/DSCM *	ND (0.613)	ND (0.630)	ND (0.791)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0453)	ND (0.0466)	ND (0.0585)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00571)	ND (0.00587)	ND (0.00736)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2A

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	ND (0.520)	EV [13.730]	ND (0.980)	EV (13.730)
Concentration, ppb, Dry	ND (0.00918)	EV [0.242]	ND (0.0173)	EV (0.242)
Concentration, ug/DSCM *	ND (0.149)	EV [3.930]	ND (0.281)	EV (3.930)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0110)	EV [0.291]	ND (0.0208)	EV (0.291)
Emission Rate, Milligrams/Second	ND (0.00139)	EV [0.0366]	ND (0.00262)	EV (0.0366)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (22.010)	ND (5.200)	ND (10.140)	ND (0.000)
Concentration, ppb, Dry	ND (0.621)	ND (0.147)	ND (0.286)	ND (0.000)
Concentration, ug/DSCM *	ND (6.310)	ND (1.490)	ND (2.910)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.466)	ND (0.110)	ND (0.215)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0587)	ND (0.0139)	ND (0.0271)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2B

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (2.560)	ND (3.730)	ND (4.350)	ND (0.000)
Concentration, ppb, Dry	ND (0.235)	ND (0.343)	ND (0.400)	ND (0.000)
Concentration, ug/DSCM *	ND (0.725)	ND (1.060)	ND (1.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0534)	ND (0.0779)	ND (0.0908)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00673)	ND (0.00981)	ND (0.0114)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.810)	ND (1.280)	ND (1.420)	ND (0.000)
Concentration, ppb, Dry	ND (0.0459)	ND (0.0725)	ND (0.0804)	ND (0.000)
Concentration, ug/DSCM *	ND (0.229)	ND (0.362)	ND (0.402)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0169)	ND (0.0267)	ND (0.0296)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00213)	ND (0.00337)	ND (0.00374)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.670)	ND (2.510)	ND (2.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.0835)	ND (0.125)	ND (0.138)	ND (0.000)
Concentration, ug/DSCM *	ND (0.473)	ND (0.710)	ND (0.781)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0349)	ND (0.0524)	ND (0.0576)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00439)	ND (0.00660)	ND (0.00726)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.230)	ND (2.160)	ND (2.250)	ND (0.000)
Concentration, ppb, Dry	ND (0.0615)	ND (0.108)	ND (0.112)	ND (0.000)
Concentration, ug/DSCM *	ND (0.348)	ND (0.611)	ND (0.637)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0257)	ND (0.0451)	ND (0.0470)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00324)	ND (0.00568)	ND (0.00592)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (2.870)	ND (1.520)	ND (2.530)	ND (0.000)
Concentration, ppb, Dry	ND (0.199)	ND (0.105)	ND (0.175)	ND (0.000)
Concentration, ug/DSCM *	ND (0.812)	ND (0.430)	ND (0.716)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0599)	ND (0.0317)	ND (0.0528)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00755)	ND (0.00400)	ND (0.00665)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.990)	ND (1.590)	ND (1.790)	ND (0.000)
Concentration, ppb, Dry	ND (0.0561)	ND (0.0901)	ND (0.101)	ND (0.000)
Concentration, ug/DSCM *	ND (0.280)	ND (0.450)	ND (0.507)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0207)	ND (0.0332)	ND (0.0374)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00260)	ND (0.00418)	ND (0.00471)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.930)	ND (1.470)	ND (1.610)	ND (0.000)
Concentration, ppb, Dry	ND (0.0673)	ND (0.106)	ND (0.116)	ND (0.000)
Concentration, ug/DSCM *	ND (0.263)	ND (0.416)	ND (0.456)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0194)	ND (0.0307)	ND (0.0336)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00245)	ND (0.00387)	ND (0.00423)	ND (0.000)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.810)	ND (1.280)	ND (1.390)	ND (0.000)
Concentration, ppb, Dry	ND (0.0436)	ND (0.0688)	ND (0.0748)	ND (0.000)
Concentration, ug/DSCM *	ND (0.229)	ND (0.362)	ND (0.393)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0169)	ND (0.0267)	ND (0.0290)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00213)	ND (0.00337)	ND (0.00366)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.260)	ND (1.910)	ND (2.090)	ND (0.000)
Concentration, ppb, Dry	ND (0.0600)	ND (0.0909)	ND (0.0995)	ND (0.000)
Concentration, ug/DSCM *	ND (0.357)	ND (0.541)	ND (0.592)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0263)	ND (0.0399)	ND (0.0436)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00331)	ND (0.00502)	ND (0.00550)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (2.630)	ND (4.050)	ND (4.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.154)	ND (0.237)	ND (0.264)	ND (0.000)
Concentration, ug/DSCM *	ND (0.744)	ND (1.150)	ND (1.270)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0549)	ND (0.0845)	ND (0.0939)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00692)	ND (0.0107)	ND (0.0118)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.450)	ND (2.220)	ND (2.440)	ND (0.000)
Concentration, ppb, Dry	ND (0.0672)	ND (0.103)	ND (0.113)	ND (0.000)
Concentration, ug/DSCM *	ND (0.410)	ND (0.628)	ND (0.691)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0303)	ND (0.0463)	ND (0.0509)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00381)	ND (0.00584)	ND (0.00642)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (0.890)	ND (1.450)	ND (1.590)	ND (0.000)
Concentration, ppb, Dry	ND (0.0451)	ND (0.0736)	ND (0.0807)	ND (0.000)
Concentration, ug/DSCM *	ND (0.252)	ND (0.410)	ND (0.450)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0186)	ND (0.0303)	ND (0.0332)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00234)	ND (0.00381)	ND (0.00418)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.230)	ND (1.900)	ND (2.080)	ND (0.000)
Concentration, ppb, Dry	ND (0.0691)	ND (0.107)	ND (0.117)	ND (0.000)
Concentration, ug/DSCM *	ND (0.348)	ND (0.538)	ND (0.589)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0257)	ND (0.0397)	ND (0.0434)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00324)	ND (0.00500)	ND (0.00547)	ND (0.000)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (4.690)	ND (7.090)	ND (7.880)	ND (0.000)
Concentration, ppb, Dry	ND (0.135)	ND (0.204)	ND (0.227)	ND (0.000)
Concentration, ug/DSCM *	ND (1.330)	ND (2.010)	ND (2.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0979)	ND (0.148)	ND (0.165)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0123)	ND (0.0186)	ND (0.0207)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (3.560)	ND (5.550)	ND (6.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.102)	ND (0.160)	ND (0.175)	ND (0.000)
Concentration, ug/DSCM *	ND (1.010)	ND (1.570)	ND (1.730)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0743)	ND (0.116)	ND (0.127)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00936)	ND (0.0146)	ND (0.0160)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (1.950)	ND (1.850)	ND (2.550)	ND (0.000)
Concentration, ppb, Dry	ND (0.124)	ND (0.118)	ND (0.162)	ND (0.000)
Concentration, ug/DSCM *	ND (0.552)	ND (0.524)	ND (0.722)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0407)	ND (0.0386)	ND (0.0532)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00513)	ND (0.00487)	ND (0.00671)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.560)	ND (2.390)	ND (2.670)	ND (0.000)
Concentration, ppb, Dry	ND (0.0982)	ND (0.150)	ND (0.168)	ND (0.000)
Concentration, ug/DSCM *	ND (0.442)	ND (0.676)	ND (0.756)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0326)	ND (0.0499)	ND (0.0557)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00410)	ND (0.00629)	ND (0.00702)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (0.980)	ND (1.440)	ND (1.660)	ND (0.000)
Concentration, ppb, Dry	ND (0.0521)	ND (0.0765)	ND (0.0882)	ND (0.000)
Concentration, ug/DSCM *	ND (0.277)	ND (0.408)	ND (0.470)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0205)	ND (0.0301)	ND (0.0347)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00258)	ND (0.00379)	ND (0.00437)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2B

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (1.880)	ND (2.220)	ND (2.990)	ND (0.000)
Concentration, ppb, Dry	ND (0.106)	ND (0.125)	ND (0.168)	ND (0.000)
Concentration, ug/DSCM *	ND (0.532)	ND (0.628)	ND (0.846)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0392)	ND (0.0463)	ND (0.0624)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00495)	ND (0.00584)	ND (0.00786)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.670)	ND (1.050)	ND (1.160)	ND (0.000)
Concentration, ppb, Dry	ND (0.0330)	ND (0.0517)	ND (0.0571)	ND (0.000)
Concentration, ug/DSCM *	ND (0.190)	ND (0.297)	ND (0.328)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0140)	ND (0.0219)	ND (0.0242)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00176)	ND (0.00276)	ND (0.00305)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.450)	ND (2.190)	ND (2.470)	ND (0.000)
Concentration, ppb, Dry	ND (0.0913)	ND (0.138)	ND (0.156)	ND (0.000)
Concentration, ug/DSCM *	ND (0.410)	ND (0.620)	ND (0.699)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0303)	ND (0.0457)	ND (0.0516)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00381)	ND (0.00576)	ND (0.00650)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (1.840)	ND (2.740)	ND (3.040)	ND (0.000)
Concentration, ppb, Dry	ND (0.0690)	ND (0.103)	ND (0.114)	ND (0.000)
Concentration, ug/DSCM *	ND (0.521)	ND (0.776)	ND (0.860)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0384)	ND (0.0572)	ND (0.0635)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00484)	ND (0.00721)	ND (0.00800)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (2.710)	ND (4.310)	ND (4.840)	ND (0.000)
Concentration, ppb, Dry	ND (0.120)	ND (0.190)	ND (0.214)	ND (0.000)
Concentration, ug/DSCM *	ND (0.767)	ND (1.220)	ND (1.370)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0566)	ND (0.0900)	ND (0.101)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00713)	ND (0.0113)	ND (0.0127)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.560)	ND (0.850)	ND (0.940)	ND (0.000)
Concentration, ppb, Dry	ND (0.0297)	ND (0.0452)	ND (0.0499)	ND (0.000)
Concentration, ug/DSCM *	ND (0.159)	ND (0.241)	ND (0.266)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0117)	ND (0.0177)	ND (0.0196)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00147)	ND (0.00224)	ND (0.00247)	ND (0.000)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (6.170)	ND (4.300)	ND (4.810)	ND (0.000)
Concentration, ppb, Dry	ND (0.341)	ND (0.238)	ND (0.266)	ND (0.000)
Concentration, ug/DSCM *	ND (1.750)	ND (1.220)	ND (1.360)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.129)	ND (0.0898)	ND (0.100)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0162)	ND (0.0113)	ND (0.0127)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (4.550)	ND (6.760)	ND (7.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.119)	ND (0.177)	ND (0.196)	ND (0.000)
Concentration, ug/DSCM *	ND (1.290)	ND (1.910)	ND (2.120)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0950)	ND (0.141)	ND (0.156)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0120)	ND (0.0178)	ND (0.0197)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.870)	ND (1.360)	ND (1.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.0383)	ND (0.0599)	ND (0.0656)	ND (0.000)
Concentration, ug/DSCM *	ND (0.246)	ND (0.385)	ND (0.422)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0182)	ND (0.0284)	ND (0.0311)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00229)	ND (0.00358)	ND (0.00392)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (2.150)	ND (3.180)	ND (3.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.0749)	ND (0.111)	ND (0.125)	ND (0.000)
Concentration, ug/DSCM *	ND (0.609)	ND (0.900)	ND (1.010)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0449)	ND (0.0664)	ND (0.0747)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00566)	ND (0.00836)	ND (0.00942)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (1.800)	ND (2.160)	ND (2.830)	ND (0.000)
Concentration, ppb, Dry	ND (0.0821)	ND (0.0985)	ND (0.129)	ND (0.000)
Concentration, ug/DSCM *	ND (0.509)	ND (0.611)	ND (0.801)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0376)	ND (0.0451)	ND (0.0591)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00473)	ND (0.00568)	ND (0.00744)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2B

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.190)	ND (3.670)	ND (5.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.327)	ND (0.231)	ND (0.354)	ND (0.000)
Concentration, ug/DSCM *	ND (1.470)	ND (1.040)	ND (1.590)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.108)	ND (0.0766)	ND (0.118)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0137)	ND (0.00965)	ND (0.0148)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (3.200)	ND (8.940)	ND (9.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.0668)	ND (0.186)	ND (0.202)	ND (0.000)
Concentration, ug/DSCM *	ND (0.906)	ND (2.530)	ND (2.740)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0668)	ND (0.187)	ND (0.202)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00842)	ND (0.0235)	ND (0.0255)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (0.960)	ND (1.510)	ND (1.650)	ND (0.000)
Concentration, ppb, Dry	ND (0.0441)	ND (0.0694)	ND (0.0758)	ND (0.000)
Concentration, ug/DSCM *	ND (0.272)	ND (0.427)	ND (0.467)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0200)	ND (0.0315)	ND (0.0344)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00253)	ND (0.00397)	ND (0.00434)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (4.310)	ND (9.670)	ND (10.190)	ND (0.000)
Concentration, ppb, Dry	ND (0.108)	ND (0.241)	ND (0.254)	ND (0.000)
Concentration, ug/DSCM *	ND (1.220)	ND (2.740)	ND (2.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0900)	ND (0.202)	ND (0.213)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0113)	ND (0.0254)	ND (0.0268)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (16.180)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.744)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (4.580)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.338)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0426)	ND (0.000)	ND (0.000)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.000)	ND (5.040)	ND (5.460)	ND (0.000)
Concentration, ppb, Dry	ND (0.103)	ND (0.174)	ND (0.188)	ND (0.000)
Concentration, ug/DSCM *	ND (0.849)	ND (1.430)	ND (1.550)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0626)	ND (0.105)	ND (0.114)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00789)	ND (0.0133)	ND (0.0144)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2B

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.850)	ND (4.500)	ND (5.460)	ND (0.000)
Concentration, ppb, Dry	ND (0.0983)	ND (0.155)	ND (0.188)	ND (0.000)
Concentration, ug/DSCM *	ND (0.807)	ND (1.270)	ND (1.550)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0595)	ND (0.0939)	ND (0.114)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00750)	ND (0.0118)	ND (0.0144)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (20.000)	ND (12.390)	ND (26.760)	ND (0.000)
Concentration, ppb, Dry	ND (1.110)	ND (0.691)	ND (1.490)	ND (0.000)
Concentration, ug/DSCM *	ND (5.660)	ND (3.510)	ND (7.570)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.418)	ND (0.259)	ND (0.559)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0526)	ND (0.0326)	ND (0.0704)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.980)	ND (3.440)	ND (5.830)	ND (0.000)
Concentration, ppb, Dry	ND (0.0827)	ND (0.144)	ND (0.244)	ND (0.000)
Concentration, ug/DSCM *	ND (0.560)	ND (0.974)	ND (1.650)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0413)	ND (0.0718)	ND (0.122)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00521)	ND (0.00905)	ND (0.0153)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (3.960)	ND (6.220)	ND (8.010)	ND (0.000)
Concentration, ppb, Dry	ND (0.165)	ND (0.260)	ND (0.335)	ND (0.000)
Concentration, ug/DSCM *	ND (1.120)	ND (1.760)	ND (2.270)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0827)	ND (0.130)	ND (0.167)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0104)	ND (0.0164)	ND (0.0211)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.480)	ND (4.360)	ND (4.920)	ND (0.000)
Concentration, ppb, Dry	ND (0.104)	ND (0.182)	ND (0.206)	ND (0.000)
Concentration, ug/DSCM *	ND (0.702)	ND (1.230)	ND (1.390)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0518)	ND (0.0910)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00652)	ND (0.0115)	ND (0.0129)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.360)	ND (4.050)	ND (4.560)	ND (0.000)
Concentration, ppb, Dry	ND (0.0986)	ND (0.169)	ND (0.190)	ND (0.000)
Concentration, ug/DSCM *	ND (0.668)	ND (1.150)	ND (1.290)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0493)	ND (0.0845)	ND (0.0952)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00621)	ND (0.0107)	ND (0.0120)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

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	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (0.970)	ND (1.650)	ND (1.870)	ND (0.000)
Concentration, ppb, Dry	ND (0.0405)	ND (0.0689)	ND (0.0781)	ND (0.000)
Concentration, ug/DSCM *	ND (0.275)	ND (0.467)	ND (0.529)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0202)	ND (0.0344)	ND (0.0390)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00255)	ND (0.00434)	ND (0.00492)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (0.890)	ND (1.530)	ND (1.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.0369)	ND (0.0634)	ND (0.0729)	ND (0.000)
Concentration, ug/DSCM *	ND (0.252)	ND (0.433)	ND (0.498)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0186)	ND (0.0319)	ND (0.0367)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00234)	ND (0.00402)	ND (0.00463)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.820)	ND (1.330)	ND (1.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.0288)	ND (0.0466)	ND (0.0522)	ND (0.000)
Concentration, ug/DSCM *	ND (0.232)	ND (0.376)	ND (0.422)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0171)	ND (0.0278)	ND (0.0311)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00216)	ND (0.00350)	ND (0.00392)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (2.610)	ND (4.220)	ND (4.980)	ND (0.000)
Concentration, ppb, Dry	ND (0.0976)	ND (0.158)	ND (0.186)	ND (0.000)
Concentration, ug/DSCM *	ND (0.739)	ND (1.190)	ND (1.410)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0545)	ND (0.0881)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00687)	ND (0.0111)	ND (0.0131)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (8.950)	ND (8.820)	ND (11.450)	ND (0.000)
Concentration, ppb, Dry	ND (0.331)	ND (0.326)	ND (0.423)	ND (0.000)
Concentration, ug/DSCM *	ND (2.530)	ND (2.500)	ND (3.240)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.187)	ND (0.184)	ND (0.239)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0235)	ND (0.0232)	ND (0.0301)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (6.160)	ND (6.360)	ND (8.010)	ND (0.000)
Concentration, ppb, Dry	ND (0.212)	ND (0.219)	ND (0.275)	ND (0.000)
Concentration, ug/DSCM *	ND (1.740)	ND (1.800)	ND (2.270)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.129)	ND (0.133)	ND (0.167)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0162)	ND (0.0167)	ND (0.0211)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (4.500)	ND (5.740)	ND (7.180)	ND (0.000)
Concentration, ppb, Dry	ND (0.182)	ND (0.232)	ND (0.291)	ND (0.000)
Concentration, ug/DSCM *	ND (1.270)	ND (1.620)	ND (2.030)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0939)	ND (0.120)	ND (0.150)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0118)	ND (0.0151)	ND (0.0189)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (4.040)	ND (2.030)	ND (2.400)	ND (0.000)
Concentration, ppb, Dry	ND (0.198)	ND (0.0994)	ND (0.117)	ND (0.000)
Concentration, ug/DSCM *	ND (1.140)	ND (0.575)	ND (0.679)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0843)	ND (0.0424)	ND (0.0501)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0106)	ND (0.00534)	ND (0.00631)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (6.260)	ND (10.390)	ND (11.770)	ND (0.000)
Concentration, ppb, Dry	ND (0.127)	ND (0.211)	ND (0.239)	ND (0.000)
Concentration, ug/DSCM *	ND (1.770)	ND (2.940)	ND (3.330)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.131)	ND (0.217)	ND (0.246)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0165)	ND (0.0273)	ND (0.0310)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (3.420)	ND (5.400)	ND (6.140)	ND (0.000)
Concentration, ppb, Dry	ND (0.0818)	ND (0.129)	ND (0.147)	ND (0.000)
Concentration, ug/DSCM *	ND (0.968)	ND (1.530)	ND (1.740)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0714)	ND (0.113)	ND (0.128)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00900)	ND (0.0142)	ND (0.0162)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.480)	ND (1.320)	ND (2.120)	ND (0.000)
Concentration, ppb, Dry	ND (0.0595)	ND (0.0531)	ND (0.0853)	ND (0.000)
Concentration, ug/DSCM *	ND (0.419)	ND (0.374)	ND (0.600)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0309)	ND (0.0276)	ND (0.0443)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00389)	ND (0.00347)	ND (0.00558)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (5.560)	ND (7.380)	ND (9.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.142)	ND (0.189)	ND (0.232)	ND (0.000)
Concentration, ug/DSCM *	ND (1.570)	ND (2.090)	ND (2.570)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.116)	ND (0.154)	ND (0.189)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0146)	ND (0.0194)	ND (0.0239)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2B

	FH	BH	Im	TOTA
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (9.180)	ND (11.950)	ND (14.880)	ND (0.000)
Concentration, ppb, Dry	ND (0.212)	ND (0.275)	ND (0.343)	ND (0.000)
Concentration, ug/DSCM *	ND (2.600)	ND (3.380)	ND (4.210)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.192)	ND (0.249)	ND (0.311)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0241)	ND (0.0314)	ND (0.0391)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (1.880)	ND (2.530)	ND (3.140)	ND (0.000)
Concentration, ppb, Dry	ND (0.0643)	ND (0.0865)	ND (0.107)	ND (0.000)
Concentration, ug/DSCM *	ND (0.532)	ND (0.716)	ND (0.889)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0392)	ND (0.0528)	ND (0.0656)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00495)	ND (0.00665)	ND (0.00826)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	ND (0.400)	ND (0.590)	ND (0.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.00978)	ND (0.0144)	ND (0.0171)	ND (0.000)
Concentration, ug/DSCM *	ND (0.113)	ND (0.167)	ND (0.198)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00835)	ND (0.0123)	ND (0.0146)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00105)	ND (0.00155)	ND (0.00184)	ND (0.000)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.410)	ND (0.620)	ND (0.880)	ND (0.000'
Concentration, ppb, Dry	ND (0.0138)	ND (0.0209)	ND (0.0296)	ND (0.000,
Concentration, ug/DSCM *	ND (0.116)	ND (0.175)	ND (0.249)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00856)	ND (0.0129)	ND (0.0184)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00108)	ND (0.00163)	ND (0.00231)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (14.400)	ND (4.190)	ND (12.440)	ND (0.000)
Concentration, ppb, Dry	ND (0.532)	ND (0.155)	ND (0.460)	ND (0.000)
Concentration, ug/DSCM *	ND (4.080)	ND (1.190)	ND (3.520)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.301)	ND (0.0875)	ND (0.260)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0379)	ND (0.0110)	ND (0.0327)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (10.880)	ND (4.670)	ND (9.450)	ND (0.000)
Concentration, ppb, Dry	ND (0.374)	ND (0.160)	ND (0.325)	ND (0.000)
Concentration, ug/DSCM *	ND (3.080)	ND (1.320)	ND (2.670)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.227)	ND (0.0975)	ND (0.197)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0286)	ND (0.0123)	ND (0.0249)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (1.620)	ND (2.190)	ND (3.320)	ND (0.000)
Concentration, ppb, Dry	ND (0.0490)	ND (0.0662)	ND (0.100)	ND (0.000)
Concentration, ug/DSCM *	ND (0.459)	ND (0.620)	ND (0.940)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0338)	ND (0.0457)	ND (0.0693)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00426)	ND (0.00576)	ND (0.00873)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.620)	ND (1.040)	ND (1.390)	ND (0.000)
Concentration, ppb, Dry	ND (0.0135)	ND (0.0227)	ND (0.0303)	ND (0.000)
Concentration, ug/DSCM *	ND (0.175)	ND (0.294)	ND (0.393)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0129)	ND (0.0217)	ND (0.0290)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00163)	ND (0.00274)	ND (0.00366)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (5.910)	ND (1.910)	ND (4.900)	ND (0.000)
Concentration, ppb, Dry	ND (0.190)	ND (0.0613)	ND (0.157)	ND (0.000)
Concentration, ug/DSCM *	ND (1.670)	ND (0.541)	ND (1.390)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.123)	ND (0.0399)	ND (0.102)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0155)	ND (0.00502)	ND (0.0129)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (3.250)	ND (3.360)	ND (4.810)	ND (0.000)
Concentration, ppb, Dry	ND (0.0828)	ND (0.0856)	ND (0.123)	ND (0.000)
Concentration, ug/DSCM *	ND (0.920)	ND (0.951)	ND (1.360)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0678)	ND (0.0701)	ND (0.100)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00855)	ND (0.00884)	ND (0.0127)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.390)	ND (0.640)	ND (0.890)	ND (0.000)
Concentration, ppb, Dry	ND (0.0116)	ND (0.0191)	ND (0.0265)	ND (0.000)
Concentration, ug/DSCM *	ND (0.110)	ND (0.181)	ND (0.252)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00814)	ND (0.0134)	ND (0.0186)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00103)	ND (0.00168)	ND (0.00234)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (1.670)	ND (1.940)	ND (2.790)	ND (0.000)
Concentration, ppb, Dry	ND (0.0449)	ND (0.0522)	ND (0.0750)	ND (0.000)
Concentration, ug/DSCM *	ND (0.473)	ND (0.549)	ND (0.790)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0349)	ND (0.0405)	ND (0.0582)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00439)	ND (0.00510)	ND (0.00734)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-2-S2-MM5-2B

	FH	BH	Im	TOTA
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	ND (0.400)	ND (0.760)	ND (0.990)	ND (0.000)
Concentration, ppb, Dry	ND (0.00697)	ND (0.0133)	ND (0.0173)	ND (0.000)
Concentration, ug/DSCM *	ND (0.113)	ND (0.215)	ND (0.280)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00835)	ND (0.0159)	ND (0.0207)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00105)	ND (0.00200)	ND (0.00260)	ND (0.000)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (17.170)	ND (4.600)	ND (10.270)	ND (0.000)
Concentration, ppb, Dry	ND (0.479)	ND (0.128)	ND (0.286)	ND (0.000)
Concentration, ug/DSCM *	ND (4.860)	ND (1.300)	ND (2.910)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.358)	ND (0.0960)	ND (0.214)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0452)	ND (0.0121)	ND (0.0270)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-3-S2-MM5-3B

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (1.510)	ND (6.390)	ND (4.740)	ND (0.000)
Concentration, ppb, Dry	ND (0.160)	ND (0.678)	ND (0.503)	ND (0.000)
Concentration, ug/DSCM *	ND (0.493)	ND (2.090)	ND (1.550)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0313)	ND (0.133)	ND (0.0984)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00395)	ND (0.0167)	ND (0.0124)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.480)	ND (2.170)	ND (1.540)	ND (0.000)
Concentration, ppb, Dry	ND (0.0314)	ND (0.142)	ND (0.101)	ND (0.000)
Concentration, ug/DSCM *	ND (0.157)	ND (0.709)	ND (0.503)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00996)	ND (0.0450)	ND (0.0320)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00126)	ND (0.00568)	ND (0.00403)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (0.990)	ND (4.240)	ND (3.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.0571)	ND (0.245)	ND (0.173)	ND (0.000)
Concentration, ug/DSCM *	ND (0.323)	ND (1.380)	ND (0.980)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0206)	ND (0.0880)	ND (0.0623)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00259)	ND (0.0111)	ND (0.00785)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (0.730)	ND (3.260)	ND (2.450)	ND (0.000)
Concentration, ppb, Dry	ND (0.0421)	ND (0.188)	ND (0.141)	ND (0.000)
Concentration, ug/DSCM *	ND (0.238)	ND (1.060)	ND (0.800)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0152)	ND (0.0677)	ND (0.0509)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00191)	ND (0.00853)	ND (0.00641)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (1.690)	ND (2.670)	ND (2.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.135)	ND (0.214)	ND (0.221)	ND (0.000)
Concentration, ug/DSCM *	ND (0.552)	ND (0.872)	ND (0.901)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0351)	ND (0.0554)	ND (0.0573)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00442)	ND (0.00698)	ND (0.00722)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.590)	ND (2.720)	ND (1.950)	ND (0.000)
Concentration, ppb, Dry	ND (0.0386)	ND (0.178)	ND (0.127)	ND (0.000)
Concentration, ug/DSCM *	ND (0.193)	ND (0.888)	ND (0.637)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0122)	ND (0.0565)	ND (0.0405)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00154)	ND (0.00711)	ND (0.00510)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-3-S2-MM5-3B

	FH	BH	Im	TOTAl
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.550)	ND (2.450)	ND (1.750)	ND (0.000)
Concentration, ppb, Dry	ND (0.0459)	ND (0.205)	ND (0.146)	ND (0.000)
Concentration, ug/DSCM *	ND (0.180)	ND (0.800)	ND (0.572)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0114)	ND (0.0509)	ND (0.0363)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00144)	ND (0.00641)	ND (0.00458)	ND (0.000)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.480)	ND (2.180)	ND (1.520)	ND (0.000)
Concentration, ppb, Dry	ND (0.0298)	ND (0.135)	ND (0.0943)	ND (0.000)
Concentration, ug/DSCM *	ND (0.157)	ND (0.712)	ND (0.496)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00996)	ND (0.0453)	ND (0.0316)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00126)	ND (0.00570)	ND (0.00398)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (0.740)	ND (3.260)	ND (2.270)	ND (0.000)
Concentration, ppb, Dry	ND (0.0407)	ND (0.179)	ND (0.125)	ND (0.000)
Concentration, ug/DSCM *	ND (0.242)	ND (1.060)	ND (0.741)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0154)	ND (0.0677)	ND (0.0471)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00194)	ND (0.00853)	ND (0.00594)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (1.550)	ND (7.150)	ND (4.890)	ND (0.000
Concentration, ppb, Dry	ND (0.105)	ND (0.484)	ND (0.331)	ND (0.000)
Concentration, ug/DSCM *	ND (0.506)	ND (2.340)	ND (1.600)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0322)	ND (0.148)	ND (0.102)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00405)	ND (0.0187)	ND (0.0128)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (0.860)	ND (3.650)	ND (2.660)	ND (0.000)
Concentration, ppb, Dry	ND (0.0460)	ND (0.195)	ND (0.142)	ND (0.000)
Concentration, ug/DSCM *	ND (0.281)	ND (1.190)	ND (0.869)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0179)	ND (0.0758)	ND (0.0552)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00225)	ND (0.00955)	ND (0.00696)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (0.530)	ND (2.410)	ND (1.730)	ND (0.000)
Concentration, ppb, Dry	ND (0.0310)	ND (0.141)	ND (0.101)	ND (0.000)
Concentration, ug/DSCM *	ND (0.173)	ND (0.787)	ND (0.565)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0110)	ND (0.0500)	ND (0.0359)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00139)	ND (0.00630)	ND (0.00452)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-3-S2-MM5-3B

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (0.720)	ND (3.190)	ND (2.270)	ND (0.000)
Concentration, ppb, Dry	ND (0.0467)	ND (0.207)	ND (0.147)	ND (0.000)
Concentration, ug/DSCM *	ND (0.235)	ND (1.040)	ND (0.741)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0149)	ND (0.0662)	ND (0.0471)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00188)	ND (0.00834)	ND (0.00594)	ND (0.000)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (2.770)	ND (11.850)	ND (8.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.0921)	ND (0.394)	ND (0.285)	ND (0.000)
Concentration, ug/DSCM *	ND (0.905)	ND (3.870)	ND (2.800)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0575)	ND (0.246)	ND (0.178)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00724)	ND (0.0310)	ND (0.0224)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (2.100)	ND (9.200)	ND (6.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.0697)	ND (0.305)	ND (0.220)	ND (0.000)
Concentration, ug/DSCM *	ND (0.686)	ND (3.000)	ND (2.170)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0436)	ND (0.191)	ND (0.138)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00549)	ND (0.0241)	ND (0.0173)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (1.150)	ND (3.020)	ND (2.770)	ND (0.000)
Concentration, ppb, Dry	ND (0.0843)	ND (0.221)	ND (0.203)	ND (0.000)
Concentration, ug/DSCM *	ND (0.376)	ND (0.986)	ND (0.905)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0239)	ND (0.0627)	ND (0.0575)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00301)	ND (0.00790)	ND (0.00724)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (0.920)	ND (4.020)	ND (2.910)	ND (0.000)
Concentration, ppb, Dry	ND (0.0669)	ND (0.292)	ND (0.211)	ND (0.000)
Concentration, ug/DSCM *	ND (0.300)	ND (1.310)	ND (0.950)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0191)	ND (0.0834)	ND (0.0604)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00241)	ND (0.0105)	ND (0.00761)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (0.580)	ND (2.430)	ND (1.810)	ND (0.000)
Concentration, ppb, Dry	ND (0.0356)	ND (0.149)	ND (0.111)	ND (0.000)
Concentration, ug/DSCM *	ND (0.189)	ND (0.794)	ND (0.591)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0120)	ND (0.0504)	ND (0.0376)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00152)	ND (0.00636)	ND (0.00473)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-3-S2-MM5-3B

	FH	BH	Im	TOTA
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (1.110)	ND (3.520)	ND (3.250)	ND (0.000)
Concentration, ppb, Dry	ND (0.0720)	ND (0.228)	ND (0.211)	ND (0.000)
Concentration, ug/DSCM *	ND (0.363)	ND (1.150)	ND (1.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0230)	ND (0.0731)	ND (0.0675)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00290)	ND (0.00921)	ND (0.00850)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.400)	ND (1.820)	ND (1.260)	ND (0.000)
Concentration, ppb, Dry	ND (0.0227)	ND (0.103)	ND (0.0716)	ND (0.000)
Concentration, ug/DSCM *	ND (0.131)	ND (0.594)	ND (0.412)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00830)	ND (0.0378)	ND (0.0262)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00105)	ND (0.00476)	ND (0.00330)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (0.850)	ND (3.620)	ND (2.680)	ND (0.00(
Concentration, ppb, Dry	ND (0.0618)	ND (0.263)	ND (0.195)	ND (0.000,
Concentration, ug/DSCM *	ND (0.278)	ND (1.180)	ND (0.875)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0176)	ND (0.0751)	ND (0.0556)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00222)	ND (0.00947)	ND (0.00701)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (1.090)	ND (4.550)	ND (3.310)	ND (0.000)
Concentration, ppb, Dry	ND (0.0472)	ND (0.197)	ND (0.143)	ND (0.000)
Concentration, ug/DSCM *	ND (0.356)	ND (1.490)	ND (1.080)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0226)	ND (0.0944)	ND (0.0687)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00285)	ND (0.0119)	ND (0.00866)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (1.600)	ND (7.210)	ND (5.260)	ND (0.000)
Concentration, ppb, Dry	ND (0.0815)	ND (0.367)	ND (0.268)	ND (0.000)
Concentration, ug/DSCM *	ND (0.523)	ND (2.350)	ND (1.720)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0332)	ND (0.150)	ND (0.109)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00418)	ND (0.0189)	ND (0.0138)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

II-3-S2-MM5-3B

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.330)	ND (1.430)	ND (1.020)	ND (0.000)
Concentration, ppb, Dry	ND (0.0202)	ND (0.0877)	ND (0.0625)	ND (0.000)
Concentration, ug/DSCM *	ND (0.108)	ND (0.467)	ND (0.333)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00685)	ND (0.0297)	ND (0.0212)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000863)	ND (0.00374)	ND (0.00267)	ND (0.000)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (3.650)	ND (7.330)	ND (5.240)	ND (0.000)
Concentration, ppb, Dry	ND (0.233)	ND (0.468)	ND (0.334)	ND (0.000)
Concentration, ug/DSCM *	ND (1.190)	ND (2.390)	ND (1.710)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0758)	ND (0.152)	ND (0.109)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00955)	ND (0.0192)	ND (0.0137)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (2.690)	ND (10.520)	ND (8.150)	ND (0.000)
Concentration, ppb, Dry	ND (0.0811)	ND (0.317)	ND (0.246)	ND (0.000)
Concentration, ug/DSCM *	ND (0.879)	ND (3.440)	ND (2.660)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0558)	ND (0.218)	ND (0.169)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00704)	ND (0.0275)	ND (0.0213)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.510)	ND (2.340)	ND (1.620)	ND (0.000)
Concentration, ppb, Dry	ND (0.0259)	ND (0.119)	ND (0.0823)	ND (0.000)
Concentration, ug/DSCM *	ND (0.167)	ND (0.764)	ND (0.529)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0106)	ND (0.0486)	ND (0.0336)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00133)	ND (0.00612)	ND (0.00424)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (1.270)	ND (5.230)	ND (3.900)	ND (0.000)
Concentration, ppb, Dry	ND (0.0510)	ND (0.210)	ND (0.157)	ND (0.000)
Concentration, ug/DSCM *	ND (0.415)	ND (1.710)	ND (1.270)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0264)	ND (0.109)	ND (0.0810)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00332)	ND (0.0137)	ND (0.0102)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (1.060)	ND (3.450)	ND (3.080)	ND (0.000)
Concentration, ppb, Dry	ND (0.0558)	ND (0.182)	ND (0.162)	ND (0.000)
Concentration, ug/DSCM *	ND (0.346)	ND (1.130)	ND (1.010)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0220)	ND (0.0716)	ND (0.0639)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00277)	ND (0.00902)	ND (0.00806)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-3-S2-MM5-3B

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (3.070)	ND (5.840)	ND (6.120)	ND (0.000)
Concentration, ppb, Dry	ND (0.223)	ND (0.424)	ND (0.445)	ND (0.000)
Concentration, ug/DSCM *	ND (1.000)	ND (1.910)	ND (2.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0637)	ND (0.121)	ND (0.127)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00803)	ND (0.0153)	ND (0.0160)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (1.890)	ND (20.720)	ND (10.540)	ND (0.000)
Concentration, ppb, Dry	ND (0.0455)	ND (0.499)	ND (0.254)	ND (0.000)
Concentration, ug/DSCM *	ND (0.617)	ND (6.770)	ND (3.440)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0392)	ND (0.430)	ND (0.219)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00494)	ND (0.0542)	ND (0.0276)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (0.570)	ND (2.480)	ND (1.790)	ND (0.000)
Concentration, ppb, Dry	ND (0.0302)	ND (0.131)	ND (0.0949)	ND (0.000)
Concentration, ug/DSCM *	ND (0.186)	ND (0.810)	ND (0.585)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0118)	ND (0.0515)	ND (0.0372)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00149)	ND (0.00649)	ND (0.00468)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (2.530)	ND (17.790)	ND (10.610)	ND (0.000)
Concentration, ppb, Dry	ND (0.0729)	ND (0.512)	ND (0.306)	ND (0.000)
Concentration, ug/DSCM *	ND (0.826)	ND (5.810)	ND (3.470)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0525)	ND (0.369)	ND (0.220)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00662)	ND (0.0465)	ND (0.0277)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (9.490)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.503)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (3.100)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.197)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0248)	ND (0.000)	ND (0.000)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (1.760)	ND (7.970)	ND (5.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.0700)	ND (0.317)	ND (0.226)	ND (0.000)
Concentration, ug/DSCM *	ND (0.575)	ND (2.600)	ND (1.860)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0365)	ND (0.165)	ND (0.118)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00460)	ND (0.0208)	ND (0.0149)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

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	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (1.670)	ND (7.140)	ND (5.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.0665)	ND (0.284)	ND (0.226)	ND (0.000)
Concentration, ug/DSCM *	ND (0.545)	ND (2.330)	ND (1.860)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0347)	ND (0.148)	ND (0.118)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00437)	ND (0.0187)	ND (0.0149)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (11.730)	ND (26.130)	ND (27.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.754)	ND (1.680)	ND (1.790)	ND (0.000)
Concentration, ug/DSCM *	ND (3.830)	ND (8.530)	ND (9.100)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.243)	ND (0.542)	ND (0.578)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0307)	ND (0.0683)	ND (0.0729)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.160)	ND (7.930)	ND (6.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.0559)	ND (0.382)	ND (0.293)	ND (0.000)
Concentration, ug/DSCM *	ND (0.379)	ND (2.590)	ND (1.980)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0241)	ND (0.165)	ND (0.126)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00303)	ND (0.0207)	ND (0.0159)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.320)	ND (10.480)	ND (8.340)	ND (0.000)
Concentration, ppb, Dry	ND (0.112)	ND (0.505)	ND (0.402)	ND (0.000)
Concentration, ug/DSCM *	ND (0.758)	ND (3.420)	ND (2.720)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0482)	ND (0.218)	ND (0.173)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00607)	ND (0.0274)	ND (0.0218)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.450)	ND (7.290)	ND (5.120)	ND (0.000)
Concentration, ppb, Dry	ND (0.0699)	ND (0.351)	ND (0.247)	ND (0.000)
Concentration, ug/DSCM *	ND (0.474)	ND (2.380)	ND (1.670)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0301)	ND (0.151)	ND (0.106)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00379)	ND (0.0191)	ND (0.0134)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.380)	ND (6.480)	ND (4.750)	ND (0.000)
Concentration, ppb, Dry	ND (0.0665)	ND (0.312)	ND (0.229)	ND (0.000)
Concentration, ug/DSCM *	ND (0.451)	ND (2.120)	ND (1.550)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0286)	ND (0.135)	ND (0.0986)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00361)	ND (0.0169)	ND (0.0124)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-3-S2-MM5-3B

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (0.570)	ND (2.710)	ND (1.940)	ND (0.000)
Concentration, ppb, Dry	ND (0.0275)	ND (0.131)	ND (0.0935)	ND (0.000)
Concentration, ug/DSCM *	ND (0.186)	ND (0.885)	ND (0.634)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0118)	ND (0.0563)	ND (0.0403)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00149)	ND (0.00709)	ND (0.00507)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (0.520)	ND (2.500)	ND (1.830)	ND (0.000)
Concentration, ppb, Dry	ND (0.0249)	ND (0.120)	ND (0.0875)	ND (0.000)
Concentration, ug/DSCM *	ND (0.170)	ND (0.817)	ND (0.598)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0108)	ND (0.0519)	ND (0.0380)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00136)	ND (0.00654)	ND (0.00479)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.480)	ND (2.160)	ND (1.550)	ND (0.000)
Concentration, ppb, Dry	ND (0.0194)	ND (0.0874)	ND (0.0627)	ND (0.000)
Concentration, ug/DSCM *	ND (0.157)	ND (0.706)	ND (0.506)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00996)	ND (0.0448)	ND (0.0322)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00126)	ND (0.00565)	ND (0.00405)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (1.530)	ND (6.720)	ND (5.180)	ND (0.000)
Concentration, ppb, Dry	ND (0.0660)	ND (0.290)	ND (0.223)	ND (0.000)
Concentration, ug/DSCM *	ND (0.500)	ND (2.190)	ND (1.690)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0318)	ND (0.139)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00400)	ND (0.0176)	ND (0.0135)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (5.250)	ND (12.890)	ND (11.920)	ND (0.000)
Concentration, ppb, Dry	ND (0.224)	ND (0.550)	ND (0.509)	ND (0.000)
Concentration, ug/DSCM *	ND (1.710)	ND (4.210)	ND (3.890)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.109)	ND (0.268)	ND (0.247)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0137)	ND (0.0337)	ND (0.0312)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (3.610)	ND (9.420)	ND (8.340)	ND (0.000)
Concentration, ppb, Dry	ND (0.143)	ND (0.374)	ND (0.331)	ND (0.000)
Concentration, ug/DSCM *	ND (1.180)	ND (3.080)	ND (2.720)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0749)	ND (0.196)	ND (0.173)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00944)	ND (0.0246)	ND (0.0218)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-3-S2-MM5-3B

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (2.640)	ND (9.020)	ND (7.480)	ND (0.000)
Concentration, ppb, Dry	ND (0.123)	ND (0.421)	ND (0.349)	ND (0.000)
Concentration, ug/DSCM *	ND (0.862)	ND (2.950)	ND (2.440)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0548)	ND (0.187)	ND (0.155)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00690)	ND (0.0236)	ND (0.0196)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (2.370)	ND (3.300)	ND (2.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.134)	ND (0.186)	ND (0.141)	ND (0.000)
Concentration, ug/DSCM *	ND (0.774)	ND (1.080)	ND (0.817)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0492)	ND (0.0685)	ND (0.0519)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00620)	ND (0.00863)	ND (0.00654)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (3.670)	ND (15.360)	ND (12.260)	ND (0.000)
Concentration, ppb, Dry	ND (0.0860)	ND (0.360)	ND (0.287)	ND (0.000)
Concentration, ug/DSCM *	ND (1.200)	ND (5.020)	ND (4.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0762)	ND (0.319)	ND (0.254)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00960)	ND (0.0402)	ND (0.0321)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (2.010)	ND (8.050)	ND (6.390)	ND (0.000)
Concentration, ppb, Dry	ND (0.0555)	ND (0.222)	ND (0.176)	ND (0.000)
Concentration, ug/DSCM *	ND (0.657)	ND (2.630)	ND (2.090)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0417)	ND (0.167)	ND (0.133)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00526)	ND (0.0211)	ND (0.0167)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (0.870)	ND (2.150)	ND (2.210)	ND (0.000)
Concentration, ppb, Dry	ND (0.0404)	ND (0.0998)	ND (0.103)	ND (0.000)
Concentration, ug/DSCM *	ND (0.284)	ND (0.702)	ND (0.722)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0181)	ND (0.0446)	ND (0.0459)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00228)	ND (0.00562)	ND (0.00578)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (3.260)	ND (10.950)	ND (9.440)	ND (0.000)
Concentration, ppb, Dry	ND (0.0962)	ND (0.323)	ND (0.278)	ND (0.000)
Concentration, ug/DSCM *	ND (1.060)	ND (3.580)	ND (3.080)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0677)	ND (0.227)	ND (0.196)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00853)	ND (0.0286)	ND (0.0247)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-3-S2-MM5-3B

	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (5.380)	ND (18.510)	ND (15.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.143)	ND (0.492)	ND (0.412)	ND (0.000)
Concentration, ug/DSCM *	ND (1.760)	ND (6.050)	ND (5.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.112)	ND (0.384)	ND (0.322)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0141)	ND (0.0484)	ND (0.0405)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (1.100)	ND (3.800)	ND (3.270)	ND (0.000)
Concentration, ppb, Dry	ND (0.0434)	ND (0.150)	ND (0.129)	ND (0.000)
Concentration, ug/DSCM *	ND (0.359)	ND (1.240)	ND (1.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0228)	ND (0.0789)	ND (0.0679)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00288)	ND (0.00994)	ND (0.00855)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	ND (0.240)	ND (0.900)	ND (0.730)	ND (0.000)
Concentration, ppb, Dry	ND (0.00677)	ND (0.0254)	ND (0.0206)	ND (0.000)
Concentration, ug/DSCM *	ND (0.0784)	ND (0.294)	ND (0.238)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00498)	ND (0.0187)	ND (0.0152)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000628)	ND (0.00235)	ND (0.00191)	ND (0.000)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.230)	ND (0.930)	ND (0.840)	ND (0.000)
Concentration, ppb, Dry	ND (0.00894)	ND (0.0361)	ND (0.0326)	ND (0.000)
Concentration, ug/DSCM *	ND (0.0751)	ND (0.304)	ND (0.274)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00477)	ND (0.0193)	ND (0.0174)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000602)	ND (0.00243)	ND (0.00220)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (8.230)	ND (6.270)	ND (11.950)	ND (0.000)
Concentration, ppb, Dry	ND (0.351)	ND (0.267)	ND (0.510)	ND (0.000)
Concentration, ug/DSCM *	ND (2.690)	ND (2.050)	ND (3.900)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.171)	ND (0.130)	ND (0.248)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0215)	ND (0.0164)	ND (0.0313)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (6.220)	ND (6.220)	ND (9.080)	ND (0.000)
Concentration, ppb, Dry	ND (0.247)	ND (0.247)	ND (0.360)	ND (0.000)
Concentration, ug/DSCM *	ND (2.030)	ND (2.030)	ND (2.970)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.129)	ND (0.129)	ND (0.188)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0163)	ND (0.0163)	ND (0.0237)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-3-S2-MM5-3B

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (0.930)	ND (3.400)	ND (3.190)	ND (0.000)
Concentration, ppb, Dry	ND (0.0324)	ND (0.119)	ND (0.111)	ND (0.000)
Concentration, ug/DSCM *	ND (0.304)	ND (1.110)	ND (1.040)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0193)	ND (0.0706)	ND (0.0662)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00243)	ND (0.00889)	ND (0.00834)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.350)	ND (1.620)	ND (1.340)	ND (0.000)
Concentration, ppb, Dry	ND (0.00880)	ND (0.0407)	ND (0.0337)	ND (0.000)
Concentration, ug/DSCM *	ND (0.114)	ND (0.529)	ND (0.438)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00727)	ND (0.0336)	ND (0.0278)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000915)	ND (0.00424)	ND (0.00350)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (3.380)	ND (2.610)	ND (4.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.125)	ND (0.0966)	ND (0.174)	ND (0.000)
Concentration, ug/DSCM *	ND (1.100)	ND (0.852)	ND (1.540)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0702)	ND (0.0542)	ND (0.0976)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00884)	ND (0.00683)	ND (0.0123)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (1.860)	ND (4.870)	ND (4.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.0547)	ND (0.143)	ND (0.136)	ND (0.000)
Concentration, ug/DSCM *	ND (0.608)	ND (1.590)	ND (1.510)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0386)	ND (0.101)	ND (0.0961)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00486)	ND (0.0127)	ND (0.0121)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.220)	ND (0.910)	ND (0.850)	ND (0.000)
Concentration, ppb, Dry	ND (0.00757)	ND (0.0313)	ND (0.0293)	ND (0.000)
Concentration, ug/DSCM *	ND (0.0719)	ND (0.297)	ND (0.278)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00457)	ND (0.0189)	ND (0.0176)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000575)	ND (0.00238)	ND (0.00222)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (0.950)	ND (2.800)	ND (2.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.0295)	ND (0.0869)	ND (0.0832)	ND (0.000)
Concentration, ug/DSCM *	ND (0.310)	ND (0.915)	ND (0.875)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0197)	ND (0.0581)	ND (0.0556)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00248)	ND (0.00732)	ND (0.00701)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

II-3-S2-MM5-3B

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	EV [4.410]	ND (1.120)	ND (0.950)	EV (4.410)
Concentration, ppb, Dry	EV [0.0887]	ND (0.0225)	ND (0.0191)	EV (0.0887)
Concentration, ug/DSCM *	EV [1.440]	ND (0.366)	ND (0.310)	EV (1.440)
Emission Rate, 1,000 * (Pounds/Hour)	EV [0.0915]	ND (0.0232)	ND (0.0197)	EV (0.0915)
Emission Rate, Milligrams/Second	EV [0.0115]	ND (0.00293)	ND (0.00248)	EV (0.0115)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (9.810)	ND (6.410)	ND (9.870)	ND (0.000)
Concentration, ppb, Dry	ND (0.316)	ND (0.206)	ND (0.317)	ND (0.000)
Concentration, ug/DSCM *	ND (3.200)	ND (2.090)	ND (3.220)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.204)	ND (0.133)	ND (0.205)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0257)	ND (0.0168)	ND (0.0258)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1A

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (2.540)	ND (5.250)	ND (3.280)	ND (0.000)
Concentration, ppb, Dry	ND (0.352)	ND (0.727)	ND (0.454)	ND (0.000)
Concentration, ug/DSCM *	ND (1.080)	ND (2.240)	ND (1.400)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0680)	ND (0.141)	ND (0.0878)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00857)	ND (0.0177)	ND (0.0111)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.810)	ND (1.780)	ND (1.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.0691)	ND (0.152)	ND (0.0913)	ND (0.000)
Concentration, ug/DSCM *	ND (0.345)	ND (0.759)	ND (0.456)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0217)	ND (0.0476)	ND (0.0286)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00273)	ND (0.00600)	ND (0.00361)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.660)	ND (3.480)	ND (2.080)	ND (0.000)
Concentration, ppb, Dry	ND (0.125)	ND (0.262)	ND (0.157)	ND (0.000)
Concentration, ug/DSCM *	ND (0.708)	ND (1.480)	ND (0.887)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0444)	ND (0.0931)	ND (0.0557)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00560)	ND (0.0117)	ND (0.00701)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.220)	ND (2.680)	ND (1.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.0919)	ND (0.202)	ND (0.128)	ND (0.000)
Concentration, ug/DSCM *	ND (0.520)	ND (1.140)	ND (0.725)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0327)	ND (0.0717)	ND (0.0455)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00411)	ND (0.00904)	ND (0.00573)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (2.850)	ND (2.190)	ND (1.910)	ND (0.000)
Concentration, ppb, Dry	ND (0.298)	ND (0.229)	ND (0.200)	ND (0.000)
Concentration, ug/DSCM *	ND (1.220)	ND (0.934)	ND (0.815)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0763)	ND (0.0586)	ND (0.0511)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00961)	ND (0.00739)	ND (0.00644)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.990)	ND (2.240)	ND (1.350)	ND (0.000)
Concentration, ppb, Dry	ND (0.0845)	ND (0.191)	ND (0.115)	ND (0.000)
Concentration, ug/DSCM *	ND (0.422)	ND (0.955)	ND (0.576)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0265)	ND (0.0600)	ND (0.0361)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00334)	ND (0.00755)	ND (0.00455)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.920)	ND (2.010)	ND (1.210)	ND (0.000)
Concentration, ppb, Dry	ND (0.100)	ND (0.219)	ND (0.132)	ND (0.000)
Concentration, ug/DSCM *	ND (0.392)	ND (0.857)	ND (0.516)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0246)	ND (0.0538)	ND (0.0324)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00310)	ND (0.00678)	ND (0.00408)	ND (0.000)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.810)	ND (1.790)	ND (1.050)	ND (0.000)
Concentration, ppb, Dry	ND (0.0657)	ND (0.145)	ND (0.0851)	ND (0.000)
Concentration, ug/DSCM *	ND (0.345)	ND (0.763)	ND (0.448)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0217)	ND (0.0479)	ND (0.0281)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00273)	ND (0.00604)	ND (0.00354)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.250)	ND (2.680)	ND (1.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.0897)	ND (0.192)	ND (0.113)	ND (0.000)
Concentration, ug/DSCM *	ND (0.533)	ND (1.140)	ND (0.674)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0335)	ND (0.0717)	ND (0.0423)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00422)	ND (0.00904)	ND (0.00533)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (2.620)	ND (5.870)	ND (3.390)	ND (0.000)
Concentration, ppb, Dry	ND (0.232)	ND (0.519)	ND (0.300)	ND (0.000)
Concentration, ug/DSCM *	ND (1.120)	ND (2.500)	ND (1.450)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0701)	ND (0.157)	ND (0.0907)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00884)	ND (0.0198)	ND (0.0114)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.450)	ND (3.000)	ND (1.840)	ND (0.000)
Concentration, ppb, Dry	ND (0.101)	ND (0.209)	ND (0.128)	ND (0.000)
Concentration, ug/DSCM *	ND (0.618)	ND (1.280)	ND (0.785)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0388)	ND (0.0803)	ND (0.0492)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00489)	ND (0.0101)	ND (0.00621)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (0.890)	ND (1.980)	ND (1.200)	ND (0.000)
Concentration, ppb, Dry	ND (0.0680)	ND (0.151)	ND (0.0917)	ND (0.000)
Concentration, ug/DSCM *	ND (0.380)	ND (0.844)	ND (0.512)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0238)	ND (0.0530)	ND (0.0321)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00300)	ND (0.00668)	ND (0.00405)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.220)	ND (2.620)	ND (1.570)	ND (0.000)
Concentration, ppb, Dry	ND (0.103)	ND (0.222)	ND (0.133)	ND (0.000)
Concentration, ug/DSCM *	ND (0.520)	ND (1.120)	ND (0.670)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0327)	ND (0.0701)	ND (0.0420)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00411)	ND (0.00884)	ND (0.00529)	ND (0.000)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (4.670)	ND (9.730)	ND (5.950)	ND (0.000)
Concentration, ppb, Dry	ND (0.203)	ND (0.422)	ND (0.258)	ND (0.000)
Concentration, ug/DSCM *	ND (1.990)	ND (4.150)	ND (2.540)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.125)	ND (0.260)	ND (0.159)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0157)	ND (0.0328)	ND (0.0201)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (3.550)	ND (7.550)	ND (4.600)	ND (0.000)
Concentration, ppb, Dry	ND (0.154)	ND (0.327)	ND (0.199)	ND (0.000)
Concentration, ug/DSCM *	ND (1.510)	ND (3.220)	ND (1.960)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0950)	ND (0.202)	ND (0.123)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0120)	ND (0.0255)	ND (0.0155)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (1.940)	ND (2.480)	ND (1.920)	ND (0.000)
Concentration, ppb, Dry	ND (0.186)	ND (0.237)	ND (0.184)	ND (0.000)
Concentration, ug/DSCM *	ND (0.827)	ND (1.060)	ND (0.819)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0519)	ND (0.0664)	ND (0.0514)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00654)	ND (0.00836)	ND (0.00647)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.550)	ND (3.300)	ND (2.010)	ND (0.000)
Concentration, ppb, Dry	ND (0.147)	ND (0.313)	ND (0.191)	ND (0.000)
Concentration, ug/DSCM *	ND (0.661)	ND (1.410)	ND (0.857)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0415)	ND (0.0883)	ND (0.0538)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00523)	ND (0.0111)	ND (0.00678)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (0.980)	ND (1.990)	ND (1.260)	ND (0.000)
Concentration, ppb, Dry	ND (0.0785)	ND (0.159)	ND (0.101)	ND (0.000)
Concentration, ug/DSCM *	ND (0.418)	ND (0.849)	ND (0.537)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0262)	ND (0.0533)	ND (0.0337)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00330)	ND (0.00671)	ND (0.00425)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1A

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (1.880)	ND (2.890)	ND (2.260)	ND (0.000)
Concentration, ppb, Dry	ND (0.159)	ND (0.245)	ND (0.191)	ND (0.000)
Concentration, ug/DSCM *	ND (0.802)	ND (1.230)	ND (0.964)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0503)	ND (0.0774)	ND (0.0605)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00634)	ND (0.00975)	ND (0.00762)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.670)	ND (1.490)	ND (0.880)	ND (0.000)
Concentration, ppb, Dry	ND (0.0497)	ND (0.111)	ND (0.0653)	ND (0.000)
Concentration, ug/DSCM *	ND (0.286)	ND (0.635)	ND (0.375)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0179)	ND (0.0399)	ND (0.0236)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00226)	ND (0.00502)	ND (0.00297)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.440)	ND (2.970)	ND (1.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.137)	ND (0.282)	ND (0.176)	ND (0.000)
Concentration, ug/DSCM *	ND (0.614)	ND (1.270)	ND (0.793)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0385)	ND (0.0795)	ND (0.0498)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00486)	ND (0.0100)	ND (0.00627)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (1.830)	ND (3.730)	ND (2.290)	ND (0.000)
Concentration, ppb, Dry	ND (0.103)	ND (0.211)	ND (0.129)	ND (0.000)
Concentration, ug/DSCM *	ND (0.781)	ND (1.590)	ND (0.977)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0490)	ND (0.0998)	ND (0.0613)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00617)	ND (0.0126)	ND (0.00772)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (2.700)	ND (5.920)	ND (3.650)	ND (0.000)
Concentration, ppb, Dry	ND (0.180)	ND (0.394)	ND (0.243)	ND (0.000)
Concentration, ug/DSCM *	ND (1.150)	ND (2.520)	ND (1.560)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0723)	ND (0.158)	ND (0.0977)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00911)	ND (0.0200)	ND (0.0123)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.550)	ND (1.180)	ND (0.710)	ND (0.000)
Concentration, ppb, Dry	ND (0.0440)	ND (0.0945)	ND (0.0568)	ND (0.000)
Concentration, ug/DSCM *	ND (0.235)	ND (0.503)	ND (0.303)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0147)	ND (0.0316)	ND (0.0190)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00185)	ND (0.00398)	ND (0.00239)	ND (0.000)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (6.150)	ND (6.020)	ND (3.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.512)	ND (0.502)	ND (0.302)	ND (0.000)
Concentration, ug/DSCM *	ND (2.620)	ND (2.570)	ND (1.550)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.165)	ND (0.161)	ND (0.0972)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0207)	ND (0.0203)	ND (0.0122)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (4.530)	ND (8.630)	ND (5.650)	ND (0.000)
Concentration, ppb, Dry	ND (0.178)	ND (0.340)	ND (0.222)	ND (0.000)
Concentration, ug/DSCM *	ND (1.930)	ND (3.680)	ND (2.410)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.121)	ND (0.231)	ND (0.151)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0153)	ND (0.0291)	ND (0.0191)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.870)	ND (1.920)	ND (1.120)	ND (0.000)
Concentration, ppb, Dry	ND (0.0577)	ND (0.127)	ND (0.0743)	ND (0.000)
Concentration, ug/DSCM *	ND (0.371)	ND (0.819)	ND (0.478)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0233)	ND (0.0514)	ND (0.0300)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00293)	ND (0.00647)	ND (0.00378)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (2.140)	ND (4.290)	ND (2.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.112)	ND (0.225)	ND (0.142)	ND (0.000)
Concentration, ug/DSCM *	ND (0.913)	ND (1.830)	ND (1.150)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0573)	ND (0.115)	ND (0.0723)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00722)	ND (0.0145)	ND (0.00911)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (1.790)	ND (2.830)	ND (2.130)	ND (0.000)
Concentration, ppb, Dry	ND (0.123)	ND (0.195)	ND (0.146)	ND (0.000)
Concentration, ug/DSCM *	ND (0.763)	ND (1.210)	ND (0.908)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0479)	ND (0.0757)	ND (0.0570)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00604)	ND (0.00954)	ND (0.00718)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

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III-1-S2-MM5-1A

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (5.170)	ND (4.800)	ND (4.250)	ND (0.000)
Concentration, ppb, Dry	ND (0.491)	ND (0.455)	ND (0.403)	ND (0.000)
Concentration, ug/DSCM *	ND (2.210)	ND (2.050)	ND (1.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.138)	ND (0.128)	ND (0.114)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0174)	ND (0.0162)	ND (0.0143)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (3.180)	ND (17.010)	ND (7.310)	ND (0.000)
Concentration, ppb, Dry	ND (0.100)	ND (0.535)	ND (0.230)	ND (0.000)
Concentration, ug/DSCM *	ND (1.360)	ND (7.250)	ND (3.120)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0851)	ND (0.455)	ND (0.196)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0107)	ND (0.0574)	ND (0.0247)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (0.960)	ND (2.040)	ND (1.240)	ND (0.000)
Concentration, ppb, Dry	ND (0.0664)	ND (0.141)	ND (0.0858)	ND (0.000)
Concentration, ug/DSCM *	ND (0.409)	ND (0.870)	ND (0.529)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0257)	ND (0.0546)	ND (0.0332)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00324)	ND (0.00688)	ND (0.00418)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (4.220)	ND (14.030)	ND (7.280)	ND (0.000)
Concentration, ppb, Dry	ND (0.159)	ND (0.528)	ND (0.274)	ND (0.000)
Concentration, ug/DSCM *	ND (1.800)	ND (5.980)	ND (3.100)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.113)	ND (0.376)	ND (0.195)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0142)	ND (0.0473)	ND (0.0246)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (15.850)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (1.100)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (6.760)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.424)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0535)	ND (0.000)	ND (0.000)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.940)	ND (6.280)	ND (3.900)	ND (0.000)
Concentration, ppb, Dry	ND (0.153)	ND (0.326)	ND (0.203)	ND (0.000)
Concentration, ug/DSCM *	ND (1.250)	ND (2.680)	ND (1.660)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0787)	ND (0.168)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00991)	ND (0.0212)	ND (0.0132)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

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III-1-S2-MM5-1A

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.790)	ND (5.630)	ND (3.900)	ND (0.000)
Concentration, ppb, Dry	ND (0.145)	ND (0.293)	ND (0.203)	ND (0.000)
Concentration, ug/DSCM *	ND (1.190)	ND (2.400)	ND (1.660)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0747)	ND (0.151)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00941)	ND (0.0190)	ND (0.0132)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (19.590)	ND (20.610)	ND (19.110)	ND (0.000)
Concentration, ppb, Dry	ND (1.650)	ND (1.730)	ND (1.600)	ND (0.000)
Concentration, ug/DSCM *	ND (8.360)	ND (8.790)	ND (8.150)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.524)	ND (0.552)	ND (0.511)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0661)	ND (0.0695)	ND (0.0644)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.940)	ND (6.250)	ND (4.170)	ND (0.000)
Concentration, ppb, Dry	ND (0.122)	ND (0.393)	ND (0.262)	ND (0.000)
Concentration, ug/DSCM *	ND (0.827)	ND (2.670)	ND (1.780)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0519)	ND (0.167)	ND (0.112)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00654)	ND (0.0211)	ND (0.0141)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (3.880)	ND (8.260)	ND (5.720)	ND (0.000)
Concentration, ppb, Dry	ND (0.244)	ND (0.520)	ND (0.360)	ND (0.000)
Concentration, ug/DSCM *	ND (1.650)	ND (3.520)	ND (2.440)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.221)	ND (0.153)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0131)	ND (0.0279)	ND (0.0193)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.430)	ND (5.750)	ND (3.510)	ND (0.000)
Concentration, ppb, Dry	ND (0.153)	ND (0.362)	ND (0.221)	ND (0.000)
Concentration, ug/DSCM *	ND (1.040)	ND (2.450)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0650)	ND (0.154)	ND (0.0939)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00819)	ND (0.0194)	ND (0.0118)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.310)	ND (5.110)	ND (3.260)	ND (0.000)
Concentration, ppb, Dry	ND (0.145)	ND (0.322)	ND (0.205)	ND (0.000)
Concentration, ug/DSCM *	ND (0.985)	ND (2.180)	ND (1.390)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0618)	ND (0.137)	ND (0.0873)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00779)	ND (0.0172)	ND (0.0110)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1A

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (0.950)	ND (2.130)	ND (1.330)	ND (0.000)
Concentration, ppb, Dry	ND (0.0598)	ND (0.134)	ND (0.0837)	ND (0.000)
Concentration, ug/DSCM *	ND (0.405)	ND (0.908)	ND (0.567)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0254)	ND (0.0570)	ND (0.0356)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00320)	ND (0.00718)	ND (0.00449)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (0.870)	ND (1.970)	ND (1.260)	ND (0.000)
Concentration, ppb, Dry	ND (0.0543)	ND (0.123)	ND (0.0787)	ND (0.000)
Concentration, ug/DSCM *	ND (0.371)	ND (0.840)	ND (0.537)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0233)	ND (0.0527)	ND (0.0337)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00293)	ND (0.00664)	ND (0.00425)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.800)	ND (1.710)	ND (1.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.0423)	ND (0.0903)	ND (0.0565)	ND (0.000)
Concentration, ug/DSCM *	ND (0.341)	ND (0.729)	ND (0.456)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0214)	ND (0.0458)	ND (0.0286)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00270)	ND (0.00577)	ND (0.00361)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (2.550)	ND (5.300)	ND (3.560)	ND (0.000)
Concentration, ppb, Dry	ND (0.144)	ND (0.299)	ND (0.201)	ND (0.000)
Concentration, ug/DSCM *	ND (1.090)	ND (2.260)	ND (1.520)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0683)	ND (0.142)	ND (0.0953)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00860)	ND (0.0179)	ND (0.0120)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (8.760)	ND (10.170)	ND (8.180)	ND (0.000)
Concentration, ppb, Dry	ND (0.488)	ND (0.567)	ND (0.456)	ND (0.000)
Concentration, ug/DSCM *	ND (3.740)	ND (4.340)	ND (3.490)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.234)	ND (0.272)	ND (0.219)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0295)	ND (0.0343)	ND (0.0276)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (6.040)	ND (7.430)	ND (5.720)	ND (0.000)
Concentration, ppb, Dry	ND (0.313)	ND (0.385)	ND (0.296)	ND (0.000)
Concentration, ug/DSCM *	ND (2.580)	ND (3.170)	ND (2.440)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.162)	ND (0.199)	ND (0.153)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0204)	ND (0.0251)	ND (0.0193)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (4.400)	ND (7.120)	ND (5.130)	ND (0.000)
Concentration, ppb, Dry	ND (0.268)	ND (0.434)	ND (0.313)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (3.040)	ND (2.190)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.118)	ND (0.191)	ND (0.137)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0148)	ND (0.0240)	ND (0.0173)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (3.960)	ND (2.600)	ND (1.710)	ND (0.000)
Concentration, ppb, Dry	ND (0.292)	ND (0.192)	ND (0.126)	ND (0.000)
Concentration, ug/DSCM *	ND (1.690)	ND (1.110)	ND (0.729)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.106)	ND (0.0696)	ND (0.0458)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0134)	ND (0.00877)	ND (0.00577)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (6.140)	ND (12.110)	ND (8.410)	ND (0.000)
Concentration, ppb, Dry	ND (0.188)	ND (0.371)	ND (0.257)	ND (0.000)
Concentration, ug/DSCM *	ND (2.620)	ND (5.160)	ND (3.590)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.164)	ND (0.324)	ND (0.225)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0207)	ND (0.0408)	ND (0.0284)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (3.350)	ND (6.350)	ND (4.380)	ND (0.000)
Concentration, ppb, Dry	ND (0.121)	ND (0.229)	ND (0.158)	ND (0.000)
Concentration, ug/DSCM *	ND (1.430)	ND (2.710)	ND (1.870)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0897)	ND (0.170)	ND (0.117)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0113)	ND (0.0214)	ND (0.0148)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.450)	ND (1.690)	ND (1.520)	ND (0.000)
Concentration, ppb, Dry	ND (0.0879)	ND (0.102)	ND (0.0922)	ND (0.000)
Concentration, ug/DSCM *	ND (0.618)	ND (0.721)	ND (0.648)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0388)	ND (0.0452)	ND (0.0407)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00489)	ND (0.00570)	ND (0.00513)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (5.450)	ND (8.640)	ND (6.480)	ND (0.000)
Concentration, ppb, Dry	ND (0.210)	ND (0.333)	ND (0.250)	ND (0.000)
Concentration, ug/DSCM *	ND (2.320)	ND (3.680)	ND (2.760)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.146)	ND (0.231)	ND (0.173)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0184)	ND (0.0291)	ND (0.0219)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (8.990)	ND (14.590)	ND (10.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.312)	ND (0.507)	ND (0.369)	ND (0.000)
Concentration, ug/DSCM *	ND (3.830)	ND (6.220)	ND (4.530)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.241)	ND (0.391)	ND (0.285)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0303)	ND (0.0492)	ND (0.0358)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (1.840)	ND (3.000)	ND (2.240)	ND (0.000)
Concentration, ppb, Dry	ND (0.0948)	ND (0.155)	ND (0.115)	ND (0.000)
Concentration, ug/DSCM *	ND (0.785)	ND (1.280)	ND (0.955)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0492)	ND (0.0803)	ND (0.0600)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00621)	ND (0.0101)	ND (0.00755)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	ND (0.390)	ND (0.710)	ND (0.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0144)	ND (0.0262)	ND (0.0184)	ND (0.000)
Concentration, ug/DSCM *	ND (0.166)	ND (0.303)	ND (0.213)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0104)	ND (0.0190)	ND (0.0134)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00132)	ND (0.00239)	ND (0.00169)	ND (0.000)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.430)	ND (0.720)	ND (0.600)	ND (0.000)
Concentration, ppb, Dry	ND (0.0218)	ND (0.0365)	ND (0.0304)	ND (0.000)
Concentration, ug/DSCM *	ND (0.183)	ND (0.307)	ND (0.256)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0115)	ND (0.0193)	ND (0.0161)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00145)	ND (0.00243)	ND (0.00202)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (15.090)	ND (4.850)	ND (8.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.840)	ND (0.270)	ND (0.473)	ND (0.000)
Concentration, ug/DSCM *	ND (6.440)	ND (2.070)	ND (3.620)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.404)	ND (0.130)	ND (0.227)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0509)	ND (0.0164)	ND (0.0286)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (11.400)	ND (4.810)	ND (6.440)	ND (0.000)
Concentration, ppb, Dry	ND (0.590)	ND (0.249)	ND (0.333)	ND (0.000)
Concentration, ug/DSCM *	ND (4.860)	ND (2.050)	ND (2.750)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.305)	ND (0.129)	ND (0.172)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0384)	ND (0.0162)	ND (0.0217)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (1.700)	ND (2.630)	ND (2.270)	ND (0.000)
Concentration, ppb, Dry	ND (0.0774)	ND (0.120)	ND (0.103)	ND (0.000)
Concentration, ug/DSCM *	ND (0.725)	ND (1.120)	ND (0.968)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0455)	ND (0.0704)	ND (0.0608)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00573)	ND (0.00887)	ND (0.00766)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.650)	ND (1.260)	ND (0.950)	ND (0.000)
Concentration, ppb, Dry	ND (0.0213)	ND (0.0414)	ND (0.0312)	ND (0.000)
Concentration, ug/DSCM *	ND (0.277)	ND (0.537)	ND (0.405)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0174)	ND (0.0337)	ND (0.0254)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00219)	ND (0.00425)	ND (0.00320)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (6.190)	ND (2.020)	ND (3.340)	ND (0.000)
Concentration, ppb, Dry	ND (0.299)	ND (0.0976)	ND (0.161)	ND (0.000)
Concentration, ug/DSCM *	ND (2.640)	ND (0.862)	ND (1.420)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.166)	ND (0.0541)	ND (0.0894)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0209)	ND (0.00681)	ND (0.0113)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (3.400)	ND (3.770)	ND (3.280)	ND (0.000)
Concentration, ppb, Dry	ND (0.131)	ND (0.145)	ND (0.126)	ND (0.000)
Concentration, ug/DSCM *	ND (1.450)	ND (1.610)	ND (1.400)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0910)	ND (0.101)	ND (0.0878)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0115)	ND (0.0127)	ND (0.0111)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.410)	ND (0.700)	ND (0.610)	ND (0.000)
Concentration, ppb, Dry	ND (0.0184)	ND (0.0315)	ND (0.0274)	ND (0.000)
Concentration, ug/DSCM *	ND (0.175)	ND (0.299)	ND (0.260)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0110)	ND (0.0187)	ND (0.0163)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00138)	ND (0.00236)	ND (0.00206)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (1.750)	ND (2.160)	ND (1.910)	ND (0.000)
Concentration, ppb, Dry	ND (0.0709)	ND (0.0876)	ND (0.0774)	ND (0.000)
Concentration, ug/DSCM *	ND (0.746)	ND (0.921)	ND (0.815)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0468)	ND (0.0578)	ND (0.0511)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00590)	ND (0.00728)	ND (0.00644)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1A

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	ND (0.420)	71.310	ND (0.670)	71.310
Concentration, ppb, Dry	ND (0.0110)	1.870	ND (0.0176)	1.870
Concentration, ug/DSCM *	ND (0.179)	30.400	ND (0.286)	30.400
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0112)	1.910	ND (0.0179)	1.910
Emission Rate, Milligrams/Second	ND (0.00142)	0.240	ND (0.00226)	0.240
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (17.990)	ND (4.960)	ND (7.010)	ND (0.000)
Concentration, ppb, Dry	ND (0.756)	ND (0.208)	ND (0.294)	ND (0.000)
Concentration, ug/DSCM *	ND (7.670)	ND (2.120)	ND (2.990)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.482)	ND (0.133)	ND (0.188)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0607)	ND (0.0167)	ND (0.0236)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1B

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (2.380)	ND (4.630)	ND (4.800)	ND (0.000)
Concentration, ppb, Dry	ND (0.323)	ND (0.629)	ND (0.652)	ND (0.000)
Concentration, ug/DSCM *	ND (0.996)	ND (1.940)	ND (2.010)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0617)	ND (0.120)	ND (0.124)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00777)	ND (0.0151)	ND (0.0157)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.750)	ND (1.570)	ND (1.560)	ND (0.000)
Concentration, ppb, Dry	ND (0.0628)	ND (0.131)	ND (0.131)	ND (0.000)
Concentration, ug/DSCM *	ND (0.314)	ND (0.657)	ND (0.653)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0194)	ND (0.0407)	ND (0.0404)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00245)	ND (0.00512)	ND (0.00509)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.560)	ND (3.070)	ND (3.040)	ND (0.000)
Concentration, ppb, Dry	ND (0.115)	ND (0.227)	ND (0.225)	ND (0.000)
Concentration, ug/DSCM *	ND (0.653)	ND (1.280)	ND (1.270)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0404)	ND (0.0795)	ND (0.0787)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00509)	ND (0.0100)	ND (0.00992)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.140)	ND (2.360)	ND (2.480)	ND (0.000)
Concentration, ppb, Dry	ND (0.0842)	ND (0.174)	ND (0.183)	ND (0.000)
Concentration, ug/DSCM *	ND (0.477)	ND (0.988)	ND (1.040)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0295)	ND (0.0611)	ND (0.0642)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00372)	ND (0.00770)	ND (0.00809)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (2.670)	ND (1.930)	ND (2.790)	ND (0.000)
Concentration, ppb, Dry	ND (0.274)	ND (0.198)	ND (0.286)	ND (0.000)
Concentration, ug/DSCM *	ND (1.120)	ND (0.808)	ND (1.170)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0692)	ND (0.0500)	ND (0.0723)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00871)	ND (0.00630)	ND (0.00911)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.920)	ND (1.970)	ND (1.970)	ND (0.000)
Concentration, ppb, Dry	ND (0.0771)	ND (0.165)	ND (0.165)	ND (0.000)
Concentration, ug/DSCM *	ND (0.385)	ND (0.824)	ND (0.824)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0238)	ND (0.0510)	ND (0.0510)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00300)	ND (0.00643)	ND (0.00643)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	EV [21.790]	ND (1.780)	86.210	108.000
Concentration, ppb, Dry	EV [2.330]	ND (0.190)	9.220	11.550
Concentration, ug/DSCM *	EV [9.120]	ND (0.745)	36.100	45.220
Emission Rate, 1,000 * (Pounds/Hour)	EV [0.564]	ND (0.0461)	2.230	2.794
Emission Rate, Milligrams/Second	EV [0.0711]	ND (0.00581)	0.281	0.352
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.760)	ND (1.580)	ND (1.540)	ND (0.000)
Concentration, ppb, Dry	ND (0.0604)	ND (0.126)	ND (0.122)	ND (0.000)
Concentration, ug/DSCM *	ND (0.318)	ND (0.661)	ND (0.645)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0197)	ND (0.0409)	ND (0.0399)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00248)	ND (0.00516)	ND (0.00503)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.170)	ND (2.360)	ND (2.300)	ND (0.000)
Concentration, ppb, Dry	ND (0.0824)	ND (0.166)	ND (0.162)	ND (0.000)
Concentration, ug/DSCM *	ND (0.490)	ND (0.988)	ND (0.963)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0303)	ND (0.0611)	ND (0.0596)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00382)	ND (0.00770)	ND (0.00751)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (2.440)	ND (5.180)	ND (4.960)	ND (0.000)
Concentration, ppb, Dry	ND (0.212)	ND (0.449)	ND (0.430)	ND (0.000
Concentration, ug/DSCM *	ND (1.020)	ND (2.170)	ND (2.080)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0632)	ND (0.134)	ND (0.128)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00796)	ND (0.0169)	ND (0.0162)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.350)	ND (2.640)	ND (2.690)	ND (0.000)
Concentration, ppb, Dry	ND (0.0925)	ND (0.181)	ND (0.184)	ND (0.000)
Concentration, ug/DSCM *	ND (0.565)	ND (1.100)	ND (1.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0350)	ND (0.0684)	ND (0.0697)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00441)	ND (0.00862)	ND (0.00878)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (0.830)	ND (1.740)	ND (1.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.0623)	ND (0.131)	ND (0.132)	ND (0.000)
Concentration, ug/DSCM *	ND (0.347)	ND (0.728)	ND (0.737)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0215)	ND (0.0451)	ND (0.0456)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00271)	ND (0.00568)	ND (0.00574)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.140)	EV [11.210]	ND (2.300)	EV (11.210)
Concentration, ppb, Dry	ND (0.0947)	EV [0.932]	ND (0.191)	EV (0.932)
Concentration, ug/DSCM *	ND (0.477)	EV [4.690]	ND (0.963)	EV (4.690)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0295)	EV [0.290]	ND (0.0596)	EV (0.290)
Emission Rate, Milligrams/Second	ND (0.00372)	EV [0.0366]	ND (0.00751)	EV (0.0366)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (4.360)	ND (8.580)	ND (8.690)	ND (0.000)
Concentration, ppb, Dry	ND (0.186)	ND (0.365)	ND (0.370)	ND (0.000)
Concentration, ug/DSCM *	ND (1.820)	ND (3.590)	ND (3.640)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.113)	ND (0.222)	ND (0.225)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0142)	ND (0.0280)	ND (0.0284)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (3.310)	ND (6.660)	ND (6.720)	ND (0.000)
Concentration, ppb, Dry	ND (0.141)	ND (0.283)	ND (0.286)	ND (0.000)
Concentration, ug/DSCM *	ND (1.390)	ND (2.790)	ND (2.810)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0857)	ND (0.173)	ND (0.174)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0108)	ND (0.0217)	ND (0.0219)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (1.810)	ND (2.190)	ND (2.810)	ND (0.000)
Concentration, ppb, Dry	ND (0.170)	ND (0.206)	ND (0.264)	ND (0.000)
Concentration, ug/DSCM *	ND (0.757)	ND (0.917)	ND (1.180)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0469)	ND (0.0567)	ND (0.0728)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00591)	ND (0.00715)	ND (0.00917)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.450)	ND (2.910)	ND (2.950)	ND (0.000)
Concentration, ppb, Dry	ND (0.135)	ND (0.271)	ND (0.275)	ND (0.000)
Concentration, ug/DSCM *	ND (0.607)	ND (1.220)	ND (1.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0376)	ND (0.0754)	ND (0.0764)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00473)	ND (0.00950)	ND (0.00963)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (0.920)	ND (1.760)	ND (1.840)	ND (0.000)
Concentration, ppb, Dry	ND (0.0723)	ND (0.138)	ND (0.145)	ND (0.000)
Concentration, ug/DSCM *	ND (0.385)	ND (0.737)	ND (0.770)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0238)	ND (0.0456)	ND (0.0477)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00300)	ND (0.00574)	ND (0.00601)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1B

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (1.750)	ND (2.550)	ND (3.300)	ND (0.000)
Concentration, ppb, Dry	ND (0.145)	ND (0.212)	ND (0.274)	ND (0.000)
Concentration, ug/DSCM *	ND (0.732)	ND (1.070)	ND (1.380)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0453)	ND (0.0661)	ND (0.0855)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00571)	ND (0.00832)	ND (0.0108)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.620)	ND (1.320)	ND (1.280)	ND (0.000)
Concentration, ppb, Dry	ND (0.0452)	ND (0.0962)	ND (0.0932)	ND (0.000)
Concentration, ug/DSCM *	ND (0.259)	ND (0.552)	ND (0.536)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0161)	ND (0.0342)	ND (0.0332)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00202)	ND (0.00431)	ND (0.00418)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.350)	ND (2.620)	ND (2.720)	ND (0.000)
Concentration, ppb, Dry	ND (0.126)	ND (0.244)	ND (0.253)	ND (0.000)
Concentration, ug/DSCM *	ND (0.565)	ND (1.100)	ND (1.140)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0350)	ND (0.0679)	ND (0.0705)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00441)	ND (0.00855)	ND (0.00888)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (1.710)	ND (3.290)	ND (3.350)	ND (0.000)
Concentration, ppb, Dry	ND (0.0949)	ND (0.183)	ND (0.186)	ND (0.000)
Concentration, ug/DSCM *	ND (0.716)	ND (1.380)	ND (1.400)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0443)	ND (0.0852)	ND (0.0868)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00558)	ND (0.0107)	ND (0.0109)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (2.530)	ND (5.220)	ND (5.330)	ND (0.000)
Concentration, ppb, Dry	ND (0.165)	ND (0.341)	ND (0.348)	ND (0.000)
Concentration, ug/DSCM *	ND (1.060)	ND (2.180)	ND (2.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0655)	ND (0.135)	ND (0.138)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00826)	ND (0.0170)	ND (0.0174)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.520)	EV [26.420]	ND (1.040)	EV (26.420)
Concentration, ppb, Dry	ND (0.0408)	EV [2.080]	ND (0.0817)	EV (2.080)
Concentration, ug/DSCM *	ND (0.218)	EV [11.100]	ND (0.435)	EV (11.100)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0135)	EV [0.684]	ND (0.0269)	EV (0.684)
Emission Rate, Milligrams/Second	ND (0.00170)	EV [0.0862]	ND (0.00339)	EV (0.0862)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (5.750)	ND (5.310)	ND (5.310)	ND (0.000)
Concentration, ppb, Dry	ND (0.470)	ND (0.434)	ND (0.434)	ND (0.000)
Concentration, ug/DSCM *	ND (2.410)	ND (2.220)	ND (2.220)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.149)	ND (0.138)	ND (0.138)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0188)	ND (0.0173)	ND (0.0173)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (4.240)	ND (7.610)	ND (8.260)	ND (0.000)
Concentration, ppb, Dry	ND (0.164)	ND (0.294)	ND (0.319)	ND (0.000)
Concentration, ug/DSCM *	ND (1.770)	ND (3.180)	ND (3.460)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.110)	ND (0.197)	ND (0.214)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0138)	ND (0.0248)	ND (0.0270)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.810)	ND (1.690)	ND (1.640)	ND (0.000)
Concentration, ppb, Dry	ND (0.0527)	ND (0.110)	ND (0.107)	ND (0.000)
Concentration, ug/DSCM *	ND (0.339)	ND (0.707)	ND (0.686)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0210)	ND (0.0438)	ND (0.0425)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00264)	ND (0.00552)	ND (0.00535)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (2.000)	ND (3.790)	ND (3.950)	ND (0.000)
Concentration, ppb, Dry	ND (0.103)	ND (0.195)	ND (0.203)	ND (0.000)
Concentration, ug/DSCM *	ND (0.837)	ND (1.590)	ND (1.650)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0518)	ND (0.0982)	ND (0.102)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00653)	ND (0.0124)	ND (0.0129)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (1.670)	ND (2.500)	ND (3.120)	ND (0.000)
Concentration, ppb, Dry	ND (0.113)	ND (0.169)	ND (0.210)	ND (0.000)
Concentration, ug/DSCM *	ND (0.699)	ND (1.050)	ND (1.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0433)	ND (0.0648)	ND (0.0808)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00545)	ND (0.00816)	ND (0.0102)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1B

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (4.830)	ND (4.230)	ND (6.210)	ND (0.000)
Concentration, ppb, Dry	ND (0.450)	ND (0.394)	ND (0.578)	ND (0.000)
Concentration, ug/DSCM *	ND (2.020)	ND (1.770)	ND (2.600)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.125)	ND (0.110)	ND (0.161)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0158)	ND (0.0138)	ND (0.0203)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (2.970)	ND (15.000)	ND (10.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.0916)	ND (0.463)	ND (0.329)	ND (0.000)
Concentration, ug/DSCM *	ND (1.240)	ND (6.280)	ND (4.470)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0769)	ND (0.389)	ND (0.277)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00969)	ND (0.0490)	ND (0.0349)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (0.900)	ND (1.800)	ND (1.820)	ND (0.000)
Concentration, ppb, Dry	ND (0.0611)	ND (0.122)	ND (0.124)	ND (0.000)
Concentration, ug/DSCM *	ND (0.377)	ND (0.753)	ND (0.762)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0233)	ND (0.0466)	ND (0.0471)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00294)	ND (0.00587)	ND (0.00594)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (3.780)	ND (12.370)	ND (10.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.140)	ND (0.457)	ND (0.401)	ND (0.000)
Concentration, ug/DSCM *	ND (1.580)	ND (5.180)	ND (4.540)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0979)	ND (0.320)	ND (0.281)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0123)	ND (0.0404)	ND (0.0354)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (14.160)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.962)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (5.930)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.367)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0462)	ND (0.000)	ND (0.000)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.630)	ND (5.540)	ND (5.820)	ND (0.000)
Concentration, ppb, Dry	ND (0.134)	ND (0.282)	ND (0.297)	ND (0.000)
Concentration, ug/DSCM *	ND (1.100)	ND (2.320)	ND (2.440)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0681)	ND (0.144)	ND (0.151)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00858)	ND (0.0181)	ND (0.0190)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1B

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.490)	ND (4.960)	ND (5.820)	ND (0.000)
Concentration, ppb, Dry	ND (0.127)	ND (0.253)	ND (0.297)	ND (0.000)
Concentration, ug/DSCM *	ND (1.040)	ND (2.080)	ND (2.440)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0645)	ND (0.128)	ND (0.151)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00813)	ND (0.0162)	ND (0.0190)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (17.510)	ND (18.160)	ND (28.540)	ND (0.000)
Concentration, ppb, Dry	ND (1.440)	ND (1.500)	ND (2.350)	ND (0.000)
Concentration, ug/DSCM *	ND (7.330)	ND (7.600)	ND (11.900)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.454)	ND (0.470)	ND (0.739)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0572)	ND (0.0593)	ND (0.0932)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.730)	ND (5.510)	ND (6.220)	ND (0.000)
Concentration, ppb, Dry	ND (0.107)	ND (0.340)	ND (0.384)	ND (0.000)
Concentration, ug/DSCM *	ND (0.724)	ND (2.310)	ND (2.600)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0448)	ND (0.143)	ND (0.161)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00565)	ND (0.0180)	ND (0.0203)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (3.470)	ND (7.280)	ND (8.540)	ND (0.000)
Concentration, ppb, Dry	ND (0.214)	ND (0.450)	ND (0.527)	ND (0.000)
Concentration, ug/DSCM *	ND (1.450)	ND (3.050)	ND (3.570)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0899)	ND (0.189)	ND (0.221)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0113)	ND (0.0238)	ND (0.0279)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.170)	ND (5.060)	ND (5.250)	ND (0.000)
Concentration, ppb, Dry	ND (0.134)	ND (0.313)	ND (0.324)	ND (0.000)
Concentration, ug/DSCM *	ND (0.908)	ND (2.120)	ND (2.200)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0562)	ND (0.131)	ND (0.136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00708)	ND (0.0165)	ND (0.0171)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.060)	ND (4.500)	ND (4.870)	ND (0.000)
Concentration, ppb, Dry	ND (0.127)	ND (0.278)	ND (0.301)	ND (0.000)
Concentration, ug/DSCM *	ND (0.862)	ND (1.880)	ND (2.040)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0534)	ND (0.117)	ND (0.126)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00672)	ND (0.0147)	ND (0.0159)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1B

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (0.850)	ND (1.880)	ND (1.990)	ND (0.000)
Concentration, ppb, Dry	ND (0.0525)	ND (0.116)	ND (0.123)	ND (0.000)
Concentration, ug/DSCM *	ND (0.356)	ND (0.787)	ND (0.833)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0220)	ND (0.0487)	ND (0.0515)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00277)	ND (0.00614)	ND (0.00650)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	EV [7.660]	ND (1.740)	ND (1.870)	EV (7.660)
Concentration, ppb, Dry	EV [0.469]	ND (0.107)	ND (0.115)	EV (0.469)
Concentration, ug/DSCM *	EV [3.210]	ND (0.728)	ND (0.783)	EV (3.210)
Emission Rate, 1,000 * (Pounds/Hour)	EV [0.198]	ND (0.0451)	ND (0.0484)	EV (0.198)
Emission Rate, Milligrams/Second	EV [0.0250]	ND (0.00568)	ND (0.00610)	EV (0.0250)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.710)	ND (1.500)	ND (1.590)	ND (0.000)
Concentration, ppb, Dry	ND (0.0368)	ND (0.0778)	ND (0.0824)	ND (0.000)
Concentration, ug/DSCM *	ND (0.297)	ND (0.628)	ND (0.665)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0184)	ND (0.0389)	ND (0.0412)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00232)	ND (0.00490)	ND (0.00519)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (2.280)	ND (4.670)	ND (5.310)	ND (0.000)
Concentration, ppb, Dry	ND (0.126)	ND (0.258)	ND (0.294)	ND (0.000)
Concentration, ug/DSCM *	ND (0.954)	ND (1.950)	ND (2.220)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0591)	ND (0.121)	ND (0.138)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00744)	ND (0.0152)	ND (0.0173)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (7.830)	ND (8.960)	ND (12.210)	ND (0.000)
Concentration, ppb, Dry	ND (0.428)	ND (0.490)	ND (0.668)	ND (0.000)
Concentration, ug/DSCM *	ND (3.280)	ND (3.750)	ND (5.110)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.203)	ND (0.232)	ND (0.316)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0256)	ND (0.0292)	ND (0.0399)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (5.400)	ND (6.540)	ND (8.540)	ND (0.000)
Concentration, ppb, Dry	ND (0.274)	ND (0.332)	ND (0.434)	ND (0.000)
Concentration, ug/DSCM *	ND (2.260)	ND (2.740)	ND (3.570)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.140)	ND (0.169)	ND (0.221)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0176)	ND (0.0213)	ND (0.0279)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (3.940)	ND (6.270)	ND (7.660)	ND (0.000)
Concentration, ppb, Dry	ND (0.236)	ND (0.375)	ND (0.458)	ND (0.000)
Concentration, ug/DSCM *	ND (1.650)	ND (2.620)	ND (3.210)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.102)	ND (0.162)	ND (0.198)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0129)	ND (0.0205)	ND (0.0250)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (3.540)	ND (2.290)	ND (2.560)	ND (0.000)
Concentration, ppb, Dry	ND (0.256)	ND (0.166)	ND (0.185)	ND (0.000)
Concentration, ug/DSCM *	ND (1.480)	ND (0.958)	ND (1.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0917)	ND (0.0593)	ND (0.0663)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0116)	ND (0.00747)	ND (0.00836)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (5.480)	ND (10.670)	ND (12.560)	ND (0.000)
Concentration, ppb, Dry	ND (0.165)	ND (0.320)	ND (0.377)	ND (0.000)
Concentration, ug/DSCM *	ND (2.290)	ND (4.470)	ND (5.260)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.142)	ND (0.276)	ND (0.325)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0179)	ND (0.0348)	ND (0.0410)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (3.000)	ND (5.600)	ND (6.540)	ND (0.000)
Concentration, ppb, Dry	ND (0.106)	ND (0.198)	ND (0.231)	ND (0.000)
Concentration, ug/DSCM *	ND (1.260)	ND (2.340)	ND (2.740)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0777)	ND (0.145)	ND (0.169)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00979)	ND (0.0183)	ND (0.0213)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.300)	ND (1.490)	ND (2.270)	ND (0.000)
Concentration, ppb, Dry	ND (0.0773)	ND (0.0886)	ND (0.135)	ND (0.000)
Concentration, ug/DSCM *	ND (0.544)	ND (0.624)	ND (0.950)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0337)	ND (0.0386)	ND (0.0588)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00424)	ND (0.00486)	ND (0.00741)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (4.870)	ND (7.610)	ND (9.670)	ND (0.000)
Concentration, ppb, Dry	ND (0.184)	ND (0.288)	ND (0.366)	ND (0.000)
Concentration, ug/DSCM *	ND (2.040)	ND (3.180)	ND (4.050)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.126)	ND (0.197)	ND (0.250)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0159)	ND (0.0248)	ND (0.0316)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (8.030)	ND (12.860)	ND (15.870)	ND (0.000)
Concentration, ppb, Dry	ND (0.274)	ND (0.438)	ND (0.541)	ND (0.000)
Concentration, ug/DSCM *	ND (3.360)	ND (5.380)	ND (6.640)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.208)	ND (0.333)	ND (0.411)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0262)	ND (0.0420)	ND (0.0518)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (1.650)	ND (2.640)	ND (3.350)	ND (0.000)
Concentration, ppb, Dry	ND (0.0834)	ND (0.133)	ND (0.169)	ND (0.000)
Concentration, ug/DSCM *	ND (0.691)	ND (1.100)	ND (1.400)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0427)	ND (0.0684)	ND (0.0868)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00539)	ND (0.00862)	ND (0.0109)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	EV [8.620]	EV [40.990]	ND (0.750)	EV (49.610)
Concentration, ppb, Dry	EV [0.312]	EV [1.480]	ND (0.0271)	EV (1.792)
Concentration, ug/DSCM *	EV [3.610]	EV [17.200]	ND (0.314)	EV (20.810)
Emission Rate, 1,000 * (Pounds/Hour)	EV [0.223]	EV [1.060]	ND (0.0194)	EV (1.283)
Emission Rate, Milligrams/Second	EV [0.0281]	EV [0.134]	ND (0.00245)	EV (0.162)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.380)	ND (0.650)	ND (0.950)	ND (0.000)
Concentration, ppb, Dry	ND (0.0189)	ND (0.0324)	ND (0.0473)	ND (0.000)
Concentration, ug/DSCM *	ND (0.159)	ND (0.272)	ND (0.398)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00984)	ND (0.0168)	ND (0.0246)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00124)	ND (0.00212)	ND (0.00310)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (13.490)	ND (4.400)	ND (13.430)	ND (0.000)
Concentration, ppb, Dry	ND (0.737)	ND (0.240)	ND (0.734)	ND (0.000)
Concentration, ug/DSCM *	ND (5.650)	ND (1.840)	ND (5.620)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.349)	ND (0.114)	ND (0.348)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0440)	ND (0.0144)	ND (0.0438)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (10.190)	ND (4.370)	ND (10.200)	ND (0.000)
Concentration, ppb, Dry	ND (0.517)	ND (0.222)	ND (0.518)	ND (0.000)
Concentration, ug/DSCM *	ND (4.260)	ND (1.830)	ND (4.270)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.264)	ND (0.113)	ND (0.264)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0333)	ND (0.0143)	ND (0.0333)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (1.520)	ND (2.390)	ND (3.590)	ND (0.000)
Concentration, ppb, Dry	ND (0.0679)	ND (0.107)	ND (0.160)	ND (0.000)
Concentration, ug/DSCM *	ND (0.636)	ND (1.000)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0394)	ND (0.0619)	ND (0.0930)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00496)	ND (0.00780)	ND (0.0117)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.580)	ND (1.140)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0187)	ND (0.0367)	ND (0.0483)	ND (0.000)
Concentration, ug/DSCM *	ND (0.243)	ND (0.477)	ND (0.628)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0150)	ND (0.0295)	ND (0.0389)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00189)	ND (0.00372)	ND (0.00490)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (5.540)	ND (1.840)	ND (5.290)	ND (0.000)
Concentration, ppb, Dry	ND (0.263)	ND (0.0873)	ND (0.251)	ND (0.000)
Concentration, ug/DSCM *	ND (2.320)	ND (0.770)	ND (2.210)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.144)	ND (0.0477)	ND (0.137)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0181)	ND (0.00601)	ND (0.0173)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (3.040)	ND (3.420)	ND (5.200)	ND (0.000)
Concentration, ppb, Dry	ND (0.115)	ND (0.129)	ND (0.196)	ND (0.000)
Concentration, ug/DSCM *	ND (1.270)	ND (1.430)	ND (2.180)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0787)	ND (0.0886)	ND (0.135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00992)	ND (0.0112)	ND (0.0170)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.360)	ND (0.640)	ND (0.960)	ND (0.000)
Concentration, ppb, Dry	ND (0.0159)	ND (0.0282)	ND (0.0423)	ND (0.000)
Concentration, ug/DSCM *	ND (0.151)	ND (0.268)	ND (0.402)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00933)	ND (0.0166)	ND (0.0249)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00117)	ND (0.00209)	ND (0.00313)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (1.560)	ND (1.970)	ND (3.020)	ND (0.000)
Concentration, ppb, Dry	ND (0.0620)	ND (0.0784)	ND (0.120)	ND (0.000)
Concentration, ug/DSCM *	ND (0.653)	ND (0.824)	ND (1.260)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0404)	ND (0.0510)	ND (0.0782)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00509)	ND (0.00643)	ND (0.00986)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-1-S2-MM5-1B

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	ND (0.380)	52.940	ND (1.070)	52.940
Concentration, ppb, Dry	ND (0.00980)	1.360	ND (0.0276)	1.360
Concentration, ug/DSCM *	ND (0.159)	22.200	ND (0.448)	22.200
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00984)	1.370	ND (0.0277)	1.370
Emission Rate, Milligrams/Second	ND (0.00124)	0.173	ND (0.00349)	0.173
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (16.090)	ND (4.500)	ND (11.090)	ND (0.000)
Concentration, ppb, Dry	ND (0.663)	ND (0.185)	ND (0.457)	ND (0.000)
Concentration, ug/DSCM *	ND (6.730)	ND (1.880)	ND (4.640)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.417)	ND (0.117)	ND (0.287)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0525)	ND (0.0147)	ND (0.0362)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2A

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (2.310)	ND (4.710)	ND (2.900)	ND (0.000)
Concentration, ppb, Dry	ND (0.225)	ND (0.459)	ND (0.282)	ND (0.000)
Concentration, ug/DSCM *	ND (0.692)	ND (1.410)	ND (0.869)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0498)	ND (0.101)	ND (0.0625)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00627)	ND (0.0128)	ND (0.00787)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.730)	ND (1.600)	ND (0.950)	ND (0.000)
Concentration, ppb, Dry	ND (0.0438)	ND (0.0960)	ND (0.0570)	ND (0.000)
Concentration, ug/DSCM *	ND (0.219)	ND (0.480)	ND (0.285)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0157)	ND (0.0345)	ND (0.0205)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00198)	ND (0.00434)	ND (0.00258)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.510)	ND (3.130)	ND (1.840)	ND (0.000)
Concentration, ppb, Dry	ND (0.0799)	ND (0.166)	ND (0.0974)	ND (0.000)
Concentration, ug/DSCM *	ND (0.453)	ND (0.938)	ND (0.552)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0325)	ND (0.0674)	ND (0.0396)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00410)	ND (0.00850)	ND (0.00499)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.110)	ND (2.400)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0588)	ND (0.127)	ND (0.0794)	ND (0.000)
Concentration, ug/DSCM *	ND (0.333)	ND (0.719)	ND (0.450)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0239)	ND (0.0517)	ND (0.0323)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00301)	ND (0.00651)	ND (0.00407)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (2.590)	ND (1.970)	ND (1.690)	ND (0.000)
Concentration, ppb, Dry	ND (0.190)	ND (0.145)	ND (0.124)	ND (0.000)
Concentration, ug/DSCM *	ND (0.776)	ND (0.591)	ND (0.507)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0558)	ND (0.0424)	ND (0.0364)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00703)	ND (0.00535)	ND (0.00459)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.900)	ND (2.010)	ND (1.190)	ND (0.000)
Concentration, ppb, Dry	ND (0.0540)	ND (0.121)	ND (0.0714)	ND (0.000)
Concentration, ug/DSCM *	ND (0.270)	ND (0.603)	ND (0.357)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0194)	ND (0.0433)	ND (0.0256)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00244)	ND (0.00546)	ND (0.00323)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.840)	ND (1.810)	ND (1.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.0644)	ND (0.139)	ND (0.0820)	ND (0.000)
Concentration, ug/DSCM *	ND (0.252)	ND (0.543)	ND (0.321)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0181)	ND (0.0390)	ND (0.0230)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00228)	ND (0.00491)	ND (0.00290)	ND (0.000)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.730)	ND (1.610)	ND (0.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.0416)	ND (0.0917)	ND (0.0530)	ND (0.000)
Concentration, ug/DSCM *	ND (0.219)	ND (0.483)	ND (0.279)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0157)	ND (0.0347)	ND (0.0200)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00198)	ND (0.00437)	ND (0.00252)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.140)	ND (2.400)	ND (1.390)	ND (0.000)
Concentration, ppb, Dry	ND (0.0575)	ND (0.121)	ND (0.0701)	ND (0.000)
Concentration, ug/DSCM *	ND (0.342)	ND (0.719)	ND (0.417)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0246)	ND (0.0517)	ND (0.0299)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00309)	ND (0.00651)	ND (0.00377)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (2.370)	ND (5.280)	ND (3.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.147)	ND (0.328)	ND (0.186)	ND (0.000)
Concentration, ug/DSCM *	ND (0.710)	ND (1.580)	ND (0.899)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0511)	ND (0.114)	ND (0.0646)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00643)	ND (0.0143)	ND (0.00814)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.310)	ND (2.690)	ND (1.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.0643)	ND (0.132)	ND (0.0800)	ND (0.000)
Concentration, ug/DSCM *	ND (0.393)	ND (0.806)	ND (0.489)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0282)	ND (0.0579)	ND (0.0351)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00356)	ND (0.00730)	ND (0.00442)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (0.800)	ND (1.780)	ND (1.060)	ND (0.000)
Concentration, ppb, Dry	ND (0.0430)	ND (0.0956)	ND (0.0570)	ND (0.000)
Concentration, ug/DSCM *	ND (0.240)	ND (0.534)	ND (0.318)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0172)	ND (0.0383)	ND (0.0228)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00217)	ND (0.00483)	ND (0.00288)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.110)	ND (2.360)	ND (1.390)	ND (0.000)
Concentration, ppb, Dry	ND (0.0661)	ND (0.140)	ND (0.0827)	ND (0.000)
Concentration, ug/DSCM *	ND (0.333)	ND (0.707)	ND (0.417)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0239)	ND (0.0508)	ND (0.0299)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00301)	ND (0.00641)	ND (0.00377)	ND (0.000)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (4.230)	ND (8.740)	ND (5.260)	ND (0.000)
Concentration, ppb, Dry	ND (0.129)	ND (0.267)	ND (0.160)	ND (0.000)
Concentration, ug/DSCM *	ND (1.270)	ND (2.620)	ND (1.580)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0911)	ND (0.188)	ND (0.113)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0115)	ND (0.0237)	ND (0.0143)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (3.210)	ND (6.780)	ND (4.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.0978)	ND (0.207)	ND (0.124)	ND (0.000)
Concentration, ug/DSCM *	ND (0.962)	ND (2.030)	ND (1.220)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0691)	ND (0.146)	ND (0.0877)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00871)	ND (0.0184)	ND (0.0110)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (1.760)	ND (2.230)	ND (1.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.118)	ND (0.150)	ND (0.114)	ND (0.000)
Concentration, ug/DSCM *	ND (0.528)	ND (0.669)	ND (0.510)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0379)	ND (0.0480)	ND (0.0366)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00478)	ND (0.00605)	ND (0.00461)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.410)	ND (2.970)	ND (1.780)	ND (0.000)
Concentration, ppb, Dry	ND (0.0940)	ND (0.198)	ND (0.119)	ND (0.000)
Concentration, ug/DSCM *	ND (0.423)	ND (0.890)	ND (0.534)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0304)	ND (0.0640)	ND (0.0383)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00383)	ND (0.00806)	ND (0.00483)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (0.890)	ND (1.790)	ND (1.110)	ND (0.000)
Concentration, ppb, Dry	ND (0.0501)	ND (0.101)	ND (0.0625)	ND (0.000)
Concentration, ug/DSCM *	ND (0.267)	ND (0.537)	ND (0.333)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0192)	ND (0.0386)	ND (0.0239)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00242)	ND (0.00486)	ND (0.00301)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2A

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (1.700)	ND (2.600)	ND (1.990)	ND (0.000)
Concentration, ppb, Dry	ND (0.101)	ND (0.155)	ND (0.118)	ND (0.000)
Concentration, ug/DSCM *	ND (0.510)	ND (0.779)	ND (0.597)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0366)	ND (0.0560)	ND (0.0429)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00461)	ND (0.00706)	ND (0.00540)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.600)	ND (1.340)	ND (0.770)	ND (0.000)
Concentration, ppb, Dry	ND (0.0313)	ND (0.0699)	ND (0.0402)	ND (0.000)
Concentration, ug/DSCM *	ND (0.180)	ND (0.402)	ND (0.231)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0129)	ND (0.0289)	ND (0.0166)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00163)	ND (0.00364)	ND (0.00209)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.310)	ND (2.670)	ND (1.650)	ND (0.000)
Concentration, ppb, Dry	ND (0.0874)	ND (0.178)	ND (0.110)	ND (0.000)
Concentration, ug/DSCM *	ND (0.393)	ND (0.800)	ND (0.495)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0282)	ND (0.0575)	ND (0.0355)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00356)	ND (0.00725)	ND (0.00448)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (1.660)	ND (3.350)	ND (2.030)	ND (0.000)
Concentration, ppb, Dry	ND (0.0660)	ND (0.133)	ND (0.0807)	ND (0.000)
Concentration, ug/DSCM *	ND (0.498)	ND (1.000)	ND (0.609)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0358)	ND (0.0722)	ND (0.0437)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00451)	ND (0.00909)	ND (0.00551)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (2.450)	ND (5.320)	ND (3.230)	ND (0.000)
Concentration, ppb, Dry	ND (0.115)	ND (0.249)	ND (0.151)	ND (0.000)
Concentration, ug/DSCM *	ND (0.734)	ND (1.590)	ND (0.968)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0528)	ND (0.115)	ND (0.0696)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00665)	ND (0.0144)	ND (0.00877)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.500)	ND (1.060)	ND (0.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.0281)	ND (0.0596)	ND (0.0354)	ND (0.000)
Concentration, ug/DSCM *	ND (0.150)	ND (0.318)	ND (0.189)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0108)	ND (0.0228)	ND (0.0136)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00136)	ND (0.00288)	ND (0.00171)	ND (0.000)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (5.570)	ND (5.400)	ND (3.210)	ND (0.000)
Concentration, ppb, Dry	ND (0.326)	ND (0.316)	ND (0.188)	ND (0.000)
Concentration, ug/DSCM *	ND (1.670)	ND (1.620)	ND (0.962)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.120)	ND (0.116)	ND (0.0691)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0151)	ND (0.0147)	ND (0.00871)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (4.110)	ND (7.760)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.114)	ND (0.215)	ND (0.138)	ND (0.000)
Concentration, ug/DSCM *	ND (1.230)	ND (2.330)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0885)	ND (0.167)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0112)	ND (0.0211)	ND (0.0136)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.790)	ND (1.730)	ND (0.990)	ND (0.000)
Concentration, ppb, Dry	ND (0.0369)	ND (0.0807)	ND (0.0462)	ND (0.000)
Concentration, ug/DSCM *	ND (0.237)	ND (0.519)	ND (0.297)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0170)	ND (0.0373)	ND (0.0213)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00214)	ND (0.00470)	ND (0.00269)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (1.940)	ND (3.860)	ND (2.390)	ND (0.000)
Concentration, ppb, Dry	ND (0.0716)	ND (0.142)	ND (0.0882)	ND (0.000)
Concentration, ug/DSCM *	ND (0.582)	ND (1.160)	ND (0.716)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0418)	ND (0.0832)	ND (0.0515)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00527)	ND (0.0105)	ND (0.00649)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (1.620)	ND (2.550)	ND (1.890)	ND (0.000)
Concentration, ppb, Dry	ND (0.0783)	ND (0.123)	ND (0.0913)	ND (0.000)
Concentration, ug/DSCM *	ND (0.486)	ND (0.764)	ND (0.567)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0349)	ND (0.0549)	ND (0.0407)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00440)	ND (0.00692)	ND (0.00513)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2A

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (4.690)	ND (4.310)	ND (3.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.313)	ND (0.287)	ND (0.251)	ND (0.000)
Concentration, ug/DSCM *	ND (1.410)	ND (1.290)	ND (1.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.101)	ND (0.0928)	ND (0.0810)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0127)	ND (0.0117)	ND (0.0102)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (2.880)	ND (15.280)	ND (6.460)	ND (0.000)
Concentration, ppb, Dry	ND (0.0636)	ND (0.338)	ND (0.143)	ND (0.000)
Concentration, ug/DSCM *	ND (0.863)	ND (4.580)	ND (1.940)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0620)	ND (0.329)	ND (0.139)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00782)	ND (0.0415)	ND (0.0175)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (0.870)	ND (1.830)	ND (1.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.0423)	ND (0.0890)	ND (0.0535)	ND (0.000)
Concentration, ug/DSCM *	ND (0.261)	ND (0.549)	ND (0.330)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0187)	ND (0.0394)	ND (0.0237)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00236)	ND (0.00497)	ND (0.00299)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (3.600)	ND (13.140)	ND (6.360)	ND (0.000)
Concentration, ppb, Dry	ND (0.0952)	ND (0.347)	ND (0.168)	ND (0.000)
Concentration, ug/DSCM *	ND (1.080)	ND (3.940)	ND (1.910)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0775)	ND (0.283)	ND (0.137)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00977)	ND (0.0357)	ND (0.0173)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (13.520)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.658)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (4.050)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.291)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0367)	ND (0.000)	ND (0.000)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.510)	ND (5.880)	ND (3.410)	ND (0.000)
Concentration, ppb, Dry	ND (0.0917)	ND (0.215)	ND (0.125)	ND (0.000)
Concentration, ug/DSCM *	ND (0.752)	ND (1.760)	ND (1.020)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0541)	ND (0.127)	ND (0.0735)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00681)	ND (0.0160)	ND (0.00926)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2A

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.380)	ND (5.270)	ND (3.410)	ND (0.000)
Concentration, ppb, Dry	ND (0.0869)	ND (0.192)	ND (0.125)	ND (0.000)
Concentration, ug/DSCM *	ND (0.713)	ND (1.580)	ND (1.020)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0513)	ND (0.114)	ND (0.0735)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00646)	ND (0.0143)	ND (0.00926)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (16.710)	ND (19.290)	ND (16.710)	ND (0.000)
Concentration, ppb, Dry	ND (0.986)	ND (1.140)	ND (0.986)	ND (0.000)
Concentration, ug/DSCM *	ND (5.010)	ND (5.780)	ND (5.010)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.360)	ND (0.416)	ND (0.360)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0454)	ND (0.0524)	ND (0.0454)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.650)	ND (5.850)	ND (3.640)	ND (0.000)
Concentration, ppb, Dry	ND (0.0730)	ND (0.259)	ND (0.161)	ND (0.000)
Concentration, ug/DSCM *	ND (0.495)	ND (1.750)	ND (1.090)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0355)	ND (0.126)	ND (0.0784)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00448)	ND (0.0159)	ND (0.00988)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (3.310)	ND (7.740)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.146)	ND (0.342)	ND (0.221)	ND (0.000)
Concentration, ug/DSCM *	ND (0.992)	ND (2.320)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0713)	ND (0.167)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00898)	ND (0.0210)	ND (0.0136)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.070)	ND (5.380)	ND (3.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.0916)	ND (0.238)	ND (0.136)	ND (0.000)
Concentration, ug/DSCM *	ND (0.621)	ND (1.610)	ND (0.920)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0446)	ND (0.116)	ND (0.0661)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00562)	ND (0.0146)	ND (0.00833)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.970)	ND (4.780)	ND (2.850)	ND (0.000)
Concentration, ppb, Dry	ND (0.0872)	ND (0.211)	ND (0.126)	ND (0.000)
Concentration, ug/DSCM *	ND (0.591)	ND (1.430)	ND (0.854)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0424)	ND (0.103)	ND (0.0614)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00535)	ND (0.0130)	ND (0.00774)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2A

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (0.810)	ND (2.000)	ND (1.170)	ND (0.000)
Concentration, ppb, Dry	ND (0.0358)	ND (0.0885)	ND (0.0518)	ND (0.000)
Concentration, ug/DSCM *	ND (0.243)	ND (0.600)	ND (0.351)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0174)	ND (0.0431)	ND (0.0252)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00220)	ND (0.00543)	ND (0.00318)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (0.740)	ND (1.850)	ND (1.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.0325)	ND (0.0812)	ND (0.0483)	ND (0.000)
Concentration, ug/DSCM *	ND (0.222)	ND (0.555)	ND (0.330)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0159)	ND (0.0399)	ND (0.0237)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00201)	ND (0.00502)	ND (0.00299)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.680)	ND (1.600)	ND (0.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.0253)	ND (0.0594)	ND (0.0345)	ND (0.000)
Concentration, ug/DSCM *	ND (0.204)	ND (0.480)	ND (0.279)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0146)	ND (0.0345)	ND (0.0200)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00185)	ND (0.00434)	ND (0.00252)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (2.180)	ND (4.960)	ND (3.110)	ND (0.000)
Concentration, ppb, Dry	ND (0.0863)	ND (0.196)	ND (0.123)	ND (0.000)
Concentration, ug/DSCM *	ND (0.654)	ND (1.490)	ND (0.932)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0470)	ND (0.107)	ND (0.0670)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00592)	ND (0.0135)	ND (0.00844)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (7.470)	ND (9.520)	ND (7.150)	ND (0.000)
Concentration, ppb, Dry	ND (0.293)	ND (0.373)	ND (0.280)	ND (0.000)
Concentration, ug/DSCM *	ND (2.240)	ND (2.850)	ND (2.140)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.161)	ND (0.205)	ND (0.154)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0203)	ND (0.0258)	ND (0.0194)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (5.150)	ND (6.950)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.187)	ND (0.253)	ND (0.182)	ND (0.000)
Concentration, ug/DSCM *	ND (1.540)	ND (2.080)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.111)	ND (0.150)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0140)	ND (0.0189)	ND (0.0136)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

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	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (3.760)	ND (6.660)	ND (4.480)	ND (0.000)
Concentration, ppb, Dry	ND (0.161)	ND (0.286)	ND (0.192)	ND (0.000)
Concentration, ug/DSCM *	ND (1.130)	ND (2.000)	ND (1.340)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0810)	ND (0.143)	ND (0.0965)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0102)	ND (0.0181)	ND (0.0122)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (3.370)	ND (2.430)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.175)	ND (0.126)	ND (0.0778)	ND (0.000)
Concentration, ug/DSCM *	ND (1.010)	ND (0.728)	ND (0.450)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0726)	ND (0.0523)	ND (0.0323)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00915)	ND (0.00660)	ND (0.00407)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (5.230)	ND (11.340)	ND (7.350)	ND (0.000)
Concentration, ppb, Dry	ND (0.112)	ND (0.244)	ND (0.158)	ND (0.000)
Concentration, ug/DSCM *	ND (1.570)	ND (3.400)	ND (2.200)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.113)	ND (0.244)	ND (0.158)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0142)	ND (0.0308)	ND (0.0199)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (2.860)	ND (5.950)	ND (3.830)	ND (0.000)
Concentration, ppb, Dry	ND (0.0724)	ND (0.151)	ND (0.0970)	ND (0.000)
Concentration, ug/DSCM *	ND (0.857)	ND (1.780)	ND (1.150)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0616)	ND (0.128)	ND (0.0825)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00776)	ND (0.0161)	ND (0.0104)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.240)	ND (1.590)	ND (1.330)	ND (0.000)
Concentration, ppb, Dry	ND (0.0528)	ND (0.0678)	ND (0.0567)	ND (0.000)
Concentration, ug/DSCM *	ND (0.372)	ND (0.477)	ND (0.399)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0267)	ND (0.0343)	ND (0.0287)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00337)	ND (0.00432)	ND (0.00361)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (4.650)	ND (8.090)	ND (5.660)	ND (0.000)
Concentration, ppb, Dry	ND (0.126)	ND (0.219)	ND (0.153)	ND (0.000)
Concentration, ug/DSCM *	ND (1.390)	ND (2.430)	ND (1.700)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.100)	ND (0.174)	ND (0.122)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0126)	ND (0.0220)	ND (0.0154)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (7.670)	ND (13.660)	ND (9.290)	ND (0.000)
Concentration, ppb, Dry	ND (0.187)	ND (0.334)	ND (0.227)	ND (0.000)
Concentration, ug/DSCM *	ND (2.300)	ND (4.090)	ND (2.780)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.165)	ND (0.294)	ND (0.200)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0208)	ND (0.0371)	ND (0.0252)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (1.570)	ND (2.810)	ND (1.960)	ND (0.000)
Concentration, ppb, Dry	ND (0.0568)	ND (0.102)	ND (0.0710)	ND (0.000)
Concentration, ug/DSCM *	ND (0.471)	ND (0.842)	ND (0.588)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0338)	ND (0.0605)	ND (0.0422)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00426)	ND (0.00763)	ND (0.00532)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	EV [6.540]	EV [15.050]	ND (0.440)	EV (21.590)
Concentration, ppb, Dry	EV [0.169]	EV [0.390]	ND (0.0114)	EV (0.559)
Concentration, ug/DSCM *	EV [1.960]	EV [4.510]	ND (0.132)	EV (6.470)
Emission Rate, 1,000 * (Pounds/Hour)	EV [0.141]	EV [0.324]	ND (0.00948)	EV (0.465)
Emission Rate, Milligrams/Second	EV [0.0178]	EV [0.0408]	ND (0.00119)	EV (0.0586)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.370)	ND (0.680)	ND (0.530)	ND (0.000)
Concentration, ppb, Dry	ND (0.0132)	ND (0.0242)	ND (0.0189)	ND (0.000)
Concentration, ug/DSCM *	ND (0.111)	ND (0.204)	ND (0.159)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00797)	ND (0.0146)	ND (0.0114)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00100)	ND (0.00185)	ND (0.00144)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (13.110)	ND (4.600)	ND (7.560)	ND (0.000)
Concentration, ppb, Dry	ND (0.513)	ND (0.180)	ND (0.296)	ND (0.000)
Concentration, ug/DSCM *	ND (3.930)	ND (1.380)	ND (2.270)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.282)	ND (0.0991)	ND (0.163)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0356)	ND (0.0125)	ND (0.0205)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (9.900)	ND (4.570)	ND (5.740)	ND (0.000)
Concentration, ppb, Dry	ND (0.360)	ND (0.166)	ND (0.209)	ND (0.000)
Concentration, ug/DSCM *	ND (2.970)	ND (1.370)	ND (1.720)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.213)	ND (0.0984)	ND (0.124)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0269)	ND (0.0124)	ND (0.0156)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (1.470)	ND (2.500)	ND (2.020)	ND (0.000)
Concentration, ppb, Dry	ND (0.0471)	ND (0.0800)	ND (0.0647)	ND (0.000)
Concentration, ug/DSCM *	ND (0.441)	ND (0.749)	ND (0.606)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0317)	ND (0.0539)	ND (0.0435)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00399)	ND (0.00679)	ND (0.00548)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.560)	ND (1.190)	ND (0.850)	ND (0.000)
Concentration, ppb, Dry	ND (0.0129)	ND (0.0275)	ND (0.0196)	ND (0.000)
Concentration, ug/DSCM *	ND (0.168)	ND (0.357)	ND (0.255)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0121)	ND (0.0256)	ND (0.0183)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00152)	ND (0.00323)	ND (0.00231)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (5.380)	ND (1.920)	ND (2.980)	ND (0.000)
Concentration, ppb, Dry	ND (0.183)	ND (0.0652)	ND (0.101)	ND (0.000)
Concentration, ug/DSCM *	ND (1.610)	ND (0.576)	ND (0.893)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.116)	ND (0.0414)	ND (0.0642)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0146)	ND (0.00521)	ND (0.00809)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (2.960)	ND (3.580)	ND (2.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.0799)	ND (0.0966)	ND (0.0791)	ND (0.000)
Concentration, ug/DSCM *	ND (0.887)	ND (1.070)	ND (0.878)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0638)	ND (0.0771)	ND (0.0631)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00803)	ND (0.00972)	ND (0.00795)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.350)	ND (0.670)	ND (0.540)	ND (0.000)
Concentration, ppb, Dry	ND (0.0111)	ND (0.0212)	ND (0.0171)	ND (0.000)
Concentration, ug/DSCM *	ND (0.105)	ND (0.201)	ND (0.162)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00754)	ND (0.0144)	ND (0.0116)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000950)	ND (0.00182)	ND (0.00147)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (1.520)	ND (2.050)	ND (1.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.0433)	ND (0.0584)	ND (0.0484)	ND (0.000)
Concentration, ug/DSCM *	ND (0.456)	ND (0.615)	ND (0.510)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0327)	ND (0.0442)	ND (0.0366)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00413)	ND (0.00556)	ND (0.00461)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2A

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	ND (0.370)	ND (0.820)	ND (0.600)	ND (0.000)
Concentration, ppb, Dry	ND (0.00683)	ND (0.0151)	ND (0.0111)	ND (0.000)
Concentration, ug/DSCM *	ND (0.111)	ND (0.246)	ND (0.180)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00797)	ND (0.0177)	ND (0.0129)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00100)	ND (0.00223)	ND (0.00163)	ND (0.000)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (15.630)	ND (4.710)	ND (6.240)	ND (0.000)
Concentration, ppb, Dry	ND (0.461)	ND (0.139)	ND (0.184)	ND (0.000)
Concentration, ug/DSCM *	ND (4.690)	ND (1.410)	ND (1.870)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.337)	ND (0.101)	ND (0.134)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0424)	ND (0.0128)	ND (0.0169)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2B

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (2.690)	ND (5.610)	ND (4.050)	ND (0.000)
Concentration, ppb, Dry	ND (0.261)	ND (0.544)	ND (0.393)	ND (0.000)
Concentration, ug/DSCM *	ND (0.804)	ND (1.680)	ND (1.210)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0576)	ND (0.120)	ND (0.0868)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00726)	ND (0.0151)	ND (0.0109)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.880)	ND (1.900)	ND (1.320)	ND (0.000)
Concentration, ppb, Dry	ND (0.0526)	ND (0.114)	ND (0.0789)	ND (0.000)
Concentration, ug/DSCM *	ND (0.263)	ND (0.568)	ND (0.394)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0189)	ND (0.0407)	ND (0.0283)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00238)	ND (0.00513)	ND (0.00356)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.740)	ND (3.720)	ND (2.570)	ND (0.000)
Concentration, ppb, Dry	ND (0.0918)	ND (0.196)	ND (0.136)	ND (0.000)
Concentration, ug/DSCM *	ND (0.520)	ND (1.110)	ND (0.768)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0373)	ND (0.0797)	ND (0.0551)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00470)	ND (0.0100)	ND (0.00694)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.410)	ND (2.860)	ND (2.090)	ND (0.000)
Concentration, ppb, Dry	ND (0.0744)	ND (0.151)	ND (0.110)	ND (0.000)
Concentration, ug/DSCM *	ND (0.421)	ND (0.854)	ND (0.624)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0302)	ND (0.0613)	ND (0.0448)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00381)	ND (0.00772)	ND (0.00564)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (2.510)	ND (2.340)	ND (2.360)	ND (0.000)
Concentration, ppb, Dry	ND (0.184)	ND (0.171)	ND (0.173)	ND (0.000)
Concentration, ug/DSCM *	ND (0.750)	ND (0.699)	ND (0.705)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0538)	ND (0.0501)	ND (0.0506)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00678)	ND (0.00632)	ND (0.00637)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (1.100)	ND (2.390)	ND (1.660)	ND (0.000)
Concentration, ppb, Dry	ND (0.0658)	ND (0.143)	ND (0.0992)	ND (0.000)
Concentration, ug/DSCM *	ND (0.329)	ND (0.714)	ND (0.496)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0236)	ND (0.0512)	ND (0.0356)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00297)	ND (0.00645)	ND (0.00448)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (1.000)	ND (2.150)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0764)	ND (0.164)	ND (0.115)	ND (0.000)
Concentration, ug/DSCM *	ND (0.299)	ND (0.642)	ND (0.448)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0214)	ND (0.0461)	ND (0.0321)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00270)	ND (0.00580)	ND (0.00405)	ND (0.000)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.860)	ND (1.910)	ND (1.300)	ND (0.000)
Concentration, ppb, Dry	ND (0.0488)	ND (0.108)	ND (0.0738)	ND (0.000)
Concentration, ug/DSCM *	ND (0.257)	ND (0.571)	ND (0.388)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0184)	ND (0.0409)	ND (0.0279)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00232)	ND (0.00516)	ND (0.00351)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.310)	ND (2.860)	ND (1.940)	ND (0.000)
Concentration, ppb, Dry	ND (0.0658)	ND (0.144)	ND (0.0975)	ND (0.000)
Concentration, ug/DSCM *	ND (0.391)	ND (0.854)	ND (0.580)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0281)	ND (0.0613)	ND (0.0416)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00354)	ND (0.00772)	ND (0.00524)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (2.840)	ND (6.270)	ND (4.180)	ND (0.000)
Concentration, ppb, Dry	ND (0.176)	ND (0.388)	ND (0.259)	ND (0.000)
Concentration, ug/DSCM *	ND (0.848)	ND (1.870)	ND (1.250)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0609)	ND (0.134)	ND (0.0896)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00767)	ND (0.0169)	ND (0.0113)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.500)	ND (3.200)	ND (2.270)	ND (0.000)
Concentration, ppb, Dry	ND (0.0733)	ND (0.156)	ND (0.111)	ND (0.000)
Concentration, ug/DSCM *	ND (0.448)	ND (0.956)	ND (0.678)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0321)	ND (0.0686)	ND (0.0486)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00405)	ND (0.00864)	ND (0.00613)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (0.980)	ND (2.110)	ND (1.480)	ND (0.000)
Concentration, ppb, Dry	ND (0.0525)	ND (0.113)	ND (0.0792)	ND (0.000)
Concentration, ug/DSCM *	ND (0.293)	ND (0.630)	ND (0.442)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0210)	ND (0.0452)	ND (0.0317)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00265)	ND (0.00570)	ND (0.00400)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.310)	ND (2.800)	ND (1.940)	ND (0.000)
Concentration, ppb, Dry	ND (0.0777)	ND (0.166)	ND (0.115)	ND (0.000)
Concentration, ug/DSCM *	ND (0.391)	ND (0.836)	ND (0.580)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0281)	ND (0.0600)	ND (0.0416)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00354)	ND (0.00756)	ND (0.00524)	ND (0.000)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (4.830)	ND (10.390)	ND (7.330)	ND (0.000)
Concentration, ppb, Dry	ND (0.147)	ND (0.316)	ND (0.223)	ND (0.000)
Concentration, ug/DSCM *	ND (1.440)	ND (3.100)	ND (2.190)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.103)	ND (0.223)	ND (0.157)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.0281)	ND (0.0198)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (3.760)	ND (8.070)	ND (5.670)	ND (0.000)
Concentration, ppb, Dry	ND (0.114)	ND (0.245)	ND (0.172)	ND (0.000)
Concentration, ug/DSCM *	ND (1.120)	ND (2.410)	ND (1.690)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0806)	ND (0.173)	ND (0.121)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0102)	ND (0.0218)	ND (0.0153)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (2.010)	ND (2.650)	ND (2.370)	ND (0.000)
Concentration, ppb, Dry	ND (0.135)	ND (0.178)	ND (0.159)	ND (0.000)
Concentration, ug/DSCM *	ND (0.600)	ND (0.792)	ND (0.708)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0431)	ND (0.0568)	ND (0.0508)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00543)	ND (0.00715)	ND (0.00640)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.690)	ND (3.530)	ND (2.480)	ND (0.000)
Concentration, ppb, Dry	ND (0.112)	ND (0.235)	ND (0.165)	ND (0.000)
Concentration, ug/DSCM *	ND (0.505)	ND (1.050)	ND (0.741)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0362)	ND (0.0756)	ND (0.0531)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00456)	ND (0.00953)	ND (0.00670)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (1.040)	ND (2.130)	ND (1.550)	ND (0.000)
Concentration, ppb, Dry	ND (0.0583)	ND (0.119)	ND (0.0869)	ND (0.000)
Concentration, ug/DSCM *	ND (0.311)	ND (0.636)	ND (0.463)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0223)	ND (0.0456)	ND (0.0332)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00281)	ND (0.00575)	ND (0.00418)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2B

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (1.950)	ND (3.090)	ND (2.780)	ND (0.000)
Concentration, ppb, Dry	ND (0.116)	ND (0.183)	ND (0.165)	ND (0.000)
Concentration, ug/DSCM *	ND (0.582)	ND (0.923)	ND (0.830)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0418)	ND (0.0662)	ND (0.0596)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00526)	ND (0.00834)	ND (0.00751)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.710)	ND (1.600)	ND (1.080)	ND (0.000)
Concentration, ppb, Dry	ND (0.0369)	ND (0.0832)	ND (0.0562)	ND (0.000)
Concentration, ug/DSCM *	ND (0.212)	ND (0.478)	ND (0.323)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0152)	ND (0.0343)	ND (0.0231)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00192)	ND (0.00432)	ND (0.00292)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.540)	ND (3.180)	ND (2.290)	ND (0.0
Concentration, ppb, Dry	ND (0.102)	ND (0.211)	ND (0.152)	ND (0.000)
Concentration, ug/DSCM *	ND (0.460)	ND (0.950)	ND (0.684)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0330)	ND (0.0681)	ND (0.0491)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00416)	ND (0.00859)	ND (0.00618)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (1.930)	ND (3.990)	ND (2.830)	ND (0.000)
Concentration, ppb, Dry	ND (0.0764)	ND (0.158)	ND (0.112)	ND (0.000)
Concentration, ug/DSCM *	ND (0.577)	ND (1.190)	ND (0.845)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0414)	ND (0.0855)	ND (0.0606)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00521)	ND (0.0108)	ND (0.00764)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (2.930)	ND (6.320)	ND (4.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.136)	ND (0.294)	ND (0.210)	ND (0.000)
Concentration, ug/DSCM *	ND (0.875)	ND (1.890)	ND (1.340)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0628)	ND (0.135)	ND (0.0964)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00791)	ND (0.0171)	ND (0.0121)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.590)	ND (1.260)	ND (0.870)	ND (0.000)
Concentration, ppb, Dry	ND (0.0331)	ND (0.0706)	ND (0.0488)	ND (0.000)
Concentration, ug/DSCM *	ND (0.176)	ND (0.376)	ND (0.260)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0126)	ND (0.0270)	ND (0.0186)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00159)	ND (0.00340)	ND (0.00235)	ND (0.000)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (2.910)	ND (6.430)	ND (4.480)	ND (0.000)
Concentration, ppb, Dry	ND (0.170)	ND (0.375)	ND (0.261)	ND (0.000)
Concentration, ug/DSCM *	ND (0.869)	ND (1.920)	ND (1.340)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0624)	ND (0.138)	ND (0.0960)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00786)	ND (0.0174)	ND (0.0121)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (4.840)	ND (9.220)	ND (6.970)	ND (0.000)
Concentration, ppb, Dry	ND (0.133)	ND (0.254)	ND (0.192)	ND (0.000)
Concentration, ug/DSCM *	ND (1.450)	ND (2.750)	ND (2.080)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.198)	ND (0.149)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0131)	ND (0.0249)	ND (0.0188)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.920)	ND (2.050)	ND (1.390)	ND (0.000)
Concentration, ppb, Dry	ND (0.0428)	ND (0.0953)	ND (0.0646)	ND (0.000)
Concentration, ug/DSCM *	ND (0.275)	ND (0.612)	ND (0.415)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0197)	ND (0.0439)	ND (0.0298)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00248)	ND (0.00553)	ND (0.00375)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (2.200)	ND (4.590)	ND (3.330)	ND (0.000)
Concentration, ppb, Dry	ND (0.0809)	ND (0.169)	ND (0.122)	ND (0.000)
Concentration, ug/DSCM *	ND (0.657)	ND (1.370)	ND (0.995)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0471)	ND (0.0984)	ND (0.0714)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00594)	ND (0.0124)	ND (0.00899)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (2.770)	ND (3.030)	ND (2.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.133)	ND (0.146)	ND (0.127)	ND (0.000)
Concentration, ug/DSCM *	ND (0.827)	ND (0.905)	ND (0.786)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0594)	ND (0.0649)	ND (0.0564)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00748)	ND (0.00818)	ND (0.00710)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2B

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (8.640)	ND (5.120)	ND (5.240)	ND (0.000)
Concentration, ppb, Dry	ND (0.574)	ND (0.340)	ND (0.348)	ND (0.000)
Concentration, ug/DSCM *	ND (2.580)	ND (1.530)	ND (1.570)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.185)	ND (0.110)	ND (0.112)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0233)	ND (0.0138)	ND (0.0141)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (5.410)	ND (18.170)	ND (9.010)	ND (0.000)
Concentration, ppb, Dry	ND (0.119)	ND (0.400)	ND (0.198)	ND (0.000)
Concentration, ug/DSCM *	ND (1.620)	ND (5.430)	ND (2.690)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.116)	ND (0.389)	ND (0.193)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0146)	ND (0.0491)	ND (0.0243)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (1.010)	ND (2.180)	ND (1.530)	ND (0.000)
Concentration, ppb, Dry	ND (0.0490)	ND (0.106)	ND (0.0742)	ND (0.000)
Concentration, ug/DSCM *	ND (0.302)	ND (0.651)	ND (0.457)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0216)	ND (0.0467)	ND (0.0328)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00273)	ND (0.00589)	ND (0.00413)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (4.850)	ND (14.720)	ND (9.220)	ND (0.000)
Concentration, ppb, Dry	ND (0.128)	ND (0.388)	ND (0.243)	ND (0.000)
Concentration, ug/DSCM *	ND (1.450)	ND (4.400)	ND (2.750)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.315)	ND (0.198)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0131)	ND (0.0397)	ND (0.0249)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (24.650)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (1.200)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (7.360)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.528)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0666)	ND (0.000)	ND (0.000)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.040)	ND (6.590)	ND (4.940)	ND (0.000)
Concentration, ppb, Dry	ND (0.111)	ND (0.240)	ND (0.180)	ND (0.000)
Concentration, ug/DSCM *	ND (0.908)	ND (1.970)	ND (1.480)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0651)	ND (0.141)	ND (0.106)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00821)	ND (0.0178)	ND (0.0133)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2B

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.040)	ND (5.900)	ND (4.940)	ND (0.000)
Concentration, ppb, Dry	ND (0.111)	ND (0.215)	ND (0.180)	ND (0.000)
Concentration, ug/DSCM *	ND (0.908)	ND (1.760)	ND (1.480)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0651)	ND (0.126)	ND (0.106)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00821)	ND (0.0159)	ND (0.0133)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (0.000)	ND (21.610)	ND (24.220)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (1.270)	ND (1.420)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (6.460)	ND (7.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.463)	ND (0.519)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0583)	ND (0.0654)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.920)	ND (6.550)	ND (5.280)	ND (0.000)
Concentration, ppb, Dry	ND (0.129)	ND (0.289)	ND (0.233)	ND (0.000)
Concentration, ug/DSCM *	ND (0.872)	ND (1.960)	ND (1.580)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0626)	ND (0.140)	ND (0.113)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00788)	ND (0.0177)	ND (0.0143)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (4.050)	ND (8.670)	ND (7.250)	ND (0.000)
Concentration, ppb, Dry	ND (0.179)	ND (0.382)	ND (0.320)	ND (0.000)
Concentration, ug/DSCM *	ND (1.210)	ND (2.590)	ND (2.170)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0868)	ND (0.186)	ND (0.155)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0109)	ND (0.0234)	ND (0.0196)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.650)	ND (6.030)	ND (4.450)	ND (0.000)
Concentration, ppb, Dry	ND (0.117)	ND (0.266)	ND (0.196)	ND (0.000)
Concentration, ug/DSCM *	ND (0.792)	ND (1.800)	ND (1.330)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0568)	ND (0.129)	ND (0.0954)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00715)	ND (0.0163)	ND (0.0120)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.500)	ND (5.360)	ND (4.130)	ND (0.000)
Concentration, ppb, Dry	ND (0.110)	ND (0.236)	ND (0.182)	ND (0.000)
Concentration, ug/DSCM *	ND (0.747)	ND (1.600)	ND (1.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0536)	ND (0.115)	ND (0.0885)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00675)	ND (0.0145)	ND (0.0112)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

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	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (0.980)	ND (2.240)	ND (1.690)	ND (0.000)
Concentration, ppb, Dry	ND (0.0432)	ND (0.0988)	ND (0.0745)	ND (0.000)
Concentration, ug/DSCM *	ND (0.293)	ND (0.669)	ND (0.505)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0210)	ND (0.0480)	ND (0.0362)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00265)	ND (0.00605)	ND (0.00456)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (0.930)	ND (2.070)	ND (1.590)	ND (0.000)
Concentration, ppb, Dry	ND (0.0407)	ND (0.0905)	ND (0.0695)	ND (0.000)
Concentration, ug/DSCM *	ND (0.278)	ND (0.618)	ND (0.475)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0199)	ND (0.0444)	ND (0.0341)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00251)	ND (0.00559)	ND (0.00429)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.810)	ND (1.790)	ND (1.350)	ND (0.000)
Concentration, ppb, Dry	ND (0.0300)	ND (0.0662)	ND (0.0500)	ND (0.000)
Concentration, ug/DSCM *	ND (0.242)	ND (0.535)	ND (0.403)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0174)	ND (0.0384)	ND (0.0289)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00219)	ND (0.00483)	ND (0.00364)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (2.490)	ND (5.560)	ND (4.510)	ND (0.000)
Concentration, ppb, Dry	ND (0.0982)	ND (0.219)	ND (0.178)	ND (0.000)
Concentration, ug/DSCM *	ND (0.744)	ND (1.660)	ND (1.350)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0534)	ND (0.119)	ND (0.0966)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00672)	ND (0.0150)	ND (0.0122)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (6.560)	ND (10.660)	ND (10.360)	ND (0.000)
Concentration, ppb, Dry	ND (0.256)	ND (0.416)	ND (0.404)	ND (0.000)
Concentration, ug/DSCM *	ND (1.960)	ND (3.180)	ND (3.090)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.141)	ND (0.228)	ND (0.222)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0177)	ND (0.0288)	ND (0.0280)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (4.720)	ND (7.790)	ND (7.250)	ND (0.000)
Concentration, ppb, Dry	ND (0.171)	ND (0.283)	ND (0.263)	ND (0.000)
Concentration, ug/DSCM *	ND (1.410)	ND (2.330)	ND (2.170)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.101)	ND (0.167)	ND (0.155)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0127)	ND (0.0210)	ND (0.0196)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (4.330)	ND (7.460)	ND (6.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.185)	ND (0.319)	ND (0.278)	ND (0.000)
Concentration, ug/DSCM *	ND (1.290)	ND (2.230)	ND (1.940)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0928)	ND (0.160)	ND (0.139)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0117)	ND (0.0201)	ND (0.0175)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (1.340)	ND (2.730)	ND (2.170)	ND (0.000)
Concentration, ppb, Dry	ND (0.0692)	ND (0.141)	ND (0.112)	ND (0.000)
Concentration, ug/DSCM *	ND (0.400)	ND (0.815)	ND (0.648)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0287)	ND (0.0585)	ND (0.0465)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00362)	ND (0.00737)	ND (0.00586)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (6.260)	ND (12.700)	ND (10.650)	ND (0.000)
Concentration, ppb, Dry	ND (0.134)	ND (0.272)	ND (0.228)	ND (0.000)
Concentration, ug/DSCM *	ND (1.870)	ND (3.790)	ND (3.180)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.134)	ND (0.272)	ND (0.228)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0169)	ND (0.0343)	ND (0.0288)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (3.490)	ND (6.660)	ND (5.550)	ND (0.000)
Concentration, ppb, Dry	ND (0.0881)	ND (0.168)	ND (0.140)	ND (0.000)
Concentration, ug/DSCM *	ND (1.040)	ND (1.990)	ND (1.660)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0748)	ND (0.143)	ND (0.119)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00942)	ND (0.0180)	ND (0.0150)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.480)	ND (1.780)	ND (1.920)	ND (0.000)
Concentration, ppb, Dry	ND (0.0628)	ND (0.0756)	ND (0.0815)	ND (0.000)
Concentration, ug/DSCM *	ND (0.442)	ND (0.532)	ND (0.574)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0317)	ND (0.0381)	ND (0.0411)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00400)	ND (0.00481)	ND (0.00518)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (5.970)	ND (9.060)	ND (8.210)	ND (0.000)
Concentration, ppb, Dry	ND (0.161)	ND (0.244)	ND (0.222)	ND (0.000)
Concentration, ug/DSCM *	ND (1.780)	ND (2.710)	ND (2.450)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.128)	ND (0.194)	ND (0.176)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0161)	ND (0.0245)	ND (0.0222)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (8.930)	ND (15.310)	ND (13.470)	ND (0.000)
Concentration, ppb, Dry	ND (0.217)	ND (0.373)	ND (0.328)	ND (0.000)
Concentration, ug/DSCM *	ND (2.670)	ND (4.570)	ND (4.020)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.191)	ND (0.328)	ND (0.289)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0241)	ND (0.0413)	ND (0.0364)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (1.820)	ND (3.140)	ND (2.840)	ND (0.000)
Concentration, ppb, Dry	ND (0.0657)	ND (0.113)	ND (0.102)	ND (0.000)
Concentration, ug/DSCM *	ND (0.544)	ND (0.938)	ND (0.848)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0390)	ND (0.0673)	ND (0.0609)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00491)	ND (0.00848)	ND (0.00767)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	ND (0.400)	ND (0.750)	ND (0.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.0103)	ND (0.0194)	ND (0.0163)	ND (0.000)
Concentration, ug/DSCM *	ND (0.119)	ND (0.224)	ND (0.188)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00857)	ND (0.0161)	ND (0.0135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00108)	ND (0.00202)	ND (0.00170)	ND (0.000)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.430)	ND (0.780)	ND (0.770)	ND (0.000)
Concentration, ppb, Dry	ND (0.0153)	ND (0.0277)	ND (0.0274)	ND (0.000)
Concentration, ug/DSCM *	ND (0.128)	ND (0.233)	ND (0.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00921)	ND (0.0167)	ND (0.0165)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00116)	ND (0.00211)	ND (0.00208)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (25.890)	ND (5.250)	ND (10.960)	ND (0.000)
Concentration, ppb, Dry	ND (1.010)	ND (0.205)	ND (0.427)	ND (0.000)
Concentration, ug/DSCM *	ND (7.730)	ND (1.570)	ND (3.270)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.555)	ND (0.112)	ND (0.235)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0699)	ND (0.0142)	ND (0.0296)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (13.300)	ND (5.210)	ND (8.320)	ND (0.000)
Concentration, ppb, Dry	ND (0.482)	ND (0.189)	ND (0.302)	ND (0.000)
Concentration, ug/DSCM *	ND (3.970)	ND (1.560)	ND (2.490)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.285)	ND (0.112)	ND (0.178)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0359)	ND (0.0141)	ND (0.0225)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (1.740)	ND (2.850)	ND (2.920)	ND (0.000)
Concentration, ppb, Dry	ND (0.0555)	ND (0.0909)	ND (0.0931)	ND (0.000)
Concentration, ug/DSCM *	ND (0.520)	ND (0.851)	ND (0.872)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0373)	ND (0.0611)	ND (0.0626)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00470)	ND (0.00769)	ND (0.00788)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.650)	ND (1.360)	ND (1.230)	ND (0.000)
Concentration, ppb, Dry	ND (0.0150)	ND (0.0313)	ND (0.0283)	ND (0.000)
Concentration, ug/DSCM *	ND (0.194)	ND (0.406)	ND (0.367)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0139)	ND (0.0291)	ND (0.0264)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00175)	ND (0.00367)	ND (0.00332)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (15.340)	ND (2.190)	ND (4.310)	ND (0.000)
Concentration, ppb, Dry	ND (0.519)	ND (0.0741)	ND (0.146)	ND (0.000)
Concentration, ug/DSCM *	ND (4.580)	ND (0.654)	ND (1.290)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.329)	ND (0.0469)	ND (0.0924)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0414)	ND (0.00591)	ND (0.0116)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (3.610)	ND (4.080)	ND (4.240)	ND (0.000)
Concentration, ppb, Dry	ND (0.0971)	ND (0.110)	ND (0.114)	ND (0.000)
Concentration, ug/DSCM *	ND (1.080)	ND (1.220)	ND (1.270)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0774)	ND (0.0874)	ND (0.0909)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00975)	ND (0.0110)	ND (0.0114)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.410)	ND (0.760)	ND (0.780)	ND (0.000)
Concentration, ppb, Dry	ND (0.0129)	ND (0.0239)	ND (0.0246)	ND (0.000)
Concentration, ug/DSCM *	ND (0.122)	ND (0.227)	ND (0.233)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00879)	ND (0.0163)	ND (0.0167)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00111)	ND (0.00205)	ND (0.00211)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (1.920)	ND (2.340)	ND (2.460)	ND (0.000)
Concentration, ppb, Dry	ND (0.0545)	ND (0.0664)	ND (0.0698)	ND (0.000)
Concentration, ug/DSCM *	ND (0.574)	ND (0.699)	ND (0.735)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0411)	ND (0.0501)	ND (0.0527)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00518)	ND (0.00632)	ND (0.00664)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-2-S2-MM5-2B

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	ND (0.470)	EV [14.820]	ND (0.870)	EV (14.820)
Concentration, ppb, Dry	ND (0.00865)	EV [0.273]	ND (0.0160)	EV (0.273)
Concentration, ug/DSCM *	ND (0.140)	EV [4.430]	ND (0.260)	EV (4.430)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0101)	EV [0.318]	ND (0.0186)	EV (0.318)
Emission Rate, Milligrams/Second	ND (0.00127)	EV [0.0400]	ND (0.00235)	EV (0.0400)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (32.520)	ND (5.370)	ND (9.050)	ND (0.000)
Concentration, ppb, Dry	ND (0.957)	ND (0.158)	ND (0.266)	ND (0.000)
Concentration, ug/DSCM *	ND (9.710)	ND (1.600)	ND (2.700)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.697)	ND (0.115)	ND (0.194)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0878)	ND (0.0145)	ND (0.0244)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-3-S2-MM5-3A

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (2.920)	ND (5.370)	ND (4.400)	ND (0.000)
Concentration, ppb, Dry	ND (0.291)	ND (0.535)	ND (0.439)	ND (0.000)
Concentration, ug/DSCM *	ND (0.897)	ND (1.650)	ND (1.350)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0603)	ND (0.111)	ND (0.0909)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00760)	ND (0.0140)	ND (0.0114)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.950)	ND (1.820)	ND (1.430)	ND (0.000)
Concentration, ppb, Dry	ND (0.0584)	ND (0.112)	ND (0.0879)	ND (0.000)
Concentration, ug/DSCM *	ND (0.292)	ND (0.559)	ND (0.439)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0196)	ND (0.0376)	ND (0.0295)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00247)	ND (0.00474)	ND (0.00372)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.880)	ND (3.560)	ND (2.790)	ND (0.000)
Concentration, ppb, Dry	ND (0.102)	ND (0.193)	ND (0.151)	ND (0.000)
Concentration, ug/DSCM *	ND (0.577)	ND (1.090)	ND (0.857)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0388)	ND (0.0735)	ND (0.0576)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00489)	ND (0.00926)	ND (0.00726)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.520)	ND (2.740)	ND (2.270)	ND (0.000)
Concentration, ppb, Dry	ND (0.0824)	ND (0.149)	ND (0.123)	ND (0.000)
Concentration, ug/DSCM *	ND (0.467)	ND (0.841)	ND (0.697)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0314)	ND (0.0566)	ND (0.0469)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00395)	ND (0.00713)	ND (0.00591)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (2.720)	ND (2.240)	ND (2.560)	ND (0.000)
Concentration, ppb, Dry	ND (0.205)	ND (0.169)	ND (0.193)	ND (0.000)
Concentration, ug/DSCM *	ND (0.835)	ND (0.688)	ND (0.786)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0562)	ND (0.0463)	ND (0.0529)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00708)	ND (0.00583)	ND (0.00666)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (1.190)	ND (2.290)	ND (1.810)	ND (0.000)
Concentration, ppb, Dry	ND (0.0731)	ND (0.141)	ND (0.111)	ND (0.000)
Concentration, ug/DSCM *	ND (0.365)	ND (0.703)	ND (0.556)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0246)	ND (0.0473)	ND (0.0374)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00310)	ND (0.00596)	ND (0.00471)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

III-A-S2-MM5-3A

	FH	BH	Im	TOTAL
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (1.080)	ND (2.060)	ND (1.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.0848)	ND (0.162)	ND (0.128)	ND (0.000)
Concentration, ug/DSCM *	ND (0.332)	ND (0.633)	ND (0.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0223)	ND (0.0425)	ND (0.0337)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00281)	ND (0.00536)	ND (0.00424)	ND (0.000)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.940)	ND (1.830)	ND (1.410)	ND (0.000)
Concentration, ppb, Dry	ND (0.0548)	ND (0.107)	ND (0.0823)	ND (0.000)
Concentration, ug/DSCM *	ND (0.289)	ND (0.562)	ND (0.433)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0194)	ND (0.0378)	ND (0.0291)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00245)	ND (0.00476)	ND (0.00367)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.420)	ND (2.740)	ND (2.110)	ND (0.000)
Concentration, ppb, Dry	ND (0.0733)	ND (0.142)	ND (0.109)	ND (0.000)
Concentration, ug/DSCM *	ND (0.436)	ND (0.841)	ND (0.648)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0293)	ND (0.0566)	ND (0.0436)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00369)	ND (0.00713)	ND (0.00549)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (3.080)	ND (6.010)	ND (4.550)	ND (0.000)
Concentration, ppb, Dry	ND (0.196)	ND (0.382)	ND (0.289)	ND (0.000)
Concentration, ug/DSCM *	ND (0.946)	ND (1.850)	ND (1.400)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0636)	ND (0.124)	ND (0.0940)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00801)	ND (0.0156)	ND (0.0118)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.630)	ND (3.070)	ND (2.470)	ND (0.000)
Concentration, ppb, Dry	ND (0.0819)	ND (0.154)	ND (0.124)	ND (0.000)
Concentration, ug/DSCM *	ND (0.500)	ND (0.943)	ND (0.758)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0337)	ND (0.0634)	ND (0.0510)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00424)	ND (0.00799)	ND (0.00643)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (1.060)	ND (2.030)	ND (1.610)	ND (0.000)
Concentration, ppb, Dry	ND (0.0583)	ND (0.112)	ND (0.0886)	ND (0.000)
Concentration, ug/DSCM *	ND (0.325)	ND (0.623)	ND (0.494)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0219)	ND (0.0419)	ND (0.0332)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00276)	ND (0.00528)	ND (0.00419)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-A-S2-MM5-3A

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.420)	ND (2.690)	ND (2.110)	ND (0.000)
Concentration, ppb, Dry	ND (0.0866)	ND (0.164)	ND (0.129)	ND (0.000)
Concentration, ug/DSCM *	ND (0.436)	ND (0.826)	ND (0.648)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0293)	ND (0.0555)	ND (0.0436)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00369)	ND (0.00700)	ND (0.00549)	ND (0.000)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (5.230)	ND (9.960)	ND (7.970)	ND (0.000)
Concentration, ppb, Dry	ND (0.163)	ND (0.311)	ND (0.249)	ND (0.000)
Concentration, ug/DSCM *	ND (1.610)	ND (3.060)	ND (2.450)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.108)	ND (0.206)	ND (0.165)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0136)	ND (0.0259)	ND (0.0207)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (4.080)	ND (7.730)	ND (6.170)	ND (0.000)
Concentration, ppb, Dry	ND (0.127)	ND (0.241)	ND (0.193)	ND (0.000)
Concentration, ug/DSCM *	ND (1.250)	ND (2.370)	ND (1.890)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0842)	ND (0.160)	ND (0.127)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0106)	ND (0.0201)	ND (0.0161)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (2.180)	ND (2.540)	ND (2.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.150)	ND (0.175)	ND (0.178)	ND (0.000)
Concentration, ug/DSCM *	ND (0.669)	ND (0.780)	ND (0.792)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0450)	ND (0.0524)	ND (0.0533)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00567)	ND (0.00661)	ND (0.00671)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.830)	ND (3.380)	ND (2.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.125)	ND (0.231)	ND (0.184)	ND (0.000)
Concentration, ug/DSCM *	ND (0.562)	ND (1.040)	ND (0.829)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0378)	ND (0.0698)	ND (0.0558)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00476)	ND (0.00879)	ND (0.00702)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (1.120)	ND (2.040)	ND (1.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.0646)	ND (0.118)	ND (0.0968)	ND (0.000)
Concentration, ug/DSCM *	ND (0.344)	ND (0.626)	ND (0.516)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0231)	ND (0.0421)	ND (0.0347)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00291)	ND (0.00531)	ND (0.00437)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-A-S2-MM5-3A

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (2.110)	ND (2.960)	ND (3.020)	ND (0.000)
Concentration, ppb, Dry	ND (0.129)	ND (0.180)	ND (0.184)	ND (0.000)
Concentration, ug/DSCM *	ND (0.648)	ND (0.909)	ND (0.927)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0436)	ND (0.0611)	ND (0.0624)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00549)	ND (0.00770)	ND (0.00786)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.770)	ND (1.530)	ND (1.170)	ND (0.000)
Concentration, ppb, Dry	ND (0.0412)	ND (0.0818)	ND (0.0625)	ND (0.000)
Concentration, ug/DSCM *	ND (0.236)	ND (0.470)	ND (0.359)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0159)	ND (0.0316)	ND (0.0242)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00200)	ND (0.00398)	ND (0.00304)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.670)	ND (3.040)	ND (2.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.114)	ND (0.208)	ND (0.170)	ND (0.000)
Concentration, ug/DSCM *	ND (0.513)	ND (0.933)	ND (0.765)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0345)	ND (0.0628)	ND (0.0514)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00434)	ND (0.00791)	ND (0.00648)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (2.100)	ND (3.820)	ND (3.080)	ND (0.000)
Concentration, ppb, Dry	ND (0.0855)	ND (0.156)	ND (0.125)	ND (0.000)
Concentration, ug/DSCM *	ND (0.645)	ND (1.170)	ND (0.946)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0434)	ND (0.0789)	ND (0.0636)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00546)	ND (0.00994)	ND (0.00801)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (3.180)	ND (6.060)	ND (4.890)	ND (0.000)
Concentration, ppb, Dry	ND (0.152)	ND (0.290)	ND (0.234)	ND (0.000)
Concentration, ug/DSCM *	ND (0.976)	ND (1.860)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0657)	ND (0.125)	ND (0.101)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00827)	ND (0.0158)	ND (0.0127)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

III-A-S2-MM5-3A

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.640)	ND (1.210)	ND (0.950)	ND (0.000)
Concentration, ppb, Dry	ND (0.0369)	ND (0.0697)	ND (0.0547)	ND (0.000)
Concentration, ug/DSCM *	ND (0.197)	ND (0.372)	ND (0.292)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0132)	ND (0.0250)	ND (0.0196)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00167)	ND (0.00315)	ND (0.00247)	ND (0.000)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (3.150)	ND (6.160)	ND (4.870)	ND (0.000)
Concentration, ppb, Dry	ND (0.189)	ND (0.369)	ND (0.292)	ND (0.000)
Concentration, ug/DSCM *	ND (0.967)	ND (1.890)	ND (1.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0650)	ND (0.127)	ND (0.101)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00820)	ND (0.0160)	ND (0.0127)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (5.250)	ND (8.840)	ND (7.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.149)	ND (0.250)	ND (0.215)	ND (0.000)
Concentration, ug/DSCM *	ND (1.610)	ND (2.710)	ND (2.330)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.108)	ND (0.183)	ND (0.157)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0137)	ND (0.0230)	ND (0.0197)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.990)	ND (1.970)	ND (1.510)	ND (0.000)
Concentration, ppb, Dry	ND (0.0473)	ND (0.0941)	ND (0.0721)	ND (0.000)
Concentration, ug/DSCM *	ND (0.304)	ND (0.605)	ND (0.464)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0204)	ND (0.0407)	ND (0.0312)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00258)	ND (0.00513)	ND (0.00393)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (2.380)	ND (4.400)	ND (3.620)	ND (0.000)
Concentration, ppb, Dry	ND (0.0899)	ND (0.166)	ND (0.137)	ND (0.000)
Concentration, ug/DSCM *	ND (0.731)	ND (1.350)	ND (1.110)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0491)	ND (0.0909)	ND (0.0748)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00619)	ND (0.0114)	ND (0.00942)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (3.000)	ND (2.900)	ND (2.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.148)	ND (0.144)	ND (0.142)	ND (0.000)
Concentration, ug/DSCM *	ND (0.921)	ND (0.890)	ND (0.878)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0619)	ND (0.0599)	ND (0.0591)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00781)	ND (0.00755)	ND (0.00744)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-A-S2-MM5-3A

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (9.370)	ND (4.910)	ND (5.690)	ND (0.000)
Concentration, ppb, Dry	ND (0.640)	ND (0.335)	ND (0.389)	ND (0.000)
Concentration, ug/DSCM *	ND (2.880)	ND (1.510)	ND (1.750)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.193)	ND (0.101)	ND (0.117)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0244)	ND (0.0128)	ND (0.0148)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (5.860)	ND (17.410)	ND (9.790)	ND (0.000)
Concentration, ppb, Dry	ND (0.133)	ND (0.394)	ND (0.222)	ND (0.000)
Concentration, ug/DSCM *	ND (1.800)	ND (5.350)	ND (3.010)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.121)	ND (0.360)	ND (0.202)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0152)	ND (0.0453)	ND (0.0255)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (1.100)	ND (2.090)	ND (1.670)	ND (0.000)
Concentration, ppb, Dry	ND (0.0548)	ND (0.104)	ND (0.0832)	ND (0.000)
Concentration, ug/DSCM *	ND (0.338)	ND (0.642)	ND (0.513)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0227)	ND (0.0432)	ND (0.0345)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00286)	ND (0.00544)	ND (0.00434)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (5.960)	ND (14.220)	ND (10.180)	ND (0.000)
Concentration, ppb, Dry	ND (0.161)	ND (0.385)	ND (0.276)	ND (0.000)
Concentration, ug/DSCM *	ND (1.830)	ND (4.370)	ND (3.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.123)	ND (0.294)	ND (0.210)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0155)	ND (0.0370)	ND (0.0265)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (30.300)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (1.510)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (9.300)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.626)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0788)	ND (0.000)	ND (0.000)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.740)	ND (6.370)	ND (5.450)	ND (0.000)
Concentration, ppb, Dry	ND (0.140)	ND (0.238)	ND (0.204)	ND (0.000)
Concentration, ug/DSCM *	ND (1.150)	ND (1.960)	ND (1.670)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0772)	ND (0.132)	ND (0.113)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00973)	ND (0.0166)	ND (0.0142)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-A-S2-MM5-3A

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.740)	ND (5.710)	ND (5.450)	ND (0.000)
Concentration, ppb, Dry	ND (0.140)	ND (0.214)	ND (0.204)	ND (0.000)
Concentration, ug/DSCM *	ND (1.150)	ND (1.750)	ND (1.670)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0772)	ND (0.118)	ND (0.113)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00973)	ND (0.0149)	ND (0.0142)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (0.000)	ND (20.890)	ND (26.740)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (1.260)	ND (1.620)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (6.410)	ND (8.210)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.431)	ND (0.552)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0544)	ND (0.0696)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (3.600)	ND (6.330)	ND (5.830)	ND (0.000)
Concentration, ppb, Dry	ND (0.163)	ND (0.287)	ND (0.264)	ND (0.000)
Concentration, ug/DSCM *	ND (1.110)	ND (1.940)	ND (1.790)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0743)	ND (0.131)	ND (0.120)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00937)	ND (0.0165)	ND (0.0152)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (4.980)	ND (8.370)	ND (8.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.226)	ND (0.379)	ND (0.363)	ND (0.000)
Concentration, ug/DSCM *	ND (1.530)	ND (2.570)	ND (2.460)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.103)	ND (0.173)	ND (0.165)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.0218)	ND (0.0208)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (3.260)	ND (5.820)	ND (4.920)	ND (0.000)
Concentration, ppb, Dry	ND (0.148)	ND (0.264)	ND (0.223)	ND (0.000)
Concentration, ug/DSCM *	ND (1.000)	ND (1.790)	ND (1.510)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0673)	ND (0.120)	ND (0.102)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00848)	ND (0.0151)	ND (0.0128)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (3.070)	ND (5.180)	ND (4.560)	ND (0.000)
Concentration, ppb, Dry	ND (0.139)	ND (0.235)	ND (0.207)	ND (0.000)
Concentration, ug/DSCM *	ND (0.943)	ND (1.590)	ND (1.400)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0634)	ND (0.107)	ND (0.0942)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00799)	ND (0.0135)	ND (0.0119)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-A-S2-MM5-3A

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.210)	ND (2.160)	ND (1.870)	ND (0.000)
Concentration, ppb, Dry	ND (0.0548)	ND (0.0979)	ND (0.0847)	ND (0.000)
Concentration, ug/DSCM *	ND (0.372)	ND (0.663)	ND (0.574)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0250)	ND (0.0446)	ND (0.0386)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00315)	ND (0.00562)	ND (0.00487)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (1.150)	ND (2.000)	ND (1.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.0517)	ND (0.0899)	ND (0.0791)	ND (0.000)
Concentration, ug/DSCM *	ND (0.353)	ND (0.614)	ND (0.540)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0237)	ND (0.0413)	ND (0.0363)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00299)	ND (0.00520)	ND (0.00458)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.990)	ND (1.730)	ND (1.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.0377)	ND (0.0658)	ND (0.0567)	ND (0.000)
Concentration, ug/DSCM *	ND (0.304)	ND (0.531)	ND (0.458)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0204)	ND (0.0357)	ND (0.0308)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00258)	ND (0.00450)	ND (0.00388)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (3.050)	ND (5.370)	ND (4.980)	ND (0.000)
Concentration, ppb, Dry	ND (0.124)	ND (0.218)	ND (0.202)	ND (0.000)
Concentration, ug/DSCM *	ND (0.937)	ND (1.650)	ND (1.530)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0630)	ND (0.111)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00794)	ND (0.0140)	ND (0.0130)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (8.060)	ND (10.300)	ND (11.440)	ND (0.000)
Concentration, ppb, Dry	ND (0.323)	ND (0.413)	ND (0.459)	ND (0.000)
Concentration, ug/DSCM *	ND (2.470)	ND (3.160)	ND (3.510)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.166)	ND (0.213)	ND (0.236)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0210)	ND (0.0268)	ND (0.0298)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (5.800)	ND (7.530)	ND (8.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.216)	ND (0.281)	ND (0.298)	ND (0.000)
Concentration, ug/DSCM *	ND (1.780)	ND (2.310)	ND (2.460)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.120)	ND (0.155)	ND (0.165)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0151)	ND (0.0196)	ND (0.0208)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-A-S2-MM5-3A

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (5.320)	ND (7.210)	ND (7.180)	ND (0.000)
Concentration, ppb, Dry	ND (0.234)	ND (0.317)	ND (0.315)	ND (0.000)
Concentration, ug/DSCM *	ND (1.630)	ND (2.210)	ND (2.200)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.110)	ND (0.149)	ND (0.148)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0138)	ND (0.0188)	ND (0.0187)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (1.650)	ND (2.630)	ND (2.400)	ND (0.000)
Concentration, ppb, Dry	ND (0.0876)	ND (0.140)	ND (0.127)	ND (0.000)
Concentration, ug/DSCM *	ND (0.507)	ND (0.808)	ND (0.737)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0341)	ND (0.0543)	ND (0.0496)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00429)	ND (0.00684)	ND (0.00624)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (7.700)	ND (12.280)	ND (11.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.170)	ND (0.271)	ND (0.259)	ND (0.000)
Concentration, ug/DSCM *	ND (2.360)	ND (3.770)	ND (3.610)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.159)	ND (0.254)	ND (0.243)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0200)	ND (0.0319)	ND (0.0306)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (4.290)	ND (6.440)	ND (6.130)	ND (0.000)
Concentration, ppb, Dry	ND (0.111)	ND (0.167)	ND (0.159)	ND (0.000)
Concentration, ug/DSCM *	ND (1.320)	ND (1.980)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0886)	ND (0.133)	ND (0.127)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0112)	ND (0.0168)	ND (0.0159)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.820)	ND (1.720)	ND (2.120)	ND (0.000)
Concentration, ppb, Dry	ND (0.0794)	ND (0.0751)	ND (0.0925)	ND (0.000)
Concentration, ug/DSCM *	ND (0.559)	ND (0.528)	ND (0.651)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0376)	ND (0.0355)	ND (0.0438)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00474)	ND (0.00448)	ND (0.00552)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (7.340)	ND (8.760)	ND (9.060)	ND (0.000)
Concentration, ppb, Dry	ND (0.204)	ND (0.243)	ND (0.251)	ND (0.000)
Concentration, ug/DSCM *	ND (2.250)	ND (2.690)	ND (2.780)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.152)	ND (0.181)	ND (0.187)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0191)	ND (0.0228)	ND (0.0236)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-A-S2-MM5-3A

	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (10.970)	ND (14.790)	ND (14.870)	ND (0.000)
Concentration, ppb, Dry	ND (0.274)	ND (0.370)	ND (0.372)	ND (0.000)
Concentration, ug/DSCM *	ND (3.370)	ND (4.540)	ND (4.570)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.227)	ND (0.305)	ND (0.307)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0285)	ND (0.0385)	ND (0.0387)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (2.230)	ND (3.040)	ND (3.140)	ND (0.000)
Concentration, ppb, Dry	ND (0.0827)	ND (0.113)	ND (0.116)	ND (0.000)
Concentration, ug/DSCM *	ND (0.685)	ND (0.933)	ND (0.964)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0460)	ND (0.0628)	ND (0.0648)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00580)	ND (0.00791)	ND (0.00817)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	ND (0.490)	ND (0.720)	ND (0.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.0130)	ND (0.0191)	ND (0.0186)	ND (0.000)
Concentration, ug/DSCM *	ND (0.150)	ND (0.221)	ND (0.215)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0101)	ND (0.0149)	ND (0.0145)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00127)	ND (0.00187)	ND (0.00182)	ND (0.000)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.470)	ND (0.740)	ND (0.910)	ND (0.000)
Concentration, ppb, Dry	ND (0.0172)	ND (0.0270)	ND (0.0332)	ND (0.000)
Concentration, ug/DSCM *	ND (0.144)	ND (0.227)	ND (0.279)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00971)	ND (0.0153)	ND (0.0188)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00122)	ND (0.00193)	ND (0.00237)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (28.790)	ND (5.010)	ND (12.940)	ND (0.000)
Concentration, ppb, Dry	ND (1.150)	ND (0.201)	ND (0.519)	ND (0.000)
Concentration, ug/DSCM *	ND (8.840)	ND (1.540)	ND (3.970)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.594)	ND (0.103)	ND (0.267)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0749)	ND (0.0130)	ND (0.0337)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (14.800)	ND (4.970)	ND (9.830)	ND (0.000)
Concentration, ppb, Dry	ND (0.551)	ND (0.185)	ND (0.366)	ND (0.000)
Concentration, ug/DSCM *	ND (4.540)	ND (1.530)	ND (3.020)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.306)	ND (0.103)	ND (0.203)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0385)	ND (0.0129)	ND (0.0256)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

III-A-S2-MM5-3A

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (1.930)	ND (2.720)	ND (3.460)	ND (0.000)
Concentration, ppb, Dry	ND (0.0633)	ND (0.0892)	ND (0.113)	ND (0.000)
Concentration, ug/DSCM *	ND (0.593)	ND (0.835)	ND (1.060)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0399)	ND (0.0562)	ND (0.0714)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00502)	ND (0.00708)	ND (0.00900)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	EV [14.860]	ND (1.300)	ND (1.450)	EV (14.860)
Concentration, ppb, Dry	EV [0.351]	ND (0.0307)	ND (0.0343)	EV (0.351)
Concentration, ug/DSCM *	EV [4.560]	ND (0.399)	ND (0.445)	EV (4.560)
Emission Rate, 1,000 * (Pounds/Hour)	EV [0.307]	ND (0.0268)	ND (0.0299)	EV (0.307)
Emission Rate, Milligrams/Second	EV [0.0387]	ND (0.00338)	ND (0.00377)	EV (0.0387)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (17.060)	ND (2.090)	ND (5.090)	ND (0.000)
Concentration, ppb, Dry	ND (0.594)	ND (0.0727)	ND (0.177)	ND (0.000)
Concentration, ug/DSCM *	ND (5.240)	ND (0.642)	ND (1.560)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.352)	ND (0.0432)	ND (0.105)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0444)	ND (0.00544)	ND (0.0132)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (4.010)	ND (3.900)	ND (5.010)	ND (0.000)
Concentration, ppb, Dry	ND (0.111)	ND (0.108)	ND (0.139)	ND (0.000)
Concentration, ug/DSCM *	ND (1.230)	ND (1.200)	ND (1.540)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0828)	ND (0.0805)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0104)	ND (0.0101)	ND (0.0130)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.460)	ND (0.730)	ND (0.920)	ND (0.000)
Concentration, ppb, Dry	ND (0.0149)	ND (0.0236)	ND (0.0298)	ND (0.000)
Concentration, ug/DSCM *	ND (0.141)	ND (0.224)	ND (0.282)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00950)	ND (0.0151)	ND (0.0190)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00120)	ND (0.00190)	ND (0.00239)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (2.130)	ND (2.240)	ND (2.910)	ND (0.000)
Concentration, ppb, Dry	ND (0.0622)	ND (0.0654)	ND (0.0849)	ND (0.000)
Concentration, ug/DSCM *	ND (0.654)	ND (0.688)	ND (0.894)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0440)	ND (0.0463)	ND (0.0601)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00554)	ND (0.00583)	ND (0.00757)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

III-A-S2-MM5-3A

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	ND (0.520)	ND (0.900)	ND (1.030)	ND (0.000)
Concentration, ppb, Dry	ND (0.00984)	ND (0.0170)	ND (0.0195)	ND (0.000)
Concentration, ug/DSCM *	ND (0.160)	ND (0.276)	ND (0.316)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0107)	ND (0.0186)	ND (0.0213)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00135)	ND (0.00234)	ND (0.00268)	ND (0.000)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (36.170)	ND (5.130)	ND (10.690)	ND (0.000)
Concentration, ppb, Dry	ND (1.090)	ND (0.155)	ND (0.323)	ND (0.000)
Concentration, ug/DSCM *	ND (11.100)	ND (1.580)	ND (3.280)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.747)	ND (0.106)	ND (0.221)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0941)	ND (0.0133)	ND (0.0278)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1A

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (2.530)	ND (4.700)	ND (2.940)	ND (0.000)
Concentration, ppb, Dry	ND (0.339)	ND (0.630)	ND (0.394)	ND (0.000)
Concentration, ug/DSCM *	ND (1.040)	ND (1.940)	ND (1.210)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0689)	ND (0.128)	ND (0.0801)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00869)	ND (0.0161)	ND (0.0101)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.830)	ND (1.590)	ND (0.960)	ND (0.000)
Concentration, ppb, Dry	ND (0.0686)	ND (0.131)	ND (0.0793)	ND (0.000)
Concentration, ug/DSCM *	ND (0.343)	ND (0.657)	ND (0.396)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0226)	ND (0.0433)	ND (0.0262)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00285)	ND (0.00546)	ND (0.00330)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.630)	ND (3.120)	ND (1.870)	ND (0.000)
Concentration, ppb, Dry	ND (0.119)	ND (0.228)	ND (0.136)	ND (0.000)
Concentration, ug/DSCM *	ND (0.673)	ND (1.290)	ND (0.772)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0444)	ND (0.0850)	ND (0.0510)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00560)	ND (0.0107)	ND (0.00642)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.320)	ND (2.400)	ND (1.520)	ND (0.000)
Concentration, ppb, Dry	ND (0.0963)	ND (0.175)	ND (0.111)	ND (0.000)
Concentration, ug/DSCM *	ND (0.545)	ND (0.991)	ND (0.628)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0360)	ND (0.0654)	ND (0.0414)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00453)	ND (0.00824)	ND (0.00522)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (2.350)	ND (1.960)	ND (1.710)	ND (0.000)
Concentration, ppb, Dry	ND (0.238)	ND (0.198)	ND (0.173)	ND (0.000)
Concentration, ug/DSCM *	ND (0.970)	ND (0.809)	ND (0.706)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0640)	ND (0.0534)	ND (0.0466)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00807)	ND (0.00673)	ND (0.00587)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (1.030)	ND (2.000)	ND (1.210)	ND (0.000)
Concentration, ppb, Dry	ND (0.0851)	ND (0.165)	ND (0.100)	ND (0.000)
Concentration, ug/DSCM *	ND (0.425)	ND (0.826)	ND (0.500)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0281)	ND (0.0545)	ND (0.0330)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00354)	ND (0.00687)	ND (0.00415)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.940)	ND (1.810)	ND (1.090)	ND (0.000)
Concentration, ppb, Dry	ND (0.0992)	ND (0.191)	ND (0.115)	ND (0.000)
Concentration, ug/DSCM *	ND (0.388)	ND (0.747)	ND (0.450)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0256)	ND (0.0493)	ND (0.0297)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00323)	ND (0.00621)	ND (0.00374)	ND (0.000)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.810)	ND (1.600)	ND (0.940)	ND (0.000)
Concentration, ppb, Dry	ND (0.0636)	ND (0.126)	ND (0.0738)	ND (0.000)
Concentration, ug/DSCM *	ND (0.334)	ND (0.661)	ND (0.388)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0221)	ND (0.0436)	ND (0.0256)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00278)	ND (0.00549)	ND (0.00323)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.230)	ND (2.400)	ND (1.410)	ND (0.000)
Concentration, ppb, Dry	ND (0.0854)	ND (0.167)	ND (0.0979)	ND (0.000)
Concentration, ug/DSCM *	ND (0.508)	ND (0.991)	ND (0.582)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0335)	ND (0.0654)	ND (0.0384)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00422)	ND (0.00824)	ND (0.00484)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (2.670)	ND (5.260)	ND (3.040)	ND (0.000)
Concentration, ppb, Dry	ND (0.228)	ND (0.450)	ND (0.260)	ND (0.000)
Concentration, ug/DSCM *	ND (1.100)	ND (2.170)	ND (1.260)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0728)	ND (0.143)	ND (0.0828)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00917)	ND (0.0181)	ND (0.0104)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.410)	ND (2.690)	ND (1.650)	ND (0.000)
Concentration, ppb, Dry	ND (0.0953)	ND (0.182)	ND (0.112)	ND (0.000)
Concentration, ug/DSCM *	ND (0.582)	ND (1.110)	ND (0.681)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0384)	ND (0.0733)	ND (0.0450)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00484)	ND (0.00924)	ND (0.00566)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (0.920)	ND (1.770)	ND (1.080)	ND (0.000)
Concentration, ppb, Dry	ND (0.0681)	ND (0.131)	ND (0.0799)	ND (0.000)
Concentration, ug/DSCM *	ND (0.380)	ND (0.731)	ND (0.446)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0251)	ND (0.0482)	ND (0.0294)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00316)	ND (0.00608)	ND (0.00371)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.230)	ND (2.350)	ND (1.410)	ND (0.000)
Concentration, ppb, Dry	ND (0.101)	ND (0.193)	ND (0.116)	ND (0.000)
Concentration, ug/DSCM *	ND (0.508)	ND (0.970)	ND (0.582)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0335)	ND (0.0640)	ND (0.0384)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00422)	ND (0.00807)	ND (0.00484)	ND (0.000)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (4.530)	ND (8.720)	ND (5.330)	ND (0.000)
Concentration, ppb, Dry	ND (0.190)	ND (0.367)	ND (0.224)	ND (0.000)
Concentration, ug/DSCM *	ND (1.870)	ND (3.600)	ND (2.200)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.123)	ND (0.238)	ND (0.145)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0156)	ND (0.0299)	ND (0.0183)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (3.530)	ND (6.770)	ND (4.120)	ND (0.000)
Concentration, ppb, Dry	ND (0.148)	ND (0.284)	ND (0.173)	ND (0.000)
Concentration, ug/DSCM *	ND (1.460)	ND (2.800)	ND (1.700)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0962)	ND (0.184)	ND (0.112)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0121)	ND (0.0232)	ND (0.0141)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (1.890)	ND (2.220)	ND (1.720)	ND (0.000)
Concentration, ppb, Dry	ND (0.175)	ND (0.206)	ND (0.159)	ND (0.000)
Concentration, ug/DSCM *	ND (0.780)	ND (0.917)	ND (0.710)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0515)	ND (0.0605)	ND (0.0469)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00649)	ND (0.00762)	ND (0.00591)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.580)	ND (2.960)	ND (1.810)	ND (0.000)
Concentration, ppb, Dry	ND (0.145)	ND (0.272)	ND (0.166)	ND (0.000)
Concentration, ug/DSCM *	ND (0.652)	ND (1.220)	ND (0.747)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0431)	ND (0.0807)	ND (0.0493)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00542)	ND (0.0102)	ND (0.00621)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (0.970)	ND (1.790)	ND (1.130)	ND (0.000)
Concentration, ppb, Dry	ND (0.0752)	ND (0.139)	ND (0.0876)	ND (0.000)
Concentration, ug/DSCM *	ND (0.401)	ND (0.739)	ND (0.467)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0264)	ND (0.0488)	ND (0.0308)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00333)	ND (0.00615)	ND (0.00388)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1A

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (1.830)	ND (2.590)	ND (2.020)	ND (0.000)
Concentration, ppb, Dry	ND (0.150)	ND (0.212)	ND (0.166)	ND (0.000)
Concentration, ug/DSCM *	ND (0.756)	ND (1.070)	ND (0.834)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0499)	ND (0.0706)	ND (0.0550)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00628)	ND (0.00889)	ND (0.00694)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.670)	ND (1.340)	ND (0.780)	ND (0.000)
Concentration, ppb, Dry	ND (0.0482)	ND (0.0963)	ND (0.0561)	ND (0.000)
Concentration, ug/DSCM *	ND (0.277)	ND (0.553)	ND (0.322)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0183)	ND (0.0365)	ND (0.0213)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00230)	ND (0.00460)	ND (0.00268)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.450)	ND (2.660)	ND (1.670)	ND (0.000)
Concentration, ppb, Dry	ND (0.133)	ND (0.244)	ND (0.153)	ND (0.000)
Concentration, ug/DSCM *	ND (0.599)	ND (1.100)	ND (0.690)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0395)	ND (0.0725)	ND (0.0455)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00498)	ND (0.00913)	ND (0.00573)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (1.820)	ND (3.350)	ND (2.060)	ND (0.000)
Concentration, ppb, Dry	ND (0.0996)	ND (0.183)	ND (0.113)	ND (0.000)
Concentration, ug/DSCM *	ND (0.752)	ND (1.380)	ND (0.851)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0496)	ND (0.0913)	ND (0.0561)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00625)	ND (0.0115)	ND (0.00707)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (2.760)	ND (5.300)	ND (3.270)	ND (0.000)
Concentration, ppb, Dry	ND (0.178)	ND (0.341)	ND (0.211)	ND (0.000)
Concentration, ug/DSCM *	ND (1.140)	ND (2.190)	ND (1.350)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0752)	ND (0.144)	ND (0.0891)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00948)	ND (0.0182)	ND (0.0112)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.550)	ND (1.060)	ND (0.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.0426)	ND (0.0822)	ND (0.0488)	ND (0.000)
Concentration, ug/DSCM *	ND (0.227)	ND (0.438)	ND (0.260)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0150)	ND (0.0289)	ND (0.0172)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00189)	ND (0.00364)	ND (0.00216)	ND (0.000)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (2.730)	ND (5.390)	ND (3.250)	ND (0.000)
Concentration, ppb, Dry	ND (0.220)	ND (0.435)	ND (0.262)	ND (0.000)
Concentration, ug/DSCM *	ND (1.130)	ND (2.230)	ND (1.340)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0744)	ND (0.147)	ND (0.0886)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00937)	ND (0.0185)	ND (0.0112)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (4.550)	ND (7.740)	ND (5.060)	ND (0.000)
Concentration, ppb, Dry	ND (0.173)	ND (0.295)	ND (0.193)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (3.200)	ND (2.090)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.124)	ND (0.211)	ND (0.138)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0156)	ND (0.0266)	ND (0.0174)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.860)	ND (1.720)	ND (1.010)	ND (0.000)
Concentration, ppb, Dry	ND (0.0553)	ND (0.111)	ND (0.0649)	ND (0.000)
Concentration, ug/DSCM *	ND (0.355)	ND (0.710)	ND (0.417)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0234)	ND (0.0469)	ND (0.0275)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00295)	ND (0.00591)	ND (0.00347)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (2.070)	ND (3.850)	ND (2.420)	ND (0.000)
Concentration, ppb, Dry	ND (0.105)	ND (0.196)	ND (0.123)	ND (0.000)
Concentration, ug/DSCM *	ND (0.855)	ND (1.590)	ND (0.999)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0564)	ND (0.105)	ND (0.0659)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00711)	ND (0.0132)	ND (0.00831)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (2.600)	ND (2.540)	ND (1.910)	ND (0.000)
Concentration, ppb, Dry	ND (0.173)	ND (0.169)	ND (0.127)	ND (0.000)
Concentration, ug/DSCM *	ND (1.070)	ND (1.050)	ND (0.789)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0708)	ND (0.0692)	ND (0.0520)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00893)	ND (0.00872)	ND (0.00656)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1A

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (8.120)	ND (4.300)	ND (3.810)	ND (0.000)
Concentration, ppb, Dry	ND (0.746)	ND (0.395)	ND (0.350)	ND (0.000)
Concentration, ug/DSCM *	ND (3.350)	ND (1.780)	ND (1.570)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.221)	ND (0.117)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0279)	ND (0.0148)	ND (0.0131)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (5.080)	ND (15.240)	ND (6.550)	ND (0.000)
Concentration, ppb, Dry	ND (0.155)	ND (0.464)	ND (0.199)	ND (0.000)
Concentration, ug/DSCM *	ND (2.100)	ND (6.290)	ND (2.700)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.138)	ND (0.415)	ND (0.178)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0174)	ND (0.0523)	ND (0.0225)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (0.950)	ND (1.830)	ND (1.120)	ND (0.000)
Concentration, ppb, Dry	ND (0.0637)	ND (0.123)	ND (0.0751)	ND (0.000)
Concentration, ug/DSCM *	ND (0.392)	ND (0.756)	ND (0.463)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0259)	ND (0.0499)	ND (0.0305)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00326)	ND (0.00628)	ND (0.00385)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (4.540)	ND (12.650)	ND (6.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.165)	ND (0.461)	ND (0.243)	ND (0.000)
Concentration, ug/DSCM *	ND (1.870)	ND (5.220)	ND (2.760)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.124)	ND (0.345)	ND (0.182)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0156)	ND (0.0434)	ND (0.0229)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (23.080)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (1.550)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (9.530)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.629)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0792)	ND (0.000)	ND (0.000)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.850)	ND (5.660)	ND (3.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.143)	ND (0.285)	ND (0.180)	ND (0.000)
Concentration, ug/DSCM *	ND (1.180)	ND (2.340)	ND (1.480)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0777)	ND (0.154)	ND (0.0975)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00978)	ND (0.0194)	ND (0.0123)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1A

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.850)	ND (5.070)	ND (3.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.143)	ND (0.255)	ND (0.180)	ND (0.000)
Concentration, ug/DSCM *	ND (1.180)	ND (2.090)	ND (1.480)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0777)	ND (0.138)	ND (0.0975)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00978)	ND (0.0174)	ND (0.0123)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (0.000)	ND (18.570)	ND (17.550)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (1.510)	ND (1.430)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (7.670)	ND (7.250)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.506)	ND (0.478)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0638)	ND (0.0603)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.740)	ND (5.630)	ND (3.830)	ND (0.000)
Concentration, ppb, Dry	ND (0.167)	ND (0.343)	ND (0.233)	ND (0.000)
Concentration, ug/DSCM *	ND (1.130)	ND (2.320)	ND (1.580)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0747)	ND (0.153)	ND (0.104)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00941)	ND (0.0193)	ND (0.0131)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (3.790)	ND (7.450)	ND (5.250)	ND (0.000)
Concentration, ppb, Dry	ND (0.231)	ND (0.454)	ND (0.320)	ND (0.000)
Concentration, ug/DSCM *	ND (1.570)	ND (3.080)	ND (2.170)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.103)	ND (0.203)	ND (0.143)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0130)	ND (0.0256)	ND (0.0180)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.480)	ND (5.180)	ND (3.230)	ND (0.000)
Concentration, ppb, Dry	ND (0.151)	ND (0.316)	ND (0.197)	ND (0.000)
Concentration, ug/DSCM *	ND (1.020)	ND (2.140)	ND (1.330)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0676)	ND (0.141)	ND (0.0880)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00851)	ND (0.0178)	ND (0.0111)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.340)	ND (4.600)	ND (2.990)	ND (0.000)
Concentration, ppb, Dry	ND (0.143)	ND (0.280)	ND (0.182)	ND (0.000)
Concentration, ug/DSCM *	ND (0.966)	ND (1.900)	ND (1.230)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0638)	ND (0.125)	ND (0.0815)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00803)	ND (0.0158)	ND (0.0103)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1A

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (0.920)	ND (1.920)	ND (1.220)	ND (0.000)
Concentration, ppb, Dry	ND (0.0561)	ND (0.117)	ND (0.0744)	ND (0.000)
Concentration, ug/DSCM *	ND (0.380)	ND (0.793)	ND (0.504)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0251)	ND (0.0523)	ND (0.0332)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00316)	ND (0.00659)	ND (0.00419)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (0.870)	ND (1.780)	ND (1.150)	ND (0.000)
Concentration, ppb, Dry	ND (0.0526)	ND (0.108)	ND (0.0695)	ND (0.000)
Concentration, ug/DSCM *	ND (0.359)	ND (0.735)	ND (0.475)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0237)	ND (0.0485)	ND (0.0313)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00299)	ND (0.00611)	ND (0.00395)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.760)	ND (1.540)	ND (0.980)	ND (0.000)
Concentration, ppb, Dry	ND (0.0389)	ND (0.0788)	ND (0.0501)	ND (0.000)
Concentration, ug/DSCM *	ND (0.314)	ND (0.636)	ND (0.405)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0207)	ND (0.0420)	ND (0.0267)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00261)	ND (0.00529)	ND (0.00336)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (2.330)	ND (4.780)	ND (3.270)	ND (0.000)
Concentration, ppb, Dry	ND (0.127)	ND (0.261)	ND (0.178)	ND (0.000)
Concentration, ug/DSCM *	ND (0.962)	ND (1.970)	ND (1.350)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0635)	ND (0.130)	ND (0.0891)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00800)	ND (0.0164)	ND (0.0112)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (6.140)	ND (9.160)	ND (7.510)	ND (0.000)
Concentration, ppb, Dry	ND (0.331)	ND (0.494)	ND (0.405)	ND (0.000)
Concentration, ug/DSCM *	ND (2.540)	ND (3.780)	ND (3.100)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.167)	ND (0.250)	ND (0.205)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0211)	ND (0.0314)	ND (0.0258)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (4.410)	ND (6.690)	ND (5.250)	ND (0.000)
Concentration, ppb, Dry	ND (0.221)	ND (0.335)	ND (0.263)	ND (0.000)
Concentration, ug/DSCM *	ND (1.820)	ND (2.760)	ND (2.170)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.120)	ND (0.182)	ND (0.143)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0151)	ND (0.0230)	ND (0.0180)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (4.050)	ND (6.410)	ND (4.710)	ND (0.000)
Concentration, ppb, Dry	ND (0.239)	ND (0.379)	ND (0.278)	ND (0.000)
Concentration, ug/DSCM *	ND (1.670)	ND (2.650)	ND (1.950)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.110)	ND (0.175)	ND (0.128)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0139)	ND (0.0220)	ND (0.0162)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (1.260)	ND (2.340)	ND (1.570)	ND (0.000)
Concentration, ppb, Dry	ND (0.0900)	ND (0.167)	ND (0.112)	ND (0.000)
Concentration, ug/DSCM *	ND (0.520)	ND (0.966)	ND (0.648)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0343)	ND (0.0638)	ND (0.0428)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00433)	ND (0.00803)	ND (0.00539)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (5.860)	ND (10.920)	ND (7.720)	ND (0.000)
Concentration, ppb, Dry	ND (0.174)	ND (0.324)	ND (0.229)	ND (0.000)
Concentration, ug/DSCM *	ND (2.420)	ND (4.510)	ND (3.190)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.160)	ND (0.298)	ND (0.210)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0201)	ND (0.0375)	ND (0.0265)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (3.270)	ND (5.720)	ND (4.030)	ND (0.000)
Concentration, ppb, Dry	ND (0.114)	ND (0.200)	ND (0.141)	ND (0.000)
Concentration, ug/DSCM *	ND (1.350)	ND (2.360)	ND (1.660)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0891)	ND (0.156)	ND (0.110)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0112)	ND (0.0196)	ND (0.0138)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.390)	ND (1.530)	ND (1.390)	ND (0.000)
Concentration, ppb, Dry	ND (0.0816)	ND (0.0898)	ND (0.0816)	ND (0.000)
Concentration, ug/DSCM *	ND (0.574)	ND (0.632)	ND (0.574)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0379)	ND (0.0417)	ND (0.0379)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00477)	ND (0.00525)	ND (0.00477)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (5.590)	ND (7.790)	ND (5.950)	ND (0.000)
Concentration, ppb, Dry	ND (0.209)	ND (0.291)	ND (0.222)	ND (0.000)
Concentration, ug/DSCM *	ND (2.310)	ND (3.220)	ND (2.460)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.152)	ND (0.212)	ND (0.162)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0192)	ND (0.0267)	ND (0.0204)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (8.360)	ND (13.150)	ND (9.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.281)	ND (0.442)	ND (0.328)	ND (0.000)
Concentration, ug/DSCM *	ND (3.450)	ND (5.430)	ND (4.030)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.228)	ND (0.358)	ND (0.266)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0287)	ND (0.0451)	ND (0.0335)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (1.700)	ND (2.700)	ND (2.060)	ND (0.000)
Concentration, ppb, Dry	ND (0.0848)	ND (0.135)	ND (0.103)	ND (0.000)
Concentration, ug/DSCM *	ND (0.702)	ND (1.110)	ND (0.851)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0463)	ND (0.0736)	ND (0.0561)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00584)	ND (0.00927)	ND (0.00707)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	ND (0.370)	ND (0.640)	ND (0.460)	ND (0.000)
Concentration, ppb, Dry	ND (0.0132)	ND (0.0228)	ND (0.0164)	ND (0.000)
Concentration, ug/DSCM *	ND (0.153)	ND (0.264)	ND (0.190)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0101)	ND (0.0174)	ND (0.0125)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00127)	ND (0.00220)	ND (0.00158)	ND (0.000)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.400)	ND (0.650)	ND (0.550)	ND (0.000)
Concentration, ppb, Dry	ND (0.0196)	ND (0.0319)	ND (0.0270)	ND (0.000)
Concentration, ug/DSCM *	ND (0.165)	ND (0.268)	ND (0.227)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0109)	ND (0.0177)	ND (0.0150)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00137)	ND (0.00223)	ND (0.00189)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (24.240)	ND (4.380)	ND (7.860)	ND (0.000)
Concentration, ppb, Dry	ND (1.310)	ND (0.236)	ND (0.424)	ND (0.000)
Concentration, ug/DSCM *	ND (10.000)	ND (1.810)	ND (3.250)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.661)	ND (0.119)	ND (0.214)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0832)	ND (0.0150)	ND (0.0270)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (12.460)	ND (4.350)	ND (5.970)	ND (0.000)
Concentration, ppb, Dry	ND (0.624)	ND (0.218)	ND (0.299)	ND (0.000)
Concentration, ug/DSCM *	ND (5.150)	ND (1.800)	ND (2.470)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.340)	ND (0.119)	ND (0.163)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0428)	ND (0.0149)	ND (0.0205)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1A

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (1.630)	ND (2.380)	ND (2.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.0719)	ND (0.105)	ND (0.0926)	ND (0.000)
Concentration, ug/DSCM *	ND (0.673)	ND (0.983)	ND (0.867)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0444)	ND (0.0649)	ND (0.0572)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00560)	ND (0.00817)	ND (0.00721)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.610)	ND (1.140)	ND (0.880)	ND (0.000)
Concentration, ppb, Dry	ND (0.0194)	ND (0.0363)	ND (0.0280)	ND (0.000)
Concentration, ug/DSCM *	ND (0.252)	ND (0.471)	ND (0.363)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0166)	ND (0.0311)	ND (0.0240)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00209)	ND (0.00391)	ND (0.00302)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (14.360)	ND (1.830)	ND (3.090)	ND (0.000)
Concentration, ppb, Dry	ND (0.672)	ND (0.0856)	ND (0.145)	ND (0.000)
Concentration, ug/DSCM *	ND (5.930)	ND (0.756)	ND (1.280)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.391)	ND (0.0499)	ND (0.0842)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0493)	ND (0.00628)	ND (0.0106)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (3.380)	ND (3.410)	ND (3.040)	ND (0.000)
Concentration, ppb, Dry	ND (0.126)	ND (0.127)	ND (0.113)	ND (0.000)
Concentration, ug/DSCM *	ND (1.400)	ND (1.410)	ND (1.260)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0921)	ND (0.0929)	ND (0.0828)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0116)	ND (0.0117)	ND (0.0104)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.390)	ND (0.640)	ND (0.560)	ND (0.000)
Concentration, ppb, Dry	ND (0.0170)	ND (0.0279)	ND (0.0244)	ND (0.000)
Concentration, ug/DSCM *	ND (0.161)	ND (0.264)	ND (0.231)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0106)	ND (0.0174)	ND (0.0153)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00134)	ND (0.00220)	ND (0.00192)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (1.790)	ND (1.960)	ND (1.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.0702)	ND (0.0769)	ND (0.0691)	ND (0.000)
Concentration, ug/DSCM *	ND (0.739)	ND (0.809)	ND (0.727)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0488)	ND (0.0534)	ND (0.0480)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00615)	ND (0.00673)	ND (0.00604)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1A

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	ND (0.440)	ND (0.780)	ND (0.620)	ND (0.000)
Concentration, ppb, Dry	ND (0.0112)	ND (0.0198)	ND (0.0158)	ND (0.000)
Concentration, ug/DSCM *	ND (0.182)	ND (0.322)	ND (0.256)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0120)	ND (0.0213)	ND (0.0169)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00151)	ND (0.00268)	ND (0.00213)	ND (0.000)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (30.450)	ND (4.480)	ND (6.490)	ND (0.000)
Concentration, ppb, Dry	ND (1.240)	ND (0.182)	ND (0.264)	ND (0.000)
Concentration, ug/DSCM *	ND (12.600)	ND (1.850)	ND (2.680)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.830)	ND (0.122)	ND (0.177)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.105)	ND (0.0154)	ND (0.0223)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1B

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (2.560)	ND (4.870)	ND (3.140)	ND (0.000)
Concentration, ppb, Dry	ND (0.340)	ND (0.646)	ND (0.417)	ND (0.000)
Concentration, ug/DSCM *	ND (1.050)	ND (1.990)	ND (1.280)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0690)	ND (0.131)	ND (0.0846)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00869)	ND (0.0165)	ND (0.0107)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.840)	ND (1.650)	ND (1.020)	ND (0.000)
Concentration, ppb, Dry	ND (0.0687)	ND (0.135)	ND (0.0834)	ND (0.000)
Concentration, ug/DSCM *	ND (0.343)	ND (0.674)	ND (0.417)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0226)	ND (0.0445)	ND (0.0275)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00285)	ND (0.00560)	ND (0.00346)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.650)	ND (3.230)	ND (1.990)	ND (0.000)
Concentration, ppb, Dry	ND (0.119)	ND (0.233)	ND (0.144)	ND (0.000)
Concentration, ug/DSCM *	ND (0.674)	ND (1.320)	ND (0.813)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0445)	ND (0.0871)	ND (0.0536)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00560)	ND (0.0110)	ND (0.00676)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.340)	ND (2.490)	ND (1.620)	ND (0.000)
Concentration, ppb, Dry	ND (0.0967)	ND (0.180)	ND (0.117)	ND (0.000)
Concentration, ug/DSCM *	ND (0.548)	ND (1.020)	ND (0.662)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0361)	ND (0.0671)	ND (0.0437)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00455)	ND (0.00846)	ND (0.00550)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (2.380)	ND (2.040)	ND (1.830)	ND (0.000)
Concentration, ppb, Dry	ND (0.238)	ND (0.204)	ND (0.183)	ND (0.000)
Concentration, ug/DSCM *	ND (0.973)	ND (0.834)	ND (0.748)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0642)	ND (0.0550)	ND (0.0493)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00808)	ND (0.00693)	ND (0.00622)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (1.040)	ND (2.080)	ND (1.290)	ND (0.000)
Concentration, ppb, Dry	ND (0.0851)	ND (0.170)	ND (0.106)	ND (0.000)
Concentration, ug/DSCM *	ND (0.425)	ND (0.850)	ND (0.527)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0280)	ND (0.0561)	ND (0.0348)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00353)	ND (0.00706)	ND (0.00438)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.950)	ND (1.870)	ND (1.160)	ND (0.000)
Concentration, ppb, Dry	ND (0.0992)	ND (0.195)	ND (0.121)	ND (0.000)
Concentration, ug/DSCM *	ND (0.388)	ND (0.764)	ND (0.474)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0256)	ND (0.0504)	ND (0.0313)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00323)	ND (0.00635)	ND (0.00394)	ND (0.000)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.820)	ND (1.660)	ND (1.010)	ND (0.000)
Concentration, ppb, Dry	ND (0.0637)	ND (0.129)	ND (0.0784)	ND (0.000)
Concentration, ug/DSCM *	ND (0.335)	ND (0.678)	ND (0.413)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0221)	ND (0.0447)	ND (0.0272)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00279)	ND (0.00564)	ND (0.00343)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.240)	ND (2.490)	ND (1.510)	ND (0.000)
Concentration, ppb, Dry	ND (0.0852)	ND (0.171)	ND (0.104)	ND (0.000)
Concentration, ug/DSCM *	ND (0.507)	ND (1.020)	ND (0.617)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0334)	ND (0.0671)	ND (0.0407)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00421)	ND (0.00846)	ND (0.00513)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (2.700)	ND (5.460)	ND (3.250)	ND (0.000)
Concentration, ppb, Dry	ND (0.229)	ND (0.462)	ND (0.275)	ND (0.000)
Concentration, ug/DSCM *	ND (1.100)	ND (2.230)	ND (1.330)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0728)	ND (0.147)	ND (0.0876)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00917)	ND (0.0185)	ND (0.0110)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.430)	ND (2.790)	ND (1.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.0956)	ND (0.187)	ND (0.118)	ND (0.000)
Concentration, ug/DSCM *	ND (0.584)	ND (1.140)	ND (0.719)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0385)	ND (0.0752)	ND (0.0474)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00486)	ND (0.00948)	ND (0.00598)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (0.930)	ND (1.840)	ND (1.150)	ND (0.000)
Concentration, ppb, Dry	ND (0.0681)	ND (0.135)	ND (0.0842)	ND (0.000)
Concentration, ug/DSCM *	ND (0.380)	ND (0.752)	ND (0.470)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0251)	ND (0.0496)	ND (0.0310)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00316)	ND (0.00625)	ND (0.00391)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.250)	ND (2.440)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.101)	ND (0.198)	ND (0.122)	ND (0.000)
Concentration, ug/DSCM *	ND (0.511)	ND (0.997)	ND (0.613)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0337)	ND (0.0658)	ND (0.0404)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00425)	ND (0.00829)	ND (0.00509)	ND (0.000)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (4.590)	ND (9.030)	ND (5.690)	ND (0.000)
Concentration, ppb, Dry	ND (0.191)	ND (0.376)	ND (0.237)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (3.690)	ND (2.330)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.124)	ND (0.243)	ND (0.153)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0156)	ND (0.0307)	ND (0.0193)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (3.580)	ND (7.010)	ND (4.400)	ND (0.000)
Concentration, ppb, Dry	ND (0.149)	ND (0.291)	ND (0.183)	ND (0.000)
Concentration, ug/DSCM *	ND (1.460)	ND (2.860)	ND (1.800)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0965)	ND (0.189)	ND (0.119)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0122)	ND (0.0238)	ND (0.0149)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (1.910)	ND (2.310)	ND (1.840)	ND (0.000)
Concentration, ppb, Dry	ND (0.175)	ND (0.212)	ND (0.169)	ND (0.000)
Concentration, ug/DSCM *	ND (0.781)	ND (0.944)	ND (0.752)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0515)	ND (0.0623)	ND (0.0496)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00649)	ND (0.00785)	ND (0.00625)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.600)	ND (3.070)	ND (1.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.145)	ND (0.279)	ND (0.175)	ND (0.000)
Concentration, ug/DSCM *	ND (0.654)	ND (1.250)	ND (0.789)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0431)	ND (0.0828)	ND (0.0520)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00543)	ND (0.0104)	ND (0.00656)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (0.980)	ND (1.850)	ND (1.200)	ND (0.000)
Concentration, ppb, Dry	ND (0.0752)	ND (0.142)	ND (0.0921)	ND (0.000)
Concentration, ug/DSCM *	ND (0.400)	ND (0.756)	ND (0.490)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0264)	ND (0.0499)	ND (0.0323)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00333)	ND (0.00628)	ND (0.00408)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1B

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (1.850)	ND (2.690)	ND (2.160)	ND (0.000)
Concentration, ppb, Dry	ND (0.150)	ND (0.218)	ND (0.175)	ND (0.000)
Concentration, ug/DSCM *	ND (0.756)	ND (1.100)	ND (0.883)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0499)	ND (0.0725)	ND (0.0582)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00628)	ND (0.00914)	ND (0.00734)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.680)	ND (1.390)	ND (0.840)	ND (0.000)
Concentration, ppb, Dry	ND (0.0484)	ND (0.0989)	ND (0.0597)	ND (0.000)
Concentration, ug/DSCM *	ND (0.278)	ND (0.568)	ND (0.343)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0183)	ND (0.0375)	ND (0.0226)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00231)	ND (0.00472)	ND (0.00285)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.470)	ND (2.760)	ND (1.780)	ND (0.000)
Concentration, ppb, Dry	ND (0.134)	ND (0.251)	ND (0.162)	ND (0.000)
Concentration, ug/DSCM *	ND (0.601)	ND (1.130)	ND (0.727)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0396)	ND (0.0744)	ND (0.0480)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00499)	ND (0.00937)	ND (0.00605)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (1.840)	ND (3.470)	ND (2.190)	ND (0.000)
Concentration, ppb, Dry	ND (0.0997)	ND (0.188)	ND (0.119)	ND (0.000)
Concentration, ug/DSCM *	ND (0.752)	ND (1.420)	ND (0.895)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0496)	ND (0.0935)	ND (0.0590)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00625)	ND (0.0118)	ND (0.00744)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (2.790)	ND (5.500)	ND (3.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.178)	ND (0.351)	ND (0.222)	ND (0.000)
Concentration, ug/DSCM *	ND (1.140)	ND (2.250)	ND (1.430)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0752)	ND (0.148)	ND (0.0941)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00948)	ND (0.0187)	ND (0.0119)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.560)	ND (1.090)	ND (0.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.0430)	ND (0.0836)	ND (0.0522)	ND (0.000)
Concentration, ug/DSCM *	ND (0.229)	ND (0.445)	ND (0.278)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0151)	ND (0.0294)	ND (0.0183)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00190)	ND (0.00370)	ND (0.00231)	ND (0.000)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (2.770)	ND (5.590)	ND (3.470)	ND (0.000)
Concentration, ppb, Dry	ND (0.221)	ND (0.446)	ND (0.277)	ND (0.000)
Concentration, ug/DSCM *	ND (1.130)	ND (2.280)	ND (1.420)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0747)	ND (0.151)	ND (0.0935)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00941)	ND (0.0190)	ND (0.0118)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (4.600)	ND (8.020)	ND (5.410)	ND (0.000)
Concentration, ppb, Dry	ND (0.173)	ND (0.302)	ND (0.204)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (3.280)	ND (2.210)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.124)	ND (0.216)	ND (0.146)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0156)	ND (0.0272)	ND (0.0184)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.870)	ND (1.780)	ND (1.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.0553)	ND (0.113)	ND (0.0680)	ND (0.000)
Concentration, ug/DSCM *	ND (0.356)	ND (0.727)	ND (0.437)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0235)	ND (0.0480)	ND (0.0288)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00295)	ND (0.00605)	ND (0.00363)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (2.090)	ND (3.990)	ND (2.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.105)	ND (0.201)	ND (0.130)	ND (0.000)
Concentration, ug/DSCM *	ND (0.854)	ND (1.630)	ND (1.050)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0563)	ND (0.108)	ND (0.0695)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00710)	ND (0.0136)	ND (0.00876)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (2.630)	ND (2.630)	ND (2.040)	ND (0.000)
Concentration, ppb, Dry	ND (0.173)	ND (0.173)	ND (0.134)	ND (0.000)
Concentration, ug/DSCM *	ND (1.070)	ND (1.070)	ND (0.834)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0709)	ND (0.0709)	ND (0.0550)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00893)	ND (0.00893)	ND (0.00693)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1B

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (8.220)	ND (4.460)	ND (4.060)	ND (0.000)
Concentration, ppb, Dry	ND (0.747)	ND (0.405)	ND (0.369)	ND (0.000)
Concentration, ug/DSCM *	ND (3.360)	ND (1.820)	ND (1.660)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.222)	ND (0.120)	ND (0.109)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0279)	ND (0.0151)	ND (0.0138)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (5.140)	ND (15.800)	ND (6.990)	ND (0.000)
Concentration, ppb, Dry	ND (0.155)	ND (0.476)	ND (0.211)	ND (0.000)
Concentration, ug/DSCM *	ND (2.100)	ND (6.460)	ND (2.860)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.139)	ND (0.426)	ND (0.188)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0175)	ND (0.0537)	ND (0.0237)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (0.960)	ND (1.890)	ND (1.190)	ND (0.000)
Concentration, ppb, Dry	ND (0.0637)	ND (0.125)	ND (0.0789)	ND (0.000)
Concentration, ug/DSCM *	ND (0.392)	ND (0.772)	ND (0.486)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0259)	ND (0.0509)	ND (0.0321)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00326)	ND (0.00642)	ND (0.00404)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (5.150)	ND (13.450)	ND (7.110)	ND (0.000)
Concentration, ppb, Dry	ND (0.186)	ND (0.485)	ND (0.256)	ND (0.000)
Concentration, ug/DSCM *	ND (2.100)	ND (5.500)	ND (2.910)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.139)	ND (0.363)	ND (0.192)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0175)	ND (0.0457)	ND (0.0241)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (26.200)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (1.740)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (10.700)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.706)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0890)	ND (0.000)	ND (0.000)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.230)	ND (6.020)	ND (3.810)	ND (0.000)
Concentration, ppb, Dry	ND (0.161)	ND (0.300)	ND (0.190)	ND (0.000)
Concentration, ug/DSCM *	ND (1.320)	ND (2.460)	ND (1.560)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0871)	ND (0.162)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0110)	ND (0.0204)	ND (0.0129)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1B

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.230)	ND (5.400)	ND (3.810)	ND (0.000)
Concentration, ppb, Dry	ND (0.161)	ND (0.269)	ND (0.190)	ND (0.000)
Concentration, ug/DSCM *	ND (1.320)	ND (2.210)	ND (1.560)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0871)	ND (0.146)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0110)	ND (0.0183)	ND (0.0129)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (0.000)	ND (19.760)	ND (18.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (1.590)	ND (1.500)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (8.070)	ND (7.630)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.533)	ND (0.504)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0671)	ND (0.0634)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (3.110)	ND (5.990)	ND (4.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.188)	ND (0.361)	ND (0.245)	ND (0.000)
Concentration, ug/DSCM *	ND (1.270)	ND (2.450)	ND (1.660)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0838)	ND (0.161)	ND (0.110)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0106)	ND (0.0203)	ND (0.0138)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (4.310)	ND (7.920)	ND (5.590)	ND (0.000)
Concentration, ppb, Dry	ND (0.260)	ND (0.478)	ND (0.337)	ND (0.000)
Concentration, ug/DSCM *	ND (1.760)	ND (3.240)	ND (2.280)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.116)	ND (0.213)	ND (0.151)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0146)	ND (0.0269)	ND (0.0190)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.820)	ND (5.510)	ND (3.430)	ND (0.000)
Concentration, ppb, Dry	ND (0.170)	ND (0.332)	ND (0.207)	ND (0.000)
Concentration, ug/DSCM *	ND (1.150)	ND (2.250)	ND (1.400)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0760)	ND (0.149)	ND (0.0925)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00958)	ND (0.0187)	ND (0.0116)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.650)	ND (4.900)	ND (3.190)	ND (0.000)
Concentration, ppb, Dry	ND (0.160)	ND (0.296)	ND (0.192)	ND (0.000)
Concentration, ug/DSCM *	ND (1.080)	ND (2.000)	ND (1.300)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0714)	ND (0.132)	ND (0.0860)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00900)	ND (0.0166)	ND (0.0108)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1B

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (1.050)	ND (2.050)	ND (1.300)	ND (0.000)
Concentration, ppb, Dry	ND (0.0633)	ND (0.124)	ND (0.0784)	ND (0.000)
Concentration, ug/DSCM *	ND (0.429)	ND (0.838)	ND (0.531)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0283)	ND (0.0553)	ND (0.0350)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00357)	ND (0.00696)	ND (0.00442)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (0.990)	ND (1.890)	ND (1.230)	ND (0.000)
Concentration, ppb, Dry	ND (0.0592)	ND (0.113)	ND (0.0736)	ND (0.000)
Concentration, ug/DSCM *	ND (0.405)	ND (0.772)	ND (0.503)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0267)	ND (0.0509)	ND (0.0332)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00336)	ND (0.00642)	ND (0.00418)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.860)	ND (1.630)	ND (1.040)	ND (0.000)
Concentration, ppb, Dry	ND (0.0435)	ND (0.0825)	ND (0.0526)	ND (0.000)
Concentration, ug/DSCM *	ND (0.351)	ND (0.666)	ND (0.425)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0232)	ND (0.0439)	ND (0.0280)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00292)	ND (0.00554)	ND (0.00353)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (2.640)	ND (5.080)	ND (3.480)	ND (0.000)
Concentration, ppb, Dry	ND (0.142)	ND (0.274)	ND (0.188)	ND (0.000)
Concentration, ug/DSCM *	ND (1.080)	ND (2.080)	ND (1.420)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0712)	ND (0.137)	ND (0.0938)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00897)	ND (0.0173)	ND (0.0118)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (6.970)	ND (9.750)	ND (7.990)	ND (0.000)
Concentration, ppb, Dry	ND (0.372)	ND (0.521)	ND (0.427)	ND (0.000)
Concentration, ug/DSCM *	ND (2.850)	ND (3.980)	ND (3.270)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.188)	ND (0.263)	ND (0.215)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0237)	ND (0.0331)	ND (0.0271)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (5.010)	ND (7.120)	ND (5.590)	ND (0.000)
Concentration, ppb, Dry	ND (0.249)	ND (0.353)	ND (0.277)	ND (0.000)
Concentration, ug/DSCM *	ND (2.050)	ND (2.910)	ND (2.280)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.135)	ND (0.192)	ND (0.151)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0170)	ND (0.0242)	ND (0.0190)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (4.600)	ND (6.820)	ND (5.010)	ND (0.000)
Concentration, ppb, Dry	ND (0.269)	ND (0.399)	ND (0.293)	ND (0.000)
Concentration, ug/DSCM *	ND (1.880)	ND (2.790)	ND (2.050)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.124)	ND (0.184)	ND (0.135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0156)	ND (0.0232)	ND (0.0170)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (1.430)	ND (2.490)	ND (1.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.101)	ND (0.176)	ND (0.119)	ND (0.000)
Concentration, ug/DSCM *	ND (0.584)	ND (1.020)	ND (0.687)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0385)	ND (0.0671)	ND (0.0453)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00486)	ND (0.00846)	ND (0.00571)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (6.650)	ND (11.610)	ND (8.220)	ND (0.000)
Concentration, ppb, Dry	ND (0.195)	ND (0.340)	ND (0.241)	ND (0.000)
Concentration, ug/DSCM *	ND (2.720)	ND (4.740)	ND (3.360)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.179)	ND (0.313)	ND (0.222)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0226)	ND (0.0394)	ND (0.0279)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (3.710)	ND (6.090)	ND (4.280)	ND (0.000)
Concentration, ppb, Dry	ND (0.128)	ND (0.210)	ND (0.148)	ND (0.000)
Concentration, ug/DSCM *	ND (1.520)	ND (2.490)	ND (1.750)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.100)	ND (0.164)	ND (0.115)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0126)	ND (0.0207)	ND (0.0145)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.580)	ND (1.620)	ND (1.480)	ND (0.000)
Concentration, ppb, Dry	ND (0.0918)	ND (0.0941)	ND (0.0860)	ND (0.000)
Concentration, ug/DSCM *	ND (0.646)	ND (0.662)	ND (0.605)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0426)	ND (0.0437)	ND (0.0399)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00537)	ND (0.00550)	ND (0.00503)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (6.340)	ND (8.280)	ND (6.330)	ND (0.000)
Concentration, ppb, Dry	ND (0.234)	ND (0.306)	ND (0.234)	ND (0.000)
Concentration, ug/DSCM *	ND (2.590)	ND (3.380)	ND (2.590)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.171)	ND (0.223)	ND (0.171)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0215)	ND (0.0281)	ND (0.0215)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (9.490)	ND (13.990)	ND (10.390)	ND (0.000)
Concentration, ppb, Dry	ND (0.316)	ND (0.466)	ND (0.346)	ND (0.000)
Concentration, ug/DSCM *	ND (3.880)	ND (5.720)	ND (4.250)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.256)	ND (0.377)	ND (0.280)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0322)	ND (0.0475)	ND (0.0353)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (1.930)	ND (2.870)	ND (2.190)	ND (0.000)
Concentration, ppb, Dry	ND (0.0952)	ND (0.142)	ND (0.108)	ND (0.000)
Concentration, ug/DSCM *	ND (0.789)	ND (1.170)	ND (0.895)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0520)	ND (0.0774)	ND (0.0590)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00656)	ND (0.00975)	ND (0.00744)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	ND (0.430)	ND (0.680)	ND (0.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.0152)	ND (0.0240)	ND (0.0173)	ND (0.000)
Concentration, ug/DSCM *	ND (0.176)	ND (0.278)	ND (0.200)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0116)	ND (0.0183)	ND (0.0132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00146)	ND (0.00231)	ND (0.00166)	ND (0.000)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.430)	ND (0.680)	ND (0.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.0209)	ND (0.0331)	ND (0.0282)	ND (0.000)
Concentration, ug/DSCM *	ND (0.176)	ND (0.278)	ND (0.237)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0116)	ND (0.0183)	ND (0.0156)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00146)	ND (0.00231)	ND (0.00197)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (25.960)	ND (4.560)	ND (8.290)	ND (0.000)
Concentration, ppb, Dry	ND (1.390)	ND (0.243)	ND (0.442)	ND (0.000)
Concentration, ug/DSCM *	ND (10.600)	ND (1.860)	ND (3.390)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.700)	ND (0.123)	ND (0.223)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0882)	ND (0.0155)	ND (0.0282)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (13.340)	ND (4.520)	ND (6.300)	ND (0.000)
Concentration, ppb, Dry	ND (0.661)	ND (0.224)	ND (0.312)	ND (0.000)
Concentration, ug/DSCM *	ND (5.450)	ND (1.850)	ND (2.570)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.360)	ND (0.122)	ND (0.170)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0453)	ND (0.0154)	ND (0.0214)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1B

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (1.740)	ND (2.470)	ND (2.210)	ND (0.000)
Concentration, ppb, Dry	ND (0.0759)	ND (0.108)	ND (0.0964)	ND (0.000)
Concentration, ug/DSCM *	ND (0.711)	ND (1.010)	ND (0.903)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0469)	ND (0.0666)	ND (0.0596)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00591)	ND (0.00839)	ND (0.00751)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.650)	ND (1.180)	ND (0.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.0205)	ND (0.0371)	ND (0.0293)	ND (0.000)
Concentration, ug/DSCM *	ND (0.266)	ND (0.482)	ND (0.380)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0175)	ND (0.0318)	ND (0.0251)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00221)	ND (0.00401)	ND (0.00316)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (15.380)	ND (1.900)	ND (3.260)	ND (0.000)
Concentration, ppb, Dry	ND (0.712)	ND (0.0880)	ND (0.151)	ND (0.000)
Concentration, ug/DSCM *	ND (6.290)	ND (0.776)	ND (1.330)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.415)	ND (0.0512)	ND (0.0879)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0522)	ND (0.00645)	ND (0.0111)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (3.620)	ND (3.550)	ND (3.210)	ND (0.000)
Concentration, ppb, Dry	ND (0.133)	ND (0.131)	ND (0.118)	ND (0.000)
Concentration, ug/DSCM *	ND (1.480)	ND (1.450)	ND (1.310)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0976)	ND (0.0957)	ND (0.0865)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0123)	ND (0.0121)	ND (0.0109)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.420)	ND (0.660)	ND (0.590)	ND (0.000)
Concentration, ppb, Dry	ND (0.0181)	ND (0.0284)	ND (0.0254)	ND (0.000)
Concentration, ug/DSCM *	ND (0.172)	ND (0.270)	ND (0.241)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0113)	ND (0.0178)	ND (0.0159)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00143)	ND (0.00224)	ND (0.00200)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (1.920)	ND (2.040)	ND (1.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.0746)	ND (0.0792)	ND (0.0722)	ND (0.000)
Concentration, ug/DSCM *	ND (0.785)	ND (0.834)	ND (0.760)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0518)	ND (0.0550)	ND (0.0501)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00652)	ND (0.00693)	ND (0.00632)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-1-S2-MM5-1B

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	ND (0.470)	ND (0.820)	ND (0.660)	ND (0.000)
Concentration, ppb, Dry	ND (0.0118)	ND (0.0206)	ND (0.0166)	ND (0.000)
Concentration, ug/DSCM *	ND (0.192)	ND (0.335)	ND (0.270)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0127)	ND (0.0221)	ND (0.0178)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00160)	ND (0.00279)	ND (0.00224)	ND (0.000)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (32.610)	ND (4.660)	ND (6.850)	ND (0.000)
Concentration, ppb, Dry	ND (1.310)	ND (0.188)	ND (0.276)	ND (0.000)
Concentration, ug/DSCM *	ND (13.300)	ND (1.900)	ND (2.800)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.879)	ND (0.126)	ND (0.185)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.111)	ND (0.0158)	ND (0.0233)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2A

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (2.390)	ND (4.920)	ND (4.370)	ND (0.000)
Concentration, ppb, Dry	ND (0.291)	ND (0.599)	ND (0.532)	ND (0.000)
Concentration, ug/DSCM *	ND (0.897)	ND (1.850)	ND (1.640)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0632)	ND (0.130)	ND (0.116)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00796)	ND (0.0164)	ND (0.0146)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.780)	ND (1.670)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0586)	ND (0.125)	ND (0.113)	ND (0.000)
Concentration, ug/DSCM *	ND (0.293)	ND (0.626)	ND (0.563)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0206)	ND (0.0441)	ND (0.0397)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00260)	ND (0.00556)	ND (0.00500)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.540)	ND (3.260)	ND (2.950)	ND (0.000)
Concentration, ppb, Dry	ND (0.102)	ND (0.216)	ND (0.195)	ND (0.000)
Concentration, ug/DSCM *	ND (0.578)	ND (1.220)	ND (1.110)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0407)	ND (0.0862)	ND (0.0780)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00513)	ND (0.0109)	ND (0.00983)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.250)	ND (2.510)	ND (2.530)	ND (0.000)
Concentration, ppb, Dry	ND (0.0828)	ND (0.166)	ND (0.168)	ND (0.000)
Concentration, ug/DSCM *	ND (0.469)	ND (0.942)	ND (0.949)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0330)	ND (0.0663)	ND (0.0669)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00416)	ND (0.00836)	ND (0.00843)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (2.220)	ND (2.060)	ND (1.790)	ND (0.000)
Concentration, ppb, Dry	ND (0.204)	ND (0.189)	ND (0.165)	ND (0.000)
Concentration, ug/DSCM *	ND (0.833)	ND (0.773)	ND (0.672)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0587)	ND (0.0545)	ND (0.0473)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00739)	ND (0.00686)	ND (0.00596)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.970)	ND (2.100)	ND (1.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.0728)	ND (0.158)	ND (0.140)	ND (0.000)
Concentration, ug/DSCM *	ND (0.364)	ND (0.788)	ND (0.698)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0256)	ND (0.0555)	ND (0.0492)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00323)	ND (0.00699)	ND (0.00619)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.880)	ND (1.890)	ND (1.720)	ND (0.000)
Concentration, ppb, Dry	ND (0.0844)	ND (0.181)	ND (0.165)	ND (0.000)
Concentration, ug/DSCM *	ND (0.330)	ND (0.709)	ND (0.645)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0233)	ND (0.0500)	ND (0.0455)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00293)	ND (0.00629)	ND (0.00573)	ND (0.000)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.770)	ND (1.680)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0549)	ND (0.120)	ND (0.107)	ND (0.000)
Concentration, ug/DSCM *	ND (0.289)	ND (0.630)	ND (0.563)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0204)	ND (0.0444)	ND (0.0397)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00256)	ND (0.00560)	ND (0.00500)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.160)	ND (2.510)	ND (2.250)	ND (0.000)
Concentration, ppb, Dry	ND (0.0732)	ND (0.158)	ND (0.142)	ND (0.000)
Concentration, ug/DSCM *	ND (0.435)	ND (0.942)	ND (0.844)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0307)	ND (0.0663)	ND (0.0595)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00386)	ND (0.00836)	ND (0.00749)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (2.520)	ND (5.510)	ND (4.750)	ND (0.000)
Concentration, ppb, Dry	ND (0.196)	ND (0.428)	ND (0.369)	ND (0.000)
Concentration, ug/DSCM *	ND (0.945)	ND (2.070)	ND (1.780)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0666)	ND (0.146)	ND (0.126)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00839)	ND (0.0184)	ND (0.0158)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.330)	ND (2.810)	ND (2.600)	ND (0.000)
Concentration, ppb, Dry	ND (0.0817)	ND (0.173)	ND (0.160)	ND (0.000)
Concentration, ug/DSCM *	ND (0.499)	ND (1.050)	ND (0.975)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0352)	ND (0.0743)	ND (0.0687)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00443)	ND (0.00936)	ND (0.00866)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (0.870)	ND (1.860)	ND (1.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.0585)	ND (0.125)	ND (0.114)	ND (0.000)
Concentration, ug/DSCM *	ND (0.326)	ND (0.698)	ND (0.638)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0230)	ND (0.0492)	ND (0.0449)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00290)	ND (0.00619)	ND (0.00566)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.160)	ND (2.460)	ND (2.230)	ND (0.000)
Concentration, ppb, Dry	ND (0.0864)	ND (0.183)	ND (0.166)	ND (0.000)
Concentration, ug/DSCM *	ND (0.435)	ND (0.923)	ND (0.837)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0307)	ND (0.0650)	ND (0.0589)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00386)	ND (0.00819)	ND (0.00743)	ND (0.000)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (4.290)	ND (9.120)	ND (8.320)	ND (0.000)
Concentration, ppb, Dry	ND (0.164)	ND (0.348)	ND (0.318)	ND (0.000)
Concentration, ug/DSCM *	ND (1.610)	ND (3.420)	ND (3.120)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.113)	ND (0.241)	ND (0.220)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0143)	ND (0.0304)	ND (0.0277)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (3.340)	ND (7.080)	ND (6.510)	ND (0.000)
Concentration, ppb, Dry	ND (0.127)	ND (0.270)	ND (0.248)	ND (0.000)
Concentration, ug/DSCM *	ND (1.250)	ND (2.660)	ND (2.440)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0883)	ND (0.187)	ND (0.172)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.0236)	ND (0.0217)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (1.780)	ND (2.330)	ND (2.170)	ND (0.000)
Concentration, ppb, Dry	ND (0.150)	ND (0.196)	ND (0.183)	ND (0.000)
Concentration, ug/DSCM *	ND (0.668)	ND (0.874)	ND (0.814)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0471)	ND (0.0616)	ND (0.0574)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00593)	ND (0.00776)	ND (0.00723)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.500)	ND (3.100)	ND (2.810)	ND (0.000)
Concentration, ppb, Dry	ND (0.125)	ND (0.259)	ND (0.235)	ND (0.000)
Concentration, ug/DSCM *	ND (0.563)	ND (1.160)	ND (1.050)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0397)	ND (0.0819)	ND (0.0743)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00500)	ND (0.0103)	ND (0.00936)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (0.920)	ND (1.870)	ND (1.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.0648)	ND (0.132)	ND (0.118)	ND (0.000)
Concentration, ug/DSCM *	ND (0.345)	ND (0.702)	ND (0.630)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0243)	ND (0.0494)	ND (0.0444)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00306)	ND (0.00623)	ND (0.00560)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2A

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (1.730)	ND (2.710)	ND (2.600)	ND (0.000)
Concentration, ppb, Dry	ND (0.129)	ND (0.202)	ND (0.194)	ND (0.000)
Concentration, ug/DSCM *	ND (0.649)	ND (1.020)	ND (0.975)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0457)	ND (0.0716)	ND (0.0687)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00576)	ND (0.00903)	ND (0.00866)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.630)	ND (1.400)	ND (1.230)	ND (0.000)
Concentration, ppb, Dry	ND (0.0411)	ND (0.0914)	ND (0.0803)	ND (0.000)
Concentration, ug/DSCM *	ND (0.236)	ND (0.525)	ND (0.461)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0167)	ND (0.0370)	ND (0.0325)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00210)	ND (0.00466)	ND (0.00410)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.370)	ND (2.790)	ND (2.570)	ND (0.000)
Concentration, ppb, Dry	ND (0.114)	ND (0.233)	ND (0.214)	ND (0.000)
Concentration, ug/DSCM *	ND (0.514)	ND (1.050)	ND (0.964)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0362)	ND (0.0738)	ND (0.0679)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00456)	ND (0.00929)	ND (0.00856)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (1.720)	ND (3.500)	ND (3.210)	ND (0.000)
Concentration, ppb, Dry	ND (0.0855)	ND (0.174)	ND (0.160)	ND (0.000)
Concentration, ug/DSCM *	ND (0.645)	ND (1.310)	ND (1.200)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0455)	ND (0.0925)	ND (0.0849)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00573)	ND (0.0117)	ND (0.0107)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (2.600)	ND (5.550)	ND (5.050)	ND (0.000)
Concentration, ppb, Dry	ND (0.152)	ND (0.325)	ND (0.295)	ND (0.000)
Concentration, ug/DSCM *	ND (0.975)	ND (2.080)	ND (1.890)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0687)	ND (0.147)	ND (0.133)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00866)	ND (0.0185)	ND (0.0168)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.520)	ND (1.100)	ND (0.990)	ND (0.000)
Concentration, ppb, Dry	ND (0.0366)	ND (0.0775)	ND (0.0697)	ND (0.000)
Concentration, ug/DSCM *	ND (0.195)	ND (0.413)	ND (0.371)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0137)	ND (0.0291)	ND (0.0262)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00173)	ND (0.00366)	ND (0.00330)	ND (0.000)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (2.580)	ND (5.640)	ND (5.040)	ND (0.000)
Concentration, ppb, Dry	ND (0.189)	ND (0.413)	ND (0.369)	ND (0.000)
Concentration, ug/DSCM *	ND (0.968)	ND (2.120)	ND (1.890)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0682)	ND (0.149)	ND (0.133)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00859)	ND (0.0188)	ND (0.0168)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (4.300)	ND (8.100)	ND (7.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.149)	ND (0.280)	ND (0.274)	ND (0.000)
Concentration, ug/DSCM *	ND (1.610)	ND (3.040)	ND (2.970)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.114)	ND (0.214)	ND (0.210)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0143)	ND (0.0270)	ND (0.0264)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.810)	ND (1.800)	ND (1.600)	ND (0.000)
Concentration, ppb, Dry	ND (0.0473)	ND (0.105)	ND (0.0934)	ND (0.000)
Concentration, ug/DSCM *	ND (0.304)	ND (0.675)	ND (0.600)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0214)	ND (0.0476)	ND (0.0423)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00270)	ND (0.00600)	ND (0.00533)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (1.950)	ND (4.030)	ND (3.730)	ND (0.000)
Concentration, ppb, Dry	ND (0.0900)	ND (0.186)	ND (0.172)	ND (0.000)
Concentration, ug/DSCM *	ND (0.732)	ND (1.510)	ND (1.400)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0515)	ND (0.107)	ND (0.0986)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00649)	ND (0.0134)	ND (0.0124)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (2.460)	ND (2.660)	ND (2.530)	ND (0.000)
Concentration, ppb, Dry	ND (0.149)	ND (0.161)	ND (0.153)	ND (0.000)
Concentration, ug/DSCM *	ND (0.923)	ND (0.998)	ND (0.949)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0650)	ND (0.0703)	ND (0.0669)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00819)	ND (0.00886)	ND (0.00843)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2A

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (7.670)	ND (4.500)	ND (4.300)	ND (0.000)
Concentration, ppb, Dry	ND (0.640)	ND (0.376)	ND (0.359)	ND (0.000)
Concentration, ug/DSCM *	ND (2.880)	ND (1.690)	ND (1.610)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.203)	ND (0.119)	ND (0.114)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0255)	ND (0.0150)	ND (0.0143)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (4.800)	ND (15.960)	ND (10.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.133)	ND (0.441)	ND (0.290)	ND (0.000)
Concentration, ug/DSCM *	ND (1.800)	ND (5.990)	ND (3.940)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.127)	ND (0.422)	ND (0.277)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0160)	ND (0.0532)	ND (0.0349)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (0.900)	ND (1.910)	ND (1.770)	ND (0.000)
Concentration, ppb, Dry	ND (0.0548)	ND (0.116)	ND (0.108)	ND (0.000)
Concentration, ug/DSCM *	ND (0.338)	ND (0.717)	ND (0.664)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0238)	ND (0.0505)	ND (0.0468)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00300)	ND (0.00636)	ND (0.00590)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (4.870)	ND (13.400)	ND (10.940)	ND (0.000)
Concentration, ppb, Dry	ND (0.161)	ND (0.443)	ND (0.362)	ND (0.000)
Concentration, ug/DSCM *	ND (1.830)	ND (5.030)	ND (4.100)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.129)	ND (0.354)	ND (0.289)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0162)	ND (0.0446)	ND (0.0364)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (24.760)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (1.510)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (9.290)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.655)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0825)	ND (0.000)	ND (0.000)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.050)	ND (6.000)	ND (5.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.139)	ND (0.274)	ND (0.261)	ND (0.000)
Concentration, ug/DSCM *	ND (1.140)	ND (2.250)	ND (2.140)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0806)	ND (0.159)	ND (0.151)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0102)	ND (0.0200)	ND (0.0190)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2A

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (3.050)	ND (5.380)	ND (5.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.139)	ND (0.246)	ND (0.233)	ND (0.000)
Concentration, ug/DSCM *	ND (1.140)	ND (2.020)	ND (1.910)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0806)	ND (0.142)	ND (0.135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0102)	ND (0.0179)	ND (0.0170)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (0.000)	ND (19.680)	ND (14.020)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (1.450)	ND (1.040)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (7.380)	ND (5.260)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.520)	ND (0.371)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0655)	ND (0.0467)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.940)	ND (5.970)	ND (3.890)	ND (0.000)
Concentration, ppb, Dry	ND (0.163)	ND (0.331)	ND (0.215)	ND (0.000)
Concentration, ug/DSCM *	ND (1.100)	ND (2.240)	ND (1.460)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0777)	ND (0.158)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00979)	ND (0.0199)	ND (0.0130)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (4.070)	ND (7.890)	ND (7.040)	ND (0.000)
Concentration, ppb, Dry	ND (0.225)	ND (0.437)	ND (0.390)	ND (0.000)
Concentration, ug/DSCM *	ND (1.530)	ND (2.960)	ND (2.640)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.108)	ND (0.209)	ND (0.186)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0136)	ND (0.0263)	ND (0.0234)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.660)	ND (5.490)	ND (4.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.147)	ND (0.304)	ND (0.273)	ND (0.000)
Concentration, ug/DSCM *	ND (0.998)	ND (2.060)	ND (1.850)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0703)	ND (0.145)	ND (0.130)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00886)	ND (0.0183)	ND (0.0164)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.510)	ND (4.880)	ND (4.590)	ND (0.000)
Concentration, ppb, Dry	ND (0.139)	ND (0.270)	ND (0.254)	ND (0.000)
Concentration, ug/DSCM *	ND (0.942)	ND (1.830)	ND (1.720)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0663)	ND (0.129)	ND (0.121)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00836)	ND (0.0163)	ND (0.0153)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2A

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (0.990)	ND (2.040)	ND (1.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.0548)	ND (0.113)	ND (0.103)	ND (0.000)
Concentration, ug/DSCM *	ND (0.371)	ND (0.765)	ND (0.698)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0262)	ND (0.0539)	ND (0.0492)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00330)	ND (0.00679)	ND (0.00619)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (0.940)	ND (1.890)	ND (1.730)	ND (0.000)
Concentration, ppb, Dry	ND (0.0516)	ND (0.104)	ND (0.0950)	ND (0.000)
Concentration, ug/DSCM *	ND (0.353)	ND (0.709)	ND (0.649)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0248)	ND (0.0500)	ND (0.0457)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00313)	ND (0.00629)	ND (0.00576)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.810)	ND (1.630)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0376)	ND (0.0758)	ND (0.0697)	ND (0.000)
Concentration, ug/DSCM *	ND (0.304)	ND (0.611)	ND (0.563)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0214)	ND (0.0431)	ND (0.0397)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00270)	ND (0.00543)	ND (0.00500)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (2.500)	ND (5.060)	ND (4.770)	ND (0.000)
Concentration, ppb, Dry	ND (0.124)	ND (0.251)	ND (0.236)	ND (0.000)
Concentration, ug/DSCM *	ND (0.938)	ND (1.900)	ND (1.790)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0661)	ND (0.134)	ND (0.126)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00833)	ND (0.0169)	ND (0.0159)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (6.580)	ND (9.710)	ND (9.980)	ND (0.000)
Concentration, ppb, Dry	ND (0.323)	ND (0.476)	ND (0.489)	ND (0.000)
Concentration, ug/DSCM *	ND (2.470)	ND (3.640)	ND (3.740)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.174)	ND (0.257)	ND (0.264)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0219)	ND (0.0323)	ND (0.0332)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (4.740)	ND (7.090)	ND (7.190)	ND (0.000)
Concentration, ppb, Dry	ND (0.216)	ND (0.323)	ND (0.327)	ND (0.000)
Concentration, ug/DSCM *	ND (1.780)	ND (2.660)	ND (2.700)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.125)	ND (0.187)	ND (0.190)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0158)	ND (0.0236)	ND (0.0239)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (4.350)	ND (6.800)	ND (6.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.233)	ND (0.365)	ND (0.348)	ND (0.000)
Concentration, ug/DSCM *	ND (1.630)	ND (2.550)	ND (2.430)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.115)	ND (0.180)	ND (0.172)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0145)	ND (0.0226)	ND (0.0216)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (1.350)	ND (2.480)	ND (2.300)	ND (0.000)
Concentration, ppb, Dry	ND (0.0876)	ND (0.161)	ND (0.149)	ND (0.000)
Concentration, ug/DSCM *	ND (0.506)	ND (0.930)	ND (0.863)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0357)	ND (0.0656)	ND (0.0608)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00450)	ND (0.00826)	ND (0.00766)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (6.290)	ND (11.570)	ND (11.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.169)	ND (0.311)	ND (0.317)	ND (0.000)
Concentration, ug/DSCM *	ND (2.360)	ND (4.340)	ND (4.410)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.166)	ND (0.306)	ND (0.311)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0209)	ND (0.0385)	ND (0.0392)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (3.510)	ND (6.060)	ND (6.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.111)	ND (0.192)	ND (0.193)	ND (0.000)
Concentration, ug/DSCM *	ND (1.320)	ND (2.270)	ND (2.290)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0928)	ND (0.160)	ND (0.161)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0117)	ND (0.0202)	ND (0.0203)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.490)	ND (1.620)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0795)	ND (0.0864)	ND (0.0800)	ND (0.000)
Concentration, ug/DSCM *	ND (0.559)	ND (0.608)	ND (0.563)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0394)	ND (0.0428)	ND (0.0397)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00496)	ND (0.00540)	ND (0.00500)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (6.000)	ND (8.250)	ND (8.350)	ND (0.000)
Concentration, ppb, Dry	ND (0.203)	ND (0.280)	ND (0.283)	ND (0.000)
Concentration, ug/DSCM *	ND (2.250)	ND (3.090)	ND (3.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.159)	ND (0.218)	ND (0.221)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0200)	ND (0.0275)	ND (0.0278)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (8.970)	ND (13.940)	ND (13.520)	ND (0.000)
Concentration, ppb, Dry	ND (0.274)	ND (0.426)	ND (0.413)	ND (0.000)
Concentration, ug/DSCM *	ND (3.370)	ND (5.230)	ND (5.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.237)	ND (0.368)	ND (0.357)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0299)	ND (0.0464)	ND (0.0450)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (1.830)	ND (2.860)	ND (2.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.0829)	ND (0.130)	ND (0.130)	ND (0.000)
Concentration, ug/DSCM *	ND (0.687)	ND (1.070)	ND (1.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0484)	ND (0.0756)	ND (0.0756)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00610)	ND (0.00953)	ND (0.00953)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	ND (0.400)	ND (0.680)	ND (0.670)	ND (0.000)
Concentration, ppb, Dry	ND (0.0130)	ND (0.0220)	ND (0.0217)	ND (0.000)
Concentration, ug/DSCM *	ND (0.150)	ND (0.255)	ND (0.251)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0106)	ND (0.0180)	ND (0.0177)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00133)	ND (0.00226)	ND (0.00223)	ND (0.000)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.390)	ND (0.670)	ND (0.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.0174)	ND (0.0299)	ND (0.0339)	ND (0.000)
Concentration, ug/DSCM *	ND (0.146)	ND (0.251)	ND (0.285)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0103)	ND (0.0177)	ND (0.0201)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00130)	ND (0.00223)	ND (0.00253)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (23.980)	ND (4.540)	ND (5.090)	ND (0.000)
Concentration, ppb, Dry	ND (1.170)	ND (0.222)	ND (0.249)	ND (0.000)
Concentration, ug/DSCM *	ND (9.000)	ND (1.700)	ND (1.910)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.634)	ND (0.120)	ND (0.135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0799)	ND (0.0151)	ND (0.0170)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (12.320)	ND (4.510)	ND (5.670)	ND (0.000)
Concentration, ppb, Dry	ND (0.561)	ND (0.205)	ND (0.258)	ND (0.000)
Concentration, ug/DSCM *	ND (4.620)	ND (1.690)	ND (2.130)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.326)	ND (0.119)	ND (0.150)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0410)	ND (0.0150)	ND (0.0189)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2A

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (1.610)	ND (2.460)	ND (2.660)	ND (0.000)
Concentration, ppb, Dry	ND (0.0645)	ND (0.0985)	ND (0.107)	ND (0.000)
Concentration, ug/DSCM *	ND (0.604)	ND (0.923)	ND (0.998)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0426)	ND (0.0650)	ND (0.0703)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00536)	ND (0.00819)	ND (0.00886)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.600)	ND (1.180)	ND (1.260)	ND (0.000)
Concentration, ppb, Dry	ND (0.0173)	ND (0.0341)	ND (0.0364)	ND (0.000)
Concentration, ug/DSCM *	ND (0.225)	ND (0.443)	ND (0.473)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0159)	ND (0.0312)	ND (0.0333)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00200)	ND (0.00393)	ND (0.00420)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (14.210)	ND (1.890)	ND (2.320)	ND (0.000)
Concentration, ppb, Dry	ND (0.604)	ND (0.0803)	ND (0.0986)	ND (0.000)
Concentration, ug/DSCM *	ND (5.330)	ND (0.709)	ND (0.870)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.376)	ND (0.0500)	ND (0.0613)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0473)	ND (0.00629)	ND (0.00773)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (3.340)	ND (3.530)	ND (4.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.113)	ND (0.119)	ND (0.137)	ND (0.000)
Concentration, ug/DSCM *	ND (1.250)	ND (1.320)	ND (1.530)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0883)	ND (0.0933)	ND (0.108)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0111)	ND (0.0118)	ND (0.0136)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.380)	ND (0.660)	ND (0.780)	ND (0.000)
Concentration, ppb, Dry	ND (0.0150)	ND (0.0261)	ND (0.0308)	ND (0.000)
Concentration, ug/DSCM *	ND (0.143)	ND (0.248)	ND (0.293)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0100)	ND (0.0174)	ND (0.0206)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00127)	ND (0.00220)	ND (0.00260)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (1.770)	ND (2.030)	ND (2.360)	ND (0.000)
Concentration, ppb, Dry	ND (0.0631)	ND (0.0724)	ND (0.0841)	ND (0.000)
Concentration, ug/DSCM *	ND (0.664)	ND (0.762)	ND (0.885)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0468)	ND (0.0537)	ND (0.0624)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00590)	ND (0.00676)	ND (0.00786)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2A

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	ND (0.430)	ND (0.810)	ND (0.920)	ND (0.000)
Concentration, ppb, Dry	ND (0.00994)	ND (0.0187)	ND (0.0213)	ND (0.000)
Concentration, ug/DSCM *	ND (0.161)	ND (0.304)	ND (0.345)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0114)	ND (0.0214)	ND (0.0243)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00143)	ND (0.00270)	ND (0.00306)	ND (0.000)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (30.120)	ND (4.650)	ND (5.590)	ND (0.000)
Concentration, ppb, Dry	ND (1.110)	ND (0.172)	ND (0.207)	ND (0.000)
Concentration, ug/DSCM *	ND (11.300)	ND (1.740)	ND (2.100)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.796)	ND (0.123)	ND (0.148)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.100)	ND (0.0155)	ND (0.0186)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2B

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (2.220)	ND (4.500)	ND (4.340)	ND (0.000)
Concentration, ppb, Dry	ND (0.269)	ND (0.546)	ND (0.527)	ND (0.000)
Concentration, ug/DSCM *	ND (0.830)	ND (1.680)	ND (1.620)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0584)	ND (0.118)	ND (0.114)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00735)	ND (0.0149)	ND (0.0144)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.730)	ND (1.530)	ND (1.480)	ND (0.000)
Concentration, ppb, Dry	ND (0.0546)	ND (0.114)	ND (0.111)	ND (0.000)
Concentration, ug/DSCM *	ND (0.273)	ND (0.572)	ND (0.553)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0192)	ND (0.0402)	ND (0.0389)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00242)	ND (0.00507)	ND (0.00490)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.430)	ND (2.980)	ND (2.920)	ND (0.000)
Concentration, ppb, Dry	ND (0.0944)	ND (0.197)	ND (0.193)	ND (0.000)
Concentration, ug/DSCM *	ND (0.535)	ND (1.110)	ND (1.090)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0376)	ND (0.0784)	ND (0.0768)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00474)	ND (0.00987)	ND (0.00967)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.160)	ND (2.290)	ND (2.510)	ND (0.000)
Concentration, ppb, Dry	ND (0.0766)	ND (0.151)	ND (0.166)	ND (0.000)
Concentration, ug/DSCM *	ND (0.434)	ND (0.856)	ND (0.938)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0305)	ND (0.0602)	ND (0.0660)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00384)	ND (0.00759)	ND (0.00832)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (2.070)	ND (1.880)	ND (1.770)	ND (0.000)
Concentration, ppb, Dry	ND (0.190)	ND (0.172)	ND (0.162)	ND (0.000)
Concentration, ug/DSCM *	ND (0.774)	ND (0.703)	ND (0.662)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0544)	ND (0.0494)	ND (0.0465)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00686)	ND (0.00623)	ND (0.00586)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (0.910)	ND (1.920)	ND (1.850)	ND (0.000)
Concentration, ppb, Dry	ND (0.0681)	ND (0.144)	ND (0.138)	ND (0.000)
Concentration, ug/DSCM *	ND (0.340)	ND (0.718)	ND (0.691)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0239)	ND (0.0505)	ND (0.0486)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00301)	ND (0.00636)	ND (0.00613)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (0.820)	ND (1.730)	ND (1.710)	ND (0.000)
Concentration, ppb, Dry	ND (0.0783)	ND (0.165)	ND (0.163)	ND (0.000)
Concentration, ug/DSCM *	ND (0.306)	ND (0.647)	ND (0.639)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0216)	ND (0.0455)	ND (0.0450)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00272)	ND (0.00573)	ND (0.00567)	ND (0.000)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.710)	ND (1.530)	ND (1.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.0504)	ND (0.109)	ND (0.106)	ND (0.000)
Concentration, ug/DSCM *	ND (0.265)	ND (0.572)	ND (0.557)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0187)	ND (0.0402)	ND (0.0392)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00235)	ND (0.00507)	ND (0.00494)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.080)	ND (2.290)	ND (2.230)	ND (0.000)
Concentration, ppb, Dry	ND (0.0679)	ND (0.144)	ND (0.140)	ND (0.000)
Concentration, ug/DSCM *	ND (0.404)	ND (0.856)	ND (0.834)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0284)	ND (0.0602)	ND (0.0586)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00358)	ND (0.00759)	ND (0.00739)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (2.340)	ND (5.040)	ND (4.720)	ND (0.000)
Concentration, ppb, Dry	ND (0.181)	ND (0.390)	ND (0.366)	ND (0.000)
Concentration, ug/DSCM *	ND (0.875)	ND (1.880)	ND (1.760)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0615)	ND (0.133)	ND (0.124)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00775)	ND (0.0167)	ND (0.0156)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.240)	ND (2.570)	ND (2.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.0758)	ND (0.157)	ND (0.158)	ND (0.000)
Concentration, ug/DSCM *	ND (0.463)	ND (0.961)	ND (0.964)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0326)	ND (0.0676)	ND (0.0678)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00411)	ND (0.00851)	ND (0.00855)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (0.800)	ND (1.700)	ND (1.680)	ND (0.000)
Concentration, ppb, Dry	ND (0.0536)	ND (0.114)	ND (0.113)	ND (0.000)
Concentration, ug/DSCM *	ND (0.299)	ND (0.635)	ND (0.628)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0210)	ND (0.0447)	ND (0.0442)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00265)	ND (0.00563)	ND (0.00557)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.080)	ND (2.250)	ND (2.210)	ND (0.000)
Concentration, ppb, Dry	ND (0.0802)	ND (0.167)	ND (0.164)	ND (0.000)
Concentration, ug/DSCM *	ND (0.404)	ND (0.841)	ND (0.826)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0284)	ND (0.0592)	ND (0.0581)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00358)	ND (0.00745)	ND (0.00732)	ND (0.000)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (3.980)	ND (8.340)	ND (8.250)	ND (0.000)
Concentration, ppb, Dry	ND (0.151)	ND (0.317)	ND (0.314)	ND (0.000)
Concentration, ug/DSCM *	ND (1.490)	ND (3.120)	ND (3.080)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.105)	ND (0.219)	ND (0.217)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0132)	ND (0.0276)	ND (0.0273)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (3.100)	ND (6.470)	ND (6.450)	ND (0.000)
Concentration, ppb, Dry	ND (0.118)	ND (0.246)	ND (0.245)	ND (0.000)
Concentration, ug/DSCM *	ND (1.160)	ND (2.420)	ND (2.410)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0815)	ND (0.170)	ND (0.170)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0103)	ND (0.0214)	ND (0.0214)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (1.660)	ND (2.130)	ND (2.150)	ND (0.000)
Concentration, ppb, Dry	ND (0.139)	ND (0.179)	ND (0.180)	ND (0.000)
Concentration, ug/DSCM *	ND (0.620)	ND (0.796)	ND (0.804)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0436)	ND (0.0560)	ND (0.0565)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00550)	ND (0.00706)	ND (0.00712)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.390)	ND (2.830)	ND (2.780)	ND (0.000)
Concentration, ppb, Dry	ND (0.116)	ND (0.235)	ND (0.231)	ND (0.000)
Concentration, ug/DSCM *	ND (0.520)	ND (1.060)	ND (1.040)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0365)	ND (0.0744)	ND (0.0731)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00461)	ND (0.00938)	ND (0.00921)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (0.850)	ND (1.710)	ND (1.670)	ND (0.000)
Concentration, ppb, Dry	ND (0.0596)	ND (0.120)	ND (0.117)	ND (0.000)
Concentration, ug/DSCM *	ND (0.318)	ND (0.639)	ND (0.624)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0224)	ND (0.0450)	ND (0.0439)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00282)	ND (0.00567)	ND (0.00553)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2B

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (1.610)	ND (2.480)	ND (2.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.119)	ND (0.184)	ND (0.191)	ND (0.000)
Concentration, ug/DSCM *	ND (0.602)	ND (0.927)	ND (0.964)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0423)	ND (0.0652)	ND (0.0678)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00533)	ND (0.00822)	ND (0.00855)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.590)	ND (1.280)	ND (1.220)	ND (0.000)
Concentration, ppb, Dry	ND (0.0384)	ND (0.0833)	ND (0.0794)	ND (0.000)
Concentration, ug/DSCM *	ND (0.221)	ND (0.478)	ND (0.456)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0155)	ND (0.0337)	ND (0.0321)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00195)	ND (0.00424)	ND (0.00404)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.000)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.270)	ND (2.550)	ND (2.550)	ND (0.000)
Concentration, ppb, Dry	ND (0.106)	ND (0.212)	ND (0.212)	ND (0.000)
Concentration, ug/DSCM *	ND (0.475)	ND (0.953)	ND (0.953)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0334)	ND (0.0671)	ND (0.0671)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00421)	ND (0.00845)	ND (0.00845)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (1.590)	ND (3.200)	ND (3.180)	ND (0.000)
Concentration, ppb, Dry	ND (0.0788)	ND (0.159)	ND (0.158)	ND (0.000)
Concentration, ug/DSCM *	ND (0.594)	ND (1.200)	ND (1.190)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0418)	ND (0.0841)	ND (0.0836)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00527)	ND (0.0106)	ND (0.0105)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (2.420)	ND (5.070)	ND (5.010)	ND (0.000)
Concentration, ppb, Dry	ND (0.141)	ND (0.296)	ND (0.292)	ND (0.000)
Concentration, ug/DSCM *	ND (0.905)	ND (1.900)	ND (1.870)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0636)	ND (0.133)	ND (0.132)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00802)	ND (0.0168)	ND (0.0166)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.490)	ND (1.010)	ND (0.990)	ND (0.000)
Concentration, ppb, Dry	ND (0.0344)	ND (0.0709)	ND (0.0695)	ND (0.000)
Concentration, ug/DSCM *	ND (0.183)	ND (0.378)	ND (0.370)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0129)	ND (0.0266)	ND (0.0260)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00162)	ND (0.00335)	ND (0.00328)	ND (0.000)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (2.400)	ND (5.160)	ND (5.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.175)	ND (0.377)	ND (0.365)	ND (0.000)
Concentration, ug/DSCM *	ND (0.897)	ND (1.930)	ND (1.870)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0631)	ND (0.136)	ND (0.131)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00795)	ND (0.0171)	ND (0.0166)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (3.990)	ND (7.400)	ND (7.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.138)	ND (0.255)	ND (0.271)	ND (0.000)
Concentration, ug/DSCM *	ND (1.490)	ND (2.770)	ND (2.940)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.105)	ND (0.195)	ND (0.207)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0132)	ND (0.0245)	ND (0.0260)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.750)	ND (1.650)	ND (1.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.0436)	ND (0.0960)	ND (0.0919)	ND (0.000)
Concentration, ug/DSCM *	ND (0.280)	ND (0.617)	ND (0.591)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0197)	ND (0.0434)	ND (0.0415)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00248)	ND (0.00547)	ND (0.00523)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (1.810)	ND (3.680)	ND (3.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.0833)	ND (0.169)	ND (0.170)	ND (0.000)
Concentration, ug/DSCM *	ND (0.677)	ND (1.380)	ND (1.380)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0476)	ND (0.0968)	ND (0.0973)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00600)	ND (0.0122)	ND (0.0123)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (2.280)	ND (2.430)	ND (2.510)	ND (0.000)
Concentration, ppb, Dry	ND (0.137)	ND (0.146)	ND (0.151)	ND (0.000)
Concentration, ug/DSCM *	ND (0.852)	ND (0.908)	ND (0.938)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0600)	ND (0.0639)	ND (0.0660)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00755)	ND (0.00805)	ND (0.00832)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2B

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (7.130)	ND (4.110)	ND (4.260)	ND (0.000)
Concentration, ppb, Dry	ND (0.593)	ND (0.342)	ND (0.354)	ND (0.000)
Concentration, ug/DSCM *	ND (2.670)	ND (1.540)	ND (1.590)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.187)	ND (0.108)	ND (0.112)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0236)	ND (0.0136)	ND (0.0141)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (4.460)	ND (14.590)	ND (10.400)	ND (0.000)
Concentration, ppb, Dry	ND (0.123)	ND (0.402)	ND (0.286)	ND (0.000)
Concentration, ug/DSCM *	ND (1.670)	ND (5.450)	ND (3.890)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.117)	ND (0.384)	ND (0.273)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0148)	ND (0.0483)	ND (0.0345)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (0.840)	ND (1.750)	ND (1.750)	ND (0.000)
Concentration, ppb, Dry	ND (0.0509)	ND (0.106)	ND (0.106)	ND (0.000)
Concentration, ug/DSCM *	ND (0.314)	ND (0.654)	ND (0.654)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0221)	ND (0.0460)	ND (0.0460)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00278)	ND (0.00580)	ND (0.00580)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (4.750)	ND (12.260)	ND (11.030)	ND (0.000)
Concentration, ppb, Dry	ND (0.157)	ND (0.404)	ND (0.364)	ND (0.000)
Concentration, ug/DSCM *	ND (1.780)	ND (4.580)	ND (4.120)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.125)	ND (0.322)	ND (0.290)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0157)	ND (0.0406)	ND (0.0365)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (24.140)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (1.470)	ND (0.000)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (9.020)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.635)	ND (0.000)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0800)	ND (0.000)	ND (0.000)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.980)	ND (5.490)	ND (5.750)	ND (0.000)
Concentration, ppb, Dry	ND (0.136)	ND (0.250)	ND (0.262)	ND (0.000)
Concentration, ug/DSCM *	ND (1.110)	ND (2.050)	ND (2.150)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0784)	ND (0.144)	ND (0.151)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00987)	ND (0.0182)	ND (0.0191)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2B

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.980)	ND (4.920)	ND (5.140)	ND (0.000)
Concentration, ppb, Dry	ND (0.136)	ND (0.224)	ND (0.234)	ND (0.000)
Concentration, ug/DSCM *	ND (1.110)	ND (1.840)	ND (1.920)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0784)	ND (0.129)	ND (0.135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00987)	ND (0.0163)	ND (0.0170)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (0.000)	ND (18.010)	ND (14.140)	ND (0.000)
Concentration, ppb, Dry	ND (0.000)	ND (1.330)	ND (1.040)	ND (0.000)
Concentration, ug/DSCM *	ND (0.000)	ND (6.730)	ND (5.290)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.000)	ND (0.474)	ND (0.372)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000)	ND (0.0597)	ND (0.0468)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.860)	ND (5.460)	ND (3.920)	ND (0.000)
Concentration, ppb, Dry	ND (0.158)	ND (0.301)	ND (0.216)	ND (0.000)
Concentration, ug/DSCM *	ND (1.070)	ND (2.040)	ND (1.470)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0752)	ND (0.144)	ND (0.103)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00948)	ND (0.0181)	ND (0.0130)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (3.970)	ND (7.220)	ND (7.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.219)	ND (0.398)	ND (0.392)	ND (0.000)
Concentration, ug/DSCM *	ND (1.480)	ND (2.700)	ND (2.650)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.104)	ND (0.190)	ND (0.187)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0132)	ND (0.0239)	ND (0.0235)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.600)	ND (5.020)	ND (4.970)	ND (0.000)
Concentration, ppb, Dry	ND (0.143)	ND (0.277)	ND (0.274)	ND (0.000)
Concentration, ug/DSCM *	ND (0.972)	ND (1.880)	ND (1.860)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0684)	ND (0.132)	ND (0.131)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00861)	ND (0.0166)	ND (0.0165)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.440)	ND (4.460)	ND (4.630)	ND (0.000)
Concentration, ppb, Dry	ND (0.135)	ND (0.246)	ND (0.255)	ND (0.000)
Concentration, ug/DSCM *	ND (0.912)	ND (1.670)	ND (1.730)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0642)	ND (0.117)	ND (0.122)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00808)	ND (0.0148)	ND (0.0153)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2B

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (0.960)	ND (1.870)	ND (1.880)	ND (0.000)
Concentration, ppb, Dry	ND (0.0530)	ND (0.103)	ND (0.104)	ND (0.000)
Concentration, ug/DSCM *	ND (0.359)	ND (0.699)	ND (0.703)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0252)	ND (0.0492)	ND (0.0494)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00318)	ND (0.00620)	ND (0.00623)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (0.910)	ND (1.730)	ND (1.750)	ND (0.000)
Concentration, ppb, Dry	ND (0.0498)	ND (0.0947)	ND (0.0958)	ND (0.000)
Concentration, ug/DSCM *	ND (0.340)	ND (0.647)	ND (0.654)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0239)	ND (0.0455)	ND (0.0460)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00301)	ND (0.00573)	ND (0.00580)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (0.790)	ND (1.490)	ND (1.510)	ND (0.000)
Concentration, ppb, Dry	ND (0.0366)	ND (0.0690)	ND (0.0699)	ND (0.000)
Concentration, ug/DSCM *	ND (0.295)	ND (0.557)	ND (0.564)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0208)	ND (0.0392)	ND (0.0397)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00262)	ND (0.00494)	ND (0.00500)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (2.430)	ND (4.630)	ND (4.810)	ND (0.000)
Concentration, ppb, Dry	ND (0.120)	ND (0.229)	ND (0.237)	ND (0.000)
Concentration, ug/DSCM *	ND (0.908)	ND (1.730)	ND (1.800)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0639)	ND (0.122)	ND (0.126)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00805)	ND (0.0153)	ND (0.0159)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (6.420)	ND (8.890)	ND (10.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.314)	ND (0.434)	ND (0.492)	ND (0.000)
Concentration, ug/DSCM *	ND (2.400)	ND (3.320)	ND (3.760)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.169)	ND (0.234)	ND (0.265)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0213)	ND (0.0295)	ND (0.0334)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (4.620)	ND (6.490)	ND (7.250)	ND (0.000)
Concentration, ppb, Dry	ND (0.210)	ND (0.295)	ND (0.329)	ND (0.000)
Concentration, ug/DSCM *	ND (1.730)	ND (2.430)	ND (2.710)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.121)	ND (0.171)	ND (0.191)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0153)	ND (0.0215)	ND (0.0240)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (4.240)	ND (6.220)	ND (6.550)	ND (0.000)
Concentration, ppb, Dry	ND (0.227)	ND (0.333)	ND (0.350)	ND (0.000)
Concentration, ug/DSCM *	ND (1.580)	ND (2.320)	ND (2.450)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.111)	ND (0.164)	ND (0.172)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0140)	ND (0.0206)	ND (0.0217)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (1.310)	ND (2.270)	ND (2.320)	ND (0.000)
Concentration, ppb, Dry	ND (0.0847)	ND (0.147)	ND (0.150)	ND (0.000)
Concentration, ug/DSCM *	ND (0.490)	ND (0.848)	ND (0.867)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0344)	ND (0.0597)	ND (0.0610)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00434)	ND (0.00752)	ND (0.00769)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (6.130)	ND (10.590)	ND (11.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.164)	ND (0.284)	ND (0.318)	ND (0.000)
Concentration, ug/DSCM *	ND (2.290)	ND (3.960)	ND (4.430)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.161)	ND (0.278)	ND (0.312)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0203)	ND (0.0351)	ND (0.0393)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (3.420)	ND (5.550)	ND (6.160)	ND (0.000)
Concentration, ppb, Dry	ND (0.108)	ND (0.175)	ND (0.194)	ND (0.000)
Concentration, ug/DSCM *	ND (1.280)	ND (2.070)	ND (2.300)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0899)	ND (0.146)	ND (0.162)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0113)	ND (0.0184)	ND (0.0204)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.450)	ND (1.480)	ND (1.510)	ND (0.000)
Concentration, ppb, Dry	ND (0.0770)	ND (0.0786)	ND (0.0802)	ND (0.000)
Concentration, ug/DSCM *	ND (0.542)	ND (0.553)	ND (0.564)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0381)	ND (0.0389)	ND (0.0397)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00480)	ND (0.00490)	ND (0.00500)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (5.840)	ND (7.550)	ND (8.420)	ND (0.000)
Concentration, ppb, Dry	ND (0.197)	ND (0.255)	ND (0.284)	ND (0.000)
Concentration, ug/DSCM *	ND (2.180)	ND (2.820)	ND (3.150)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.154)	ND (0.199)	ND (0.221)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0193)	ND (0.0250)	ND (0.0279)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (8.740)	ND (12.760)	ND (13.640)	ND (0.000)
Concentration, ppb, Dry	ND (0.266)	ND (0.388)	ND (0.415)	ND (0.000)
Concentration, ug/DSCM *	ND (3.270)	ND (4.770)	ND (5.100)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.230)	ND (0.336)	ND (0.359)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0290)	ND (0.0423)	ND (0.0452)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (1.780)	ND (2.620)	ND (2.890)	ND (0.000)
Concentration, ppb, Dry	ND (0.0803)	ND (0.118)	ND (0.130)	ND (0.000)
Concentration, ug/DSCM *	ND (0.665)	ND (0.979)	ND (1.080)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0468)	ND (0.0689)	ND (0.0760)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00590)	ND (0.00868)	ND (0.00957)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	ND (0.390)	ND (0.620)	ND (0.670)	ND (0.000)
Concentration, ppb, Dry	ND (0.0126)	ND (0.0200)	ND (0.0216)	ND (0.000)
Concentration, ug/DSCM *	ND (0.146)	ND (0.232)	ND (0.250)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0103)	ND (0.0163)	ND (0.0176)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00129)	ND (0.00205)	ND (0.00222)	ND (0.000)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.370)	ND (0.610)	ND (0.780)	ND (0.000)
Concentration, ppb, Dry	ND (0.0165)	ND (0.0271)	ND (0.0347)	ND (0.000)
Concentration, ug/DSCM *	ND (0.138)	ND (0.228)	ND (0.292)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00973)	ND (0.0160)	ND (0.0205)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00123)	ND (0.00202)	ND (0.00258)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (22.830)	ND (4.140)	ND (5.270)	ND (0.000)
Concentration, ppb, Dry	ND (1.110)	ND (0.202)	ND (0.257)	ND (0.000)
Concentration, ug/DSCM *	ND (8.530)	ND (1.550)	ND (1.970)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.600)	ND (0.109)	ND (0.139)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0756)	ND (0.0137)	ND (0.0175)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (11.730)	ND (4.110)	ND (5.870)	ND (0.000)
Concentration, ppb, Dry	ND (0.532)	ND (0.186)	ND (0.266)	ND (0.000)
Concentration, ug/DSCM *	ND (4.380)	ND (1.540)	ND (2.190)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.308)	ND (0.108)	ND (0.154)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0389)	ND (0.0136)	ND (0.0194)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2B

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (1.530)	ND (2.240)	ND (2.760)	ND (0.000)
Concentration, ppb, Dry	ND (0.0611)	ND (0.0894)	ND (0.110)	ND (0.000)
Concentration, ug/DSCM *	ND (0.572)	ND (0.837)	ND (1.030)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0402)	ND (0.0589)	ND (0.0726)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00507)	ND (0.00742)	ND (0.00914)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.570)	ND (1.070)	ND (1.310)	ND (0.000)
Concentration, ppb, Dry	ND (0.0164)	ND (0.0308)	ND (0.0377)	ND (0.000)
Concentration, ug/DSCM *	ND (0.213)	ND (0.400)	ND (0.490)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0150)	ND (0.0281)	ND (0.0344)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00189)	ND (0.00354)	ND (0.00434)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (13.530)	ND (1.720)	ND (2.410)	ND (0.000)
Concentration, ppb, Dry	ND (0.573)	ND (0.0729)	ND (0.102)	ND (0.000)
Concentration, ug/DSCM *	ND (5.060)	ND (0.643)	ND (0.901)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.356)	ND (0.0452)	ND (0.0634)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0448)	ND (0.00570)	ND (0.00798)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (3.180)	ND (3.220)	ND (4.220)	ND (0.000)
Concentration, ppb, Dry	ND (0.107)	ND (0.108)	ND (0.142)	ND (0.000)
Concentration, ug/DSCM *	ND (1.190)	ND (1.200)	ND (1.580)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0836)	ND (0.0847)	ND (0.111)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0105)	ND (0.0107)	ND (0.0140)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.360)	ND (0.600)	ND (0.810)	ND (0.000)
Concentration, ppb, Dry	ND (0.0142)	ND (0.0236)	ND (0.0319)	ND (0.000)
Concentration, ug/DSCM *	ND (0.135)	ND (0.224)	ND (0.303)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00947)	ND (0.0158)	ND (0.0213)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00119)	ND (0.00199)	ND (0.00268)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (1.690)	ND (1.850)	ND (2.440)	ND (0.000)
Concentration, ppb, Dry	ND (0.0600)	ND (0.0657)	ND (0.0867)	ND (0.000)
Concentration, ug/DSCM *	ND (0.632)	ND (0.691)	ND (0.912)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0444)	ND (0.0486)	ND (0.0642)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00560)	ND (0.00613)	ND (0.00808)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-2-S2-MM5-2B

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	ND (0.410)	ND (0.740)	ND (0.950)	ND (0.000)
Concentration, ppb, Dry	ND (0.00944)	ND (0.0170)	ND (0.0219)	ND (0.000)
Concentration, ug/DSCM *	ND (0.153)	ND (0.277)	ND (0.355)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0108)	ND (0.0195)	ND (0.0250)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00136)	ND (0.00245)	ND (0.00315)	ND (0.000)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (28.670)	ND (4.230)	ND (5.790)	ND (0.000)
Concentration, ppb, Dry	ND (1.060)	ND (0.156)	ND (0.213)	ND (0.000)
Concentration, ug/DSCM *	ND (10.700)	ND (1.580)	ND (2.160)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.754)	ND (0.111)	ND (0.152)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0950)	ND (0.0140)	ND (0.0192)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

	FH	BH	Im	TOTAL
n-Nitrosodimethylamine				
Formula Weight, Lb/Lb-Mole	74.08	74.08	74.08	74.08
Catch Weight, Micrograms	ND (31.930)	ND (123.440)	ND (4.240)	ND (0.000)
Concentration, ppb, Dry	ND (2.710)	ND (10.500)	ND (0.360)	ND (0.000)
Concentration, ug/DSCM *	ND (8.340)	ND (32.300)	ND (1.110)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.561)	ND (2.170)	ND (0.0746)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0707)	ND (0.273)	ND (0.00939)	ND (0.000)
Cumene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (1.080)	ND (4.190)	ND (1.450)	ND (0.000)
Concentration, ppb, Dry	ND (0.0565)	ND (0.219)	ND (0.0758)	ND (0.000)
Concentration, ug/DSCM *	ND (0.282)	ND (1.090)	ND (0.379)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0190)	ND (0.0737)	ND (0.0255)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00239)	ND (0.00928)	ND (0.00321)	ND (0.000)
a-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (1.970)	ND (7.620)	ND (2.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.0909)	ND (0.352)	ND (0.132)	ND (0.000)
Concentration, ug/DSCM *	ND (0.515)	ND (1.990)	ND (0.747)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0346)	ND (0.134)	ND (0.0503)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00436)	ND (0.0169)	ND (0.00634)	ND (0.000)
b-Pinene				
Formula Weight, Lb/Lb-Mole	136.24	136.24	136.24	136.24
Catch Weight, Micrograms	ND (0.700)	ND (2.720)	ND (2.460)	ND (0.000)
Concentration, ppb, Dry	ND (0.0323)	ND (0.125)	ND (0.113)	ND (0.000)
Concentration, ug/DSCM *	ND (0.183)	ND (0.711)	ND (0.643)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0123)	ND (0.0478)	ND (0.0433)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00155)	ND (0.00603)	ND (0.00545)	ND (0.000)
Aniline				
Formula Weight, Lb/Lb-Mole	98.17	98.17	98.17	98.17
Catch Weight, Micrograms	ND (0.700)	ND (2.720)	ND (1.730)	ND (0.000)
Concentration, ppb, Dry	ND (0.0448)	ND (0.174)	ND (0.111)	ND (0.000)
Concentration, ug/DSCM *	ND (0.183)	ND (0.711)	ND (0.452)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0123)	ND (0.0478)	ND (0.0304)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00155)	ND (0.00603)	ND (0.00383)	ND (0.000)
1,2,4-Trimethylbenzene				
Formula Weight, Lb/Lb-Mole	120.20	120.20	120.20	120.20
Catch Weight, Micrograms	ND (1.270)	ND (4.890)	ND (1.810)	ND (0.000)
Concentration, ppb, Dry	ND (0.0664)	ND (0.256)	ND (0.0946)	ND (0.000)
Concentration, ug/DSCM *	ND (0.332)	ND (1.280)	ND (0.473)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0223)	ND (0.0860)	ND (0.0318)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00281)	ND (0.0108)	ND (0.00401)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Phenol				
Formula Weight, Lb/Lb-Mole	94.11	94.11	94.11	94.11
Catch Weight, Micrograms	ND (1.040)	ND (4.000)	ND (1.670)	ND (0.000)
Concentration, ppb, Dry	ND (0.0695)	ND (0.267)	ND (0.112)	ND (0.000)
Concentration, ug/DSCM *	ND (0.272)	ND (1.050)	ND (0.436)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0183)	ND (0.0703)	ND (0.0294)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00230)	ND (0.00886)	ND (0.00370)	ND (0.000)
Benzyl Chloride				
Formula Weight, Lb/Lb-Mole	126.59	126.59	126.59	126.59
Catch Weight, Micrograms	ND (0.860)	ND (3.310)	ND (1.450)	ND (0.000)
Concentration, ppb, Dry	ND (0.0427)	ND (0.164)	ND (0.0720)	ND (0.000)
Concentration, ug/DSCM *	ND (0.225)	ND (0.865)	ND (0.379)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0151)	ND (0.0582)	ND (0.0255)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00191)	ND (0.00733)	ND (0.00321)	ND (0.000)
bis-(2-Chloroethyl)ether				
Formula Weight, Lb/Lb-Mole	143.02	143.02	143.02	143.02
Catch Weight, Micrograms	ND (1.320)	ND (5.120)	ND (2.180)	ND (0.000)
Concentration, ppb, Dry	ND (0.0580)	ND (0.225)	ND (0.0958)	ND (0.000)
Concentration, ug/DSCM *	ND (0.345)	ND (1.340)	ND (0.570)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0232)	ND (0.0900)	ND (0.0383)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00292)	ND (0.0113)	ND (0.00483)	ND (0.000)
n-Nitrosomorpholine				
Formula Weight, Lb/Lb-Mole	116.11	116.11	116.11	116.11
Catch Weight, Micrograms	ND (2.520)	ND (9.730)	ND (4.620)	ND (0.000)
Concentration, ppb, Dry	ND (0.136)	ND (0.527)	ND (0.250)	ND (0.000)
Concentration, ug/DSCM *	ND (0.658)	ND (2.540)	ND (1.210)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0443)	ND (0.171)	ND (0.0812)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00558)	ND (0.0216)	ND (0.0102)	ND (0.000)
1,4-Dichlorobenzene				
Formula Weight, Lb/Lb-Mole	147.00	147.00	147.00	147.00
Catch Weight, Micrograms	ND (1.980)	ND (7.640)	ND (2.530)	ND (0.000)
Concentration, ppb, Dry	ND (0.0847)	ND (0.327)	ND (0.108)	ND (0.000)
Concentration, ug/DSCM *	ND (0.517)	ND (2.000)	ND (0.661)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0348)	ND (0.134)	ND (0.0445)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00439)	ND (0.0169)	ND (0.00560)	ND (0.000)
p-Cymene				
Formula Weight, Lb/Lb-Mole	134.22	134.22	134.22	134.22
Catch Weight, Micrograms	ND (1.200)	ND (4.660)	ND (1.650)	ND (0.000)
Concentration, ppb, Dry	ND (0.0562)	ND (0.218)	ND (0.0773)	ND (0.000)
Concentration, ug/DSCM *	ND (0.314)	ND (1.220)	ND (0.431)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0211)	ND (0.0819)	ND (0.0290)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00266)	ND (0.0103)	ND (0.00366)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Acetophenone				
Formula Weight, Lb/Lb-Mole	121.14	121.14	121.14	121.14
Catch Weight, Micrograms	ND (1.220)	ND (4.720)	ND (2.170)	ND (0.000)
Concentration, ppb, Dry	ND (0.0633)	ND (0.245)	ND (0.113)	ND (0.000)
Concentration, ug/DSCM *	ND (0.319)	ND (1.230)	ND (0.567)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0215)	ND (0.0830)	ND (0.0382)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00270)	ND (0.0105)	ND (0.00481)	ND (0.000)
1,2-Dibromo-3-chloropropane				
Formula Weight, Lb/Lb-Mole	236.36	236.36	236.36	236.36
Catch Weight, Micrograms	ND (7.750)	ND (29.950)	ND (8.070)	ND (0.000)
Concentration, ppb, Dry	ND (0.206)	ND (0.796)	ND (0.215)	ND (0.000)
Concentration, ug/DSCM *	ND (2.020)	ND (7.830)	ND (2.110)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.136)	ND (0.527)	ND (0.142)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0172)	ND (0.0664)	ND (0.0179)	ND (0.000)
Hexachloroethane				
Formula Weight, Lb/Lb-Mole	236.74	236.74	236.74	236.74
Catch Weight, Micrograms	ND (3.720)	ND (14.360)	ND (5.320)	ND (0.000)
Concentration, ppb, Dry	ND (0.0988)	ND (0.381)	ND (0.168)	ND (0.000)
Concentration, ug/DSCM *	ND (0.972)	ND (3.750)	ND (1.650)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0654)	ND (0.252)	ND (0.111)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00824)	ND (0.0318)	ND (0.0140)	ND (0.000)
o-Toluidine				
Formula Weight, Lb/Lb-Mole	107.16	107.16	107.16	107.16
Catch Weight, Micrograms	ND (1.180)	ND (4.550)	ND (2.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.0692)	ND (0.267)	ND (0.123)	ND (0.000)
Concentration, ug/DSCM *	ND (0.308)	ND (1.190)	ND (0.549)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0207)	ND (0.0800)	ND (0.0369)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00261)	ND (0.0101)	ND (0.00465)	ND (0.000)
2-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.610)	ND (6.240)	ND (2.720)	ND (0.000)
Concentration, ppb, Dry	ND (0.0936)	ND (0.363)	ND (0.158)	ND (0.000)
Concentration, ug/DSCM *	ND (0.421)	ND (1.630)	ND (0.711)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0283)	ND (0.110)	ND (0.0478)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00357)	ND (0.0138)	ND (0.00603)	ND (0.000)
Nitrobenzene				
Formula Weight, Lb/Lb-Mole	128.15	128.15	128.15	128.15
Catch Weight, Micrograms	ND (0.660)	ND (2.560)	ND (1.640)	ND (0.000)
Concentration, ppb, Dry	ND (0.0324)	ND (0.126)	ND (0.0804)	ND (0.000)
Concentration, ug/DSCM *	ND (0.172)	ND (0.669)	ND (0.428)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0116)	ND (0.0450)	ND (0.0288)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00146)	ND (0.00567)	ND (0.00363)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

	FH	BH	Im	TOTAL
N,N-Dimethylaniline				
Formula Weight, Lb/Lb-Mole	121.18	121.18	121.18	121.18
Catch Weight, Micrograms	ND (1.700)	ND (6.580)	ND (2.520)	ND (0.000)
Concentration, ppb, Dry	ND (0.0882)	ND (0.341)	ND (0.131)	ND (0.000)
Concentration, ug/DSCM *	ND (0.444)	ND (1.720)	ND (0.658)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0299)	ND (0.116)	ND (0.0443)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00377)	ND (0.0146)	ND (0.00558)	ND (0.000)
Isophorone				
Formula Weight, Lb/Lb-Mole	138.21	138.21	138.21	138.21
Catch Weight, Micrograms	ND (0.600)	ND (2.340)	ND (1.190)	ND (0.000)
Concentration, ppb, Dry	ND (0.0273)	ND (0.106)	ND (0.0541)	ND (0.000)
Concentration, ug/DSCM *	ND (0.157)	ND (0.611)	ND (0.311)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0105)	ND (0.0411)	ND (0.0209)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00133)	ND (0.00518)	ND (0.00264)	ND (0.000)
Catechol				
Formula Weight, Lb/Lb-Mole	110.11	110.11	110.11	110.11
Catch Weight, Micrograms	ND (20.520)	ND (79.330)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (1.170)	ND (4.530)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (5.360)	ND (20.700)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.361)	ND (1.390)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0455)	ND (0.176)	ND (0.000)	ND (0.000)
3/4-Methylphenol				
Formula Weight, Lb/Lb-Mole	108.13	108.13	108.13	108.13
Catch Weight, Micrograms	ND (1.570)	ND (6.070)	ND (2.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.0913)	ND (0.353)	ND (0.145)	ND (0.000)
Concentration, ug/DSCM *	ND (0.410)	ND (1.590)	ND (0.651)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0276)	ND (0.107)	ND (0.0438)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00348)	ND (0.0134)	ND (0.00552)	ND (0.000)
1,2,4-Trichlorobenzene				
Formula Weight, Lb/Lb-Mole	181.45	181.45	181.45	181.45
Catch Weight, Micrograms	ND (2.790)	ND (10.800)	ND (3.110)	ND (0.000)
Concentration, ppb, Dry	ND (0.0966)	ND (0.374)	ND (0.108)	ND (0.000)
Concentration, ug/DSCM *	ND (0.729)	ND (2.820)	ND (0.813)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0491)	ND (0.190)	ND (0.0547)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00618)	ND (0.0239)	ND (0.00689)	ND (0.000)
a-Terpineol				
Formula Weight, Lb/Lb-Mole	154.25	154.25	154.25	154.25
Catch Weight, Micrograms	ND (2.390)	ND (9.250)	ND (4.910)	ND (0.000)
Concentration, ppb, Dry	ND (0.0974)	ND (0.377)	ND (0.200)	ND (0.000)
Concentration, ug/DSCM *	ND (0.624)	ND (2.420)	ND (1.280)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0420)	ND (0.163)	ND (0.0863)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00529)	ND (0.0205)	ND (0.0109)	ND (0.000)

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(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Naphthalene				
Formula Weight, Lb/Lb-Mole	128.17	128.17	128.17	128.17
Catch Weight, Micrograms	ND (0.620)	ND (2.410)	ND (0.970)	ND (0.000)
Concentration, ppb, Dry	ND (0.0304)	ND (0.118)	ND (0.0476)	ND (0.000)
Concentration, ug/DSCM *	ND (0.162)	ND (0.630)	ND (0.253)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0109)	ND (0.0424)	ND (0.0171)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00137)	ND (0.00534)	ND (0.00215)	ND (0.000)
o-Anisidine				
Formula Weight, Lb/Lb-Mole	123.16	123.16	123.16	123.16
Catch Weight, Micrograms	ND (2.920)	ND (11.300)	ND (4.890)	ND (0.000)
Concentration, ppb, Dry	ND (0.149)	ND (0.577)	ND (0.250)	ND (0.000)
Concentration, ug/DSCM *	ND (0.763)	ND (2.950)	ND (1.280)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0513)	ND (0.199)	ND (0.0860)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00647)	ND (0.0250)	ND (0.0108)	ND (0.000)
Hexachlorobutadiene				
Formula Weight, Lb/Lb-Mole	260.76	260.76	260.76	260.76
Catch Weight, Micrograms	ND (3.950)	ND (15.270)	ND (7.690)	ND (0.000)
Concentration, ppb, Dry	ND (0.0952)	ND (0.368)	ND (0.185)	ND (0.000)
Concentration, ug/DSCM *	ND (1.030)	ND (3.990)	ND (2.010)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0695)	ND (0.268)	ND (0.135)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00875)	ND (0.0338)	ND (0.0170)	ND (0.000)
2-Chloroacetophenone				
Formula Weight, Lb/Lb-Mole	154.60	154.60	154.60	154.60
Catch Weight, Micrograms	ND (0.790)	ND (3.040)	ND (1.550)	ND (0.000)
Concentration, ppb, Dry	ND (0.0321)	ND (0.124)	ND (0.0630)	ND (0.000)
Concentration, ug/DSCM *	ND (0.206)	ND (0.794)	ND (0.405)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0139)	ND (0.0535)	ND (0.0273)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00175)	ND (0.00673)	ND (0.00343)	ND (0.000)
a,a,a-Trichlorotoluene				
Formula Weight, Lb/Lb-Mole	195.48	195.48	195.48	195.48
Catch Weight, Micrograms	ND (3.520)	ND (13.620)	ND (3.620)	ND (0.000)
Concentration, ppb, Dry	ND (0.113)	ND (0.438)	ND (0.116)	ND (0.000)
Concentration, ug/DSCM *	ND (0.920)	ND (3.560)	ND (0.946)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0619)	ND (0.239)	ND (0.0636)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00780)	ND (0.0302)	ND (0.00802)	ND (0.000)
N,N-Diethylaniline				
Formula Weight, Lb/Lb-Mole	149.24	149.24	149.24	149.24
Catch Weight, Micrograms	ND (2.620)	ND (10.130)	ND (2.460)	ND (0.000)
Concentration, ppb, Dry	ND (0.110)	ND (0.427)	ND (0.104)	ND (0.000)
Concentration, ug/DSCM *	ND (0.685)	ND (2.650)	ND (0.643)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0461)	ND (0.178)	ND (0.0433)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00580)	ND (0.0224)	ND (0.00545)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

	FH	BH	Im	TOTAL
1,4-Phenylenediamine				
Formula Weight, Lb/Lb-Mole	108.14	108.14	108.14	108.14
Catch Weight, Micrograms	ND (1.910)	ND (7.400)	ND (4.170)	ND (0.000)
Concentration, ppb, Dry	ND (0.111)	ND (0.430)	ND (0.242)	ND (0.000)
Concentration, ug/DSCM *	ND (0.499)	ND (1.930)	ND (1.090)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0336)	ND (0.130)	ND (0.0733)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00423)	ND (0.0164)	ND (0.00924)	ND (0.000)
Hydroquinone				
Formula Weight, Lb/Lb-Mole	326.40	326.40	326.40	326.40
Catch Weight, Micrograms	ND (2.020)	ND (7.790)	ND (10.180)	ND (0.000)
Concentration, ppb, Dry	ND (0.0389)	ND (0.150)	ND (0.196)	ND (0.000)
Concentration, ug/DSCM *	ND (0.528)	ND (2.040)	ND (2.660)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0355)	ND (0.137)	ND (0.179)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00448)	ND (0.0173)	ND (0.0226)	ND (0.000)
Pentamethylbenzene				
Formula Weight, Lb/Lb-Mole	148.25	148.25	148.25	148.25
Catch Weight, Micrograms	ND (1.230)	ND (4.760)	ND (1.720)	ND (0.000)
Concentration, ppb, Dry	ND (0.0521)	ND (0.202)	ND (0.0729)	ND (0.000)
Concentration, ug/DSCM *	ND (0.321)	ND (1.240)	ND (0.449)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0216)	ND (0.0837)	ND (0.0302)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00272)	ND (0.0105)	ND (0.00381)	ND (0.000)
Hexachlorocyclopentadiene				
Formula Weight, Lb/Lb-Mole	272.77	272.77	272.77	272.77
Catch Weight, Micrograms	ND (3.360)	ND (9.440)	ND (10.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.0774)	ND (0.218)	ND (0.252)	ND (0.000)
Concentration, ug/DSCM *	ND (0.878)	ND (2.470)	ND (2.860)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0591)	ND (0.166)	ND (0.192)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00744)	ND (0.0209)	ND (0.0242)	ND (0.000)
Phthalic Anhydride				
Formula Weight, Lb/Lb-Mole	148.12	148.12	148.12	148.12
Catch Weight, Micrograms	ND (11.160)	ND (31.330)	ND (0.000)	ND (0.000)
Concentration, ppb, Dry	ND (0.474)	ND (1.330)	ND (0.000)	ND (0.000)
Concentration, ug/DSCM *	ND (2.920)	ND (8.190)	ND (0.000)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.196)	ND (0.551)	ND (0.000)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0247)	ND (0.0694)	ND (0.000)	ND (0.000)
2,4,6-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.790)	ND (7.830)	ND (5.700)	ND (0.000)
Concentration, ppb, Dry	ND (0.0888)	ND (0.249)	ND (0.181)	ND (0.000)
Concentration, ug/DSCM *	ND (0.729)	ND (2.050)	ND (1.490)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0491)	ND (0.138)	ND (0.100)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00618)	ND (0.0173)	ND (0.0126)	ND (0.000)

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* - 68 Deg. F -- 29.92 inches Hg

(Continued next page)

SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

	FH	BH	Im	TOTAL
2,4,5-Trichlorophenol				
Formula Weight, Lb/Lb-Mole	197.45	197.45	197.45	197.45
Catch Weight, Micrograms	ND (2.950)	ND (8.290)	ND (5.090)	ND (0.000)
Concentration, ppb, Dry	ND (0.0939)	ND (0.264)	ND (0.162)	ND (0.000)
Concentration, ug/DSCM *	ND (0.771)	ND (2.170)	ND (1.330)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0519)	ND (0.146)	ND (0.0895)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00654)	ND (0.0184)	ND (0.0113)	ND (0.000)
2,4-Toluenediamine				
Formula Weight, Lb/Lb-Mole	122.17	122.17	122.17	122.17
Catch Weight, Micrograms	ND (8.370)	ND (23.490)	ND (14.010)	ND (0.000)
Concentration, ppb, Dry	ND (0.431)	ND (1.210)	ND (0.721)	ND (0.000)
Concentration, ug/DSCM *	ND (2.190)	ND (6.140)	ND (3.660)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.147)	ND (0.413)	ND (0.246)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0185)	ND (0.0520)	ND (0.0310)	ND (0.000)
2,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (3.220)	ND (9.040)	ND (3.880)	ND (0.000)
Concentration, ppb, Dry	ND (0.124)	ND (0.349)	ND (0.150)	ND (0.000)
Concentration, ug/DSCM *	ND (0.841)	ND (2.360)	ND (1.010)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0566)	ND (0.159)	ND (0.0682)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00713)	ND (0.0200)	ND (0.00860)	ND (0.000)
2,3-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.700)	ND (7.570)	ND (7.040)	ND (0.000)
Concentration, ppb, Dry	ND (0.104)	ND (0.292)	ND (0.271)	ND (0.000)
Concentration, ug/DSCM *	ND (0.705)	ND (1.980)	ND (1.840)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0475)	ND (0.133)	ND (0.124)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00598)	ND (0.0168)	ND (0.0156)	ND (0.000)
2,6-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (4.080)	ND (11.450)	ND (4.930)	ND (0.000)
Concentration, ppb, Dry	ND (0.157)	ND (0.442)	ND (0.190)	ND (0.000)
Concentration, ug/DSCM *	ND (1.070)	ND (2.990)	ND (1.290)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0717)	ND (0.201)	ND (0.0867)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00904)	ND (0.0254)	ND (0.0109)	ND (0.000)
3,5-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (2.960)	ND (8.320)	ND (4.580)	ND (0.000)
Concentration, ppb, Dry	ND (0.114)	ND (0.321)	ND (0.177)	ND (0.000)
Concentration, ug/DSCM *	ND (0.773)	ND (2.170)	ND (1.200)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0520)	ND (0.146)	ND (0.0805)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00656)	ND (0.0184)	ND (0.0101)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

	FH	BH	Im	TOTAL
3,4-Dichlorophenol				
Formula Weight, Lb/Lb-Mole	163.00	163.00	163.00	163.00
Catch Weight, Micrograms	ND (3.460)	ND (9.730)	ND (1.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.133)	ND (0.375)	ND (0.0717)	ND (0.000)
Concentration, ug/DSCM *	ND (0.904)	ND (2.540)	ND (0.486)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0608)	ND (0.171)	ND (0.0327)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00767)	ND (0.0216)	ND (0.00412)	ND (0.000)
Biphenyl				
Formula Weight, Lb/Lb-Mole	164.29	164.29	164.29	164.29
Catch Weight, Micrograms	ND (1.250)	ND (3.500)	ND (1.730)	ND (0.000)
Concentration, ppb, Dry	ND (0.0478)	ND (0.134)	ND (0.0662)	ND (0.000)
Concentration, ug/DSCM *	ND (0.327)	ND (0.914)	ND (0.452)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0220)	ND (0.0615)	ND (0.0304)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00277)	ND (0.00775)	ND (0.00383)	ND (0.000)
Dimethylphthalate				
Formula Weight, Lb/Lb-Mole	194.19	194.19	194.19	194.19
Catch Weight, Micrograms	ND (1.090)	ND (3.050)	ND (1.500)	ND (0.000)
Concentration, ppb, Dry	ND (0.0353)	ND (0.0987)	ND (0.0486)	ND (0.000)
Concentration, ug/DSCM *	ND (0.285)	ND (0.797)	ND (0.392)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0192)	ND (0.0536)	ND (0.0264)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00241)	ND (0.00676)	ND (0.00332)	ND (0.000)
2,4-Dinitrotoluene				
Formula Weight, Lb/Lb-Mole	182.14	182.14	182.14	182.14
Catch Weight, Micrograms	ND (2.960)	ND (8.300)	ND (4.770)	ND (0.000)
Concentration, ppb, Dry	ND (0.102)	ND (0.286)	ND (0.165)	ND (0.000)
Concentration, ug/DSCM *	ND (0.773)	ND (2.170)	ND (1.250)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0520)	ND (0.146)	ND (0.0839)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00656)	ND (0.0184)	ND (0.0106)	ND (0.000)
2,4-Dinitrophenol				
Formula Weight, Lb/Lb-Mole	184.11	184.11	184.11	184.11
Catch Weight, Micrograms	ND (17.900)	ND (50.260)	ND (9.980)	ND (0.000)
Concentration, ppb, Dry	ND (0.611)	ND (1.720)	ND (0.341)	ND (0.000)
Concentration, ug/DSCM *	ND (4.680)	ND (13.100)	ND (2.610)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.315)	ND (0.884)	ND (0.175)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0397)	ND (0.111)	ND (0.0221)	ND (0.000)
4,6-Dinitro-2-methylphenol				
Formula Weight, Lb/Lb-Mole	198.13	198.13	198.13	198.13
Catch Weight, Micrograms	ND (10.150)	ND (28.510)	ND (7.190)	ND (0.000)
Concentration, ppb, Dry	ND (0.322)	ND (0.904)	ND (0.228)	ND (0.000)
Concentration, ug/DSCM *	ND (2.650)	ND (7.450)	ND (1.880)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.178)	ND (0.501)	ND (0.126)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0225)	ND (0.0632)	ND (0.0159)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Dibenzofuran				
Formula Weight, Lb/Lb-Mole	168.20	168.20	168.20	168.20
Catch Weight, Micrograms	ND (0.910)	ND (2.550)	ND (6.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.0340)	ND (0.0953)	ND (0.243)	ND (0.000)
Concentration, ug/DSCM *	ND (0.238)	ND (0.666)	ND (1.700)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0160)	ND (0.0448)	ND (0.114)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00202)	ND (0.00565)	ND (0.0144)	ND (0.000)
4-Nitrophenol				
Formula Weight, Lb/Lb-Mole	139.11	139.11	139.11	139.11
Catch Weight, Micrograms	ND (7.010)	ND (19.680)	ND (2.300)	ND (0.000)
Concentration, ppb, Dry	ND (0.317)	ND (0.889)	ND (0.104)	ND (0.000)
Concentration, ug/DSCM *	ND (1.830)	ND (5.140)	ND (0.601)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.123)	ND (0.346)	ND (0.0404)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0155)	ND (0.0436)	ND (0.00510)	ND (0.000)
Trifluralin				
Formula Weight, Lb/Lb-Mole	335.29	335.29	335.29	335.29
Catch Weight, Micrograms	ND (7.670)	ND (21.530)	ND (11.750)	ND (0.000)
Concentration, ppb, Dry	ND (0.144)	ND (0.404)	ND (0.220)	ND (0.000)
Concentration, ug/DSCM *	ND (2.000)	ND (5.630)	ND (3.070)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.135)	ND (0.379)	ND (0.207)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0170)	ND (0.0477)	ND (0.0260)	ND (0.000)
Hexachlorobenzene				
Formula Weight, Lb/Lb-Mole	284.78	284.78	284.78	284.78
Catch Weight, Micrograms	ND (2.040)	ND (5.720)	ND (6.100)	ND (0.000)
Concentration, ppb, Dry	ND (0.0450)	ND (0.126)	ND (0.135)	ND (0.000)
Concentration, ug/DSCM *	ND (0.533)	ND (1.490)	ND (1.590)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0359)	ND (0.101)	ND (0.107)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00452)	ND (0.0127)	ND (0.0135)	ND (0.000)
4-Aminobiphenyl				
Formula Weight, Lb/Lb-Mole	169.23	169.23	169.23	169.23
Catch Weight, Micrograms	ND (1.040)	ND (2.910)	ND (1.490)	ND (0.000)
Concentration, ppb, Dry	ND (0.0386)	ND (0.108)	ND (0.0553)	ND (0.000)
Concentration, ug/DSCM *	ND (0.272)	ND (0.760)	ND (0.389)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0183)	ND (0.0512)	ND (0.0262)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00230)	ND (0.00645)	ND (0.00330)	ND (0.000)
Pentachlorophenol				
Formula Weight, Lb/Lb-Mole	266.34	266.34	266.34	266.34
Catch Weight, Micrograms	ND (5.100)	ND (14.320)	ND (8.340)	ND (0.000)
Concentration, ppb, Dry	ND (0.120)	ND (0.338)	ND (0.197)	ND (0.000)
Concentration, ug/DSCM *	ND (1.330)	ND (3.740)	ND (2.180)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0897)	ND (0.252)	ND (0.147)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0113)	ND (0.0317)	ND (0.0185)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Pentachloronitrobenzene				
Formula Weight, Lb/Lb-Mole	295.34	295.34	295.34	295.34
Catch Weight, Micrograms	ND (9.370)	ND (26.320)	ND (13.520)	ND (0.000)
Concentration, ppb, Dry	ND (0.199)	ND (0.560)	ND (0.288)	ND (0.000)
Concentration, ug/DSCM *	ND (2.450)	ND (6.880)	ND (3.530)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.165)	ND (0.463)	ND (0.238)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0208)	ND (0.0583)	ND (0.0300)	ND (0.000)
4-Nitrobiphenyl				
Formula Weight, Lb/Lb-Mole	199.21	199.21	199.21	199.21
Catch Weight, Micrograms	ND (2.590)	ND (7.270)	ND (2.860)	ND (0.000)
Concentration, ppb, Dry	ND (0.0817)	ND (0.229)	ND (0.0902)	ND (0.000)
Concentration, ug/DSCM *	ND (0.677)	ND (1.900)	ND (0.747)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0455)	ND (0.128)	ND (0.0503)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00574)	ND (0.0161)	ND (0.00634)	ND (0.000)
Di-n-butylphthalate				
Formula Weight, Lb/Lb-Mole	278.34	278.34	278.34	278.34
Catch Weight, Micrograms	ND (0.520)	EV [8.300]	ND (0.670)	EV (8.300)
Concentration, ppb, Dry	ND (0.0117)	EV [0.187]	ND (0.0151)	EV (0.187)
Concentration, ug/DSCM *	ND (0.136)	EV [2.170]	ND (0.175)	EV (2.170)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00914)	EV [0.146]	ND (0.0118)	EV (0.146)
Emission Rate, Milligrams/Second	ND (0.00115)	EV [0.0184]	ND (0.00148)	EV (0.0184)
Pyrene				
Formula Weight, Lb/Lb-Mole	202.24	202.24	202.24	202.24
Catch Weight, Micrograms	ND (0.280)	ND (0.920)	ND (0.840)	ND (0.000)
Concentration, ppb, Dry	ND (0.00870)	ND (0.0286)	ND (0.0261)	ND (0.000)
Concentration, ug/DSCM *	ND (0.0732)	ND (0.240)	ND (0.219)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00492)	ND (0.0162)	ND (0.0148)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000620)	ND (0.00204)	ND (0.00186)	ND (0.000)
Benzidine				
Formula Weight, Lb/Lb-Mole	184.23	184.23	184.23	184.23
Catch Weight, Micrograms	ND (3.920)	ND (12.680)	ND (5.690)	ND (0.000)
Concentration, ppb, Dry	ND (0.134)	ND (0.433)	ND (0.194)	ND (0.000)
Concentration, ug/DSCM *	ND (1.020)	ND (3.310)	ND (1.490)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0689)	ND (0.223)	ND (0.100)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00868)	ND (0.0281)	ND (0.0126)	ND (0.000)
4,4'-Methylenedianiline				
Formula Weight, Lb/Lb-Mole	198.26	198.26	198.26	198.26
Catch Weight, Micrograms	ND (4.880)	ND (15.820)	ND (6.340)	ND (0.000)
Concentration, ppb, Dry	ND (0.155)	ND (0.502)	ND (0.201)	ND (0.000)
Concentration, ug/DSCM *	ND (1.280)	ND (4.130)	ND (1.660)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0858)	ND (0.278)	ND (0.111)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.0108)	ND (0.0350)	ND (0.0140)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

	FH	BH	Im	TOTAL
Dimethylaminoazobenzene				
Formula Weight, Lb/Lb-Mole	225.28	225.28	225.28	225.28
Catch Weight, Micrograms	ND (1.580)	ND (5.120)	ND (2.980)	ND (0.000)
Concentration, ppb, Dry	ND (0.0441)	ND (0.143)	ND (0.0831)	ND (0.000)
Concentration, ug/DSCM *	ND (0.413)	ND (1.340)	ND (0.779)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0278)	ND (0.0900)	ND (0.0524)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00350)	ND (0.0113)	ND (0.00660)	ND (0.000)
Butylbenzylphthalate				
Formula Weight, Lb/Lb-Mole	312.39	312.39	312.39	312.39
Catch Weight, Micrograms	ND (0.970)	ND (3.140)	ND (1.410)	ND (0.000)
Concentration, ppb, Dry	ND (0.0195)	ND (0.0632)	ND (0.0284)	ND (0.000)
Concentration, ug/DSCM *	ND (0.253)	ND (0.820)	ND (0.368)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0171)	ND (0.0552)	ND (0.0248)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00215)	ND (0.00696)	ND (0.00312)	ND (0.000)
3,3'-Dimethylbenzidine				
Formula Weight, Lb/Lb-Mole	212.28	212.28	212.28	212.28
Catch Weight, Micrograms	ND (1.130)	ND (3.670)	ND (2.600)	ND (0.000)
Concentration, ppb, Dry	ND (0.0335)	ND (0.109)	ND (0.0770)	ND (0.000)
Concentration, ug/DSCM *	ND (0.295)	ND (0.959)	ND (0.679)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0199)	ND (0.0645)	ND (0.0457)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00250)	ND (0.00813)	ND (0.00576)	ND (0.000)
Methylene bis-chloroaniline				
Formula Weight, Lb/Lb-Mole	267.15	267.15	267.15	267.15
Catch Weight, Micrograms	ND (1.490)	ND (4.830)	ND (4.550)	ND (0.000)
Concentration, ppb, Dry	ND (0.0351)	ND (0.114)	ND (0.107)	ND (0.000)
Concentration, ug/DSCM *	ND (0.389)	ND (1.260)	ND (1.190)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0262)	ND (0.0849)	ND (0.0800)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00330)	ND (0.0107)	ND (0.0101)	ND (0.000)
Chrysene				
Formula Weight, Lb/Lb-Mole	228.28	228.28	228.28	228.28
Catch Weight, Micrograms	ND (0.250)	ND (0.800)	ND (0.870)	ND (0.000)
Concentration, ppb, Dry	ND (0.00688)	ND (0.0220)	ND (0.0240)	ND (0.000)
Concentration, ug/DSCM *	ND (0.0653)	ND (0.209)	ND (0.227)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.00440)	ND (0.0141)	ND (0.0153)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.000554)	ND (0.00177)	ND (0.00193)	ND (0.000)
3,3'-Dichlorobenzidine				
Formula Weight, Lb/Lb-Mole	253.13	253.13	253.13	253.13
Catch Weight, Micrograms	ND (0.760)	ND (2.470)	ND (2.640)	ND (0.000)
Concentration, ppb, Dry	ND (0.0189)	ND (0.0613)	ND (0.0656)	ND (0.000)
Concentration, ug/DSCM *	ND (0.199)	ND (0.645)	ND (0.690)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0134)	ND (0.0434)	ND (0.0464)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00168)	ND (0.00547)	ND (0.00585)	ND (0.000)

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SEMIVOLATILE RESULTS TABULATION

(Continued)

IV-3-S2-MM5-3A

	FH	BH	Im	TOTAL
bis(2-Ethylhexyl)phthalate				
Formula Weight, Lb/Lb-Mole	390.54	390.54	390.54	390.54
Catch Weight, Micrograms	EV [40.920]	ND (2.090)	ND (1.030)	EV (40.920)
Concentration, ppb, Dry	EV [0.659]	ND (0.0336)	ND (0.0166)	EV (0.659)
Concentration, ug/DSCM *	EV [10.700]	ND (0.546)	ND (0.269)	EV (10.700)
Emission Rate, 1,000 * (Pounds/Hour)	EV [0.719]	ND (0.0367)	ND (0.0181)	EV (0.719)
Emission Rate, Milligrams/Second	EV [0.0907]	ND (0.00463)	ND (0.00228)	EV (0.0907)
3,3'-Dimethoxybenzidine				
Formula Weight, Lb/Lb-Mole	244.28	244.28	244.28	244.28
Catch Weight, Micrograms	ND (3.190)	ND (10.340)	ND (6.250)	ND (0.000)
Concentration, ppb, Dry	ND (0.0821)	ND (0.266)	ND (0.161)	ND (0.000)
Concentration, ug/DSCM *	ND (0.833)	ND (2.700)	ND (1.630)	ND (0.000)
Emission Rate, 1,000 * (Pounds/Hour)	ND (0.0561)	ND (0.182)	ND (0.110)	ND (0.000)
Emission Rate, Milligrams/Second	ND (0.00707)	ND (0.0229)	ND (0.0138)	ND (0.000)

ND - Not Detected. Detection limits are shown in parentheses ( ).

EV - Estimated Value. Indicates the measured value, shown in brackets [ ], is below the quantitation limit.

* - 68 Deg. F -- 29.92 inches Hg

Volatile Organics Sampling Train

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE I-2-S3-V2-A

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate (div by 4) ug	Condensate Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.002	ND	0.889	D	0.0032	ND	0.889	No
Bromomethane	94.95	0.002	ND	0.676	D	0.0034	ND	0.676	No
Vinyl Chloride	62.50	0.002	ND	0.002	ND	0.0026	ND	0.000	NA
Chloroethane	64.52	0.002	ND	0.002	ND	0.0035	ND	0.000	NA
Methylene Chloride	84.94	0.013	E	0.029	E	0.3156	D	0.358	NA
Acetone	58.08	0.002	ND	0.002	ND	1.6125	D	1.612	NA
Carbon Disulfide	76.14	0.041	E	0.001	ND	0.0017	ND	0.041	NA
1,1-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0076	ND	0.000	NA
1,1-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0044	ND	0.000	NA
Chloroform	119.38	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
1,2-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0018	ND	0.000	NA
2-Butanone	72.1	0.007	ND	0.007	ND	0.3833	D	0.383	NA
1,1,1-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0020	ND	0.000	NA
Carbon Tetrachloride	153.82	0.001	ND	0.001	ND	0.0023	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0241	E	0.024	NA
Bromodichloromethane	163.83	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
1,2-Dichloropropane	112.99	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
Trichloroethene	131.40	0.001	ND	0.001	ND	0.0267	E	0.027	NA
Dibromochloromethane	208.29	0.001	ND	0.001	ND	0.0055	E	0.005	NA
1,1,2-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0128	E	0.013	NA
Benzene	78.12	0.044	E	0.008	E	0.0009	ND	0.052	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0012	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.004	ND	0.004	ND	0.0039	ND	0.000	NA
Bromoform	252.77	0.001	ND	0.001	ND	0.0255	E	0.025	NA
2-Hexanone	100.16	0.001	ND	0.001	ND	0.2371	D	0.237	NA
4-Methyl-2-Pentanone	100.16	0.001	ND	0.001	ND	0.1982	D	0.198	NA
Tetrachloroethene	163.85	0.001	ND	0.001	ND	0.0033	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.001	ND	0.001	ND	0.0449	E	0.045	NA
Toluene	92.13	0.030	E	0.143	D	0.2068	D	0.380	477.7
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
Ethylbenzene	106.16	0.001	ND	0.001	ND	0.0049	E	0.005	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0008	ND	0.000	NA
m-/p-Xylene	106.12	0.014	E	0.002	E	0.0042	E	0.021	NA
o-Xylene	106.12	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
Acrolein	56.06	0.025	ND	0.027	ND	0.8076	D	0.808	NA
Acrylonitrile	53.03	0.005	ND	0.005	ND	0.0080	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.001	ND	0.001	ND	0.0023	ND	0.000	NA
Iodomethane	141.94	0.001	ND	0.035	E	0.0046	ND	0.035	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0188	E	0.019	NA
1,4-Dichloro-2-butene	125.00	0.002	ND	0.002	ND	0.0305	E	0.031	NA
Ethyl methacrylate	114.15	0.001	ND	0.001	ND	0.0548	E	0.055	NA
1,2,3-Trichloropropane	147.43	0.001	ND	0.001	ND	0.0854	E	0.085	NA
Trichlorofluoromethane	137.37	0.001	ND	0.001	ND	0.0029	ND	0.000	NA
1,3 Dichlorobenzene	147.00	0.002	ND	0.002	ND	0.0009	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0009	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0034	ND	0.000	NA
n-Hexane	86.18	0.001	ND	0.027	E	0.0015	ND	0.027	NA
Tert-Butyl methyl ether	88.15	0.004	ND	0.004	ND	0.0114	ND	0.000	NA
1,3 Butadiene	54.09	0.004	ND	0.004	ND	0.0050	ND	0.000	NA
Vinyl Bromide	106.96	0.001	ND	0.001	ND	0.0045	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.038	E	0.0004	ND	0.038	NA
Allyl Chloride	76.53	0.002	ND	0.002	ND	0.0089	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0005	ND	0.000	NA
Dimethyl Sulfide	62.13	0.001	ND	0.001	ND	0.0034	ND	0.000	NA
Dimethyl Disulfide	94.2	0.001	ND	0.001	ND	0.0012	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0007	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0008	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0005	ND	0.000	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE I-2-S3-V2-B

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate (div by 4) ug	Condensate Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.002	ND	1.036	D	0.0032	ND	1.036	No
Bromomethane	94.95	0.002	ND	0.985	D	0.0034	ND	0.985	No
Vinyl Chloride	62.50	0.002	ND	0.002	ND	0.0026	ND	0.000	NA
Chloroethane	64.52	0.002	ND	0.002	ND	0.0035	ND	0.000	NA
Methylene Chloride	84.94	0.001	ND	0.061	D	0.3156	D	0.376	NA
Acetone	58.08	0.187	D	0.338	D	1.6125	D	2.137	181.3
Carbon Disulfide	76.14	0.015	E	0.001	ND	0.0017	ND	0.015	NA
1,1-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0076	ND	0.000	NA
1,1-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0044	ND	0.000	NA
Chloroform	119.38	0.294	D	0.001	ND	0.0015	ND	0.294	NA
1,2-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0018	ND	0.000	NA
2-Butanone	72.1	0.078	D	0.006	ND	0.3833	D	0.461	NA
1,1,1-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0020	ND	0.000	NA
Carbon Tetrachloride	153.82	0.001	ND	0.001	ND	0.0023	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0241	E	0.024	NA
Bromodichloromethane	163.83	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
1,2-Dichloropropane	112.99	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
Trichloroethene	131.40	0.037	E	0.001	ND	0.0267	E	0.064	NA
Dibromochloromethane	208.29	0.001	ND	0.001	ND	0.0055	E	0.005	NA
1,1,2-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0128	E	0.013	NA
Benzene	78.12	4.507	D	0.032	E	0.0009	ND	4.538	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0012	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.004	ND	0.004	ND	0.0039	ND	0.000	NA
Bromoform	252.77	0.001	ND	0.001	ND	0.0255	E	0.025	NA
2-Hexanone	100.16	0.001	ND	0.001	ND	0.2371	D	0.237	NA
4-Methyl-2-Pentanone	100.16	0.001	ND	0.001	ND	0.1982	D	0.198	NA
Tetrachloroethene	163.85	0.001	ND	0.001	ND	0.0033	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.001	ND	0.001	ND	0.0449	E	0.045	NA
Toluene	92.13	0.050	D	0.190	D	0.2068	D	0.447	376.5
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
Ethylbenzene	106.16	0.007	E	0.001	ND	0.0049	E	0.012	NA
Styrene	104.14	0.005	E	0.001	ND	0.0008	ND	0.005	NA
m-/p-Xylene	106.12	0.025	E	0.004	E	0.0042	E	0.033	NA
o-Xylene	106.12	0.006	E	0.001	ND	0.0014	ND	0.006	NA
Acrolein	56.06	0.032	ND	0.025	ND	0.8076	D	0.808	NA
Acrylonitrile	53.03	0.006	ND	0.005	ND	0.0080	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.001	ND	0.001	ND	0.0023	ND	0.000	NA
Iodomethane	141.94	0.001	ND	0.001	ND	0.0046	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0188	E	0.019	NA
1,4-Dichloro-2-butene	125.00	0.002	ND	0.002	ND	0.0305	E	0.031	NA
Ethyl methacrylate	114.15	0.001	ND	0.001	ND	0.0548	E	0.055	NA
1,2,3-Trichloropropane	147.43	0.001	ND	0.001	ND	0.0854	E	0.085	NA
Trichlorofluoromethane	137.37	0.001	ND	0.001	ND	0.0029	ND	0.000	NA
1,3 Dichlorobenzene	147.00	0.003	ND	0.002	ND	0.0009	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0009	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0034	ND	0.000	NA
n-Hexane	86.18	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
Tert-Butyl methyl ether	88.15	0.005	ND	0.004	ND	0.0114	ND	0.000	NA
1,3 Butadiene	54.09	0.005	ND	0.004	ND	0.0050	ND	0.000	NA
Vinyl Bromide	106.96	0.001	ND	0.001	ND	0.0045	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.001	ND	0.0004	ND	0.000	NA
Allyl Chloride	76.53	0.002	ND	0.002	ND	0.0089	ND	0.000	NA
Cumene	120.2	0.011	E	0.001	ND	0.0005	ND	0.011	NA
Dimethyl Sulfide	62.13	0.001	ND	0.001	ND	0.0034	ND	0.000	NA
Dimethyl Disulfide	94.2	0.001	ND	0.001	ND	0.0012	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0007	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0008	ND	0.000	NA
P-Cymene	134.22	0.010	E	0.001	ND	0.0005	ND	0.010	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE I-2-S3-V2-C

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate (div by 4) ug	Condensate Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.002	ND	1.163	D	0.0032	ND	1.163	No
Bromomethane	94.95	0.002	ND	1.016	D	0.0034	ND	1.016	No
Vinyl Chloride	62.50	0.002	ND	0.002	ND	0.0026	ND	0.000	NA
Chloroethane	64.52	0.002	ND	0.002	ND	0.0035	ND	0.000	NA
Methylene Chloride	84.94	0.013	E	0.061	D	0.3156	D	0.390	NA
Acetone	58.08	0.093	D	0.002	ND	1.6125	D	1.705	NA
Carbon Disulfide	76.14	0.025	E	0.001	ND	0.0017	ND	0.025	NA
1,1-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0076	ND	0.000	NA
1,1-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0044	ND	0.000	NA
Chloroform	119.38	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
1,2-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0018	ND	0.000	NA
2-Butanone	72.1	0.007	ND	0.007	ND	0.3833	D	0.383	NA
1,1,1-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0020	ND	0.000	NA
Carbon Tetrachloride	153.82	0.001	ND	0.001	ND	0.0023	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0241	E	0.024	NA
Bromodichloromethane	163.83	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
1,2-Dichloropropane	112.99	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
Trichloroethene	131.40	0.001	ND	0.001	ND	0.0267	E	0.027	NA
Dibromochloromethane	208.29	0.001	ND	0.001	ND	0.0055	E	0.005	NA
1,1,2-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0128	E	0.013	NA
Benzene	78.12	0.047	E	0.024	E	0.0009	ND	0.071	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0012	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.004	ND	0.004	ND	0.0039	ND	0.000	NA
Bromoform	252.77	0.001	ND	0.001	ND	0.0255	E	0.025	NA
2-Hexanone	100.16	0.001	ND	0.001	ND	0.2371	D	0.237	NA
4-Methyl-2-Pentanone	100.16	0.001	ND	0.001	ND	0.1982	D	0.198	NA
Tetrachloroethene	163.85	0.001	ND	0.001	ND	0.0033	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.001	ND	0.001	ND	0.0449	E	0.045	NA
Toluene	92.13	0.045	E	0.105	D	0.2068	D	0.357	235.3
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
Ethylbenzene	106.16	0.001	ND	0.001	ND	0.0049	E	0.005	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0008	ND	0.000	NA
m-/p-Xylene	106.12	0.015	E	0.002	E	0.0042	E	0.022	NA
o-Xylene	106.12	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
Acrolein	56.06	0.028	ND	0.027	ND	0.8076	D	0.808	NA
Acrylonitrile	53.03	0.006	ND	0.005	ND	0.0080	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.001	ND	0.001	ND	0.0023	ND	0.000	NA
Iodomethane	141.94	0.001	ND	0.001	ND	0.0046	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0188	E	0.019	NA
1,4-Dichloro-2-butene	125.00	0.002	ND	0.002	ND	0.0305	E	0.031	NA
Ethyl methacrylate	114.15	0.001	ND	0.001	ND	0.0548	E	0.055	NA
1,2,3-Trichloropropane	147.43	0.001	ND	0.001	ND	0.0854	E	0.085	NA
Trichlorofluoromethane	137.37	0.001	ND	0.001	ND	0.0029	ND	0.000	NA
1,3 Dichlorobenzene	147.00	0.002	ND	0.002	ND	0.0009	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0009	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0034	ND	0.000	NA
n-Hexane	86.18	0.001	ND	0.005	E	0.0015	ND	0.005	NA
Tert-Butyl methyl ether	88.15	0.004	ND	0.004	ND	0.0114	ND	0.000	NA
1,3 Butadiene	54.09	0.004	ND	0.004	ND	0.0050	ND	0.000	NA
Vinyl Bromide	106.96	0.001	ND	0.001	ND	0.0045	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.001	ND	0.0004	ND	0.000	NA
Allyl Chloride	76.53	0.002	ND	0.002	ND	0.0089	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0005	ND	0.000	NA
Dimethyl Sulfide	62.13	0.001	ND	0.001	ND	0.0034	ND	0.000	NA
Dimethyl Disulfide	94.2	0.001	ND	0.001	ND	0.0012	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0007	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0008	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0005	ND	0.000	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE I-2-S3-V2-D

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate (div by 4) ug	Condensate Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.002	ND	1.406	D	0.0032	ND	1.406	No
Bromomethane	94.95	0.002	ND	0.717	D	0.0034	ND	0.717	No
Vinyl Chloride	62.50	0.002	ND	0.003	ND	0.0026	ND	0.000	NA
Chloroethane	64.52	0.002	ND	0.003	ND	0.0035	ND	0.000	NA
Methylene Chloride	84.94	0.076	D	0.097	D	0.3156	D	0.488	127.5
Acetone	58.08	0.003	ND	0.004	ND	1.6125	D	1.612	NA
Carbon Disulfide	76.14	0.001	ND	0.001	ND	0.0017	ND	0.000	NA
1,1-Dichloroethene	96.94	0.001	ND	0.002	ND	0.0076	ND	0.000	NA
1,1-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.001	ND	0.002	ND	0.0044	ND	0.000	NA
Chloroform	119.38	0.076	D	0.001	ND	0.0015	ND	0.076	NA
1,2-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0018	ND	0.000	NA
2-Butanone	72.1	0.007	ND	0.012	ND	0.3833	D	0.383	NA
1,1,1-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0020	ND	0.000	NA
Carbon Tetrachloride	153.82	0.001	ND	0.001	ND	0.0023	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0241	E	0.024	NA
Bromodichloromethane	163.83	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
1,2-Dichloropropane	112.99	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
Trichloroethene	131.40	0.018	E	0.001	ND	0.0267	E	0.044	NA
Dibromochloromethane	208.29	0.001	ND	0.001	ND	0.0055	E	0.005	NA
1,1,2-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0128	E	0.013	NA
Benzene	78.12	2.566	D	0.001	ND	0.0009	ND	2.566	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0012	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.004	ND	0.007	ND	0.0039	ND	0.000	NA
Bromoform	252.77	0.001	ND	0.002	ND	0.0255	E	0.025	NA
2-Hexanone	100.16	0.001	ND	0.002	ND	0.2371	D	0.237	NA
4-Methyl-2-Pentanone	100.16	0.001	ND	0.002	ND	0.1982	D	0.198	NA
Tetrachloroethene	163.85	0.001	ND	0.001	ND	0.0033	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.001	ND	0.001	ND	0.0449	E	0.045	NA
Toluene	92.13	0.026	E	0.105	D	0.2068	D	0.337	410.0
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
Ethylbenzene	106.16	0.001	ND	0.001	ND	0.0049	E	0.005	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0008	ND	0.000	NA
m-/p-Xylene	106.12	0.014	E	0.001	ND	0.0042	E	0.018	NA
o-Xylene	106.12	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
Acrolein	56.06	0.032	ND	0.052	ND	0.8076	D	0.808	NA
Acrylonitrile	53.03	0.006	ND	0.010	ND	0.0080	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.001	ND	0.001	ND	0.0023	ND	0.000	NA
Iodomethane	141.94	0.001	ND	0.002	ND	0.0046	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0188	E	0.019	NA
1,4-Dichloro-2-butene	125.00	0.003	ND	0.004	ND	0.0305	E	0.031	NA
Ethyl methacrylate	114.15	0.001	ND	0.001	ND	0.0548	E	0.055	NA
1,2,3-Trichloropropane	147.43	0.001	ND	0.002	ND	0.0854	E	0.085	NA
Trichlorofluoromethane	137.37	0.001	ND	0.001	ND	0.0029	ND	0.000	NA
1,3 Dichlorobenzene	147.00	0.003	ND	0.004	ND	0.0009	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0009	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0034	ND	0.000	NA
n-Hexane	86.18	0.010	E	0.001	ND	0.0015	ND	0.010	NA
Tert-Butyl methyl ether	88.15	0.005	ND	0.007	ND	0.0114	ND	0.000	NA
1,3 Butadiene	54.09	0.005	ND	0.008	ND	0.0050	ND	0.000	NA
Vinyl Bromide	106.96	0.001	ND	0.002	ND	0.0045	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.001	ND	0.0004	ND	0.000	NA
Allyl Chloride	76.53	0.002	ND	0.004	ND	0.0089	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0005	ND	0.000	NA
Dimethyl Sulfide	62.13	0.001	ND	0.002	ND	0.0034	ND	0.000	NA
Dimethyl Disulfide	94.2	0.001	ND	0.001	ND	0.0012	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0007	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0008	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0005	ND	0.000	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE II-2-S3-V2-A

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate ug	Condensate Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.005	ND	1.439	D	0.0109	ND	1.439	No
Bromomethane	94.95	0.005	ND	0.897	D	0.0109	ND	0.897	No
Vinyl Chloride	62.50	0.005	ND	0.004	ND	0.0093	ND	0.000	NA
Chloroethane	64.52	0.005	ND	0.004	ND	0.0126	ND	0.000	NA
Methylene Chloride	84.94	0.041	E	0.044	E	0.9079	D	0.993	NA
Acetone	58.08	0.006	ND	0.006	ND	3.5208	D	3.521	NA
Carbon Disulfide	76.14	0.001	ND	0.001	ND	0.0046	ND	0.000	NA
1,1-Dichloroethene	96.94	0.003	ND	0.003	ND	0.0156	ND	0.000	NA
1,1-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0043	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.002	ND	0.002	ND	0.0109	ND	0.000	NA
Chloroform	119.38	0.001	ND	0.001	ND	0.0044	ND	0.000	NA
1,2-Dichloroethane	98.96	0.002	ND	0.002	ND	0.0056	ND	0.000	NA
2-Butanone	72.1	0.014	ND	0.016	ND	0.0895	E	0.089	NA
1,1,1-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0068	ND	0.000	NA
Carbon Tetrachloride	153.82	0.001	ND	0.001	ND	0.0079	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0039	ND	0.000	NA
Bromodichloromethane	163.83	0.001	ND	0.001	ND	0.0051	ND	0.000	NA
1,2-Dichloropropane	112.99	0.001	ND	0.001	ND	0.0055	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.001	ND	0.002	ND	0.0048	ND	0.000	NA
Trichloroethene	131.40	0.001	ND	0.002	ND	0.0078	ND	0.000	NA
Dibromochloromethane	208.29	0.001	ND	0.002	ND	0.0058	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.002	ND	0.002	ND	0.0076	ND	0.000	NA
Benzene	78.12	0.036	E	0.016	E	0.0034	ND	0.052	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0045	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.009	ND	0.010	ND	0.0174	ND	0.000	NA
Bromoform	252.77	0.003	ND	0.003	ND	0.0065	ND	0.000	NA
2-Hexanone	100.16	0.003	ND	0.002	ND	0.0470	E	0.047	NA
4-Methyl-2-Pentanone	100.16	0.002	ND	0.002	ND	0.0045	ND	0.000	NA
Tetrachloroethene	163.85	0.002	ND	0.002	ND	0.0093	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.002	ND	0.002	ND	0.0035	ND	0.000	NA
Toluene	92.13	0.027	E	0.098	D	0.8202	D	0.945	365.8
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0035	ND	0.000	NA
Ethylbenzene	106.16	0.001	ND	0.001	ND	0.0058	E	0.006	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0030	ND	0.000	NA
m-/p-Xylene	106.12	0.014	E	0.001	ND	0.0251	E	0.039	NA
o-Xylene	106.12	0.001	ND	0.001	ND	0.0109	E	0.011	NA
Acrolein	56.06	0.074	ND	0.066	ND	0.2087	ND	0.000	NA
Acrylonitrile	53.03	0.014	ND	0.013	ND	0.0211	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.002	ND	0.002	ND	0.0066	ND	0.000	NA
Iodomethane	141.94	0.003	ND	0.002	ND	0.0107	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0333	E	0.033	NA
1,4-Dichloro-2-butene	125.00	0.005	ND	0.006	ND	0.0099	ND	0.000	NA
Ethyl methacrylate	114.15	0.001	ND	0.001	ND	0.0048	ND	0.000	NA
1,2,3-Trichloropropane	147.43	0.003	ND	0.002	ND	0.0056	ND	0.000	NA
Trichlorofluoromethane	137.37	0.002	ND	0.002	ND	0.0098	ND	0.000	NA
1,3 Dichlorobenzene	147.00	0.006	ND	0.005	ND	0.0034	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0038	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0036	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.002	ND	0.002	ND	0.0090	ND	0.000	NA
n-Hexane	86.18	0.001	ND	0.001	ND	0.0043	ND	0.000	NA
Tert-Butyl methyl ether	88.15	0.011	ND	0.009	ND	0.0277	ND	0.000	NA
1,3 Butadiene	54.09	0.011	ND	0.010	ND	0.0179	ND	0.000	NA
Vinyl Bromide	106.96	0.003	ND	0.003	ND	0.0146	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.001	ND	0.0011	ND	0.000	NA
Allyl Chloride	76.53	0.005	ND	0.005	ND	0.0245	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0020	ND	0.000	NA
Dimethyl Sulfide	62.13	0.003	ND	0.002	ND	0.0097	ND	0.000	NA
Dimethyl Disulfide	94.2	0.001	ND	0.001	ND	0.0037	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0024	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0026	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0018	ND	0.000	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE III-2-S3-V2-B

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate ug	Condensate Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.006	ND	1.838	D	0.0113	ND	1.838	No
Bromomethane	94.95	0.006	ND	1.214	D	0.0113	ND	1.214	No
Vinyl Chloride	62.50	0.005	ND	0.005	ND	0.0096	ND	0.000	NA
Chloroethane	64.52	0.006	ND	0.005	ND	0.0130	ND	0.000	NA
Methylene Chloride	84.94	0.003	ND	0.041	E	1.1514	D	1.192	NA
Acetone	58.08	0.007	ND	0.007	ND	5.3806	D	5.381	NA
Carbon Disulfide	76.14	0.001	ND	0.001	ND	0.0122	E	0.012	NA
1,1-Dichloroethene	96.94	0.003	ND	0.003	ND	0.0161	ND	0.000	NA
1,1-Dichloroethane	98.96	0.002	ND	0.001	ND	0.0044	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.003	ND	0.002	ND	0.0113	ND	0.000	NA
Chloroform	119.38	0.096	D	0.001	ND	0.0046	ND	0.096	NA
1,2-Dichloroethane	98.96	0.002	ND	0.002	ND	0.0058	ND	0.000	NA
2-Butanone	72.1	0.019	ND	0.017	ND	0.0790	E	0.079	NA
1,1,1-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0073	ND	0.000	NA
Carbon Tetrachloride	153.82	0.001	ND	0.001	ND	0.0085	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0042	ND	0.000	NA
Bromodichloromethane	163.83	0.002	ND	0.001	ND	0.0054	ND	0.000	NA
1,2-Dichloropropane	112.99	0.002	ND	0.002	ND	0.0059	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.002	ND	0.002	ND	0.0052	ND	0.000	NA
Trichloroethene	131.40	0.032	E	0.002	ND	0.0084	ND	0.032	NA
Dibromochloromethane	208.29	0.002	ND	0.002	ND	0.0062	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.002	ND	0.002	ND	0.0081	ND	0.000	NA
Benzene	78.12	0.274	D	0.022	E	0.0036	ND	0.296	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0049	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.012	ND	0.010	ND	0.0187	ND	0.000	NA
Bromoform	252.77	0.003	ND	0.003	ND	0.0070	ND	0.000	NA
2-Hexanone	100.16	0.003	ND	0.002	ND	0.0426	E	0.043	NA
4-Methyl-2-Pentanone	100.16	0.003	ND	0.002	ND	0.0046	ND	0.000	NA
Tetrachloroethene	163.85	0.002	ND	0.002	ND	0.0094	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.002	ND	0.002	ND	0.0035	ND	0.000	NA
Toluene	92.13	0.012	E	0.080	D	0.9495	D	1.041	692.0
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0036	ND	0.000	NA
Ethylbenzene	106.16	0.001	ND	0.001	ND	0.0062	E	0.006	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0030	ND	0.000	NA
m-/p-Xylene	106.12	0.001	ND	0.001	ND	0.0214	E	0.021	NA
o-Xylene	106.12	0.001	ND	0.001	ND	0.0088	E	0.009	NA
Acrolein	56.06	0.087	ND	0.079	ND	0.2164	ND	0.000	No
Acrylonitrile	53.03	0.017	ND	0.015	ND	0.0219	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.002	ND	0.002	ND	0.0068	ND	0.000	NA
Iodomethane	141.94	0.088	D	0.003	ND	0.0111	ND	0.088	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0339	E	0.034	NA
1,4-Dichloro-2-butene	125.00	0.006	ND	0.006	ND	0.0106	ND	0.000	NA
Ethyl methacrylate	114.15	0.002	ND	0.001	ND	0.0049	ND	0.000	NA
1,2,3-Trichloropropane	147.43	0.003	ND	0.003	ND	0.0056	ND	0.000	NA
Trichlorofluoromethane	137.37	0.002	ND	0.002	ND	0.0102	ND	0.000	NA
1,3 Dichlorobenzene	147.00	0.007	ND	0.006	ND	0.0035	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0038	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0036	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.002	ND	0.002	ND	0.0093	ND	0.000	NA
n-Hexane	86.18	0.001	ND	0.001	ND	0.0045	ND	0.000	NA
Tert-Butyl methyl ether	88.15	0.012	ND	0.011	ND	0.0287	ND	0.000	NA
1,3 Butadiene	54.09	0.013	ND	0.012	ND	0.0186	ND	0.000	NA
Vinyl Bromide	106.96	0.004	ND	0.003	ND	0.0151	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.001	ND	0.0012	ND	0.000	NA
Allyl Chloride	76.53	0.006	ND	0.006	ND	0.0254	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0020	ND	0.000	NA
Dimethyl Sulfide	62.13	0.003	ND	0.003	ND	0.0101	ND	0.000	NA
Dimethyl Disulfide	94.2	0.001	ND	0.001	ND	0.0039	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0024	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0027	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0018	ND	0.000	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE IV-2-S3-V2-A

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate ug	Condensate Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.005	ND	0.005	ND	0.0116	ND	0.000	NA
Bromomethane	94.95	0.005	ND	1.534	D	0.0116	ND	1.534	No
Vinyl Chloride	62.50	0.005	ND	0.004	ND	0.0099	ND	0.000	NA
Chloroethane	64.52	0.005	ND	0.004	ND	0.0134	ND	0.000	NA
Methylene Chloride	84.94	0.003	ND	0.002	ND	1.1517	D	1.152	NA
Acetone	58.08	0.006	ND	0.006	ND	5.3687	D	5.369	NA
Carbon Disulfide	76.14	0.001	ND	0.001	ND	0.0049	ND	0.000	NA
1,1-Dichloroethene	96.94	0.003	ND	0.003	ND	0.0166	ND	0.000	NA
1,1-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0046	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.002	ND	0.002	ND	0.0116	ND	0.000	NA
Chloroform	119.38	0.001	ND	0.001	ND	0.0047	ND	0.000	NA
1,2-Dichloroethane	98.96	0.002	ND	0.002	ND	0.0058	ND	0.000	NA
2-Butanone	72.1	0.018	ND	0.010	ND	0.1322	E	0.132	NA
1,1,1-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0070	ND	0.000	NA
Carbon Tetrachloride	153.82	0.001	ND	0.001	ND	0.0082	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0041	ND	0.000	NA
Bromodichloromethane	163.83	0.001	ND	0.001	ND	0.0053	ND	0.000	NA
1,2-Dichloropropane	112.99	0.002	ND	0.001	ND	0.0057	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.002	ND	0.001	ND	0.0050	ND	0.000	NA
Trichloroethene	131.40	0.002	ND	0.001	ND	0.0081	ND	0.000	NA
Dibromochloromethane	208.29	0.002	ND	0.001	ND	0.0060	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.002	ND	0.001	ND	0.0079	ND	0.000	NA
Benzene	78.12	0.042	E	0.014	E	0.0035	ND	0.056	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0047	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.011	ND	0.006	ND	0.0181	ND	0.000	NA
Bromoform	252.77	0.003	ND	0.002	ND	0.0067	ND	0.000	NA
2-Hexanone	100.16	0.002	ND	0.003	ND	0.0313	E	0.031	NA
4-Methyl-2-Pentanone	100.16	0.002	ND	0.003	ND	0.0051	ND	0.000	NA
Tetrachloroethene	163.85	0.002	ND	0.002	ND	0.0105	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.002	ND	0.002	ND	0.0040	ND	0.000	NA
Toluene	92.13	0.042	E	0.023	E	1.1695	D	1.234	NA
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0040	ND	0.000	NA
Ethylbenzene	106.16	0.001	ND	0.002	ND	0.0067	E	0.007	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0034	ND	0.000	NA
m-/p-Xylene	106.12	0.015	E	0.001	ND	0.0220	E	0.038	NA
o-Xylene	106.12	0.001	ND	0.001	ND	0.0100	E	0.010	NA
Acrolein	56.06	0.075	ND	0.067	ND	0.2229	ND	0.000	NA
Acrylonitrile	53.03	0.015	ND	0.013	ND	0.0225	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.002	ND	0.002	ND	0.0070	ND	0.000	NA
Iodomethane	141.94	0.003	ND	0.003	ND	0.0114	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0320	E	0.032	NA
1,4-Dichloro-2-butene	125.00	0.006	ND	0.003	ND	0.0102	ND	0.000	NA
Ethyl methacrylate	114.15	0.001	ND	0.002	ND	0.0055	ND	0.000	NA
1,2,3-Trichloropropane	147.43	0.003	ND	0.003	ND	0.0063	ND	0.000	NA
Trichlorofluoromethane	137.37	0.002	ND	0.002	ND	0.0105	ND	0.000	NA
1,3 Dichlorobenzene	147.00	0.006	ND	0.006	ND	0.0039	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0043	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0041	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.002	ND	0.002	ND	0.0096	ND	0.000	NA
n-Hexane	86.18	0.001	ND	0.001	ND	0.0046	ND	0.000	NA
Tert-Butyl methyl ether	88.15	0.011	ND	0.010	ND	0.0296	ND	0.000	NA
1,3 Butadiene	54.09	0.012	ND	0.010	ND	0.0191	ND	0.000	NA
Vinyl Bromide	106.96	0.003	ND	0.003	ND	0.0156	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.001	ND	0.0012	ND	0.000	NA
Allyl Chloride	76.53	0.005	ND	0.005	ND	0.0261	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0023	ND	0.000	NA
Dimethyl Sulfide	62.13	0.003	ND	0.002	ND	0.0521	E	0.052	NA
Dimethyl Disulfide	94.2	0.001	ND	0.001	ND	0.0040	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0027	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0030	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0020	ND	0.000	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE I-3-S3-V3-A

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate ug	Condensate Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.007	ND	2.330	D	0.0126	ND	2.330	No
Bromomethane	94.95	0.007	ND	2.022	D	0.0126	ND	2.022	No
Vinyl Chloride	62.50	0.006	ND	0.007	ND	0.0107	ND	0.000	NA
Chloroethane	64.52	0.007	ND	0.008	ND	0.0146	ND	0.000	NA
Methylene Chloride	84.94	0.077	D	0.174	D	1.7203	D	1.971	225.9
Acetone	58.08	0.009	ND	0.010	ND	6.7351	D	6.735	NA
Carbon Disulfide	76.14	0.106	D	0.023	E	0.0053	ND	0.129	NA
1,1-Dichloroethene	96.94	0.004	ND	0.005	ND	0.0180	ND	0.000	NA
1,1-Dichloroethane	98.96	0.002	ND	0.002	ND	0.0049	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.003	ND	0.004	ND	0.0126	ND	0.000	NA
Chloroform	119.38	0.002	ND	0.002	ND	0.0051	ND	0.000	NA
1,2-Dichloroethane	98.96	0.002	ND	0.003	ND	0.0064	ND	0.000	NA
2-Butanone	72.1	0.022	ND	0.018	ND	0.1137	E	0.114	NA
1,1,1-Trichloroethane	133.41	0.002	ND	0.001	ND	0.0076	ND	0.000	NA
Carbon Tetrachloride	153.82	0.002	ND	0.001	ND	0.0089	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0044	ND	0.000	NA
Bromodichloromethane	163.83	0.002	ND	0.001	ND	0.0057	ND	0.000	NA
1,2-Dichloropropane	112.99	0.002	ND	0.002	ND	0.0062	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.002	ND	0.002	ND	0.0054	ND	0.000	NA
Trichloroethene	131.40	0.002	ND	0.002	ND	0.0087	ND	0.000	NA
Dibromochloromethane	208.29	0.002	ND	0.002	ND	0.0065	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.003	ND	0.002	ND	0.0085	ND	0.000	NA
Benzene	78.12	0.038	E	0.001	ND	0.0038	ND	0.038	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0051	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.014	ND	0.011	ND	0.0195	ND	0.000	NA
Bromoform	252.77	0.004	ND	0.003	ND	0.0073	ND	0.000	NA
2-Hexanone	100.16	0.003	ND	0.003	ND	0.0290	E	0.029	NA
4-Methyl-2-Pentanone	100.16	0.003	ND	0.003	ND	0.0049	ND	0.000	NA
Tetrachloroethene	163.85	0.002	ND	0.003	ND	0.0100	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.002	ND	0.003	ND	0.0038	ND	0.000	NA
Toluene	92.13	0.040	E	0.148	D	1.4598	D	1.647	373.3
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0038	ND	0.000	NA
Ethylbenzene	106.16	0.001	ND	0.002	ND	0.0051	E	0.005	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0032	ND	0.000	NA
m-/p-Xylene	106.12	0.015	E	0.001	ND	0.0195	E	0.034	NA
o-Xylene	106.12	0.001	ND	0.001	ND	0.0084	E	0.008	NA
Acrolein	56.06	0.101	ND	0.115	ND	0.2416	ND	0.000	No
Acrylonitrile	53.03	0.020	ND	0.023	ND	0.0244	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.003	ND	0.003	ND	0.0076	ND	0.000	NA
Iodomethane	141.94	0.004	ND	0.004	ND	0.0123	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0361	E	0.036	NA
1,4-Dichloro-2-butene	125.00	0.008	ND	0.006	ND	0.0110	ND	0.000	NA
Ethyl methacrylate	114.15	0.002	ND	0.002	ND	0.0052	ND	0.000	NA
1,2,3-Trichloropropane	147.43	0.003	ND	0.004	ND	0.0060	ND	0.000	NA
Trichlorofluoromethane	137.37	0.003	ND	0.003	ND	0.0114	ND	0.000	NA
1,3 Dichlorobenzene	147.00	0.008	ND	0.009	ND	0.0037	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0041	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0039	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.003	ND	0.003	ND	0.0104	ND	0.000	NA
n-Hexane	86.18	0.002	ND	0.034	E	0.0050	ND	0.034	NA
Tert-Butyl methyl ether	88.15	0.015	ND	0.017	ND	0.0320	ND	0.000	NA
1,3 Butadiene	54.09	0.016	ND	0.018	ND	0.0207	ND	0.000	NA
Vinyl Bromide	106.96	0.004	ND	0.005	ND	0.0169	ND	0.000	NA
Isooctane	114.23	0.039	E	0.035	E	0.0013	ND	0.074	NA
Allyl Chloride	76.53	0.007	ND	0.008	ND	0.0283	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0021	ND	0.000	NA
Dimethyl Sulfide	62.13	0.003	ND	0.004	ND	0.0113	ND	0.000	NA
Dimethyl Disulfide	94.2	0.001	ND	0.002	ND	0.0043	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0026	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0028	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0105	E	0.011	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE II-3-S3-V3-A

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate ug	Condensate Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.008	ND	2.926	D	0.0121	ND	2.926	No
Bromomethane	94.95	0.008	ND	1.372	D	0.0121	ND	1.372	No
Vinyl Chloride	62.50	0.007	ND	0.008	ND	0.0103	ND	0.000	NA
Chloroethane	64.52	0.008	ND	0.008	ND	0.0140	ND	0.000	NA
Methylene Chloride	84.94	0.138	D	0.328	D	1.8593	D	2.325	236.7
Acetone	58.08	0.010	ND	0.011	ND	5.5009	D	5.501	NA
Carbon Disulfide	76.14	0.029	E	0.002	ND	0.0051	ND	0.029	NA
1,1-Dichloroethene	96.94	0.005	ND	0.005	ND	0.0173	ND	0.000	NA
1,1-Dichloroethane	98.96	0.002	ND	0.002	ND	0.0048	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.004	ND	0.004	ND	0.0121	ND	0.000	NA
Chloroform	119.38	0.002	ND	0.002	ND	0.0049	ND	0.000	NA
1,2-Dichloroethane	98.96	0.003	ND	0.003	ND	0.0062	ND	0.000	NA
2-Butanone	72.1	0.024	ND	0.022	ND	0.1105	E	0.111	NA
1,1,1-Trichloroethane	133.41	0.002	ND	0.001	ND	0.0072	ND	0.000	NA
Carbon Tetrachloride	153.82	0.002	ND	0.002	ND	0.0084	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0042	ND	0.000	NA
Bromodichloromethane	163.83	0.002	ND	0.002	ND	0.0054	ND	0.000	NA
1,2-Dichloropropane	112.99	0.002	ND	0.002	ND	0.0059	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.002	ND	0.002	ND	0.0051	ND	0.000	NA
Trichloroethene	131.40	0.002	ND	0.002	ND	0.0083	ND	0.000	NA
Dibromochloromethane	208.29	0.002	ND	0.002	ND	0.0061	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.003	ND	0.002	ND	0.0081	ND	0.000	NA
Benzene	78.12	0.024	E	0.014	E	0.0036	ND	0.039	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0048	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.015	ND	0.013	ND	0.0185	ND	0.000	NA
Bromoform	252.77	0.004	ND	0.004	ND	0.0069	ND	0.000	NA
2-Hexanone	100.16	0.003	ND	0.003	ND	0.0377	E	0.038	NA
4-Methyl-2-Pentanone	100.16	0.003	ND	0.003	ND	0.0046	ND	0.000	NA
Tetrachloroethene	163.85	0.002	ND	0.002	ND	0.0094	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.002	ND	0.002	ND	0.0036	ND	0.000	NA
Toluene	92.13	0.024	E	0.154	D	1.6998	D	1.878	630.8
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0036	ND	0.000	NA
Ethylbenzene	106.16	0.001	ND	0.001	ND	0.0045	E	0.005	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0030	ND	0.000	NA
m-/p-Xylene	106.12	0.014	E	0.001	ND	0.0196	E	0.034	NA
o-Xylene	106.12	0.001	ND	0.001	ND	0.0081	E	0.008	NA
Acrolein	56.06	0.118	ND	0.129	ND	0.2324	ND	0.000	No
Acrylonitrile	53.03	0.023	ND	0.025	ND	0.0235	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.003	ND	0.004	ND	0.0073	ND	0.000	NA
Iodomethane	141.94	0.004	ND	0.005	ND	0.0119	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0327	E	0.033	NA
1,4-Dichloro-2-butene	125.00	0.008	ND	0.007	ND	0.0105	ND	0.000	NA
Ethyl methacrylate	114.15	0.002	ND	0.002	ND	0.0049	ND	0.000	NA
1,2,3-Trichloropropane	147.43	0.003	ND	0.003	ND	0.0057	ND	0.000	NA
Trichlorofluoromethane	137.37	0.003	ND	0.004	ND	0.0109	ND	0.000	NA
1,3 Dichlorobenzene	147.00	0.010	ND	0.011	ND	0.0035	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0039	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0036	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.003	ND	0.004	ND	0.0100	ND	0.000	NA
n-Hexane	86.18	0.002	ND	0.002	ND	0.0048	ND	0.000	NA
Tert-Butyl methyl ether	88.15	0.017	ND	0.019	ND	0.0308	ND	0.000	NA
1,3 Butadiene	54.09	0.018	ND	0.020	ND	0.0199	ND	0.000	NA
Vinyl Bromide	106.96	0.005	ND	0.006	ND	0.0162	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.001	ND	0.0013	ND	0.000	NA
Allyl Chloride	76.53	0.008	ND	0.009	ND	0.0273	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0020	ND	0.000	NA
Dimethyl Sulfide	62.13	0.004	ND	0.004	ND	0.0108	ND	0.000	NA
Dimethyl Disulfide	94.2	0.002	ND	0.002	ND	0.0042	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0025	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0027	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0018	ND	0.000	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE III-3-S3-V3-A

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate ug	Condensate Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.010	ND	3.386	D	0.0123	ND	3.386	No
Bromomethane	94.95	0.011	ND	1.671	D	0.0122	ND	1.671	No
Vinyl Chloride	62.50	0.010	ND	0.009	ND	0.0105	ND	0.000	NA
Chloroethane	64.52	0.010	ND	0.009	ND	0.0142	ND	0.000	NA
Methylene Chloride	84.94	0.005	ND	0.152	D	1.2804	D	1.432	No
Acetone	58.08	0.013	ND	0.012	ND	3.9474	D	3.947	NA
Carbon Disulfide	76.14	0.045	E	0.036	E	0.0052	ND	0.081	NA
1,1-Dichloroethene	96.94	0.006	ND	0.006	ND	0.0175	ND	0.000	NA
1,1-Dichloroethane	98.96	0.003	ND	0.003	ND	0.0048	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.005	ND	0.004	ND	0.0123	ND	0.000	NA
Chloroform	119.38	0.003	ND	0.003	ND	0.0050	ND	0.000	NA
1,2-Dichloroethane	98.96	0.004	ND	0.003	ND	0.0063	ND	0.000	NA
2-Butanone	72.1	0.028	ND	0.024	ND	0.1620	E	0.162	NA
1,1,1-Trichloroethane	133.41	0.002	ND	0.002	ND	0.0077	ND	0.000	NA
Carbon Tetrachloride	153.82	0.002	ND	0.002	ND	0.0091	ND	0.000	NA
Vinyl Acetate	86.09	0.002	ND	0.001	ND	0.0045	ND	0.000	NA
Bromodichloromethane	163.83	0.002	ND	0.002	ND	0.0058	ND	0.000	NA
1,2-Dichloropropane	112.99	0.003	ND	0.002	ND	0.0063	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.003	ND	0.002	ND	0.0055	ND	0.000	NA
Trichloroethene	131.40	0.003	ND	0.002	ND	0.0089	ND	0.000	NA
Dibromochloromethane	208.29	0.003	ND	0.002	ND	0.0066	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.003	ND	0.003	ND	0.0087	ND	0.000	NA
Benzene	78.12	0.001	ND	0.037	E	0.0039	ND	0.037	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0052	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.017	ND	0.015	ND	0.0199	ND	0.000	NA
Bromoform	252.77	0.005	ND	0.004	ND	0.0074	ND	0.000	NA
2-Hexanone	100.16	0.003	ND	0.003	ND	0.0615	E	0.061	NA
4-Methyl-2-Pentanone	100.16	0.003	ND	0.003	ND	0.0046	ND	0.000	NA
Tetrachloroethene	163.85	0.002	ND	0.002	ND	0.0095	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.002	ND	0.002	ND	0.0036	ND	0.000	NA
Toluene	92.13	0.016	E	0.263	D	1.0787	D	1.358	1632.0
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0036	ND	0.000	NA
Ethylbenzene	106.16	0.002	ND	0.001	ND	0.0050	E	0.005	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0030	ND	0.000	NA
m-/p-Xylene	106.12	0.001	ND	0.001	ND	0.0182	E	0.018	NA
o-Xylene	106.12	0.001	ND	0.001	ND	0.0087	E	0.009	NA
Acrolein	56.06	0.154	ND	0.139	ND	0.2351	ND	0.000	No
Acrylonitrile	53.03	0.030	ND	0.027	ND	0.0238	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.004	ND	0.004	ND	0.0074	ND	0.000	NA
Iodomethane	141.94	0.006	ND	0.005	ND	0.0120	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0334	E	0.033	NA
1,4-Dichloro-2-butene	125.00	0.010	ND	0.008	ND	0.0113	ND	0.000	NA
Ethyl methacrylate	114.15	0.002	ND	0.002	ND	0.0050	ND	0.000	NA
1,2,3-Trichloropropane	147.43	0.003	ND	0.003	ND	0.0057	ND	0.000	NA
Trichlorofluoromethane	137.37	0.004	ND	0.109	D	0.0111	ND	0.109	No
1,3 Dichlorobenzene	147.00	0.013	ND	0.011	ND	0.0035	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0039	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0037	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.004	ND	0.004	ND	0.0102	ND	0.000	NA
n-Hexane	86.18	0.002	ND	0.063	D	0.0048	ND	0.063	NA
Tert-Butyl methyl ether	88.15	0.022	ND	0.020	ND	0.0312	ND	0.000	NA
1,3 Butadiene	54.09	0.024	ND	0.021	ND	0.0202	ND	0.000	NA
Vinyl Bromide	106.96	0.007	ND	0.006	ND	0.0164	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.001	ND	0.0013	ND	0.000	NA
Allyl Chloride	76.53	0.011	ND	0.010	ND	0.0276	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0020	ND	0.000	NA
Dimethyl Sulfide	62.13	0.005	ND	0.005	ND	0.0110	ND	0.000	NA
Dimethyl Disulfide	94.2	0.002	ND	0.002	ND	0.0042	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0025	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0027	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0018	ND	0.000	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE IV-3-S3-V3-A

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate ug	Condensate Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.011	ND	1.352	D	0.0136	ND	1.352	No
Bromomethane	94.95	0.011	ND	0.939	D	0.0136	ND	0.939	No
Vinyl Chloride	62.50	0.010	ND	0.005	ND	0.0116	ND	0.000	NA
Chloroethane	64.52	0.010	ND	0.006	ND	0.0157	ND	0.000	NA
Methylene Chloride	84.94	0.053	D	0.003	ND	1.2479	D	1.301	NA
Acetone	58.08	0.013	ND	0.007	ND	6.0583	D	6.058	NA
Carbon Disulfide	76.14	0.027	E	0.001	ND	0.0057	ND	0.027	NA
1,1-Dichloroethene	96.94	0.006	ND	0.003	ND	0.0194	ND	0.000	NA
1,1-Dichloroethane	98.96	0.003	ND	0.002	ND	0.0053	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.005	ND	0.003	ND	0.0136	ND	0.000	NA
Chloroform	119.38	0.003	ND	0.002	ND	0.0055	ND	0.000	NA
1,2-Dichloroethane	98.96	0.004	ND	0.002	ND	0.0069	ND	0.000	NA
2-Butanone	72.1	0.025	ND	0.019	ND	0.2416	E	0.242	NA
1,1,1-Trichloroethane	133.41	0.002	ND	0.001	ND	0.0082	ND	0.000	NA
Carbon Tetrachloride	153.82	0.002	ND	0.002	ND	0.0095	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0047	ND	0.000	NA
Bromodichloromethane	163.83	0.002	ND	0.002	ND	0.0061	ND	0.000	NA
1,2-Dichloropropane	112.99	0.002	ND	0.002	ND	0.0066	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.002	ND	0.002	ND	0.0058	ND	0.000	NA
Trichloroethene	131.40	0.002	ND	0.002	ND	0.0094	ND	0.000	NA
Dibromochloromethane	208.29	0.002	ND	0.002	ND	0.0070	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.003	ND	0.002	ND	0.0091	ND	0.000	NA
Benzene	78.12	0.032	E	0.001	ND	0.0041	ND	0.032	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0055	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.015	ND	0.012	ND	0.0210	ND	0.000	NA
Bromoform	252.77	0.005	ND	0.004	ND	0.0078	ND	0.000	NA
2-Hexanone	100.16	0.003	ND	0.003	ND	0.0968	E	0.097	NA
4-Methyl-2-Pentanone	100.16	0.003	ND	0.003	ND	0.0051	ND	0.000	NA
Tetrachloroethene	163.85	0.003	ND	0.003	ND	0.0104	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.002	ND	0.002	ND	0.0039	ND	0.000	NA
Toluene	92.13	0.035	E	0.081	D	0.9279	D	1.043	233.8
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0040	ND	0.000	NA
Ethylbenzene	106.16	0.002	ND	0.002	ND	0.0057	E	0.006	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0033	ND	0.000	NA
m-/p-Xylene	106.12	0.015	E	0.001	ND	0.0210	E	0.036	NA
o-Xylene	106.12	0.001	ND	0.001	ND	0.0081	E	0.008	NA
Acrolein	56.06	0.158	ND	0.084	ND	0.2603	ND	0.000	No
Acrylonitrile	53.03	0.031	ND	0.016	ND	0.0263	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.004	ND	0.002	ND	0.0082	ND	0.000	NA
Iodomethane	141.94	0.006	ND	0.003	ND	0.0133	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0329	E	0.033	NA
1,4-Dichloro-2-butene	125.00	0.008	ND	0.007	ND	0.0119	ND	0.000	NA
Ethyl methacrylate	114.15	0.002	ND	0.002	ND	0.0054	ND	0.000	NA
1,2,3-Trichloropropane	147.43	0.003	ND	0.003	ND	0.0144	E	0.014	NA
Trichlorofluoromethane	137.37	0.004	ND	0.002	ND	0.0122	ND	0.000	NA
1,3 Dichlorobenzene	147.00	0.013	ND	0.007	ND	0.0039	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0043	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0040	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.004	ND	0.002	ND	0.0112	ND	0.000	NA
n-Hexane	86.18	0.002	ND	0.001	ND	0.0054	ND	0.000	NA
Tert-Butyl methyl ether	88.15	0.023	ND	0.012	ND	0.0345	ND	0.000	NA
1,3 Butadiene	54.09	0.024	ND	0.013	ND	0.0223	ND	0.000	NA
Vinyl Bromide	106.96	0.007	ND	0.004	ND	0.0182	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
Allyl Chloride	76.53	0.011	ND	0.006	ND	0.0305	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0022	ND	0.000	NA
Dimethyl Sulfide	62.13	0.005	ND	0.003	ND	0.0121	ND	0.000	NA
Dimethyl Disulfide	94.2	0.002	ND	0.001	ND	0.0047	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0027	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0030	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0020	ND	0.000	NA

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		I-1-S3-V-1A
	Test Date	10/29/91
	Sample Start Time	1715
	Sample Finish Time	1735
Theta	Net Sample Time, Minutes	20
Y	Dry Gas Meter Calibration Factor	0.9722
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	21.641
tm °F	Dry Gas Meter Temperature, Degrees F	95
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	1
Vmstd	Volume of Metered Gas Sample, SL*	19.442
Mfd	Dry Mole Fraction	0.855
Ps	Absolute Flue Gas Pressure, Inches	28.85
ts	Flue Gas Temperature, Degrees F	1519
Qsd	Volumetric Air Flow Rate, Dry SCFM*	22623

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	2.42	59.4	125	7.78E-09	27.4	4.79	0.0105
Bromomethane	94.95	1.22	15.9	62.7	3.92E-09	13.8	2.41	0.005[illegible]
Methylene Chloride	84.94	1.46	21.3	75.3	4.70E-09	16.6	2.90	0.00636
Acetone	58.08	2.75	58.6	141	8.83E-09	31.1	5.43	0.0120
Carbon Disulfide	76.14	0.0164	0.266	0.842	5.26E-11	0.185	0.0324	7.14E-05
2-Butanone	72.1	0.00827	0.142	0.425	2.65E-11	0.0935	0.0163	3.60E-05
1,1,1-Trichloroethane	133.41	0.0169	0.156	0.867	5.41E-11	0.191	0.0333	7.35E-05
Trichloroethene	131.40	0.0379	0.356	1.95	1.22E-10	0.428	0.0748	0.000165
Benzene	78.12	0.0943	1.49	4.85	3.03E-10	1.07	0.187	0.000411
Toluene	92.13	0.527	7.08	27.1	1.69E-09	5.96	1.04	0.00230
Ethylbenzene	106.16	0.00364	0.0424	0.187	1.17E-11	0.0412	0.00719	1.59E-05
m-/p-Xylene	106.12	0.0239	0.279	1.23	7.67E-11	0.270	0.0472	0.000104
o-Xylene	106.12	0.00335	0.0390	0.172	1.07E-11	0.0379	0.00662	1.46E-05
Iodomethane	141.94	0.0369	0.322	1.90	1.18E-10	0.417	0.0729	0.000161
Dibromomethane	173.85	0.00694	0.0494	0.357	2.23E-11	0.0785	0.0137	3.02E-05
Trichlorofluoromethane	137.37	0.0252	0.227	1.29	8.08E-11	0.285	0.0497	0.000110
n-Hexane	86.18	0.0121	0.174	0.623	3.89E-11	0.137	0.0239	5.28E-05
Isooctane	114.23	0.0282	0.306	1.45	9.07E-11	0.319	0.0558	0.000123

* 68 °F (20 °C) – 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		I-1-S3-V-1B
	Test Date	10/29/91
	Sample Start Time	1741
	Sample Finish Time	1821
Theta	Net Sample Time, Minutes	40
Y	Dry Gas Meter Calibration Factor	0.9921
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	19.43
tm °F	Dry Gas Meter Temperature, Degrees F	94
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.55
Vmstd	Volume of Metered Gas Sample, SL*	17.825
Mfd	Dry Mole Fraction	0.855
Ps	Absolute Flue Gas Pressure, Inches	28.85
ts	Flue Gas Temperature, Degrees F	1519
Qsd	Volumetric Air Flow Rate, Dry SCFM*	22623

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	0.375	10.0	21.0	1.31E-09	4.83	0.808	0.00178
Bromomethane	94.95	0.412	5.85	23.1	1.44E-09	5.08	0.888	0.00196
Methylene Chloride	84.94	1.29	20.4	72.2	4.51E-09	15.9	2.78	0.00612
Acetone	58.08	2.79	64.7	156	9.76E-09	34.4	6.01	0.0132
Carbon Disulfide	76.14	0.0166	0.294	0.930	5.80E-11	0.204	0.0357	7.88E-05
2-Butanone	72.1	0.00827	0.155	0.464	2.90E-11	0.102	0.0178	3.93E-05
1,1,1-Trichloroethane	133.41	0.0270	0.273	1.51	9.44E-11	0.333	0.0581	0.000128
Trichloroethene	131.40	0.0253	0.259	1.42	8.85E-11	0.312	0.0545	0.000120
Benzene	78.12	0.0470	0.812	2.64	1.65E-10	0.580	0.101	0.000223
Toluene	92.13	0.528	7.73	29.6	1.85E-09	6.51	1.14	0.00251
Ethylbenzene	106.16	0.00364	0.0462	0.204	1.27E-11	0.0449	0.00785	1.73E-05
m-/p-Xylene	106.12	0.0151	0.192	0.846	5.28E-11	0.186	0.0325	7.17E-05
Dibromomethane	173.85	0.00694	0.054	0.389	2.43E-11	0.0856	0.0150	3.30E-05
Trichlorofluoromethane	137.37	0.00664	0.0653	0.373	2.33E-11	0.0820	0.0143	3.16E-05
P-Cymene	134.22	0.00403	0.0405	0.226	1.41E-11	0.0497	0.00869	1.92E-05

* 68 °F (20 °C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		I-1-S3-V-1C
	Test Date	10/29/91
	Sample Start Time	1835
	Sample Finish Time	1915
Theta	Net Sample Time, Minutes	40
Y	Dry Gas Meter Calibration Factor	0.9722
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	21.35
tm °F	Dry Gas Meter Temperature, Degrees F	93
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.8
Vmstd	Volume of Metered Gas Sample, SL*	19.240
Mfd	Dry Mole Fraction	0.855
Ps	Absolute Flue Gas Pressure, Inches	28.85
ts	Flue Gas Temperature, Degrees F	1519
Qsd	Volumetric Air Flow Rate, Dry SCFM*	22623

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	0.604	15.0	31.4	1.96E-09	6.91	1.21	0.00266
Bromomethane	94.95	0.565	7.44	29.4	1.83E-09	6.46	1.13	0.0[illegible]
Methylene Chloride	84.94	1.45	21.4	75.5	4.71E-09	16.6	2.90	0.00[illegible]
Acetone	58.08	2.71	58.2	141	8.78E-09	30.9	5.40	0.0119
Carbon Disulfide	76.14	0.0777	1.28	4.04	2.52E-10	0.888	0.155	0.000342
2-Butanone	72.1	0.00827	0.143	0.430	2.68E-11	0.0945	0.0165	3.64E-05
1,1,1-Trichloroethane	133.41	0.0142	0.133	0.739	4.62E-11	0.163	0.0284	6.26E-05
Trichloroethene	131.40	0.0101	0.0958	0.523	3.27E-11	0.115	0.0201	4.44E-05
Benzene	78.12	0.0890	1.42	4.63	2.89E-10	1.02	0.178	0.000392
Tetrachloroethene	163.85	0.00852	0.0850	0.443	2.77E-11	0.0974	0.0170	3.75E-05
Toluene	92.13	0.876	11.9	45.5	2.84E-09	10.0	1.75	0.00386
Ethylbenzene	106.16	0.00731	0.0661	0.380	2.37E-11	0.0836	0.0146	3.22E-05
m-/p-Xylene	106.12	0.0266	0.313	1.38	8.63E-11	0.304	0.0531	0.000117
o-Xylene	106.12	0.00475	0.0560	0.247	1.54E-11	0.0543	0.00949	2.09E-05
Dibromomethane	173.85	0.00694	0.0499	0.361	2.25E-11	0.0793	0.0139	3.06E-05
Trichlorofluoromethane	137.37	0.118	1.07	6.12	3.82E-10	1.35	0.235	0.000518
n-Hexane	86.18	0.0223	0.323	1.16	7.22E-11	0.254	0.0445	9.80E-05
Tert-Butyl methyl ether	88.15	0.001000	0.0142	0.0520	3.25E-12	0.0114	0.00200	4.40E-06
Isooctane	114.23	0.0201	0.220	1.05	6.53E-11	0.230	0.0402	8.87E-05
Cumene	120.2	0.00771	0.0802	0.401	2.50E-11	0.0882	0.0154	3.40E-05

* 68 °F (20 °C) – 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		I-1-S3-V-1D
	Test Date	10/29/91
	Sample Start Time	1935
	Sample Finish Time	1955
Theta	Net Sample Time, Minutes	20
Y	Dry Gas Meter Calibration Factor	0.9921
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	17.887
tm °F	Dry Gas Meter Temperature, Degrees F	92
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.8
Vmstd	Volume of Metered Gas Sample, SL*	16.479
Mfd	Dry Mole Fraction	0.855
Ps	Absolute Flue Gas Pressure, Inches	28.85
ts	Flue Gas Temperature, Degrees F	1519
Qsd	Volumetric Air Flow Rate, Dry SCFM*	22623

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	1.19	34.4	72.1	4.50E-09	15.9	2.77	0.00611
Bromomethane	94.95	0.825	12.7	50.1	3.13E-09	11.0	1.92	0.00424
Methylene Chloride	84.94	1.70	29.2	103	6.45E-09	22.7	3.97	0.00875
Acetone	58.08	2.71	68.0	164	1.02E-08	36.1	6.31	0.0139
Carbon Disulfide	76.14	0.0477	0.915	2.90	1.81E-10	0.637	0.111	0.000245
2-Butanone	72.1	0.00827	0.167	0.502	3.13E-11	0.110	0.0193	4.25E-05
Benzene	78.12	0.0593	1.11	3.60	2.25E-10	0.791	0.138	0.000305
Toluene	92.13	0.651	10.3	39.5	2.47E-09	8.68	1.52	0.00335
Ethylbenzene	106.16	0.00364	0.0500	0.221	1.38E-11	0.0486	0.00849	1.87E-05
m-/p-Xylene	106.12	0.0146	0.201	0.887	5.54E-11	0.195	0.0341	7.52E-05
Dibromomethane	173.85	0.00694	0.0583	0.421	2.63E-11	0.0926	0.0162	3.57E-05
n-Hexane	86.18	0.00648	0.110	0.393	2.46E-11	0.0865	0.0151	3.33E-05

* 68 °F (20 °C) – 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		I-2-S3-V-2A
	Test Date	10/30/91
	Sample Start Time	1744
	Sample Finish Time	1804
Theta	Net Sample Time, Minutes	20
Y	Dry Gas Meter Calibration Factor	0.9722
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	22.195
tm °F	Dry Gas Meter Temperature, Degrees F	82
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	1.0
Vmstd	Volume of Metered Gas Sample, SL*	20.418
Mfd	Dry Mole Fraction	0.832
Ps	Absolute Flue Gas Pressure, Inches	28.99
ts	Flue Gas Temperature, Degrees F	1555
Qsd	Volumetric Air Flow Rate, Dry SCFM*	20987

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	0.889	20.8	43.6	2.72E-09	9.20	1.55	0.00342
Bromomethane	94.95	0.676	8.39	33.1	2.07E-09	6.99	1.18	0.0026
Methylene Chloride	84.94	0.358	4.97	17.5	1.10E-09	3.71	0.626	0.0013
Acetone	58.08	1.61	32.7	79.0	4.93E-09	16.7	2.82	0.00621
Carbon Disulfide	76.14	0.0415	0.642	2.03	1.27E-10	0.429	0.0725	0.000160
2-Butanone	72.1	0.383	6.26	18.8	1.17E-09	3.97	0.669	0.00148
Vinyl Acetate	86.09	0.0241	0.330	1.18	7.38E-11	0.250	0.0422	9.30E-05
Trichloroethene	131.40	0.0267	0.239	1.31	8.16E-11	0.276	0.0466	0.000103
Dibromochloromethane	208.29	0.00548	0.0310	0.268	1.68E-11	0.0567	0.00957	2.11E-05
1,1,2-Trichloroethane	133.41	0.0128	0.113	0.629	3.93E-11	0.133	0.0224	4.95E-05
Benzene	78.12	0.0516	0.778	2.53	1.58E-10	0.534	0.0901	0.000199
Bromoform	252.77	0.0255	0.119	1.25	7.80E-11	0.264	0.0445	9.82E-05
2-Hexanone	100.16	0.237	2.79	11.6	7.25E-10	2.45	0.414	0.000913
4-Methyl-2-Pentanone	100.16	0.198	2.33	9.71	6.06E-10	2.05	0.346	0.000763
1,1,2,2-Tetrachloroethane	167.86	0.0449	0.315	2.20	1.37E-10	0.464	0.0783	0.000173
Toluene	92.13	0.380	4.86	18.6	1.16E-09	3.93	0.664	0.00146
Ethylbenzene	106.16	0.00495	0.0549	0.242	1.51E-11	0.0512	0.00864	1.90E-05
m-/p-Xylene	106.12	0.0209	0.232	1.02	6.39E-11	0.216	0.0365	8.05E-05
Acrolein	56.06	0.808	17.0	39.6	2.47E-09	8.35	1.41	0.00311
Iodomethane	141.94	0.0364	0.293	1.73	1.08E-10	0.366	0.0617	0.000136
Dibromomethane	173.85	0.0188	0.127	0.920	5.74E-11	0.194	0.0328	7.23E-05
1,4-Dichloro-2-butene	125.00	0.0305	0.288	1.49	9.33E-11	0.316	0.0533	0.000117
Ethyl methacrylate	114.15	0.0548	0.566	2.69	1.68E-10	0.567	0.0958	0.000211
1,2,3-Trichloropropane	147.43	0.0854	0.682	4.18	2.61E-10	0.883	0.149	0.000329
n-Hexane	86.18	0.0269	0.368	1.32	8.23E-11	0.278	0.0470	0.000104
Isooctane	114.23	0.0379	0.391	1.86	1.16E-10	0.392	0.0663	0.000146

* 68 °F (20 °C) – 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		I-2-S3-V-2B
	Test Date	10/30/91
	Sample Start Time	1820
	Sample Finish Time	1900
Theta	Net Sample Time, Minutes	40
Y	Dry Gas Meter Calibration Factor	0.9921
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	22.415
tm °F	Dry Gas Meter Temperature, Degrees F	78
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.6
Vmstd	Volume of Metered Gas Sample, SL*	21.177
Mfd	Dry Mole Fraction	0.832
Ps	Absolute Flue Gas Pressure, Inches	28.99
ts	Flue Gas Temperature, Degrees F	1555
Qsd	Volumetric Air Flow Rate, Dry SCFM*	20987

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	1.04	23.3	48.9	3.06E-09	10.3	1.74	0.00385
Bromomethane	94.95	0.985	11.8	46.5	2.90E-09	9.83	1.66	0.00366
Methylene Chloride	84.94	0.376	5.03	17.8	1.11E-09	3.75	0.634	0.00140
Acetone	58.08	2.14	41.8	101	6.30E-09	21.3	3.60	0.00793
Carbon Disulfide	76.14	0.0154	0.230	0.727	4.54E-11	0.154	0.0259	5.72E-05
Chloroform	119.38	0.294	2.60	13.9	8.66E-10	2.93	0.495	0.00109
2-Butanone	72.1	0.461	7.27	21.8	1.36E-09	4.60	0.777	0.00171
Vinyl Acetate	86.09	0.0241	0.319	1.14	7.12E-11	0.241	0.0407	8.96E-05
Trichloroethene	131.40	0.0640	0.553	3.02	1.89E-10	0.638	0.108	0.000237
Dibromochloromethane	208.29	0.00548	0.0289	0.259	1.62E-11	0.0547	0.00923	2.03E-05
1,1,2-Trichloroethane	133.41	0.0128	0.109	0.607	3.79E-11	0.128	0.0216	4.77E-05
Benzene	78.12	4.54	66.0	214	1.34E-08	45.3	7.64	0.0168
Bromoform	252.77	0.0255	0.115	1.20	7.52E-11	0.254	0.0429	9.47E-05
2-Hexanone	100.16	0.237	2.69	11.2	6.99E-10	2.36	0.399	0.000880
4-Methyl-2-Pentanone	100.16	0.198	2.25	9.36	5.84E-10	1.98	0.334	0.000736
1,1,2,2-Tetrachloroethane	167.86	0.0449	0.304	2.12	1.32E-10	0.447	0.0755	0.000167
Toluene	92.13	0.447	5.51	21.1	1.32E-09	4.46	0.753	0.00166
Ethylbenzene	106.16	0.0117	0.125	0.554	3.46E-11	0.117	0.0197	4.35E-05
Styrene	104.14	0.00528	0.0576	0.249	1.56E-11	0.0527	0.00890	1.96E-05
m-/p-Xylene	106.12	0.0333	0.357	1.57	9.82E-11	0.332	0.0561	0.000124
o-Xylene	106.12	0.00631	0.0675	0.298	1.86E-11	0.0629	0.0106	2.34E-05
Acrolein	56.06	0.808	16.4	38.1	2.38E-09	8.06	1.36	0.00300
Dibromomethane	173.85	0.0188	0.123	0.887	5.54E-11	0.187	0.0316	6.97E-05
1,4-Dichloro-2-butene	125.00	0.0305	0.277	1.44	8.99E-11	0.304	0.0514	0.000113
Ethyl methacrylate	114.15	0.0548	0.546	2.59	1.62E-10	0.547	0.0923	0.000204
1,2,3-Trichloropropane	147.43	0.0854	0.658	4.03	2.52E-10	0.852	0.144	0.000317
Cumene	120.2	0.0106	0.1000	0.500	3.12E-11	0.106	0.0178	3.93E-05
P-Cymene	134.22	0.0102	0.0863	0.482	3.01E-11	0.102	0.0172	3.79E-05

* 68 °F (20 °C) – 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		I-2-S3-V-2C
	Test Date	10/30/91
	Sample Start Time	1915
	Sample Finish Time	1955
Theta	Net Sample Time, Minutes	40
Y	Dry Gas Meter Calibration Factor	0.9722
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	22.075
tm °F	Dry Gas Meter Temperature, Degrees F	90
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.8
Vmstd	Volume of Metered Gas Sample, SL*	20.372
Mfd	Dry Mole Fraction	0.932
Ps	Absolute Flue Gas Pressure, Inches	28.99
ts	Flue Gas Temperature, Degrees F	1555
Qsd	Volumetric Air Flow Rate, Dry SCFM*	20997

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	1.16	27.2	57.1	3.56E-09	12.1	2.04	0.00449
Bromomethane	94.95	1.02	12.6	49.9	3.11E-09	10.5	1.78	0.0039'
Methylene Chloride	84.94	0.390	5.42	19.2	1.20E-09	4.06	0.683	0.001[illegible]
Acetone	58.08	1.71	34.7	83.7	5.23E-09	17.7	2.99	0.00658
Carbon Disulfide	76.14	0.0247	0.382	1.21	7.56E-11	0.256	0.0432	9.52E-05
2-Butanone	72.1	0.383	6.28	18.8	1.17E-09	3.97	0.671	0.00148
Vinyl Acetate	86.09	0.0241	0.331	1.19	7.40E-11	0.250	0.0423	9.32E-05
Trichloroethene	131.40	0.0267	0.240	1.31	8.17E-11	0.277	0.0467	0.000103
Dibromochloromethane	208.29	0.00548	0.0311	0.269	1.68E-11	0.0568	0.00959	2.11E-05
1,1,2-Trichloroethane	133.41	0.0128	0.114	0.631	3.94E-11	0.133	0.0225	4.96E-05
Benzene	78.12	0.0709	1.07	3.48	2.17E-10	0.735	0.124	0.000274
Bromoform	252.77	0.0255	0.119	1.25	7.81E-11	0.264	0.0446	9.84E-05
2-Hexanone	100.16	0.237	2.80	11.6	7.27E-10	2.46	0.415	0.000915
4-Methyl-2-Pentanone	100.16	0.198	2.34	9.73	6.07E-10	2.06	0.347	0.000765
1,1,2,2-Tetrachloroethane	167.86	0.0449	0.316	2.20	1.37E-10	0.465	0.0785	0.000173
Toluene	92.13	0.357	4.57	17.5	1.09E-09	3.70	0.625	0.00138
Ethylbenzene	106.16	0.00495	0.0550	0.243	1.52E-11	0.0513	0.00866	1.91E-05
m-/p-Xylene	106.12	0.0220	0.245	1.08	6.76E-11	0.229	0.0386	8.51E-05
Acrolein	56.06	0.808	17.0	39.6	2.47E-09	8.37	1.41	0.00312
Dibromomethane	173.85	0.0188	0.128	0.922	5.76E-11	0.195	0.0329	7.25E-05
1,4-Dichloro-2-butene	125.00	0.0305	0.288	1.50	9.35E-11	0.316	0.0534	0.000118
Ethyl methacrylate	114.15	0.0548	0.567	2.69	1.68E-10	0.569	0.0960	0.000212
1,2,3-Trichloropropane	147.43	0.0854	0.884	4.19	2.62E-10	0.885	0.149	0.000329
n-Hexane	86.18	0.00503	0.0689	0.247	1.54E-11	0.0522	0.00881	1.94E-05

* 68 °F (20 °C) – 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		I-2-S3-V-2D
	Test Date	10/30/91
	Sample Start Time	2010
	Sample Finish Time	2030
Theta	Net Sample Time, Minutes	20
Y	Dry Gas Meter Calibration Factor	0.9921
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	19.8
tm °F	Dry Gas Meter Temperature, Degrees F	82
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.8
Vmstd	Volume of Metered Gas Sample, SL*	18.578
Mfd	Dry Mole Fraction	0.832
Ps	Absolute Flue Gas Pressure, Inches	28.99
ts	Flue Gas Temperature, Degrees F	1555
Qsd	Volumetric Air Flow Rate, Dry SCFM*	20987

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	1.41	38.1	75.7	4.72E-09	18.0	2.70	0.00595
Bromomethane	94.95	0.717	9.77	38.6	2.41E-09	9.15	1.38	0.00303
Methylene Chloride	84.94	0.488	7.44	26.3	1.64E-09	5.55	0.937	0.00207
Acetone	58.08	1.61	35.9	86.8	5.42E-09	18.3	3.10	0.00682
Chloroform	119.38	0.0762	0.826	4.10	2.56E-10	0.866	0.146	0.000322
2-Butanone	72.1	0.383	6.88	20.6	1.29E-09	4.36	0.736	0.00162
Vinyl Acetate	86.09	0.0241	0.363	1.30	8.12E-11	0.275	0.0464	0.000102
Trichloroethene	131.40	0.0443	0.436	2.38	1.49E-10	0.503	0.0849	0.000187
Dibromochloromethane	208.29	0.00548	0.0341	0.295	1.84E-11	0.0623	0.0105	2.32E-05
1,1,2-Trichloroethane	133.41	0.0128	0.125	0.691	4.32E-11	0.146	0.0247	5.44E-05
Benzene	78.12	2.57	42.5	138	8.62E-09	29.2	4.93	0.0109
Bromoform	252.77	0.0255	0.131	1.37	8.57E-11	0.290	0.0489	0.000108
2-Hexanone	100.16	0.237	3.06	12.8	7.97E-10	2.70	0.455	0.00100
4-Methyl-2-Pentanone	100.16	0.198	2.56	10.7	6.66E-10	2.25	0.380	0.000839
1,1,2,2-Tetrachloroethane	167.86	0.0449	0.346	2.41	1.51E-10	0.510	0.0861	0.000190
Toluene	92.13	0.337	4.74	18.2	1.13E-09	3.84	0.648	0.00143
Ethylbenzene	106.16	0.00495	0.0603	0.266	1.66E-11	0.0562	0.00949	2.09E-05
m-/p-Xylene	106.12	0.0184	0.224	0.989	6.17E-11	0.209	0.0353	7.77E-05
Acrolein	56.06	0.808	18.7	43.5	2.71E-09	9.18	1.55	0.00342
Dibromomethane	173.85	0.0188	0.140	1.01	6.31E-11	0.214	0.0361	7.95E-05
1,4-Dichloro-2-butene	125.00	0.0305	0.316	1.64	1.03E-10	0.347	0.0586	0.000129
Ethyl methacrylate	114.15	0.0548	0.622	2.95	1.84E-10	0.623	0.105	0.000232
1,2,3-Trichloropropane	147.43	0.0854	0.750	4.60	2.87E-10	0.971	0.164	0.000361
n-Hexane	86.18	0.0101	0.152	0.544	3.40E-11	0.115	0.0194	4.28E-05

* 68 °F (20 °C) – 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		I-3-S3-V-3A
	Test Date	10/31/91
	Sample Start Time	1905
	Sample Finish Time	1945
Theta	Net Sample Time, Minutes	40.0
Y	Dry Gas Meter Calibration Factor	0.9722
Pbar	Barometric Pressure, Inches Hg	29.05
Vm	Volume of Metered Gas Sample, Liters	23.06
tm °F	Dry Gas Meter Temperature, Degrees F	79
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.800
Vmstd	Volume of Metered Gas Sample, SL*	21.357
Mfd	Dry Mole Fraction	0.850
Ps	Absolute Flue Gas Pressure, Inches	28.84
ts	Flue Gas Temperature, Degrees F	1543
Qsd	Volumetric Air Flow Rate, Dry SCFM*	25490

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	2.33	52.0	109	6.81E-09	23.6	4.73	0.0104
Bromomethane	94.95	2.02	24.0	94.7	5.91E-09	20.5	4.10	0.00904
Methylene Chloride	84.94	1.97	26.1	92.3	5.76E-09	19.9	4.00	0.009
Acetone	58.08	6.74	131	315	1.97E-08	68.1	13.7	0.03
Carbon Disulfide	76.14	0.129	1.91	6.03	3.77E-10	1.30	0.261	0.000576
2-Butanone	72.1	0.114	1.78	5.32	3.32E-10	1.15	0.231	0.000508
Benzene	78.12	0.0384	0.554	1.80	1.12E-10	0.388	0.0779	0.000172
2-Hexanone	100.16	0.0290	0.327	1.36	8.49E-11	0.294	0.0589	0.000130
Toluene	92.13	1.65	20.1	77.1	4.82E-09	16.7	3.34	0.00736
Ethylbenzene	106.16	0.00512	0.0544	0.240	1.50E-11	0.0518	0.0104	2.29E-05
m-/p-Xylene	106.12	0.0342	0.363	1.60	1.00E-10	0.346	0.0694	0.000153
o-Xylene	106.12	0.00837	0.0889	0.392	2.45E-11	0.0847	0.0170	3.74E-05
Dibromomethane	173.85	0.0361	0.234	1.69	1.06E-10	0.365	0.0733	0.000161
n-Hexane	86.18	0.0336	0.439	1.57	9.81E-11	0.340	0.0681	0.000150
Isooctane	114.23	0.0743	0.733	3.48	2.17E-10	0.751	0.151	0.000332
P-Cymene	134.22	0.0105	0.0885	0.494	3.08E-11	0.107	0.0214	4.71E-05

* 68 °F (20 °C) – 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		II-1-S3-V-1A
	Test Date	10/29/91
	Sample Start Time	2145
	Sample Finish Time	2225
Theta	Net Sample Time, Minutes	40
Y	Dry Gas Meter Calibration Factor	0.9722
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	22.046
tm °F	Dry Gas Meter Temperature, Degrees F	80
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.8
Vmstd	Volume of Metered Gas Sample, SL*	20.345
Mfd	Dry Mole Fraction	0.852
Ps	Absolute Flue Gas Pressure, Inches	28.99
ts	Flue Gas Temperature, Degrees F	1507
Qsd	Volumetric Air Flow Rate, Dry SCFM*	20394

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	1.50	35.1	73.8	4.60E-09	16.3	2.55	0.00563
Bromomethane	94.95	0.992	12.4	48.8	3.04E-09	10.8	1.69	0.00373
Methylene Chloride	84.94	2.57	35.8	126	7.89E-09	28.0	4.38	0.0097
Acetone	58.08	6.17	126	303	1.89E-08	67.2	10.5	0.0232
2-Butanone	72.1	0.0900	1.48	4.42	2.76E-10	0.980	0.153	0.000338
Trichloroethene	131.40	0.0178	0.160	0.875	5.46E-11	0.194	0.0303	6.69E-05
Benzene	78.12	0.102	1.54	4.99	3.12E-10	1.11	0.173	0.000381
2-Hexanone	100.16	0.0540	0.637	2.65	1.66E-10	0.588	0.0920	0.000203
Toluene	92.13	1.07	13.7	52.4	3.27E-09	11.6	1.81	0.00400
Ethylbenzene	106.16	0.00256	0.0295	0.126	7.86E-12	0.0278	0.00436	9.60E-06
m-/p-Xylene	106.12	0.0250	0.278	1.23	7.67E-11	0.272	0.0426	0.000094
Dibromomethane	173.85	0.0157	0.107	0.771	4.81E-11	0.171	0.0267	5.89E-05
Ethyl methacrylate	114.15	0.0104	0.108	0.511	3.19E-11	0.113	0.0177	3.90E-05
Trichlorofluoromethane	137.37	0.0490	0.422	2.41	1.50E-10	0.534	0.0835	0.000184
n-Hexane	86.18	0.0199	0.273	0.977	6.10E-11	0.217	0.0339	7.47E-05

* 68 °F (20 °C) – 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		II-1-S3-V-18
	Test Date	10/29/91
	Sample Start Time	2300
	Sample Finish Time	2340
Theta	Net Sample Time, Minutes	40
Y	Dry Gas Meter Calibration Factor	0.9921
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	19.935
tm °F	Dry Gas Meter Temperature, Degrees F	72
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.6
Vmstd	Volume of Metered Gas Sample, SL*	19.047
Mfd	Dry Mole Fraction	0.852
Ps	Absolute Flue Gas Pressure, Inches	28.99
ts	Flue Gas Temperature, Degrees F	1507
Qsd	Volumetric Air Flow Rate, Dry SCFM*	20394

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	2.02	50.6	106	6.64E-09	23.5	3.68	0.00812
Bromomethane	94.95	1.62	21.5	85.1	5.31E-09	18.8	2.95	0.00650
Methylene Chloride	84.94	2.36	35.1	124	7.74E-09	27.5	4.30	0.009[illegible]
Acetone	58.08	6.17	134	324	2.02E-08	71.8	11.2	0.024[illegible]
Carbon Disulfide	76.14	0.0244	0.405	1.28	8.01E-11	0.284	0.0445	0.000098
2-Butanone	72.1	0.0900	1.58	4.73	2.95E-10	1.05	0.164	0.000361
Benzene	78.12	0.0515	0.833	2.71	1.69E-10	0.599	0.094	0.000207
2-Hexanone	100.16	0.0540	0.681	2.83	1.77E-10	0.628	0.098	0.000217
Toluene	92.13	0.799	11.0	41.9	2.62E-09	9.29	1.45	0.00320
Ethylbenzene	106.16	0.0218	0.260	1.15	7.15E-11	0.254	0.0397	8.75E-05
m-/p-Xylene	106.12	0.00856	0.102	0.450	2.81E-11	0.0996	0.0156	3.44E-05
Dibromomethane	173.85	0.0157	0.114	0.824	5.14E-11	0.183	0.0285	6.29E-05
Ethyl methacrylate	114.15	0.0104	0.115	0.545	3.41E-11	0.121	0.0189	4.17E-05
n-Hexane	86.18	0.0103	0.151	0.543	3.39E-11	0.120	0.0188	4.15E-05

* 68 °F (20 °C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		II-2-S3-V-2A
	Test Date	10/30/91
	Sample Start Time	2310
	Sample Finish Time	2350
Theta	Net Sample Time, Minutes	40
Y	Dry Gas Meter Calibration Factor	0.9722
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	21.33
tm °F	Dry Gas Meter Temperature, Degrees F	80
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	1.0
Vmstd	Volume of Metered Gas Sample, SL*	19.695
Mfd	Dry Mole Fraction	0.947
Ps	Absolute Flue Gas Pressure, Inches	28.99
ts	Flue Gas Temperature, Degrees F	1545
Qsd	Volumetric Air Flow Rate, Dry SCFM*	19231

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	1.44	34.8	73.1	4.56E-09	15.8	2.39	0.00526
Bromomethane	94.95	0.897	11.5	45.5	2.84E-09	9.84	1.49	0.00328
Methylene Chloride	84.94	0.993	14.3	50.4	3.15E-09	10.9	1.65	0.00363
Acetone	58.08	3.52	74.0	179	1.12E-08	38.8	5.84	0.0129
2-Butanone	72.1	0.0895	1.52	4.54	2.84E-10	0.982	0.148	0.000327
Benzene	78.12	0.0521	0.815	2.65	1.65E-10	0.572	0.0865	0.000191
2-Hexanone	100.16	0.0470	0.574	2.39	1.49E-10	0.516	0.0780	0.000172
Toluene	92.13	0.945	12.5	48.0	3.00E-09	10.4	1.57	0.00346
Ethylbenzene	106.16	0.00582	0.0670	0.296	1.85E-11	0.0639	0.00966	2.13E-05
m-/p-Xylene	106.12	0.0387	0.445	1.96	1.23E-10	0.424	0.0641	0.000141
o-Xylene	106.12	0.0109	0.125	0.552	3.45E-11	0.119	0.0180	3.98E-05
Dibromomethane	173.85	0.0333	0.234	1.69	1.05E-10	0.365	0.0552	0.000122

* 68 °F (20 °C) – 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		II-3-S3-V-3A
	Test Date	10/31/91
	Sample Start Time	2240
	Sample Finish Time	2320
Theta	Net Sample Time, Minutes	40
Y	Dry Gas Meter Calibration Factor	0.9722
Pbar	Barometric Pressure, Inches Hg	29.04
Vm	Volume of Metered Gas Sample, Liters	23.798
tm °F	Dry Gas Meter Temperature, Degrees F	76
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.8
Vmstd	Volume of Metered Gas Sample, SL*	22.157
Mfd	Dry Mole Fraction	0.831
Ps	Absolute Flue Gas Pressure, Inches	28.84
ts	Flue Gas Temperature, Degrees F	1522
Qsd	Volumetric Air Flow Rate, Dry SCFM*	23289

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	2.93	62.9	132	8.26E-09	28.2	5.23	0.01[illegible]
Bromomethane	94.95	1.37	15.7	61.9	3.87E-09	13.2	2.45	0.005
Methylene Chloride	84.94	2.33	29.7	105	6.55E-09	22.4	4.15	0.009
Acetone	58.08	5.50	103	248	1.55E-08	53.0	9.83	0.0217
Carbon Disulfide	76.14	0.0290	0.414	1.31	8.18E-11	0.280	0.0518	0.000114
2-Butanone	72.1	0.111	1.66	4.99	3.11E-10	1.06	0.197	0.000435
Benzene	78.12	0.0385	0.535	1.74	1.09E-10	0.371	0.0688	0.000152
2-Hexanone	100.16	0.0377	0.408	1.70	1.06E-10	0.363	0.0673	0.000148
Toluene	92.13	1.88	22.1	84.8	5.29E-09	18.1	3.35	0.00739
Ethylbenzene	106.16	0.00451	0.0462	0.204	1.27E-11	0.0435	0.00806	1.78E-05
m-/p-Xylene	106.12	0.0338	0.346	1.53	9.52E-11	0.325	0.0604	0.000133
o-Xylene	106.12	0.00806	0.0824	0.364	2.27E-11	0.0776	0.0144	3.17E-05
Dibromomethane	173.85	0.0327	0.204	1.48	9.22E-11	0.315	0.0584	0.000129

* 68 °F (20 °C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		III-1-S3-V-18
	Test Date	10/30/91
	Sample Start Time	630
	Sample Finish Time	710
Theta	Net Sample Time, Minutes	40
Y	Dry Gas Meter Calibration Factor	0.9722
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	24.37
tm °F	Dry Gas Meter Temperature, Degrees F	66
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.8
Vmstd	Volume of Metered Gas Sample, SL*	23.089
Mfd	Dry Mole Fraction	0.858
Ps	Absolute Flue Gas Pressure, Inches	28.99
ts	Flue Gas Temperature, Degrees F	1504
Qsd	Volumetric Air Flow Rate, Dry SCFM*	14474

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	1.49	30.8	64.6	4.03E-09	14.4	1.59	0.00350
Bromomethane	94.95	1.02	11.2	44.0	2.75E-09	9.84	1.08	0.00239
Methylene Chloride	84.94	1.53	18.8	66.2	4.14E-09	14.8	1.63	0.00359
Acetone	58.08	5.56	89.8	241	1.50E-08	53.8	5.92	0.0131
Carbon Disulfide	76.14	0.0100	0.137	0.434	2.71E-11	0.0970	0.0107	2.35E-05
2-Butanone	72.1	0.0570	0.824	2.47	1.54E-10	0.552	0.0607	0.000134
1,1,1-Trichloroethane	133.41	0.0156	0.122	0.675	4.21E-11	0.151	0.0166	3.66E-05
Trichloroethene	131.40	0.0481	0.392	2.08	1.30E-10	0.466	0.0513	0.000113
Benzene	78.12	0.0887	1.18	3.84	2.40E-10	0.859	0.0944	0.000208
Toluene	92.13	1.24	14.0	53.7	3.35E-09	12.0	1.32	0.00291
Ethylbenzene	106.16	0.00981	0.0963	0.425	2.65E-11	0.0949	0.0104	2.30E-05
m-/p-Xylene	106.12	0.0219	0.215	0.949	5.93E-11	0.212	0.0233	5.15E-05
Acrolein	56.06	0.600	11.2	26.0	1.62E-09	5.81	0.640	0.00141
Dibromomethane	173.85	0.0142	0.0850	0.614	3.83E-11	0.137	0.0151	3.33E-05
n-Hexane	86.18	0.188	2.27	8.15	5.09E-10	1.82	0.200	0.000442
Isooctane	114.23	0.329	3.00	14.3	8.90E-10	3.19	0.351	0.000773
Dimethyl Sulfide	62.13	0.0365	0.613	1.58	9.88E-11	0.354	0.0389	8.58E-05

* 68 °F (20 °C) – 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		III-1-S3-V-1C
	Test Date	10/30/91
	Sample Start Time	930
	Sample Finish Time	1030
Theta	Net Sample Time, Minutes	40
Y	Dry Gas Meter Calibration Factor	0.9921
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	20.0
tm °F	Dry Gas Meter Temperature, Degrees F	83
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.5
Vmstd	Volume of Metered Gas Sample, SL*	18.717
Mfd	Dry Mole Fraction	0.859
Ps	Absolute Flue Gas Pressure, Inches	28.99
ts	Flue Gas Temperature, Degrees F	1504
Qsd	Volumetric Air Flow Rate, Dry SCFM*	14474

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Methylene Chloride	84.94	1.44	21.8	76.9	4.80E-09	17.2	1.89	0.00417
Acetone	58.08	6.32	140	338	2.11E-08	75.5	8.31	0.01'
2-Butanone	72.1	0.05702	1.02	3.05	1.90E-10	0.681	0.0749	0.0001
Benzene	78.12	16.7116	275	893	5.57E-08	200	22.0	0.0484
Toluene	92.13	1.519	21.2	81.2	5.07E-09	18.1	2.00	0.00440
Ethylbenzene	106.16	0.00981	0.119	0.524	3.27E-11	0.117	0.0129	2.84E-05
Styrene	104.14	0.14	1.74	7.52	4.70E-10	1.68	0.185	0.000408
m-/p-Xylene	106.12	0.0084	0.102	0.449	2.80E-11	0.100	0.0110	2.43E-05
Acrolein	56.06	436.60	10,010	23,327	1.46E-06	5,213	574	1.26
Dibromomethane	173.85	0.01418	0.105	0.757	4.73E-11	0.169	0.0186	4.11E-05
Dimethyl Sulfide	62.13	0.04	0.756	1.95	1.22E-10	0.436	0.0480	0.000106

* 68 °F (20 °C) – 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		III-2-S3-V-2B
	Test Date	10/31/91
	Sample Start Time	700
	Sample Finish Time	740
Theta	Net Sample Time, Minutes	40
Y	Dry Gas Meter Calibration Factor	0.9921
Pbar	Barometric Pressure, Inches Hg	28.8
Vm	Volume of Metered Gas Sample, Liters	21.96
tm °F	Dry Gas Meter Temperature, Degrees F	63
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.6
Vmstd	Volume of Metered Gas Sample, SL*	21.195
Mfd	Dry Mole Fraction	0.859
Ps	Absolute Flue Gas Pressure, Inches	28.79
ts	Flue Gas Temperature, Degrees F	1520
Qsd	Volumetric Air Flow Rate, Dry SCFM*	14043

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	1.84	41.3	86.7	5.41E-09	19.1	2.07	0.00456
Bromomethane	94.95	1.21	14.5	57.3	3.58E-09	12.6	1.37	0.00301
Methylene Chloride	84.94	1.19	15.9	56.3	3.51E-09	12.4	1.34	0.00296
Acetone	58.08	5.38	105	254	1.58E-08	56.0	6.06	0.0134
Carbon Disulfide	76.14	0.0122	0.182	0.575	3.59E-11	0.127	0.0137	3.02E-05
Chloroform	119.38	0.0956	0.909	4.51	2.82E-10	0.995	0.108	0.000237
2-Butanone	72.1	0.0790	1.24	3.73	2.33E-10	0.822	0.0889	0.000196
Trichloroethane	131.40	0.0316	0.273	1.49	9.31E-11	0.329	0.0356	7.84E-05
Benzene	78.12	0.296	4.29	13.9	8.71E-10	3.07	0.333	0.000734
2-Hexanone	100.16	0.0426	0.482	2.01	1.25E-10	0.443	0.0479	1.06E-04
Toluene	92.13	1.04	12.8	49.1	3.07E-09	10.8	1.17	0.00258
Ethylbenzene	106.16	0.00623	0.0666	0.294	1.84E-11	0.0648	0.00701	1.55E-05
m-/p-Xylene	106.12	0.0214	0.229	1.01	6.30E-11	0.222	0.0241	5.30E-05
o-Xylene	106.12	0.00877	0.0938	0.414	2.58E-11	0.0912	0.00987	2.18E-05
Iodomethane	141.94	0.0881	0.705	4.16	2.60E-10	0.916	0.0992	0.000219
Dibromomethane	173.85	0.0339	0.222	1.60	1.00E-10	0.353	0.0382	8.42E-05

* 68 °F (20 °C) – 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		III-3-S3-V-3A
	Test Date	11/1/91
	Sample Start Time	500
	Sample Finish Time	540
Theta	Net Sample Time, Minutes	40
Y	Dry Gas Meter Calibration Factor	0.9722
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	23.495
tm °F	Dry Gas Meter Temperature, Degrees F	68
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.8
Vmstd	Volume of Metered Gas Sample, SL*	22.176
Mfd	Dry Mole Fraction	0.858
Ps	Absolute Flue Gas Pressure, Inches	28.69
ts	Flue Gas Temperature, Degrees F	1536
Qsd	Volumetric Air Flow Rate, Dry SCFM*	23774

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	3.39	72.8	153	9.53E-09	33.2	6.17	0.0136
Bromomethane	94.95	1.67	19.1	75.3	4.70E-09	16.4	3.04	0.0067
Methylene Chloride	84.94	1.43	18.3	64.6	4.03E-09	14.1	2.61	0.005.
Acetone	58.08	3.95	73.7	178	1.11E-08	38.7	7.19	0.0159
Carbon Disulfide	76.14	0.0807	1.15	3.64	2.27E-10	0.792	0.147	0.000324
2-Butanone	72.1	0.162	2.44	7.31	4.56E-10	1.59	0.295	0.000651
Benzene	78.12	0.0365	0.507	1.65	1.03E-10	0.359	0.0666	0.000147
2-Hexanone	100.16	0.0615	0.666	2.77	1.73E-10	0.604	0.112	0.000247
Toluene	92.13	1.36	16.0	61.2	3.82E-09	13.3	2.47	0.00545
Ethylbenzene	106.16	0.00498	0.0509	0.224	1.40E-11	0.0489	0.00907	2.00E-05
m-/p-Xylene	106.12	0.0182	0.186	0.821	5.13E-11	0.179	0.0332	7.31E-05
o-Xylene	106.12	0.00875	0.0894	0.394	2.46E-11	0.0858	0.0159	3.51E-05
Dibromomethane	173.85	0.0334	0.208	1.51	9.40E-11	0.328	0.0608	0.000134
Trichlorofluoromethane	137.37	0.109	0.858	4.90	3.06E-10	1.07	0.198	0.000437
n-Hexane	86.18	0.0630	0.793	2.84	1.77E-10	0.618	0.115	0.000253

* 68 °F (20 °C) – 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		IV-1-S3-V-1A
	Test Date	10/30/91
	Sample Start Time	1130
	Sample Finish Time	1210
Theta	Net Sample Time, Minutes	40
Y	Dry Gas Meter Calibration Factor	0.9921
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	20
tm °F	Dry Gas Meter Temperature, Degrees F	87
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.6
Vmstd	Volume of Metered Gas Sample, SL*	18.585
Mfd	Dry Mole Fraction	0.874
Ps	Absolute Flue Gas Pressure, Inches	28.99
ts	Flue Gas Temperature, Degrees F	1541
Qsd	Volumetric Air Flow Rate, Dry SCFM*	18589

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	1.08	27.6	58.0	3.62E-09	13.0	1.83	0.00404
Bromomethane	94.95	0.847	11.5	45.6	2.84E-09	10.2	1.44	0.00317
Methylene Chloride	84.94	0.460	7.01	24.7	1.55E-09	5.53	0.782	0.00172
Acetone	58.08	8.92	199	480	3.00E-08	107	15.2	0.0334
2-Butanone	72.1	0.133	2.39	7.16	4.47E-10	1.60	0.226	0.000499
Vinyl Acetate	86.09	0.0123	0.186	0.664	4.15E-11	0.148	0.0210	4.63E-05
Benzene	78.12	12.2	203	659	4.11E-08	147	20.8	0.0458
2-Hexanone	100.16	0.0607	0.784	3.27	2.04E-10	0.730	0.103	0.000227
Toluene	92.13	0.836	11.7	45.0	2.81E-09	10.1	1.42	0.00313
Chlorobenzene	112.56	0.0312	0.359	1.68	1.05E-10	0.376	0.0531	0.000117
Ethylbenzene	106.16	0.00689	0.0840	0.371	2.31E-11	0.0828	0.0117	2.58E-05
Styrene	104.14	0.0377	0.469	2.03	1.27E-10	0.453	0.0641	0.000141
m-/p-Xylene	106.12	0.0468	0.570	2.52	1.57E-10	0.562	0.0795	0.000175
o-Xylene	106.12	0.00845	0.103	0.455	2.84E-11	0.102	0.0144	3.17E-05
Acrolein	56.06	0.992	22.9	53.4	3.33E-09	11.9	1.69	0.00372
Dibromomethane	173.85	0.0179	0.133	0.963	6.01E-11	0.215	0.0304	6.71E-05
Ethyl methacrylate	114.15	0.0140	0.159	0.753	4.70E-11	0.168	0.0238	5.24E-05
1,2,3-Trichloropropane	147.43	0.0137	0.121	0.739	4.61E-11	0.165	0.0233	5.14E-05
n-Hexane	86.18	0.150	2.25	8.06	5.03E-10	1.80	0.255	0.000561
Cumene	120.2	0.0153	0.165	0.825	5.15E-11	0.184	0.0261	5.74E-05

* 68 °F (20 °C) – 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		IV-1-S3-V-1C
	Test Date	10/30/91
	Sample Start Time	1451
	Sample Finish Time	1531
Theta	Net Sample Time, Minutes	40
Y	Dry Gas Meter Calibration Factor	0.9921
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	20.0
tm °F	Dry Gas Meter Temperature, Degrees F	92
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.6
Vmstd	Volume of Metered Gas Sample, SL*	18.416
Mfd	Dry Mole Fraction	0.874
Ps	Absolute Flue Gas Pressure, Inches	28.99
ts	Flue Gas Temperature, Degrees F	1541
Qsd	Volumetric Air Flow Rate, Dry SCFM*	18589

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	0.564	14.6	30.6	1.91E-09	6.84	0.967	0.00213
Bromomethane	94.95	0.555	7.63	30.1	1.88E-09	6.73	0.951	0.002[illegible]
Methylene Chloride	84.94	0.406	6.24	22.0	1.38E-09	4.93	0.696	0.001[illegible]
Acetone	58.08	3.43	77.1	186	1.16E-08	41.6	5.88	0.0130
Carbon Disulfide	76.14	0.0170	0.292	0.923	5.76E-11	0.206	0.0292	6.43E-05
2-Butanone	72.1	0.133	2.41	7.23	4.51E-10	1.62	0.228	0.000503
1,1,1-Trichloroethane	133.41	0.0173	0.170	0.942	5.88E-11	0.210	0.0298	6.56E-05
Vinyl Acetate	86.09	0.0123	0.187	0.670	4.19E-11	0.150	0.0212	4.67E-05
Benzene	78.12	0.153	2.55	8.29	5.18E-10	1.85	0.262	0.000578
2-Hexanone	100.16	0.0607	0.791	3.30	2.06E-10	0.736	0.104	0.000229
Toluene	92.13	0.582	8.26	31.6	1.97E-09	7.07	0.999	0.00220
Ethylbenzene	106.16	0.0131	0.161	0.711	4.44E-11	0.159	0.0225	4.95E-05
m-/p-Xylene	106.12	0.0185	0.227	1.00	6.26E-11	0.224	0.0317	6.98E-05
Acrolein	56.06	0.992	23.1	53.8	3.36E-09	12.0	1.70	0.00375
Dibromomethane	173.85	0.0179	0.134	0.972	6.07E-11	0.217	0.0307	6.77E-05
Ethyl methacrylate	114.15	0.0140	0.160	0.760	4.75E-11	0.170	0.0240	5.29E-05
1,2,3-Trichloropropane	147.43	0.0137	0.122	0.745	4.65E-11	0.167	0.0236	5.19E-05
n-Hexane	86.18	0.0154	0.233	0.834	5.21E-11	0.186	0.0263	5.81E-05

* 68 °F (20 °C) -- 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		IV-2-S3-V-2A
	Test Date	10/31/91
	Sample Start Time	1200
	Sample Finish Time	1240
Theta	Net Sample Time, Minutes	40.0
Y	Dry Gas Meter Calibration Factor	0.9722
Pbar	Barometric Pressure, Inches Hg	28.8
Vm	Volume of Metered Gas Sample, Liters	23.288
tm °F	Dry Gas Meter Temperature, Degrees F	93.0
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.8
Vmstd	Volume of Metered Gas Sample, SL*	20.842
Mfd	Dry Mole Fraction	0.868
Ps	Absolute Flue Gas Pressure, Inches	28.79
ts	Flue Gas Temperature, Degrees F	1498
Qsd	Volumetric Air Flow Rate, Dry SCFM*	20784

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Bromomethane	94.95	1.53	18.6	73.6	4.60E-09	16.6	2.60	0.00573
Methylene Chloride	84.94	1.15	15.7	55.3	3.45E-09	12.4	1.95	0.00430
Acetone	58.08	5.37	107	258	1.61E-08	58.0	9.10	0.0201
2-Butanone	72.1	0.132	2.12	6.34	3.96E-10	1.43	0.224	0.000494
Benzene	78.12	0.0562	0.831	2.70	1.68E-10	0.608	0.0953	0.000210
2-Hexanone	100.16	0.0313	0.361	1.50	9.39E-11	0.339	0.0531	0.000117
Toluene	92.13	1.23	15.5	59.2	3.70E-09	13.3	2.08	0.00461
Ethylbenzene	106.16	0.00670	0.0729	0.322	2.01E-11	0.0724	0.0114	2.50E-05
m-/p-Xylene	106.12	0.0375	0.408	1.80	1.12E-10	0.405	0.0635	0.000140
o-Xylene	106.12	0.0100	0.109	0.481	3.00E-11	0.108	0.0170	3.74E-05
Dibromomethane	173.85	0.0320	0.212	1.53	9.58E-11	0.346	0.0542	0.000119
Dimethyl Sulfide	62.13	0.0521	0.968	2.50	1.56E-10	0.563	0.0883	0.000195

* 68 °F (20 °C) – 29.92 Inches of Mercury (Hg)

FIELD DATA AND RESULTS TABULATION

PLANT: Jewell Coal & Coke Company, Vansant, Virginia

SAMPLING LOCATION: Stack No. 3

		IV-3-S3-V-3A
	Test Date	11/1/91
	Sample Start Time	1200
	Sample Finish Time	1240
Theta	Net Sample Time, Minutes	40
Y	Dry Gas Meter Calibration Factor	0.9722
Pbar	Barometric Pressure, Inches Hg	29.0
Vm	Volume of Metered Gas Sample, Liters	24.44
tm °F	Dry Gas Meter Temperature, Degrees F	88
Delta-H	Avg. Pressure Differential of Meter, Inches H2O	0.8
Vmstd	Volume of Metered Gas Sample, SL*	22.226
Mfd	Dry Mole Fraction	0.87
Ps	Absolute Flue Gas Pressure, Inches	28.69
ts	Flue Gas Temperature, Degrees F	1502
Qsd	Volumetric Air Flow Rate, Dry SCFM*	20279

Compound	Fwt	ug	ppbvd	ug/DSCM	lb/DSCF	ug/ACM	g/hr	lb/hr
Chloromethane	50.49	1.35	29.0	60.8	3.80E-09	13.7	2.10	0.00462
Bromomethane	94.95	0.939	10.7	42.2	2.64E-09	9.48	1.46	0.00321
Methylene Chloride	84.94	1.30	16.6	58.5	3.66E-09	13.1	2.02	0.004
Acetone	58.08	6.06	113	273	1.70E-08	61.2	9.39	0.02
Carbon Disulfide	76.14	0.0274	0.389	1.23	7.68E-11	0.276	0.0424	9.35E-05
2-Butanone	72.1	0.242	3.63	10.9	6.79E-10	2.44	0.375	0.000826
Benzene	78.12	0.0324	0.449	1.46	9.10E-11	0.327	0.0502	0.000111
2-Hexanone	100.16	0.0968	1.05	4.36	2.72E-10	0.978	0.150	0.000331
Toluene	92.13	1.04	12.3	46.9	2.93E-09	10.5	1.62	0.00357
Ethylbenzene	106.16	0.00573	0.0584	0.258	1.61E-11	0.0579	0.00888	1.96E-05
m-/p-Xylene	106.12	0.0364	0.371	1.64	1.02E-10	0.368	0.0565	0.000124
o-Xylene	106.12	0.00815	0.0831	0.367	2.29E-11	0.0823	0.0126	2.78E-05
Dibromomethane	173.85	0.0329	0.205	1.48	9.24E-11	0.332	0.0510	0.000112
1,2,3-Trichloropropane	147.43	0.0144	0.106	0.647	4.04E-11	0.145	0.0223	4.91E-05

* 68 °F (20 °C) -- 29.92 Inches of Mercury (Hg)

VOST CONDENSATE CONVERSIONS

Final Volume	I-1-S3-V1				I-2-S3-V2				I-3-S3-V3			
0.05												
Run #:	Condensate A-D				Condensate A-D				Condensate A			
Compounds	Concentration ug/L		Catch Weight ug		Concentration ug/L		Catch Weight ug		Concentration ug/L		Catch Weight ug	
Chloromethane	0.3	ND	0.0125	ND	0.3	ND	0.0129	ND	0.3	ND	0.0126	ND
Bromomethane	0.3	ND	0.0134	ND	0.3	ND	0.0138	ND	0.3	ND	0.0126	ND
Vinyl chloride	0.2	ND	0.0102	ND	0.2	ND	0.0105	ND	0.2	ND	0.0107	ND
Chloroethane	0.3	ND	0.0136	ND	0.3	ND	0.0139	ND	0.3	ND	0.0146	ND
Methylene chloride	96.2	D	4.8104	D	25.2	D	1.2623	D	34.4	D	1.7203	D
Acetone	216.4	D	10.8203	D	129.0	D	6.4500	D	134.7	D	6.7351	D
Carbon disulfide	0.1	ND	0.0065	ND	0.1	ND	0.0067	ND	0.1	ND	0.0053	ND
1,1-Dichloroethene	0.6	ND	0.0294	ND	0.6	ND	0.0302	ND	0.4	ND	0.0180	ND
1,1-Dichloroethane	0.1	ND	0.0056	ND	0.1	ND	0.0057	ND	0.1	ND	0.0049	ND
trans-1,2-Dichloroethene	0.3	ND	0.0171	ND	0.4	ND	0.0176	ND	0.3	ND	0.0126	ND
Chloroform	0.1	ND	0.0058	ND	0.1	ND	0.0059	ND	0.1	ND	0.0051	ND
1,2-Dichloroethane	0.1	ND	0.0069	ND	0.1	ND	0.0071	ND	0.1	ND	0.0064	ND
2-Butanone	0.7	E	0.0331	E	30.7	D	1.5332	D	2.3	E	0.1137	E
1,1,1-Trichloroethane	0.2	ND	0.0083	ND	0.2	ND	0.0079	ND	0.2	ND	0.0076	ND
Carbon tetrachloride	0.2	ND	0.0096	ND	0.2	ND	0.0092	ND	0.2	ND	0.0089	ND
Vinyl acetate	0.1	ND	0.0046	ND	1.9	E	0.0966	E	0.1	ND	0.0044	ND
Bromodichloromethane	0.1	ND	0.0060	ND	0.1	ND	0.0058	ND	0.1	ND	0.0057	ND
1,2-Dichloropropane	0.1	ND	0.0057	ND	0.1	ND	0.0055	ND	0.1	ND	0.0062	ND
trans-1,3-Dichloropropene	0.1	ND	0.0060	ND	0.1	ND	0.0058	ND	0.1	ND	0.0054	ND
Trichloroethene	0.2	ND	0.0102	ND	2.1	E	0.1067	E	0.2	ND	0.0087	ND
Dibromochloromethane	0.1	ND	0.0061	ND	0.4	E	0.0219	E	0.1	ND	0.0065	ND
1,1,2-Trichloroethane	0.1	ND	0.0072	ND	1.0	E	0.0514	E	0.2	ND	0.0085	ND
Benzene	0.1	ND	0.0037	ND	0.1	ND	0.0035	ND	0.1	ND	0.0038	ND
cis-1,3-Dichloropropene	0.1	ND	0.0052	ND	0.1	ND	0.0050	ND	0.1	ND	0.0051	ND
2-Chloroethylvinylether	0.3	ND	0.0164	ND	0.3	ND	0.0157	ND	0.4	ND	0.0195	ND
Bromoform	0.1	ND	0.0071	ND	2.0	E	0.1020	E	0.1	ND	0.0073	ND
2-Hexanone	0.2	ND	0.0083	ND	19.0	D	0.9483	D	0.6	E	0.0290	E
4-Methyl-2-pentanone	0.1	ND	0.0062	ND	15.9	D	0.7928	D	0.1	ND	0.0049	ND
Tetrachloroethene	0.3	ND	0.0137	ND	0.3	ND	0.0131	ND	0.2	ND	0.0100	ND
1,1,2,2-Tetrachloroethane	0.1	ND	0.0039	ND	3.6	E	0.1794	E	0.1	ND	0.0038	ND
Toluene	33.3	D	1.6654	D	16.5	D	0.8271	D	29.2	D	1.4598	D
Chlorobenzene	0.1	ND	0.0041	ND	0.1	ND	0.0039	ND	0.1	ND	0.0038	ND
Ethylbenzene	0.3	E	0.0146	E	0.4	E	0.0198	E	0.1	E	0.0051	E
Styrene	0.1	ND	0.0034	ND	0.1	ND	0.0033	ND	0.1	ND	0.0032	ND
m-/p-Xylene	0.1	ND	0.0057	ND	0.3	E	0.0169	E	0.4	E	0.0195	E
o-Xylene	0.1	ND	0.0058	ND	0.1	ND	0.0056	ND	0.2	E	0.0084	E
Acrolein	6.0	ND	0.2998	ND	64.6	D	3.2303	D	4.8	ND	0.2416	ND
Acrylonitrile	0.6	ND	0.0312	ND	0.6	ND	0.0321	ND	0.5	ND	0.0244	ND
Dichlorodifluoromethane	0.2	ND	0.0089	ND	0.2	ND	0.0092	ND	0.2	ND	0.0076	ND
Iodomethane	0.4	ND	0.0178	ND	0.4	ND	0.0183	ND	0.2	ND	0.0123	ND
Dibromomethane	0.6	E	0.0277	E	1.5	E	0.0751	E	0.7	E	0.0361	E
1,4-Dichloro-2-butene	0.2	ND	0.0083	ND	2.4	E	0.1220	E	0.2	ND	0.0110	ND
Ethyl methacrylate	0.1	ND	0.0058	ND	4.4	E	0.2193	E	0.1	ND	0.0052	ND
1,2,3-Trichloropropane	0.1	ND	0.0058	ND	6.8	E	0.3415	E	0.1	ND	0.0060	ND
Trichlorofluoromethane	0.2	ND	0.0111	ND	0.2	ND	0.0114	ND	0.2	ND	0.0114	ND
1,3 Dichlorobenzene	0.1	ND	0.0038	ND	0.1	ND	0.0036	ND	0.1	ND	0.0037	ND
1,4 Dichlorobenzene	0.1	ND	0.0041	ND	0.1	ND	0.0040	ND	0.1	ND	0.0041	ND
1,2 Dichlorobenzene	0.1	ND	0.0038	ND	0.1	ND	0.0037	ND	0.1	ND	0.0039	ND
cis-1,2-Dichloroethene	0.3	ND	0.0134	ND	0.3	ND	0.0138	ND	0.2	ND	0.0104	ND
n-Hexane	0.1	ND	0.0060	ND	0.1	ND	0.0062	ND	0.1	ND	0.0050	ND
Tert-Butyl methyl ether	0.9	ND	0.0442	ND	0.9	ND	0.0454	ND	0.6	ND	0.0320	ND
1,3-butadiene	0.4	ND	0.0195	ND	0.4	ND	0.0200	ND	0.4	ND	0.0207	ND
Vinyl Bromide	0.4	ND	0.0177	ND	0.4	ND	0.0181	ND	0.3	ND	0.0169	ND
Isooctane	0.0	ND	0.0015	ND	0.0	ND	0.0015	ND	0.0	ND	0.0013	ND
Allyl chloride	0.7	ND	0.0344	ND	0.7	ND	0.0354	ND	0.6	ND	0.0283	ND
Cumene (isopropylbenzene)	0.0	ND	0.0023	ND	0.0	ND	0.0022	ND	0.0	ND	0.0021	ND
Dimethyl sulfide	0.3	ND	0.0132	ND	0.3	ND	0.0135	ND	0.2	ND	0.0113	ND
Dimethyl disulfide	0.1	ND	0.0048	ND	0.1	ND	0.0050	ND	0.1	ND	0.0043	ND
A-Pinene	0.1	ND	0.0029	ND	0.1	ND	0.0028	ND	0.1	ND	0.0026	ND
B-Pinene	0.1	ND	0.0032	ND	0.1	ND	0.0031	ND	0.1	ND	0.0028	ND
P-Cymene	0.0	ND	0.0019	ND	0.0	ND	0.0018	ND	0.2	E	0.0105	E

VOST CONDENSATE CONVERSIONS

Final Volume											
0.05											
Run #:	II-1-S3-V1 Condensate A-B				II-2-S3-V2 Condensate A				II-3-S3-V3 Condensate A		
Compounds	Concentration ug/L		Catch Weight ug		Concentration ug/L		Catch Weight ug		Concentration ug/L		Catch We ug	
Chloromethane	0.2	ND	0.0118	ND	0.2	ND	0.0109	ND	0.2	ND	0.0121	ND
Bromomethane	0.3	ND	0.0126	ND	0.2	ND	0.0109	ND	0.2	ND	0.0121	ND
Vinyl chloride	0.2	ND	0.0097	ND	0.2	ND	0.0093	ND	0.2	ND	0.0103	ND
Chloroethane	0.3	ND	0.0128	ND	0.3	ND	0.0126	ND	0.3	ND	0.0140	ND
Methylene chloride	83.4	D	4.1718	D	18.2	D	0.9079	D	37.2	D	1.8593	D
Acetone	246.9	D	12.3446	D	70.4	D	3.5208	D	110.0	D	5.5009	D
Carbon disulfide	0.1	ND	0.0062	ND	0.1	ND	0.0046	ND	0.1	ND	0.0051	ND
1,1-Dichloroethene	0.6	ND	0.0278	ND	0.3	ND	0.0156	ND	0.3	ND	0.0173	ND
1,1-Dichloroethane	0.1	ND	0.0053	ND	0.1	ND	0.0043	ND	0.1	ND	0.0048	ND
trans-1,2-Dichloroethene	0.3	ND	0.0162	ND	0.2	ND	0.0109	ND	0.2	ND	0.0121	ND
Chloroform	0.1	ND	0.0055	ND	0.1	ND	0.0044	ND	0.1	ND	0.0049	ND
1,2-Dichloroethane	0.1	ND	0.0065	ND	0.1	ND	0.0056	ND	0.1	ND	0.0062	ND
2-Butanone	3.6	E	0.1800	E	1.8	E	0.0895	E	2.2	E	0.1105	E
1,1,1-Trichloroethane	0.2	ND	0.0078	ND	0.1	ND	0.0068	ND	0.1	ND	0.0072	ND
Carbon tetrachloride	0.2	ND	0.0090	ND	0.2	ND	0.0079	ND	0.2	ND	0.0084	ND
Vinyl acetate	0.1	ND	0.0043	ND	0.1	ND	0.0039	ND	0.1	ND	0.0042	ND
Bromodichloromethane	0.1	ND	0.0056	ND	0.1	ND	0.0051	ND	0.1	ND	0.0054	ND
1,2-Dichloropropane	0.1	ND	0.0053	ND	0.1	ND	0.0055	ND	0.1	ND	0.0059	ND
trans-1,3-Dichloropropene	0.1	ND	0.0057	ND	0.1	ND	0.0048	ND	0.1	ND	0.0051	ND
Trichloroethene	0.2	ND	0.0095	ND	0.2	ND	0.0078	ND	0.2	ND	0.0083	ND
Dibromochloromethane	0.1	ND	0.0057	ND	0.1	ND	0.0058	ND	0.1	ND	0.0061	ND
1,1,2-Trichloroethane	0.1	ND	0.0068	ND	0.2	ND	0.0076	ND	0.2	ND	0.0081	ND
Benzene	0.1	ND	0.0034	ND	0.1	ND	0.0034	ND	0.1	ND	0.0036	ND
cis-1,3-Dichloropropene	0.1	ND	0.0049	ND	0.1	ND	0.0045	ND	0.1	ND	0.0048	ND
2-Chloroethylvinylether	0.3	ND	0.0154	ND	0.3	ND	0.0174	ND	0.4	ND	0.0185	ND
Bromoform	0.1	ND	0.0067	ND	0.1	ND	0.0065	ND	0.1	ND	0.0069	ND
2-Hexanone	2.2	E	0.1080	E	0.9	E	0.0470	E	0.8	E	0.0377	E
4-Methyl-2-pentanone	0.1	ND	0.0061	ND	0.1	ND	0.0045	ND	0.1	ND	0.0046	ND
Tetrachloroethene	0.3	ND	0.0134	ND	0.2	ND	0.0093	ND	0.2	ND	0.0094	ND
1,1,2,2-Tetrachloroethane	0.1	ND	0.0039	ND	0.1	ND	0.0035	ND	0.1	ND	0.0036	
Toluene	27.9	D	1.3964	D	16.4	D	0.8202	D	34.0	D	1.6998	
Chlorobenzene	0.1	ND	0.0040	ND	0.1	ND	0.0035	ND	0.1	ND	0.0036	ND
Ethylbenzene	0.1	E	0.0051	E	0.1	E	0.0058	E	0.1	E	0.0045	E
Styrene	0.1	ND	0.0034	ND	0.1	ND	0.0030	ND	0.1	ND	0.0030	ND
m-/p-Xylene	0.3	E	0.0171	E	0.5	E	0.0251	E	0.4	E	0.0196	E
o-Xylene	0.1	ND	0.0057	ND	0.2	E	0.0109	E	0.2	E	0.0081	E
Acrolein	5.7	ND	0.2831	ND	4.2	ND	0.2087	ND	4.6	ND	0.2324	ND
Acrylonitrile	0.6	ND	0.0294	ND	0.4	ND	0.0211	ND	0.5	ND	0.0235	ND
Dichlorodifluoromethane	0.2	ND	0.0084	ND	0.1	ND	0.0066	ND	0.1	ND	0.0073	ND
Iodomethane	0.3	ND	0.0168	ND	0.2	ND	0.0107	ND	0.2	ND	0.0119	ND
Dibromomethane	0.6	E	0.0314	E	0.7	E	0.0333	E	0.7	E	0.0327	E
1,4-Dichloro-2-butene	0.2	ND	0.0078	ND	0.2	ND	0.0099	ND	0.2	ND	0.0105	ND
Ethyl methacrylate	0.4	E	0.0208	E	0.1	ND	0.0048	ND	0.1	ND	0.0049	ND
1,2,3-Trichloropropane	0.1	ND	0.0057	ND	0.1	ND	0.0056	ND	0.1	ND	0.0057	ND
Trichlorofluoromethane	0.2	ND	0.0105	ND	0.2	ND	0.0098	ND	0.2	ND	0.0109	ND
1,3 Dichlorobenzene	0.1	ND	0.0037	ND	0.1	ND	0.0034	ND	0.1	ND	0.0035	ND
1,4 Dichlorobenzene	0.1	ND	0.0041	ND	0.1	ND	0.0038	ND	0.1	ND	0.0039	ND
1,2 Dichlorobenzene	0.1	ND	0.0038	ND	0.1	ND	0.0036	ND	0.1	ND	0.0036	ND
cis-1,2-Dichloroethene	0.3	ND	0.0127	ND	0.2	ND	0.0090	ND	0.2	ND	0.0100	ND
n-Hexane	0.1	ND	0.0057	ND	0.1	ND	0.0043	ND	0.1	ND	0.0048	ND
Tert-Butyl methyl ether	0.8	ND	0.0417	ND	0.6	ND	0.0277	ND	0.6	ND	0.0308	ND
1,3-butadiene	0.4	ND	0.0184	ND	0.4	ND	0.0179	ND	0.4	ND	0.0199	ND
Vinyl Bromide	0.3	ND	0.0167	ND	0.3	ND	0.0146	ND	0.3	ND	0.0162	ND
Isooctane	0.0	ND	0.0014	ND	0.0	ND	0.0011	ND	0.0	ND	0.0013	ND
Allyl chloride	0.7	ND	0.0325	ND	0.5	ND	0.0245	ND	0.5	ND	0.0273	ND
Cumene (isopropylbenzene)	0.0	ND	0.0022	ND	0.0	ND	0.0020	ND	0.0	ND	0.0020	ND
Dimethyl sulfide	0.2	ND	0.0124	ND	0.2	ND	0.0097	ND	0.2	ND	0.0108	ND
Dimethyl disulfide	0.1	ND	0.0046	ND	0.1	ND	0.0037	ND	0.1	ND	0.0042	ND
A-Pinene	0.1	ND	0.0028	ND	0.0	ND	0.0024	ND	0.0	ND	0.0025	ND
B-Pinene	0.1	ND	0.0031	ND	0.1	ND	0.0026	ND	0.1	ND	0.0027	ND
P-Cymene	0.0	ND	0.0019	ND	0.0	ND	0.0018	ND	0.0	ND	0.0018	ND

VOST CONDENSATE CONVERSIONS

Final Volume											
0.05											
Run #:	III-1-S3-V1 Condensate B-C				III-2-S3-V2 Condensate B				III-3-S3-V3 Condensate A		
Compounds	Concentration ug/L		Catch Weight ug		Concentration ug/L		Catch Weight ug		Concentration ug/L		Catch Weight ug	
Chloromethane	0.2	ND	0.0116	ND	0.2	ND	0.0113	ND	0.2	ND	0.0123	ND
Bromomethane	0.2	ND	0.0124	ND	0.2	ND	0.0113	ND	0.2	ND	0.0122	ND
Vinyl chloride	0.2	ND	0.0095	ND	0.2	ND	0.0096	ND	0.2	ND	0.0105	ND
Chloroethane	0.3	ND	0.0125	ND	0.3	ND	0.0130	ND	0.3	ND	0.0142	ND
Methylene chloride	54.3	D	2.7143	D	23.0	D	1.1514	D	25.6	D	1.2804	D
Acetone	222.5	D	11.1239	D	107.6	D	5.3806	D	78.9	D	3.9474	D
Carbon disulfide	0.1	ND	0.0060	ND	0.2	E	0.0122	E	0.1	ND	0.0052	ND
1,1-Dichloroethene	0.5	ND	0.0272	ND	0.3	ND	0.0161	ND	0.4	ND	0.0175	ND
1,1-Dichloroethane	0.1	ND	0.0052	ND	0.1	ND	0.0044	ND	0.1	ND	0.0048	ND
trans-1,2-Dichloroethene	0.3	ND	0.0159	ND	0.2	ND	0.0113	ND	0.2	ND	0.0123	ND
Chloroform	0.1	ND	0.0054	ND	0.1	ND	0.0046	ND	0.1	ND	0.0050	ND
1,2-Dichloroethane	0.1	ND	0.0064	ND	0.1	ND	0.0058	ND	0.1	ND	0.0063	ND
2-Butanone	2.3	E	0.1140	E	1.6	E	0.0790	E	3.2	E	0.1620	E
1,1,1-Trichloroethane	0.1	ND	0.0075	ND	0.1	ND	0.0073	ND	0.2	ND	0.0077	ND
Carbon tetrachloride	0.2	ND	0.0087	ND	0.2	ND	0.0085	ND	0.2	ND	0.0091	ND
Vinyl acetate	0.1	ND	0.0042	ND	0.1	ND	0.0042	ND	0.1	ND	0.0045	ND
Bromodichloromethane	0.1	ND	0.0054	ND	0.1	ND	0.0054	ND	0.1	ND	0.0058	ND
1,2-Dichloropropane	0.1	ND	0.0052	ND	0.1	ND	0.0059	ND	0.1	ND	0.0063	ND
trans-1,3-Dichloropropene	0.1	ND	0.0055	ND	0.1	ND	0.0052	ND	0.1	ND	0.0055	ND
Trichloroethene	0.2	ND	0.0092	ND	0.2	ND	0.0084	ND	0.2	ND	0.0089	ND
Dibromochloromethane	0.1	ND	0.0055	ND	0.1	ND	0.0062	ND	0.1	ND	0.0066	ND
1,1,2-Trichloroethane	0.1	ND	0.0066	ND	0.2	ND	0.0081	ND	0.2	ND	0.0087	ND
Benzene	0.1	ND	0.0033	ND	0.1	ND	0.0036	ND	0.1	ND	0.0039	ND
cis-1,3-Dichloropropene	0.1	ND	0.0047	ND	0.1	ND	0.0049	ND	0.1	ND	0.0052	ND
2-Chloroethylvinylether	0.3	ND	0.0149	ND	0.4	ND	0.0187	ND	0.4	ND	0.0199	ND
Bromoform	0.1	ND	0.0064	ND	0.1	ND	0.0070	ND	0.1	ND	0.0074	ND
2-Hexanone	0.2	ND	0.0079	ND	0.9	E	0.0426	E	1.2	E	0.0615	E
4-Methyl-2-pentanone	0.1	ND	0.0059	ND	0.1	ND	0.0046	ND	0.1	ND	0.0046	ND
Tetrachloroethene	0.3	ND	0.0130	ND	0.2	ND	0.0094	ND	0.2	ND	0.0095	ND
1,1,2,2-Tetrachloroethane	0.1	ND	0.0038	ND	0.1	ND	0.0035	ND	0.1	ND	0.0036	ND
Toluene	31.9	D	1.5966	D	19.0	D	0.9495	D	21.6	D	1.0787	D
Chlorobenzene	0.1	ND	0.0039	ND	0.1	ND	0.0036	ND	0.1	ND	0.0036	ND
Ethylbenzene	0.4	E	0.0196	E	0.1	E	0.0062	E	0.1	E	0.0050	E
Styrene	0.1	ND	0.0033	ND	0.1	ND	0.0030	ND	0.1	ND	0.0030	ND
m-/p-Xylene	0.3	E	0.0168	E	0.4	E	0.0214	E	0.4	E	0.0182	E
o-Xylene	0.1	ND	0.0055	ND	0.2	E	0.0088	E	0.2	E	0.0087	E
Acrolein	24.0	D	1.2007	D	4.3	ND	0.2164	ND	4.7	ND	0.2351	ND
Acrylonitrile	0.6	ND	0.0289	ND	0.4	ND	0.0219	ND	0.5	ND	0.0238	ND
Dichlorodifluoromethane	0.2	ND	0.0083	ND	0.1	ND	0.0068	ND	0.1	ND	0.0074	ND
Iodomethane	0.3	ND	0.0165	ND	0.2	ND	0.0111	ND	0.2	ND	0.0120	ND
Dibromomethane	0.6	E	0.0284	E	0.7	E	0.0339	E	0.7	E	0.0334	E
1,4-Dichloro-2-butene	0.2	ND	0.0075	ND	0.2	ND	0.0106	ND	0.2	ND	0.0113	ND
Ethyl methacrylate	0.1	ND	0.0055	ND	0.1	ND	0.0049	ND	0.1	ND	0.0050	ND
1,2,3-Trichloropropane	0.1	ND	0.0055	ND	0.1	ND	0.0056	ND	0.1	ND	0.0057	ND
Trichlorofluoromethane	0.2	ND	0.0103	ND	0.2	ND	0.0102	ND	0.2	ND	0.0111	ND
1,3 Dichlorobenzene	0.1	ND	0.0036	ND	0.1	ND	0.0035	ND	0.1	ND	0.0035	ND
1,4 Dichlorobenzene	0.1	ND	0.0040	ND	0.1	ND	0.0038	ND	0.1	ND	0.0039	ND
1,2 Dichlorobenzene	0.1	ND	0.0037	ND	0.1	ND	0.0036	ND	0.1	ND	0.0037	ND
cis-1,2-Dichloroethene	0.2	ND	0.0124	ND	0.2	ND	0.0093	ND	0.2	ND	0.0102	ND
n-Hexane	0.1	ND	0.0056	ND	0.1	ND	0.0045	ND	0.1	ND	0.0048	ND
Tert-Butyl methyl ether	0.8	ND	0.0409	ND	0.6	ND	0.0287	ND	0.6	ND	0.0312	ND
1,3-butadiene	0.4	ND	0.0180	ND	0.4	ND	0.0186	ND	0.4	ND	0.0202	ND
Vinyl Bromide	0.3	ND	0.0163	ND	0.3	ND	0.0151	ND	0.3	ND	0.0164	ND
Isooctane	0.0	ND	0.0014	ND	0.0	ND	0.0012	ND	0.0	ND	0.0013	ND
Allyl chloride	0.6	ND	0.0319	ND	0.5	ND	0.0254	ND	0.6	ND	0.0276	ND
Cumene (isopropylbenzene)	0.0	ND	0.0022	ND	0.0	ND	0.0020	ND	0.0	ND	0.0020	ND
Dimethyl sulfide	1.5	E	0.0731	E	0.2	ND	0.0101	ND	0.2	ND	0.0110	ND
Dimethyl disulfide	0.1	ND	0.0045	ND	0.1	ND	0.0039	ND	0.1	ND	0.0042	ND
A-Pinene	0.1	ND	0.0027	ND	0.0	ND	0.0024	ND	0.0	ND	0.0025	ND
B-Pinene	0.1	ND	0.0030	ND	0.1	ND	0.0027	ND	0.1	ND	0.0027	ND
P-Cymene	0.0	ND	0.0018	ND	0.0	ND	0.0018	ND	0.0	ND	0.0018	ND

VOST CONDENSATE CONVERSIONS

Final Volume	IV-1-S3-V1				IV-2-S3-V2				IV-3-S3-V3			
0.05	Condensate A-C				Condensate A				Condensate A			
Run #:												
Compounds	Concentration ug/L		Catch Weight ug		Concentration ug/L		Catch Weight ug		Concentration ug/L		Catch W ug	
Chloromethane	0.2	ND	0.0119	ND	0.2	ND	0.0116	ND	0.3	ND	0.0136	ND
Bromomethane	0.3	ND	0.0127	ND	0.2	ND	0.0116	ND	0.3	ND	0.0136	ND
Vinyl chloride	0.2	ND	0.0097	ND	0.2	ND	0.0099	ND	0.2	ND	0.0116	ND
Chloroethane	0.3	ND	0.0129	ND	0.3	ND	0.0134	ND	0.3	ND	0.0157	ND
Methylene chloride	10.1	D	0.5068	D	23.0	D	1.1517	D	25.0	D	1.2479	D
Acetone	137.1	D	6.8533	D	107.4	D	5.3687	D	121.2	D	6.0583	D
Carbon disulfide	0.1	ND	0.0062	ND	0.1	ND	0.0049	ND	0.1	ND	0.0057	ND
1,1-Dichloroethene	0.6	ND	0.0279	ND	0.3	ND	0.0166	ND	0.4	ND	0.0194	ND
1,1-Dichloroethane	0.1	ND	0.0053	ND	0.1	ND	0.0046	ND	0.1	ND	0.0053	ND
trans-1,2-Dichloroethene	0.3	ND	0.0163	ND	0.2	ND	0.0116	ND	0.3	ND	0.0136	ND
Chloroform	0.1	ND	0.0055	ND	0.1	ND	0.0047	ND	0.1	ND	0.0055	ND
1,2-Dichloroethane	0.1	ND	0.0066	ND	0.1	ND	0.0059	ND	0.1	ND	0.0069	ND
2-Butanone	5.3	E	0.2662	E	2.6	E	0.1322	E	4.8	E	0.2416	E
1,1,1-Trichloroethane	0.2	ND	0.0077	ND	0.1	ND	0.0070	ND	0.2	ND	0.0082	ND
Carbon tetrachloride	0.2	ND	0.0089	ND	0.2	ND	0.0082	ND	0.2	ND	0.0095	ND
Vinyl acetate	0.5	E	0.0247	E	0.1	ND	0.0041	ND	0.1	ND	0.0047	ND
Bromodichloromethane	0.1	ND	0.0056	ND	0.1	ND	0.0053	ND	0.1	ND	0.0061	ND
1,2-Dichloropropane	0.1	ND	0.0053	ND	0.1	ND	0.0057	ND	0.1	ND	0.0066	ND
trans-1,3-Dichloropropene	0.1	ND	0.0056	ND	0.1	ND	0.0050	ND	0.1	ND	0.0058	ND
Trichloroethene	0.2	ND	0.0094	ND	0.2	ND	0.0081	ND	0.2	ND	0.0094	ND
Dibromochloromethane	0.1	ND	0.0057	ND	0.1	ND	0.0060	ND	0.1	ND	0.0070	ND
1,1,2-Trichloroethane	0.1	ND	0.0067	ND	0.2	ND	0.0079	ND	0.2	ND	0.0091	ND
Benzene	0.1	ND	0.0034	ND	0.1	ND	0.0035	ND	0.1	ND	0.0041	ND
cis-1,3-Dichloropropene	0.1	ND	0.0048	ND	0.1	ND	0.0047	ND	0.1	ND	0.0055	ND
2-Chloroethylvinylether	0.3	ND	0.0152	ND	0.4	ND	0.0181	ND	0.4	ND	0.0210	ND
Bromoform	0.1	ND	0.0066	ND	0.1	ND	0.0067	ND	0.2	ND	0.0078	ND
2-Hexanone	2.4	E	0.1214	E	0.6	E	0.0313	E	1.9	E	0.0968	E
4-Methyl-2-pentanone	0.1	ND	0.0059	ND	0.1	ND	0.0051	ND	0.1	ND	0.0051	ND
Tetrachloroethene	0.3	ND	0.0131	ND	0.2	ND	0.0105	ND	0.2	ND	0.0104	ND
1,1,2,2-Tetrachloroethane	0.1	ND	0.0038	ND	0.1	ND	0.0040	ND	0.1	ND	0.00?	
Toluene	7.1	E	0.3528	E	23.4	D	1.1695	D	18.6	D	0.927.	
Chlorobenzene	0.1	ND	0.0039	ND	0.1	ND	0.0040	ND	0.1	ND	0.0040	ND
Ethylbenzene	0.3	E	0.0138	E	0.1	E	0.0067	E	0.1	E	0.0057	E
Styrene	0.1	ND	0.0033	ND	0.1	ND	0.0034	ND	0.1	ND	0.0033	ND
m-/p-Xylene	0.1	ND	0.0054	ND	0.4	E	0.0220	E	0.4	E	0.0210	E
o-Xylene	0.1	ND	0.0056	ND	0.2	E	0.0100	E	0.2	E	0.0081	E
Acrolein	39.7	D	1.9831	D	4.5	ND	0.2229	ND	5.2	ND	0.2603	ND
Acrylonitrile	0.6	ND	0.0296	ND	0.5	ND	0.0225	ND	0.5	ND	0.0263	ND
Dichlorodifluoromethane	0.2	ND	0.0085	ND	0.1	ND	0.0070	ND	0.2	ND	0.0082	ND
Iodomethane	0.3	ND	0.0169	ND	0.2	ND	0.0114	ND	0.3	ND	0.0133	ND
Dibromomethane	0.7	E	0.0358	E	0.6	E	0.0320	E	0.7	E	0.0329	E
1,4-Dichloro-2-butene	0.2	ND	0.0077	ND	0.2	ND	0.0102	ND	0.2	ND	0.0119	ND
Ethyl methacrylate	0.6	E	0.0280	E	0.1	ND	0.0055	ND	0.1	ND	0.0054	ND
1,2,3-Trichloropropane	0.5	E	0.0275	E	0.1	ND	0.0063	ND	0.3	E	0.0144	E
Trichlorofluoromethane	0.2	ND	0.0105	ND	0.2	ND	0.0105	ND	0.2	ND	0.0122	ND
1,3 Dichlorobenzene	0.1	ND	0.0036	ND	0.1	ND	0.0039	ND	0.1	ND	0.0039	ND
1,4 Dichlorobenzene	0.1	ND	0.0040	ND	0.1	ND	0.0043	ND	0.1	ND	0.0043	ND
1,2 Dichlorobenzene	0.1	ND	0.0037	ND	0.1	ND	0.0041	ND	0.1	ND	0.0040	ND
cis-1,2-Dichloroethene	0.3	ND	0.0127	ND	0.2	ND	0.0096	ND	0.2	ND	0.0112	ND
n-Hexane	0.1	ND	0.0057	ND	0.1	ND	0.0046	ND	0.1	ND	0.0054	ND
Tert-Butyl methyl ether	0.8	ND	0.0420	ND	0.6	ND	0.0296	ND	0.7	ND	0.0345	ND
1,3-butadiene	0.4	ND	0.0185	ND	0.4	ND	0.0191	ND	0.4	ND	0.0223	ND
Vinyl Bromide	0.3	ND	0.0168	ND	0.3	ND	0.0156	ND	0.4	ND	0.0182	ND
Isooctane	0.0	ND	0.0014	ND	0.0	ND	0.0012	ND	0.0	ND	0.0014	ND
Allyl chloride	0.7	ND	0.0327	ND	0.5	ND	0.0261	ND	0.6	ND	0.0305	ND
Cumene (isopropylbenzene)	0.0	ND	0.0022	ND	0.0	ND	0.0023	ND	0.0	ND	0.0022	ND
Dimethyl sulfide	0.3	ND	0.0125	ND	1.0	E	0.0521	E	0.2	ND	0.0121	ND
Dimethyl disulfide	0.1	ND	0.0046	ND	0.1	ND	0.0040	ND	0.1	ND	0.0047	ND
A-Pinene	0.1	ND	0.0028	ND	0.1	ND	0.0027	ND	0.1	ND	0.0027	ND
B-Pinene	0.1	ND	0.0031	ND	0.1	ND	0.0030	ND	0.1	ND	0.0030	ND
P-Cymene	0.0	ND	0.0018	ND	0.0	ND	0.0020	ND	0.0	ND	0.0020	ND

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE I-1-S3-V1-A

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate (div by 4) ug	Condensate Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.003	ND	2.423	D	0.0031	ND	2.423	No
Bromomethane	94.95	0.003	ND	1.220	D	0.0033	ND	1.220	No
Vinyl Chloride	62.50	0.002	ND	0.002	ND	0.0026	ND	0.000	NA
Chloroethane	64.52	0.003	ND	0.002	ND	0.0034	ND	0.000	NA
Methylene Chloride	84.94	0.021	E	0.241	D	1.2026	D	1.465	1151.0
Acetone	58.08	0.003	ND	0.043	E	2.7051	D	2.748	NA
Carbon Disulfide	76.14	0.008	E	0.008	E	0.0016	ND	0.016	NA
1,1-Dichloroethene	96.94	0.002	ND	0.001	ND	0.0074	ND	0.000	NA
1,1-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0043	ND	0.000	NA
Chloroform	119.38	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
1,2-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0017	ND	0.000	NA
2-Butanone	72.1	0.008	ND	0.007	ND	0.0083	E	0.008	NA
1,1,1-Trichloroethane	133.41	0.017	E	0.001	ND	0.0021	ND	0.017	NA
Carbon Tetrachloride	153.82	0.001	ND	0.001	ND	0.0024	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0011	ND	0.000	NA
Bromodichloromethane	163.83	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
1,2-Dichloropropane	112.99	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
Trichloroethene	131.40	0.030	E	0.008	E	0.0025	ND	0.038	NA
Dibromochloromethane	208.29	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0018	ND	0.000	NA
Benzene	78.12	0.079	D	0.016	E	0.0009	ND	0.094	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0013	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.005	ND	0.004	ND	0.0041	ND	0.000	NA
Bromoform	252.77	0.001	ND	0.001	ND	0.0018	ND	0.000	NA
2-Hexanone	100.16	0.001	ND	0.001	ND	0.0021	ND	0.000	NA
4-Methyl-2-Pentanone	100.16	0.001	ND	0.001	ND	0.0016	ND	0.000	NA
Tetrachloroethene	163.85	0.001	ND	0.001	ND	0.0034	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
Toluene	92.13	0.065	D	0.046	E	0.4164	D	0.527	NA
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
Ethylbenzene	106.16	0.001	ND	0.001	ND	0.0036	E	0.004	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0009	ND	0.000	NA
m-/p-Xylene	106.12	0.020	E	0.004	E	0.0014	ND	0.024	NA
o-Xylene	106.12	0.003	E	0.001	ND	0.0015	ND	0.003	NA
Acrolein	56.06	0.039	ND	0.030	ND	0.0750	ND	0.000	NA
Acrylonitrile	53.03	0.008	ND	0.006	ND	0.0078	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.001	ND	0.001	ND	0.0022	ND	0.000	NA
Iodomethane	141.94	0.001	ND	0.037	E	0.0045	ND	0.037	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0069	E	0.007	NA
1,4-Dichloro-2-butene	125.00	0.003	ND	0.002	ND	0.0021	ND	0.000	NA
Ethyl methacrylate	114.15	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
1,2,3-Trichloropropane	147.43	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
Trichlorofluoromethane	137.37	0.001	ND	0.025	E	0.0028	ND	0.025	NA
1,3 Dichlorobenzene	147.00	0.003	ND	0.002	ND	0.0009	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0034	ND	0.000	NA
n-Hexane	86.18	0.012	E	0.001	ND	0.0015	ND	0.012	NA
Tert-Butyl methyl ether	88.15	0.006	ND	0.004	ND	0.0110	ND	0.000	NA
1,3 Butadiene	54.09	0.006	ND	0.005	ND	0.0049	ND	0.000	NA
Vinyl Bromide	106.96	0.002	ND	0.001	ND	0.0044	ND	0.000	NA
Isooctane	114.23	0.028	E	0.001	ND	0.0004	ND	0.028	NA
Allyl Chloride	76.53	0.003	ND	0.002	ND	0.0086	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0006	ND	0.000	NA
Dimethyl Sulfide	62.13	0.001	ND	0.001	ND	0.0033	ND	0.000	NA
Dimethyl Disulfide	94.2	0.001	ND	0.001	ND	0.0012	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0007	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0008	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0005	ND	0.000	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE I-1-S3-V1-B

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate (div by 4) ug	Condensate (div by 4) Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.002	ND	0.375	D	0.0031	ND	0.375	No
Bromomethane	94.95	0.186	D	0.225	D	0.0033	ND	0.412	120.9
Vinyl Chloride	62.50	0.002	ND	0.001	ND	0.0026	ND	0.000	NA
Chloroethane	64.52	0.002	ND	0.001	ND	0.0034	ND	0.000	NA
Methylene Chloride	84.94	0.008	E	0.076	D	1.2026	D	1.287	916.9
Acetone	58.08	0.081	D	0.001	ND	2.7051	D	2.786	NA
Carbon Disulfide	76.14	0.006	E	0.011	E	0.0016	ND	0.017	NA
1,1-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0074	ND	0.000	NA
1,1-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0043	ND	0.000	NA
Chloroform	119.38	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
1,2-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0017	ND	0.000	NA
2-Butanone	72.1	0.006	ND	0.001	ND	0.0083	E	0.008	NA
1,1,1-Trichloroethane	133.41	0.027	E	0.001	ND	0.0021	ND	0.027	NA
Carbon Tetrachloride	153.82	0.001	ND	0.001	ND	0.0024	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0011	ND	0.000	NA
Bromodichloromethane	163.83	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
1,2-Dichloropropane	112.99	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
Trichloroethene	131.40	0.024	E	0.001	E	0.0025	ND	0.025	NA
Dibromochloromethane	208.29	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0018	ND	0.000	NA
Benzene	78.12	0.047	E	0.001	ND	0.0009	ND	0.047	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0013	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.004	ND	0.001	ND	0.0041	ND	0.000	NA
Bromoform	252.77	0.001	ND	0.001	ND	0.0018	ND	0.000	NA
2-Hexanone	100.16	0.001	ND	0.001	ND	0.0021	ND	0.000	NA
4-Methyl-2-Pentanone	100.16	0.001	ND	0.001	ND	0.0016	ND	0.000	NA
Tetrachloroethene	163.85	0.001	ND	0.001	ND	0.0034	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
Toluene	92.13	0.055	D	0.056	D	0.4164	D	0.528	NA
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
Ethylbenzene	106.16	0.001	ND	0.001	ND	0.0036	E	0.004	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0009	ND	0.000	NA
m-/p-Xylene	106.12	0.015	E	0.001	ND	0.0014	ND	0.015	NA
o-Xylene	106.12	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
Acrolein	56.06	0.026	ND	0.010	ND	0.0750	ND	0.000	NA
Acrylonitrile	53.03	0.005	ND	0.002	ND	0.0078	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.001	ND	0.001	ND	0.0022	ND	0.000	NA
Iodomethane	141.94	0.001	ND	0.001	ND	0.0045	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0069	E	0.007	NA
1,4-Dichloro-2-butene	125.00	0.002	ND	0.001	ND	0.0021	ND	0.000	NA
Ethyl methacrylate	114.15	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
1,2,3-Trichloropropane	147.43	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
Trichlorofluoromethane	137.37	0.001	ND	0.007	E	0.0028	ND	0.007	NA
1,3 Dichlorobenzene	147.00	0.002	ND	0.001	ND	0.0009	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0034	ND	0.000	NA
n-Hexane	86.18	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
Tert-Butyl methyl ether	88.15	0.004	ND	0.001	ND	0.0110	ND	0.000	NA
1,3 Butadiene	54.09	0.004	ND	0.002	ND	0.0049	ND	0.000	NA
Vinyl Bromide	106.96	0.001	ND	0.001	ND	0.0044	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.001	ND	0.0004	ND	0.000	NA
Allyl Chloride	76.53	0.002	ND	0.001	ND	0.0086	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0006	ND	0.000	NA
Dimethyl Sulfide	62.13	0.001	ND	0.001	ND	0.0033	ND	0.000	NA
Dimethyl Disulfide	94.2	0.001	ND	0.001	ND	0.0012	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0007	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0008	ND	0.000	NA
P-Cymene	134.22	0.004	E	0.001	ND	0.0005	ND	0.004	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE I-1-S3-V1-C

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate (div by 4) ug	Condensate Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.002	ND	0.604	D	0.0031	ND	0.604	No
Bromomethane	94.95	0.002	ND	0.565	D	0.0033	ND	0.565	No
Vinyl Chloride	62.50	0.002	ND	0.002	ND	0.0026	ND	0.000	NA
Chloroethane	64.52	0.002	ND	0.002	ND	0.0034	ND	0.000	NA
Methylene Chloride	84.94	0.015	E	0.235	D	1.2026	D	1.452	1567.7
Acetone	58.08	0.002	ND	0.002	ND	2.7051	D	2.705	NA
Carbon Disulfide	76.14	0.078	D	0.001	ND	0.0016	ND	0.078	NA
1,1-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0074	ND	0.000	NA
1,1-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0043	ND	0.000	NA
Chloroform	119.38	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
1,2-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0017	ND	0.000	NA
2-Butanone	72.1	0.006	ND	0.006	ND	0.0083	E	0.008	NA
1,1,1-Trichloroethane	133.41	0.007	E	0.007	E	0.0021	ND	0.014	NA
Carbon Tetrachloride	153.82	0.001	ND	0.001	ND	0.0024	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0011	ND	0.000	NA
Bromodichloromethane	163.83	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
1,2-Dichloropropane	112.99	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
Trichloroethene	131.40	0.010	E	0.001	ND	0.0025	ND	0.010	NA
Dibromochloromethane	208.29	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0018	ND	0.000	NA
Benzene	78.12	0.072	D	0.017	E	0.0009	ND	0.089	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0013	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.004	ND	0.004	ND	0.0041	ND	0.000	NA
Bromoform	252.77	0.001	ND	0.001	ND	0.0018	ND	0.000	NA
2-Hexanone	100.16	0.001	ND	0.001	ND	0.0021	ND	0.000	NA
4-Methyl-2-Pentanone	100.16	0.001	ND	0.001	ND	0.0016	ND	0.000	NA
Tetrachloroethene	163.85	0.009	E	0.001	ND	0.0034	ND	0.009	NA
1,1,2,2-Tetrachloroethane	167.86	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
Toluene	92.13	0.099	D	0.361	D	0.4164	D	0.876	365.0
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
Ethylbenzene	106.16	0.004	E	0.001	ND	0.0036	E	0.007	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0009	ND	0.000	NA
m-/p-Xylene	106.12	0.023	E	0.004	E	0.0014	ND	0.027	NA
o-Xylene	106.12	0.005	E	0.001	ND	0.0015	ND	0.005	NA
Acrolein	56.06	0.025	ND	0.026	ND	0.0750	ND	0.000	NA
Acrylonitrile	53.03	0.005	ND	0.005	ND	0.0078	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.001	ND	0.001	ND	0.0022	ND	0.000	NA
Iodomethane	141.94	0.001	ND	0.001	ND	0.0045	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0069	E	0.007	NA
1,4-Dichloro-2-butene	125.00	0.002	ND	0.002	ND	0.0021	ND	0.000	NA
Ethyl methacrylate	114.15	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
1,2,3-Trichloropropane	147.43	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
Trichlorofluoromethane	137.37	0.001	ND	0.118	D	0.0028	ND	0.118	No
1,3 Dichlorobenzene	147.00	0.002	ND	0.002	ND	0.0009	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0034	ND	0.000	NA
n-Hexane	86.18	0.014	E	0.008	E	0.0015	ND	0.022	NA
Tert-Butyl methyl ether	88.15	0.001	E	0.004	ND	0.0110	ND	0.001	NA
1,3 Butadiene	54.09	0.004	ND	0.004	ND	0.0049	ND	0.000	NA
Vinyl Bromide	106.96	0.001	ND	0.001	ND	0.0044	ND	0.000	NA
Isooctane	114.23	0.020	E	0.001	ND	0.0004	ND	0.020	NA
Allyl Chloride	76.53	0.002	ND	0.002	ND	0.0086	ND	0.000	NA
Cumene	120.2	0.008	E	0.001	ND	0.0006	ND	0.008	NA
Dimethyl Sulfide	62.13	0.001	ND	0.001	ND	0.0033	ND	0.000	NA
Dimethyl Disulfide	94.2	0.001	ND	0.001	ND	0.0012	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0007	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0008	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0005	ND	0.000	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE I-1-S3-V1-D

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate (div by 4) ug	Condensate Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.002	ND	1.189	D	0.0031	ND	1.189	No
Bromomethane	94.95	0.002	ND	0.825	D	0.0033	ND	0.825	No
Vinyl Chloride	62.50	0.002	ND	0.002	ND	0.0026	ND	0.000	NA
Chloroethane	64.52	0.002	ND	0.002	ND	0.0034	ND	0.000	NA
Methylene Chloride	84.94	0.155	D	0.345	D	1.2026	D	1.702	222.8
Acetone	58.08	0.003	ND	0.002	ND	2.7051	D	2.705	NA
Carbon Disulfide	76.14	0.025	E	0.022	E	0.0016	ND	0.048	NA
1,1-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0074	ND	0.000	NA
1,1-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0043	ND	0.000	NA
Chloroform	119.38	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
1,2-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0017	ND	0.000	NA
2-Butanone	72.1	0.007	ND	0.006	ND	0.0083	E	0.008	NA
1,1,1-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0021	ND	0.000	NA
Carbon Tetrachloride	153.82	0.001	ND	0.001	ND	0.0024	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0011	ND	0.000	NA
Bromodichloromethane	163.83	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
1,2-Dichloropropane	112.99	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
Trichloroethene	131.40	0.001	ND	0.001	ND	0.0025	ND	0.000	NA
Dibromochloromethane	208.29	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0018	ND	0.000	NA
Benzene	78.12	0.046	E	0.013	E	0.0009	ND	0.059	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0013	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.004	ND	0.004	ND	0.0041	ND	0.000	NA
Bromoform	252.77	0.001	ND	0.001	ND	0.0018	ND	0.000	NA
2-Hexanone	100.16	0.001	ND	0.001	ND	0.0021	ND	0.000	NA
4-Methyl-2-Pentanone	100.16	0.001	ND	0.001	ND	0.0016	ND	0.000	NA
Tetrachloroethene	163.85	0.001	ND	0.001	ND	0.0034	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
Toluene	92.13	0.025	E	0.209	D	0.4164	D	0.651	835.6
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
Ethylbenzene	106.16	0.001	ND	0.001	ND	0.0036	E	0.004	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0009	ND	0.000	NA
m-/p-Xylene	106.12	0.015	E	0.001	ND	0.0014	ND	0.015	NA
o-Xylene	106.12	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
Acrolein	56.06	0.032	ND	0.025	ND	0.0750	ND	0.000	NA
Acrylonitrile	53.03	0.006	ND	0.005	ND	0.0078	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.001	ND	0.001	ND	0.0022	ND	0.000	NA
Iodomethane	141.94	0.001	ND	0.001	ND	0.0045	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0069	E	0.007	NA
1,4-Dichloro-2-butene	125.00	0.002	ND	0.002	ND	0.0021	ND	0.000	NA
Ethyl methacrylate	114.15	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
1,2,3-Trichloropropane	147.43	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
Trichlorofluoromethane	137.37	0.001	ND	0.001	ND	0.0028	ND	0.000	NA
1,3 Dichlorobenzene	147.00	0.003	ND	0.002	ND	0.0009	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0010	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0034	ND	0.000	NA
n-Hexane	86.18	0.001	ND	0.006	E	0.0015	ND	0.006	NA
Tert-Butyl methyl ether	88.15	0.005	ND	0.004	ND	0.0110	ND	0.000	NA
1,3 Butadiene	54.09	0.005	ND	0.004	ND	0.0049	ND	0.000	NA
Vinyl Bromide	106.96	0.001	ND	0.001	ND	0.0044	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.001	ND	0.0004	ND	0.000	NA
Allyl Chloride	76.53	0.002	ND	0.002	ND	0.0086	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0006	ND	0.000	NA
Dimethyl Sulfide	62.13	0.001	ND	0.001	ND	0.0033	ND	0.000	NA
Dimethyl Disulfide	94.2	0.001	ND	0.001	ND	0.0012	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0007	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0008	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0005	ND	0.000	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE II-1-S3-V1-A

NAME	Mol. Wt.	Tenax ug	Tenax Code	Trix Charcoal ug	Trix Charcoal Code	Condensate (div by 2) ug	Condensate (div by 2) Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.004	ND	1.498	D	0.0059	ND	1.498	No
Bromomethane	94.95	0.004	ND	0.992	D	0.0063	ND	0.992	No
Vinyl Chloride	62.50	0.003	ND	0.003	ND	0.0048	ND	0.000	NA
Chloroethane	64.52	0.004	ND	0.003	ND	0.0064	ND	0.000	NA
Methylene Chloride	84.94	0.265	D	0.221	D	2.0859	D	2.572	83.4
Acetone	58.08	0.005	ND	0.004	ND	6.1723	D	6.172	NA
Carbon Disulfide	76.14	0.001	ND	0.001	ND	0.0031	ND	0.000	NA
1,1-Dichloroethene	96.94	0.002	ND	0.002	ND	0.0139	ND	0.000	NA
1,1-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0026	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.002	ND	0.001	ND	0.0081	ND	0.000	NA
Chloroform	119.38	0.001	ND	0.001	ND	0.0027	ND	0.000	NA
1,2-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0033	ND	0.000	NA
2-Butanone	72.1	0.012	ND	0.010	ND	0.0900	E	0.090	NA
1,1,1-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0039	ND	0.000	NA
Carbon Tetrachloride	153.82	0.001	ND	0.001	ND	0.0046	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0022	ND	0.000	NA
Bromodichloromethane	163.83	0.001	ND	0.001	ND	0.0028	ND	0.000	NA
1,2-Dichloropropane	112.99	0.001	ND	0.001	ND	0.0027	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.001	ND	0.001	ND	0.0028	ND	0.000	NA
Trichloroethene	131.40	0.018	E	0.001	ND	0.0048	ND	0.018	NA
Dibromochloromethane	208.29	0.001	ND	0.001	ND	0.0029	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0034	ND	0.000	NA
Benzene	78.12	0.093	D	0.009	E	0.0017	ND	0.102	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0024	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.007	ND	0.006	ND	0.0077	ND	0.000	NA
Bromoform	252.77	0.002	ND	0.002	ND	0.0033	ND	0.000	NA
2-Hexanone	100.16	0.002	ND	0.001	ND	0.0540	E	0.054	NA
4-Methyl-2-Pentanone	100.16	0.002	ND	0.001	ND	0.0030	ND	0.000	NA
Tetrachloroethene	163.85	0.001	ND	0.001	ND	0.0067	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.001	ND	0.001	ND	0.0019	ND	0.000	NA
Toluene	92.13	0.108	D	0.259	D	0.6982	D	1.065	240.6
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0020	ND	0.000	NA
Ethylbenzene	106.16	0.001	ND	0.001	ND	0.0026	E	0.003	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0017	ND	0.000	NA
m-/p-Xylene	106.12	0.016	E	0.001	ND	0.0086	E	0.025	NA
o-Xylene	106.12	0.001	ND	0.001	ND	0.0029	ND	0.000	NA
Acrolein	56.06	0.054	ND	0.044	ND	0.1415	ND	0.000	NA
Acrylonitrile	53.03	0.010	ND	0.009	ND	0.0147	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.002	ND	0.001	ND	0.0042	ND	0.000	NA
Iodomethane	141.94	0.002	ND	0.002	ND	0.0084	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0157	E	0.016	NA
1,4-Dichloro-2-butene	125.00	0.004	ND	0.003	ND	0.0039	ND	0.000	NA
Ethyl methacrylate	114.15	0.001	ND	0.001	ND	0.0104	E	0.010	NA
1,2,3-Trichloropropane	147.43	0.002	ND	0.002	ND	0.0028	ND	0.000	NA
Trichlorofluoromethane	137.37	0.002	ND	0.049	D	0.0052	ND	0.049	NA
1,3 Dichlorobenzene	147.00	0.004	ND	0.004	ND	0.0019	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0020	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0019	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0063	ND	0.000	NA
n-Hexane	86.18	0.011	E	0.009	E	0.0028	ND	0.020	NA
Tert-Butyl methyl ether	88.15	0.008	ND	0.006	ND	0.0209	ND	0.000	NA
1,3 Butadiene	54.09	0.008	ND	0.007	ND	0.0092	ND	0.000	NA
Vinyl Bromide	106.96	0.002	ND	0.002	ND	0.0083	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.001	ND	0.0007	ND	0.000	NA
Allyl Chloride	76.53	0.004	ND	0.003	ND	0.0163	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0011	ND	0.000	NA
Dimethyl Sulfide	62.13	0.002	ND	0.002	ND	0.0062	ND	0.000	NA
Dimethyl Disulfide	94.2	0.001	ND	0.001	ND	0.0023	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0016	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0009	ND	0.000	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE II-1-S3-V1-B

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate (div by 2) ug	Condensate Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.005	ND	2.024	D	0.0059	ND	2.024	No
Bromomethane	94.95	0.005	ND	1.620	D	0.0063	ND	1.620	No
Vinyl Chloride	62.50	0.004	ND	0.003	ND	0.0048	ND	0.000	NA
Chloroethane	64.52	0.005	ND	0.003	ND	0.0064	ND	0.000	NA
Methylene Chloride	84.94	0.148	D	0.127	D	2.0859	D	2.362	85.8
Acetone	58.08	0.006	ND	0.004	ND	6.1723	D	6.172	NA
Carbon Disulfide	76.14	0.024	E	0.001	ND	0.0031	ND	0.024	NA
1,1-Dichloroethene	96.94	0.003	ND	0.002	ND	0.0139	ND	0.000	NA
1,1-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0026	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.002	ND	0.002	ND	0.0081	ND	0.000	NA
Chloroform	119.38	0.001	ND	0.001	ND	0.0027	ND	0.000	NA
1,2-Dichloroethane	98.96	0.002	ND	0.001	ND	0.0033	ND	0.000	NA
2-Butanone	72.1	0.015	ND	0.011	ND	0.0900	E	0.090	NA
1,1,1-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0039	ND	0.000	NA
Carbon Tetrachloride	153.82	0.001	ND	0.001	ND	0.0045	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0022	ND	0.000	NA
Bromodichloromethane	163.83	0.001	ND	0.001	ND	0.0028	ND	0.000	NA
1,2-Dichloropropane	112.99	0.001	ND	0.001	ND	0.0027	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.001	ND	0.001	ND	0.0028	ND	0.000	NA
Trichloroethene	131.40	0.001	ND	0.001	ND	0.0048	ND	0.000	NA
Dibromochloromethane	208.29	0.002	ND	0.001	ND	0.0029	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.002	ND	0.001	ND	0.0034	ND	0.000	NA
Benzene	78.12	0.038	E	0.014	E	0.0017	ND	0.052	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0024	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.009	ND	0.007	ND	0.0077	ND	0.000	NA
Bromoform	252.77	0.003	ND	0.002	ND	0.0033	ND	0.000	NA
2-Hexanone	100.16	0.002	ND	0.002	ND	0.0540	E	0.054	NA
4-Methyl-2-Pentanone	100.16	0.002	ND	0.002	ND	0.0030	ND	0.000	NA
Tetrachloroethene	163.85	0.002	ND	0.001	ND	0.0067	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.002	ND	0.001	ND	0.0019	ND	0.000	NA
Toluene	92.13	0.024	E	0.077	D	0.6982	D	0.799	316.7
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0020	ND	0.000	NA
Ethylbenzene	106.16	0.019	E	0.001	ND	0.0026	E	0.022	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0017	ND	0.000	NA
m-/p-Xylene	106.12	0.001	ND	0.001	ND	0.0086	E	0.009	NA
o-Xylene	106.12	0.001	ND	0.001	ND	0.0029	ND	0.000	NA
Acrolein	56.06	0.069	ND	0.050	ND	0.1415	ND	0.000	NA
Acrylonitrile	53.03	0.014	ND	0.010	ND	0.0147	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.002	ND	0.001	ND	0.0042	ND	0.000	NA
Iodomethane	141.94	0.003	ND	0.002	ND	0.0084	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0157	E	0.016	NA
1,4-Dichloro-2-butene	125.00	0.005	ND	0.004	ND	0.0039	ND	0.000	NA
Ethyl methacrylate	114.15	0.001	ND	0.001	ND	0.0104	E	0.010	NA
1,2,3-Trichloropropane	147.43	0.002	ND	0.002	ND	0.0028	ND	0.000	NA
Trichlorofluoromethane	137.37	0.002	ND	0.001	ND	0.0052	ND	0.000	NA
1,3 Dichlorobenzene	147.00	0.006	ND	0.004	ND	0.0019	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0020	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0019	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.002	ND	0.001	ND	0.0063	ND	0.000	NA
n-Hexane	86.18	0.001	ND	0.010	E	0.0028	ND	0.010	NA
Tert-Butyl methyl ether	88.15	0.010	ND	0.007	ND	0.0209	ND	0.000	NA
1,3 Butadiene	54.09	0.011	ND	0.008	ND	0.0092	ND	0.000	NA
Vinyl Bromide	106.96	0.003	ND	0.002	ND	0.0083	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.001	ND	0.0007	ND	0.000	NA
Allyl Chloride	76.53	0.005	ND	0.004	ND	0.0163	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0011	ND	0.000	NA
Dimethyl Sulfide	62.13	0.002	ND	0.002	ND	0.0062	ND	0.000	NA
Dimethyl Disulfide	94.2	0.001	ND	0.001	ND	0.0023	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0016	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0009	ND	0.000	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE III-1-S3-V1-B

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate (div by 2) ug	Condensate (div by 2) Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.003	ND	1.491	D	0.0058	ND	1.491	No
Bromomethane	94.95	0.003	ND	1.016	D	0.0062	ND	1.016	No
Vinyl Chloride	62.50	0.002	ND	0.002	ND	0.0047	ND	0.000	NA
Chloroethane	64.52	0.003	ND	0.002	ND	0.0063	ND	0.000	NA
Methylene Chloride	84.94	0.001	ND	0.172	D	1.3572	D	1.530	No
Acetone	58.08	0.003	ND	0.003	ND	5.5620	D	5.562	NA
Carbon Disulfide	76.14	0.010	E	0.001	ND	0.0030	ND	0.010	NA
1,1-Dichloroethene	96.94	0.002	ND	0.001	ND	0.0136	ND	0.000	NA
1,1-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0026	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0079	ND	0.000	NA
Chloroform	119.38	0.001	ND	0.001	ND	0.0027	ND	0.000	NA
1,2-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0032	ND	0.000	NA
2-Butanone	72.1	0.008	ND	0.007	ND	0.0570	E	0.057	NA
1,1,1-Trichloroethane	133.41	0.016	E	0.001	ND	0.0037	ND	0.016	NA
Carbon Tetrachloride	153.82	0.001	ND	0.001	ND	0.0043	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0021	ND	0.000	NA
Bromodichloromethane	163.83	0.001	ND	0.001	ND	0.0027	ND	0.000	NA
1,2-Dichloropropane	112.99	0.001	ND	0.001	ND	0.0028	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.001	ND	0.001	ND	0.0027	ND	0.000	NA
Trichloroethene	131.40	0.048	E	0.001	ND	0.0046	ND	0.048	NA
Dibromochloromethane	208.29	0.001	ND	0.001	ND	0.0028	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0033	ND	0.000	NA
Benzene	78.12	0.080	D	0.009	E	0.0017	ND	0.089	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0023	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.005	ND	0.004	ND	0.0074	ND	0.000	NA
Bromoform	252.77	0.002	ND	0.001	ND	0.0032	ND	0.000	NA
2-Hexanone	100.16	0.001	ND	0.001	ND	0.0040	ND	0.000	NA
4-Methyl-2-Pentanone	100.16	0.001	ND	0.001	ND	0.0030	ND	0.000	NA
Tetrachloroethene	163.85	0.001	ND	0.001	ND	0.0065	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.001	ND	0.001	ND	0.0019	ND	0.000	NA
Toluene	92.13	0.100	D	0.342	D	0.7983	D	1.240	343.0
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0019	ND	0.000	NA
Ethylbenzene	106.16	0.001	ND	0.001	ND	0.0098	E	0.010	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0016	ND	0.000	NA
m-/p-Xylene	106.12	0.010	E	0.003	E	0.0084	E	0.022	NA
o-Xylene	106.12	0.001	ND	0.001	ND	0.0028	ND	0.000	NA
Acrolein	56.06	0.039	ND	0.032	ND	0.6004	D	0.600	NA
Acrylonitrile	53.03	0.008	ND	0.006	ND	0.0144	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.001	ND	0.001	ND	0.0041	ND	0.000	NA
Iodomethane	141.94	0.001	ND	0.001	ND	0.0083	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0142	E	0.014	NA
1,4-Dichloro-2-butene	125.00	0.003	ND	0.003	ND	0.0038	ND	0.000	NA
Ethyl methacrylate	114.15	0.001	ND	0.001	ND	0.0027	ND	0.000	NA
1,2,3-Trichloropropane	147.43	0.001	ND	0.001	ND	0.0028	ND	0.000	NA
Trichlorofluoromethane	137.37	0.001	ND	0.001	ND	0.0061	ND	0.000	NA
1,3 Dichlorobenzene	147.00	0.003	ND	0.003	ND	0.0018	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0020	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0018	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.001	ND	0.001	ND	0.0062	ND	0.000	NA
n-Hexane	86.18	0.134	D	0.054	D	0.0028	ND	0.188	NA
Tert-Butyl methyl ether	88.15	0.006	ND	0.005	ND	0.0205	ND	0.000	NA
1,3 Butadiene	54.09	0.006	ND	0.005	ND	0.0090	ND	0.000	NA
Vinyl Bromide	106.96	0.002	ND	0.001	ND	0.0082	ND	0.000	NA
Isooctane	114.23	0.297	D	0.032	E	0.0007	ND	0.329	NA
Allyl Chloride	76.53	0.003	ND	0.002	ND	0.0160	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0011	ND	0.000	NA
Dimethyl Sulfide	62.13	0.001	ND	0.001	ND	0.0365	E	0.037	NA
Dimethyl Disulfide	94.2	0.001	ND	0.001	ND	0.0022	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0009	ND	0.000	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE III-1-S3-V1-C

NAME	Mol. Wt.	Tenax ug	Code	Tnx Charcoal ug	Code	Condensate (div by 2) ug	Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.019	ND	0.002	ND	0.0058	ND	0.000	NA
Bromomethane	94.95	0.019	ND	0.002	ND	0.0062	ND	0.000	NA
Vinyl Chloride	62.50	0.017	ND	0.002	ND	0.0047	ND	0.000	NA
Chloroethane	64.52	0.018	ND	0.002	ND	0.0063	ND	0.000	NA
Methylene Chloride	84.94	0.010	ND	0.081	D	1.3572	D	1.439	No
Acetone	58.08	0.024	ND	0.759	D	5.5620	D	6.321	No
Carbon Disulfide	76.14	0.004	ND	0.001	ND	0.0030	ND	0.000	NA
1,1-Dichloroethene	96.94	0.011	ND	0.001	ND	0.0136	ND	0.000	NA
1,1-Dichloroethane	98.96	0.005	ND	0.001	ND	0.0026	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.009	ND	0.001	ND	0.0079	ND	0.000	NA
Chloroform	119.38	0.005	ND	0.001	ND	0.0027	ND	0.000	NA
1,2-Dichloroethane	98.96	0.007	ND	0.001	ND	0.0032	ND	0.000	NA
2-Butanone	72.1	0.021	ND	0.017	ND	0.0570	E	0.057	NA
1,1,1-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0037	ND	0.000	NA
Carbon Tetrachloride	153.82	0.002	ND	0.001	ND	0.0043	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0021	ND	0.000	NA
Bromodichloromethane	163.83	0.002	ND	0.001	ND	0.0027	ND	0.000	NA
1,2-Dichloropropane	112.99	0.002	ND	0.002	ND	0.0028	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.002	ND	0.002	ND	0.0027	ND	0.000	NA
Trichloroethene	131.40	0.002	ND	0.002	ND	0.0046	ND	0.000	NA
Dibromochloromethane	208.29	0.002	ND	0.002	ND	0.0028	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.002	ND	0.002	ND	0.0033	ND	0.000	NA
Benzene	78.12	16.650	D	0.061	D	0.0017	ND	16.712	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0023	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.013	ND	0.010	ND	0.0074	ND	0.000	NA
Bromoform	252.77	0.004	ND	0.003	ND	0.0032	ND	0.000	NA
2-Hexanone	100.16	0.010	ND	0.002	ND	0.0040	ND	0.000	NA
4-Methyl-2-Pentanone	100.16	0.010	ND	0.002	ND	0.0030	ND	0.000	NA
Tetrachloroethene	163.85	0.008	ND	0.002	ND	0.0065	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.008	ND	0.002	ND	0.0019	ND	0.000	NA
Toluene	92.13	0.380	D	0.341	D	0.7883	D	1.519	89.9
Chlorobenzene	112.56	0.003	ND	0.001	ND	0.0019	ND	0.000	NA
Ethylbenzene	106.16	0.005	ND	0.001	ND	0.0098	E	0.010	NA
Styrene	104.14	0.141	D	0.001	ND	0.0016	ND	0.141	NA
m-/p-Xylene	106.12	0.004	ND	0.001	ND	0.0084	E	0.008	NA
o-Xylene	106.12	0.004	ND	0.001	ND	0.0028	ND	0.000	NA
Acrolein	56.06	243.918	D	192.081	D	0.6004	D	436.599	78.7
Acrylonitrile	53.03	0.055	ND	0.006	ND	0.0144	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.008	ND	0.001	ND	0.0041	ND	0.000	NA
Iodomethane	141.94	0.010	ND	0.001	ND	0.0083	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0142	E	0.014	NA
1,4-Dichloro-2-butene	125.00	0.007	ND	0.006	ND	0.0038	ND	0.000	NA
Ethyl methacrylate	114.15	0.006	ND	0.001	ND	0.0027	ND	0.000	NA
1,2,3-Trichloropropane	147.43	0.011	ND	0.002	ND	0.0028	ND	0.000	NA
Trichlorofluoromethane	137.37	0.008	ND	0.001	ND	0.0051	ND	0.000	NA
1,3 Dichlorobenzene	147.00	0.023	ND	0.003	ND	0.0018	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.004	ND	0.001	ND	0.0020	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.004	ND	0.001	ND	0.0018	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.008	ND	0.001	ND	0.0062	ND	0.000	NA
n-Hexane	86.18	0.004	ND	0.001	ND	0.0028	ND	0.000	NA
Tert-Butyl methyl ether	88.15	0.040	ND	0.005	ND	0.0205	ND	0.000	NA
1,3 Butadiene	54.09	0.043	ND	0.005	ND	0.0090	ND	0.000	NA
Vinyl Bromide	106.96	0.012	ND	0.001	ND	0.0082	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.001	ND	0.0007	ND	0.000	NA
Allyl Chloride	76.53	0.020	ND	0.002	ND	0.0160	ND	0.000	NA
Cumene	120.2	0.002	ND	0.001	ND	0.0011	ND	0.000	NA
Dimethyl Sulfide	62.13	0.010	ND	0.001	ND	0.0365	E	0.037	NA
Dimethyl Disulfide	94.2	0.004	ND	0.001	ND	0.0022	ND	0.000	NA
A-Pinene	136.24	0.003	ND	0.001	ND	0.0014	ND	0.000	NA
B-Pinene	136.24	0.003	ND	0.001	ND	0.0015	ND	0.000	NA
P-Cymene	134.22	0.002	ND	0.001	ND	0.0009	ND	0.000	NA

VOST TUBE COMBINATION

Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE IV-1-S3-V1-A

NAME	Mol. Wt.	Tenax ug	Tenax Code	Trx Charcoal ug	Trx Charcoal Code	Condensate (div by 2) ug	Condensate Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.612	D	0.465	D	0.0060	ND	1.077	76
Bromomethane	94.95	0.434	D	0.412	D	0.0064	ND	0.847	95
Vinyl Chloride	62.50	0.004	ND	0.002	ND	0.0049	ND	0.000	NA
Chloroethane	64.52	0.004	ND	0.003	ND	0.0064	ND	0.000	NA
Methylene Chloride	84.94	0.002	ND	0.207	D	0.2534	D	0.460	No
Acetone	58.08	4.650	D	0.842	D	3.4266	D	8.920	No
Carbon Disulfide	76.14	0.001	ND	0.001	ND	0.0031	ND	0.000	NA
1,1-Dichloroethene	96.94	0.002	ND	0.002	ND	0.0140	ND	0.000	NA
1,1-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0026	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.002	ND	0.001	ND	0.0081	ND	0.000	NA
Chloroform	119.38	0.001	ND	0.001	ND	0.0027	ND	0.000	NA
1,2-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0033	ND	0.000	NA
2-Butanone	72.1	0.022	ND	0.008	ND	0.1331	E	0.133	NA
1,1,1-Trichloroethane	133.41	0.001	ND	0.001	ND	0.0038	ND	0.000	NA
Carbon Tetrachloride	153.82	0.002	ND	0.001	ND	0.0044	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0123	E	0.012	NA
Bromodichloromethane	163.83	0.002	ND	0.001	ND	0.0028	ND	0.000	NA
1,2-Dichloropropane	112.99	0.002	ND	0.001	ND	0.0026	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.002	ND	0.001	ND	0.0028	ND	0.000	NA
Trichloroethene	131.40	0.002	ND	0.001	ND	0.0047	ND	0.000	NA
Dibromochloromethane	208.29	0.002	ND	0.001	ND	0.0028	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.003	ND	0.001	ND	0.0034	ND	0.000	NA
Benzene	78.12	12.164	D	0.081	D	0.0017	ND	12.245	No
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0024	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.013	ND	0.005	ND	0.0076	ND	0.000	NA
Bromoform	252.77	0.004	ND	0.002	ND	0.0033	ND	0.000	NA
2-Hexanone	100.16	0.002	ND	0.001	ND	0.0607	E	0.061	NA
4-Methyl-2-Pentanone	100.16	0.002	ND	0.001	ND	0.0030	ND	0.000	NA
Tetrachloroethene	163.85	0.002	ND	0.001	ND	0.0065	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.002	ND	0.001	ND	0.0019	ND	0.000	NA
Toluene	92.13	0.001	ND	0.660	D	0.1764	E	0.836	No
Chlorobenzene	112.56	0.031	E	0.001	ND	0.0019	ND	0.031	NA
Ethylbenzene	106.16	0.001	ND	0.001	ND	0.0069	E	0.007	NA
Styrene	104.14	0.038	E	0.001	ND	0.0016	ND	0.038	NA
m-/p-Xylene	106.12	0.043	E	0.004	E	0.0027	ND	0.047	NA
o-Xylene	106.12	0.008	E	0.001	ND	0.0028	ND	0.008	NA
Acrolein	56.06	0.069	ND	0.039	ND	0.9916	D	0.992	NA
Acrylonitrile	53.03	0.011	ND	0.008	ND	0.0148	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.002	ND	0.001	ND	0.0042	ND	0.000	NA
Iodomethane	141.94	0.002	ND	0.001	ND	0.0085	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0179	E	0.018	NA
1,4-Dichloro-2-butene	125.00	0.008	ND	0.003	ND	0.0038	ND	0.000	NA
Ethyl methacrylate	114.15	0.001	ND	0.001	ND	0.0140	E	0.014	NA
1,2,3-Trichloropropane	147.43	0.002	ND	0.001	ND	0.0137	E	0.014	NA
Trichlorofluoromethane	137.37	0.002	ND	0.001	ND	0.0053	ND	0.000	NA
1,3 Dichlorobenzene	147.00	0.005	ND	0.003	ND	0.0018	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0020	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0018	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.002	ND	0.001	ND	0.0064	ND	0.000	NA
n-Hexane	86.18	0.132	D	0.018	E	0.0028	ND	0.150	NA
Tert-Butyl methyl ether	88.15	0.008	ND	0.006	ND	0.0210	ND	0.000	NA
1,3 Butadiene	54.09	0.009	ND	0.006	ND	0.0092	ND	0.000	NA
Vinyl Bromide	106.96	0.003	ND	0.002	ND	0.0084	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.001	ND	0.0007	ND	0.000	NA
Allyl Chloride	76.53	0.004	ND	0.003	ND	0.0164	ND	0.000	NA
Cumene	120.2	0.015	E	0.001	ND	0.0011	ND	0.015	NA
Dimethyl Sulfide	62.13	0.002	ND	0.001	ND	0.0063	ND	0.000	NA
Dimethyl Disulfide	94.2	0.001	ND	0.001	ND	0.0023	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0009	ND	0.000	NA

VOST TUBE COMBINATION

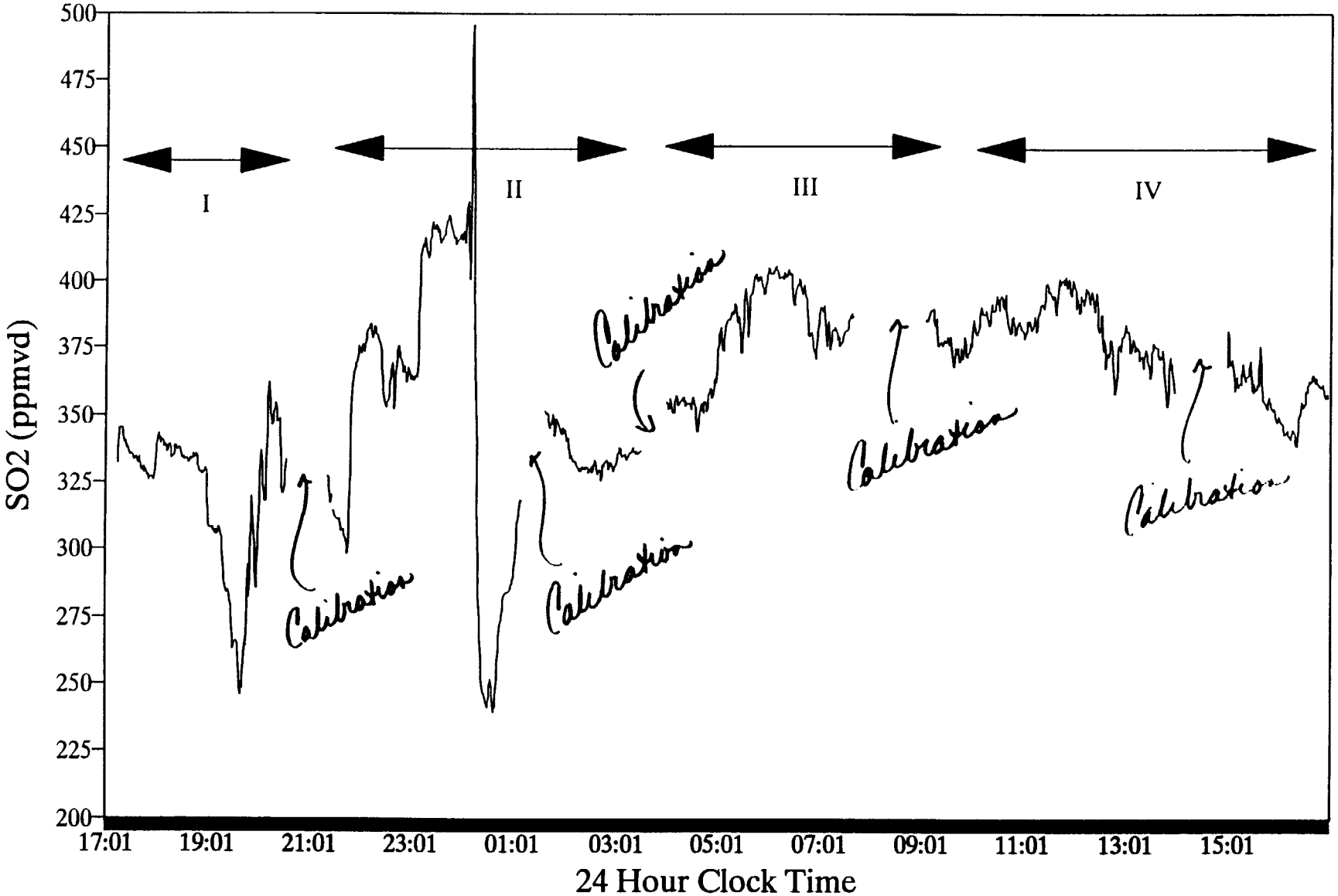
Job Name: Jewell Coal & Coke Plant
EEI Ref #: 3694

SAMPLE IV-1-S3-V1-C

NAME	Mol. Wt.	Tenax ug	Tenax Code	Tnx Charcoal ug	Tnx Charcoal Code	Condensate (div by 2) ug	Condensate (div by 2) Code	Total ug	BT
IS			IS		IS				
Chloromethane	50.49	0.004	ND	0.564	D	0.0060	ND	0.564	No
Bromomethane	94.95	0.004	ND	0.555	D	0.0064	ND	0.555	No
Vinyl Chloride	62.50	0.004	ND	0.004	ND	0.0049	ND	0.000	NA
Chloroethane	64.52	0.004	ND	0.004	ND	0.0064	ND	0.000	NA
Methylene Chloride	84.94	0.023	E	0.130	D	0.2534	D	0.406	578.1
Acetone	58.08	0.005	ND	0.006	ND	3.4266	D	3.427	NA
Carbon Disulfide	76.14	0.017	D	0.001	ND	0.0031	ND	0.017	NA
1,1-Dichloroethene	96.94	0.002	ND	0.003	ND	0.0140	ND	0.000	NA
1,1-Dichloroethane	98.96	0.001	ND	0.001	ND	0.0026	ND	0.000	NA
trans-1,2-Dichloroethene	96.94	0.002	ND	0.002	ND	0.0081	ND	0.000	NA
Chloroform	119.38	0.001	ND	0.001	ND	0.0027	ND	0.000	NA
1,2-Dichloroethane	98.96	0.001	ND	0.002	ND	0.0033	ND	0.000	NA
2-Butanone	72.1	0.015	ND	0.014	ND	0.1331	E	0.133	NA
1,1,1-Trichloroethane	133.41	0.017	E	0.001	ND	0.0038	ND	0.017	NA
Carbon Tetrachloride	153.82	0.001	ND	0.001	ND	0.0044	ND	0.000	NA
Vinyl Acetate	86.09	0.001	ND	0.001	ND	0.0123	E	0.012	NA
Bromodichloromethane	163.83	0.001	ND	0.001	ND	0.0028	ND	0.000	NA
1,2-Dichloropropane	112.99	0.001	ND	0.001	ND	0.0026	ND	0.000	NA
trans-1,3-Dichloropropene	110.97	0.001	ND	0.001	ND	0.0028	ND	0.000	NA
Trichloroethene	131.40	0.001	ND	0.001	ND	0.0047	ND	0.000	NA
Dibromochloromethane	208.29	0.002	ND	0.001	ND	0.0028	ND	0.000	NA
1,1,2-Trichloroethane	133.41	0.002	ND	0.002	ND	0.0034	ND	0.000	NA
Benzene	78.12	0.139	D	0.014	E	0.0017	ND	0.153	NA
cis-1,3-Dichloropropene	110.98	0.001	ND	0.001	ND	0.0024	ND	0.000	NA
2-Chloroethylvinylether	106.55	0.009	ND	0.009	ND	0.0076	ND	0.000	NA
Bromoform	252.77	0.003	ND	0.003	ND	0.0033	ND	0.000	NA
2-Hexanone	100.16	0.002	ND	0.002	ND	0.0607	E	0.061	NA
4-Methyl-2-Pentanone	100.16	0.002	ND	0.002	ND	0.0030	ND	0.000	NA
Tetrachloroethene	163.85	0.002	ND	0.002	ND	0.0065	ND	0.000	NA
1,1,2,2-Tetrachloroethane	167.86	0.002	ND	0.002	ND	0.0019	ND	0.000	NA
Toluene	92.13	0.082	D	0.324	D	0.1764	E	0.582	396.2
Chlorobenzene	112.56	0.001	ND	0.001	ND	0.0019	ND	0.000	NA
Ethylbenzene	106.16	0.006	E	0.001	ND	0.0069	E	0.013	NA
Styrene	104.14	0.001	ND	0.001	ND	0.0016	ND	0.000	NA
m-/p-Xylene	106.12	0.018	E	0.001	ND	0.0027	ND	0.018	NA
o-Xylene	106.12	0.001	ND	0.001	ND	0.0028	ND	0.000	NA
Acrolein	56.06	0.059	ND	0.067	ND	0.8916	D	0.892	NA
Acrylonitrile	53.03	0.012	ND	0.013	ND	0.0148	ND	0.000	NA
Dichlorodifluoromethane	120.91	0.002	ND	0.002	ND	0.0042	ND	0.000	NA
Iodomethane	141.94	0.002	ND	0.003	ND	0.0085	ND	0.000	NA
Dibromomethane	173.85	0.001	ND	0.001	ND	0.0179	E	0.018	NA
1,4-Dichloro-2-butene	125.00	0.005	ND	0.005	ND	0.0038	ND	0.000	NA
Ethyl methacrylate	114.15	0.001	ND	0.001	ND	0.0140	E	0.014	NA
1,2,3-Trichloropropane	147.43	0.002	ND	0.002	ND	0.0137	E	0.014	NA
Trichlorofluoromethane	137.37	0.002	ND	0.002	ND	0.0053	ND	0.000	NA
1,3 Dichlorobenzene	147.00	0.005	ND	0.006	ND	0.0018	ND	0.000	NA
1,4 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0020	ND	0.000	NA
1,2 Dichlorobenzene	147.00	0.001	ND	0.001	ND	0.0018	ND	0.000	NA
cis-1,2-Dichloroethene	96.94	0.002	ND	0.002	ND	0.0064	ND	0.000	NA
n-Hexane	86.18	0.015	E	0.001	ND	0.0028	ND	0.015	NA
Tert-Butyl methyl ether	88.15	0.008	ND	0.010	ND	0.0210	ND	0.000	NA
1,3 Butadiene	54.09	0.009	ND	0.010	ND	0.0092	ND	0.000	NA
Vinyl Bromide	106.96	0.003	ND	0.003	ND	0.0084	ND	0.000	NA
Isooctane	114.23	0.001	ND	0.001	ND	0.0007	ND	0.000	NA
Allyl Chloride	76.53	0.004	ND	0.005	ND	0.0164	ND	0.000	NA
Cumene	120.2	0.001	ND	0.001	ND	0.0011	ND	0.000	NA
Dimethyl Sulfide	62.13	0.002	ND	0.002	ND	0.0063	ND	0.000	NA
Dimethyl Disulfide	94.2	0.001	ND	0.001	ND	0.0023	ND	0.000	NA
A-Pinene	136.24	0.001	ND	0.001	ND	0.0014	ND	0.000	NA
B-Pinene	136.24	0.001	ND	0.001	ND	0.0015	ND	0.000	NA
P-Cymene	134.22	0.001	ND	0.001	ND	0.0009	ND	0.000	NA

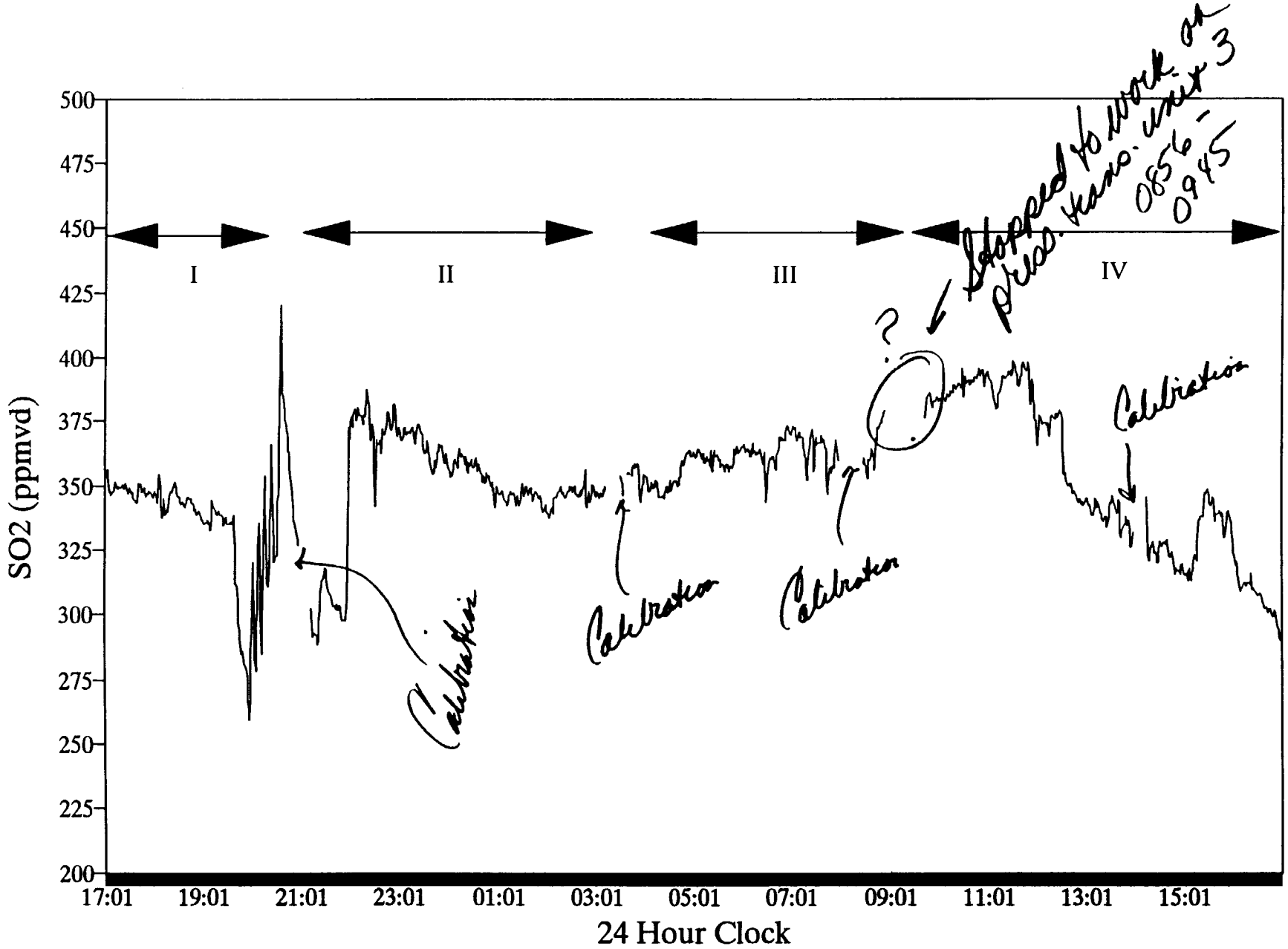
Continuous Emissions Monitoring

SO2 ppmvd
Day 1

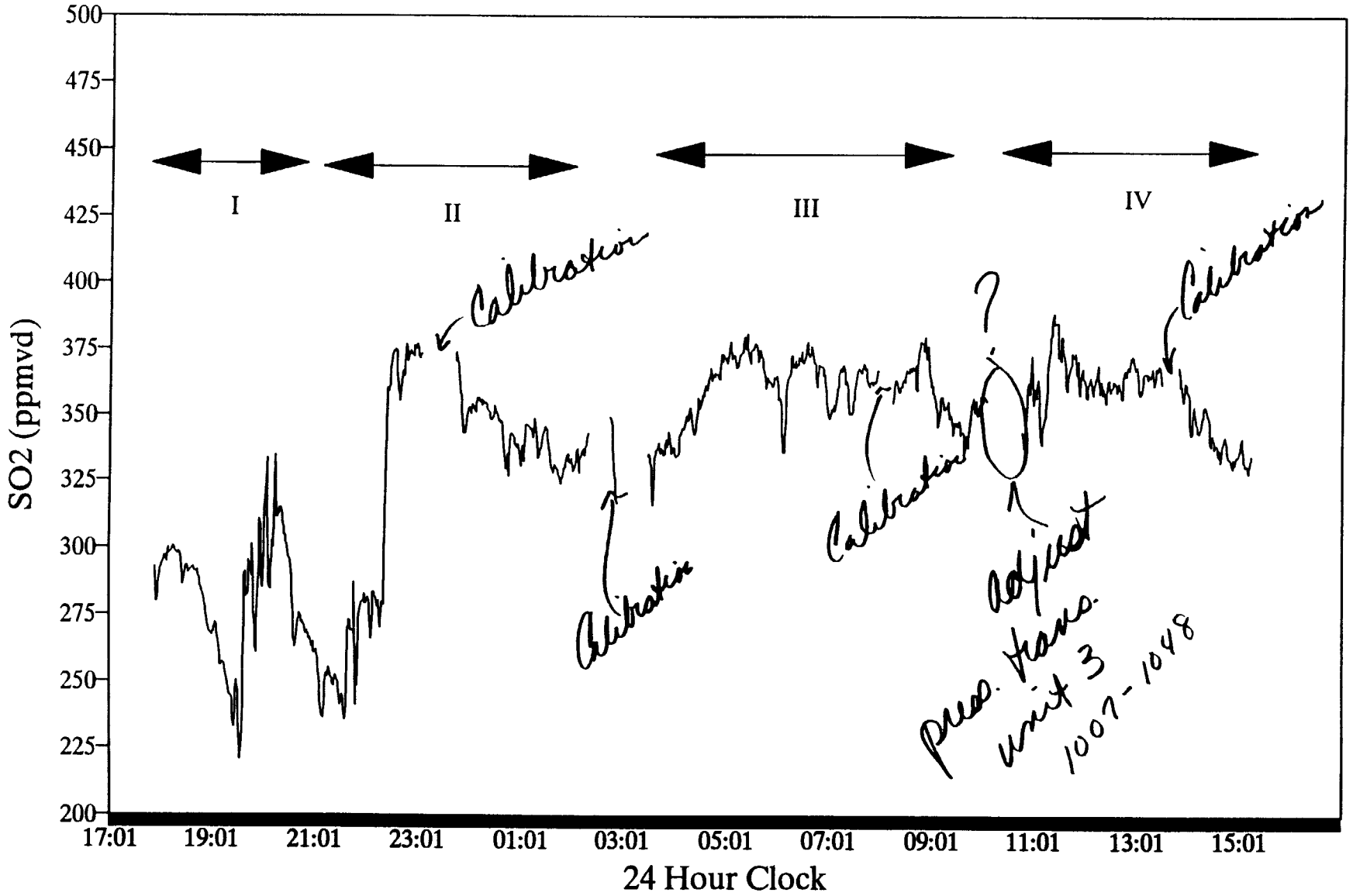


Jewell Coal & Coke

SO2 ppmvd
Day 2

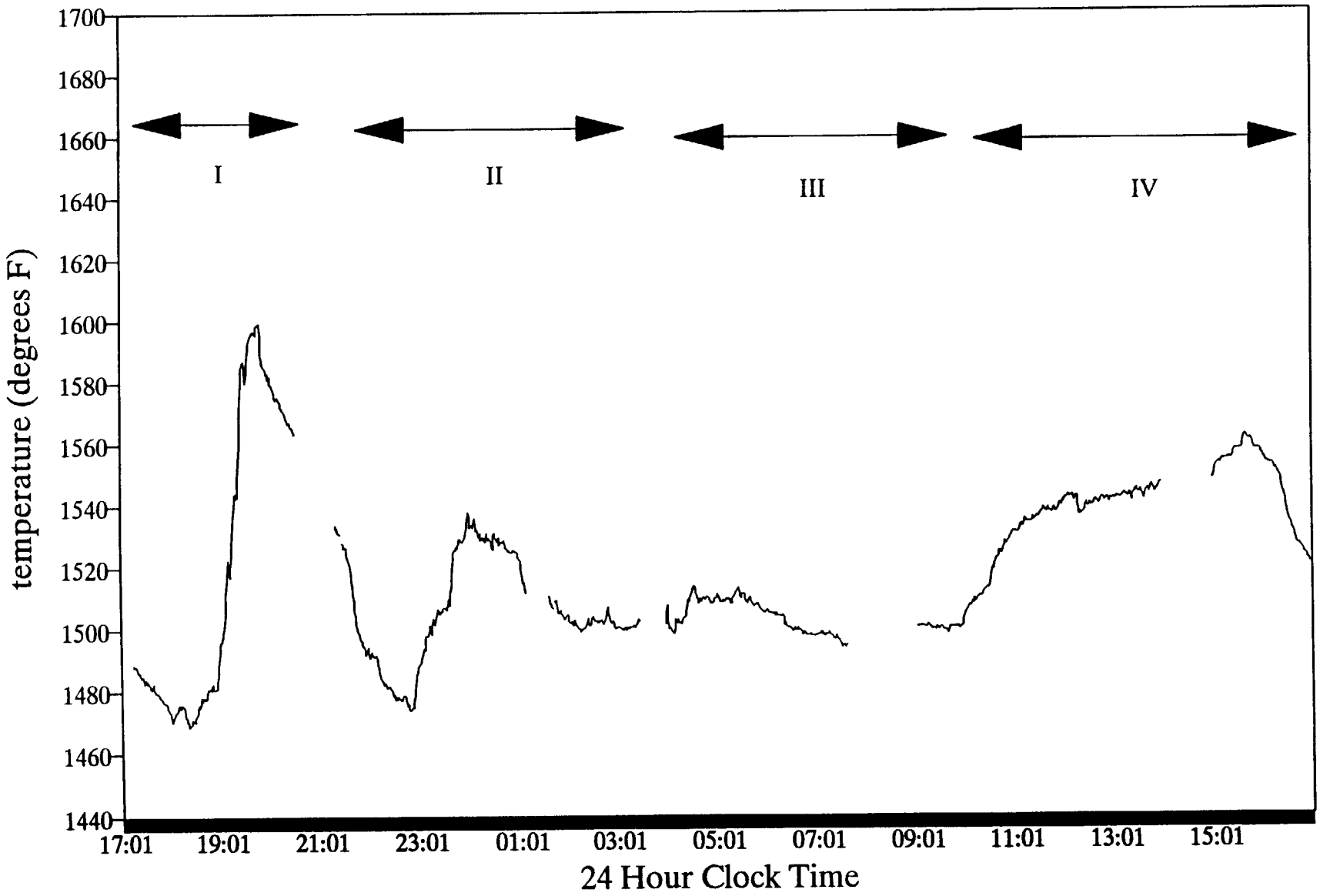


SO2 ppmvd
Day 3



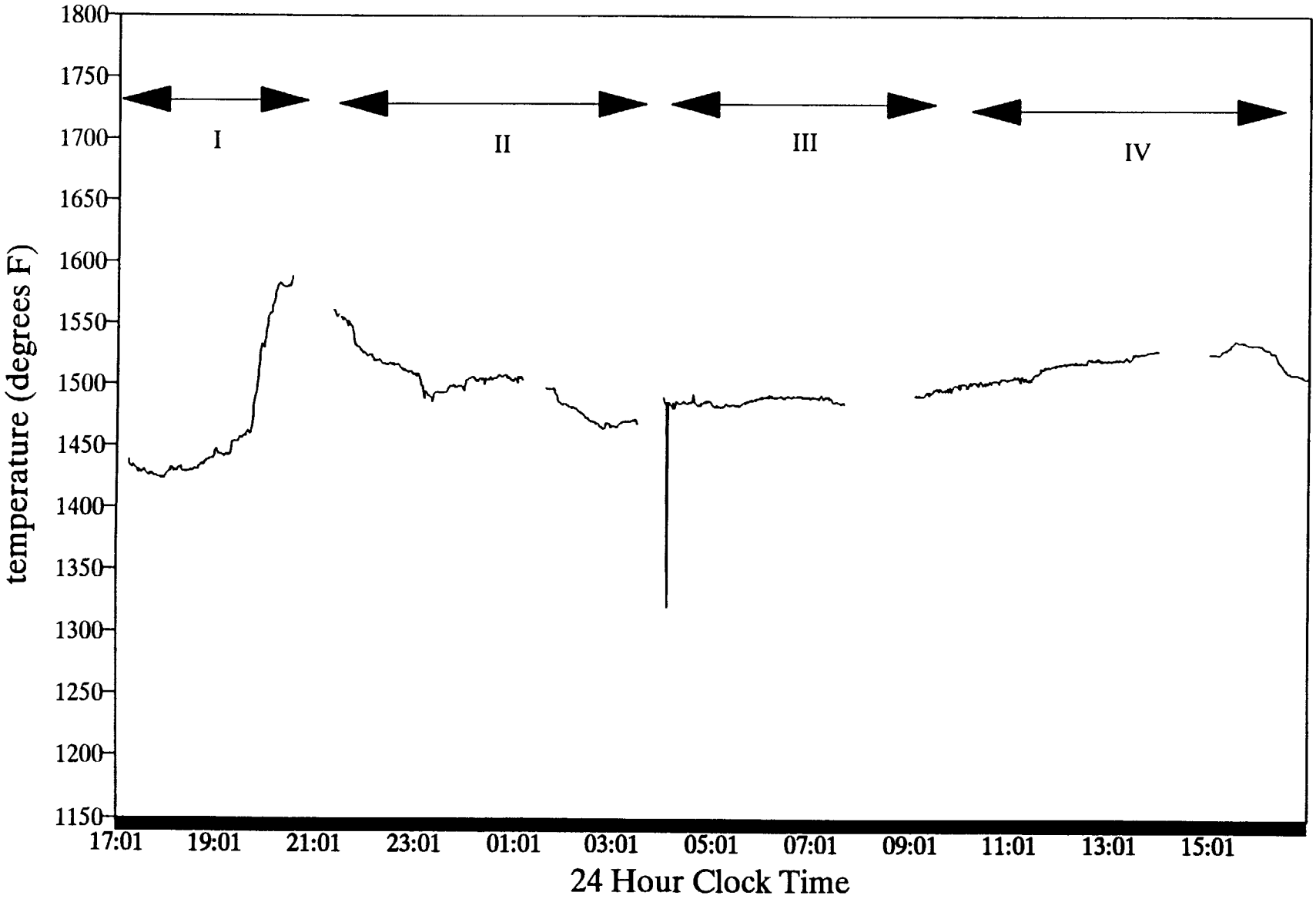
Jewell Coal & Coke

Temperature (degrees F) Stack 3
Day 1



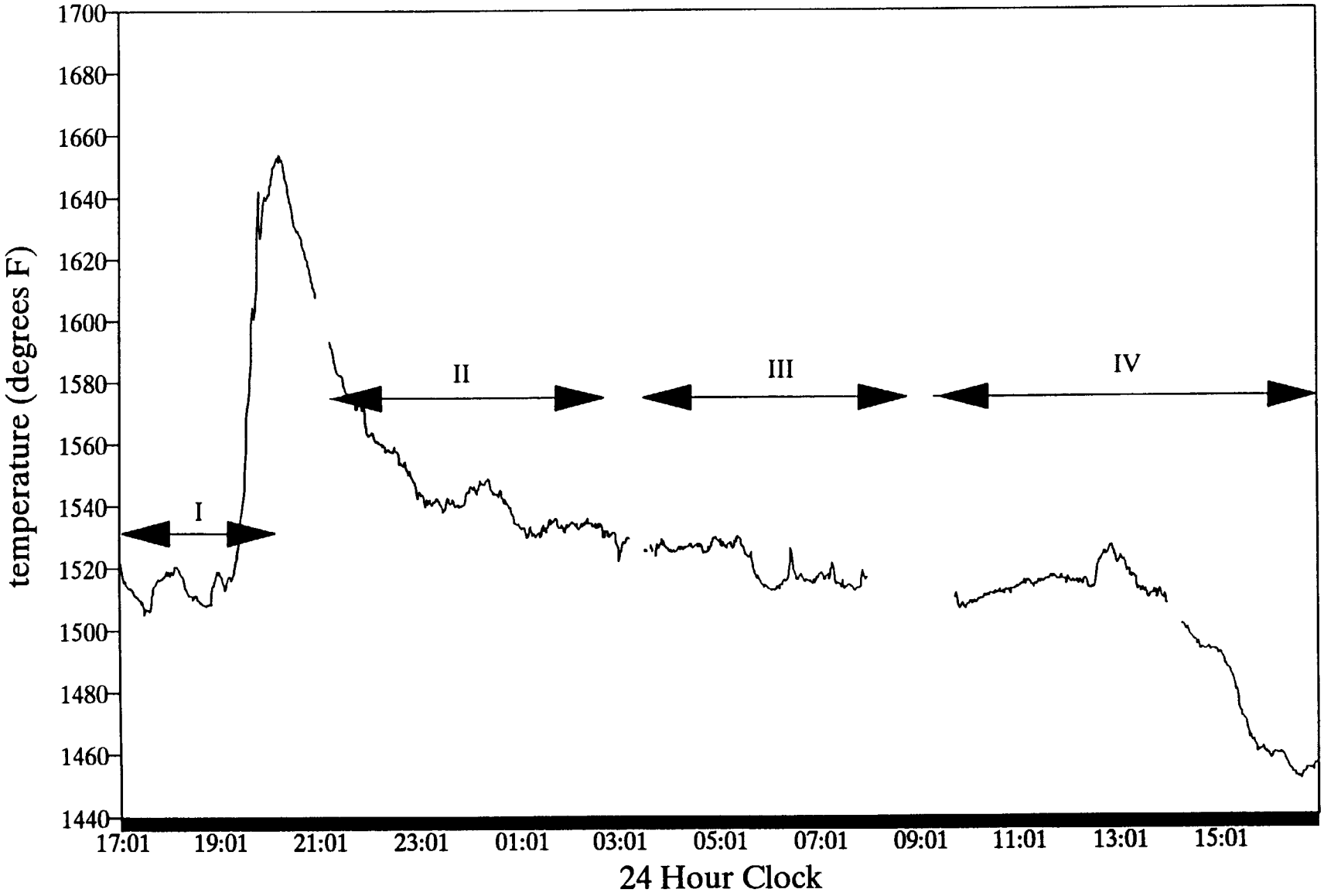
/ell Coal & Coke

Temperature (degrees F) Stack 4
Day 1



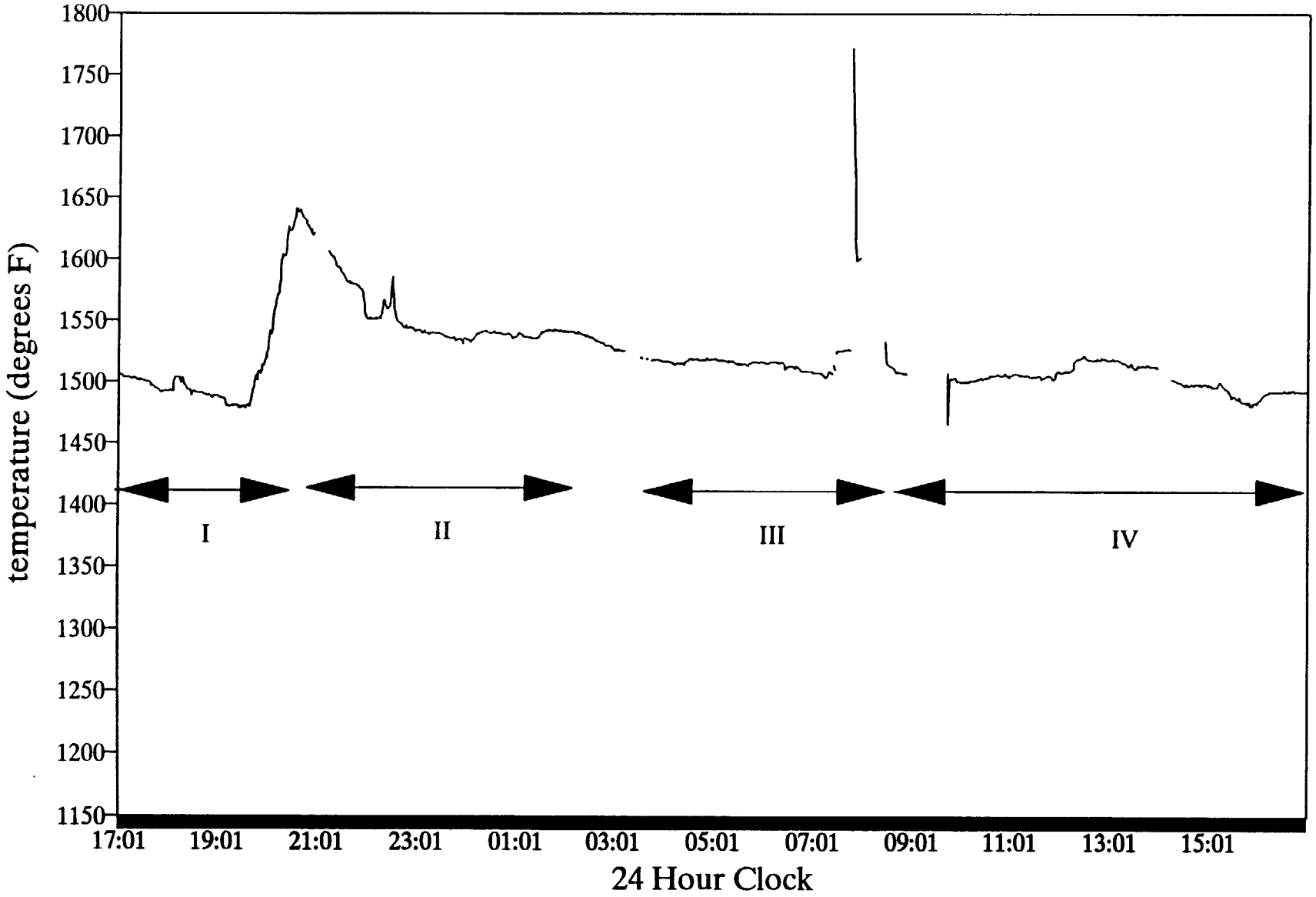
Jewell Coal & Coke

Temperature (degrees F) Stack 3
Day 2



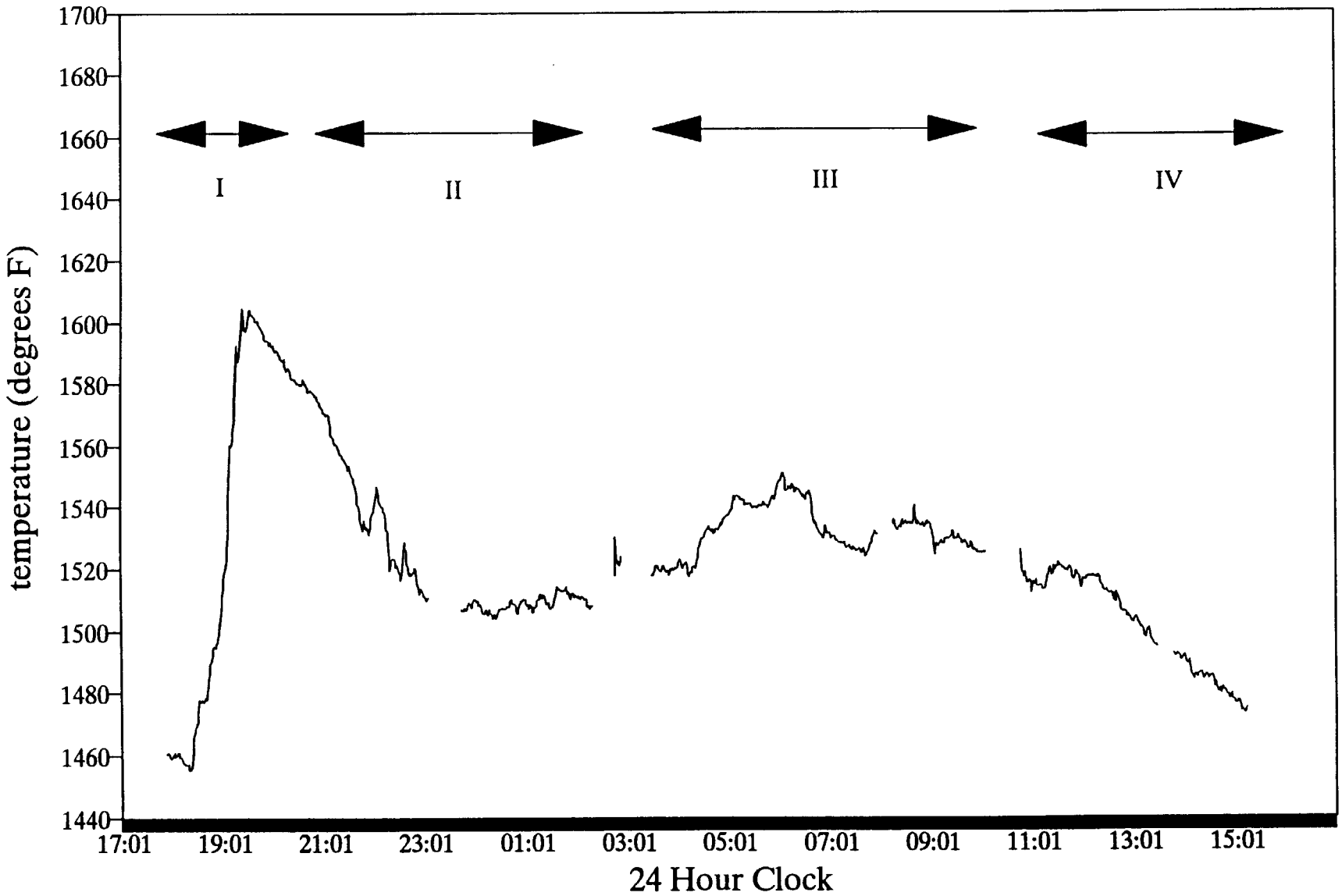
vell Coal & Coke

Temperature (degrees F) Stack 4
Day 2



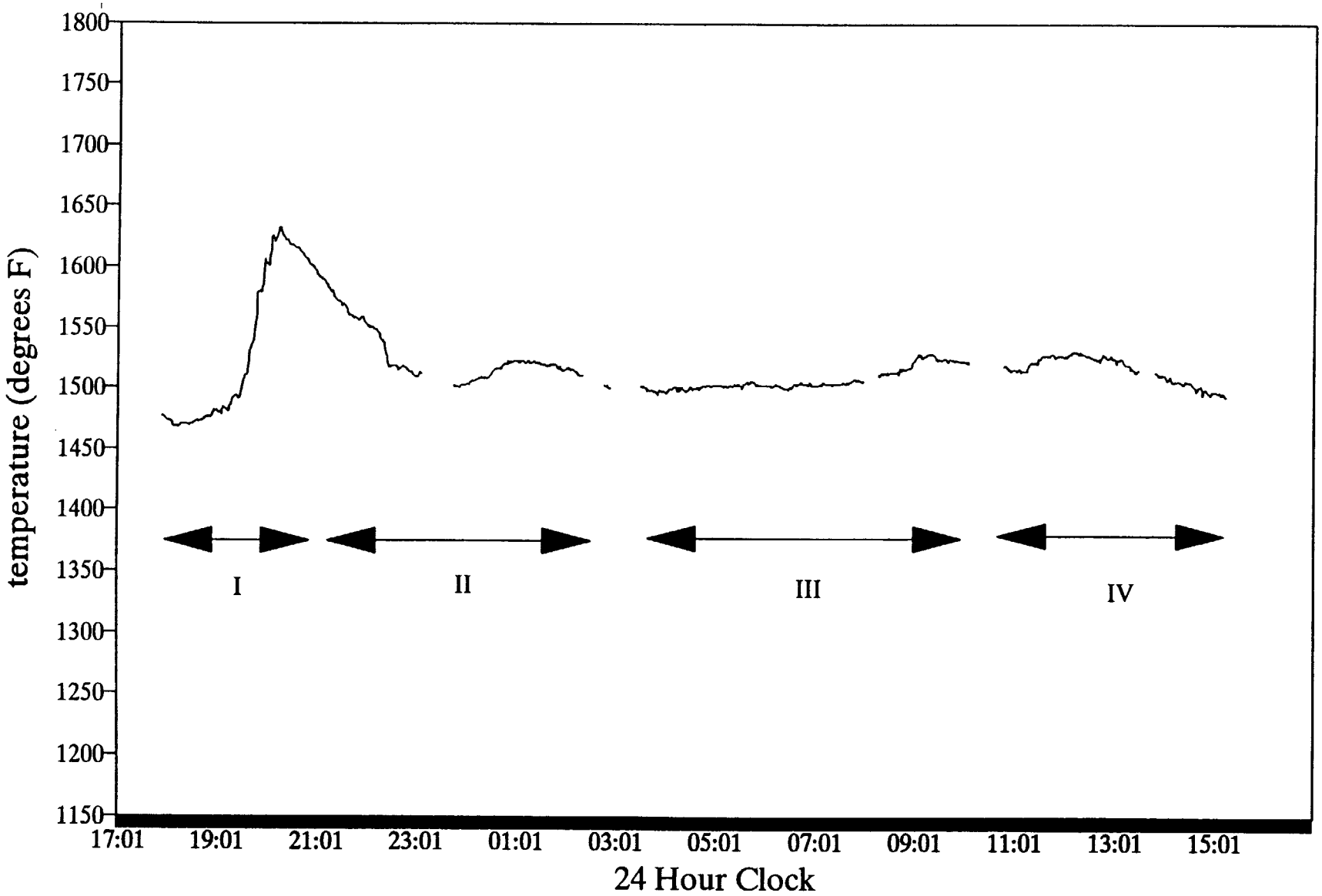
Jewell Coal & Coke

Temperature (degrees F) Stack 3
Day 3



vell Coal & Coke

Temperature (degrees F) Stack 4
Day 3



Jewell Coal & Coke

CEM RUN AND CALIBRATION TIMES

RUN NUMBER	DATE	RUN TIME	CALIBRATION TIME	DATE
I-1-S4-CEM-1	10/29/91	1716-2034	2035-2111	10/29/91
II-1-S4-CEM-1	10/29/91	2123-0330	0111-0130	10/30/91
III-1-S4-CEM-1	10/30/91	0401-1020	0331-0346/0741-0855	10/30/91
IV-1-S4-CEM-1	10/30/91	1021-1700	1400-1458	10/30/91
I-2-S4-CEM-2	10/30/91	1701-2100		
II-2-S4-CEM-2	10/30/91	2116-0315	2101-2112	10/30/91
III-2-S4-CEM-2	10/31/91	0333-1000	0316-0329/0800-0821	10/31/91
IV-2-S4-CEM-2	10/31/91	1001-1700	1400-1414	10/31/91
I-3-S4-CEM-3	10/31/91	1756-2100	1700-1752	10/31/91
II-3-S4-CEM-3	10/31/91	2101-0255	2308-2340	10/31/91
III-3-S4-CEM-3	11/01/91	0331-1007	0255-0316/0800-0812	10/31/91
IV-3-S4-CEM-3	11/01/91	1049-1516	1330-1347	11/01/91

CONCENTRATION ppmvd
AS MEASURED IN STACK 4

DAY 1

CONDITION	SO2	NOx
I	324.9	44.1
II	350.7	58.8
III	389.5	43.9
IV	394.2	39.5

DAY 2

CONDITION	SO2	NOx
I	347.9	49.2
II	364.0	57.2
III	376.3	43.8
IV	363.6	38.7

DAY 3

CONDITION	SO2	NOx
I	286.5	68.0
II	330.3	65.7
III	362.1	48.0
IV	362.0	38.6

FLOW RATES DSCFM

DAY 1

CONDITION	I	II	III	IV
STACK 1				
MMTL	22,494	18,879	18,529	15,515
M5	22,137	18,835	18,959	16,714
STACK 2				
A	21,421	18,954	16,752	17,614
B	21,461	19,302	16,523	17,609
STACK 3	22,623	20,394	14,474	18,589
STACK 4 *	22,027	19,273	17,047	17,208

DAY 2

CONDITION	I	II	III	IV
STACK 1				
MMTL		19,055	18,336	16,585
M5	21,310	18,911	18,031	17,070
STACK 2				
A	22,742	19,727	19,182	18,810
B		19,689	19,149	18,779
STACK 3	20,987	19,231	14,043	20,784
STACK4 *	21,680	19,323	17,748	18,406

DAY 3

CONDITION	I	II	III	IV
STACK 1				
MMTL	20,672			
M5	20,142	20,739	16,019	17,766
STACK 2				
A	21,170			17,964
B	21,187	16,965	17,952	
STACK 3	25,490	23,289	23,774	20,279
STACK4 *	21,732	20,331	19,248	18,670

* Average of all flow rate data from S1, S2, and S3, per condition.

AIR FLOW RATE ACFM

DAY 1

CONDITION	I	II	III	IV
STACK 1				
MMTL	105,493	85,832	81,641	69,645
M5	103,053	85,509	83,809	73,096
STACK 2				
MM5-A	99,066	90,084	76,406	80,026
MM5-B	99,027	89,733	76,629	80,029
STACK 3	102,331	92,007	65,512	83,161
STACK 4*	101,794	88,633	76,799	77,191

DAY 2

CONDITION	I	II	III	IV
STACK 1				
MMTL		81,899	80,884	73,869
M5	100,102	84,065	80,088	75,598
STACK 2				
MM5-A	109,685	93,391	88,886	86,445
MM5-B		93,430	89,072	86,476
STACK 3	99,366	88,991	63,719	92,281
STACK 4*	103,051	88,355	80,530	82,934

DAY 3

CONDITION	I	II	III	IV
STACK 1				
MMTL	94,348			
M5	90,320	94,329	69,824	78,741
STACK 2				
MM5-A	102,532			83,663
MM5-B	102,517	81,465	85,335	
STACK 3	118,038	109,183	109,093	90,335
STACK 4*	101,551	94,992	88,084	84,246

* Average of all flow rate data from S1, S2, and S3, per condition.

VELOCITY ft/sec

DAY 1

CONDITION	I	II	III	IV
STACK 1				
MMTL	33.23	27.03	25.71	21.93
M5	32.13	26.66	26.13	22.79
STACK 2				
MM5-A	32.85	29.87	25.33	26.53
MM5-B	32.83	29.75	25.41	26.54
STACK 3	32.56	29.28	20.84	26.46
STACK 4*	32.72	28.52	24.68	24.85

DAY 2

CONDITION	I	II	III	IV
STACK 1				
MMTL		25.79	25.47	23.27
M5	31.21	26.21	24.97	23.57
STACK 2				
MM5-A	36.37	30.97	29.47	28.66
MM5-B		30.98	29.53	28.67
STACK 3	31.62	28.32	20.27	29.36
STACK 4*	33.07	28.45	25.94	26.71

DAY 3

CONDITION	I	II	III	IV
STACK 1				
MMTL	29.72			
M5	28.16	29.41	21.77	24.55
STACK 2				
MM5-A	34.00			27.74
MM5-B	33.99	27.01	28.29	
STACK 3	37.56	34.74	34.71	28.74
STACK 4*	32.69	30.39	28.26	27.01

* Average of all data from S1, S2, and S3.

FLUE GAS TEMPERATURE DEGREES F

DAY 1

CONDITION	I	II	III	IV
STACK 1				
MMTL	1,583	1,550	1,501	1,525
M5	1,581	1,549	1,503	1,520
STACK 2				
MM5-A	1,564	1,558	1,533	1,571
MM5-B	1,564	1,558	1,533	1,570
STACK 3	1,519	1,507	1,504	1,541
STACK 4	1,466	1,500	1,489	1,518

DAY 2

CONDITION	I	II	III	IV
STACK 1				
MMTL		1,461	1,491	1,510
M5	1,561	1,473	1,492	1,511
STACK 2				
MM5-A	1,566	1,559	1,546	1,557
MM5-B		1,559	1,545	1,557
STACK 3	1,555	1,545	1,520	1,498
STACK 4	1,521	1,546	1,519	1,503

DAY 3

CONDITION	I	II	III	IV
STACK 1				
MMTL	1,511			
M5	1,506	1,483	1,460	1,508
STACK 2				
MM5-A	1,621			1,575
MM5-B	1,621	1,549	1,574	
STACK 3	1,543	1,522	1,536	1,502
STACK 4	1,533	1,529	1,508	1,516

Cycle 0

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Preliminary Calibration Error Check

DATE : 10-2~~1~~9-1991 TIME: 16:36 - 16:50

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	0.6
7	Unit 4	ppmSO2	241.0	240.5
7	Unit 4	ppmSO2	436.0	437.3
9	Unit 4	ppmNOx	0.0	0.0
9	Unit 4	ppmNOx	240.0	241.0
9	Unit 4	ppmNOx	850.0	849.3
8	Unit 4	ppmCO	0.0	1.4
8	Unit 4	ppmCO	92.3	92.0
8	Unit 4	ppmCO	407.0	406.8
5	Unit 4	% O2	0.00	0.05
5	Unit 4	% O2	12.48	12.53
5	Unit 4	% O2	21.40	21.47
6	Unit 4	% CO2	0.00	0.04
6	Unit 4	% CO2	11.06	10.94
6	Unit 4	% CO2	17.46	17.44

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Pre-test 1 Calibration Bias Check

DATE : 10-2~~1~~8-1991 TIME: 16:50 - 17:03

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	2.8
7	Unit 4	ppmSO2	241.0	235.7
9	Unit 4	ppmNOx	0.0	0.0
9	Unit 4	ppmNOx	240.0	236.3
8	Unit 4	ppmCO	0.0	0.7
8	Unit 4	ppmCO	0.0	91.0
5	Unit 4	% O2	0.00	0.05
5	Unit 4	% O2	12.48	12.50
6	Unit 4	% CO2	0.00	0.06
6	Unit 4	% CO2	11.06	10.80

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Jewell Coal & Coke Engineering 10-28-1991

I-O-SA-CEM

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
17:31	345.9	35.3	0.6	10.33	6.92	1507.9	0.06	1508.6	0.03
17:32	347.5	35.1	0.6	10.22	6.97	1507.4	0.06	1508.5	0.03
17:33	343.1	35.2	0.6	10.30	6.92	1507.5	0.06	1508.9	0.04
17:34	345.8	35.5	0.6	10.25	6.96	1506.7	0.06	1509.5	0.03
17:35	347.1	35.2	0.6	10.20	6.99	1505.5	0.06	1508.6	0.04
17:36	345.7	35.0	0.7	10.21	6.98	1506.2	0.06	1508.7	0.04
17:37	345.7	35.1	0.6	10.22	6.96	1506.9	0.06	1509.3	0.04
17:38	342.5	35.7	0.7	10.29	6.93	1506.3	0.06	1189.6	-0.01
17:39	342.7	35.5	0.7	10.27	6.95	1505.5	0.06	1508.8	0.04
17:40	344.1	35.4	0.6	10.26	6.95	1506.0	0.06	1508.4	0.03
17:41	344.7	35.7	0.6	10.27	6.94	1504.8	0.06	1508.3	0.03
17:42	344.7	35.9	0.7	10.28	6.94	1504.1	0.06	1507.8	0.04
17:43	347.9	35.6	0.6	10.23	6.98	1505.1	0.06	1508.0	0.04
17:44	349.1	35.2	0.7	10.20	6.99	1505.9	0.06	1507.0	0.03
17:45	346.0	35.2	0.6	10.26	6.95	1505.5	0.06	1507.0	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
17:45	345.5	35.4	0.6	10.25	6.95	1506.1	0.06	1487.1	0.03
17:46	345.3	35.2	0.6	10.26	6.94	1506.5	0.06	1506.7	0.03
17:47	344.1	35.2	0.6	10.29	6.93	1505.1	0.06	1506.9	0.03
17:48	343.9	35.1	0.6	10.30	6.93	1505.3	0.06	1507.1	0.03
17:49	343.9	35.2	0.7	10.29	6.94	1505.4	0.06	1508.2	0.04
17:50	346.8	35.3	0.9	10.21	6.98	1505.4	0.06	1507.4	0.04
17:51	347.4	35.0	0.7	10.23	6.97	1505.3	0.06	1507.4	0.03
17:52	344.4	35.4	0.6	10.31	6.92	1505.2	0.06	1507.3	0.04
17:53	344.8	35.4	0.7	10.30	6.92	1505.5	0.06	1506.2	0.03
17:54	342.5	35.1	0.7	10.30	6.92	1505.5	0.06	1507.0	0.03
17:55	345.6	35.5	0.7	10.26	6.96	1507.3	0.06	1506.8	0.04
17:56	346.3	35.3	0.6	10.23	6.98	1508.5	0.06	1507.0	0.04
17:57	349.2	35.3	0.7	10.16	6.99	1507.3	0.06	1506.9	0.03
17:58	348.5	35.4	0.6	10.24	6.97	1507.0	0.06	1506.7	0.04
17:59	349.2	35.6	0.7	10.21	6.99	1507.1	0.06	1507.4	0.03
18:00	348.0	35.8	0.7	10.23	6.98	1507.0	0.06	1506.7	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
18:00	346.0	35.3	0.7	10.25	6.95	1506.2	0.06	1507.0	0.03
18:01	347.4	35.2	0.6	10.22	6.97	1505.6	0.06	1505.8	0.03
18:02	350.5	35.0	0.7	10.17	6.99	1505.5	0.06	1503.6	0.03
18:03	351.1	35.1	0.6	10.13	7.00	1505.2	0.06	1501.5	0.03
18:04	351.6	34.9	0.6	10.12	7.02	1504.6	0.06	1503.4	0.04
18:05	352.7	34.7	0.6	10.06	7.06	1505.8	0.06	1504.0	0.04
18:06	356.9	34.5	0.7	9.94	7.13	1507.1	0.06	1504.0	0.04
18:07	355.9	34.4	0.5	9.95	7.13	1507.4	0.06	1504.0	0.03
18:08	355.5	34.4	0.6	9.99	7.11	1506.9	0.06	1503.9	0.04
18:09	353.7	34.7	0.6	10.06	7.07	1506.0	0.06	1504.0	0.05
18:10	355.8	34.6	0.4	10.04	7.08	1507.3	0.06	1503.6	0.04
18:11	355.3	34.6	0.5	10.06	7.07	1506.7	0.06	1503.2	0.05
18:12	353.9	34.6	0.5	10.10	7.05	1507.0	0.06	1502.4	0.04
18:13	354.0	34.7	0.5	10.11	7.05	1507.0	0.06	1502.4	0.04
18:14	355.8	34.3	0.5	10.02	7.09	1506.7	0.06	1502.2	0.04
18:15	353.7	34.5	0.4	10.08	7.07	1506.4	0.06	1502.4	0.04

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST 15 MINUTES									
18:15	353.6	34.7	0.6	10.07	7.06	1506.3	0.06	1503.4	0.04
18:16	353.7	34.6	0.5	10.09	7.06	1506.4	0.06	1502.3	0.04
18:17	354.1	34.6	0.4	10.09	7.07	1507.0	0.06	1501.5	0.04
18:18	354.0	34.5	0.5	10.13	7.05	1507.1	0.06	1500.9	0.04
18:19	352.0	34.5	0.4	10.17	7.03	1506.2	0.06	1501.0	0.04
18:20	353.9	34.5	0.5	10.12	7.06	1505.6	0.06	1501.0	0.04
18:21	351.5	34.4	0.5	10.13	7.06	1506.8	0.06	1500.9	0.04
18:22	353.0	34.3	0.5	10.10	7.08	1507.0	0.06	1500.9	0.04
18:23	352.7	34.5	0.5	10.16	7.05	1506.1	0.06	1500.2	0.04
18:24	352.1	34.5	0.3	10.20	7.04	1505.5	0.06	1500.9	0.04
18:25	350.1	34.5	0.3	10.26	7.00	1505.5	0.06	1500.9	0.05
18:26	351.0	34.4	0.4	10.19	7.03	1504.9	0.06	1500.1	0.04
18:27	349.7	34.6	0.3	10.27	7.00	1505.3	0.06	1499.7	0.04
18:28	351.8	34.6	0.3	10.20	7.05	1505.4	0.06	1499.4	0.04
18:29	348.4	34.8	0.3	10.25	6.99	1504.6	0.06	1499.4	0.05
18:30	349.0	34.6	0.3	10.24	7.02	1504.0	0.06	1499.4	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
18:30	351.8	34.5	0.4	10.17	7.04	1505.8	0.06	1500.6	0.04
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
18:30	349.2	35.0	0.6	10.19	7.00	1506.1	0.06	1499.5	0.04
18:31	348.0	34.6	0.3	10.26	7.00	1504.0	0.08	1499.4	0.05
18:32	346.0	34.5	0.3	10.33	6.97	1504.0	0.12	1499.4	0.05
18:33	346.2	34.8	0.3	10.32	6.98	1504.0	0.14	1498.1	0.04
18:34	347.1	34.5	0.2	10.29	6.98	1504.4	0.16	1498.5	0.05
18:35	343.6	34.7	0.0	10.36	6.95	1503.8	0.19	1497.8	0.04
18:36	344.4	34.5	-0.0	10.34	6.96	1503.0	0.21	1497.2	0.04
18:37	346.7	34.3	-0.0	10.32	6.97	1502.5	0.20	1496.6	0.04
18:38	347.5	34.2	-0.0	10.29	6.98	1502.5	0.09	1497.6	0.04
18:39	347.5	34.3	-0.1	10.30	6.99	1502.2	0.10	1497.9	0.04
18:40	348.4	34.2	-0.0	10.28	7.00	1503.6	0.11	1497.9	0.04
18:41	347.3	34.3	-0.0	10.30	6.99	1503.8	0.12	1497.2	0.04
18:42	347.1	34.2	-0.1	10.32	6.98	1503.1	0.13	1496.3	0.03
18:43	347.9	34.2	-0.2	10.32	6.98	1502.6	0.14	1496.3	0.04
18:44	347.3	34.3	-0.2	10.33	6.97	1501.3	0.11	1495.1	0.03
18:45	346.5	34.4	-0.1	10.35	6.97	1500.2	0.06	1494.8	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
18:45	346.8	34.4	0.0	10.31	6.98	1503.0	0.13	1497.3	0.04
18:46	342.7	34.4	-0.1	10.37	6.97	1499.8	0.06	1495.4	0.04
18:47	342.7	34.4	-0.1	10.34	6.99	1502.7	0.06	1496.0	0.04
18:48	342.2	34.5	-0.3	10.39	6.96	1503.6	0.06	1495.5	0.04
18:49	342.8	34.5	-0.2	10.40	6.96	1504.0	0.06	1496.2	0.04
18:50	340.9	34.4	-0.2	10.42	6.95	1504.3	0.06	1495.1	0.04
18:51	339.2	34.6	-0.2	10.43	6.94	1504.0	0.06	1494.8	0.04
18:52	339.6	34.5	-0.3	10.44	6.92	1503.8	0.06	1494.8	0.04
18:53	339.8	34.7	-0.3	10.44	6.94	1503.9	0.06	1494.8	0.04
18:54	340.2	34.4	-0.3	10.45	6.93	1503.9	0.06	1494.7	0.04

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
18:55	340.2	34.3	-0.3	10.44	6.93	1503.1	0.06	1494.8	0.04
18:56	341.7	34.2	0.2	10.45	6.93	1503.0	0.06	1494.8	0.04
18:57	341.5	34.1	0.2	10.44	6.93	1503.7	0.06	1494.6	0.04
18:58	341.1	34.3	0.2	10.43	6.94	1503.9	0.06	1493.6	0.04
18:59	343.4	34.4	0.1	10.38	6.97	1504.3	0.06	1494.5	0.04
19:00	342.8	34.4	0.2	10.40	6.96	1504.0	0.06	1494.5	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
19:00	341.4	34.4	-0.1	10.41	6.95	1503.5	0.06	1494.9	0.04
19:01	340.6	34.3	0.2	10.47	6.93	1504.0	0.06	1493.6	0.04
19:02	340.0	34.3	0.2	10.47	6.93	1504.0	0.06	1493.3	0.04
19:03	339.5	34.4	0.1	10.44	6.94	1503.5	0.06	1493.3	0.04
19:04	341.5	34.3	0.1	10.44	6.95	1502.3	0.06	1492.5	0.04
19:05	341.8	34.1	0.1	10.40	6.96	1502.3	0.06	1492.9	0.04
19:06	342.4	34.0	0.1	10.41	6.95	1501.9	0.06	1492.9	0.03
19:07	343.1	34.2	0.0	10.36	6.96	1501.2	0.06	1493.3	0.04
19:08	342.1	34.0	-0.0	10.41	6.93	1502.5	0.06	1493.1	0.04
19:09	343.1	34.1	-0.0	10.39	6.96	1502.2	0.06	1492.6	0.04
19:10	341.8	34.1	-0.1	10.42	6.93	1502.2	0.06	1492.1	0.04
19:11	341.4	33.9	-0.2	10.40	6.93	1502.0	0.06	1491.8	0.03
19:12	340.5	33.8	-0.2	10.38	6.95	1502.6	0.06	1491.8	0.03
19:13	339.6	33.8	-0.2	10.39	6.94	1501.6	0.06	1491.7	0.03
19:14	341.2	33.8	-0.2	10.42	6.93	1502.2	0.06	1491.7	0.04
19:15	342.0	33.9	-0.2	10.40	6.95	1503.2	0.06	1491.7	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
19:15	341.4	34.1	-0.0	10.41	6.94	1502.5	0.06	1492.6	0.04
19:16	341.9	33.7	-0.3	10.41	6.94	1503.4	0.06	1491.5	0.04
19:17	342.9	33.7	-0.3	10.40	6.96	1501.0	0.06	1491.8	0.04
19:18	341.0	33.7	-0.3	10.45	6.93	1500.5	0.06	1491.7	0.03
19:19	339.5	33.9	-0.3	10.46	6.94	1501.4	0.06	1491.4	0.04
19:20	340.8	33.7	-0.4	10.49	6.93	1501.2	0.06	1491.7	0.04
19:21	341.8	33.8	-0.5	10.50	6.93	1500.8	0.06	1491.5	0.04
19:22	339.0	33.8	-0.6	10.49	6.92	1500.8	0.06	1490.8	0.04
19:23	331.9	33.8	-0.5	10.49	6.93	1500.6	0.06	1490.3	0.04
19:24	332.9	33.5	-0.5	10.52	6.92	1500.4	0.06	1490.2	0.04
19:25	337.0	33.7	-0.6	10.54	6.90	1500.8	0.06	1490.2	0.04
19:26	339.3	33.8	-0.5	10.52	6.92	1500.7	0.06	1490.2	0.04
19:27	338.8	33.3	-0.6	10.50	6.93	1500.1	0.06	1490.2	0.04
19:28	337.9	33.4	-0.6	10.52	6.92	1499.7	0.06	1490.2	0.04
19:29	338.3	33.7	-0.7	10.54	6.93	1500.0	0.06	1490.2	0.04
19:30	338.7	33.4	-0.7	10.57	6.91	1499.9	0.06	1490.2	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
19:30	338.8	33.7	-0.5	10.49	6.93	1500.8	0.06	1490.8	0.04
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
19:30	342.1	34.1	-0.1	10.41	6.95	1502.4	0.08	1493.9	0.04
19:31	339.6	33.5	-0.7	10.54	6.94	1500.0	0.06	1490.3	0.04
19:32	340.8	33.6	-0.7	10.54	6.92	1499.2	0.06	1490.2	0.04
19:33	339.1	33.3	-0.7	10.60	6.91	1502.3	0.06	1490.2	0.04

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
19:34	338.7	33.3	-0.7	10.58	6.91	1501.5	0.06	1489.0	0.04
19:35	338.4	33.3	-0.8	10.61	6.91	1501.0	0.06	1488.6	0.04
19:36	338.4	33.3	-0.9	10.63	6.91	1500.5	0.06	1488.6	0.03
19:37	339.6	33.2	-0.9	10.62	6.90	1500.9	0.06	1488.7	0.04
19:38	339.9	33.4	-0.9	10.60	6.92	1500.9	0.06	1488.7	0.04
19:39	337.4	33.2	-0.9	10.61	6.90	1500.5	0.06	1488.5	0.04
19:40	340.1	33.3	-1.0	10.61	6.92	1499.7	0.06	1488.7	0.04
19:41	339.4	33.1	-0.9	10.61	6.92	1498.8	0.06	1488.7	0.04
19:42	339.2	33.1	-1.0	10.66	6.89	1497.9	0.06	1488.3	0.04
19:43	340.2	33.2	-1.1	10.64	6.90	1497.7	0.06	1488.0	0.04
19:44	337.2	32.8	-1.0	10.69	6.89	1497.8	0.06	1488.7	0.05
19:45	338.5	32.6	-1.1	10.63	6.92	1497.8	0.06	1488.8	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
19:45	339.1	33.2	-0.9	10.61	6.91	1499.8	0.06	1488.9	0.04
19:46	337.2	32.7	-1.0	10.68	6.88	1496.7	0.06	1488.5	0.04
19:47	337.4	33.0	-1.1	10.67	6.90	1496.3	0.06	1487.2	0.04
19:48	339.1	33.0	-1.1	10.65	6.92	1496.2	0.06	1487.3	0.04
19:49	337.7	32.7	-1.2	10.65	6.91	1495.1	0.06	1487.8	0.04
19:50	338.1	32.6	-1.1	10.65	6.92	1494.8	0.06	1487.3	0.04
19:51	336.9	32.7	-1.3	10.67	6.89	1494.5	0.06	1487.3	0.04
19:52	337.0	32.9	-1.3	10.66	6.91	1494.7	0.06	1487.2	0.04
19:53	336.8	32.8	-1.2	10.68	6.89	1493.9	0.06	1487.2	0.04
19:54	335.7	32.8	-1.2	10.71	6.89	1493.4	0.06	1487.2	0.04
19:55	336.7	32.6	-1.3	10.68	6.91	1494.0	0.06	1487.2	0.04
19:56	336.9	32.8	-1.1	10.73	6.89	1497.9	0.06	1486.8	0.04
19:57	336.0	32.6	-1.0	10.66	6.96	1501.6	0.06	1490.8	0.04
19:58	337.0	32.3	-1.2	10.72	6.95	1503.6	0.06	1494.3	0.04
19:59	335.8	32.3	-1.2	10.80	6.92	1505.8	0.06	1496.0	0.05
20:00	334.4	32.2	-1.2	10.79	6.95	1508.3	0.06	1496.7	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
20:00	336.8	32.7	-1.2	10.69	6.91	1497.8	0.06	1489.2	0.04
20:01	335.1	31.7	-1.4	10.76	6.98	1510.3	0.06	1498.0	0.05
20:02	334.2	31.8	-1.3	10.76	6.99	1511.6	0.06	1498.7	0.05
20:03	334.3	31.7	-1.4	10.76	6.99	1512.8	0.06	1497.9	0.04
20:04	332.8	31.8	-1.4	10.79	6.96	1517.0	0.06	1497.1	0.04
20:05	332.5	31.9	-1.4	10.86	6.93	1521.6	0.06	1497.4	0.04
20:06	329.7	31.5	-1.4	10.88	6.93	1524.8	0.06	1500.3	0.05
20:07	327.7	31.0	-1.4	10.90	6.93	1529.7	0.06	1501.9	0.05
20:08	326.1	31.6	-1.4	10.91	6.92	1533.7	0.06	1501.2	0.05
20:09	327.3	31.8	-1.5	10.91	6.91	1534.6	0.06	1500.9	0.05
20:10	328.9	31.6	-1.5	10.89	6.93	1532.8	0.06	1501.6	0.05
20:11	327.5	31.1	-1.5	10.89	6.95	1531.2	0.06	1502.4	0.05
20:12	328.3	30.5	-1.5	10.84	6.98	1532.5	0.06	1503.8	0.05
20:13	327.7	30.8	-1.5	10.85	6.97	1537.1	0.06	1504.0	0.05
20:14	328.2	31.2	-1.5	10.88	6.95	1541.3	0.06	1503.4	0.05
20:15	327.7	31.1	-1.4	10.91	6.95	1549.4	0.06	1503.9	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
20:15	329.9	31.4	-1.4	10.85	6.95	1528.0	0.06	1500.8	0.05
20:16	327.7	31.3	-1.5	10.87	6.94	1554.7	0.06	1502.9	0.04

ENTROPY

Jewell Coal & Coke Engineering 10-21-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
20:17	328.7	31.5	-1.5	10.90	6.92	1554.7	0.06	1501.5	0.04
20:18	327.2	31.1	-1.4	10.92	6.93	1551.6	0.06	1501.8	0.05
20:19	329.1	31.3	-1.5	10.89	6.94	1550.1	0.06	1502.4	0.05
20:20	329.2	31.0	-1.5	10.88	6.95	1551.0	0.06	1503.7	0.05
20:21	329.8	31.2	-1.5	10.85	6.96	1552.9	0.06	1503.1	0.05
20:22	329.5	30.9	-1.5	10.86	6.96	1553.4	0.06	1503.9	0.05
20:23	327.5	30.9	-1.4	10.88	6.94	1554.3	0.06	1503.7	0.05
20:24	328.7	30.4	-1.4	10.87	6.96	1555.7	0.06	1504.8	0.05
20:25	328.8	30.7	-1.5	10.85	6.97	1558.9	0.06	1504.3	0.04
20:26	329.0	31.4	-1.6	10.87	6.94	1563.4	0.06	1502.7	0.05
20:27	326.5	31.2	-1.7	10.93	6.90	1567.2	0.06	1502.4	0.05
20:28	324.2	31.1	-1.6	10.95	6.90	1576.2	0.06	1502.4	0.05
20:29	323.6	30.6	-1.7	10.96	6.92	1579.5	0.06	1503.2	0.05
20:30	325.8	30.1	-1.7	10.86	6.98	1587.9	0.06	1504.4	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
20:30	327.7	31.0	-1.5	10.89	6.94	1560.8	0.06	1503.2	0.05
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
20:30	333.4	32.1	-1.3	10.76	6.93	1521.6	0.06	1495.5	0.04
20:31	327.8	30.2	-1.8	10.89	6.95	1588.5	0.06	1504.9	0.05
20:32	328.2	30.3	-1.8	10.91	6.96	1584.7	0.06	1504.7	0.05
20:33	325.0	30.8	-1.7	10.96	6.89	1590.3	0.06	1504.3	0.05
20:34	322.9	30.5	-1.7	11.00	6.89	1595.0	0.06	1503.7	0.05
20:35	322.3	30.5	-1.8	10.99	6.89	1600.0	0.06	1503.2	0.05
20:36	324.1	30.2	-1.9	10.91	6.94	1610.1	0.06	1502.9	0.05
20:37	325.2	29.6	-1.9	10.95	6.92	1608.4	0.06	1502.5	0.04
20:38	323.7	29.6	-2.0	10.99	6.91	1607.5	0.06	1500.9	0.03
20:39	323.5	29.8	-1.9	10.93	6.96	1608.0	0.06	1501.8	0.04
20:40	322.8	29.9	-1.9	10.96	6.93	1608.8	0.06	1503.8	0.04
20:41	321.0	29.9	-1.8	10.96	6.93	1609.3	0.06	1504.6	0.04
20:42	304.2	27.7	-1.8	11.57	6.58	1609.3	0.06	1500.7	0.06
20:43	286.2	26.4	-1.9	12.05	6.33	1609.8	0.06	1498.3	0.06
20:44	284.9	26.2	-1.9	12.11	6.28	1613.9	0.06	1497.3	0.06
20:45	288.7	26.6	-1.9	12.05	6.30	1616.0	0.06	1496.0	0.06
AVERAGE VALUES FOR THE LAST 15 MINUTES									
20:45	315.4	29.2	-1.8	11.21	6.78	1604.0	0.06	1502.0	0.05
20:46	291.1	26.7	-2.0	12.00	6.35	1615.6	0.06	1496.0	0.06
20:47	288.3	26.6	-2.0	12.06	6.33	1612.3	0.06	1496.3	0.07
20:48	291.7	27.2	-1.9	11.93	6.42	1611.6	0.06	1495.9	0.06
20:49	291.1	27.0	-2.0	11.99	6.38	1610.9	0.06	1495.3	0.06
20:50	289.4	27.2	-2.0	12.04	6.34	1610.8	0.06	1494.6	0.06
20:51	290.1	27.1	-2.0	12.00	6.37	1609.7	0.06	1494.5	0.06
20:52	288.4	26.8	-2.0	12.04	6.35	1609.2	0.06	1494.5	0.06
20:53	289.1	26.7	-2.1	12.01	6.39	1609.6	0.06	1494.2	0.06
20:54	289.0	26.6	-2.0	12.03	6.36	1610.1	0.06	1494.3	0.06
20:55	289.1	26.8	-2.0	12.03	6.35	1611.3	0.06	1493.4	0.05
20:56	287.2	27.0	-2.0	12.10	6.29	1610.9	0.06	1492.5	0.05
20:57	285.9	26.7	-2.1	12.09	6.30	1611.2	0.06	1492.8	0.06
20:58	285.2	26.5	-2.0	12.13	6.30	1610.8	0.06	1492.9	0.06
20:59	284.5	26.3	-2.1	12.13	6.31	1611.0	0.06	1493.0	0.06

ENTROPY

Jewell Coal & Coke Engineering 10-21-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
21:00	284.7	26.5	-2.1	12.17	6.27	1609.8	0.06	1492.4	0.07
AVERAGE VALUES FOR THE LAST 15 MINUTES									
21:00	288.3	26.8	-2.0	12.05	6.34	1611.0	0.06	1494.2	0.06
21:01	283.0	26.6	-2.1	12.18	6.26	1608.3	0.06	1491.3	0.05
21:02	282.8	26.5	-2.2	12.17	6.26	1606.9	0.06	1490.1	0.06
21:03	284.7	26.6	-2.1	12.13	6.31	1605.5	0.06	1490.3	0.06
21:04	283.9	26.4	-2.1	12.16	6.28	1604.9	0.06	1490.8	0.06
21:05	285.3	26.6	-2.2	12.11	6.30	1604.4	0.06	1491.1	0.06
21:06	283.3	26.7	-2.2	12.20	6.24	1603.4	0.06	1490.5	0.06
21:07	285.0	26.3	-2.2	12.12	6.31	1604.3	0.06	1490.7	0.07
21:08	284.9	26.4	-2.3	12.16	6.29	1603.2	0.06	1490.5	0.06
21:09	284.9	26.5	-2.3	12.19	6.26	1601.3	0.06	1490.2	0.06
21:10	284.8	26.4	-2.2	12.20	6.26	1601.8	0.06	1490.6	0.06
21:11	283.1	26.7	-2.3	12.26	6.22	1599.8	0.06	1489.4	0.06
21:12	283.3	26.4	-2.3	12.21	6.26	1600.4	0.06	1489.2	0.06
21:13	283.6	26.3	-2.3	12.21	6.26	1599.4	0.06	1488.7	0.06
21:14	284.4	26.2	-2.4	12.20	6.27	1598.6	0.06	1488.5	0.06
21:15	284.4	26.2	-2.3	12.23	6.26	1598.6	0.06	1488.8	0.06
AVERAGE VALUES FOR THE LAST 15 MINUTES									
21:15	284.1	26.5	-2.2	12.18	6.27	1602.7	0.06	1490.1	0.06
21:16	282.2	26.2	-2.3	12.30	6.23	1598.1	0.06	1489.1	0.06
21:17	281.9	26.2	-2.3	12.31	6.21	1596.9	0.06	1488.7	0.06
21:18	282.0	26.2	-2.2	12.29	6.22	1594.5	0.06	1488.1	0.06
21:19	282.6	26.1	-2.3	12.29	6.24	1595.4	0.06	1487.9	0.06
21:20	281.7	25.7	-2.3	12.39	6.18	1594.0	0.06	1489.5	0.06
21:21	271.4	24.7	-2.5	12.75	5.88	1594.1	0.06	1492.9	0.07
21:22	272.8	27.3	-2.4	12.81	5.85	1594.0	0.06	1493.7	0.07
21:23	272.2	28.2	-2.4	12.74	5.91	1593.3	0.06	1494.2	0.06
21:24	280.3	28.9	-2.4	12.68	5.99	1591.9	0.06	1495.3	0.07
21:25	296.5	30.4	-2.5	12.43	6.10	1594.7	0.06	1499.1	0.07
21:26	295.9	34.4	-2.4	12.28	6.15	1592.2	0.06	1503.7	0.07
21:27	300.9	37.3	-2.5	12.08	6.27	1592.4	0.06	1506.8	0.07
21:28	323.7	41.9	-2.4	11.47	6.69	1592.5	0.06	1510.0	0.07
21:29	302.8	35.4	-2.4	12.16	6.20	1593.2	0.06	1514.9	0.07
21:30	310.5	39.4	-2.3	12.11	6.20	1592.9	0.06	1520.3	0.07
AVERAGE VALUES FOR THE LAST 15 MINUTES									
21:30	289.2	30.6	-2.4	12.34	6.16	1594.0	0.06	1498.3	0.07
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
21:30	294.2	28.3	-2.1	11.95	6.39	1602.9	0.06	1496.1	0.06
21:31	309.8	39.8	-2.3	12.05	6.26	1593.7	0.06	1520.7	0.03
21:32	318.4	38.6	-2.3	12.07	6.27	1594.0	0.06	1520.7	-0.00
21:33	337.0	43.9	-2.4	11.68	6.47	1593.9	0.06	1524.0	0.07
21:34	343.9	48.2	-2.3	11.58	6.49	1592.0	0.06	1528.0	0.07
21:35	357.2	57.0	-2.5	11.01	6.82	1589.7	0.06	1534.9	0.07
21:36	395.9	66.8	-2.4	10.10	7.38	1589.4	0.06	1543.2	0.07
21:37	382.0	56.9	-2.6	10.63	7.09	1589.3	0.06	1552.5	0.08
21:38	356.0	53.7	-2.6	11.36	6.61	1588.1	0.06	1556.4	0.09

ENTROPY

Jewell Coal & Coke Engineering 10-28-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
21:39	353.9	54.6	-2.6	11.46	6.52	1588.5	0.06	1556.4	0.08
21:40	354.5	54.1	-2.6	11.46	6.55	1588.1	0.06	1555.7	0.09
21:41	366.6	57.4	-2.6	11.24	6.66	1587.1	0.06	1557.9	0.08
21:42	378.4	62.3	-2.6	10.92	6.79	1586.6	0.06	1561.0	0.09
21:43	391.8	67.9	-2.6	10.60	6.95	1586.7	0.06	1566.7	0.08
21:44	412.5	75.9	-2.1	10.10	7.31	1586.4	0.06	1576.6	0.10
21:45	391.8	76.4	-2.6	10.78	6.90	1586.1	0.06	1581.3	0.10
AVERAGE VALUES FOR THE LAST 15 MINUTES									
21:45	363.3	56.9	-2.5	11.14	6.74	1589.3	0.06	1549.1	0.07
21:46	373.0	76.0	-2.6	11.23	6.61	1585.6	0.06	1583.4	0.11
21:47	376.1	78.6	-2.7	11.02	6.71	1584.7	0.06	1580.8	0.10
21:48	371.6	75.7	-2.7	11.22	6.61	1583.4	0.06	1582.2	0.10
21:49	390.1	80.9	-2.7	10.83	6.79	1582.6	0.06	1585.6	0.10
21:50	400.9	88.7	-2.5	10.57	6.91	1582.2	0.06	1590.4	0.10
21:51	408.1	89.6	-2.6	10.32	7.07	1582.5	0.06	1594.9	0.10
21:52	431.8	100.9	-2.5	9.70	7.41	1583.0	0.06	1600.6	0.11
21:53	422.0	96.5	-2.6	10.13	7.22	1582.5	0.06	1603.7	0.11
21:54	400.7	92.8	-2.6	10.68	6.87	1581.8	0.06	1608.6	0.11
21:55	397.3	93.9	-2.6	11.00	6.63	1581.8	0.06	1610.8	0.10
21:56	396.4	97.4	-2.7	10.74	6.79	1581.0	0.06	1611.0	0.11
21:57	397.1	96.5	-2.6	10.87	6.72	1580.2	0.06	1612.9	0.11
21:58	414.4	103.9	-2.6	10.42	6.95	1578.9	0.06	1615.5	0.12
21:59	424.3	108.1	-2.4	10.03	7.12	1578.7	0.06	1619.7	0.12
22:00	441.6	115.7	-2.5	9.55	7.41	1578.8	0.06	1625.2	0.11
AVERAGE VALUES FOR THE LAST 15 MINUTES									
22:00	403.0	93.0	-2.6	10.55	6.92	1581.8	0.06	1601.7	0.11

COMMENTS: Calibration Time

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Post-test 1 Calibration Bias Check

DATE : 10-2~~1~~8-1991 TIME: 22:01 - 22:14

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	6.4
7	Unit 4	ppmSO2	241.0	242.3
9	Unit 4	ppmNOx	0.0	0.4
9	Unit 4	ppmNOx	240.0	241.0
8	Unit 4	ppmCO	0.0	-2.2
8	Unit 4	ppmCO	92.3	87.5
5	Unit 4	% O2	0.00	0.07
5	Unit 4	% O2	12.48	12.46
6	Unit 4	% CO2	0.00	0.12
6	Unit 4	% CO2	11.06	10.94

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Calibration Error Check

DATE : 10-21-1991 TIME: 22:14 - 22:32

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	0.9
7	Unit 4	ppmSO2	241.0	241.1
7	Unit 4	ppmSO2	436.0	436.5
9	Unit 4	ppmNOx	0.0	0.0
9	Unit 4	ppmNOx	141.5	139.2
9	Unit 4	ppmNOx	240.0	240.7
8	Unit 4	ppmCO	0.0	1.3
8	Unit 4	ppmCO	30.2	32.1
8	Unit 4	ppmCO	92.3	91.8
5	Unit 4	% O2	0.00	0.07
5	Unit 4	% O2	12.48	12.57
5	Unit 4	% O2	21.40	21.54
6	Unit 4	% CO2	0.00	0.05
6	Unit 4	% CO2	11.06	10.95
6	Unit 4	% CO2	17.46	17.42

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Pre-test 2 Calibration Bias Check

DATE : 10-2~~1~~8-1991 TIME: 22:32 - 22:42

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	3.1
7	Unit 4	ppmSO2	241.0	236.3
9	Unit 4	ppmNOx	0.0	0.0
9	Unit 4	ppmNOx	141.5	136.4
8	Unit 4	ppmCO	0.0	0.7
8	Unit 4	ppmCO	30.2	31.1
5	Unit 4	% O2	0.00	0.07
5	Unit 4	% O2	12.48	12.51
6	Unit 4	% CO2	0.00	0.06
6	Unit 4	% CO2	11.06	10.84

Jewell Coal & Coke Engineering 10-21-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
23:01	344.0	22.6	0.1	11.11	6.22	1539.7	0.06	1583.9	0.09
23:02	344.3	22.5	0.1	11.15	6.20	1539.4	0.06	1584.6	0.09
23:03	343.0	22.4	0.0	11.12	6.21	1538.8	0.06	1583.4	0.09
23:04	343.9	22.7	0.0	11.13	6.22	1537.7	0.06	1581.5	0.09
23:05	339.5	22.5	0.0	11.24	6.14	1537.7	0.06	1580.3	0.08
23:06	340.8	22.4	0.0	11.20	6.16	1537.5	0.06	1580.2	0.09
23:07	339.9	22.1	0.0	11.23	6.15	1538.7	0.06	1579.8	0.09
23:08	339.7	21.9	0.0	11.23	6.15	1537.0	0.06	1579.2	0.08
23:09	337.7	22.1	0.0	11.30	6.11	1535.4	0.06	1577.2	0.08
23:10	338.6	22.0	0.1	11.28	6.13	1536.0	0.06	1577.1	0.08
23:11	337.1	22.0	0.1	11.28	6.13	1535.2	0.06	1576.8	0.09
23:12	339.4	22.0	0.1	11.25	6.15	1534.8	0.06	1577.2	0.09
23:13	335.8	21.7	0.1	11.35	6.08	1534.2	0.06	1575.9	0.09
23:14	335.0	21.8	0.1	11.35	6.08	1533.5	0.06	1574.5	0.09
23:15	334.5	21.8	0.1	11.32	6.07	1532.4	0.06	1574.1	0.09
AVERAGE VALUES FOR THE LAST 15 MINUTES									
23:15	339.6	22.2	0.1	11.24	6.15	1536.5	0.06	1579.0	0.09
23:16	334.5	21.7	0.1	11.31	6.11	1532.6	0.06	1574.1	0.08
23:17	336.3	21.7	0.1	11.25	6.11	1532.9	0.06	1573.0	0.08
23:18	333.8	21.5	0.1	11.38	6.07	1533.7	0.06	1572.1	0.08
23:19	335.3	21.8	0.1	11.34	6.09	1532.8	0.06	1571.5	0.09
23:20	333.5	21.8	0.1	11.39	6.06	1531.1	0.06	1570.0	0.08
23:21	330.9	21.3	0.1	11.44	6.03	1530.3	0.06	1568.0	0.08
23:22	331.2	21.4	0.1	11.45	6.03	1529.4	0.06	1567.6	0.07
23:23	330.8	21.3	0.1	11.42	6.03	1529.5	0.06	1567.4	0.08
23:24	331.1	21.3	0.1	11.42	6.03	1529.9	0.06	1567.3	0.09
23:25	331.3	21.2	0.1	11.42	6.04	1532.1	0.06	1565.8	0.07
23:26	331.9	21.0	0.1	11.43	6.03	1533.0	0.06	1565.1	0.08
23:27	329.9	20.9	0.1	11.45	6.01	1532.8	0.06	1564.8	0.08
23:28	328.6	20.9	0.1	11.49	5.99	1533.1	0.06	1563.6	0.09
23:29	331.7	21.0	0.1	11.42	6.04	1533.3	0.06	1563.0	0.08
23:30	330.3	21.0	0.1	11.46	6.03	1533.6	0.06	1562.6	0.08
AVERAGE VALUES FOR THE LAST 15 MINUTES									
23:30	332.1	21.3	0.1	11.40	6.05	1532.0	0.06	1567.7	0.08
23:31	327.6	20.8	0.1	11.52	5.98	1533.4	0.06	1562.7	0.09
23:32	328.0	20.7	0.2	11.54	5.98	1533.5	0.06	1562.8	0.08
23:33	326.3	20.6	0.2	11.58	5.95	1532.2	0.06	1560.2	0.08
23:34	325.8	20.6	0.2	11.57	5.95	1532.4	0.06	1559.2	0.08
23:35	329.8	20.2	0.2	11.39	6.07	1530.1	0.06	1557.9	0.07
23:36	360.5	18.8	1.0	10.55	6.59	1531.0	0.06	1563.5	0.08
23:37	362.1	18.5	0.2	10.54	6.58	1529.7	0.06	1562.2	0.07
23:38	357.3	18.0	0.2	10.64	6.53	1528.4	0.06	1560.1	0.07
23:39	377.6	17.6	0.2	9.99	6.91	1528.0	0.06	1558.0	0.06
23:40	391.4	18.3	0.2	9.57	7.13	1528.1	0.06	1556.0	0.06
23:41	413.8	17.6	0.2	8.96	7.46	1526.3	0.06	1554.9	0.06
23:42	415.8	17.9	0.2	8.96	7.45	1526.9	0.06	1552.5	0.06
23:43	417.6	17.5	0.2	8.89	7.49	1526.8	0.06	1551.0	0.06
23:44	416.5	17.4	0.2	8.90	7.48	1525.7	0.06	1550.7	0.06
23:45	416.1	17.5	0.2	8.95	7.45	1526.8	0.06	1549.3	0.07

Jewell Coal & Coke Engineering 10-24-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST 15 MINUTES									
23:45	371.1	18.8	0.2	10.24	6.73	1529.3	0.06	1557.4	0.07
23:46	418.4	17.7	0.2	8.89	7.47	1525.8	0.06	1549.2	0.06
23:47	417.9	17.8	0.2	8.83	7.50	1526.4	0.06	1548.9	0.06
23:48	423.5	17.4	0.2	8.76	7.54	1529.5	0.06	1549.7	0.07
23:49	416.3	17.6	0.2	8.89	7.46	1530.0	0.06	1548.2	0.06
23:50	417.6	17.7	0.2	8.85	7.49	1527.3	0.06	1547.7	0.06
23:51	415.3	17.6	0.2	8.92	7.45	1524.9	0.06	1547.3	0.06
23:52	414.3	17.5	0.2	8.90	7.46	1523.7	0.06	1547.6	0.06
23:53	418.9	17.6	0.2	8.79	7.52	1523.8	0.06	1548.2	0.06
23:54	420.7	17.4	0.2	8.80	7.52	1523.7	0.06	1548.2	0.07
23:55	419.8	17.5	0.3	8.84	7.49	1523.1	0.06	1547.9	0.06
23:56	419.7	17.4	0.2	8.80	7.51	1524.7	0.06	1549.1	0.07
23:57	420.5	17.2	0.3	8.80	7.52	1523.8	0.06	1549.0	0.06
23:58	420.0	17.3	0.3	8.75	7.53	1523.8	0.06	1548.7	0.07
23:59	412.2	17.2	0.3	8.81	7.47	1523.6	0.06	1547.9	0.07
24:00	410.0	17.1	0.3	8.81	7.46	1522.8	0.06	1545.0	0.06
AVERAGE VALUES FOR THE LAST 15 MINUTES									
24:00	417.7	17.5	0.2	8.83	7.49	1525.1	0.06	1548.2	0.06
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
24:00	365.1	19.9	0.2	10.43	6.61	1530.7	0.06	1563.1	0.08
00:01	408.3	17.1	0.3	8.82	7.46	1524.9	0.06	1545.2	0.07
00:02	408.9	17.0	0.3	8.82	7.45	1524.1	0.06	1546.0	0.06
00:03	411.7	17.0	0.3	8.80	7.47	1521.0	0.06	1545.7	0.06
00:04	408.1	17.0	0.3	8.90	7.39	1520.6	0.06	1544.2	0.06
00:05	407.4	17.0	0.3	8.88	7.41	1520.9	0.06	1549.3	0.06
00:06	410.5	16.8	0.3	8.86	7.43	1520.6	0.06	1554.4	0.06
00:07	408.2	16.8	0.3	8.90	7.40	1520.8	0.06	1565.0	0.06
00:08	401.7	16.8	0.2	8.89	7.40	1518.3	0.06	1573.5	0.06
00:09	401.2	16.8	0.3	8.97	7.37	1519.2	0.06	1572.5	0.06
00:10	404.4	16.5	0.2	8.99	7.37	1521.7	0.06	1571.8	0.06
00:11	406.0	16.7	0.2	8.96	7.39	1520.6	0.06	1571.0	0.07
00:12	402.2	16.3	0.2	8.98	7.39	1519.5	0.06	1572.7	0.06
00:13	404.5	16.4	0.2	8.94	7.40	1519.7	0.06	1573.0	0.07
00:14	402.8	16.3	0.2	8.91	7.42	1519.2	0.06	1572.0	0.06
00:15	403.4	16.4	0.2	8.89	7.42	1519.7	0.06	1571.4	0.06
AVERAGE VALUES FOR THE LAST 15 MINUTES									
00:15	406.0	16.7	0.3	8.90	7.41	1520.7	0.06	1561.8	0.06
00:16	401.4	16.1	0.2	8.94	7.39	1519.2	0.06	1570.0	0.05
00:17	401.7	16.2	0.2	8.90	7.42	1518.6	0.06	1569.8	0.07
00:18	402.2	16.1	0.2	8.88	7.43	1517.7	0.06	1570.2	0.06
00:19	402.3	16.1	0.3	8.85	7.43	1517.9	0.06	1570.1	0.06
00:20	401.5	16.1	0.2	8.89	7.43	1517.1	0.06	1572.1	0.06
00:21	399.6	16.0	0.2	8.87	7.42	1516.8	0.06	1587.0	0.06
00:22	400.3	15.9	0.2	8.85	7.44	1518.3	0.06	1588.8	0.07
00:23	402.6	15.9	0.2	8.79	7.47	1517.8	0.06	1590.1	0.06
00:24	400.9	15.8	0.2	8.90	7.41	1517.6	0.06	1585.4	0.06

Jewell Coal & Coke Engineering 10-22-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
00:25	403.5	16.0	0.2	8.82	7.45	1516.9	0.06	1580.2	0.06
00:26	406.1	15.9	0.2	8.84	7.45	1517.6	0.06	1576.5	0.06
00:27	404.6	15.9	0.3	8.84	7.44	1517.6	0.06	1610.7	0.07
00:28	402.3	15.7	0.2	8.92	7.41	1517.2	0.06	1623.3	0.06
00:29	401.8	15.7	0.2	8.87	7.42	1517.4	0.06	1605.7	0.06
00:30	401.2	15.7	0.3	8.89	7.43	1517.3	0.06	1607.0	0.07
AVERAGE VALUES FOR THE LAST 15 MINUTES									
00:30	402.1	15.9	0.2	8.87	7.43	1517.7	0.06	1587.1	0.06
00:31	398.1	15.7	0.3	9.02	7.35	1517.7	0.06	1561.7	0.07
00:32	399.1	15.6	0.3	8.90	7.42	1517.7	0.06	1546.0	0.07
00:33	399.6	15.5	0.2	8.96	7.40	1518.2	0.06	1544.8	0.07
00:34	400.3	15.5	0.2	8.86	7.44	1518.6	0.06	1545.7	0.07
00:35	401.8	15.5	0.2	8.85	7.46	1519.2	0.06	1543.2	0.07
00:36	401.1	15.4	0.2	8.91	7.44	1518.1	0.06	1538.6	0.06
00:37	398.9	15.6	0.2	8.93	7.43	1517.8	0.06	1537.8	0.06
00:38	400.2	15.6	0.2	8.95	7.42	1518.9	0.06	1538.3	0.06
00:39	400.4	15.5	0.2	8.89	7.45	1518.6	0.06	1537.5	0.05
00:40	399.7	15.5	0.2	8.88	7.45	1517.9	0.06	1537.8	0.06
00:41	399.0	15.5	0.2	8.98	7.41	1516.7	0.06	1537.1	0.06
00:42	397.7	15.5	0.2	9.01	7.41	1516.6	0.06	1537.5	0.07
00:43	396.8	15.3	0.2	9.04	7.39	1516.8	0.06	1537.9	0.07
00:44	397.5	15.3	0.2	8.97	7.42	1516.2	0.06	1537.8	0.06
00:45	396.9	15.3	0.2	9.03	7.39	1516.9	0.06	1537.5	0.06
AVERAGE VALUES FOR THE LAST 15 MINUTES									
00:45	399.1	15.5	0.2	8.95	7.42	1517.7	0.06	1541.3	0.07
00:46	394.6	15.2	0.2	9.05	7.38	1516.3	0.06	1537.2	0.07
00:47	396.1	15.1	0.2	9.03	7.40	1517.4	0.06	1536.9	0.06
00:48	396.1	15.2	0.2	9.05	7.39	1518.1	0.06	1536.8	0.06
00:49	396.5	15.3	0.2	9.07	7.39	1519.2	0.06	1537.4	0.07
00:50	396.5	15.0	0.2	9.06	7.39	1519.8	0.06	1537.0	0.07
00:51	393.7	15.1	0.2	9.13	7.35	1519.2	0.06	1536.0	0.06
00:52	394.6	15.1	0.2	9.14	7.39	1519.3	0.06	1536.0	0.07
00:53	394.4	15.0	0.2	9.23	7.38	1518.5	0.06	1536.0	0.07
00:54	395.7	15.1	0.2	9.05	7.41	1517.5	0.06	1536.0	0.07
00:55	394.6	14.9	0.2	9.12	7.37	1518.2	0.06	1536.0	0.07
00:56	391.8	14.9	0.2	9.15	7.35	686.1	0.01	1536.0	0.07
00:57	392.0	15.1	0.2	9.11	7.38	-625.2	-0.09	1536.4	0.07
00:58	392.3	15.1	0.2	9.13	7.36	-625.2	-0.09	1535.0	0.06
00:59	390.4	15.0	0.2	9.18	7.35	1253.1	0.03	1534.6	0.07
01:00	390.8	15.0	0.1	9.19	7.35	1526.8	0.04	1534.0	0.06
AVERAGE VALUES FOR THE LAST 15 MINUTES									
01:00	394.0	15.1	0.2	9.11	7.38	1159.9	0.04	1536.1	0.07
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
01:00	400.3	15.8	0.2	8.96	7.41	1429.0	0.06	1556.6	0.06
01:01	390.5	14.5	0.1	9.11	7.38	1525.2	0.03	1532.9	0.06
01:02	398.0	14.3	0.2	8.83	7.55	1524.8	0.04	1531.4	0.06
01:03	398.5	14.3	0.2	8.89	7.52	1525.1	0.04	1529.4	0.06

Jewell Coal & Coke Engineering 10-22-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
01:04	397.8	14.3	0.1	8.90	7.52	737.7	-0.00	1528.7	0.06
01:05	399.0	14.3	0.1	8.88	7.54	-625.2	-0.09	1529.2	0.06
01:06	399.5	14.2	0.1	8.85	7.55	-625.2	-0.09	1528.7	0.06
01:07	400.9	14.4	0.1	8.83	7.57	-625.2	-0.09	1527.4	0.06
01:08	400.2	14.3	0.1	8.91	7.53	1270.7	0.06	1528.1	0.07
01:09	402.2	14.3	0.1	8.83	7.58	1521.3	0.12	1527.6	0.05
01:10	399.7	14.4	0.1	8.94	7.51	1523.7	0.13	1526.7	0.06
01:11	399.4	14.2	0.1	8.86	7.57	1524.8	0.18	1527.0	0.06
01:12	399.1	14.3	0.1	8.91	7.55	1526.4	0.11	1527.2	0.06
01:13	399.5	14.3	0.1	8.90	7.54	1525.7	0.08	1525.6	0.05
01:14	399.2	14.3	0.1	8.92	7.54	1522.9	0.08	1526.1	0.06
01:15	398.0	14.4	0.1	8.86	7.57	1519.7	0.08	1526.6	0.06
AVERAGE VALUES FOR THE LAST 15 MINUTES									
01:15	398.8	14.3	0.1	8.90	7.53	1024.8	0.05	1528.2	0.06
01:16	394.8	14.9	0.1	8.98	7.48	1517.9	0.08	1525.2	0.06
01:17	397.7	14.8	0.1	8.83	7.58	1519.0	0.09	1524.6	0.07
01:18	399.6	14.8	0.1	8.80	7.61	1519.1	0.08	1525.0	0.06
01:19	400.9	14.8	0.1	8.82	7.61	1518.4	0.08	1525.3	0.07
01:20	401.7	14.8	0.1	8.80	7.62	1517.7	0.08	1523.7	0.06
01:21	401.6	14.8	0.1	8.80	7.62	1517.7	0.08	1523.4	0.07
01:22	401.2	14.8	0.1	8.83	7.61	1517.6	0.08	1522.5	0.06
01:23	401.7	14.8	0.0	8.81	7.62	1517.8	0.08	1522.8	0.06
01:24	400.9	14.9	0.1	8.86	7.60	1518.2	0.09	1520.9	0.05
01:25	398.6	14.9	0.0	8.96	7.55	1517.7	0.08	1519.7	0.05
01:26	395.1	14.9	0.0	8.97	7.54	1517.4	0.08	1520.8	0.06
01:27	394.9	14.8	0.0	9.02	7.53	1516.8	0.08	1520.6	0.05
01:28	395.4	14.8	0.0	8.98	7.54	1516.3	0.09	1520.2	0.06
01:29	393.4	14.7	0.0	9.03	7.52	1517.2	0.09	1519.7	0.06
01:30	393.6	14.6	0.1	9.07	7.51	1516.9	0.08	1518.6	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
01:30	398.1	14.8	0.1	8.90	7.57	1517.7	0.08	1522.2	0.06
01:31	393.5	14.7	0.0	9.12	7.48	1516.7	0.08	1518.3	0.06
01:32	390.8	14.6	0.0	9.15	7.47	1516.7	0.09	1518.3	0.06
01:33	392.1	14.5	0.0	9.08	7.51	1515.8	0.09	1517.3	0.06
01:34	392.5	14.6	0.0	9.08	7.54	1515.3	0.09	1517.8	0.05
01:35	390.3	14.6	0.0	9.17	7.49	1515.7	0.09	1516.3	0.05
01:36	388.3	14.6	0.0	9.18	7.48	1517.6	0.08	1516.8	0.05
01:37	390.1	14.5	0.0	9.12	7.51	1516.4	0.09	1517.6	0.06
01:38	388.8	14.6	0.0	9.15	7.50	1514.8	0.08	1516.9	0.04
01:39	388.5	14.6	0.0	9.18	7.47	1513.2	0.08	1516.0	0.05
01:40	387.9	14.6	0.0	9.21	7.47	1513.5	0.08	1514.8	0.05
01:41	385.4	14.6	0.0	9.20	7.46	1513.2	0.08	1516.1	0.06
01:42	386.8	14.5	0.0	9.15	7.49	1512.0	0.08	1515.4	0.05
01:43	386.4	14.6	0.0	9.21	7.47	1511.8	0.08	1514.7	0.05
01:44	384.4	14.4	0.0	9.18	7.51	1512.3	0.08	1515.0	0.05
01:45	386.3	14.5	0.0	9.15	7.52	1510.3	0.08	1514.7	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
01:45	388.8	14.6	0.0	9.16	7.49	1514.3	0.08	1516.4	0.05
01:46	384.6	14.5	0.0	9.26	7.47	1510.0	0.08	1513.7	0.05

ENTROPY

Jewell Coal & Coke Engineering 10-22-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
01:47	385.3	14.3	-0.0	9.29	7.48	1511.0	0.08	1513.9	0.04
01:48	383.5	14.4	-0.0	9.25	7.46	1510.0	0.08	1512.9	0.05
01:49	382.8	14.4	-0.0	9.28	7.48	1511.1	0.08	1513.5	0.05
01:50	380.4	14.3	-0.0	9.35	7.44	1509.8	0.08	1511.7	0.04
01:51	379.0	14.2	-0.0	9.39	7.44	1510.6	0.08	1511.8	0.04
01:52	375.8	14.3	-0.0	9.35	7.47	1511.1	0.08	1513.8	0.05
01:53	374.8	14.2	-0.0	9.30	7.49	1510.1	0.08	1514.6	0.05
01:54	374.8	14.4	-0.0	9.30	7.51	1508.5	0.08	1513.0	0.04
01:55	381.4	14.5	0.0	9.26	7.53	1508.5	0.08	1511.5	0.04
01:56	381.3	14.4	-0.0	9.38	7.46	1508.4	0.08	1511.0	0.04
01:57	378.7	14.2	-0.0	9.35	7.49	1508.6	0.08	1512.8	0.06
01:58	378.9	14.2	-0.0	9.33	7.51	1508.5	0.08	1513.5	0.05
01:59	379.2	14.3	-0.0	9.34	7.49	1507.0	0.08	1512.0	0.04
02:00	379.7	14.3	-0.0	9.38	7.48	1507.0	0.08	1510.0	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
02:00	380.0	14.3	-0.0	9.32	7.48	1509.4	0.08	1512.7	0.05
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
02:00	391.4	14.5	0.0	9.07	7.52	1391.6	0.07	1519.9	0.05
02:01	379.5	14.4	-0.0	9.39	7.49	1507.2	0.08	1510.1	0.04
02:02	382.8	14.4	-0.0	9.32	7.55	1509.6	0.08	1510.3	0.04
02:03	381.4	14.2	-0.0	9.35	7.52	1508.6	0.08	1510.1	0.04
02:04	380.3	14.2	-0.0	9.36	7.51	1510.8	0.08	1511.2	0.04
02:05	379.0	14.3	-0.0	9.40	7.50	1512.6	0.08	1511.5	0.05
02:06	381.0	14.3	-0.0	9.34	7.54	1512.9	0.08	1510.8	0.05
02:07	383.1	14.4	-0.1	9.30	7.54	1511.1	0.08	1510.8	0.03
02:08	382.6	14.3	-0.1	9.43	7.48	1511.9	0.08	1509.3	0.03

COMMENTS: INTERUPT TO RESET CEM SET UP. REINSTALL PRESSURE TRANSDUCER

CONTINUOUS EMISSIONS MONITORING SET-UP

SOURCE: Jewell Coal & Coke Engineering

DATE: 10-22-1991 TIME: 02:09

A/D CHAN	DESCRIP	UNITS	SPAN	INPUT VOLTAGE	ZERO OFFSET
7	Unit 4	ppmSO2	1000	1.00 V	0%
9	Unit 4	ppmNOx	250	10.00 V	0%
8	Unit 4	ppmCO	100	1.00 V	0%
5	Unit 4	% O2	25	1.00 V	0%
6	Unit 4	% CO2	20	1.00 V	0%
11	Unit 3	TEMPF	2500	5.00 V	20%
12	Unit 3	PRESS	1	5.00 V	0%
13	Unit 4	TEMPF	2500	5.00 V	20%
14	Unit 4	PRESS	1	5.00 V	21%

AVERAGING PERIODS: 15 MINUTES, ONE HOUR,
NO EMISSION RATE CALCULATIONS

9B

Jewell Coal & Coke Engineering 10-22-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
02:16	371.4	14.1	-0.0	9.58	7.44	1508.5	0.15	1508.3	0.04
02:17	371.1	14.2	-0.0	9.61	7.42	1507.4	0.15	1506.9	0.04
02:18	371.6	14.1	-0.0	9.65	7.41	1506.1	0.15	1507.0	0.04
02:19	372.6	14.1	-0.0	9.60	7.42	1507.4	0.15	1507.1	0.04
02:20	373.9	13.9	-0.0	9.62	7.42	1493.0	-0.00	1507.0	0.04
02:21	374.0	14.1	-0.0	9.63	7.42	1490.9	0.00	1507.9	0.05
02:22	377.3	14.0	-0.0	9.59	7.45	1491.8	-0.00	1509.6	0.04
02:23	375.8	14.1	-0.0	9.63	7.43	1491.8	-0.00	1508.7	0.04
02:24	376.5	14.2	-0.0	9.61	7.44	1491.2	-0.00	1507.0	0.04
02:25	374.6	14.1	-0.0	9.64	7.42	1491.6	-0.00	1507.0	0.04
02:26	374.3	14.2	-0.0	9.59	7.45	1493.0	0.00	1506.2	0.04
02:27	373.0	13.9	-0.0	9.64	7.41	1503.2	0.15	1504.6	0.03
02:28	370.5	13.8	-0.0	9.76	7.35	1505.6	0.15	1504.4	0.04
02:29	368.8	13.8	-0.0	9.76	7.36	1507.2	0.15	1505.2	0.04
02:30	371.5	14.1	-0.1	9.66	7.41	1511.2	0.15	1504.3	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
02:30	373.1	14.0	-0.0	9.64	7.42	1500.0	0.08	1506.8	0.04
02:31	373.0	14.0	-0.1	9.67	7.42	1513.2	0.16	1505.4	0.03
02:32	373.7	14.1	-0.0	9.64	7.42	1514.3	0.16	1505.4	0.04
02:33	372.6	14.0	-0.1	9.67	7.41	1515.1	0.16	1506.5	0.04
02:34	372.3	14.0	-0.1	9.63	7.44	1516.5	0.16	1506.8	0.04
02:35	371.7	13.9	-0.1	9.70	7.40	1517.6	0.16	1504.8	0.03
02:36	370.7	14.0	-0.1	9.73	7.38	1517.2	0.17	1503.8	0.04
02:37	368.4	14.1	-0.0	9.71	7.39	1517.3	0.16	1503.2	0.04
02:38	369.1	13.9	-0.0	9.72	7.38	1517.5	0.12	1504.3	0.04
02:39	367.6	13.6	-0.0	9.82	7.33	1517.7	0.10	1506.8	0.04
02:40	366.8	13.6	-0.1	10.07	7.34	1518.3	0.12	1507.7	0.03
02:41	369.0	13.6	-0.0	9.65	7.42	1518.5	0.12	1508.9	0.04
02:42	370.3	13.5	-0.1	9.77	7.37	1517.9	0.12	1508.8	0.04
02:43	368.5	13.7	-0.0	9.74	7.38	1519.0	0.13	1510.6	0.04
02:44	369.9	13.6	-0.0	9.69	7.42	1519.2	0.12	1511.5	0.04
02:45	371.1	13.6	-0.0	9.64	7.43	1519.2	0.13	1511.5	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
02:45	370.3	13.8	-0.1	9.72	7.40	1517.3	0.14	1507.1	0.04
02:46	372.2	13.7	-0.1	9.65	7.42	1518.5	0.14	1510.1	0.03
02:47	371.7	13.5	-0.1	9.70	7.41	1520.2	0.12	1511.7	0.03
02:48	372.3	13.5	-0.1	9.63	7.44	1518.5	0.12	1512.5	0.03
02:49	374.3	13.7	-0.1	9.62	7.43	1519.1	0.13*	1511.5	0.03
02:50	371.4	13.6	-0.1	9.72	7.40	1522.9	0.53*	1511.9	0.03
02:51	369.7	13.5	-0.0	9.69	7.38	1524.9	0.20*	1512.6	0.03
02:52	369.6	13.6	-0.1	9.74	7.39	1528.7	0.15	1512.0	0.04
02:53	369.8	13.5	-0.0	9.78	7.36	1524.6	0.15	1512.1	0.03
02:54	370.2	13.7	-0.0	9.71	7.39	1516.1	0.15	1510.3	0.04
02:55	370.0	13.4	-0.0	9.77	7.35	1515.6	0.16	1510.7	0.03
02:56	368.8	13.4	-0.0	9.76	7.37	1515.5	0.16	1509.9	0.04
02:57	370.6	13.6	-0.1	9.72	7.38	1517.5	0.16	1509.7	0.03
02:58	372.5	13.5	-0.0	9.66	7.39	1516.3	0.16	1508.8	0.03
02:59	373.8	13.5	-0.1	9.62	7.41	1515.9	0.25*	1508.1	0.02
03:00	374.6	13.6	-0.1	9.67	7.40	1516.3	0.27*	1507.6	0.02

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Jewell Coal & Coke Engineering 10-22-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST 15 MINUTES									
03:00	371.4	13.5	-0.1	9.70	7.39	1519.4	0.19	1510.6	0.03
03:01	373.8	13.6	-0.1	9.58	7.36	1524.5	0.19	1506.2	0.03
03:02	375.1	13.6	-0.1	9.70	7.38	1528.0	0.22	1507.7	0.03
03:03	375.6	13.6	-0.1	9.59	7.42	1517.8	0.15	1508.8	0.03
03:04	375.1	13.7	-0.1	9.64	7.39	1517.5	0.15	1506.9	0.03
03:05	373.7	13.4	-0.1	9.71	7.35	1518.3	0.15	1509.0	0.03
03:06	371.7	13.5	-0.1	9.73	7.36	1517.4	0.15	1507.3	0.02
03:07	375.7	13.3	-0.1	9.56	7.44	1516.8	0.15	1503.6	0.02
03:08	380.1	13.3	-0.1	9.49	7.48	1516.2	0.15	1502.4	0.03
03:09	379.4	13.4	-0.1	9.48	7.48	1515.9	0.15	1501.7	0.02
03:10	378.7	13.3	-0.1	9.49	7.47	1516.0	0.15	1500.9	0.02
03:11	379.3	13.2	-0.1	9.47	7.48	1515.9	0.15	1500.9	0.03
03:12	379.7	13.3	-0.1	9.45	7.49	1501.7	0.15	1502.1	0.02
03:13	378.8	13.2	-0.1	9.50	7.45	1503.3	0.15	1500.4	0.02
03:14	377.5	13.2	-0.1	9.52	7.46	1502.5	0.15	1498.8	0.02
03:15	374.6	13.2	-0.1	9.56	7.42	1502.4	0.15	1498.7	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
03:15	376.6	13.4	-0.1	9.56	7.43	1514.3	0.16	1503.7	0.02
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
03:15	372.9	13.7	-0.1	9.66	7.41	1512.7	0.14	1507.0	0.03
03:16	374.4	13.2	-0.1	9.53	7.44	1502.7	0.15	1500.9	0.03
03:17	374.0	13.2	-0.1	9.51	7.46	1503.4	0.15	1501.2	0.03
03:18	375.7	13.2	-0.1	9.49	7.47	1502.1	0.15	1501.1	0.02
03:19	377.2	13.2	-0.1	9.49	7.46	1500.9	0.15	1499.8	0.03
03:20	374.6	13.2	-0.1	9.51	7.45	1501.6	0.15	1500.9	0.02
03:21	375.3	13.2	-0.1	9.53	7.43	1501.6	0.15	1497.9	0.02
03:22	373.9	13.1	-0.1	9.57	7.42	1502.0	0.15	1497.8	0.02
03:23	373.3	13.2	-0.1	9.53	7.44	1501.5	0.15	1496.9	0.02
03:24	373.9	13.1	-0.1	9.50	7.45	1501.3	0.15	1497.3	0.03
03:25	374.0	13.1	-0.1	9.51	7.43	1502.7	0.15	1496.3	0.02
03:26	373.1	13.1	-0.1	9.55	7.41	1504.5	0.15	1499.7	0.03
03:27	368.5	13.0	-0.1	9.44	7.47	1506.1	0.15	1497.7	0.02
03:28	381.9	13.1	-0.1	9.57	7.39	1505.6	0.15	1497.0	0.02
03:29	378.5	13.0	-0.1	9.65	7.36	1505.3	0.15	1496.6	0.02
03:30	359.9	13.0	-0.1	9.65	7.36	1506.6	0.15	1493.6	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
03:30	373.9	13.1	-0.1	9.53	7.43	1503.2	0.15	1498.3	0.02
03:31	370.7	13.0	-0.1	9.58	7.38	1501.2	0.15	1494.6	0.02
03:32	377.1	13.0	-0.1	9.54	7.40	1501.6	0.15	1494.4	0.03
03:33	376.4	13.0	-0.1	9.60	7.36	1503.7	0.15	1495.9	0.03
03:34	375.4	13.0	-0.1	9.56	7.38	1501.5	0.15	1495.5	0.03
03:35	373.6	13.1	-0.1	9.57	7.38	1501.9	0.15	1494.5	0.02
03:36	372.7	13.0	-0.1	9.58	7.38	1501.9	0.15	1493.8	0.02
03:37	372.1	13.0	-0.1	9.60	7.38	1502.1	0.15	1493.2	0.02
03:38	372.1	13.0	-0.1	9.60	7.36	1502.6	0.15	1494.0	0.03
03:39	368.9	13.0	-0.1	9.62	7.35	1502.8	0.15	1492.5	0.02

Jewell Coal & Coke Engineering 10-22-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
03:40	369.9	13.0	-0.1	9.59	7.36	1502.6	0.15	1493.7	0.03
03:41	369.4	13.0	-0.1	9.64	7.34	1505.3	0.15	1493.6	0.02
03:42	369.6	12.9	-0.1	9.63	7.36	1504.7	0.15	1493.7	0.02
03:43	372.2	13.0	-0.1	9.65	7.35	1505.5	0.15	1493.2	0.03
03:44	375.7	13.0	-0.1	9.52	7.40	1506.4	0.15	1493.3	0.02
03:45	375.5	13.0	-0.1	9.58	7.38	1505.5	0.15	1492.2	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
03:45	372.8	13.0	-0.1	9.59	7.37	1503.3	0.15	1493.9	0.02
03:46	372.1	12.9	-0.1	9.62	7.35	1505.5	0.15	1492.1	0.02
03:47	374.2	12.9	-0.1	9.58	7.38	1506.0	0.15	1493.2	0.02
03:48	376.8	12.9	-0.1	9.59	7.37	1506.5	0.15	1494.1	0.03

COMMENTS: interupt testing for the night
II-1-S4-CEM-2

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: SYSTEM CALIBRATION AFTER RUN II-1-S4-CEM-2

DATE : 10-22-1991 TIME: 03:50 - 04:16

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	4.4
7	Unit 4	ppmSO2	241.0	237.5
9	Unit 4	ppmNOx	0.0	0.0
9	Unit 4	ppmNOx	142.0	34.8 X4
8	Unit 4	ppmCO	0.0	0.0
8	Unit 4	ppmCO	30.0	6.0 X5
5	Unit 4	% O2	0.00	0.08
5	Unit 4	% O2	12.50	12.57
6	Unit 4	% CO2	0.00	0.07
6	Unit 4	% CO2	11.00	10.84

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Preliminary Calibration Error Check

DATE : 10-29-1991 TIME: 16:01 - 16:39

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	0.0
7	Unit 4	ppmSO2	241.0	240.6
7	Unit 4	ppmSO2	436.0	436.9
9	Unit 4	ppmNOx	0.0	0.1
9	Unit 4	ppmNOx	141.5	139.7
9	Unit 4	ppmNOx	240.0	240.7
8	Unit 4	ppmCO	0.0	1.5
8	Unit 4	ppmCO	30.2	31.7
8	Unit 4	ppmCO	92.3	92.0
5	Unit 4	% O2	0.00	0.01
5	Unit 4	% O2	12.48	12.48
5	Unit 4	% O2	21.40	21.46
6	Unit 4	% CO2	0.00	0.02
6	Unit 4	% CO2	11.06	10.92
6	Unit 4	% CO2	17.46	17.46

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Pre-test I-1-S4-CEM-1 Calibration Bias Check

DATE : 10-29-1991 TIME: 16:39 - 17:09

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	1.4
7	Unit 4	ppmSO2	241.0	238.1
9	Unit 4	ppmNOx	0.0	0.1
9	Unit 4	ppmNOx	141.5	138.9
8	Unit 4	ppmCO	0.0	0.5
8	Unit 4	ppmCO	30.2	30.2
5	Unit 4	% O2	0.00	0.07
5	Unit 4	% O2	12.48	12.46
6	Unit 4	% CO2	0.00	0.06
6	Unit 4	% CO2	11.06	10.87

I-1-Sq-cem-1

Jewell Coal & Coke Engineering 10-29-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
17:16	332.0	31.7	-0.2	10.85	6.38	1488.7	1.31	1438.0	0.03
17:17	337.3	31.4	-0.2	10.83	6.39	1488.2	1.34	1435.2	0.03
17:18	344.5	31.7	-0.2	10.65	6.50	1488.2	1.38	1433.9	0.03
17:19	345.0	32.2	-0.2	10.68	6.49	1488.6	1.36	1433.7	0.03
17:20	345.0	32.0	-0.3	10.66	6.50	1488.5	1.48	1432.4	0.03
17:21	344.7	32.1	-0.3	10.66	6.50	1488.0	1.26	1433.8	0.04
17:22	342.6	32.1	-0.3	10.73	6.46	1486.9	1.21	1434.8	0.04
17:23	340.2	32.0	-0.3	10.81	6.41	1486.3	1.37	1432.8	0.03
17:24	339.7	31.9	-0.3	10.81	6.41	1486.3	1.42	1432.0	0.03
17:25	340.5	32.0	-0.3	10.77	6.44	1486.0	1.39	1432.1	0.04
17:26	338.8	32.0	-0.4	10.84	6.41	1485.0	1.40	1430.7	0.03
17:27	337.4	31.8	-0.5	10.83	6.41	1485.4	1.66	1428.7	0.03
17:28	338.3	31.8	-0.4	10.83	6.42	1485.5	1.24	1430.3	0.04
17:29	336.8	31.8	-0.4	10.85	6.41	1483.2	1.17	1430.0	0.03
17:30	337.0	31.9	-0.4	10.85	6.41	1482.6	1.33	1429.4	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
17:30	340.0	31.9	-0.3	10.78	6.44	1486.5	1.35	1432.5	0.03
17:31	335.2	31.8	-0.4	10.87	6.39	1483.9	1.46	1429.1	0.03
17:32	335.7	31.8	-0.5	10.81	6.43	1484.3	1.38	1428.8	0.03
17:33	335.4	31.9	-0.6	10.83	6.42	1482.9	1.29	1429.2	0.03
17:34	334.6	31.8	-0.6	10.85	6.41	1483.7	1.30	1429.4	0.04
17:35	333.3	31.8	-0.6	10.89	6.40	1482.6	1.24	1430.5	0.04
17:36	333.2	31.9	-0.6	10.90	6.40	1482.6	1.36	1430.4	0.03
17:37	333.5	31.9	-0.6	10.91	6.39	1482.4	1.36	1428.5	0.03
17:38	334.2	31.8	-0.6	10.89	6.41	1481.4	1.38	1427.8	0.03
17:39	334.4	31.7	-0.7	10.94	6.40	1481.1	1.51	1427.5	0.03
17:40	332.1	31.5	-0.7	10.96	6.39	1482.5	1.43	1426.1	0.03
17:41	334.3	31.9	-0.8	10.90	6.44	1481.1	1.34	1426.6	0.03
17:42	332.4	31.7	-0.8	10.97	6.41	1480.7	1.31	1427.7	0.03
17:43	331.2	31.8	-0.9	10.98	6.41	1480.1	1.35	1427.6	0.03
17:44	329.8	31.6	-0.8	11.05	6.37	1479.6	1.40	1427.6	0.04
17:45	328.8	31.6	-0.7	11.09	6.35	1479.6	1.50	1427.7	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
17:45	333.2	31.8	-0.7	10.92	6.40	1481.9	1.37	1428.3	0.03
17:46	330.5	31.7	-0.8	11.08	6.37	1479.6	1.55	1426.7	0.03
17:47	330.9	31.6	-0.8	11.09	6.37	1479.5	1.45	1426.3	0.03
17:48	328.7	31.4	-0.8	11.13	6.37	1479.4	1.47	1425.8	0.03
17:49	329.6	31.6	-0.8	11.09	6.39	1478.5	1.44	1426.1	0.03
17:50	327.8	31.5	-0.8	11.18	6.34	1478.0	1.42	1426.1	0.04
17:51	327.2	31.5	-0.8	11.16	6.37	1478.1	1.44	1426.0	0.03
17:52	327.9	31.5	-0.8	11.16	6.37	1477.1	1.38	1424.6	0.03
17:53	325.6	31.4	-0.7	11.24	6.33	1476.4	1.37	1424.5	0.03
17:54	326.4	31.3	-0.7	11.21	6.35	1476.4	1.44	1424.2	0.04
17:55	326.9	31.3	-0.8	11.18	6.37	1476.5	1.38	1424.1	0.04
17:56	327.0	31.4	-0.8	11.17	6.38	1476.4	1.57	1423.7	0.03
17:57	327.4	31.5	-0.7	11.17	6.39	1475.9	1.29	1424.3	0.03
17:58	325.3	31.4	-0.7	11.21	6.37	1475.0	1.46	1424.1	0.03
17:59	325.6	31.4	-0.7	11.20	6.37	1474.8	1.39	1423.4	0.03
18:00	329.3	32.1	-0.7	11.07	6.46	1473.9	1.38	1425.0	0.03

Jewell Coal & Coke Engineering 10-29-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST 15 MINUTES									
18:00	327.7	31.5	-0.8	11.16	6.37	1477.0	1.43	1425.0	0.03
18:01	335.7	32.5	-0.7	10.87	6.56	1473.7	1.26	1426.3	0.03
18:02	339.3	32.2	-0.7	10.77	6.63	1472.3	1.03	1427.4	0.03
18:03	340.0	31.8	-0.7	10.75	6.65	1471.6	0.97	1427.7	0.03
18:04	341.6	31.6	-0.7	10.72	6.69	1470.4	0.91	1428.7	0.03
18:05	343.2	31.3	-0.7	10.70	6.68	1472.0	0.86	1429.3	0.03
18:06	341.1	31.5	-0.6	10.75	6.67	1473.2	1.08	1429.8	0.03
18:07	341.2	31.4	-0.6	10.75	6.67	1473.6	0.82	1431.6	0.03
18:08	339.2	31.6	-0.6	10.76	6.67	1473.5	0.71	1432.0	0.03
18:09	341.1	31.3	-0.6	10.72	6.70	1473.5	0.71	1431.8	0.03
18:10	340.1	31.0	-0.7	10.78	6.66	1474.6	1.31	1430.5	0.03
18:11	338.1	30.9	-0.6	10.85	6.61	1475.4	1.28	1429.4	0.02
18:12	338.3	31.3	-0.5	10.84	6.62	1476.2	1.41	1429.4	0.03
18:13	338.8	31.3	-0.5	10.83	6.63	1475.2	1.32	1430.5	0.03
18:14	337.8	30.8	-0.6	10.87	6.61	1475.0	1.38	1429.6	0.03
18:15	336.4	30.9	-0.5	10.89	6.60	1476.2	1.65	1429.9	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
18:15	339.5	31.4	-0.6	10.79	6.64	1473.8	1.11	1429.6	0.03
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
18:15	335.1	31.6	-0.6	10.91	6.46	1479.8	1.32	1428.8	0.03
18:16	336.8	31.1	-0.6	10.86	6.62	1475.4	1.41	1431.7	0.03
18:17	338.6	31.1	-0.6	10.79	6.66	1475.6	1.46	1431.8	0.03
18:18	339.2	31.0	-0.5	10.79	6.66	1475.6	1.53	1432.4	0.04
18:19	337.3	31.1	-0.4	10.82	6.65	1472.2	0.83	1433.2	0.03
18:20	333.8	30.9	-0.5	10.90	6.59	1471.8	1.42	1431.4	0.03
18:21	334.1	30.8	-0.4	10.89	6.59	1472.0	1.75	1429.8	0.03
18:22	334.1	30.6	-0.4	10.90	6.59	1470.7	1.64	1429.2	0.02
18:23	335.1	30.6	-0.4	10.92	6.59	1470.2	1.74	1429.1	0.02
18:24	338.2	30.5	-0.4	10.84	6.64	1468.9	1.72	1429.2	0.02
18:25	338.2	30.5	-0.3	10.87	6.62	1469.3	1.50	1429.1	0.02
18:26	337.6	30.7	-0.3	10.89	6.61	1469.6	1.74	1429.2	0.02
18:27	336.6	30.9	-0.4	10.90	6.61	1469.8	1.56	1429.1	0.02
18:28	337.4	30.5	-0.3	10.89	6.62	1471.6	1.82	1429.4	0.03
18:29	337.7	31.0	-0.3	10.78	6.70	1470.9	1.38	1429.8	0.02
18:30	337.2	31.3	-0.3	10.81	6.68	1470.7	1.45	1431.0	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
18:30	336.8	30.8	-0.4	10.86	6.63	1471.6	1.53	1430.4	0.03
18:31	336.9	31.4	-0.3	10.84	6.66	1471.8	1.74	1430.6	0.02
18:32	334.2	31.4	-0.2	10.87	6.64	1472.7	1.67	1430.2	0.02
18:33	334.0	31.6	-0.3	10.91	6.62	1472.7	1.58	1430.0	0.03
18:34	334.6	31.4	-0.3	10.93	6.61	1473.5	1.61	1430.8	0.03
18:35	332.9	31.4	-0.3	10.95	6.60	1474.9	1.88	1430.4	0.03
18:36	333.1	31.5	-0.2	10.94	6.61	1476.2	1.45	1430.5	0.03
18:37	333.3	31.4	-0.2	10.87	6.66	1475.3	1.42	1431.5	0.03
18:38	333.7	31.4	-0.2	10.85	6.66	1476.8	1.69	1430.7	0.03
18:39	332.6	31.4	-0.2	10.95	6.62	1478.5	1.92	1431.3	0.03

Jewell Coal & Coke Engineering 10-29-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
18:40	331.7	31.3	-0.2	10.93	6.63	1477.0	1.14	1430.9	0.02
18:41	332.5	31.6	-0.1	10.85	6.68	1476.9	1.34	1433.2	0.02
18:42	333.7	31.5	-0.1	10.82	6.70	1478.4	1.56	1433.1	0.02
18:43	333.8	31.6	-0.1	10.80	6.71	1477.6	1.03	1436.2	0.03
18:44	333.3	31.4	-0.0	10.83	6.70	1477.9	1.04	1434.7	0.03
18:45	333.8	31.5	0.0	10.78	6.72	1478.3	1.04	1435.6	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
18:45	333.6	31.5	-0.2	10.87	6.65	1475.9	1.47	1432.0	0.03
18:46	335.6	31.5	0.0	10.78	6.72	1479.6	1.52	1434.6	0.02
18:47	334.0	31.5	0.0	10.83	6.69	1481.0	1.12	1435.3	0.03
18:48	334.3	31.7	-0.0	10.80	6.70	1480.7	1.23	1436.9	0.02
18:49	335.7	31.8	-0.0	10.77	6.72	1481.0	1.36	1437.7	0.03
18:50	334.5	31.5	0.1	10.84	6.70	1481.1	1.30	1438.6	0.03
18:51	330.7	31.2	0.1	10.91	6.64	1480.9	1.15	1438.3	0.02
18:52	330.1	31.2	0.1	10.83	6.69	1482.1	1.38	1437.9	0.02
18:53	329.1	31.2	0.2	10.89	6.65	1482.6	1.11	1438.3	0.02
18:54	328.4	31.2	0.3	10.87	6.66	1481.1	1.16	1439.2	0.02
18:55	328.6	31.4	0.2	10.80	6.69	1480.5	1.36	1439.7	0.02
18:56	329.0	31.2	0.3	10.79	6.71	1481.2	1.31	1440.0	0.02
18:57	328.1	31.1	0.2	10.83	6.67	1481.2	1.23	1439.8	0.02
18:58	328.7	31.3	0.1	10.79	6.69	1481.3	1.30	1440.3	0.02
18:59	330.3	31.4	0.3	10.76	6.70	1483.1	1.16	1441.4	0.02
19:00	329.8	31.4	0.3	10.76	6.69	1486.0	1.93	1441.8	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
19:00	331.1	31.4	0.1	10.82	6.69	1481.6	1.31	1438.7	0.02
19:01	328.8	31.0	0.2	10.78	6.68	1488.7	1.81	1446.7	0.04
19:02	319.3	30.5	0.3	11.09	6.52	1492.9	2.16	1447.0	0.03
19:03	312.6	30.9	0.4	11.22	6.44	1496.2	1.94	1445.9	0.03
19:04	309.2	31.1	0.4	11.25	6.43	1495.8	2.01	1445.2	0.03
19:05	307.5	31.2	0.4	11.27	6.42	1496.6	2.41	1444.2	0.03
19:06	308.6	31.3	0.4	11.23	6.42	1498.2	2.71	1443.8	0.03
19:07	307.8	31.3	0.4	11.27	6.40	1499.0	2.67	1443.4	0.03
19:08	308.3	31.3	0.5	11.28	6.39	1501.0	2.58	1443.8	0.04
19:09	306.6	31.2	0.5	11.30	6.37	1505.3	2.87	1442.6	0.03
19:10	307.1	31.2	0.4	11.27	6.37	1511.8	2.71	1442.1	0.04
19:11	306.0	31.1	0.4	11.32	6.36	1515.5	2.60	1442.3	0.03
19:12	305.4	31.1	0.4	11.31	6.37	1516.1	3.02	1441.4	0.03
19:13	307.0	31.2	0.5	11.25	6.41	1522.9	3.00	1444.0	0.04
19:14	305.2	31.2	0.5	11.31	6.39	1521.5	2.89	1444.2	0.04
19:15	305.5	31.3	0.5	11.23	6.44	1517.2	2.57	1443.4	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
19:15	309.7	31.1	0.4	11.23	6.43	1505.2	2.53	1444.0	0.03
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
19:15	327.8	31.2	-0.0	10.94	6.60	1483.6	1.71	1436.3	0.03
19:16	308.1	31.5	0.5	11.13	6.50	1520.0	2.44	1442.8	0.03
19:17	306.3	31.6	0.4	11.17	6.47	1524.3	2.42	1443.3	0.03
19:18	305.4	31.6	0.4	11.27	6.40	1527.9	2.41	1442.3	0.03

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
19:19	304.4	31.3	0.4	11.28	6.40	1536.1	2.64	1443.8	0.05
19:20	299.8	29.4	0.3	11.42	6.33	1542.3	3.39	1452.7	0.06
19:21	291.5	30.3	0.3	11.67	6.15	1544.3	3.39	1453.5	0.05
19:22	288.5	31.2	0.3	11.77	6.08	1544.2	3.23	1454.0	0.05
19:23	285.7	31.4	0.3	11.83	6.04	1542.4	3.25	1454.0	0.05
19:24	285.2	31.7	0.4	11.86	6.04	1543.2	3.34	1453.6	0.05
19:25	283.5	31.3	0.4	11.91	6.03	1549.9	3.51	1453.3	0.05
19:26	284.1	31.5	0.4	11.80	6.09	1559.8	3.39	1454.1	0.05
19:27	284.5	31.8	0.4	11.85	6.07	1570.8	3.69	1454.3	0.05
19:28	281.6	32.0	0.3	11.93	6.01	1579.9	3.59	1453.5	0.06
19:29	280.1	32.2	0.2	11.97	6.02	1584.9	3.49	1454.7	0.05
19:30	279.5	31.4	0.2	12.05	5.94	1585.4	3.65	1456.0	0.06
AVERAGE VALUES FOR THE LAST 15 MINUTES									
19:30	291.2	31.3	0.3	11.66	6.17	1550.4	3.19	1451.1	0.05
19:31	273.5	30.7	0.3	12.31	5.76	1586.6	3.69	1457.4	0.06
19:32	266.8	30.3	0.2	12.54	5.60	1587.3	3.72	1456.4	0.06
19:33	262.6	30.1	0.2	12.55	5.60	1581.6	3.70	1456.5	0.07
19:34	265.3	30.7	0.2	12.46	5.68	1580.2	3.55	1457.3	0.07
19:35	265.1	31.9	0.2	12.44	5.67	1582.3	3.44	1458.9	0.07
19:36	266.0	32.2	0.2	12.46	5.67	1586.3	3.76	1458.5	0.07
19:37	264.6	31.6	0.2	12.45	5.72	1591.0	3.91	1458.2	0.06
19:38	262.6	30.6	0.2	12.62	5.60	1592.8	3.79	1460.5	0.07
19:39	253.1	28.1	0.1	12.97	5.33	1594.6	3.82	1461.7	0.06
19:40	248.8	31.2	0.2	13.11	5.21	1595.5	3.71	1462.3	0.07
19:41	245.7	32.9	0.2	13.09	5.29	1595.5	3.56	1460.9	0.06
19:42	250.3	33.3	0.1	12.94	5.45	1596.6	3.64	1459.7	0.06
19:43	248.4	32.0	0.1	13.01	5.36	1596.0	3.68	1460.0	0.07
19:44	252.2	33.3	0.1	13.00	5.38	1597.0	3.76	1461.7	0.07
19:45	263.1	37.8	0.1	12.64	5.59	1596.5	3.60	1465.4	0.07
AVERAGE VALUES FOR THE LAST 15 MINUTES									
19:45	259.2	31.8	0.2	12.71	5.53	1590.7	3.69	1459.7	0.06
19:46	266.8	38.9	0.0	12.79	5.50	1595.4	3.74	1474.9	0.06
19:47	264.3	42.7	0.1	12.67	5.56	1598.3	3.85	1483.0	0.06
19:48	278.4	46.9	0.0	12.24	5.86	1598.7	3.78	1487.9	0.06
19:49	284.9	47.4	0.1	12.34	5.80	1598.3	3.62	1489.7	0.07
19:50	294.3	48.1	0.1	12.04	5.98	1599.3	3.62	1494.2	0.07
19:51	281.9	43.7	0.0	12.77	5.52	1598.7	3.78	1499.1	0.07
19:52	287.9	47.7	-0.1	12.45	5.66	1595.8	3.28	1505.6	0.08
19:53	298.7	51.7	0.0	12.30	5.74	1589.3	3.14	1510.8	0.07
19:54	311.2	56.6	0.1	11.84	6.05	1587.1	3.13	1519.8	0.08
19:55	319.7	59.8	-0.1	11.75	6.14	1586.2	3.23	1526.3	0.09
19:56	311.0	61.5	-0.1	11.93	6.06	1585.0	3.13	1530.1	0.09
19:57	301.2	59.1	-0.1	12.06	5.94	1585.3	3.35	1533.0	0.08
19:58	292.7	57.9	-0.2	12.30	5.76	1584.4	3.17	1530.4	0.08
19:59	285.6	60.3	-0.2	12.42	5.70	1583.4	3.21	1529.2	0.08
20:00	292.8	63.4	-0.1	12.10	5.92	1582.5	3.36	1535.0	0.09
AVERAGE VALUES FOR THE LAST 15 MINUTES									
20:00	291.4	52.4	-0.0	12.27	5.81	1591.2	3.43	1509.9	0.07
20:01	301.0	64.2	-0.1	11.97	5.99	1583.3	3.47	1538.4	0.09

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
20:02	306.6	68.5	-0.2	11.84	6.04	1581.2	3.30	1543.7	0.09
20:03	317.9	75.6	-0.2	11.61	6.16	1582.0	3.57	1549.0	0.09
20:04	328.7	76.1	-0.2	11.09	6.54	1579.3	3.07	1554.7	0.09
20:05	336.5	83.0	-0.3	11.14	6.54	1579.0	3.27	1556.5	0.09
20:06	331.4	80.7	-0.3	11.33	6.41	1579.4	3.71	1557.2	0.09
20:07	324.3	77.8	-0.3	11.70	6.15	1578.1	3.05	1558.4	0.08
20:08	320.4	80.0	-0.3	11.76	6.08	1577.7	3.71	1557.4	0.10
20:09	317.8	79.2	-0.3	11.77	6.09	1576.9	3.09	1558.4	0.08
20:10	317.8	83.5	-0.2	11.51	6.27	1575.6	3.07	1563.7	0.08
20:11	332.3	88.6	-0.3	11.26	6.36	1574.3	3.07	1566.8	0.08
20:12	343.4	92.4	-0.3	11.04	6.45	1575.1	3.25	1570.8	0.08
20:13	356.3	95.5	-0.3	10.72	6.66	1575.5	3.57	1575.6	0.10
20:14	362.3	98.7	-0.2	10.88	6.65	1574.5	3.34	1578.6	0.10
20:15	354.7	101.4	-0.3	10.99	6.57	1573.7	3.13	1580.0	0.10
AVERAGE VALUES FOR THE LAST 15 MINUTES									
20:15	330.1	83.0	-0.3	11.37	6.33	1577.7	3.30	1560.6	0.09
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
20:15	293.0	49.6	0.1	12.00	5.96	1577.5	3.40	1495.3	0.07
20:16	350.4	99.8	-0.3	10.99	6.60	1573.6	3.62	1580.7	0.09
20:17	348.2	98.3	-0.4	11.08	6.51	1571.8	3.27	1582.0	0.09
20:18	346.2	96.0	-0.5	11.18	6.45	1571.7	3.08	1582.5	0.09
20:19	347.6	97.9	-0.5	11.02	6.50	1571.3	3.28	1582.1	0.09
20:20	350.6	97.8	-0.5	10.97	6.52	1570.7	2.91	1581.4	0.08
20:21	352.6	97.4	-0.6	10.83	6.60	1571.0	3.28	1580.4	0.08
20:22	354.3	96.7	-0.7	10.88	6.56	1570.0	3.16	1580.2	0.09
20:23	352.0	97.2	-0.7	10.90	6.54	1569.6	3.14	1579.1	0.08
20:24	347.2	96.3	-0.7	10.97	6.50	1568.1	3.03	1579.2	0.08
20:25	348.1	96.7	-0.6	10.90	6.54	1567.4	2.88	1579.5	0.09
20:26	348.5	96.4	-0.6	10.98	6.49	1566.5	3.07	1579.1	0.09
20:27	343.5	93.8	-0.6	11.18	6.40	1567.3	3.39	1579.6	0.10
20:28	332.4	88.4	-0.7	11.83	5.96	1566.3	3.07	1580.5	0.09
20:29	322.6	89.3	-0.8	12.00	5.82	1565.3	3.16	1581.2	0.09
20:30	320.8	93.2	-0.9	11.77	5.98	1565.7	2.83	1579.0	0.09
AVERAGE VALUES FOR THE LAST 15 MINUTES									
20:30	344.3	95.7	-0.6	11.17	6.40	1569.1	3.14	1580.4	0.09
20:31	320.6	91.8	-0.9	11.94	5.88	1565.0	3.14	1580.6	0.08
20:32	323.5	95.3	-0.8	11.59	6.08	1564.4	2.79	1582.6	0.10
20:33	328.4	98.4	-0.8	11.51	6.07	1563.5	2.89	1585.3	0.09
20:34	333.4	102.9	-0.9	11.21	6.25	1563.2	2.94	1587.8	0.08

COMMENTS: END I-1-S4-CEM-1
INTERUPT FOR SYSTEM CALIBRATION

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: SYSTEM CALIBRATION AFTER RUN I-1-S4-CEM-1

DATE : 10-29-1991 TIME: 20:35 - 20:50

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	4.8
7	Unit 4	ppmSO2	241.0	239.3
9	Unit 4	ppmNOx	0.0	0.4
9	Unit 4	ppmNOx	141.0	136.4
8	Unit 4	ppmCO	0.0	-0.9
8	Unit 4	ppmCO	30.0	29.7
5	Unit 4	% O2	0.00	0.09
5	Unit 4	% O2	12.50	12.45
6	Unit 4	% CO2	0.00	0.18
6	Unit 4	% CO2	11.00	10.89

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: RECALIBRATE CO AND CO2 ANALYZER - DIRECT CALIBRATION

DATE : 10-29-1991 TIME: 20:51 - 21:05

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
8	Unit 4	ppmCO	0.0	0.2
8	Unit 4	ppmCO	30.0	30.8
8	Unit 4	ppmCO	92.0	91.7
6	Unit 4	% CO2	0.00	0.01
6	Unit 4	% CO2	11.00	10.97
6	Unit 4	% CO2	17.40	17.52

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: SYSTEM CALIBRATION - CO AND CO2

DATE : 10-29-1991 TIME: 21:05 - 21:11

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
8	Unit 4	ppmCO	0.0	1.6
8	Unit 4	ppmCO	30.0	31.6
6	Unit 4	% CO2	0.00	0.05
6	Unit 4	% CO2	11.00	10.82

Jewell Coal & Coke Engineering 10-29-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS

COMMENTS: START RUN II-1-S4-CEM-1

Jewell Coal & Coke Engineering 10-29-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
21:23	327.3	93.5	1.5	11.49	5.93	1533.8	2.63	1559.6	0.07
21:24	325.8	92.4	1.3	11.44	5.96	1532.9	2.84	1561.4	0.08
21:25	322.3	91.8	1.3	11.52	5.91	1533.0	2.84	1559.6	0.07
21:26	319.0	91.5	1.4	11.47	5.94	1531.9	2.78	1557.6	0.07
21:27	317.4	91.7	1.4	11.51	5.91	1531.4	2.90	1554.5	0.07
21:28	320.4	91.0	1.2	11.42	5.96	1530.7	2.66	1556.9	0.08

COMMENTS: INTERUPT TO RESET AVG PERIOD

Jewell Coal & Coke Engineering 10-29-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
21:31	314.2	90.6	1.3	11.64	5.84	1528.2	2.84	1554.4	0.07
21:32	312.1	89.8	1.3	11.65	5.84	1528.0	2.84	1554.8	0.07
21:33	311.4	89.6	1.3	11.56	5.89	1526.3	2.72	1553.4	0.07
21:34	311.4	91.2	1.3	11.52	5.93	1526.6	3.01	1552.6	0.07
21:35	310.8	89.6	1.2	11.54	5.91	1526.0	3.00	1554.8	0.09
21:36	310.7	88.0	1.2	11.55	5.91	1526.6	3.05	1554.0	0.10
21:37	311.1	87.2	1.3	11.55	5.91	1524.2	3.12	1553.6	0.10
21:38	310.2	85.7	1.3	11.61	5.89	1522.6	3.04	1552.8	0.10
21:39	308.5	85.5	1.3	11.66	5.86	1521.2	3.15	1547.7	0.09
21:40	306.6	86.8	1.2	11.68	5.85	1520.7	3.01	1552.5	0.10
21:41	307.3	85.9	1.3	11.65	5.87	1518.1	2.91	1551.7	0.09
21:42	307.0	85.8	1.3	11.70	5.84	1516.0	2.94	1549.7	0.08
21:43	305.5	85.0	1.2	11.76	5.79	1513.3	2.94	1547.5	0.08
21:44	303.9	85.7	1.3	11.81	5.76	1511.6	2.49	1548.6	0.09
21:45	303.8	85.3	1.2	11.78	5.78	1509.1	2.48	1547.9	0.07
AVERAGE VALUES FOR THE LAST 15 MINUTES									
21:45	309.0	87.5	1.3	11.65	5.86	1521.2	2.90	1551.7	0.08
21:46	301.1	84.7	1.3	11.96	5.67	1505.9	2.28	1544.9	0.05
21:47	298.1	85.1	1.2	11.94	5.70	1504.5	2.19	1540.9	0.05
21:48	303.3	79.5	1.2	11.49	5.98	1502.3	2.09	1537.1	0.07
21:49	312.2	77.4	1.3	10.98	6.31	1500.7	2.05	1532.0	0.06
21:50	329.0	79.0	1.4	10.22	6.76	1499.4	2.06	1532.6	0.06
21:51	348.0	74.7	1.4	9.80	6.99	1498.9	1.89	1530.8	0.06
21:52	360.4	76.7	1.3	9.90	6.94	1496.7	1.84	1530.3	0.06
21:53	364.4	79.0	1.4	9.94	6.89	1496.3	1.94	1530.1	0.05
21:54	365.4	79.9	1.4	9.90	6.94	1496.3	2.05	1529.0	0.06
21:55	367.7	78.7	1.4	9.82	6.97	1495.0	1.98	1528.5	0.06
21:56	369.0	79.0	1.4	9.89	6.92	1494.9	1.93	1527.6	0.06
21:57	369.9	78.9	1.4	9.75	7.02	1494.7	1.98	1527.7	0.05
21:58	370.4	79.0	1.4	9.80	6.99	1494.2	2.10	1525.7	0.06
21:59	372.9	78.3	1.3	9.75	7.02	1491.9	1.94	1525.5	0.06
22:00	375.4	77.5	1.3	9.75	7.03	1493.2	2.02	1526.4	0.06
AVERAGE VALUES FOR THE LAST 15 MINUTES									
22:00	347.2	79.2	1.3	10.33	6.68	1497.7	2.02	1531.3	0.06
AVERAGE VALUES FOR THE LAST HOUR: 30 MINUTES OF VALID DATA									
22:00	328.1	83.3	1.3	10.99	6.27	1509.4	2.46	1541.5	0.07
22:01	373.6	77.1	1.4	9.83	7.00	1492.3	2.04	1525.9	0.06
22:02	372.8	76.3	1.3	9.86	6.98	1494.3	2.20	1525.5	0.06
22:03	375.3	76.9	1.3	9.77	7.05	1492.9	2.05	1524.4	0.05
22:04	376.4	75.7	1.3	9.87	6.99	1491.1	1.76	1523.6	0.06
22:05	374.8	76.3	1.3	9.96	6.94	1492.9	2.14	1524.6	0.05
22:06	373.3	75.6	1.2	9.82	7.03	1492.7	2.02	1523.7	0.05
22:07	375.3	75.1	1.3	9.80	7.05	1491.8	1.97	1524.4	0.06
22:08	378.0	74.4	1.3	9.79	7.06	1491.6	2.00	1523.7	0.06
22:09	380.7	73.3	1.2	9.96	6.99	1491.5	2.05	1524.1	0.06
22:10	382.1	73.6	1.2	9.96	6.98	1491.6	1.95	1522.2	0.05
22:11	382.3	72.7	1.3	9.89	7.03	1491.9	2.09	1522.0	0.05
22:12	383.1	73.3	1.3	9.89	7.03	1491.3	2.01	1519.2	0.05
22:13	383.7	74.2	1.4	9.83	7.07	1490.7	1.90	1519.8	0.06

Jewell Coal & Coke Engineering 10-29-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
22:14	382.0	73.6	1.4	9.85	7.05	1489.0	1.87	1519.0	0.06
22:15	378.6	73.4	1.4	9.83	7.08	1487.9	1.73	1519.8	0.06
AVERAGE VALUES FOR THE LAST 15 MINUTES									
22:15	378.1	74.8	1.3	9.86	7.02	1491.6	1.99	1522.8	0.06
22:16	378.5	73.2	1.3	9.75	7.11	1486.2	1.74	1519.7	0.06
22:17	380.9	72.7	1.5	9.69	7.15	1484.3	1.54	1521.0	0.06
22:18	382.5	72.8	1.5	9.74	7.14	1483.0	1.74	1520.5	0.06
22:19	382.9	73.2	1.4	9.71	7.14	1483.7	1.80	1520.0	0.05
22:20	380.2	72.4	1.5	9.83	7.08	1482.4	1.96	1518.0	0.05
22:21	379.7	72.0	1.5	9.78	7.12	1482.9	1.91	1518.1	0.05
22:22	377.7	71.5	1.5	9.88	7.07	1482.8	2.02	1516.7	0.05
22:23	377.5	71.0	1.4	9.86	7.07	1482.9	2.06	1516.5	0.05
22:24	376.1	69.8	1.5	9.81	7.11	1481.3	1.82	1517.6	0.05
22:25	376.1	69.5	1.5	9.89	7.06	1481.9	1.99	1517.1	0.05
22:26	373.5	69.9	1.5	9.89	7.04	1481.8	2.08	1516.4	0.05
22:27	367.3	70.0	1.5	9.82	7.08	1481.7	2.04	1516.0	0.05
22:28	362.7	69.6	1.6	9.87	7.05	1481.7	1.88	1516.0	0.05
22:29	358.5	69.3	1.6	9.84	7.07	1481.2	1.97	1515.6	0.05
22:30	355.1	69.0	1.7	9.89	7.03	1480.7	1.85	1517.3	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
22:30	373.9	71.1	1.5	9.82	7.09	1482.6	1.89	1517.8	0.05
22:31	352.5	69.0	1.6	9.96	7.01	1478.8	1.88	1517.4	0.06
22:32	354.5	69.3	1.6	9.85	7.05	1479.1	2.00	1517.1	0.05
22:33	355.3	68.9	1.5	9.95	7.01	1479.0	1.93	1517.2	-0.01
22:34	355.2	68.7	1.6	9.92	7.02	1477.4	1.85	1517.0	-0.01
22:35	356.9	68.3	1.5	9.92	7.03	1477.8	1.91	1517.3	-0.01
22:36	361.7	68.2	1.6	9.84	7.07	1477.9	1.99	1515.2	-0.01
22:37	363.8	67.9	1.6	9.96	7.00	1478.5	2.00	1516.0	0.01
22:38	366.0	67.6	1.5	9.82	7.08	1477.6	2.04	1515.7	0.06
22:39	368.9	67.4	1.6	9.84	7.09	1478.0	2.08	1516.5	0.05
22:40	363.5	67.1	1.6	9.84	7.07	1478.0	1.94	1516.7	0.05
22:41	352.1	66.1	1.6	9.84	7.06	1477.0	1.66	1516.4	0.06
22:42	356.5	66.6	1.6	9.97	7.00	1477.1	1.94	1516.0	0.05
22:43	364.1	66.6	1.7	9.94	7.02	1478.7	2.14	1513.8	0.05
22:44	370.2	66.8	1.6	9.95	7.00	1479.2	2.14	1513.1	0.05
22:45	373.7	66.4	1.7	9.94	7.00	1479.1	2.18	1512.7	0.06
AVERAGE VALUES FOR THE LAST 15 MINUTES									
22:45	361.0	67.7	1.6	9.90	7.03	1478.2	1.98	1515.9	~~0.03~~
22:46	375.6	66.1	1.7	9.94	7.01	1478.7	-3.55	1512.7	0.05
22:47	374.8	65.8	1.7	9.98	6.99	1477.4	-4.01	1512.0	0.04
22:48	372.9	65.8	1.7	9.96	6.99	1475.9	-4.01	1512.2	0.04
22:49	370.7	65.4	1.7	10.01	6.97	1475.6	-0.47	1510.9	0.04
22:50	370.2	65.3	1.6	10.09	6.93	1476.2	1.89	1511.3	0.05
22:51	367.3	65.9	1.6	10.05	6.97	1474.4	1.76	1511.9	0.05
22:52	365.8	65.9	1.7	9.99	7.00	1474.1	1.88	1512.1	0.04
22:53	368.2	65.8	1.8	10.00	7.01	1474.2	1.96	1510.3	0.04
22:54	366.3	65.3	1.8	9.96	6.99	1475.1	1.82	1510.2	0.05
22:55	365.3	64.2	1.8	10.01	6.97	1475.0	1.68	1511.7	0.06
22:56	362.3	64.1	1.7	9.92	7.02	1477.4	1.73	1511.8	0.03

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ENTROPY

Jewell Coal & Coke Engineering 10-29-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
22:57	365.2	63.6	1.8	9.91	7.05	1478.6	1.57	1510.5	-0.01
22:58	367.5	63.5	1.7	9.92	7.07	1480.9	1.73	1508.4	0.03
22:59	366.2	63.5	1.8	9.93	7.02	1484.8	1.86	1509.4	0.04
23:00	364.2	63.2	1.8	10.09	6.95	1485.6	1.91	1507.0	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
23:00	368.2	64.9	1.7	9.98	7.00	1477.6	~~0.52~~	1510.8	~~0.04~~
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
23:00	370.3	69.6	1.5	9.89	7.03	1482.5	~~1.59~~	1516.8	~~0.05~~
23:01	363.5	63.6	1.8	10.08	6.95	1486.5	2.05	1508.8	0.04
23:02	363.3	62.8	1.9	10.06	6.98	1487.7	2.07	1508.4	0.05
23:03	364.7	62.5	1.8	10.02	6.98	1489.1	2.04	1506.5	0.05
23:04	363.3	62.2	1.8	10.01	6.97	1488.8	1.97	1508.3	0.05
23:05	362.9	62.0	1.7	9.98	7.00	1489.5	1.90	1509.4	0.05
23:06	363.6	62.0	1.6	10.02	6.98	1490.2	1.95	1508.2	0.04
23:07	364.4	62.4	1.7	9.98	6.99	1492.2	1.88	1504.5	0.05
23:08	363.9	61.6	1.7	10.02	6.98	1494.1	1.86	1498.7	0.04
23:09	369.9	59.9	1.7	9.18	7.48	1493.4	1.72	1498.5	0.04
23:10	387.0	57.5	1.8	8.57	7.84	1493.7	1.88	1498.9	0.03
23:11	400.5	57.4	1.7	8.48	7.92	1498.0	1.89	1496.3	0.04
23:12	409.2	56.7	1.8	8.51	7.92	1498.0	1.89	1488.8	0.04
23:13	412.2	56.8	1.7	8.48	7.95	1498.0	1.80	1494.3	0.04
23:14	412.4	56.9	1.8	8.45	7.98	1498.2	1.81	1493.1	0.04
23:15	413.9	56.7	1.9	8.41	8.01	1498.4	1.79	1494.7	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
23:15	381.0	60.1	1.8	9.35	7.40	1493.1	1.90	1501.2	0.04
23:16	412.6	57.0	1.8	8.43	8.01	1500.3	1.87	1492.0	0.05
23:17	415.6	56.8	1.8	8.34	8.07	1501.6	1.89	1490.8	0.04
23:18	416.6	56.1	1.8	8.50	7.93	1498.5	1.85	1490.7	0.04
23:19	410.3	55.5	1.8	8.67	7.83	1501.0	1.95	1491.0	0.04
23:20	409.3	55.5	1.7	8.64	7.85	1503.7	1.92	1489.7	0.04
23:21	408.8	56.9	1.8	8.43	7.97	1502.0	1.73	1488.4	0.04
23:22	412.0	56.9	1.8	8.38	8.01	1501.8	1.96	1486.1	0.03
23:23	415.7	56.4	1.8	8.38	8.00	1504.0	2.00	1490.0	0.04
23:24	416.7	56.4	1.9	8.36	8.01	1504.4	1.94	1491.8	0.04
23:25	419.9	56.0	1.9	8.34	8.04	1505.6	1.84	1493.3	0.04
23:26	422.1	56.3	1.9	8.32	8.04	1506.9	1.86	1493.0	0.04
23:27	421.3	56.1	1.8	8.40	8.00	1505.7	1.90	1493.2	0.04
23:28	419.2	56.3	1.8	8.34	8.04	1505.3	1.90	1493.4	0.04
23:29	419.4	55.9	1.9	8.33	8.06	1505.4	1.68	1494.4	0.04
23:30	421.1	55.8	1.9	8.38	8.05	1505.9	1.83	1493.3	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
23:30	416.0	56.2	1.8	8.42	7.99	1503.5	1.87	1491.4	0.04
23:31	420.3	55.8	1.8	8.37	8.04	1506.0	1.95	1493.1	0.04
23:32	418.1	55.8	1.8	8.39	8.05	1507.0	1.82	1493.2	0.04
23:33	419.3	55.7	1.9	8.38	8.06	1507.1	2.01	1493.1	0.04
23:34	417.5	55.3	2.0	8.50	8.01	1506.8	1.93	1493.1	0.04
23:35	414.1	55.2	1.9	8.45	8.00	1506.8	1.87	1493.3	0.04

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ENTROPY

Jewell Coal & Coke Engineering 10-29-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
23:36	415.4	55.4	1.8	8.39	8.05	1506.2	1.95	1493.7	0.04
23:37	415.1	55.2	1.8	8.33	8.10	1507.6	1.90	1493.3	0.04
23:38	417.1	55.1	1.8	8.28	8.12	1507.9	2.07	1493.0	0.04
23:39	417.0	54.9	1.8	8.32	8.11	1509.8	2.06	1493.3	0.03
23:40	416.9	54.9	1.8	8.27	8.16	1507.7	1.77	1494.7	0.04
23:41	419.3	55.7	1.8	8.17	8.24	1511.7	1.82	1496.5	0.04
23:42	422.0	55.8	1.8	8.18	8.24	1514.1	1.70	1497.6	0.03
23:43	422.6	55.7	1.8	8.11	8.28	1518.8	1.85	1498.9	0.03
23:44	423.8	55.4	1.7	8.14	8.27	1522.7	1.88	1498.2	0.04
23:45	424.5	55.8	1.8	8.12	8.29	1525.2	1.93	1498.9	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
23:45	418.9	55.4	1.8	8.29	8.13	1511.0	1.90	1494.9	0.04
23:46	424.0	55.7	1.8	8.15	8.28	1525.6	1.92	1498.6	0.03
23:47	422.2	55.0	1.8	8.24	8.21	1525.5	1.85	1499.1	0.04
23:48	419.7	55.1	1.8	8.20	8.24	1526.9	1.96	1499.4	0.04
23:49	418.2	55.3	1.7	8.17	8.28	1526.0	2.03	1498.3	0.03
23:50	417.4	54.9	1.7	8.28	8.19	1527.5	1.89	1497.7	0.04
23:51	416.0	55.0	1.6	8.27	8.20	1527.8	1.85	1497.8	0.04
23:52	416.7	54.9	1.7	8.26	8.21	1529.1	1.82	1498.0	0.03
23:53	416.3	54.9	1.7	8.27	8.22	1529.5	1.88	1498.7	0.04
23:54	413.7	54.9	1.7	8.19	8.28	1528.6	1.66	1498.3	0.03
23:55	415.1	54.6	1.6	8.25	8.26	1528.4	1.61	1498.1	0.04
23:56	415.4	54.5	1.7	8.27	8.24	1528.4	1.52	1498.5	0.04
23:57	416.1	54.4	1.6	8.29	8.23	1529.3	1.47	1498.5	0.04
23:58	417.7	54.1	1.7	8.35	8.18	1530.4	1.62	1497.9	0.04
23:59	416.0	54.0	1.7	8.34	8.19	1531.6	2.03	1495.6	0.02
24:00	415.4	53.5	1.6	8.35	8.19	1533.0	1.79	1495.2	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
24:00	417.3	54.7	1.7	8.26	8.23	1528.5	1.79	1498.0	0.03
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
24:00	408.3	56.6	1.8	8.58	7.94	1509.0	1.87	1496.4	0.04
00:01	417.6	53.1	1.6	8.24	8.28	1535.1	2.09	1498.8	0.03
00:02	419.0	53.5	1.6	8.23	8.26	1537.3	1.98	1500.8	0.04
00:03	416.8	53.7	1.7	8.23	8.27	1537.8	1.91	1503.4	0.05
00:04	414.8	53.8	1.7	8.28	8.24	1536.4	2.00	1504.4	0.04
00:05	414.0	53.5	1.6	8.26	8.27	1532.9	1.45	1504.0	0.05
00:06	427.7	54.5	1.7	8.27	8.28	1533.7	1.66	1505.0	0.04
00:07	430.0	54.3	1.6	8.23	8.31	1533.3	1.66	1505.2	0.04
00:08	414.3	53.9	1.6	8.18	8.37	1533.0	1.57	1505.0	0.04
00:09	406.7	53.9	1.5	8.20	8.36	1533.9	1.65	1505.4	0.04
00:10	400.5	54.6	1.8	8.18	8.35	1535.8	1.66	1506.6	0.04
00:11	439.1	55.3	2.5	8.25	8.30	1533.1	1.49	1505.6	0.04
00:12	481.9	54.7	2.4	8.22	8.31	1532.0	1.55	1506.1	0.04
00:13	495.5	53.5	2.7	8.17	8.34	1532.2	1.68	1505.3	0.04
00:14	472.3	52.7	2.3	8.21	8.30	1532.3	1.59	1503.4	0.04
00:15	436.1	52.1	2.1	8.28	8.28	1530.0	1.37	1502.5	0.05

Green push to over 70 ~ 23:50 - 00:05

ENTROPY

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST 15 MINUTES									
00:15	432.4	53.8	1.9	8.23	8.30	1533.9	1.69	1504.1	0.04
00:16	396.6	51.5	1.9	8.25	8.31	1529.9	1.52	1503.2	0.04
00:17	365.4	51.3	1.8	8.23	8.35	1531.5	1.37	1503.0	0.04
00:18	339.1	50.9	1.7	8.29	8.29	1529.0	1.22	1503.2	0.04
00:19	315.0	50.4	1.6	8.26	8.33	1529.3	1.37	1505.0	0.04
00:20	295.5	50.5	1.5	8.25	8.34	1529.8	1.45	1504.7	0.04
00:21	282.5	50.6	1.5	8.22	8.37	1529.9	1.45	1505.5	0.04
00:22	274.3	50.4	1.4	8.24	8.36	1528.7	1.60	1504.2	0.04
00:23	267.9	50.4	1.4	8.23	8.36	1528.5	1.72	1504.7	0.05
00:24	259.2	50.2	1.4	8.33	8.32	1531.4	1.80	1503.3	0.03
00:25	251.7	50.0	1.5	8.41	8.28	1529.6	1.52	1500.4	0.04
00:26	247.6	49.7	1.4	8.43	8.27	1528.9	1.73	1504.9	0.04
00:27	245.5	50.3	1.4	8.40	8.31	1529.7	1.85	1505.0	0.03
00:28	245.5	50.0	1.3	8.37	8.31	1528.8	1.89	1503.8	0.04
00:29	244.0	50.0	1.3	8.48	8.24	1529.4	1.79	1503.9	0.03
00:30	243.6	50.4	1.3	8.46	8.28	1528.4	1.75	1503.6	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
00:30	284.9	50.4	1.5	8.32	8.31	1529.5	1.60	1503.9	0.04
00:31	241.0	50.1	1.4	8.45	8.28	1526.9	1.58	1504.6	0.04
00:32	242.9	50.5	1.3	8.45	8.30	1525.6	1.35	1506.2	0.05
00:33	244.6	52.3	1.4	8.42	8.34	1531.0	2.58	1505.1	0.03
00:34	249.0	51.1	1.4	8.40	8.35	1531.4	2.10	1503.3	0.03
00:35	251.4	49.8	1.4	8.44	8.32	1529.9	2.04	1504.3	0.04
00:36	249.0	49.4	1.4	8.54	8.25	1529.1	1.86	1505.1	0.04
00:37	244.9	48.3	1.4	8.53	8.28	1528.1	1.76	1505.4	0.04
00:38	239.5	49.0	1.3	8.40	8.38	1529.4	1.88	1505.4	0.04
00:39	240.2	49.2	1.4	8.34	8.42	1529.7	1.66	1505.5	0.04
00:40	240.9	49.5	1.3	8.39	8.39	1527.1	1.52	1505.2	0.03
00:41	244.4	49.4	1.3	8.30	8.45	1527.8	1.68	1505.8	0.04
00:42	252.5	49.1	1.3	8.26	8.48	1528.5	1.48	1507.3	0.03
00:43	258.1	49.5	1.3	8.35	8.42	1528.4	1.52	1508.1	0.04
00:44	262.5	49.5	1.3	8.35	8.43	1528.4	1.50	1507.4	0.04
00:45	267.9	49.7	1.3	8.36	8.44	1528.9	1.63	1506.7	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
00:45	248.6	49.8	1.3	8.40	8.37	1528.7	1.74	1505.7	0.04
00:46	272.3	49.5	1.3	8.35	8.45	1528.4	1.46	1506.6	0.04
00:47	273.5	49.3	1.2	8.43	8.39	1527.3	1.43	1506.8	0.04
00:48	275.3	49.7	1.2	8.40	8.40	1526.3	1.41	1506.8	0.04
00:49	277.6	49.7	1.2	8.42	8.40	1526.3	1.23	1507.8	0.04
00:50	281.1	49.7	1.2	8.45	8.38	1525.4	1.42	1507.8	0.04
00:51	283.0	49.9	1.1	8.42	8.41	1525.5	1.40	1508.1	0.04
00:52	283.0	49.8	1.2	8.46	8.39	1525.1	1.36	1507.6	0.04
00:53	283.4	49.7	1.2	8.47	8.37	1525.0	1.58	1505.5	0.04
00:54	283.6	49.9	1.2	8.53	8.33	1524.8	1.41	1506.0	0.04
00:55	283.8	50.0	1.2	8.48	8.36	1524.6	1.65	1505.5	0.04
00:56	284.4	50.0	1.2	8.51	8.35	1525.7	1.85	1504.9	0.03
00:57	284.0	49.6	1.3	8.54	8.34	1525.6	1.96	1504.4	0.02
00:58	285.6	49.2	1.3	8.56	8.33	1525.4	1.80	1503.8	0.03

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
00:59	286.3	49.4	1.2	8.54	8.36	1525.4	1.75	1503.2	0.03
01:00	287.3	49.3	1.1	8.58	8.35	1525.4	1.74	1502.4	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
01:00	281.6	49.6	1.2	8.48	8.37	1525.7	1.56	1505.8	0.04
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
01:00	311.9	50.9	1.5	8.36	8.34	1529.5	1.65	1504.9	0.04
01:01	288.3	49.1	1.1	8.61	8.34	1524.5	1.55	1504.6	0.04
01:02	289.6	49.0	1.1	8.63	8.34	1523.1	1.82	1504.5	0.04
01:03	292.7	49.3	1.1	8.59	8.38	1522.8	1.54	1504.4	0.03
01:04	296.2	49.4	1.1	8.58	8.36	1522.8	1.52	1503.9	0.04
01:05	303.1	49.4	1.1	8.53	8.41	1522.2	1.76	1501.4	0.04
01:06	309.6	49.5	1.1	8.55	8.39	1519.7	1.58	1506.7	0.04
01:07	312.5	49.3	1.0	8.59	8.36	1516.0	1.40	1506.2	0.04
01:08	314.0	49.7	1.1	8.59	8.37	1515.2	1.54	1505.5	0.04
01:09	317.8	49.9	1.0	8.49	8.46	1515.3	1.55	1505.4	0.04
01:10	318.2	50.2	1.1	8.40	8.52	1514.3	1.46	1505.8	0.04
01:11	318.0	50.1	1.0	8.40	8.53	1512.0	1.24	1504.0	0.04

COMMENTS: INTERUPT TO CHECK SO2 SYSTEM CALIBRATION

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: SYSTEM CALIBRATION DURING RUN II-1-S4-CEM-7

DATE : 10-30-1991 TIME: 01:11 - 01:30

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	6.3
7	Unit 4	ppmSO2	241.0	243.0
9	Unit 4	ppmNOx	0.0	0.2
9	Unit 4	ppmNOx	240.0	139.5
8	Unit 4	ppmCO	0.0	0.9
8	Unit 4	ppmCO	30.0	31.4
5	Unit 4	% O2	0.00	0.04
5	Unit 4	% O2	12.50	12.46
6	Unit 4	% CO2	0.00	0.18
6	Unit 4	% CO2	11.00	10.92

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
01:39	351.4	49.4	1.1	8.65	8.39	1510.8	1.51	1497.5	0.04
01:40	350.5	49.4	1.0	8.71	8.37	1509.3	1.34	1496.3	0.04
01:41	350.9	49.1	1.0	8.69	8.38	1508.5	1.44	1496.4	0.04
01:42	350.2	49.5	1.0	8.63	8.42	1508.3	1.34	1496.6	0.04
01:43	347.7	48.8	1.0	8.68	8.37	1507.3	1.15	1495.8	0.05
01:44	345.0	49.3	1.1	8.61	8.42	1507.0	1.29	1496.0	0.04

COMMENTS: INTERUPT TO RESET AVG PERIODS

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
01:46	346.3	49.1	1.0	8.67	8.38	1508.8	1.48	1496.2	0.03
01:47	349.5	48.6	0.9	8.60	8.43	1509.2	1.46	1495.5	0.04
01:48	350.4	48.6	1.0	8.61	8.43	1509.3	1.53	1495.5	0.04
01:49	347.5	49.0	1.0	8.65	8.38	1508.5	1.31	1497.7	0.04
01:50	342.2	48.6	1.0	8.79	8.30	1506.4	1.15	1496.4	0.03
01:51	345.7	49.2	1.1	8.70	8.37	1505.5	1.13	1493.7	0.04
01:52	348.6	49.5	1.1	8.71	8.36	1505.5	1.19	1492.6	0.03
01:53	348.2	48.9	1.0	8.82	8.27	1506.2	1.57	1489.9	0.03
01:54	345.7	48.6	1.1	8.87	8.25	1505.3	1.22	1487.0	0.03
01:55	345.5	48.0	1.1	8.95	8.21	1504.9	1.46	1486.4	0.02
01:56	343.9	48.1	1.0	9.00	8.16	1504.0	1.23	1485.4	0.03
01:57	343.5	48.2	1.0	8.95	8.19	1503.5	1.32	1484.7	0.02
01:58	342.5	48.1	1.0	9.01	8.18	1503.3	1.25	1484.1	0.03
01:59	345.2	48.6	1.0	8.93	8.21	1503.7	1.46	1483.8	0.03
02:00	344.7	48.5	1.1	8.96	8.21	1504.3	1.50	1484.0	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
02:00	346.0	48.6	1.0	8.81	8.29	1505.9	1.35	1490.2	0.03
AVERAGE VALUES FOR THE LAST HOUR: 15 MINUTES OF VALID DATA									
02:00	346.0	48.6	1.0	8.81	8.29	1505.9	1.35	1490.2	0.03
02:01	343.4	48.5	1.0	8.97	8.19	1504.9	1.38	1484.1	0.03
02:02	344.6	47.8	1.0	8.90	8.22	1505.0	1.42	1484.0	0.03
02:03	340.8	48.5	1.0	8.92	8.20	1504.7	1.17	1484.0	0.03
02:04	340.3	48.4	0.9	8.91	8.22	1502.5	0.99	1484.1	0.02
02:05	341.4	48.3	0.9	8.91	8.21	1502.3	1.26	1483.4	0.03
02:06	338.7	48.3	0.9	8.99	8.15	1502.4	1.40	1482.7	0.03
02:07	335.8	48.5	0.9	9.05	8.10	1502.5	1.45	1482.4	0.02
02:08	333.8	48.1	1.0	9.06	8.11	1501.2	1.29	1481.8	0.03
02:09	334.8	48.5	0.9	9.01	8.12	1502.6	1.61	1482.2	0.02
02:10	334.2	48.6	0.8	9.00	8.11	1503.2	1.47	1481.4	0.03
02:11	332.4	48.1	0.9	9.02	8.11	1501.7	1.35	1481.3	0.02
02:12	333.2	48.4	0.8	9.00	8.13	1502.1	1.41	1481.7	0.03
02:13	332.5	48.1	0.8	8.99	8.14	1501.0	1.40	1481.5	0.03
02:14	332.7	48.2	0.8	9.03	8.11	1501.4	1.39	1481.0	0.03
02:15	331.5	48.5	0.7	9.04	8.09	1500.6	1.31	1480.6	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
02:15	336.7	48.3	0.9	8.99	8.15	1502.6	1.35	1482.4	0.03
02:16	331.1	48.3	0.8	9.07	8.07	1500.0	1.35	1480.4	0.02
02:17	330.9	47.8	0.7	9.06	8.06	1500.3	1.22	1479.6	0.03
02:18	329.2	48.1	0.8	9.09	8.07	1499.3	1.25	1479.7	0.03
02:19	330.1	47.9	0.8	9.07	8.07	1500.1	1.40	1478.3	0.02
02:20	329.2	47.9	0.8	9.12	8.04	1499.4	1.39	1477.8	0.03
02:21	329.6	48.4	0.8	9.05	8.07	1500.7	1.40	1477.9	0.03
02:22	330.7	48.5	0.8	9.01	8.09	1500.1	1.37	1476.4	0.03
02:23	330.1	47.5	0.9	9.05	8.05	1500.6	1.32	1477.1	0.03
02:24	329.9	47.8	0.8	9.01	8.06	1501.0	1.56	1476.7	0.03
02:25	330.7	47.4	0.8	8.98	8.08	1501.8	1.55	1476.2	0.03
02:26	329.6	47.1	0.8	9.01	8.08	1502.0	1.77	1475.7	0.02
02:27	330.7	46.7	0.7	9.01	8.08	1503.8	1.89	1474.0	0.02
02:28	331.1	46.2	0.7	9.08	8.01	1502.4	1.65	1472.7	0.02

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
02:29	330.1	46.5	0.8	9.09	8.00	1501.0	1.41	1473.2	0.03
02:30	328.7	46.4	0.7	9.15	7.97	1501.8	1.54	1473.2	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
02:30	330.1	47.5	0.8	9.06	8.05	1501.0	1.47	1476.6	0.03
02:31	329.9	46.6	0.8	9.15	7.98	1503.2	1.64	1472.2	0.02
02:32	330.6	46.4	0.8	9.12	7.99	1504.0	1.71	1471.1	0.02
02:33	328.6	46.0	0.7	9.21	7.93	1503.8	1.58	1470.5	0.02
02:34	329.8	45.8	0.7	9.24	7.92	1503.1	1.54	1470.4	0.02
02:35	331.2	45.6	0.7	9.22	7.91	1502.8	1.50	1470.4	0.02
02:36	331.7	45.5	0.7	9.21	7.96	1502.5	1.57	1470.5	0.02
02:37	333.4	45.9	0.8	9.15	7.97	1502.6	1.57	1470.4	0.02
02:38	331.8	45.8	0.7	9.16	7.97	1502.7	1.60	1470.4	0.02
02:39	330.3	46.3	0.7	9.18	7.96	1502.4	1.65	1469.6	0.02
02:40	328.6	45.7	0.7	9.26	7.89	1502.5	1.69	1468.9	0.02
02:41	328.0	45.7	0.6	9.24	7.91	1502.4	1.51	1468.4	0.02
02:42	329.5	45.8	0.7	9.17	7.96	1502.8	1.68	1468.8	0.02
02:43	329.0	45.9	0.6	9.19	7.94	1503.4	1.64	1467.7	0.02
02:44	325.2	45.7	0.7	9.24	7.92	1502.5	1.59	1467.3	0.01
02:45	327.9	45.7	0.7	9.14	7.99	1501.8	1.36	1465.9	0.01
AVERAGE VALUES FOR THE LAST 15 MINUTES									
02:45	329.7	45.9	0.7	9.19	7.95	1502.8	1.59	1469.5	0.02
02:46	331.4	46.0	0.6	9.09	8.02	1502.0	1.60	1466.7	0.01
02:47	331.1	46.2	0.7	9.06	8.01	1502.6	1.62	1465.8	0.01
02:48	331.8	46.0	0.6	9.10	8.00	1503.3	1.83	1464.1	0.00
02:49	332.7	46.5	0.7	9.01	8.06	1504.2	1.79	1464.2	0.01
02:50	332.8	46.2	0.7	9.05	8.03	1505.8	1.85	1464.3	0.01
02:51	333.0	46.5	0.7	9.02	8.05	1507.2	1.89	1464.9	0.02
02:52	331.7	46.7	0.6	9.06	8.03	1505.5	1.16	1469.6	0.03
02:53	329.7	46.4	0.7	9.12	7.97	1504.0	1.36	1469.6	0.02
02:54	331.2	46.4	0.6	9.06	8.03	1503.9	1.47	1467.8	0.01
02:55	332.4	46.6	0.6	9.03	8.05	1502.2	1.33	1468.7	0.01
02:56	332.1	47.2	0.6	9.07	8.00	1502.0	1.47	1467.8	0.01
02:57	331.4	46.8	0.6	9.07	8.00	1502.5	1.41	1465.9	0.01
02:58	330.1	47.1	0.6	9.07	8.00	1502.3	1.27	1465.8	0.01
02:59	328.9	47.3	0.6	9.06	7.99	1500.9	1.29	1466.1	0.02
03:00	331.0	47.1	0.7	9.04	8.00	1500.4	1.28	1466.2	0.01
AVERAGE VALUES FOR THE LAST 15 MINUTES									
03:00	331.4	46.6	0.6	9.06	8.02	1503.3	1.51	1466.5	0.01
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
03:00	332.0	47.1	0.8	9.07	8.04	1502.4	1.48	1473.8	0.02
03:01	331.6	47.5	0.7	9.02	8.02	1500.1	1.37	1467.1	0.01
03:02	332.0	47.5	0.7	9.05	8.00	1500.8	1.40	1466.6	0.02
03:03	334.0	47.4	0.5	9.04	8.00	1500.4	1.36	1466.7	0.02
03:04	335.5	47.5	0.5	9.06	7.98	1500.9	1.38	1465.6	0.01
03:05	336.0	47.0	0.6	9.08	7.97	1500.9	1.43	1464.9	0.01
03:06	337.6	47.5	0.7	9.03	8.01	1500.4	1.31	1465.8	0.01
03:07	337.2	47.1	0.5	9.05	7.98	1500.4	1.41	1466.4	0.02

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
03:08	335.6	46.4	0.5	9.06	7.98	1499.9	1.29	1468.0	0.01
03:09	334.5	46.7	0.5	9.03	8.00	1499.8	1.23	1469.0	0.01
03:10	334.8	46.6	0.5	9.08	7.97	1500.3	1.42	1469.0	0.01
03:11	334.9	47.0	0.5	9.07	7.99	1499.9	1.38	1469.9	0.01
03:12	335.6	46.6	0.5	9.10	7.96	1500.9	1.31	1469.6	0.01
03:13	335.0	46.9	0.5	9.11	7.96	1500.7	1.37	1470.4	0.01
03:14	333.1	46.8	0.4	9.13	7.93	1499.7	1.50	1470.8	0.01
03:15	334.0	46.6	0.5	9.14	7.93	1500.1	1.37	1470.6	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
03:15	334.8	47.0	0.5	9.07	7.98	1500.3	1.37	1468.0	0.01
03:16	334.1	46.6	0.5	9.13	7.94	1500.5	1.42	1470.4	0.01
03:17	335.2	46.3	0.4	9.14	7.92	1499.9	1.28	1470.3	0.01
03:18	336.0	46.6	0.4	9.12	7.94	1500.4	1.34	1470.2	0.01
03:19	336.2	46.9	0.5	9.10	7.96	1500.4	1.38	1470.4	0.02
03:20	336.2	46.4	0.4	9.10	7.97	1500.8	1.51	1470.3	0.01
03:21	338.1	46.1	0.4	9.08	7.98	1501.1	1.41	1470.4	0.01
03:22	336.9	46.0	0.4	9.10	7.95	1501.1	1.21	1470.4	0.01
03:23	335.9	46.1	0.4	9.08	7.97	1500.6	1.29	1471.1	0.01
03:24	336.4	46.4	0.3	9.08	7.98	1500.6	1.44	1471.5	0.01
03:25	336.7	46.3	0.4	9.06	7.98	1501.2	1.56	1471.7	0.01
03:26	335.8	45.7	0.4	9.06	7.98	1502.1	1.72	1470.5	0.01
03:27	336.4	45.9	0.3	9.06	7.99	1501.8	1.45	1471.4	0.02
03:28	335.8	46.2	0.2	9.12	7.94	1503.4	1.76	1472.0	0.02
03:29	336.2	46.1	0.2	9.14	7.93	1502.6	1.68	1471.5	0.01
03:30	336.6	45.7	0.3	9.11	7.96	1502.5	2.04	1468.0	0.01
AVERAGE VALUES FOR THE LAST 15 MINUTES									
03:30	336.2	46.2	0.4	9.10	7.96	1501.3	1.50	1470.7	0.01

COMMENTS: SYSTEM CALIBRATION BETWEEN RUNS II-1-S4-CEM-~~2~~ 1 AND
~~IV-2~~ III-1-S4-CEM-1

ENTROPY

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: SYSTEM CALIBRATION BETWEEN RUNS II-1-S4-CEM-2 AND ~~IV-2~~ III.1 -S4-CEM -1

DATE : 10-30-1991 TIME: 03:31 - 03:46

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	6.1
7	Unit 4	ppmSO2	240.0	240.5
9	Unit 4	ppmNOx	0.0	0.2
9	Unit 4	ppmNOx	141.5	139.9
8	Unit 4	ppmCO	0.0	0.3
8	Unit 4	ppmCO	30.0	30.4
5	Unit 4	% O2	0.00	0.07
5	Unit 4	% O2	12.50	12.53
6	Unit 4	% CO2	0.00	0.19
6	Unit 4	% CO2	11.00	10.90

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
04:01	354.8	46.7	0.1	8.64	8.12	1501.8	1.29	1489.3	0.01
04:02	354.7	46.8	0.1	8.65	8.08	1505.3	2.73	1488.1	0.02
04:03	354.6	45.7	0.1	8.77	8.03	1507.6	2.46	1484.4	0.04
04:04	351.8	45.0	0.0	8.85	7.96	1502.9	1.77	1484.5	0.01
04:05	353.2	45.4	0.1	8.74	8.03	1501.4	2.15	1484.5	0.01
04:06	356.3	45.8	0.1	8.72	8.04	1499.9	1.34	1485.6	0.02
04:07	353.7	45.8	0.2	8.82	7.97	1500.9	1.68	1320.4	0.00
04:08	352.5	45.2	0.1	8.91	7.93	1499.9	1.39	1486.1	0.03
04:09	350.8	45.5	0.1	8.91	7.92	1499.5	1.30	1486.5	0.03
04:10	351.0	45.2	0.0	8.93	7.90	1499.3	1.18	1484.4	0.03
04:11	354.8	44.8	0.1	8.90	7.94	1498.6	1.23	1483.1	0.03
04:12	356.1	45.2	0.1	8.77	8.03	1500.3	1.29	1481.1	0.03
04:13	357.1	45.4	0.2	8.71	8.07	1503.1	1.10	1486.3	0.03
04:14	356.3	45.3	0.1	8.76	8.01	1502.3	1.25	1483.7	0.03
04:15	353.8	45.3	0.1	8.75	8.05	1502.5	1.31	1480.7	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
04:15	354.1	45.5	0.1	8.79	8.00	1501.7	1.56	1473.9	0.02
04:16	353.8	45.8	0.0	8.68	8.07	1503.0	1.08	1485.4	0.03
04:17	354.0	45.7	-0.1	8.73	8.06	1502.1	1.08	1487.3	0.02
04:18	355.8	45.4	0.0	8.75	8.02	1502.4	1.12	1486.2	0.03
04:19	355.5	45.5	0.0	8.72	8.04	1502.4	1.14	1486.1	0.03
04:20	356.3	45.4	0.0	8.73	8.04	1502.4	0.93	1485.0	0.03
04:21	356.6	45.3	-0.0	8.73	8.04	1501.5	0.98	1485.0	0.03
04:22	355.3	45.4	0.0	8.70	8.05	1503.5	1.09	1485.0	0.02
04:23	355.5	45.8	0.0	8.72	8.04	1503.8	1.02	1485.0	0.03
04:24	353.5	45.6	0.0	8.71	8.04	1503.9	0.89	1485.7	0.03
04:25	354.2	45.8	0.0	8.77	8.01	1504.6	0.54	1486.7	0.02
04:26	354.3	45.5	0.0	8.75	8.02	1506.3	0.67	1486.4	0.03
04:27	354.3	45.4	-0.0	8.78	7.99	1508.5	0.83	1485.7	0.03
04:28	354.4	45.7	0.1	8.72	8.03	1509.2	0.83	1486.4	0.02
04:29	354.5	45.5	0.1	8.74	8.04	1509.0	0.89	1484.2	0.02
04:30	352.3	45.6	0.1	8.69	8.05	1510.1	0.99	1484.3	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
04:30	354.7	45.6	0.0	8.73	8.04	1504.9	0.94	1485.6	0.03
04:31	354.3	45.6	-0.1	8.66	8.08	1510.9	0.80	1484.4	0.03
04:32	356.2	45.5	-0.0	8.66	8.07	1511.3	0.98	1485.6	0.02
04:33	356.5	45.5	-0.1	8.70	8.05	1511.8	0.75	1485.3	0.02
04:34	354.3	45.6	-0.0	8.71	8.04	1512.9	0.90	1485.8	0.02
04:35	353.7	45.8	0.0	8.66	8.07	1514.2	1.03	1485.9	0.03
04:36	353.5	46.1	0.0	8.65	8.06	1512.8	-1.07	1490.3	0.05
04:37	348.5	46.1	-0.1	8.83	7.93	1511.2	-0.33	1491.7	0.03
04:38	343.7	45.7	-0.1	8.87	7.90	1511.1	0.96	1486.4	0.02
04:39	346.8	45.3	0.0	8.75	8.02	1509.9	0.90	1485.7	0.03
04:40	350.0	45.3	-0.0	8.69	8.07	1509.2	0.75	1484.9	0.02
04:41	352.6	44.9	-0.1	8.68	8.07	1508.5	0.89	1484.2	0.02
04:42	353.7	44.8	-0.1	8.72	8.04	1509.1	0.82	1483.5	0.02
04:43	354.7	44.8	-0.1	8.70	8.06	1509.7	0.62	1483.6	0.02
04:44	352.2	44.7	-0.1	8.80	7.96	1508.9	0.79	1482.8	0.02
04:45	351.1	44.6	-0.1	8.75	8.02	1509.1	0.75	1483.0	0.02

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST 15 MINUTES									
04:45	352.1	45.3	-0.0	8.72	8.03	1510.7	0.64	1485.5	0.02
04:46	355.2	45.0	-0.1	8.64	8.06	1509.9	0.81	1483.6	0.02
04:47	355.3	45.0	-0.1	8.71	8.04	1510.2	0.51	1485.5	0.02
04:48	353.7	44.8	-0.1	8.68	8.06	1509.2	0.57	1484.1	0.02
04:49	351.4	44.9	-0.2	8.59	8.11	1510.2	0.63	1485.4	0.02
04:50	353.3	45.3	-0.2	8.62	8.09	1510.5	0.61	1485.9	0.02
04:51	357.4	45.4	-0.2	8.60	8.11	1510.5	0.90	1486.8	0.02
04:52	358.9	45.0	-0.2	8.68	8.06	1510.3	0.44	1485.9	0.03
04:53	359.6	45.1	-0.2	8.65	8.08	1510.0	0.41	1486.1	0.03
04:54	359.8	45.3	-0.3	8.62	8.09	1509.2	0.54	1487.5	0.03
04:55	356.3	44.9	-0.2	8.74	8.00	1508.9	0.32	1487.2	0.02
04:56	357.3	44.8	-0.1	8.75	8.00	1508.1	0.49	1486.2	0.03
04:57	360.9	44.4	-0.2	8.74	8.01	1508.4	0.40	1487.1	0.03
04:58	363.5	44.6	-0.2	8.72	8.02	1508.3	0.44	1487.0	0.03
04:59	363.9	44.6	-0.2	8.76	7.99	1508.8	0.84	1486.0	0.03
05:00	362.2	44.1	-0.1	8.68	8.04	1509.9	0.50	1485.0	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
05:00	357.9	44.9	-0.2	8.68	8.05	1509.5	0.56	1486.0	0.02
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
05:00	354.7	45.3	-0.0	8.73	8.03	1506.7	0.93	1482.8	0.02
05:01	367.6	44.1	-0.1	8.42	8.25	1510.1	0.61	1483.2	0.02
05:02	374.8	44.4	-0.1	8.31	8.31	1510.3	0.64	1482.6	0.01
05:03	376.0	45.2	-0.2	8.34	8.31	1511.4	0.83	1482.6	0.01
05:04	379.9	45.2	-0.3	8.25	8.37	1510.2	0.77	1482.6	0.01
05:05	382.9	45.5	-0.3	8.21	8.39	1510.1	0.75	1482.7	0.02
05:06	381.7	45.5	-0.2	8.24	8.37	1510.0	0.82	1483.1	0.01
05:07	374.8	45.2	-0.2	8.39	8.26	1508.7	1.01	1482.6	0.01
05:08	373.9	45.2	-0.2	8.35	8.30	1508.6	0.74	1482.6	0.01
05:09	378.1	44.9	-0.2	8.31	8.32	1508.7	0.78	1482.5	0.02
05:10	381.9	44.9	-0.2	8.29	8.34	1508.9	0.71	1482.5	0.01
05:11	383.5	45.0	-0.2	8.30	8.34	1509.6	0.90	1482.6	0.01
05:12	384.4	44.8	-0.2	8.31	8.33	1508.6	0.73	1482.5	0.01
05:13	384.9	45.0	-0.2	8.28	8.35	1508.6	0.91	1482.6	0.01
05:14	385.9	45.1	-0.2	8.29	8.34	1509.9	0.91	1482.6	0.01
05:15	385.5	45.0	-0.2	8.28	8.34	1509.5	0.62	1482.7	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
05:15	379.7	45.0	-0.2	8.30	8.33	1509.5	0.78	1482.7	0.01
05:16	386.0	45.2	-0.2	8.23	8.38	1510.0	0.82	1484.0	0.01
05:17	388.9	45.3	-0.2	8.17	8.41	1510.0	0.66	1484.2	0.01
05:18	388.4	45.1	-0.2	8.22	8.37	1510.0	0.92	1484.1	0.02
05:19	387.6	44.9	0.0	8.24	8.36	1508.8	0.97	1483.3	0.01
05:20	387.9	44.9	-0.1	8.23	8.37	1508.5	1.11	1482.8	0.01
05:21	389.7	44.8	-0.3	8.23	8.38	1508.5	0.75	1482.7	0.01
05:22	391.4	45.0	-0.3	8.21	8.38	1509.7	0.81	1483.6	0.01
05:23	390.4	45.1	-0.3	8.22	8.38	1510.3	0.83	1482.8	0.01
05:24	389.0	44.9	-0.4	8.19	8.40	1511.0	0.80	1483.3	0.01

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
05:25	384.6	44.6	-0.4	8.14	8.44	1511.5	1.00	1484.1	0.02
05:26	385.2	45.0	-0.4	8.09	8.47	1511.7	1.04	1484.1	0.01
05:27	386.9	45.0	-0.4	8.01	8.53	1512.4	1.20	1483.6	0.02
05:28	378.1	44.7	-0.4	8.11	8.45	1513.4	1.06	1483.3	0.02
05:29	373.3	45.0	-0.3	8.10	8.47	1513.1	1.16	1483.4	0.03
05:30	373.2	45.2	-0.4	8.11	8.45	1511.8	0.98	1483.1	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
05:30	385.4	45.0	-0.3	8.17	8.42	1510.7	0.94	1483.5	0.02
05:31	378.1	44.6	-0.4	8.10	8.45	1510.6	0.88	1483.1	0.03
05:32	384.3	44.6	-0.4	8.14	8.44	1510.1	0.95	1482.7	0.02
05:33	391.7	44.4	-0.4	8.11	8.46	1511.6	0.90	1482.4	0.03
05:34	397.6	44.4	-0.5	8.06	8.50	1511.5	1.02	1483.2	0.02
05:35	397.5	44.8	-0.4	8.07	8.48	1511.3	1.04	1483.7	0.03
05:36	392.7	45.0	-0.6	8.06	8.50	1511.6	1.15	1484.7	0.03
05:37	384.2	44.8	-0.1	8.15	8.43	1510.1	1.18	1484.4	0.03
05:38	379.0	44.5	-0.4	8.20	8.40	1508.9	1.04	1485.3	0.03
05:39	388.5	44.4	-0.6	8.21	8.38	1508.5	1.08	1485.6	0.03
05:40	394.3	43.7	-0.4	8.17	8.41	1509.0	0.94	1484.9	0.03
05:41	395.0	44.0	-0.4	8.21	8.40	1510.1	1.11	1486.8	0.03
05:42	395.1	44.2	-0.4	8.12	8.44	1509.9	1.20	1487.6	0.03
05:43	398.1	43.5	-0.4	8.14	8.45	1510.2	1.17	1487.1	0.03
05:44	399.3	43.8	-0.4	8.05	8.51	1509.3	1.01	1485.8	0.03
05:45	402.1	43.8	-0.4	7.96	8.57	1508.5	1.08	1487.2	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
05:45	391.8	44.3	-0.4	8.12	8.45	1510.1	1.05	1485.0	0.03
05:46	402.6	43.5	-0.4	7.98	8.55	1508.5	1.00	1486.6	0.03
05:47	402.2	43.8	-0.4	8.01	8.54	1507.8	1.16	1488.0	0.03
05:48	400.1	43.7	-0.5	8.10	8.49	1507.3	0.85	1486.7	0.03
05:49	399.9	43.6	-0.5	8.03	8.52	1507.9	0.98	1487.2	0.03
05:50	400.3	44.0	-0.5	8.02	8.52	1507.7	0.93	1487.4	0.02
05:51	401.4	43.8	-0.5	7.99	8.56	1508.4	0.88	1487.9	0.03
05:52	401.5	43.8	-0.6	7.93	8.59	1508.3	1.05	1487.6	0.03
05:53	400.5	43.7	-0.5	7.96	8.57	1507.6	0.90	1488.7	0.03
05:54	398.1	43.7	-0.6	8.00	8.54	1507.3	0.99	1488.6	0.03
05:55	397.1	44.1	-0.5	8.06	8.49	1507.0	1.01	1488.7	0.03
05:56	395.4	43.4	-0.6	8.12	8.45	1506.5	1.03	1488.5	0.03
05:57	395.8	43.4	-0.6	8.12	8.47	1506.1	1.21	1488.9	0.03
05:58	398.2	43.3	-0.6	8.10	8.47	1506.0	1.08	1489.3	0.03
05:59	400.1	43.4	-0.6	8.08	8.49	1506.0	0.94	1489.6	0.03
06:00	402.5	43.3	-0.7	8.07	8.50	1505.5	1.08	1488.8	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
06:00	399.7	43.6	-0.5	8.04	8.52	1507.2	1.01	1488.2	0.03
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
06:00	389.2	44.5	-0.4	8.16	8.43	1509.4	0.94	1484.8	0.02
06:01	403.4	43.3	-0.8	8.05	8.52	1505.5	0.96	1490.4	0.03
06:02	405.0	43.4	-0.8	7.98	8.55	1505.7	1.08	1489.4	0.02
06:03	404.6	43.3	-0.8	8.04	8.52	1506.0	0.88	1489.8	0.03

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
06:04	402.9	43.0	-0.8	8.09	8.50	1506.3	1.01	1489.2	0.03
06:05	402.7	43.3	-0.8	8.07	8.52	1505.4	0.94	1490.4	0.03
06:06	403.0	43.2	-1.0	8.06	8.50	1505.5	1.24	1490.1	0.03
06:07	403.8	43.0	-0.9	8.09	8.50	1505.2	0.99	1490.7	0.03
06:08	403.9	43.2	-1.0	8.07	8.51	1505.5	1.28	1489.9	0.02
06:09	405.2	43.0	-0.9	8.03	8.54	1505.5	0.89	1490.2	0.03
06:10	405.8	43.1	-0.9	8.01	8.55	1505.5	1.01	1492.0	0.03
06:11	404.7	42.6	-1.0	8.09	8.48	1504.9	1.06	1490.3	0.03
06:12	404.2	43.1	-0.9	8.01	8.53	1505.2	1.10	1490.9	0.03
06:13	404.0	43.8	-1.0	8.04	8.50	1505.4	1.19	1491.0	0.02
06:14	401.1	44.0	-1.0	8.22	8.39	1504.4	1.16	1489.3	0.03
06:15	401.6	44.2	-1.0	8.12	8.47	1505.1	1.17	1490.1	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
06:15	403.7	43.3	-0.9	8.06	8.51	1505.4	1.06	1490.3	0.03
06:16	401.9	44.4	-1.2	8.17	8.43	1504.5	1.04	1489.6	0.03
06:17	401.6	44.6	-1.1	8.15	8.43	1504.0	1.11	1489.4	0.03
06:18	400.9	44.3	-1.1	8.19	8.43	1504.0	1.11	1489.6	0.03
06:19	401.0	44.1	-1.0	8.16	8.44	1504.0	1.02	1489.6	0.02
06:20	403.2	44.0	-1.0	8.14	8.45	1504.0	0.88	1490.2	0.03
06:21	402.5	44.2	-0.9	8.18	8.43	1504.0	1.00	1490.3	0.03
06:22	401.8	44.2	-1.0	8.15	8.45	1504.0	1.17	1490.7	0.03
06:23	401.6	44.2	-1.1	8.16	8.43	1504.5	0.83	1490.9	0.03
06:24	404.7	44.8	-1.1	8.13	8.46	1503.5	1.00	1490.6	0.03
06:25	404.0	44.4	-1.1	8.19	8.42	1501.4	0.96	1489.9	0.03
06:26	402.3	44.6	-1.0	8.18	8.43	1502.1	1.09	1489.7	0.03
06:27	402.7	44.7	-1.1	8.19	8.43	1501.2	0.89	1489.8	0.03
06:28	402.7	44.7	-1.1	8.16	8.44	1500.9	0.79	1489.0	0.03
06:29	399.0	45.0	-1.1	8.19	8.43	1500.6	0.90	1489.9	0.03
06:30	392.2	45.1	-1.1	8.21	8.42	1500.5	1.10	1491.0	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
06:30	401.5	44.5	-1.1	8.17	8.43	1502.9	0.99	1490.0	0.03
06:31	391.4	45.2	-1.0	8.25	8.37	1499.9	1.09	1490.1	0.02
06:32	390.8	45.0	-1.0	8.28	8.37	1500.6	0.97	1490.4	0.03
06:33	393.8	44.9	-1.2	8.30	8.36	1499.8	1.01	1490.4	0.03
06:34	397.8	44.8	-1.2	8.25	8.39	1499.4	0.94	1490.5	0.03
06:35	398.9	44.9	-1.2	8.27	8.37	1499.2	1.10	1490.0	0.03
06:36	398.3	44.6	-1.1	8.31	8.34	1499.7	0.96	1490.3	0.03
06:37	399.2	44.8	-1.1	8.24	8.40	1500.4	0.96	1490.0	0.03
06:38	400.9	44.9	-1.2	8.18	8.45	1499.4	0.89	1490.6	0.03
06:39	399.8	44.8	-1.3	8.25	8.40	1499.4	0.84	1490.4	0.02
06:40	398.1	44.6	-1.4	8.18	8.45	1499.5	0.99	1490.5	0.02
06:41	396.0	44.5	-1.3	8.14	8.47	1500.4	1.09	1489.5	0.02
06:42	395.3	44.4	-1.2	8.16	8.47	1499.4	0.95	1489.3	0.02
06:43	398.7	44.9	-1.2	8.14	8.48	1499.7	0.53	1490.4	0.03
06:44	394.5	44.8	-1.2	8.14	8.48	1499.4	1.11	1490.6	0.02
06:45	394.6	44.8	-1.2	8.13	8.48	1498.9	0.75	1489.5	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
06:45	396.5	44.8	-1.2	8.21	8.42	1499.7	0.94	1490.2	0.03
06:46	393.3	44.4	-1.2	8.09	8.50	1498.9	0.69	1490.6	0.02

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
06:47	390.4	44.4	-1.3	8.17	8.46	1498.0	0.74	1490.8	0.03
06:48	383.8	44.2	-1.4	8.24	8.40	1498.6	0.46	1490.9	0.02
06:49	379.8	44.2	-1.4	8.24	8.41	1499.2	0.98	1489.5	0.02
06:50	379.3	44.3	-1.4	8.19	8.45	1498.6	0.61	1490.3	0.03
06:51	380.2	44.4	-1.3	8.21	8.41	1497.9	0.56	1491.6	0.02
06:52	381.2	44.1	-1.3	8.20	8.42	1498.0	0.60	1490.2	0.02
06:53	376.8	44.2	-1.4	8.20	8.42	1498.3	0.39	1490.3	0.02
06:54	374.9	44.0	-1.3	8.20	8.43	1498.0	0.85	1490.3	0.02
06:55	373.5	44.0	-1.4	8.23	8.41	1497.9	0.90	1490.4	0.02
06:56	374.3	43.8	-1.5	8.24	8.40	1498.8	0.87	1490.3	0.02
06:57	370.8	44.1	-1.4	8.31	8.35	1498.0	0.93	1490.5	0.02
06:58	374.0	43.5	-1.5	8.26	8.37	1497.7	1.04	1490.3	0.02
06:59	379.5	43.5	-1.4	8.26	8.40	1498.0	1.10	1489.9	0.02
07:00	381.4	43.5	-1.0	8.25	8.39	1498.1	0.87	1488.8	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
07:00	379.5	44.1	-1.4	8.22	8.42	1498.3	0.77	1490.3	0.02
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
07:00	395.3	44.2	-1.1	8.17	8.44	1501.6	0.94	1490.2	0.03
07:01	384.3	43.6	-0.7	8.25	8.39	1497.8	1.13	1489.6	0.02
07:02	387.5	43.2	-0.7	8.25	8.40	1497.9	0.99	1490.8	0.02
07:03	390.2	43.3	-0.8	8.26	8.36	1497.9	0.77	1490.3	0.02
07:04	390.0	43.2	-0.9	8.26	8.35	1498.2	1.15	1490.2	0.02
07:05	388.8	42.9	-1.0	8.27	8.36	1497.9	0.94	1490.1	0.02
07:06	391.0	42.9	-1.1	8.23	8.38	1497.9	0.89	1489.5	0.03
07:07	390.0	43.0	-1.3	8.21	8.39	1498.6	1.01	1490.1	0.02
07:08	382.9	43.0	-1.1	8.28	8.34	1498.4	1.02	1489.6	0.02
07:09	380.9	42.9	-0.9	8.27	8.36	1499.0	0.85	1488.7	0.02
07:10	375.8	43.1	-0.9	8.23	8.39	1497.9	0.85	1488.7	0.02
07:11	382.0	42.9	-0.9	8.22	8.40	1499.0	0.53	1489.4	0.02
07:12	385.0	43.3	-1.1	8.22	8.39	1497.8	0.27	1492.4	0.02
07:13	376.8	43.3	-1.1	8.34	8.32	1498.2	0.96	1490.4	0.01
07:14	374.5	43.2	-1.2	8.24	8.40	1497.9	0.96	1489.8	0.02
07:15	378.3	43.4	-1.3	8.20	8.42	1498.8	1.13	1488.9	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
07:15	383.9	43.1	-1.0	8.25	8.38	1498.2	0.90	1489.9	0.02
07:16	381.3	43.3	-1.2	8.20	8.42	1498.0	0.87	1488.9	0.02
07:17	382.0	43.4	-1.2	8.19	8.42	1498.1	1.05	1489.7	0.03
07:18	381.9	43.5	-1.2	8.20	8.40	1498.7	0.79	1490.0	0.02
07:19	381.7	43.6	-1.0	8.22	8.38	1499.0	0.99	1490.6	0.03
07:20	383.0	43.4	-0.9	8.26	8.36	1498.0	0.97	1489.6	0.02
07:21	381.7	43.5	-1.0	8.22	8.39	1497.9	0.53	1490.4	0.03
07:22	380.0	43.5	-1.1	8.20	8.39	1497.9	0.82	1489.0	0.02
07:23	378.3	43.7	-1.1	8.15	8.43	1497.8	0.78	1488.7	0.02
07:24	379.0	43.5	-1.2	8.15	8.42	1497.3	0.83	1489.2	0.03
07:25	375.9	43.3	-1.2	8.20	8.39	1496.4	0.79	1488.4	0.02
07:26	376.2	43.0	-1.1	8.23	8.37	1496.7	1.00	1487.0	0.02
07:27	376.6	43.0	-0.9	8.30	8.31	1497.9	0.89	1485.7	0.03
07:28	377.5	42.7	-0.9	8.37	8.27	1497.9	0.82	1486.2	0.02
07:29	379.3	42.6	-0.9	8.37	8.29	1496.5	0.67	1486.4	0.02

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
07:30	380.3	42.6	-1.0	8.35	8.32	1496.3	0.67	1486.4	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
07:30	379.6	43.3	-1.1	8.24	8.37	1497.6	0.83	1488.4	0.02
07:31	381.2	42.5	-1.0	8.31	8.33	1496.3	0.67	1487.0	0.02
07:32	381.7	42.4	-1.3	8.31	8.33	1496.2	0.87	1486.9	0.02
07:33	381.5	42.5	-1.6	8.40	8.28	1495.4	0.51	1485.8	0.02
07:34	381.6	42.4	-1.9	8.39	8.30	1494.1	0.58	1486.3	0.02
07:35	382.6	42.3	-2.1	8.40	8.30	1494.5	0.80	1485.9	0.02
07:36	385.5	42.3	-2.4	8.38	8.30	1494.8	0.72	1485.1	0.03
07:37	386.3	41.9	-2.4	8.39	8.31	1494.8	0.81	1485.2	0.02
07:38	386.8	42.0	-2.5	8.37	8.30	1494.0	0.54	1485.6	0.02
07:39	388.3	41.9	-2.6	8.38	8.31	1494.7	0.83	1485.9	0.02
07:40	386.4	41.7	-2.8	8.45	8.27	1495.2	0.65	1485.8	0.03
07:41	387.1	42.2	-2.8	8.43	8.27	1494.8	0.62	1484.9	0.02

COMMENTS: INTERUPT TO RECALIBRATE CO ANALYZER

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: DIRECT CALIBRATION OF CO ANALYZER

DATE : 10-30-1991 TIME: 07:41 - 08:08

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	6.7
7	Unit 4	ppmSO2	241.0	241.1
9	Unit 4	ppmNOx	0.0	0.3
9	Unit 4	ppmNOx	141.5	141.0
8	Unit 4	ppmCO	0.0	-2.5
8	Unit 4	ppmCO	30.0	26.6
5	Unit 4	% O2	0.00	0.11
5	Unit 4	% O2	12.50	12.72
6	Unit 4	% CO2	0.00	0.38
6	Unit 4	% CO2	11.00	11.05

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Calibration Error Check

DATE : 10-30-1991 TIME: 08:08 - 08:33

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	0.6
7	Unit 4	ppmSO2	241.0	240.0
7	Unit 4	ppmSO2	436.0	437.1
9	Unit 4	ppmNOx	0.0	0.1
9	Unit 4	ppmNOx	141.5	140.2
9	Unit 4	ppmNOx	240.0	240.0
8	Unit 4	ppmCO	0.0	1.2
8	Unit 4	ppmCO	30.2	31.9
8	Unit 4	ppmCO	92.3	91.5
5	Unit 4	% O2	0.00	0.05
5	Unit 4	% O2	12.48	12.49
5	Unit 4	% O2	21.40	21.45
6	Unit 4	% CO2	0.00	0.02
6	Unit 4	% CO2	11.06	10.93
6	Unit 4	% CO2	17.46	17.45

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Calibration Bias Check

DATE : 10-30-1991 TIME: 08:33 - 08:55

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	2.7
7	Unit 4	ppmSO2	241.0	234.4
9	Unit 4	ppmNOx	0.0	0.2
9	Unit 4	ppmNOx	141.5	138.7
8	Unit 4	ppmCO	0.0	1.4
8	Unit 4	ppmCO	30.2	30.8
5	Unit 4	% O2	0.00	0.06
5	Unit 4	% O2	12.48	12.48
6	Unit 4	% CO2	0.00	0.05
6	Unit 4	% CO2	11.06	10.76

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
09:06	385.6	37.8	-0.5	8.26	7.90	1500.9	0.58	1490.7	0.03
09:07	385.3	37.8	-0.6	8.32	7.87	1501.0	0.46	1491.7	0.03
09:08	385.3	38.0	-0.5	8.31	7.87	1500.9	0.61	1490.6	0.03
09:09	386.8	38.1	-0.4	8.31	7.88	1501.0	0.60	1491.2	0.03
09:10	386.8	38.0	-0.4	8.29	7.89	1501.0	0.56	1490.6	0.03
09:11	389.5	38.0	-0.3	8.25	7.91	1500.9	0.78	1490.7	0.03
09:12	389.5	38.4	-0.4	8.43	7.90	1501.1	0.70	1491.7	0.04
09:13	389.5	38.1	-0.4	8.26	7.90	1501.1	0.74	1491.4	0.03
09:14	389.2	38.2	-0.3	8.25	7.92	1500.9	0.50	1490.9	0.03
09:15	389.7	37.9	-0.6	8.25	7.92	1500.7	0.45	1491.2	0.04
09:16	385.2	37.7	-0.7	8.34	7.87	1500.9	0.49	1490.9	0.03
09:17	383.6	37.3	-0.6	8.37	7.86	1500.9	0.43	1490.5	0.03
09:18	386.1	37.9	-0.5	8.20	7.95	1501.5	0.71	1492.1	0.03
09:19	382.0	39.9	-0.6	8.41	7.78	1501.8	0.56	1493.3	0.03
09:20	375.6	41.0	-0.6	8.58	7.70	1500.9	0.53	1493.4	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
09:20	386.0	38.3	-0.5	8.32	7.87	1501.0	0.58	1491.4	0.03
09:21	375.6	41.3	-0.7	8.56	7.71	1500.9	0.60	1494.7	0.04
09:22	376.8	41.3	-0.7	8.55	7.72	1500.9	0.77	1494.4	0.03
09:23	376.1	41.5	-0.9	8.56	7.72	1500.1	0.70	1492.7	0.02
09:24	376.7	41.6	-0.9	8.52	7.76	1499.8	0.81	1491.8	0.03
09:25	377.7	41.8	-0.8	8.50	7.76	1500.1	0.57	1494.5	0.04
09:26	376.3	41.7	-1.0	8.55	7.71	1500.0	0.80	1493.9	0.04
09:27	375.9	41.8	-0.7	8.49	7.77	1499.6	0.57	1494.4	0.03
09:28	377.8	41.8	-0.6	8.47	7.79	1500.4	0.59	1495.8	0.03
09:29	376.6	41.8	-0.6	8.50	7.76	1500.4	0.72	1495.5	0.03
09:30	377.0	41.7	-0.7	8.47	7.79	1500.7	0.79	1496.4	0.04
09:31	377.8	41.8	-0.8	8.46	7.79	1499.5	0.46	1496.3	0.03
09:32	379.0	41.6	-0.8	8.40	7.85	1499.4	0.51	1497.5	0.04
09:33	377.3	41.3	-0.7	8.41	7.84	1500.7	0.58	1497.9	0.03
09:34	376.2	40.9	-0.8	8.42	7.84	1500.9	0.90	1496.4	0.02
09:35	376.1	41.0	-0.9	8.39	7.86	1500.9	0.54	1494.8	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
09:35	376.9	41.5	-0.8	8.48	7.78	1500.3	0.66	1495.1	0.03
09:36	379.3	41.3	-1.0	8.30	7.93	1500.9	0.59	1497.4	0.04
09:37	374.0	41.0	-1.0	8.45	7.82	1500.2	0.63	1497.7	0.04
09:38	368.2	40.9	-1.0	8.57	7.74	1499.6	0.81	1497.3	0.07*
09:39	368.3	40.7	-1.0	8.68	7.68	1499.4	0.69	1495.4	0.00
09:40	372.9	41.4	-0.9	8.58	7.75	1499.4	0.65	1496.6	0.00
09:41	375.2	41.5	-1.0	8.55	7.76	1499.1	0.80	1496.5	0.00
09:42	374.1	41.4	-1.0	8.56	7.74	1498.8	0.70	1495.7	0.03
09:43	373.0	41.4	-1.0	8.52	7.77	1498.7	0.71	1494.6	0.04
09:44	375.2	41.6	-0.9	8.51	7.78	1499.9	0.67	1497.5	0.04
09:45	373.4	41.5	-0.8	8.59	7.72	1500.7	0.97	1497.9	0.04
09:46	369.9	41.3	-0.8	8.59	7.73	1500.9	0.92	1496.9	0.03
09:47	371.8	40.8	-0.8	8.52	7.81	1500.9	0.64	1495.0	0.03
09:48	375.2	41.0	-0.7	8.39	7.85	1500.8	0.91	1498.9	0.04
09:49	372.7	41.1	-0.7	8.47	7.81	1500.5	0.84	1498.9	0.04
09:50	370.8	40.8	-0.8	8.48	7.81	1500.5	0.80	1496.0	0.03

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST 15 MINUTES									
09:50	372.9	41.2	-0.9	8.52	7.78	1500.0	0.75	1496.8	0.03
09:51	376.9	41.2	-0.8	8.38	7.88	1500.8	0.70	1495.4	0.03
09:52	379.1	41.4	-0.9	8.39	7.88	1500.9	0.71	1499.0	0.04
09:53	376.1	41.5	-0.8	8.45	7.81	1501.1	0.96	1499.4	0.04
09:54	372.1	41.1	-0.8	8.55	7.77	1500.9	0.77	1499.4	0.04
09:55	371.8	41.4	-0.8	8.55	7.76	1501.0	1.01	1499.4	0.04
09:56	372.7	41.5	-0.6	8.54	7.77	1500.2	0.82	1499.4	0.04
09:57	373.3	41.4	-0.7	8.53	7.77	1500.2	1.03	1498.1	0.03
09:58	375.1	41.6	-0.8	8.48	7.82	1500.2	0.92	1499.3	0.04
09:59	376.7	41.8	-0.8	8.46	7.83	1501.0	0.90	1500.7	0.03
10:00	375.9	41.4	-0.8	8.50	7.80	1500.9	1.08	1497.4	0.03
AVERAGE VALUES FOR THE LAST HOUR: 55 MINUTES OF VALID DATA									
10:00	377.9	40.5	-0.7	8.45	7.81	1500.5	0.71	1495.2	0.03
10:01	379.4	41.4	-0.8	8.37	7.90	1501.3	0.83	1496.9	0.03
10:02	385.9	41.9	-0.7	8.32	7.94	1503.3	1.02	1500.6	0.03
10:03	384.6	41.8	-0.9	8.38	7.89	1504.7	1.10	1500.9	0.03
10:04	381.9	41.5	-0.8	8.41	7.86	1505.5	1.01	1500.9	0.04
10:05	381.0	41.6	-0.9	8.41	7.87	1505.7	0.89	1500.9	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
10:05	377.5	41.5	-0.8	8.45	7.84	1501.8	0.92	1499.2	0.03
10:06	380.0	41.4	-0.9	8.44	7.85	1506.6	0.92	1500.9	0.04
10:07	381.7	41.5	-0.9	8.44	7.86	1507.0	1.19	1500.9	0.04
10:08	381.8	41.5	-0.8	8.45	7.84	1507.9	0.98	1500.4	0.04
10:09	383.3	41.1	-0.8	8.46	7.85	1507.8	1.28	1497.9	0.04
10:10	386.8	41.3	-0.8	8.40	7.90	1507.4	1.20	1498.5	0.03
10:11	389.6	41.4	-0.8	8.33	7.93	1507.9	1.11	1499.2	0.04
10:12	390.3	41.6	-0.5	8.36	7.92	1508.5	0.97	1502.0	0.04
10:13	387.5	41.5	-0.5	8.40	7.88	1508.6	1.21	1502.3	0.03
10:14	388.0	41.5	-0.5	8.41	7.88	1508.5	1.02	1502.1	0.04
10:15	387.4	41.3	-0.7	8.47	7.86	1509.8	1.34	1500.4	0.04
10:16	387.7	41.3	-0.7	8.46	7.88	1509.0	0.99	1502.0	0.04
10:17	389.2	41.7	-0.6	8.40	7.88	1510.0	1.23	1502.5	0.04
10:18	385.6	41.5	-0.7	8.48	7.85	1510.1	1.12	1502.4	0.04
10:19	386.1	41.5	-0.7	8.48	7.85	1510.3	1.32	1502.4	0.03
10:20	383.9	41.3	-0.6	8.52	7.82	1510.5	1.32	1501.6	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
10:20	385.9	41.4	-0.7	8.43	7.87	1508.7	1.15	1501.0	0.04
10:21	383.6	41.2	-0.6	8.50	7.84	1510.5	1.21	1501.0	0.03
10:22	384.5	41.2	-0.6	8.47	7.86	1510.7	1.43	1499.5	0.04
10:23	387.6	41.0	-0.5	8.40	7.90	1510.5	1.23	1500.3	0.04
10:24	391.4	41.6	-0.5	8.34	7.92	1510.6	1.23	1502.8	0.03
10:25	389.7	41.4	-0.5	8.41	7.88	1511.4	1.32	1503.9	0.03
10:26	388.8	41.3	-0.5	8.43	7.86	1512.1	1.23	1503.6	0.03
10:27	389.0	41.3	-0.5	8.46	7.86	1512.4	1.43	1501.3	0.03
10:28	390.7	41.0	-0.6	8.35	7.92	1512.6	1.39	1500.0	0.03
10:29	393.2	41.0	-0.5	8.32	7.94	1513.0	1.28	1501.8	0.03

End Run III-1-54-CEM-1

Begin Run IV-1-54-CEM-

ENTROPY

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
10:30	394.3	41.7	-0.6	8.32	7.93	1513.2	1.42	1503.0	0.03
10:31	391.4	40.9	-0.6	8.42	7.87	1513.1	1.22	1500.3	0.03
10:32	393.4	41.5	-0.5	8.34	7.93	1513.3	1.49	1502.4	0.03
10:33	389.4	41.0	-0.4	8.42	7.89	1514.2	1.50	1500.7	0.04
10:34	393.7	41.3	-0.4	8.30	7.98	1516.3	1.46	1501.4	0.03
10:35	394.7	41.4	-0.4	8.34	7.93	1517.7	1.44	1501.2	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
10:35	390.4	41.3	-0.5	8.39	7.90	1512.8	1.35	1501.6	0.03
10:36	394.0	41.4	-0.4	8.32	7.95	1519.0	1.53	1503.8	0.03
10:37	391.1	41.4	-0.4	8.40	7.88	1519.6	1.53	1502.4	0.03
10:38	389.6	41.0	-0.5	8.42	7.89	1519.2	1.54	1500.9	0.03
10:39	393.0	41.4	-0.4	8.31	7.95	1520.6	1.28	1502.2	0.03
10:40	394.9	41.6	-0.3	8.34	7.93	1522.4	1.47	1504.4	0.04
10:41	389.3	41.2	-0.3	8.45	7.85	1522.7	1.49	1504.0	0.04
10:42	386.1	41.2	-0.2	8.51	7.81	1522.6	1.34	1503.2	0.04
10:43	385.1	41.2	-0.2	8.48	7.83	1523.2	1.38	1504.2	0.03
10:44	382.6	40.9	-0.2	8.54	7.80	1525.0	1.54	1504.4	0.03
10:45	380.8	40.8	-0.2	8.55	7.80	1524.4	1.55	1504.2	0.03
10:46	380.4	40.8	-0.3	8.57	7.78	1525.3	1.47	1503.7	0.03
10:47	381.2	40.4	-0.2	8.55	7.80	1524.3	1.50	1500.9	0.03
10:48	386.4	41.0	-0.2	8.41	7.89	1524.3	1.41	1503.5	0.03
10:49	387.2	41.2	-0.1	8.44	7.86	1525.6	1.48	1504.2	0.03
10:50	385.2	41.1	-0.1	8.49	7.83	1526.1	1.22	1505.2	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
10:50	387.1	41.1	-0.3	8.45	7.86	1523.0	1.45	1503.4	0.03
10:51	383.0	41.1	-0.2	8.52	7.81	1526.9	1.42	1505.3	0.04
10:52	379.9	41.0	-0.2	8.55	7.79	1528.1	1.45	1505.7	0.04
10:53	380.6	40.8	-0.2	8.54	7.79	1527.3	1.33	1505.2	0.03
10:54	381.8	40.6	-0.1	8.50	7.82	1527.6	1.42	1505.5	0.03
10:55	383.7	40.9	-0.1	8.49	7.83	1528.4	1.48	1504.8	0.03
10:56	385.1	40.8	-0.0	8.47	7.83	1528.7	1.59	1503.5	0.03
10:57	384.1	40.4	-0.1	8.49	7.83	1529.1	1.49	1503.4	0.03
10:58	383.1	40.8	-0.1	8.44	7.84	1530.5	1.53	1505.2	0.03
10:59	382.2	40.4	-0.1	8.49	7.81	1529.6	1.36	1504.3	0.03
11:00	382.1	40.6	-0.1	8.49	7.81	1531.3	1.36	1505.5	0.04
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
11:00	386.5	41.2	-0.5	8.43	7.87	1516.2	1.31	1502.3	0.03
11:01	381.4	40.5	-0.1	8.48	7.81	1531.4	1.43	1505.5	0.03
11:02	380.8	40.5	-0.1	8.47	7.81	1531.4	1.42	1505.5	0.03
11:03	378.9	40.4	-0.1	8.47	7.82	1531.4	1.42	1505.5	0.03
11:04	380.7	40.4	-0.1	8.44	7.83	1531.4	1.46	1504.5	0.03
11:05	381.7	40.2	-0.0	8.44	7.83	1530.8	1.38	1505.5	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
11:05	381.9	40.6	-0.1	8.49	7.82	1529.6	1.44	1505.0	0.03
11:06	385.2	40.4	-0.0	8.40	7.86	1531.3	1.46	1507.0	0.03
11:07	383.6	40.4	-0.0	8.42	7.85	1531.0	1.40	1506.9	0.03
11:08	385.0	40.5	0.0	8.39	7.87	1531.6	1.45	1504.6	0.03

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
11:09	385.0	40.8	-0.0	8.39	7.86	1532.9	1.34	1506.3	0.03
11:10	384.9	40.9	0.1	8.38	7.86	1533.4	1.45	1507.0	0.03
11:11	381.8	40.8	0.1	8.43	7.82	1533.7	1.56	1504.8	0.03
11:12	381.3	40.5	0.1	8.41	7.84	1533.0	1.49	1504.6	0.03
11:13	382.4	40.4	0.2	8.45	7.82	1533.0	1.56	1502.9	0.03
11:14	386.1	40.7	0.2	8.35	7.87	1533.6	1.35	1505.9	0.03
11:15	387.2	40.9	0.1	8.40	7.82	1534.4	1.39	1507.0	0.03
11:16	383.6	40.5	0.2	8.45	7.80	1535.4	1.42	1507.0	0.03
11:17	381.0	40.2	0.2	8.55	7.74	1534.9	1.63	1503.8	0.03
11:18	382.5	40.2	0.2	8.48	7.79	1534.4	1.56	1503.6	0.03
11:19	386.4	40.5	0.2	8.42	7.83	1534.5	1.36	1506.0	0.03
11:20	388.4	40.7	0.2	8.35	7.85	1534.4	1.50	1504.4	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
11:20	384.3	40.6	0.1	8.42	7.83	1533.4	1.46	1505.5	0.03
11:21	387.3	40.7	0.2	8.33	7.90	1534.3	1.40	1503.3	0.03
11:22	391.0	41.0	0.3	8.25	7.92	1534.5	1.57	1504.6	0.03
11:23	391.2	41.1	0.3	8.26	7.92	1534.5	1.61	1504.0	0.03
11:24	391.8	40.8	0.4	8.27	7.92	1535.0	1.59	1504.2	0.03
11:25	389.9	41.1	0.3	8.28	7.90	1536.0	1.58	1504.5	0.03
11:26	389.8	40.8	0.3	8.31	7.89	1535.2	1.42	1503.8	0.03
11:27	394.1	41.5	0.4	8.13	8.00	1534.8	1.44	1505.0	0.03
11:28	398.7	41.7	0.4	8.07	8.06	1535.5	1.44	1506.9	0.03
11:29	399.4	41.9	0.5	8.05	8.06	1536.2	1.45	1507.4	0.03
11:30	398.5	41.7	0.5	8.07	8.04	1536.3	1.52	1508.6	0.03
11:31	398.3	41.8	0.4	8.07	8.05	1535.8	1.42	1508.6	0.03
11:32	395.9	41.8	0.5	8.12	8.01	1536.2	1.45	1508.6	0.03
11:33	396.6	41.9	0.6	8.12	8.00	1537.3	1.44	1508.5	0.03
11:34	394.8	41.6	0.6	8.12	8.02	1536.8	1.47	1509.0	0.03
11:35	394.5	41.7	0.5	8.08	8.02	1537.9	1.63	1509.7	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
11:35	394.1	41.4	0.4	8.17	7.98	1535.8	1.49	1506.5	0.03
11:36	393.5	41.6	0.5	8.13	7.98	1538.1	1.52	1510.0	0.03
11:37	394.5	42.0	0.6	8.01	8.06	1538.4	1.42	1511.1	0.03
11:38	394.8	42.1	0.6	8.06	8.01	1538.9	1.36	1513.7	0.03
11:39	392.5	42.1	0.7	8.08	8.02	1538.5	1.55	1513.3	0.03
11:40	387.6	41.6	0.7	8.12	7.96	1538.0	1.27	1513.1	0.03
11:41	390.1	41.8	0.7	8.04	8.02	1538.0	1.49	1513.1	0.03
11:42	394.4	41.7	0.7	8.07	8.02	1537.6	1.38	1513.8	0.04
11:43	401.1	42.0	0.7	7.96	8.08	1538.8	1.30	1515.1	0.03
11:44	399.4	42.0	0.8	7.97	8.09	1538.5	1.51	1514.3	0.03
11:45	398.5	41.9	0.8	8.01	8.04	1537.9	1.47	1514.6	0.03
11:46	400.0	41.9	0.8	8.02	8.04	1537.4	1.34	1514.7	0.03
11:47	400.5	41.9	0.8	7.99	8.06	1537.4	1.45	1514.7	0.03
11:48	399.7	42.0	0.9	8.02	8.04	1537.6	1.43	1514.4	0.03
11:49	400.9	42.3	1.0	7.88	8.14	1538.2	1.38	1514.6	0.03
11:50	399.0	42.3	1.1	7.91	8.10	1539.0	1.31	1514.7	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
11:50	396.4	42.0	0.8	8.02	8.04	1538.2	1.41	1513.7	0.03
11:51	399.4	42.3	1.1	7.89	8.10	1538.8	1.21	1514.7	0.03

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
11:52	401.4	42.3	1.2	7.88	8.12	1537.6	1.53	1515.1	0.03
11:53	397.5	42.1	1.2	7.92	8.08	1537.5	1.41	1515.9	0.03
11:54	400.6	42.1	1.2	7.90	8.10	1538.6	1.31	1516.1	0.03
11:55	401.2	42.2	1.2	7.94	8.04	1538.5	1.45	1515.4	0.03
11:56	399.8	42.7	0.4	7.86*	8.02	1539.1	1.51	1515.7	0.03
11:57	396.3	42.4	1.3	7.85	7.93	1540.3	1.43	1516.5	0.03
11:58	394.8	42.0	1.3	7.85	7.98	1540.5	1.42	1517.2	0.03
11:59	395.3	41.8	1.3	7.85	8.01	1539.7	1.32	1516.2	0.03
12:00	399.2	42.0	1.4	7.79	8.06	1540.3	1.37	1516.2	0.03
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
12:00	391.9	41.4	0.5	8.17	7.96	1536.0	1.44	1509.5	0.03
12:01	400.2	42.0	1.4	7.85	8.03	1541.8	1.44	1516.2	0.03
12:02	397.4	42.1	1.5	7.88	8.00	1540.8	1.40	1517.1	0.04
12:03	396.2	42.4	1.5	7.89	7.99	1542.1	1.67	1516.2	0.03
12:04	390.0	41.7	1.7	8.03	7.92	1541.5	1.59	1516.9	0.03
12:05	393.3	41.6	1.5	7.90	8.00	1542.1	1.53	1517.7	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
12:05	397.5	42.1	1.3	7.89	8.03	1540.0	1.44	1516.2	0.03
12:06	390.4	41.7	1.5	7.98	7.95	1542.1	1.55	1517.6	0.04
12:07	391.9	41.9	1.6	7.92	7.97	1543.2	1.46	1517.8	0.03
12:08	388.3	41.7	1.6	8.02	7.92	1542.6	1.52	1517.2	0.03
12:09	389.2	41.5	1.6	8.00	7.93	1541.9	1.41	1516.9	0.03
12:10	394.4	41.7	1.7	8.00	7.95	1542.8	1.50	1517.6	0.04
12:11	392.8	41.6	1.7	7.99	7.94	1542.6	1.44	1517.7	0.04
12:12	393.2	41.6	1.7	7.98	7.95	1542.7	1.42	1518.3	0.04
12:13	390.9	41.0	1.7	8.18	7.82	1542.9	1.34	1517.9	0.03
12:14	395.3	41.8	1.7	7.99	7.95	1541.1	1.31	1517.6	0.03
12:15	397.8	42.1	1.8	7.95	7.98	1541.2	1.13	1518.9	0.04
12:16	396.4	41.7	1.8	7.93	7.99	1542.2	1.30	1518.0	0.03
12:17	397.2	41.7	1.9	7.84	8.05	1542.8	1.40	1517.7	0.03
12:18	395.6	41.8	1.9	7.80	8.07	1542.8	1.45	1517.8	0.03
12:19	394.3	41.9	1.9	7.88	8.01	1539.8	1.50	1518.6	0.04
12:20	391.4	41.9	1.9	8.03	7.89	1538.4	1.47	1518.7	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
12:20	393.3	41.7	1.7	7.97	7.96	1541.9	1.41	1517.9	0.03
12:21	392.0	41.8	1.9	8.05	7.90	1536.7	1.45	1517.7	0.03
12:22	396.6	41.7	2.0	8.02	7.91	1537.5	1.48	1517.7	0.03
12:23	394.4	41.8	2.0	8.06	7.90	1536.3	1.53	1517.7	0.03
12:24	393.8	41.8	2.1	8.07	7.89	1536.8	1.48	1517.8	0.04
12:25	388.7	41.6	2.1	8.15	7.80	1537.5	1.44	1517.8	0.03
12:26	390.9	41.5	2.2	8.21	7.80	1537.5	1.47	1518.8	0.04
12:27	394.5	41.4	2.2	8.19	7.82	1538.1	1.62	1518.1	0.03
12:28	395.5	41.5	2.3	8.18	7.81	1539.2	1.62	1518.4	0.03
12:29	390.3	41.3	2.3	8.26	7.77	1540.5	1.60	1518.4	0.03
12:30	382.7	41.3	2.3	8.35	7.71	1539.3	1.41	1517.7	0.04
12:31	381.2	41.0	2.3	8.29	7.74	1539.0	1.48	1517.7	0.04
12:32	382.9	41.1	2.3	8.23	7.77	1539.1	1.42	1518.5	0.04
12:33	387.6	41.2	2.5	8.21	7.78	1539.6	1.50	1518.4	0.03
12:34	387.5	41.1	2.5	8.27	7.74	1540.6	1.48	1520.3	0.04

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
12:35	379.0	40.6	2.5	8.39	7.66	1539.8	1.44	1521.8	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
12:35	389.2	41.4	2.2	8.19	7.80	1538.5	1.50	1518.5	0.04
12:36	374.2	40.3	2.5	8.51	7.60	1540.0	1.46	1520.9	0.04
12:37	378.6	40.8	2.5	8.46	7.63	1539.6	1.41	1520.2	0.04
12:38	375.9	39.7	2.7	8.65	7.47	1540.3	1.53	1521.1	0.04
12:39	367.7	40.3	2.5	8.46	7.64	1541.1	1.48	1520.5	0.04
12:40	372.8	40.2	2.5	8.46	7.65	1541.0	1.56	1520.8	0.03
12:41	373.4	40.2	2.7	8.48	7.64	1541.5	1.42	1520.9	0.04
12:42	371.5	40.0	2.7	8.45	7.64	1541.2	1.51	1519.9	0.03
12:43	373.1	40.0	2.8	8.44	7.66	1540.4	1.31	1520.8	0.03
12:44	378.0	40.1	2.8	8.38	7.69	1540.0	1.12	1520.8	0.04
12:45	378.3	40.2	2.7	8.37	7.69	1540.5	1.32	1521.1	0.04
12:46	377.5	40.1	2.9	8.36	7.70	1540.6	1.37	1520.8	0.04
12:47	374.1	40.1	3.0	8.36	7.70	1541.5	1.40	1521.3	0.04
12:48	370.2	40.2	2.8	8.44	7.65	1542.1	1.46	1521.1	0.03
12:49	361.1	40.2	2.8	8.50	7.61	1542.3	1.42	1519.6	0.04
12:50	358.2	40.3	2.8	8.56	7.58	1542.0	1.53	1520.7	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
12:50	372.3	40.2	2.7	8.46	7.64	1540.9	1.42	1520.7	0.04
12:51	361.1	40.2	2.8	8.56	7.58	1541.4	1.44	1520.4	0.04
12:52	366.1	40.3	2.9	8.46	7.63	1541.1	1.21	1519.4	0.03
12:53	375.1	40.2	3.0	8.44	7.64	1542.0	1.32	1520.7	0.03
12:54	376.2	40.0	3.0	8.44	7.63	1542.1	1.38	1520.2	0.04
12:55	375.3	39.9	3.2	8.44	7.63	1541.4	1.21	1520.5	0.04
12:56	374.5	39.8	3.1	8.48	7.61	1542.3	1.45	1520.5	0.04
12:57	374.2	40.1	3.2	8.49	7.61	1540.8	1.12	1519.7	0.04
12:58	379.4	39.9	3.2	8.39	7.66	1541.3	1.27	1520.9	0.03
12:59	379.3	40.0	3.3	8.41	7.65	1542.1	1.41	1520.2	0.03
13:00	379.4	39.8	3.4	8.42	7.63	1542.1	1.27	1520.1	0.03
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
13:00	384.0	41.0	2.3	8.22	7.79	1540.8	1.43	1519.0	0.04
13:01	382.8	40.2	3.5	8.32	7.69	1541.6	1.37	1520.8	0.03
13:02	384.1	40.4	3.6	8.32	7.72	1542.0	1.34	1519.4	0.03
13:03	381.1	40.5	3.6	8.33	7.70	1541.9	1.07	1520.6	0.04
13:04	381.1	40.3	3.5	8.30	7.71	1541.4	1.10	1521.0	0.03
13:05	381.8	40.6	3.5	8.26	7.70	1542.2	1.32	1521.0	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
13:05	376.8	40.1	3.2	8.40	7.65	1541.7	1.29	1520.4	0.03
13:06	381.3	40.8	3.4	8.30	7.69	1542.2	1.35	1521.0	0.04
13:07	377.4	40.4	3.4	8.39	7.63	1542.5	1.37	1520.8	0.03
13:08	373.5	39.8	3.5	8.48	7.58	1542.2	1.47	1521.0	0.04
13:09	374.0	39.9	3.8	8.43	7.61	1542.1	1.28	1521.2	0.04
13:10	378.0	40.3	3.9	8.30	7.67	1542.1	1.23	1521.0	0.04
13:11	378.4	40.6	3.8	8.23	7.72	1542.2	1.07	1520.8	0.03
13:12	376.0	41.0	3.9	8.23	7.72	1542.3	1.12	1520.8	0.03
13:13	373.7	40.8	4.0	8.33	7.65	1542.3	1.33	1521.2	0.03

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
13:14	375.8	40.6	3.9	8.31	7.66	1543.1	1.32	1520.5	0.03
13:15	374.5	40.0	3.9	8.39	7.63	1543.1	1.22	1520.8	0.04
13:16	374.8	40.9	4.0	8.30	7.67	1543.7	1.35	1520.8	0.03
13:17	375.2	40.4	4.1	8.33	7.65	1542.8	1.25	1520.8	0.04
13:18	373.7	40.2	4.0	8.37	7.62	1543.1	1.30	1522.3	0.03
13:19	370.2	40.1	4.1	8.44	7.58	1542.8	1.23	1522.3	0.03
13:20	371.6	40.1	4.4	8.36	7.62	1542.2	1.10	1522.7	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
13:20	375.2	40.4	3.9	8.35	7.65	1542.6	1.27	1521.2	0.03
13:21	372.4	40.0	4.3	8.38	7.62	1543.3	1.27	1523.6	0.04
13:22	372.3	40.2	4.2	8.34	7.62	1543.6	1.19	1522.0	0.03
13:23	367.7	40.4	4.5	8.26	7.66	1543.5	1.32	1521.8	0.03
13:24	370.8	40.2	4.5	8.22	7.68	1542.8	1.11	1520.2	0.03
13:25	373.8	40.2	4.6	8.25	7.66	1541.1	1.18	1520.4	0.03
13:26	374.3	40.1	4.7	8.26	7.65	1542.5	1.71	1520.0	0.03
13:27	372.5	39.7	4.9	8.27	7.63	1543.6	1.48	1521.5	0.04
13:28	370.1	39.7	4.9	8.36	7.57	1543.4	1.36	1522.4	0.04
13:29	369.3	39.4	5.2	8.41	7.55	1544.7	1.35	1525.2	0.04
13:30	366.2	39.2	5.1	8.42	7.55	1545.1	1.38	1524.7	0.04
13:31	363.7	39.2	5.0	8.39	7.56	1544.0	1.41	1525.3	0.04
13:32	367.0	39.2	5.1	8.36	7.58	1543.6	1.15	1525.3	0.04
13:33	374.2	39.4	5.1	8.30	7.62	1543.5	1.22	1525.3	0.04
13:34	374.7	39.6	5.0	8.22	7.65	1543.7	1.11	1525.6	0.04
13:35	376.8	39.7	5.1	8.18	7.66	1544.5	1.36	1524.3	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
13:35	371.1	39.7	4.8	8.31	7.62	1543.5	1.31	1523.2	0.04
13:36	375.6	39.7	5.1	8.19	7.65	1544.7	1.19	1525.0	0.04
13:37	375.5	39.6	5.1	8.18	7.66	1543.7	1.27	1525.3	0.04
13:38	375.3	39.7	5.1	8.21	7.64	1542.9	1.11	1525.4	0.04
13:39	375.1	39.6	5.0	8.20	7.65	1541.4	1.16	1525.1	0.03
13:40	372.7	39.4	5.1	8.26	7.62	1542.0	1.28	1525.3	0.03
13:41	371.1	39.4	4.9	8.27	7.60	1543.7	1.21	1525.3	0.03
13:42	371.9	39.3	4.9	8.23	7.62	1544.0	1.19	1525.3	0.04
13:43	371.5	39.3	4.9	8.22	7.62	1544.9	1.23	1525.4	0.04
13:44	370.9	39.5	5.0	8.18	7.63	1545.2	1.32	1525.6	0.04
13:45	371.3	39.3	5.0	8.25	7.61	1544.5	1.09	1526.5	0.04
13:46	374.4	39.6	4.9	8.29	7.58	1543.6	1.29	1526.5	0.04
13:47	369.5	39.4	5.0	8.36	7.53	1544.5	1.35	1526.8	0.04
13:48	367.0	39.1	5.0	8.41	7.53	1545.5	1.37	1528.1	0.04
13:49	359.9	38.8	5.0	8.50	7.47	1546.2	1.59	1527.4	0.04
13:50	353.3	38.5	5.0	8.57	7.42	1545.7	1.43	1527.2	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
13:50	370.3	39.4	5.0	8.29	7.59	1544.2	1.27	1526.0	0.04
13:51	353.6	38.8	5.0	8.51	7.47	1545.2	1.61	1527.5	0.04
13:52	357.5	38.8	5.0	8.47	7.48	1544.1	1.25	1526.9	0.04
13:53	366.6	38.8	5.0	8.37	7.54	1543.6	1.33	1526.7	0.04
13:54	371.6	38.8	5.1	8.30	7.58	1544.9	1.40	1527.6	0.05
13:55	369.6	39.1	5.1	8.31	7.56	1545.2	1.33	1527.8	0.04
13:56	369.0	39.1	5.1	8.31	7.55	1545.2	1.31	1528.2	0.04

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
13:57	366.8	38.8	5.2	8.38	7.51	1545.6	1.34	1528.2	0.05
13:58	364.1	38.6	5.3	8.45	7.48	1546.5	1.52	1528.5	0.04
13:59	358.6	38.4	5.2	8.47	7.46	1546.5	1.46	1528.5	0.04
14:00	359.1	38.5	5.1	8.45	7.48	1546.7	1.42	1528.3	0.04
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
14:00	371.6	39.7	4.6	8.33	7.61	1543.6	1.30	1523.9	0.04

COMMENTS: Calibration Time

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Calibration Bias Check

DATE : 10-30-1991 TIME: 14:00 - 14:17

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	1.2
7	Unit 4	ppmSO2	241.0	219.8
9	Unit 4	ppmNOx	0.0	0.2
9	Unit 4	ppmNOx	141.5	132.2
8	Unit 4	ppmCO	0.0	4.5
8	Unit 4	ppmCO	30.2	34.7
5	Unit 4	% O2	0.00	0.04
5	Unit 4	% O2	12.48	12.32
6	Unit 4	% CO2	0.00	0.23
6	Unit 4	% CO2	11.06	10.75

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Calibration Error Check

DATE : 10-30-1991 TIME: 14:18 - 14:44

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	0.1
7	Unit 4	ppmSO2	241.0	240.6
7	Unit 4	ppmSO2	436.0	436.5
9	Unit 4	ppmNOx	0.0	0.2
9	Unit 4	ppmNOx	141.0	139.6
9	Unit 4	ppmNOx	240.0	240.1
8	Unit 4	ppmCO	0.0	0.6
8	Unit 4	ppmCO	30.2	31.8
8	Unit 4	ppmCO	92.3	92.1
5	Unit 4	% O2	0.00	0.05
5	Unit 4	% O2	12.48	12.50
5	Unit 4	% O2	21.40	21.42
6	Unit 4	% CO2	0.00	0.01
6	Unit 4	% CO2	11.06	10.89
6	Unit 4	% CO2	17.46	17.46

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Calibration Bias Check

DATE : 10-30-1991 TIME: 14:45 - 14:58

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	1.8
7	Unit 4	ppmSO2	241.0	234.8
9	Unit 4	ppmNOx	0.0	0.4
9	Unit 4	ppmNOx	141.5	137.7
8	Unit 4	ppmCO	0.0	0.5
8	Unit 4	ppmCO	30.2	30.7
5	Unit 4	% O2	0.00	0.07
5	Unit 4	% O2	12.48	12.48
6	Unit 4	% CO2	0.00	0.02
6	Unit 4	% CO2	11.06	10.74

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
15:01	367.8	38.2	0.4	8.69	7.31	1548.2	1.46	1525.3	0.03
15:02	381.7	38.0	0.6	8.64	7.34	1548.2	1.35	1525.4	0.04
15:03	378.9	37.9	0.5	8.74	7.29	1548.2	1.32	1525.4	0.04
15:04	370.1	37.8	0.2	8.75	7.29	1548.2	1.41	1525.3	0.03
15:05	368.4	37.9	0.2	8.76	7.28	1550.4	1.51	1525.3	0.03
15:06	369.1	37.7	0.3	8.72	7.31	1551.3	1.46	1525.0	0.04
15:07	371.0	37.8	0.3	8.66	7.34	1552.2	1.60	1525.3	0.03
15:08	367.0	37.6	0.2	8.77	7.29	1552.8	1.25	1525.3	0.03
15:09	367.8	37.6	0.2	8.76	7.30	1552.8	1.30	1525.3	0.04
15:10	362.7	37.3	0.1	8.82	7.26	1553.2	1.47	1525.4	0.04
15:11	359.2	37.4	0.0	8.85	7.25	1553.1	1.43	1525.3	0.03
15:12	364.5	37.6	0.0	8.73	7.32	1553.1	1.42	1525.1	0.03
15:13	361.9	37.3	0.1	8.79	7.28	1554.1	1.25	1524.8	0.03
15:14	360.2	37.3	0.0	8.82	7.28	1554.1	1.30	1525.3	0.03
15:15	361.0	37.3	0.1	8.84	7.26	1554.2	1.40	1525.7	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
15:15	367.4	37.7	0.2	8.76	7.29	1551.6	1.40	1525.3	0.03
15:16	362.2	37.1	0.0	8.81	7.28	1554.4	1.25	1526.7	0.04
15:17	361.5	36.8	-0.1	8.83	7.27	1553.9	1.31	1527.6	0.03
15:18	364.8	37.0	0.0	8.74	7.32	1554.3	1.40	1528.3	0.03
15:19	367.5	36.9	0.0	8.75	7.32	1554.3	1.36	1528.4	0.03
15:20	369.3	36.8	-0.1	8.72	7.34	1554.4	1.52	1529.1	0.03
15:21	364.4	36.7	-0.1	8.82	7.27	1554.7	1.44	1528.4	0.03
15:22	365.0	36.7	-0.1	8.75	7.32	1554.4	1.39	1529.4	0.03
15:23	362.7	36.9	-0.1	8.78	7.30	1554.7	1.08	1529.8	0.04
15:24	363.9	36.8	-0.2	8.77	7.31	1554.3	1.50	1530.2	0.03
15:25	364.2	36.8	-0.2	8.80	7.28	1555.1	1.54	1530.1	0.04
15:26	365.3	36.7	-0.2	8.82	7.28	1554.3	1.34	1530.1	0.03
15:27	367.3	36.5	-0.2	8.74	7.32	1555.5	1.30	1530.7	0.04
15:28	370.6	36.4	-0.2	8.55	7.43	1556.5	1.36	1533.1	0.04
15:29	368.0	35.6	-0.4	8.73	7.36	1557.1	1.59	1533.7	0.03
15:30	362.3	35.0	-0.3	8.76	7.36	1557.3	1.31	1533.8	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
15:30	365.3	36.6	-0.1	8.76	7.32	1555.0	1.38	1530.0	0.03
15:31	360.0	34.8	-0.3	8.78	7.35	1557.3	1.53	1534.5	0.03
15:32	358.6	34.7	-0.2	8.77	7.37	1557.3	1.21	1534.9	0.03
15:33	362.0	34.6	-0.4	8.71	7.40	1557.4	-1.62	1536.6	0.04
15:34	358.9	34.4	-0.3	8.79	7.35	1557.6	0.98	1536.3	0.04
15:35	360.0	34.4	-0.4	8.78	7.36	1557.4	1.32	1535.8	0.03
15:36	361.3	34.5	-0.3	8.78	7.36	1557.4	1.42	1535.8	0.03
15:37	361.2	34.4	-0.5	8.78	7.37	1557.5	1.38	1536.0	0.03
15:38	366.8	35.4	-0.4	8.54	7.50	1557.9	1.38	1535.1	0.08*
15:39	371.3	35.7	-0.4	8.46	7.55	1559.2	1.24	1534.6	0.03*
15:40	375.4	35.6	-0.3	8.43	7.56	1561.7	1.81	1536.0	0.03
15:41	368.3	34.5	-0.4	8.64	7.42	1561.8	1.57	1536.1	0.03
15:42	362.1	32.7	-0.5	8.91	7.27	1561.9	1.69	1535.2	0.03
15:43	357.9	32.1	-0.5	9.02	7.23	1561.9	1.63	1534.6	0.03
15:44	355.8	31.8	-0.5	9.03	7.22	1561.6	1.68	1535.2	0.03
15:45	355.3	31.8	-0.6	9.05	7.22	1561.0	1.64	1534.7	0.03

CONTINUOUS EMISSIONS MONITORING SET-UP

SOURCE: Jewell Coal & Coke Engineering

DATE: 10-30-1991 TIME: 03:55

A/D CHAN	DESCRIP	UNITS	SPAN	INPUT VOLTAGE	ZERO OFFSET
7	Unit 4	ppmSO2	1000	1.00 V	0%
9	Unit 4	ppmNOx	250	10.00 V	0%
8	Unit 4	ppmCO	500	1.00 V	0%
5	Unit 4	% O2	25	1.00 V	0%
6	Unit 4	% CO2	20	1.00 V	0%
11	Unit 3	TEMPF	2500	5.00 V	20%
12	Unit 3	PRESS	25	5.00 V	22%
13	Unit 4	TEMPF	2500	5.00 V	20%
14	Unit 4	PRESS	1	5.00 V	21%

AVERAGING PERIODS: 15 MINUTES, ONE HOUR,
NO EMISSION RATE CALCULATIONS

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST 15 MINUTES									
15:45	362.3	34.1	-0.4	8.77	7.37	1559.3	1.26	1535.4	0.04
15:46	353.7	31.6	-0.6	9.05	7.21	1560.5	1.65	1534.4	0.04
15:47	353.8	31.6	-0.6	9.09	7.19	1560.5	1.73	1533.8	0.04
15:48	352.2	31.4	-0.5	9.13	7.18	1561.2	1.79	1533.8	0.03
15:49	354.8	31.6	-0.4	9.03	7.24	1560.3	1.70	1533.0	0.03
15:50	356.5	31.8	-0.4	9.04	7.23	1560.3	1.69	1533.7	0.03
15:51	355.0	31.6	-0.5	9.05	7.21	1559.1	1.62	1533.1	0.03
15:52	355.0	31.8	-0.5	9.04	7.22	1558.6	1.61	1533.2	0.03
15:53	353.4	31.7	-0.5	9.03	7.22	1557.8	1.53	1533.0	0.03
15:54	351.8	31.5	-0.5	9.05	7.22	1557.4	1.49	1533.1	0.03
15:55	351.3	31.6	-0.5	9.00	7.25	1557.4	1.55	1533.0	0.03
15:56	352.9	31.6	-0.5	9.00	7.25	1557.4	1.56	1533.0	0.04
15:57	351.3	31.5	-0.4	9.04	7.22	1557.4	1.62	1533.3	0.04
15:58	350.0	31.5	-0.4	9.07	7.21	1557.4	1.73	1533.0	0.03
15:59	347.5	31.3	-0.5	9.13	7.19	1557.4	1.70	1533.0	0.04
16:00	347.1	31.4	-0.4	9.08	7.20	1557.0	1.76	1533.0	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
16:00	352.4	31.6	-0.5	9.05	7.22	1558.7	1.65	1533.3	0.03
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
16:00	361.9	35.0	-0.2	8.83	7.30	1556.1	1.42	1531.0	0.03
16:01	348.1	31.2	-0.5	9.07	7.22	1555.9	1.64	1533.0	0.03
16:02	349.8	31.0	-0.5	9.06	7.22	1555.9	1.65	1533.0	0.03
16:03	347.9	31.2	-0.5	9.11	7.18	1555.9	1.63	1532.3	0.03
16:04	347.0	31.1	-0.6	9.13	7.18	1554.4	1.59	1532.7	0.03
16:05	347.3	30.9	-0.5	9.12	7.19	1554.7	1.59	1532.9	0.03
16:06	346.9	31.1	-0.5	9.13	7.19	1554.2	1.63	1532.2	0.03
16:07	344.8	30.8	-0.4	9.17	7.17	1553.5	1.54	1531.2	0.03
16:08	343.2	30.9	-0.4	9.17	7.17	1553.4	1.54	1530.3	0.03
16:09	342.8	30.9	-0.4	9.18	7.16	1552.8	1.62	1530.0	0.03
16:10	343.3	31.0	-0.4	9.18	7.18	1552.8	1.61	1530.0	0.03
16:11	343.3	30.7	-0.4	9.21	7.16	1552.8	1.58	1529.9	0.03
16:12	344.5	30.7	-0.4	9.19	7.16	1552.4	1.52	1529.9	0.03
16:13	342.9	30.8	-0.4	9.23	7.15	1552.8	1.61	1529.6	0.03
16:14	341.9	30.7	-0.4	9.20	7.16	1552.7	1.65	1529.3	0.04
16:15	341.1	30.7	-0.3	9.21	7.15	1552.4	1.69	1528.2	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
16:15	345.0	30.9	-0.4	9.16	7.18	1553.8	1.61	1531.0	0.03
16:16	341.8	30.7	-0.3	9.20	7.16	1552.4	1.69	1527.1	0.03
16:17	343.7	30.7	-0.3	9.19	7.17	1551.3	1.60	1526.9	0.03
16:18	344.6	30.5	-0.3	9.19	7.16	1550.7	1.54	1526.9	0.04
16:19	344.5	30.7	-0.3	9.21	7.17	1551.1	1.62	1526.9	0.04
16:20	343.8	30.6	-0.3	9.19	7.17	1551.0	1.57	1526.9	0.04
16:21	343.1	30.6	-0.3	9.20	7.15	1549.9	1.58	1526.8	0.04
16:22	339.9	30.5	-0.3	9.34	7.07	1549.2	1.61	1525.2	0.04
16:23	338.4	31.1	-0.3	9.34	7.09	1548.8	1.58	1522.9	0.03
16:24	345.6	31.7	-0.3	9.16	7.17	1547.5	1.48	1520.8	0.03

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
16:25	349.7	32.3	-0.2	8.98	7.28	1545.5	1.38	1519.3	0.04
16:26	350.0	32.4	-0.1	8.97	7.28	1544.2	1.40	1518.9	0.03
16:27	350.3	32.4	-0.1	8.93	7.29	1543.6	1.53	1517.9	0.04
16:28	353.0	32.7	-0.1	8.94	7.28	1542.9	1.52	1517.7	0.03
16:29	355.1	32.5	-0.1	8.94	7.27	1542.2	1.35	1516.8	0.04
16:30	353.6	32.3	-0.1	9.01	7.24	1541.5	1.35	1516.1	0.03

End Run
II-1-94-Cem-1

AVERAGE VALUES FOR THE LAST 15 MINUTES

16:30	346.5	31.4	-0.2	9.12	7.20	1547.4	1.52	1522.5	0.03

Begin Run
I-2-94-Cem-2

16:31	352.6	32.6	-0.0	8.97	7.25	1539.4	1.36	1515.3	0.03
16:32	353.7	32.4	-0.0	9.01	7.24	1537.5	1.32	1514.4	0.03
16:33	354.7	32.7	-0.1	8.93	7.28	1536.8	1.24	1513.1	0.03
16:34	359.1	32.8	0.0	8.84	7.32	1535.1	1.36	1512.4	0.03
16:35	358.8	33.0	0.0	8.81	7.32	1534.2	1.35	1511.5	0.03
16:36	360.8	33.0	-0.0	8.81	7.32	1533.7	1.31	1510.2	0.03
16:37	361.4	33.1	0.0	8.81	7.31	1532.6	1.32	1510.1	0.03
16:38	362.5	33.2	0.0	8.73	7.35	1531.9	1.38	1510.1	0.03
16:39	362.3	33.3	0.1	8.77	7.32	1531.6	1.34	1510.0	0.03
16:40	362.5	33.1	0.1	8.77	7.32	1531.3	1.38	1509.0	0.03
16:41	362.9	33.3	0.0	8.78	7.33	1529.9	1.33	1508.6	0.03
16:42	364.4	33.1	0.0	8.73	7.35	1528.7	1.29	1508.5	0.03
16:43	364.9	33.1	-0.0	8.71	7.36	1528.4	1.01	1509.5	0.03
16:44	362.9	32.9	0.1	8.74	7.35	1527.5	1.16	1508.8	0.03
16:45	362.0	33.0	0.0	8.74	7.35	1526.9	1.15	1508.5	0.03

AVERAGE VALUES FOR THE LAST 15 MINUTES

16:45	360.4	33.0	0.0	8.81	7.32	1532.4	1.29	1510.7	0.03

16:46	363.6	33.1	0.0	8.69	7.38	1526.8	1.15	1508.5	0.03
16:47	362.1	32.7	0.1	8.80	7.33	1526.9	1.26	1508.6	0.04
16:48	361.7	33.1	0.1	8.76	7.35	1526.3	1.16	1508.4	0.04
16:49	360.8	32.7	0.0	8.80	7.32	1525.8	1.43	1508.4	0.03
16:50	360.7	33.0	0.0	8.76	7.34	1525.3	1.27	1507.6	0.03
16:51	360.3	33.0	0.1	8.75	7.34	1525.3	1.14	1507.0	0.03
16:52	360.6	33.1	0.0	8.71	7.36	1524.4	1.26	1507.0	0.03
16:53	361.3	32.8	0.1	8.75	7.34	1523.7	1.01	1507.4	0.04
16:54	360.6	32.9	0.1	8.75	7.34	1523.8	0.93	1508.0	0.03
16:55	359.3	32.9	0.1	8.76	7.34	1523.6	1.38	1506.6	0.03
16:56	357.9	32.8	0.1	8.77	7.32	1523.0	0.97	1506.4	0.04
16:57	356.2	32.7	0.1	8.79	7.33	1522.3	1.20	1506.3	0.03
16:58	357.6	33.0	0.1	8.78	7.32	1522.1	1.19	1505.7	0.03
16:59	357.7	32.7	0.1	8.79	7.32	1521.2	1.45	1505.5	0.03
17:00	356.0	32.8	0.1	8.80	7.32	1520.8	1.15	1506.1	0.04

AVERAGE VALUES FOR THE LAST 15 MINUTES

17:00	359.8	32.9	0.1	8.76	7.34	1524.1	1.20	1507.2	0.04

AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA

17:00	352.9	32.1	-0.1	8.96	7.26	1539.4	1.40	1517.8	0.03

17:01	356.1	33.2	0.1	8.77	7.33	1521.7	1.31	1506.0	0.04
17:02	353.7	32.7	0.2	8.88	7.29	1522.3	1.52	1505.2	0.03
17:03	355.4	32.8	0.2	8.82	7.31	1521.6	0.99	1505.5	0.04

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
17:04	355.5	32.8	0.2	8.84	7.31	1520.3	1.42	1505.9	0.04
17:05	356.4	33.2	0.1	8.77	7.33	1518.7	1.45	1505.3	0.03
17:06	352.5	32.8	0.0	8.86	7.28	1517.4	1.40	1505.1	0.04
17:07	348.2	32.7	0.0	8.88	7.28	1516.1	1.19	1504.6	0.04
17:08	347.6	32.9	0.1	8.88	7.27	1515.4	1.36	1504.0	0.03
17:09	347.8	32.8	0.0	8.86	7.28	1516.0	1.36	1504.0	0.04
17:10	346.3	32.7	-0.0	8.94	7.25	1515.1	1.40	1503.5	0.03
17:11	347.3	32.7	0.0	8.92	7.27	1514.7	1.37	1504.1	0.04
17:12	348.1	32.7	-0.1	8.94	7.25	1514.6	1.01	1504.0	0.04
17:13	348.7	32.7	0.0	8.95	7.25	1513.7	1.08	1503.5	0.04
17:14	351.5	32.9	-0.0	8.92	7.26	1513.8	1.41	1503.2	0.04
17:15	351.1	32.6	-0.1	8.95	7.26	1513.4	1.19	1503.3	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
17:15	351.1	32.8	0.0	8.88	7.28	1517.0	1.30	1504.5	0.04
17:16	349.8	32.7	-0.1	8.94	7.25	1513.2	1.51	1502.5	0.04
17:17	349.1	32.7	-0.2	8.94	7.25	1513.1	1.18	1502.9	0.04
17:18	348.8	32.9	-0.1	8.96	7.23	1512.7	1.44	1502.5	0.04
17:19	349.9	32.9	-0.1	8.96	7.25	1512.3	1.14	1503.0	0.04
17:20	349.2	32.6	-0.1	8.98	7.23	1511.6	1.02	1503.6	0.04
17:21	349.3	32.8	-0.1	9.00	7.23	1511.5	1.40	1503.2	0.04
17:22	349.3	32.8	-0.2	8.96	7.25	1511.4	0.99	1502.4	0.04
17:23	350.2	32.7	-0.2	9.00	7.25	1511.1	1.08	1502.4	0.04
17:24	349.8	32.7	-0.1	9.02	7.24	1510.8	1.03	1502.4	0.04
17:25	348.6	32.6	-0.1	9.05	7.23	1510.3	1.49	1501.4	0.03
17:26	349.4	32.9	-0.2	9.04	7.24	1510.1	1.43	1500.9	0.04
17:27	350.7	32.9	-0.2	9.03	7.23	1509.8	1.12	1501.0	0.04
17:28	350.5	32.8	-0.2	9.04	7.22	1509.0	1.15	1502.0	0.04
17:29	348.7	32.5	-0.2	9.09	7.21	1509.4	1.25	1501.0	0.04
17:30	347.3	32.8	-0.3	9.11	7.19	1508.5	1.03	1500.9	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
17:30	349.4	32.7	-0.2	9.01	7.23	1511.0	1.22	1502.1	0.04
17:31	346.7	32.6	-0.3	9.08	7.22	1508.0	1.41	1500.9	0.04
17:32	349.4	32.5	-0.4	9.11	7.20	1505.5	1.13	1500.9	0.04
17:33	347.7	32.8	-0.3	9.16	7.17	1507.0	1.44	1500.3	0.03
17:34	348.1	32.5	-0.5	9.14	7.19	1507.2	1.22	1500.7	0.04
17:35	346.9	32.6	-0.4	9.16	7.18	1507.0	1.14	1500.3	0.04
17:36	347.2	32.5	-0.5	9.14	7.19	1507.0	1.13	1500.3	0.04
17:37	345.1	32.9	-0.5	9.11	7.21	1506.6	1.28	1500.2	0.04
17:38	344.5	32.6	-0.5	9.13	7.19	1506.1	1.34	1499.8	0.04
17:39	344.5	32.5	-0.5	9.17	7.17	1506.4	1.16	1499.4	0.04
17:40	343.7	32.4	-0.4	9.20	7.16	1509.2	1.34	1498.3	0.03
17:41	343.4	32.7	-0.6	9.20	7.15	1511.4	1.04	1496.7	0.03
17:42	343.3	32.5	-0.5	9.21	7.16	1511.9	1.37	1497.0	0.03
17:43	348.9	32.3	-0.4	9.15	7.18	1513.8	1.31	1496.4	0.03
17:44	350.7	32.3	-0.4	9.17	7.18	1514.6	1.39	1496.2	0.04
17:45	349.5	32.6	-0.5	9.14	7.20	1514.6	1.20	1495.5	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
17:45	346.6	32.6	-0.5	9.15	7.18	1509.1	1.26	1498.9	0.04
17:46	350.6	32.7	-0.6	9.18	7.18	1515.1	1.20	1494.9	0.03

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
17:47	348.7	32.5	-0.6	9.19	7.17	1515.6	1.24	1494.8	0.03
17:48	347.1	32.6	-0.6	9.18	7.16	1516.2	1.30	1494.8	0.03
17:49	348.2	32.7	-0.6	9.16	7.18	1516.3	1.30	1494.8	0.03
17:50	349.2	32.6	-0.7	9.19	7.16	1516.5	1.28	1494.1	0.03
17:51	347.4	32.5	-0.7	9.17	7.17	1516.2	1.02	1493.6	0.03
17:52	347.0	32.8	-0.8	9.18	7.17	1516.3	1.26	1492.1	0.03
17:53	345.6	32.7	-0.7	9.17	7.17	1516.6	1.24	1490.7	0.03
17:54	346.6	32.6	-0.7	9.17	7.16	1517.1	1.06	1491.1	0.03
17:55	346.5	32.7	-0.7	9.20	7.16	1517.2	1.09	1492.6	0.03
17:56	346.8	32.6	-0.7	9.21	7.16	1517.4	1.11	1491.8	0.03
17:57	347.9	32.7	-0.7	9.21	7.15	1517.7	1.22	1492.6	0.03
17:58	347.3	32.5	-0.6	9.20	7.17	1517.8	1.22	1492.7	0.03
17:59	346.9	32.4	-0.6	9.22	7.16	1519.1	1.19	1492.4	0.03
18:00	346.6	32.9	-0.6	9.21	7.16	1518.0	0.75	1491.9	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
18:00	347.5	32.6	-0.6	9.19	7.16	1516.9	1.17	1493.0	0.03
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
18:00	348.6	32.7	-0.3	9.06	7.22	1513.5	1.23	1499.6	0.04
18:01	344.7	32.7	-0.6	9.23	7.15	1518.1	1.19	1492.1	0.03
18:02	345.6	32.4	-0.7	9.24	7.14	1519.1	1.15	1492.7	0.04
18:03	347.8	32.5	-0.6	9.17	7.18	1518.0	0.85	1492.9	0.03
18:04	347.1	32.8	-0.7	9.20	7.17	1517.7	0.93	1492.6	0.03
18:05	345.9	32.5	-0.6	9.19	7.17	1518.9	1.30	1493.2	0.03
18:06	346.6	32.5	-0.8	9.22	7.15	1518.3	1.11	1492.5	0.03
18:07	343.3	32.5	-0.8	9.23	7.14	1518.0	0.93	1491.7	0.03
18:08	343.7	32.7	-0.8	9.19	7.16	1519.1	1.26	1492.8	0.04
18:09	354.7	33.3	-0.8	8.85	7.36	1520.5	1.57	1499.9	0.05
18:10	349.9	34.7	-0.8	9.22	7.15	1520.8	1.55	1503.1	0.04
18:11	342.6	35.5	-0.8	9.30	7.11	1520.8	1.54	1503.7	0.04
18:12	338.6	35.8	-0.9	9.39	7.08	1520.6	1.54	1503.7	0.03
18:13	337.2	35.7	-0.9	9.36	7.10	1520.2	1.49	1503.2	0.04
18:14	340.9	36.2	-0.8	9.23	7.21	1519.4	1.43	1503.6	0.03
18:15	344.8	36.9	-0.9	9.23	7.20	1519.2	1.53	1503.4	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
18:15	344.9	33.9	-0.8	9.22	7.17	1519.2	1.29	1497.4	0.04
18:16	340.2	36.1	-0.9	9.23	7.20	1518.2	1.47	1503.2	0.04
18:17	338.2	35.9	-0.9	9.24	7.22	1517.6	1.27	1498.7	0.04
18:18	339.2	35.7	-0.9	9.25	7.21	1517.6	1.38	1500.7	0.04
18:19	341.3	35.6	-0.9	9.27	7.20	1517.0	1.04	1503.6	0.04
18:20	339.9	36.1	-0.9	9.20	7.25	1516.0	1.44	1503.3	0.04
18:21	345.9	36.6	-0.9	9.10	7.31	1514.7	1.00	1499.2	0.03
18:22	345.9	36.9	-1.0	9.17	7.29	1513.4	0.99	1497.8	0.03
18:23	348.2	37.1	-0.9	9.29	7.32	1513.2	1.20	1497.2	0.03
18:24	347.5	36.9	-0.9	9.16	7.32	1512.9	1.06	1495.7	0.03
18:25	347.5	37.0	-1.1	9.15	7.32	1511.7	1.28	1494.2	0.03
18:26	348.7	37.0	-1.1	9.22	7.31	1511.6	1.25	1493.8	0.03
18:27	349.6	36.8	-1.0	9.20	7.32	1511.6	1.29	1493.7	0.03
18:28	351.5	36.7	-1.0	9.20	7.33	1511.6	1.24	1494.1	0.04
18:29	351.0	36.9	-1.0	9.24	7.34	1511.6	1.37	1493.6	0.04

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18:30	349.1	36.9	-1.0	9.20	7.34	1511.0	1.24	1488.9	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
18:30	345.6	36.5	-1.0	9.21	7.29	1514.0	1.24	1497.2	0.03
18:31	347.6	36.8	-1.1	9.25	7.30	1510.1	1.23	1489.6	0.04
18:32	345.7	36.9	-1.1	9.29	7.30	1510.5	1.31	1491.9	0.03
18:33	345.8	36.8	-1.2	9.32	7.29	1511.2	1.28	1492.7	0.03
18:34	345.7	36.8	-1.2	9.31	7.30	1511.5	1.33	1492.6	0.03
18:35	343.6	36.8	-1.1	9.32	7.29	1511.6	1.57	1492.2	0.03
18:36	342.5	36.8	-1.1	9.31	7.30	1511.4	1.39	1491.6	0.03
18:37	343.8	36.7	-1.0	9.38	7.28	1510.1	1.47	1491.4	0.03
18:38	343.9	36.6	-1.0	9.34	7.30	1510.1	1.38	1491.2	0.04
18:39	342.5	36.7	-1.0	9.35	7.30	1509.7	1.11	1491.4	0.04
18:40	341.8	37.0	-1.0	9.35	7.30	1508.6	1.10	1490.6	0.03
18:41	341.2	37.0	-0.9	9.34	7.31	1509.2	1.16	1491.2	0.04
18:42	342.5	37.0	-0.9	9.37	7.31	1508.6	1.40	1491.1	0.03
18:43	343.1	37.1	-0.9	9.38	7.30	1508.5	1.23	1491.2	0.03
18:44	344.9	36.6	-0.9	9.40	7.30	1508.3	1.46	1490.7	0.03
18:45	345.4	36.7	-0.9	9.39	7.29	1508.5	1.51	1490.2	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
18:45	344.0	36.8	-1.0	9.34	7.30	1509.9	1.33	1491.3	0.03
18:46	344.9	36.7	-0.8	9.44	7.26	1508.2	1.30	1490.2	0.03
18:47	344.4	36.9	-0.7	9.42	7.28	1507.6	1.42	1490.3	0.03
18:48	345.2	36.9	-0.6	9.41	7.29	1508.2	1.45	1490.1	0.03
18:49	343.0	36.6	-0.8	9.47	7.25	1508.5	1.35	1488.8	0.03
18:50	343.1	36.7	-0.8	9.42	7.27	1508.6	1.07	1488.8	0.03
18:51	343.2	36.9	-0.8	9.45	7.27	1508.5	1.32	1489.7	0.04
18:52	341.9	36.8	-0.8	9.40	7.29	1508.7	1.15	1489.8	0.03
18:53	340.3	36.9	-0.8	9.45	7.27	1508.5	1.37	1488.7	0.03
18:54	340.6	37.1	-0.7	9.48	7.27	1512.0	1.54	1488.1	0.03
18:55	339.9	36.9	-0.8	9.47	7.25	1514.6	1.53	1487.4	0.03
18:56	338.5	36.7	-0.8	9.52	7.24	1514.3	1.44	1487.6	0.03
18:57	340.3	36.9	-0.7	9.52	7.25	1515.3	1.43	1488.3	0.03
18:58	340.5	36.8	-0.7	9.53	7.24	1516.3	1.38	1488.0	0.03
18:59	338.8	36.9	-0.7	9.53	7.23	1516.9	1.51	1488.6	0.03
19:00	338.7	36.9	-0.7	9.53	7.23	1518.8	1.61	1487.9	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
19:00	341.5	36.8	-0.7	9.47	7.26	1511.7	1.39	1488.8	0.03
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
19:00	344.0	36.0	-0.9	9.31	7.25	1513.7	1.31	1493.7	0.03
19:01	337.6	36.8	-0.7	9.60	7.20	1519.0	1.54	1488.0	0.04
19:02	337.0	36.8	-0.8	9.57	7.22	1518.1	1.47	1488.5	0.03
19:03	336.5	36.7	-0.7	9.60	7.20	1519.0	1.53	1488.4	0.04
19:04	336.1	36.5	-0.8	9.60	7.19	1517.7	1.54	1487.4	0.04
19:05	335.1	36.7	-0.7	9.59	7.20	1517.6	1.52	1487.0	0.03
19:06	335.7	36.7	-0.7	9.60	7.20	1517.7	1.70	1487.6	0.04
19:07	335.7	36.7	-0.6	9.58	7.20	1516.4	1.63	1487.2	0.04
19:08	335.3	36.4	-0.6	9.60	7.20	1514.9	1.65	1487.7	0.04

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19:09	336.7	36.6	-0.5	9.59	7.20	1513.9	1.58	1486.2	0.03
19:10	335.9	36.6	-0.5	9.53	7.22	1513.1	1.55	1486.7	0.04
19:11	335.1	36.7	-0.6	9.56	7.21	1514.1	1.53	1486.2	0.03
19:12	334.0	36.5	-0.5	9.61	7.19	1515.7	1.66	1484.6	0.03
19:13	332.5	35.8	-0.5	9.62	7.16	1516.2	1.73	1480.1	0.03
19:14	336.6	35.0	-0.5	9.43	7.32	1517.2	1.67	1479.7	0.03
19:15	344.2	35.7	-0.5	9.36	7.37	1517.7	1.63	1480.4	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
19:15	336.3	36.4	-0.6	9.56	7.22	1516.5	1.60	1485.7	0.03
19:16	342.2	36.8	-0.4	9.51	7.33	1517.5	1.84	1480.1	0.04
19:17	340.9	37.0	-0.4	9.86	7.29	1516.7	1.73	1479.5	0.03
19:18	341.0	37.1	-0.3	9.54	7.26	1516.2	1.79	1479.9	0.03
19:19	340.1	37.0	-0.4	9.52	7.27	1517.3	1.88	1480.5	0.03
19:20	339.3	37.1	-0.3	9.50	7.28	1518.7	1.66	1480.3	0.03
19:21	338.5	37.3	-0.3	9.49	7.29	1519.6	1.97	1479.0	0.04
19:22	339.6	37.4	-0.3	9.51	7.28	1521.5	2.05	1480.9	0.04
19:23	340.2	37.4	-0.3	9.42	7.33	1522.4	1.84	1480.7	0.04
19:24	339.1	37.7	-0.3	9.46	7.31	1523.2	1.91	1481.0	0.04
19:25	338.6	37.5	-0.2	9.51	7.29	1524.9	2.00	1480.6	0.04
19:26	338.3	37.4	-0.2	9.50	7.28	1527.6	2.00	1480.4	0.04
19:27	338.2	37.3	-0.2	9.51	7.29	1530.4	1.94	1479.9	0.04
19:28	337.1	37.5	-0.2	9.52	7.28	1534.3	1.82	1478.5	0.04
19:29	334.6	37.7	-0.2	9.55	7.27	1535.4	1.97	1479.4	0.04
19:30	336.5	37.8	-0.1	9.51	7.30	1538.1	2.04	1479.5	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
19:30	338.9	37.3	-0.3	9.53	7.29	1524.3	1.89	1480.0	0.04
19:31	336.8	37.8	-0.2	9.47	7.33	1538.1	2.10	1477.7	0.05
19:32	337.7	37.7	-0.2	9.49	7.31	1541.5	2.01	1480.0	0.04
19:33	335.3	37.7	-0.1	9.54	7.30	1545.3	2.14	1480.5	0.05
19:34	335.1	37.8	-0.1	9.51	7.31	1550.8	2.17	1480.0	0.05
19:35	335.6	37.8	-0.1	9.54	7.29	1558.7	2.30	1479.8	0.05
19:36	335.2	37.9	-0.1	9.50	7.31	1568.9	2.50	1478.8	0.05
19:37	336.0	37.8	-0.1	9.60	7.28	1572.7	2.23	1479.7	0.05
19:38	335.3	37.8	-0.1	9.53	7.30	1571.8	2.17	1480.5	0.05
19:39	335.0	37.7	-0.0	9.52	7.30	1576.9	2.18	1480.2	0.04
19:40	335.0	37.7	0.0	9.47	7.33	1580.6	2.03	1479.6	0.05
19:41	338.4	37.3	-0.0	9.41	7.36	1586.2	2.00	1479.2	0.05
19:42	334.6	37.1	0.1	9.56	7.32	1598.6	2.71	1482.5	0.04
19:43	326.1	38.8	0.0	9.83	7.17	1604.5	2.78	1485.6	0.04
19:44	312.2	40.0	0.0	10.16	7.00	1604.7	2.87	1487.0	0.04
19:45	311.2	41.0	0.0	10.11	7.03	1600.4	2.89	1494.0	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
19:45	332.0	38.1	-0.1	9.61	7.26	1573.3	2.34	1481.7	0.05
19:46	305.2	41.2	0.0	10.43	6.84	1603.4	3.13	1496.2	0.05
19:47	295.8	42.3	0.1	10.56	6.75	1606.5	3.24	1499.9	0.04
19:48	294.2	43.0	0.1	10.57	6.76	1611.4	3.28	1503.3	0.05
19:49	290.2	42.8	0.0	10.65	6.72	1628.8	3.30	1504.7	0.05
19:50	285.8	42.0	0.0	10.76	6.68	1641.8	3.55	1501.2	0.06
19:51	284.5	42.3	0.0	10.74	6.69	1631.4	3.24	1507.5	0.06

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19:52	286.1	42.3	0.1	10.67	6.72	1627.3	3.13	1508.8	0.06
19:53	286.1	42.0	-0.1	10.70	6.70	1626.5	3.01	1508.9	0.05
19:54	280.8	41.7	-0.1	10.76	6.67	1628.9	2.96	1506.7	0.05
19:55	279.9	41.3	-0.0	10.82	6.63	1631.6	2.98	1509.4	0.06
19:56	280.1	41.4	0.1	10.79	6.66	1637.4	3.14	1509.4	0.06
19:57	276.7	40.3	0.0	11.04	6.52	1637.9	3.17	1513.4	0.06
19:58	266.5	37.6	-0.0	11.44	6.18	1640.2	3.31	1512.4	0.06
19:59	263.8	39.0	0.1	11.61	6.07	1638.8	3.06	1516.4	0.07
20:00	259.2	40.1	0.0	11.59	6.12	1639.5	3.12	1517.6	0.07
AVERAGE VALUES FOR THE LAST 15 MINUTES									
20:00	282.3	41.3	0.0	10.87	6.58	1628.7	3.18	1507.7	0.06
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
20:00	322.4	38.3	-0.2	9.89	7.09	1560.7	2.25	1488.8	0.04
20:01	266.2	43.1	0.0	11.29	6.32	1640.0	3.01	1519.1	0.07
20:02	285.6	46.9	0.1	10.93	6.49	1641.1	3.06	1522.4	0.06
20:03	292.8	50.6	0.1	10.53	6.71	1641.1	2.98	1526.6	0.06
20:04	320.2	59.0	0.1	9.76	7.22	1643.8	3.16	1531.4	0.06
20:05	311.7	47.1	0.1	10.45	6.76	1644.1	3.17	1541.3	0.07
20:06	299.9	45.6	0.1	10.82	6.52	1646.0	3.30	1541.7	0.06
20:07	283.0	44.2	0.1	11.17	6.30	1647.6	3.38	1538.0	0.06
20:08	278.0	44.6	0.2	11.20	6.34	1649.5	3.49	1538.3	0.07
20:09	295.1	50.1	0.2	10.91	6.48	1650.3	3.44	1543.1	0.08
20:10	302.5	55.0	0.2	10.76	6.54	1649.4	3.25	1549.3	0.08
20:11	326.0	63.8	0.3	10.07	6.98	1650.9	3.31	1558.7	0.08
20:12	335.5	62.8	0.3	10.18	6.93	1652.8	3.39	1562.8	0.05
20:13	310.9	55.7	0.3	10.76	6.59	1652.5	3.08	1565.8	0.07
20:14	298.1	54.1	0.4	11.07	6.37	1650.9	3.82	1571.1	0.06
20:15	284.5	53.8	0.4	11.30	6.24	1653.9	3.79	1570.6	0.07
AVERAGE VALUES FOR THE LAST 15 MINUTES									
20:15	299.3	51.8	0.2	10.75	6.59	1647.6	3.31	1545.3	0.07
20:16	297.9	55.3	0.4	10.81	6.54	1652.5	3.72	1573.3	0.06
20:17	320.6	60.0	0.3	10.40	6.72	1651.7	4.33	1577.2	0.06
20:18	330.8	68.3	0.4	10.07	6.89	1652.0	4.30	1584.9	0.06
20:19	353.7	78.7	0.7	9.49	7.29	1651.7	4.19	1598.5	0.08
20:20	341.4	77.6	0.4	10.01	6.95	1650.7	4.59	1600.7	0.07
20:21	319.1	74.5	0.4	10.45	6.68	1649.2	4.03	1603.3	0.10
20:22	312.6	77.9	0.3	10.45	6.70	1647.4	3.97	1602.0	0.09
20:23	310.8	77.0	0.3	10.54	6.64	1646.2	3.92	1601.8	0.10
20:24	319.0	79.6	0.5	10.21	6.82	1645.2	3.82	1602.9	0.08
20:25	335.8	83.6	0.6	9.93	6.89	1643.2	3.31	1608.8	0.09
20:26	347.9	91.2	0.6	9.62	7.06	1641.2	3.75	1614.5	0.09
20:27	366.1	102.5	0.7	9.10	7.46	1639.3	3.43	1626.1	0.11
20:28	348.2	97.2	0.7	9.75	7.02	1638.4	3.61	1623.4	0.10
20:29	346.1	99.8	0.7	9.43	7.21	1637.8	3.66	1622.7	0.10
20:30	327.6	93.3	0.7	10.17	6.74	1636.9	3.44	1622.2	0.08
AVERAGE VALUES FOR THE LAST 15 MINUTES									
20:30	331.8	81.1	0.5	10.03	6.91	1645.6	3.87	1604.2	0.08

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20:31	320.1	93.9	0.7	10.40	6.55	1635.0	3.26	1623.0	0.08
20:32	322.5	97.0	0.8	10.06	6.79	1633.5	3.22	1623.7	0.08
20:33	322.5	96.4	0.8	10.15	6.75	1631.1	3.07	1625.6	0.08
20:34	344.2	102.0	0.9	9.68	6.95	1630.5	3.12	1628.2	0.08
20:35	347.0	108.0	0.8	9.38	7.10	1630.1	2.96	1631.5	0.07
20:36	363.1	116.2	0.8	8.68	7.52	1628.7	3.04	1635.7	0.08
20:37	418.8	124.5	0.7	8.05	7.89	1628.5	3.33	1641.2	0.08
20:38	420.6	116.6	0.8	8.13	7.81	1629.0	3.70	1640.3	0.08
20:39	390.3	114.4	0.9	8.29	7.69	1628.2	3.66	1638.4	0.08
20:40	386.6	112.1	0.9	8.30	7.69	1627.4	3.28	1638.1	0.08
20:41	384.3	110.3	1.0	8.31	7.67	1626.9	3.85	1639.4	0.10
20:42	379.3	109.5	1.2	8.47	7.56	1626.4	3.67	1639.3	0.10
20:43	375.6	109.4	1.0	8.58	7.49	1624.6	3.54	1637.3	0.10
20:44	373.3	109.0	0.9	8.63	7.45	1623.5	3.26	1635.8	0.09
20:45	371.4	108.4	1.0	8.69	7.40	1622.9	3.32	1634.8	0.09
AVERAGE VALUES FOR THE LAST 15 MINUTES									
20:45	368.0	108.5	0.9	8.92	7.35	1628.4	3.35	1634.2	0.09
20:46	370.0	108.0	1.2	8.81	7.33	1622.4	3.30	1632.5	0.09
20:47	363.3	106.8	1.4	8.87	7.30	1621.2	3.63	1632.7	0.09
20:48	363.2	105.8	1.5	8.80	7.31	1620.1	3.52	1631.8	0.09
20:49	357.2	104.0	1.5	8.99	7.19	1619.3	3.66	1630.2	0.09
20:50	352.3	101.9	1.6	9.21	7.06	1617.8	3.33	1628.3	0.09
20:51	352.6	101.2	1.6	9.22	7.03	1616.9	3.49	1627.1	0.09
20:52	348.1	99.8	1.7	9.31	6.97	1615.5	3.32	1625.7	0.09
20:53	340.7	100.4	1.8	9.41	6.91	1614.2	3.09	1624.5	0.08
20:54	336.6	100.1	1.8	9.54	6.84	1612.9	3.01	1622.4	0.09
20:55	334.9	99.5	1.9	9.47	6.87	1612.0	3.20	1623.5	0.09
20:56	334.1	98.6	2.0	9.57	6.81	1610.8	2.93	1620.8	0.08
20:57	331.4	99.1	2.1	9.64	6.78	1610.6	3.11	1619.1	0.08
20:58	331.1	97.9	2.2	9.59	6.79	1609.5	3.02	1620.2	0.08
20:59	328.8	97.3	2.3	9.66	6.75	1608.9	3.12	1620.8	0.09
21:00	326.9	96.9	2.2	9.68	6.73	1607.8	3.25	1619.6	0.09
AVERAGE VALUES FOR THE LAST 15 MINUTES									
21:00	344.8	101.2	1.8	9.32	6.98	1614.7	3.26	1625.3	0.09
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
21:00	336.0	85.6	0.8	9.75	6.96	1634.1	3.45	1602.2	0.08

COMMENTS: INTERUPT FOR SYSTEM CALIBRATION

End I-2-54-CEM-2

ENTROPY

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: SYSTEM CALIBRATION

DATE : 10-30-1991 TIME: 21:01 - 21:12

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	4.3
7	Unit 4	ppmSO2	241.0	235.0
9	Unit 4	ppmNOx	0.0	0.5
9	Unit 4	ppmNOx	141.5	137.3
8	Unit 4	ppmCO	0.0	1.7
8	Unit 4	ppmCO	30.0	32.3
5	Unit 4	% O2	0.00	0.08
5	Unit 4	% O2	12.50	12.21
6	Unit 4	% CO2	0.00	-0.01
6	Unit 4	% CO2	11.06	10.69

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
21:16	302.3	89.3	1.7	10.20	6.32	1593.2	2.85	1606.1	0.07
21:17	292.2	89.4	1.6	10.27	6.30	1591.4	2.86	1603.3	0.06
21:18	291.2	90.4	1.6	10.15	6.37	1591.0	2.93	1603.2	~~0.07~~
21:19	293.0	91.2	1.5	10.14	6.38	1590.6	2.95	1602.0	~~0.00~~
21:20	292.7	91.1	1.2	10.18	6.35	1589.7	2.91	1602.0	~~0.05~~
21:21	292.3	91.2	1.2	10.17	6.36	1588.1	2.84	1601.8	0.06
21:22	291.1	89.8	1.2	10.28	6.32	1586.6	2.72	1601.0	0.06
21:23	288.4	88.8	1.2	10.32	6.29	1585.8	2.72	1600.9	0.06
21:24	290.3	88.2	1.2	10.14	6.42	1584.4	2.66	1598.4	0.06
21:25	297.7	85.3	1.2	9.98	6.50	1583.4	~~0.76~~	1597.0	0.06
21:26	302.2	89.5	1.2	9.78	6.64	1583.1	~~-4.00~~	1595.1	0.06
21:27	308.7	90.9	1.1	9.69	6.69	1582.6	~~-0.98~~	1593.6	0.06
21:28	310.5	90.7	1.1	9.74	6.69	1581.9	2.79	1592.8	0.06
21:29	312.8	90.1	1.1	9.71	6.68	1581.8	2.92	1592.3	0.07
21:30	313.4	90.8	1.1	9.70	6.71	1581.8	2.85	1591.7	0.07
AVERAGE VALUES FOR THE LAST 15 MINUTES									
21:30	298.6	89.8	1.3	10.03	6.47	1586.4	~~1.99~~	1598.7	~~0.06~~
21:31	316.3	90.4	1.2	9.66	6.71	1581.8	2.93	1589.8	0.07
21:32	317.7	90.2	1.1	9.73	6.68	1580.6	2.75	1588.6	0.06
21:33	317.0	89.1	1.0	9.77	6.66	1579.0	2.57	1587.8	0.07
21:34	313.5	89.4	1.0	9.84	6.62	1577.8	2.22	1586.7	0.07
21:35	310.4	88.4	1.0	9.93	6.57	1577.8	2.30	1586.5	0.07
21:36	310.0	88.2	0.9	9.91	6.60	1576.6	2.18	1584.8	0.06
21:37	308.2	88.0	0.7	8.79*	6.58	1576.3	2.24	1584.5	0.07
21:38	308.3	87.7	1.0	9.43	6.58	1576.4	2.50	1582.4	0.07
21:39	307.6	87.1	1.0	9.59	6.58	1574.7	2.26	1580.0	0.07
21:40	306.0	86.5	1.1	9.68	6.55	1575.5	2.30	1581.0	0.07
21:41	305.6	85.5	1.0	9.79	6.51	1576.2	2.66	1581.5	0.07
21:42	302.9	85.5	1.0	9.85	6.49	1576.1	2.64	1579.8	0.07
21:43	303.7	84.6	1.1	9.90	6.48	1575.9	2.70	1580.6	0.07
21:44	303.0	84.6	0.9	9.93	6.48	1575.6	2.51	1580.9	0.07
21:45	302.3	84.6	1.0	9.88	6.51	1575.5	2.59	1579.6	0.07
AVERAGE VALUES FOR THE LAST 15 MINUTES									
21:45	308.8	87.3	1.0	9.71	6.57	1577.0	2.49	1583.6	0.07
21:46	302.0	84.6	0.9	9.88	6.52	1574.0	2.62	1579.9	0.06
21:47	304.2	83.7	0.9	9.93	6.50	1573.5	2.36	1579.3	0.05
21:48	301.7	83.4	0.8	9.98	6.47	1571.1	2.09	1578.8	0.06
21:49	301.7	83.4	0.8	9.99	6.48	1571.3	2.27	1579.0	0.06
21:50	303.4	83.0	0.7	10.02	6.47	1571.6	2.49	1579.0	0.07
21:51	302.9	82.7	0.7	10.06	6.44	1572.6	2.80	1577.6	0.06
21:52	301.0	82.2	0.7	10.14	6.42	1572.6	2.77	1577.6	0.06
21:53	298.0	81.4	0.6	10.15	6.39	1572.6	2.84	1576.7	0.06
21:54	297.7	81.2	0.8	10.15	6.40	1571.4	2.52	1575.5	0.05
21:55	297.8	81.5	0.6	10.15	6.41	1570.8	2.61	1575.1	0.05
21:56	298.0	80.7	0.8	10.15	6.42	1572.4	2.45	1574.9	0.05
21:57	297.8	81.3	0.7	10.16	6.41	1573.5	2.47	1573.6	0.04
21:58	298.1	80.9	0.7	10.15	6.40	1569.3	2.19	1571.8	0.04
21:59	304.5	75.5	0.8	9.78	6.68	1566.5	2.34	1567.5	0.04
22:00	350.2	59.7	1.3	8.22	7.60	1565.3	2.42	1562.7	0.04

Berger Run
11-2-54-cam-2

ENTROPY

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST 15 MINUTES									
22:00	303.9	80.4	0.8	9.93	6.53	1571.2	2.48	1575.3	0.05
AVERAGE VALUES FOR THE LAST HOUR: 45 MINUTES OF VALID DATA									
22:00	303.8	85.8	1.0	9.89	6.53	1578.2	2.32	1585.9	0.06
22:01	373.0	56.3	0.9	7.96	7.73	1563.8	2.23	1556.3	0.04
22:02	368.2	55.5	1.0	8.01	7.72	1563.1	2.22	1554.0	0.04
22:03	374.5	55.0	1.0	7.93	7.75	1562.4	2.09	1552.3	0.03
22:04	377.1	54.7	1.1	7.91	7.76	1562.7	2.25	1551.0	0.04
22:05	375.4	56.0	1.1	8.02	7.70	1563.1	2.49	1551.0	0.03
22:06	373.0	56.6	1.5	7.92	7.75	1563.7	2.59	1552.0	0.04
22:07	377.6	57.5	1.5	7.91	7.74	1563.6	2.47	1552.6	0.05
22:08	379.7	56.9	1.8	7.94	7.75	1563.4	2.27	1550.7	0.05
22:09	378.1	56.8	1.6	8.03	7.71	1561.7	2.36	1551.1	0.05
22:10	375.2	56.1	1.8	8.00	7.71	1561.4	2.43	1551.7	0.05
22:11	378.0	55.5	1.5	8.00	7.72	1560.5	2.29	1551.4	0.04
22:12	380.7	55.4	1.5	7.96	7.76	1560.4	2.42	1551.6	0.04
22:13	378.7	55.5	1.6	7.96	7.74	1560.5	2.16	1551.6	0.04
22:14	377.3	55.0	1.4	7.99	7.74	1561.2	2.32	1552.1	0.04
22:15	377.6	55.1	1.4	8.03	7.71	1560.3	2.35	1551.2	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
22:15	376.3	55.9	1.4	7.97	7.73	1562.1	2.33	1552.0	0.04
22:16	377.3	55.0	1.4	8.04	7.72	1560.0	2.15	1551.2	0.05
22:17	376.7	54.7	1.5	8.01	7.73	1559.8	2.17	1551.8	0.05
22:18	374.0	54.3	1.4	8.01	7.72	1559.0	2.24	1551.7	0.04
22:19	377.5	54.1	1.1	7.92	7.78	1560.0	2.51	1553.9	0.04
22:20	376.8	54.5	1.4	7.90	7.80	1559.5	2.05	1554.6	0.04
22:21	379.8	55.1	1.5	7.80	7.89	1558.9	1.97	1557.6	0.05
22:22	384.1	54.3	1.5	7.78	7.89	1558.8	2.17	1562.3	0.04
22:23	387.3	55.5	1.5	7.82	7.87	1557.7	1.96	1566.2	0.04
22:24	383.2	55.8	1.5	7.84	7.86	1557.5	2.28	1565.9	0.04
22:25	383.3	55.8	1.4	7.88	7.82	1558.1	1.85	1563.6	0.04
22:26	380.6	56.2	1.5	7.95	7.77	1558.6	2.16	1561.7	0.04
22:27	377.1	55.7	1.5	8.08	7.69	1558.5	1.92	1560.1	0.05
22:28	367.6	55.4	1.4	8.13	7.68	1558.1	1.68	1559.3	0.05
22:29	370.3	56.2	1.3	8.08	7.68	1557.5	1.62	1560.2	0.04
22:30	373.7	56.1	1.2	8.01	7.74	1557.6	1.85	1561.2	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
22:30	377.9	55.3	1.4	7.95	7.78	1558.6	2.04	1558.7	0.04
22:31	369.1	56.0	1.3	8.36	7.51	1556.9	1.93	1569.8	0.04
22:32	356.7	57.3	1.2	8.60	7.38	1557.6	2.16	1576.0	0.05
22:33	341.8	55.0	1.1	9.06	7.12	1558.8	2.18	1585.4	0.04
22:34	342.9	52.4	1.3	8.65	7.40	1557.9	1.93	1578.2	0.04
22:35	368.2	55.3	1.3	7.95	7.77	1557.4	1.88	1566.1	0.04
22:36	366.2	55.8	1.1	8.05	7.72	1557.5	1.53	1559.8	0.04
22:37	366.5	56.0	1.0	8.01	7.74	1557.4	1.84	1556.2	0.04
22:38	366.3	56.2	1.2	7.98	7.73	1557.4	2.04	1553.6	0.04
22:39	367.4	56.2	1.2	8.04	7.72	1555.7	1.93	1551.5	0.03

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
22:40	367.2	56.5	1.2	8.00	7.71	1553.6	1.78	1550.2	0.03
22:41	362.5	56.0	1.1	7.97	7.73	1553.9	2.07	1548.8	0.03
22:42	372.1	55.2	1.2	7.90	7.77	1553.5	1.93	1548.3	0.03
22:43	371.1	55.3	1.1	7.93	7.74	1552.9	1.79	1547.9	0.04
22:44	370.3	55.1	1.2	7.93	7.72	1552.7	2.01	1546.8	0.04
22:45	369.7	55.3	1.1	7.97	7.70	1553.9	2.24	1546.3	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
22:45	363.9	55.6	1.2	8.16	7.63	1555.8	1.95	1559.0	0.04
22:46	372.2	55.0	1.0	7.89	7.74	1554.2	2.22	1545.1	0.02
22:47	374.9	55.0	1.1	7.83	7.78	1552.8	1.89	1544.2	0.02
22:48	378.7	54.8	1.0	7.72	7.85	1551.3	1.89	1543.9	0.03
22:49	378.4	54.4	1.0	7.77	7.82	1552.0	1.95	1545.2	0.03
22:50	377.7	54.7	1.0	7.75	7.83	1551.0	1.84	1545.4	0.03
22:51	375.2	54.5	1.0	7.76	7.83	1550.0	1.75	1545.2	0.03
22:52	372.8	54.2	1.1	7.80	7.80	1551.2	2.10	1543.8	0.02
22:53	371.6	54.7	1.2	7.85	7.77	1550.9	2.04	1543.9	0.03
22:54	371.5	54.4	1.0	7.90	7.74	1548.6	1.92	1544.2	0.03
22:55	375.0	54.2	0.9	7.90	7.74	1548.3	2.11	1543.9	0.03
22:56	381.5	54.5	0.9	7.85	7.77	1547.9	1.89	1543.9	0.03
22:57	381.3	54.2	0.9	7.88	7.76	1547.7	1.68	1544.4	0.03
22:58	375.5	54.3	0.9	7.97	7.71	1546.7	1.88	1543.8	0.04
22:59	372.5	54.4	0.9	8.00	7.69	1545.5	1.61	1543.9	0.04
23:00	369.3	54.3	0.7	8.05	7.68	1544.5	1.53	1542.7	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
23:00	375.2	54.5	1.0	7.86	7.77	1549.5	1.89	1544.2	0.03
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
23:00	373.3	55.3	1.2	7.99	7.73	1556.5	2.05	1553.5	0.04
23:01	369.7	54.2	0.6	8.03	7.70	1542.2	1.86	1541.5	0.02
23:02	372.7	54.3	0.6	7.98	7.74	1542.7	1.94	1541.2	0.03
23:03	371.9	53.9	0.5	7.96	7.76	1544.4	2.09	1542.1	0.03
23:04	370.8	53.8	0.4	7.96	7.78	1544.8	1.81	1542.0	0.03
23:05	369.0	53.6	0.4	7.97	7.77	1543.7	1.67	1542.8	0.04
23:06	367.4	54.0	0.4	8.10	7.71	1543.2	1.79	1542.7	0.03
23:07	369.4	53.4	0.3	8.06	7.72	1543.7	2.04	1541.7	0.03
23:08	372.0	53.7	0.3	8.02	7.76	1542.5	1.88	1540.3	0.02
23:09	372.8	53.5	0.3	8.02	7.75	1541.4	1.59	1540.0	0.02
23:10	371.1	53.6	0.3	7.97	7.78	1539.3	1.48	1539.6	0.02
23:11	369.9	53.3	0.3	7.99	7.77	1540.6	1.77	1540.7	0.03
23:12	370.7	53.3	0.4	8.02	7.76	1542.2	1.63	1541.6	0.04
23:13	370.3	53.4	0.3	8.12	7.71	1540.5	1.63	1540.6	0.03
23:14	371.1	53.3	0.4	8.05	7.75	1540.8	1.85	1539.6	0.02
23:15	370.7	52.8	0.4	8.05	7.75	1541.8	1.98	1540.0	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
23:15	370.6	53.6	0.4	8.02	7.75	1542.3	1.80	1541.1	0.03
23:16	370.5	53.3	0.3	8.01	7.76	1541.9	1.91	1539.3	0.03
23:17	371.6	52.9	0.3	8.05	7.77	1541.3	1.98	1539.2	0.02
23:18	372.7	52.9	0.3	8.06	7.76	1540.8	1.88	1538.8	0.02

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
23:19	371.5	52.8	0.2	8.07	7.77	1540.2	1.82	1539.3	0.03
23:20	371.0	52.9	0.2	8.03	7.78	1541.4	1.95	1539.5	0.03
23:21	369.4	52.6	0.1	8.09	7.75	1541.2	1.60	1540.4	0.04
23:22	366.1	52.4	0.1	8.20	7.70	1541.2	2.04	1540.0	0.03
23:23	368.2	52.3	0.2	8.16	7.73	1542.6	2.14	1540.0	0.03
23:24	372.0	52.3	0.1	8.13	7.76	1542.6	1.79	1539.2	0.03
23:25	374.0	52.2	0.0	8.15	7.75	1541.9	1.91	1539.5	0.03
23:26	374.0	52.1	0.1	8.16	7.74	1541.4	1.92	1539.5	0.03
23:27	373.1	52.2	0.1	8.16	7.75	1541.7	1.96	1539.5	0.03
23:28	372.6	52.3	0.0	8.13	7.76	1540.6	1.84	1539.1	0.03
23:29	370.1	52.2	0.1	8.20	7.73	1540.6	1.95	1539.3	0.03
23:30	371.0	52.1	0.0	8.19	7.75	1540.1	1.74	1539.6	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
23:30	371.2	52.5	0.1	8.12	7.75	1541.3	1.90	1539.5	0.03
23:31	369.6	51.8	0.0	8.25	7.72	1539.1	1.69	1540.1	0.04
23:32	365.6	51.9	0.2	8.37	7.67	1537.8	1.51	1539.8	0.04
23:33	362.8	51.7	-0.0	8.41	7.64	1538.3	1.63	1538.9	0.04
23:34	362.6	51.9	0.0	8.41	7.64	1539.5	1.42	1538.8	0.04
23:35	362.8	51.4	-0.1	8.44	7.64	1540.7	1.74	1538.2	0.04
23:36	364.4	51.3	-0.1	8.43	7.66	1542.7	2.13	1537.3	0.02
23:37	367.6	51.4	-0.1	8.34	7.69	1542.4	1.73	1537.3	0.03
23:38	365.3	51.1	-0.0	8.47	7.63	1541.9	1.58	1536.5	0.04
23:39	363.4	51.0	-0.1	8.51	7.62	1541.3	1.50	1537.4	0.04
23:40	360.7	50.9	-0.1	8.59	7.58	1540.6	1.55	1537.6	0.04
23:41	359.4	50.7	-0.1	8.62	7.55	1540.6	1.55	1537.1	0.04
23:42	357.6	50.8	-0.1	8.67	7.55	1541.2	1.51	1535.7	0.04
23:43	356.5	50.3	-0.1	8.66	7.55	1542.3	2.01	1536.2	0.04
23:44	354.2	50.7	-0.1	8.65	7.57	1541.3	1.77	1535.8	0.03
23:45	355.9	50.4	-0.1	8.64	7.57	1540.4	1.92	1535.8	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
23:45	361.9	51.2	-0.1	8.50	7.62	1540.7	1.68	1537.5	0.04
23:46	360.0	50.7	-0.2	8.58	7.62	1539.7	1.81	1535.6	0.04
23:47	359.7	50.3	-0.1	8.57	7.63	1540.1	1.80	1535.3	0.04
23:48	356.8	50.1	-0.1	8.61	7.62	1540.2	1.71	1536.5	0.03
23:49	360.5	50.3	-0.2	8.31	7.70	1540.5	1.88	1534.7	0.03
23:50	363.3	50.3	-0.2	8.40	7.73	1539.3	1.85	1533.7	0.03
23:51	363.5	50.4	-0.2	8.41	7.74	1539.6	2.03	1534.5	0.03
23:52	366.1	50.5	-0.2	8.34	7.77	1539.9	1.71	1534.7	0.03
23:53	365.1	50.6	-0.2	8.36	7.76	1539.3	1.83	1534.5	0.02
23:54	365.5	50.4	-0.2	8.34	7.78	1540.3	1.87	1535.0	0.03
23:55	364.3	50.5	-0.1	8.39	7.75	1540.0	1.65	1535.5	0.04
23:56	361.3	50.4	-0.1	8.55	7.66	1540.2	1.71	1535.1	0.04
23:57	360.1	50.3	-0.2	8.60	7.64	1540.8	1.73	1534.7	0.04
23:58	358.6	50.4	-0.1	8.61	7.64	1543.9	2.16	1530.4	0.03
23:59	360.8	49.9	-0.2	8.51	7.68	1544.2	2.31	1534.9	0.03
24:00	362.9	49.9	-0.2	8.42	7.73	1544.6	1.83	1535.2	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
24:00	361.9	50.4	-0.2	8.47	7.70	1540.8	1.86	1534.7	0.03

Jewell Coal & Coke Engineering 10-30-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
24:00	366.4	51.9	0.1	8.28	7.70	1541.3	1.81	1538.2	0.03
00:01	362.4	50.5	-0.2	8.50	7.70	1544.0	1.60	1535.3	0.03
00:02	357.9	50.3	-0.1	8.57	7.66	1544.4	1.49	1535.7	0.04
00:03	357.9	50.4	-0.1	8.64	7.66	1545.5	1.28	1534.9	0.04
00:04	356.0	49.9	-0.1	8.64	7.64	1546.3	1.42	1534.4	0.04
00:05	354.9	49.6	-0.2	8.55	7.67	1546.3	1.41	1534.7	0.04
00:06	353.2	49.4	-0.2	8.56	7.66	1545.2	1.38	1534.2	0.04
00:07	354.0	49.5	-0.1	8.58	7.65	1545.9	1.24	1533.8	0.04
00:08	354.3	49.7	-0.1	8.54	7.71	1545.7	1.15	1532.4	0.04
00:09	357.0	49.5	-0.1	8.52	7.73	1546.4	1.06	1533.8	0.04
00:10	358.9	49.2	-0.2	8.49	7.76	1544.0	1.14	1534.3	0.04
00:11	360.2	49.4	-0.1	8.47	7.80	1543.8	1.38	1534.7	0.03
00:12	359.2	49.4	-0.2	8.48	7.77	1545.2	0.94	1535.4	0.04
00:13	358.6	49.5	-0.1	8.47	7.80	1545.2	0.76	1536.6	0.04
00:14	356.9	49.5	-0.2	8.48	7.78	1546.2	0.68	1537.3	0.04
00:15	361.0	49.8	-0.2	8.35	7.85	1547.3	0.80	1538.3	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
00:15	357.5	49.7	-0.1	8.52	7.72	1545.4	1.18	1535.0	0.04
00:16	364.2	50.3	-0.3	8.36	7.88	1548.2	1.30	1539.0	0.03
00:17	363.2	50.7	-0.2	8.30	7.91	1546.6	1.63	1538.4	0.03
00:18	361.0	50.5	-0.2	8.37	7.87	1547.1	1.31	1539.5	0.04
00:19	362.7	50.5	-0.2	8.35	7.88	1546.8	0.90	1540.0	0.04
00:20	361.7	50.1	-0.2	8.48	7.81	1546.7	0.73	1540.9	0.04
00:21	361.7	50.3	-0.3	8.48	7.81	1546.6	0.72	1539.3	0.04
00:22	361.1	50.4	-0.2	8.46	7.84	1547.1	0.81	1540.4	0.04
00:23	358.0	50.3	-0.3	8.43	7.84	1548.1	1.77	1540.5	0.03
00:24	361.3	50.7	-0.3	8.41	7.88	1548.3	1.19	1540.8	0.03
00:25	359.1	50.5	-0.3	8.39	7.87	1548.7	0.78	1541.5	0.04
00:26	356.0	50.3	-0.3	8.47	7.82	1548.0	0.87	1542.2	0.03
00:27	354.9	50.6	-0.3	8.42	7.84	1547.9	1.35	1541.4	0.03
00:28	358.9	50.5	-0.3	8.34	7.91	1545.4	1.70	1540.3	0.03
00:29	358.0	50.6	-0.2	8.46	7.83	1545.4	1.59	1540.6	0.03
00:30	357.5	50.5	-0.3	8.44	7.84	1544.6	1.71	1539.9	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
00:30	360.0	50.5	-0.3	8.41	7.86	1547.0	1.22	1540.3	0.03
00:31	360.3	50.4	-0.3	8.40	7.87	1543.8	1.62	1540.2	0.03
00:32	358.0	50.5	-0.3	8.41	7.84	1543.9	1.46	1539.9	0.03
00:33	356.8	50.6	-0.3	8.41	7.86	1543.7	1.32	1539.5	0.02
00:34	357.1	50.8	-0.3	8.41	7.86	1543.6	1.70	1539.1	0.03
00:35	359.7	50.9	-0.3	8.36	7.88	1543.5	1.40	1539.8	0.03
00:36	361.0	51.0	-0.3	8.45	7.84	1543.5	1.49	1540.4	0.03
00:37	360.5	51.0	-0.2	8.42	7.85	1542.5	1.33	1540.3	0.03
00:38	357.0	51.1	-0.2	8.46	7.80	1542.9	1.61	1539.8	0.03
00:39	355.6	51.0	-0.2	8.47	7.80	1545.0	1.60	1539.4	0.03
00:40	358.3	51.1	-0.2	8.43	7.83	1545.2	1.55	1539.7	0.03
00:41	358.0	50.9	-0.2	8.45	7.83	1544.6	1.49	1539.9	0.03
00:42	354.8	51.0	-0.2	8.51	7.79	1542.8	1.53	1540.2	0.03
00:43	354.5	51.1	-0.2	8.54	7.76	1542.1	1.50	1539.4	0.03

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
00:44	351.6	50.8	-0.2	8.61	7.72	1541.3	1.48	1539.3	0.03
00:45	351.7	50.9	-0.1	8.60	7.73	1540.7	1.50	1539.8	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
00:45	357.0	50.9	-0.2	8.46	7.82	1543.3	1.51	1539.8	0.03
00:46	353.7	50.9	-0.1	8.56	7.76	1541.9	1.46	1539.4	0.03
00:47	352.2	50.9	-0.2	8.66	7.70	1541.0	1.73	1538.5	0.03
00:48	350.9	50.8	-0.2	8.74	7.65	1540.6	1.61	1537.9	0.03
00:49	351.5	50.7	-0.3	8.68	7.71	1540.6	1.65	1538.6	0.03
00:50	355.2	50.8	-0.2	8.67	7.71	1539.1	1.39	1538.3	0.03
00:51	353.3	50.8	-0.2	8.70	7.68	1539.2	1.62	1538.3	0.03
00:52	353.8	50.7	-0.2	8.65	7.72	1539.4	1.45	1539.1	0.03
00:53	352.2	50.9	-0.1	8.66	7.70	1538.2	1.52	1539.3	0.03
00:54	350.3	50.7	-0.2	8.71	7.67	1537.0	1.42	1538.8	0.03
00:55	349.6	50.7	-0.3	8.72	7.68	1537.5	0.76	1539.4	0.03
00:56	351.5	50.8	-0.2	8.72	7.67	1536.1	1.54	1538.9	0.03
00:57	348.2	50.3	-0.1	8.69	7.69	1534.4	1.44	1538.1	0.03
00:58	348.9	50.5	-0.1	8.76	7.64	1534.4	1.46	1537.4	0.03
00:59	345.6	49.8	-0.1	8.99	7.49	1534.5	1.38	1536.2	0.04
01:00	341.7	50.4	-0.1	8.87	7.58	1534.0	1.53	1535.2	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
01:00	350.6	50.6	-0.2	8.72	7.67	1537.9	1.47	1538.2	0.03
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
01:00	356.3	50.4	-0.2	8.53	7.77	1543.4	1.34	1538.3	0.03
01:01	348.3	50.7	-0.1	8.73	7.65	1534.4	1.34	1536.9	0.03
01:02	350.0	51.0	-0.0	8.74	7.65	1533.8	1.33	1537.5	0.03
01:03	348.0	51.0	-0.1	8.77	7.63	1533.2	1.38	1537.3	0.03
01:04	347.5	51.4	-0.1	8.78	7.63	1532.9	1.56	1537.0	0.03
01:05	346.5	50.8	-0.2	8.84	7.58	1532.9	1.39	1538.1	0.03
01:06	345.9	51.0	-0.2	8.75	7.64	1532.3	1.46	1539.0	0.03
01:07	347.3	51.1	-0.1	8.71	7.65	1533.0	1.62	1539.0	0.03
01:08	348.1	51.0	-0.1	8.74	7.64	1532.9	1.51	1539.1	0.03
01:09	347.8	51.1	-0.1	8.75	7.64	1532.7	1.33	1538.4	0.03
01:10	346.8	51.1	-0.1	8.76	7.63	1532.1	1.51	1538.7	0.03
01:11	344.4	50.7	-0.1	8.85	7.58	1531.0	1.57	1537.7	0.03
01:12	343.9	50.9	-0.1	8.80	7.61	1529.9	1.51	1537.4	0.03
01:13	343.8	50.9	0.0	8.82	7.59	1529.7	1.07	1537.5	0.03
01:14	343.2	50.7	-0.0	8.92	7.59	1531.2	1.19	1537.4	0.03
01:15	342.0	50.7	-0.0	8.84	7.59	1532.9	1.03	1537.4	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
01:15	346.2	50.9	-0.1	8.79	7.62	1532.3	1.39	1537.9	0.03
01:16	344.0	50.8	-0.1	8.80	7.60	1533.3	1.25	1537.4	0.03
01:17	346.1	50.9	-0.1	8.79	7.61	1532.4	1.45	1537.2	0.03
01:18	346.5	50.7	-0.0	8.80	7.61	1531.3	1.54	1536.3	0.02
01:19	348.2	50.7	0.0	8.78	7.59	1530.3	1.08	1537.2	0.03
01:20	346.1	50.8	-0.0	8.78	7.59	1530.8	1.20	1537.5	0.03
01:21	347.3	50.9	0.0	8.80	7.58	1531.6	1.38	1536.2	0.02
01:22	347.5	50.9	0.1	8.78	7.58	1529.9	1.39	1536.0	0.03

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
01:23	346.3	50.8	0.1	8.82	7.58	1529.9	1.16	1536.2	0.03
01:24	345.3	50.6	0.1	8.84	7.57	1530.2	1.45	1536.1	0.03
01:25	342.1	50.6	0.1	8.90	7.53	1531.0	1.35	1535.6	0.03
01:26	344.3	50.6	0.1	8.82	7.58	1531.2	1.14	1535.9	0.03
01:27	346.0	50.7	0.1	8.84	7.57	1531.2	1.63	1535.9	0.03
01:28	346.1	50.6	0.2	8.79	7.58	1529.9	1.52	1535.4	0.03
01:29	342.1	50.4	0.1	8.90	7.52	1530.5	1.42	1535.3	0.03
01:30	344.4	50.5	0.1	8.88	7.54	1532.4	1.13	1535.9	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
01:30	345.5	50.7	0.0	8.82	7.58	1531.1	1.34	1536.3	0.03
01:31	347.3	51.4	0.1	8.69	7.64	1534.1	1.18	1537.8	0.03
01:32	351.1	51.1	0.1	8.72	7.62	1531.7	1.53	1537.8	0.02
01:33	349.8	51.1	0.1	8.77	7.59	1532.2	1.25	1539.6	0.03
01:34	345.6	50.7	0.1	8.82	7.56	1533.0	1.21	1540.4	0.03
01:35	346.2	50.9	-0.0	8.79	7.57	1531.4	0.90	1540.9	0.03
01:36	347.6	50.8	0.1	8.75	7.60	1532.8	1.23	1539.3	0.02
01:37	349.5	50.6	0.0	8.78	7.59	1533.0	1.07	1540.6	0.03
01:38	348.1	50.8	-0.0	8.72	7.63	1532.9	1.10	1541.2	0.02
01:39	349.6	50.9	0.0	8.79	7.60	1535.3	1.45	1542.0	0.03
01:40	346.4	50.7	0.1	8.79	7.60	1535.5	1.32	1541.4	0.02
01:41	348.9	50.6	0.1	8.72	7.62	1534.1	0.92	1541.9	0.03
01:42	348.5	50.7	0.0	8.76	7.60	1534.4	1.50	1542.1	0.03
01:43	349.4	50.8	0.1	8.71	7.63	1534.9	1.23	1542.2	0.03
01:45	348.0	50.8	0.0	8.76	7.60	1533.7	1.24	1540.8	0.03
02:00	344.4	50.3	0.0	8.85	7.54	1533.5	1.22	1541.7	0.03
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
02:00	346.0	50.7	0.0	8.80	7.58	1532.6	1.30	1539.2	0.03
02:15	341.6	49.7	0.1	8.85	7.51	1533.7	1.15	1540.7	0.03
02:30	347.3	49.5	0.2	8.81	7.51	1534.3	1.10	1538.8	0.03
02:45	347.8	49.1	0.3	8.83	7.46	1533.0	1.11	1534.8	0.03
03:00	347.5	48.8	0.5	8.83	7.43	1530.6	1.18	1530.0	0.02
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
03:00	346.0	49.3	0.3	8.83	7.48	1532.9	1.13	1536.1	0.03
03:15	347.0	48.2	0.6	8.85	7.41	1527.1	1.07	1526.0	0.03

COMMENTS: INTERUPT FOR SYSTEM CALIBRATION

End II-2-54-CEM-2

ENTROPY

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: SYSTEM CALIBRATION

DATE : 10-31-1991 TIME: 03:16 - 03:29

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	3.1
7	Unit 4	ppmSO2	241.0	231.5
9	Unit 4	ppmNOx	0.0	0.2
9	Unit 4	ppmNOx	141.5	136.9
8	Unit 4	ppmCO	0.0	0.3
8	Unit 4	ppmCO	30.0	31.3
5	Unit 4	% O2	0.00	0.03
5	Unit 4	% O2	12.50	12.25
6	Unit 4	% CO2	0.00	-0.05
6	Unit 4	% CO2	11.06	10.70

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
03:33	353.6	47.4	1.1	8.73	7.46	1525.4	1.21	1520.7	0.03
03:34	352.3	47.7	1.0	8.71	7.47	1525.8	1.36	1520.5	0.02
03:35	350.3	47.6	1.0	8.66	7.48	1525.2	1.41	1520.1	0.03
03:36	346.4	47.7	0.9	8.76	7.45	1525.5	1.44	1519.7	0.03

Begin

III-2-54-CEM-2

COMMENTS: INTERUPT TO LOAD PRINTER

ENTROPY

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
03:41	354.2	47.6	0.8	8.71	7.47	1527.3	1.34	1519.2	0.03
03:42	354.9	47.7	0.7	8.66	7.48	1526.2	1.30	1519.1	0.02
03:43	354.9	47.4	0.8	8.73	7.46	1526.0	1.24	1518.9	0.03
03:44	354.7	47.3	0.6	8.72	7.46	1525.3	1.67	1518.9	0.02

COMMENTS: INTERUPT TO RESET AVG PERIODS

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
03:46	354.0	47.1	0.6	8.80	7.43	1523.5	1.21	1517.5	0.03
03:47	356.7	47.1	0.5	8.77	7.45	1525.3	0.99	1518.2	0.03
03:48	358.2	47.0	0.5	8.79	7.44	1528.0	0.78	1518.1	0.03
03:49	358.2	46.7	0.5	8.79	7.43	1526.2	1.00	1518.5	0.03
03:50	358.4	46.7	0.4	8.80	7.43	1527.3	0.75	1517.7	0.03
03:51	357.0	46.5	0.4	8.82	7.41	1526.1	0.86	1518.7	0.03
03:52	358.3	46.7	0.4	8.82	7.42	1527.6	0.92	1518.5	0.03
03:53	357.6	46.8	0.4	8.82	7.41	1527.7	0.72	1517.8	0.03
03:54	358.3	46.5	0.3	8.81	7.42	1528.0	1.03	1518.6	0.03
03:55	352.7	46.7	0.4	8.84	7.40	1529.5	1.04	1518.8	0.03
03:56	348.2	46.8	0.3	8.87	7.40	1527.2	1.00	1518.5	0.03
03:57	343.7	46.8	0.4	8.92	7.38	1528.8	1.24	1517.7	0.03
03:58	345.0	46.6	0.3	8.88	7.38	1526.9	0.90	1517.5	0.03
03:59	348.4	46.9	0.3	8.80	7.42	1526.5	1.02	1517.9	0.03
04:00	350.3	46.9	0.3	8.83	7.40	1526.4	1.14	1517.0	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
04:00	353.7	46.8	0.4	8.82	7.41	1527.0	0.97	1518.1	0.03
AVERAGE VALUES FOR THE LAST HOUR: 15 MINUTES OF VALID DATA									
04:00	353.7	46.8	0.4	8.82	7.41	1527.0	0.97	1518.1	0.03
04:01	350.7	47.0	0.3	8.76	7.43	1526.1	1.15	1516.7	0.02
04:02	354.2	47.0	0.2	8.76	7.44	1525.8	1.02	1516.7	0.03
04:03	354.1	47.0	0.2	8.77	7.43	1525.4	0.85	1517.4	0.03
04:04	353.2	46.9	0.1	8.83	7.41	1525.9	1.02	1516.5	0.02
04:05	352.2	46.6	0.1	8.86	7.38	1525.9	1.23	1516.9	0.02
04:06	349.6	46.4	0.1	8.89	7.37	1525.2	0.83	1517.4	0.03
04:07	348.2	46.3	0.1	8.87	7.37	1525.3	0.76	1517.0	0.03
04:08	347.9	46.4	0.1	8.86	7.37	1525.3	1.00	1516.3	0.03
04:09	348.2	46.2	0.0	8.86	7.38	1525.7	0.81	1516.3	0.03
04:10	350.0	46.6	0.1	8.84	7.39	1525.4	0.95	1516.3	0.03
04:11	351.2	46.9	-0.0	8.80	7.42	1525.2	0.99	1516.1	0.03
04:12	349.4	46.2	0.0	8.83	7.40	1525.9	1.02	1515.8	0.03
04:13	349.3	46.6	0.0	8.80	7.42	1525.9	0.98	1514.8	0.03
04:14	351.0	46.5	-0.1	8.78	7.41	1526.9	0.94	1514.7	0.03
04:15	349.5	46.6	-0.1	8.80	7.42	1526.9	0.95	1514.6	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
04:15	350.6	46.6	0.1	8.82	7.40	1525.8	0.97	1516.2	0.03
04:16	352.1	46.8	-0.1	8.76	7.43	1526.6	1.15	1514.6	0.02
04:17	351.4	46.5	-0.1	8.80	7.41	1525.5	1.11	1515.0	0.02
04:18	349.9	46.4	-0.2	8.79	7.42	1527.0	1.08	1514.7	0.02
04:19	347.2	46.2	-0.1	8.87	7.37	1526.7	0.63	1515.0	0.02
04:20	345.3	46.0	-0.1	8.94	7.35	1525.9	0.89	1515.5	0.03
04:21	345.7	46.2	-0.2	8.92	7.37	1526.4	0.88	1515.2	0.02
04:22	345.4	46.1	-0.3	8.88	7.38	1526.9	0.90	1514.7	0.02
04:23	345.3	45.9	-0.2	8.96	7.36	1526.1	0.63	1514.7	0.02
04:24	346.1	45.8	-0.3	8.99	7.34	1526.7	0.60	1514.7	0.03
04:25	345.7	45.8	-0.3	8.95	7.35	1526.6	0.47	1514.7	0.03
04:26	344.9	45.7	-0.4	9.01	7.31	1526.8	0.51	1514.5	0.03
04:27	346.7	45.7	-0.3	8.97	7.34	1527.7	0.88	1514.6	0.03
04:28	348.6	46.0	-0.3	8.91	7.39	1527.5	0.64	1516.2	0.03

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
04:29	349.7	45.8	-0.4	8.92	7.38	1527.8	1.11	1516.0	0.02
04:30	349.8	45.6	-0.3	8.85	7.43	1526.9	0.95	1516.4	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
04:30	347.6	46.0	-0.2	8.90	7.38	1526.7	0.83	1515.1	0.02
04:31	347.5	45.4	-0.4	8.91	7.39	1526.5	1.16	1517.6	0.03
04:32	348.2	45.5	-0.4	8.93	7.39	1526.1	1.01	1517.6	0.02
04:33	351.9	45.4	-0.4	8.94	7.39	1526.7	0.92	1518.4	0.02
04:34	347.8	45.3	-0.4	9.00	7.37	1526.9	1.27	1519.0	0.03
04:35	348.5	45.3	-0.5	8.91	7.40	1527.4	1.26	1519.6	0.03
04:36	349.9	45.7	-0.4	8.82	7.45	1527.9	0.82	1519.2	0.03
04:37	350.9	45.5	-0.4	8.90	7.42	1526.9	0.81	1518.4	0.02
04:38	351.2	45.6	-0.3	8.84	7.45	1526.9	0.96	1519.2	0.03
04:39	352.3	45.6	-0.3	8.83	7.44	1527.8	1.01	1518.6	0.02
04:40	351.3	45.8	-0.3	8.83	7.45	1527.0	1.07	1518.3	0.02
04:41	351.9	45.4	-0.4	8.89	7.42	1527.6	1.13	1519.3	0.03
04:42	349.5	45.2	-0.4	8.90	7.42	1526.9	0.78	1519.2	0.03
04:43	351.1	45.0	-0.3	8.93	7.40	1526.8	1.19	1519.2	0.02
04:44	350.3	45.2	-0.3	8.91	7.40	1524.6	1.14	1519.0	0.02
04:45	353.5	45.1	-0.3	8.87	7.43	1524.5	1.15	1518.1	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
04:45	350.4	45.4	-0.4	8.89	7.42	1526.7	1.04	1518.7	0.02
04:46	353.5	45.0	-0.3	8.84	7.44	1525.4	1.07	1518.4	0.02
04:47	357.2	45.1	-0.4	8.79	7.47	1524.6	0.93	1517.7	0.02
04:48	359.0	44.8	-0.4	8.86	7.43	1525.4	0.77	1518.5	0.02
04:49	359.6	45.0	-0.4	8.83	7.44	1525.4	1.13	1518.5	0.02
04:50	358.6	44.7	-0.4	8.86	7.42	1526.8	0.94	1518.9	0.03
04:51	357.8	44.7	-0.4	8.84	7.41	1525.9	0.99	1518.1	0.01
04:52	360.7	45.1	-0.4	8.72	7.48	1526.5	0.93	1517.6	0.02
04:53	362.9	45.2	-0.4	8.74	7.48	1527.0	1.06	1518.5	0.02
04:54	362.5	45.2	-0.4	8.77	7.48	1528.1	0.87	1519.2	0.03
04:55	363.1	45.3	-0.5	8.74	7.48	1528.2	0.57	1520.0	0.03
04:56	362.9	44.9	-0.3	8.82	7.45	1529.3	0.86	1519.1	0.03
04:57	363.7	45.0	-0.3	8.81	7.46	1529.6	0.77	1518.0	0.02
04:58	363.8	45.1	-0.4	8.83	7.44	1529.4	0.89	1518.5	0.02
04:59	363.2	45.3	-0.3	8.85	7.43	1529.9	0.76	1518.9	0.02
05:00	361.5	44.9	-0.4	8.86	7.39	1529.4	0.89	1517.6	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
05:00	360.7	45.0	-0.4	8.81	7.45	1527.4	0.90	1518.5	0.02
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
05:00	352.3	45.8	-0.2	8.86	7.41	1526.7	0.93	1517.1	0.02
05:01	361.7	44.4	-0.4	8.87	7.39	1528.6	0.60	1519.2	0.02
05:02	362.1	44.5	-0.4	8.90	7.40	1528.3	1.18	1519.2	0.03
05:03	363.2	44.7	-0.5	8.84	7.43	1528.5	0.93	1519.2	0.02
05:04	361.2	44.4	-0.4	8.87	7.40	1529.1	0.74	1518.8	0.02
05:05	361.0	44.5	-0.4	8.84	7.43	1527.3	0.93	1519.0	0.03
05:06	361.8	44.3	-0.4	8.83	7.42	1526.9	0.74	1519.0	0.02
05:07	362.7	44.2	-0.5	8.83	7.44	1528.1	0.74	1517.7	0.02

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05:08	364.3	44.2	-0.4	8.78	7.47	1528.1	0.93	1517.4	0.02
05:09	364.3	44.5	-0.3	8.78	7.48	1527.1	0.85	1517.7	0.02
05:10	363.5	44.2	-0.3	8.85	7.43	1527.2	0.31	1518.0	0.02
05:11	362.1	44.0	-0.4	8.93	7.41	1526.6	0.72	1518.1	0.02
05:12	361.8	44.2	-0.4	8.86	7.42	1526.4	0.98	1517.7	0.02
05:13	360.5	44.1	-0.4	8.91	7.39	1527.4	0.85	1517.5	0.02
05:14	362.5	44.1	-0.4	8.83	7.43	1527.6	0.78	1517.7	0.02
05:15	362.5	44.0	-0.4	8.88	7.41	1527.9	0.70	1517.8	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
05:15	362.4	44.3	-0.4	8.85	7.42	1527.7	0.80	1518.3	0.02
05:16	359.4	44.2	-0.3	8.87	7.40	1528.3	0.91	1517.6	0.02
05:17	359.1	44.1	-0.3	8.90	7.41	1528.4	1.12	1516.5	0.01
05:18	360.1	44.0	-0.3	8.85	7.42	1526.5	1.07	1516.2	0.02
05:19	361.7	43.9	-0.4	8.84	7.43	1526.5	0.75	1517.7	0.02
05:20	359.5	44.0	-0.3	8.89	7.39	1526.3	1.00	1517.1	0.02
05:21	360.2	44.1	-0.2	8.89	7.40	1526.9	0.78	1516.7	0.02
05:22	359.0	43.7	-0.2	8.92	7.38	1528.7	0.89	1517.5	0.02
05:23	357.7	43.6	-0.2	8.90	7.39	1528.4	1.19	1517.0	0.01
05:24	363.7	44.2	-0.2	8.88	7.41	1529.8	0.79	1517.1	0.02
05:25	357.6	43.6	-0.3	8.89	7.41	1530.4	0.79	1517.3	0.02
05:26	355.4	43.6	-0.2	8.89	7.41	1529.2	0.51	1517.0	0.02
05:27	357.6	44.2	-0.3	8.84	7.42	1529.6	0.96	1516.2	0.02
05:28	364.0	44.1	-0.4	8.82	7.43	1529.4	0.95	1514.8	0.02
05:29	362.3	43.9	-0.3	8.79	7.42	1527.8	0.70	1514.7	0.02
05:30	361.8	44.1	-0.4	8.79	7.43	1527.0	0.74	1514.5	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
05:30	359.9	44.0	-0.3	8.86	7.41	1528.2	0.88	1516.5	0.02
05:31	362.2	44.0	-0.6	8.79	7.42	1527.5	0.77	1515.5	0.03
05:32	361.4	44.1	-0.5	8.78	7.43	1526.7	1.03	1514.8	0.02
05:33	360.2	43.8	-0.5	8.86	7.38	1526.4	0.79	1514.6	0.02
05:34	359.8	43.9	-0.5	8.87	7.39	1524.5	0.81	1514.5	0.02
05:35	360.5	44.0	-0.4	8.85	7.39	1524.4	0.79	1514.7	0.02
05:36	357.2	43.7	-0.4	9.01	7.30	1524.1	0.88	1514.6	0.02
05:37	358.7	43.7	-0.4	8.94	7.33	1523.5	0.84	1514.7	0.03
05:38	357.7	43.7	-0.4	8.94	7.35	1523.1	0.80	1514.5	0.02
05:39	358.7	43.5	-0.3	8.95	7.34	1523.8	0.92	1515.0	0.03
05:40	355.5	43.2	-0.2	9.01	7.31	1524.0	0.95	1514.7	0.02
05:41	357.8	43.4	-0.3	8.94	7.33	1525.0	0.91	1514.6	0.02
05:42	358.7	43.4	-0.3	8.94	7.34	1522.7	1.17	1513.5	0.02
05:43	358.8	43.6	-0.3	8.90	7.36	1521.0	0.51	1513.3	0.03
05:44	356.5	43.2	-0.3	8.89	7.37	1519.5	1.15	1514.5	0.02
05:45	358.6	43.7	-0.4	8.75	7.45	1519.3	0.50	1514.9	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
05:45	358.8	43.7	-0.4	8.90	7.37	1523.7	0.85	1514.5	0.02
05:46	355.4	43.9	-0.4	8.76	7.45	1518.0	0.97	1515.6	0.02
05:47	356.9	44.0	-0.4	8.71	7.48	1517.6	0.73	1515.1	0.02
05:48	357.8	44.0	-0.3	8.66	7.50	1516.6	0.66	1515.3	0.02
05:49	356.6	43.7	-0.3	8.79	7.43	1516.6	1.16	1516.1	0.02
05:50	356.8	43.8	-0.3	8.72	7.45	1517.3	1.06	1516.2	0.02

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
05:51	358.9	44.1	-0.2	8.72	7.46	1516.2	1.03	1516.1	0.02
05:52	364.5	43.7	-0.3	8.75	7.46	1515.3	0.76	1516.5	0.02
05:53	362.7	43.8	-0.3	8.71	7.46	1514.8	0.71	1516.1	0.02
05:54	362.3	43.6	-0.3	8.76	7.44	1514.6	0.84	1516.6	0.02
05:55	364.9	43.4	-0.2	8.78	7.43	1514.4	0.49	1517.1	0.02
05:56	365.6	43.6	-0.3	8.75	7.45	1514.5	0.82	1514.9	0.02
05:57	363.8	43.3	-0.2	8.79	7.43	1513.2	0.75	1515.6	0.02
05:58	362.8	43.2	-0.3	8.84	7.40	1514.5	0.77	1516.2	0.02
05:59	363.4	43.1	-0.2	8.81	7.42	1514.6	0.75	1516.8	0.02
06:00	364.4	43.0	-0.3	8.80	7.42	1514.0	0.86	1516.1	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
06:00	361.1	43.6	-0.3	8.76	7.44	1515.5	0.82	1516.0	0.02
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
06:00	360.6	43.9	-0.3	8.84	7.41	1523.8	0.84	1516.3	0.02
06:01	365.1	43.4	-0.2	8.74	7.44	1513.2	0.73	1516.1	0.02
06:02	365.1	43.1	-0.1	8.79	7.41	1513.1	0.11	1516.2	0.02
06:03	365.1	43.4	-0.2	8.79	7.43	1513.2	0.63	1516.4	0.02
06:04	368.6	43.7	-0.2	8.71	7.47	1513.6	0.57	1515.5	0.02
06:05	365.2	44.0	-0.2	8.72	7.46	1512.6	1.00	1514.7	0.02
06:06	363.9	43.6	-0.1	8.77	7.43	1513.1	0.81	1515.5	0.02
06:07	363.2	43.4	-0.1	8.77	7.42	1513.1	0.83	1515.6	0.02
06:08	364.6	43.5	-0.2	8.72	7.45	1512.8	1.16	1515.7	0.02
06:09	364.7	43.7	-0.2	8.73	7.44	1512.3	1.01	1515.6	0.02
06:10	363.5	43.6	-0.2	8.77	7.42	1512.7	0.74	1515.7	0.02
06:11	363.8	43.2	-0.2	8.79	7.41	1513.0	0.38	1516.3	0.02
06:12	361.5	43.2	-0.2	8.83	7.37	1513.8	0.07	1517.0	0.02
06:13	361.7	43.3	-0.2	8.87	7.37	1513.8	0.56	1517.0	0.02
06:14	362.6	43.1	-0.2	8.81	7.40	1513.4	0.64	1516.3	0.02
06:15	366.6	43.2	-0.2	8.75	7.43	1513.0	0.35	1516.7	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
06:15	364.2	43.4	-0.2	8.77	7.42	1513.1	0.64	1516.0	0.02
06:16	362.7	42.8	-0.2	8.86	7.37	1514.3	0.73	1516.6	0.02
06:17	363.7	42.7	-0.1	8.83	7.40	1514.7	0.50	1516.5	0.02
06:18	363.0	42.9	-0.1	8.82	7.39	1514.7	0.59	1516.3	0.02
06:19	362.0	42.9	-0.1	8.83	7.39	1515.5	0.62	1515.7	0.02
06:20	363.3	42.8	-0.1	8.80	7.40	1516.1	0.91	1516.2	0.02
06:21	362.1	42.8	-0.0	8.79	7.40	1516.2	1.02	1515.9	0.01
06:22	363.1	43.0	-0.1	8.76	7.41	1516.2	1.09	1515.9	0.01
06:23	362.6	43.0	-0.2	8.76	7.42	1515.7	0.94	1515.2	0.02
06:24	364.2	42.9	-0.1	8.79	7.41	1516.1	1.18	1516.1	0.02
06:25	363.6	42.7	-0.1	8.77	7.42	1516.2	0.87	1516.2	0.01
06:26	362.7	42.9	-0.0	8.73	7.44	1517.8	0.70	1515.8	0.02
06:27	361.3	42.7	-0.1	8.77	7.43	1519.0	0.87	1515.8	0.02
06:28	358.6	42.7	-0.0	8.89	7.36	1522.1	1.59	1513.4	0.01
06:29	363.0	43.5	-0.1	8.64	7.51	1526.2	1.92	1510.7	0.01
06:30	357.0	43.3	-0.1	8.65	7.52	1524.8	0.37	1511.5	0.02

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST 15 MINUTES									
06:30	362.2	42.9	-0.1	8.78	7.42	1517.7	0.93	1515.2	0.02
06:31	349.2	43.8	-0.1	8.62	7.53	1519.9	0.11	1513.1	0.03
06:32	343.6	44.0	-0.1	8.59	7.56	1519.2	0.04	1513.0	0.03
06:33	349.7	44.1	-0.1	8.51	7.58	1518.6	0.15	1512.3	0.02
06:34	354.5	44.0	-0.1	8.52	7.57	1518.1	-0.23	1512.7	0.03
06:35	358.6	44.3	-0.1	8.50	7.58	1517.2	-0.45	1513.1	0.03
06:36	358.9	44.4	-0.1	8.53	7.56	1516.2	-1.10	1512.7	0.04
06:37	360.7	44.1	-0.2	8.60	7.52	1516.2	-0.79	1513.0	0.04
06:38	360.1	44.1	-0.4	8.55	7.54	1516.5	-0.36	1513.1	0.03
06:39	361.5	43.7	-0.3	8.56	7.53	1517.6	0.19	1512.7	0.02
06:40	361.4	43.7	-0.2	8.60	7.51	1517.7	0.04	1511.7	0.02
06:41	360.3	43.6	-0.2	8.62	7.50	1517.7	-0.29	1512.0	0.03
06:42	359.4	43.9	-0.3	8.57	7.52	1518.0	0.05	1512.3	0.03
06:43	356.8	43.7	-0.2	8.65	7.47	1516.4	-0.32	1512.6	0.03
06:44	356.1	43.7	-0.2	8.61	7.50	1516.2	0.16	1511.4	0.03
06:45	361.9	43.7	-0.1	8.59	7.51	1515.3	-0.00	1511.5	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
06:45	356.8	43.9	-0.2	8.57	7.53	1517.4	-0.19	1512.5	0.03
06:46	362.7	43.6	-0.2	8.57	7.52	1515.7	0.29	1511.0	0.03
06:47	365.1	43.2	-0.2	8.63	7.49	1516.1	-0.05	1510.3	0.03
06:48	369.0	43.6	-0.2	8.62	7.49	1516.2	0.37	1509.2	0.02
06:49	367.6	43.7	-0.1	8.69	7.45	1516.0	0.20	1508.6	0.02
06:50	368.9	43.8	-0.1	8.66	7.46	1515.5	0.48	1509.4	0.02
06:51	368.8	43.6	-0.1	8.68	7.44	1515.7	0.36	1508.7	0.02
06:52	367.6	43.3	-0.2	8.69	7.42	1515.9	0.41	1508.5	0.02
06:53	367.9	43.4	-0.3	8.69	7.42	1515.7	0.23	1508.7	0.02
06:54	368.3	42.9	-0.2	8.72	7.40	1515.2	0.24	1509.2	0.03
06:55	367.5	43.1	-0.2	8.72	7.42	1515.2	0.27	1509.4	0.03
06:56	371.1	43.2	-0.1	8.67	7.43	1515.9	0.15	1509.4	0.02
06:57	373.4	43.2	-0.1	8.66	7.44	1516.1	0.49	1509.0	0.02
06:58	373.2	43.3	-0.1	8.65	7.46	1515.2	0.43	1508.6	0.03
06:59	372.2	43.1	-0.0	8.65	7.44	1516.2	0.37	1508.5	0.02
07:00	371.0	43.2	0.0	8.60	7.47	1516.8	0.49	1508.3	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
07:00	369.0	43.4	-0.1	8.66	7.45	1515.8	0.31	1509.1	0.02
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
07:00	363.0	43.4	-0.1	8.70	7.46	1516.0	0.42	1513.2	0.02
07:01	370.1	43.1	0.2	8.63	7.44	1516.3	0.35	1508.9	0.02
07:02	369.6	43.1	0.2	8.70	7.41	1517.3	0.64	1507.0	0.02
07:03	370.5	43.0	0.2	8.66	7.43	1518.0	0.62	1507.1	0.03
07:04	372.7	43.1	0.4	8.50	7.44	1518.2	0.76	1507.0	0.03
07:05	373.4	43.2	0.2	8.65	7.44	1517.9	0.57	1507.4	0.02
07:06	371.9	43.0	0.1	8.68	7.43	1518.6	0.79	1507.1	0.02
07:07	372.8	42.9	0.2	8.64	7.44	1518.0	0.73	1507.2	0.02
07:08	369.4	42.6	0.4	8.78	7.37	1516.7	0.29	1507.8	0.03
07:09	368.6	42.7	0.2	8.80	7.37	1516.2	0.48	1508.0	0.03

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
07:10	367.7	42.8	0.2	8.78	7.38	1516.1	0.53	1508.2	0.03
07:11	370.4	42.6	0.2	8.74	7.41	1516.8	0.54	1507.2	0.02
07:12	371.2	42.7	0.3	8.72	7.43	1517.6	0.74	1506.8	0.02
07:13	370.8	42.6	0.3	8.72	7.41	1517.7	0.38	1507.0	0.02
07:14	368.4	42.5	0.3	8.74	7.42	1517.8	0.88	1506.0	0.02
07:15	369.0	42.7	0.3	8.60	7.48	1516.2	0.73	1505.4	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
07:15	370.4	42.8	0.2	8.69	7.42	1517.3	0.60	1507.2	0.02
07:16	368.7	42.4	0.3	8.64	7.47	1517.5	1.26	1504.5	0.02
07:17	365.3	42.7	0.2	8.64	7.47	1519.8	1.22	1504.3	0.02
07:18	363.0	42.6	0.2	8.58	7.49	1519.6	1.19	1504.1	0.02
07:19	361.5	42.4	0.2	8.65	7.46	1521.6	1.68	1504.1	0.02
07:20	360.7	42.4	0.2	8.79	7.38	1520.8	-0.13	1505.7	0.03
07:21	357.3	42.8	0.2	8.70	7.45	1517.1	-0.72	1509.0	0.05
07:22	352.1	42.9	0.1	8.75	7.40	1515.7	-0.15	1509.2	0.04
07:23	357.5	42.5	0.1	8.74	7.41	1514.7	0.25	1508.4	0.03
07:24	363.4	42.5	0.1	8.76	7.41	1515.6	0.41	1507.0	0.03
07:25	366.9	42.8	0.1	8.68	7.45	1514.9	0.13	1507.0	0.03
07:26	369.1	42.6	0.1	8.64	7.48	1514.8	0.05	1506.9	0.03
07:27	371.8	41.5	0.1	8.62	7.50	1515.0	-0.32	1566.2*	0.04
07:28	372.1	42.1	0.1	8.51	7.54	1514.7	-0.44	1513.9	0.04
07:29	368.0	42.1	0.1	8.56	7.52	1514.2	-0.66	1509.6	0.04
07:30	355.5	42.1	0.1	8.65	7.47	1513.2	-0.18	1568.4*	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
07:30	363.5	42.4	0.1	8.66	7.46	1516.6	0.24	1515.2	0.03
07:31	357.1	41.3	0.1	8.68	7.43	1515.8	1.32	1523.3	0.03
07:32	365.7	41.6	0.1	8.66	7.46	1514.9	-0.32	1526.0	0.04
07:33	369.3	41.8	0.0	8.62	7.49	1513.1	0.18	1525.7	0.03
07:34	365.7	41.3	0.0	8.71	7.43	1513.9	0.43	1525.3	0.03
07:35	367.1	41.5	0.0	8.66	7.46	1513.6	0.15	1525.3	0.03
07:36	367.0	41.6	0.1	8.72	7.41	1514.0	0.57	1525.3	0.03
07:37	366.6	41.4	0.1	8.71	7.41	1514.7	0.49	1525.3	0.03
07:38	366.8	41.1	0.1	8.74	7.40	1514.7	0.39	1525.3	0.03
07:39	369.5	41.2	0.1	8.77	7.39	1514.7	0.63	1525.3	0.03
07:40	368.1	41.3	0.2	8.70	7.42	1514.5	0.15	1525.6	0.03
07:41	366.7	41.7	0.2	8.66	7.43	1513.9	-0.06	1526.3	0.03
07:42	368.0	41.8	0.2	8.64	7.44	1513.9	-0.06	1527.0	0.04
07:43	367.8	41.3	0.2	8.68	7.44	1514.0	0.24	1526.6	0.03
07:44	364.5	40.8	0.2	8.69	7.42	1513.5	0.18	1525.3	0.04
07:45	364.6	41.2	0.1	8.62	7.47	1513.0	-0.87	1527.2	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
07:45	366.3	41.4	0.1	8.68	7.43	1514.1	0.23	1525.7	0.03
07:46	352.6	40.9	-0.0	8.74	7.38	1512.6	-0.52	1527.4	0.04
07:47	346.6	41.0	-0.0	8.81	7.36	1513.1	-0.15	1526.7	0.04
07:48	350.5	40.7	-0.0	8.79	7.37	1513.2	0.38	1525.7	0.04
07:49	355.5	40.9	-0.0	8.71	7.41	1513.7	0.37	1584.2*	0.03
07:50	356.9	40.9	0.0	8.67	7.43	1513.3	0.52	1771.3	0.03
07:51	357.4	41.0	-0.0	8.63	7.45	1513.2	0.30	1696.6	0.04
07:52	355.3	41.3	-0.0	8.61	7.48	1513.2	0.04	1688.1	0.04

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
07:53	357.7	41.0	-0.0	8.62	7.46	1513.9	0.65	1663.8	0.03
07:54	356.5	40.8	0.0	8.64	7.45	1516.5	1.28	1613.1	0.03
07:55	361.4	40.8	0.0	8.57	7.48	1518.9	1.43	1602.1	0.02
07:56	366.2	40.7	0.1	8.62	7.46	1519.1	0.88	1598.6	0.03
07:57	367.8	40.3	-0.0	8.68	7.44	1516.9	0.79	1599.9	0.03
07:58	364.2	39.9	-0.1	8.66	7.44	1515.9	1.29	1599.3	0.02
07:59	364.5	39.3	-0.1	8.64	7.44	1516.0	1.15	1600.5	0.03
08:00	359.6	39.3	-0.0	8.70	7.42	1517.0	1.67	1600.5	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
08:00	358.2	40.6	-0.0	8.67	7.43	1515.1	0.67	1613.2	0.03
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
08:00	364.6	41.8	0.1	8.68	7.44	1515.8	0.44	1540.3	0.03

COMMENTS: Calibration Time

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Calibration Bias Check

DATE : 10-31-1991 TIME: 08:00 - 08:21

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	3.4
7	Unit 4	ppmSO2	241.0	235.0
9	Unit 4	ppmNOx	0.0	0.2
9	Unit 4	ppmNOx	141.5	137.0
8	Unit 4	ppmCO	0.0	0.8
8	Unit 4	ppmCO	30.2	30.8
5	Unit 4	% O2	0.00	0.07
5	Unit 4	% O2	12.48	12.41
6	Unit 4	% CO2	0.00	0.00
6	Unit 4	% CO2	11.06	10.75

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
08:31	358.8	37.7	-0.0	8.99	7.25	-625.2	-7.05	1532.7	0.03
08:32	361.1	37.7	0.0	8.97	7.26	1562.9*	1.93	1515.6	0.02
08:33	358.1	37.9	0.1	8.95	7.25	1771.5*	2.61	1515.0	0.02
08:34	357.6	37.7	-0.0	8.98	7.24	2448.5*	5.31	1513.8	0.02
08:35	355.8	37.5	0.0	8.98	7.25	2500.6*	5.36	1513.4	0.02
08:36	352.9	37.7	-0.0	8.95	7.25	2500.6*	3.02	1513.2	0.02
08:37	360.4	38.4	-0.0	8.93	7.26	2500.6*	3.66	1513.1	0.02
08:38	359.6	38.4	-0.0	8.97	7.25	2500.6*	8.37	1512.2	0.02
08:39	359.5	38.0	-0.0	8.96	7.25	2500.6*	7.92	1511.6	0.02
08:40	362.0	38.0	-0.0	8.95	7.25	2500.6*	0.72	1511.2	0.02
08:41	364.4	38.0	-0.1	8.94	7.25	2500.6*	-0.31	1511.3	0.02
08:42	362.6	38.2	0.0	8.95	7.25	2500.6*	2.76	1510.1	0.02
08:43	360.3	37.1	-0.0	9.12	7.15	2500.6*	0.05	1507.8	0.02
08:44	356.3	38.0	-0.0	8.93	7.27	2500.6*	1.63	1508.3	0.02
08:45	365.4	38.1	-0.0	8.81	7.33	2500.6*	0.95	1507.0	0.01
AVERAGE VALUES FOR THE LAST 15 MINUTES									
08:45	359.6	37.9	-0.0	8.96	7.25	2177.6	2.46	1513.1	0.02
08:46	368.6	37.8	-0.1	8.76	7.34	2500.6*	-5.89	1508.4	0.02
08:47	367.4	38.0	-0.1	8.84	7.30	2500.6*	-3.25	1508.0	0.01
08:48	372.6	38.0	-0.1	8.81	7.33	2500.6*	1.31	1507.7	0.01
08:49	372.9	38.0	-0.1	8.77	7.33	2500.6*	0.59	1507.5	0.02
08:50	372.4	37.9	-0.0	8.81	7.31	2500.6*	0.04	1508.1	0.02
08:51	374.4	38.1	0.0	8.83	7.31	2500.6*	1.35	1507.3	0.01
08:52	374.7	38.0	0.1	8.79	7.32	2500.6*	-0.46	1506.9	0.01
08:53	376.4	38.0	0.1	8.79	7.32	2500.6*	0.04	1506.8	0.01
08:54	376.8	38.0	0.1	8.82	7.31	2500.6*	0.04	1506.5	0.02
08:55	377.9	38.6	0.2	8.77	7.34	365.1*	-4.78	1507.0	0.01
08:56	379.0	38.5	0.2	8.75	7.34	-625.2	-7.05	1506.5	0.01

OFFLINE

Stopped to work on Pressure Transducer Unit 3

ENTROPY

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
09:46	376.3	38.4	0.4	8.63	7.35	1510.2	1.59	1507.5	0.07*
09:47	382.7	38.4	0.5	8.60	7.35	1510.6	1.71	1465.3	0.01
09:48	383.9	38.3	0.4	8.63	7.33	1511.8	1.72	1500.5	0.10*
09:49	385.3	38.3	0.4	8.66	7.33	1511.4	1.68	1500.2	0.00
09:50	385.7	38.5	0.3	8.61	7.36	1509.5	1.65	1503.9	0.00
09:51	386.5	38.4	0.1	8.55	7.37	1508.5	1.50	1502.6	0.01
09:52	383.7	38.4	0.1	8.52	7.39	1506.8	1.49	1502.8	0.01
09:53	382.8	38.5	0.1	8.54	7.38	1507.7	1.58	1504.0	0.02
09:54	380.5	38.3	0.0	8.60	7.33	1508.4	1.54	1504.0	0.02
09:55	382.1	38.4	0.0	8.57	7.34	1508.9	1.66	1504.0	0.02
09:56	382.9	38.2	0.1	8.61	7.34	1508.6	1.47	1502.4	0.02
09:57	382.8	38.6	0.2	8.60	7.34	1507.3	1.53	1500.8	0.02
09:58	382.9	38.5	0.4	8.63	7.33	1507.5	1.50	1500.5	0.02
09:59	384.1	38.5	0.3	8.59	7.35	1507.0	1.55	1500.7	0.02
10:00	384.4	38.3	0.3	8.61	7.33	1507.1	1.49	1500.9	0.02

Cal Check

AVERAGE VALUES FOR THE LAST 15 MINUTES

10:00	383.1	38.4	0.2	8.60	7.35	1508.7	1.58	1500.0	0.02

III-2-S4-CEM

End Run

Begin Run

AVERAGE VALUES FOR THE LAST HOUR: 15 MINUTES OF VALID DATA

10:00	383.1	38.4	0.2	8.60	7.35	1508.7	1.58	1500.0	0.02

III-2-S4-CEM 2

10:01	383.2	38.6	0.3	8.60	7.33	1508.3	1.58	1500.4	0.02
10:02	382.7	38.3	0.3	8.62	7.34	1508.4	1.63	1500.3	0.02
10:03	383.9	38.4	0.3	8.59	7.34	1508.5	1.57	1500.1	0.02
10:04	383.5	38.3	0.4	8.62	7.34	1508.5	1.55	1499.9	0.02
10:05	383.2	38.4	0.4	8.59	7.33	1509.5	1.57	1499.8	0.02
10:06	383.4	38.3	0.4	8.64	7.32	1508.9	1.67	1500.9	0.02
10:07	384.5	38.4	0.5	8.60	7.34	1508.4	1.62	1499.9	0.02
10:08	383.5	38.3	0.4	8.60	7.33	1508.9	1.64	1500.3	0.02
10:09	384.1	38.3	0.4	8.64	7.32	1509.2	1.67	1500.9	0.02
10:10	382.9	38.1	0.5	8.66	7.31	1509.4	1.63	1499.9	0.02
10:11	383.4	38.1	0.4	8.62	7.33	1508.8	1.61	1500.1	0.02
10:12	385.1	38.2	0.4	8.62	7.34	1508.6	1.64	1499.8	0.02
10:13	386.0	38.2	0.4	8.60	7.35	1508.9	1.60	1500.6	0.02
10:14	384.9	38.3	0.4	8.62	7.33	1509.4	1.63	1501.1	0.02
10:15	384.5	38.3	0.5	8.58	7.33	1510.0	1.71	1500.9	0.02

AVERAGE VALUES FOR THE LAST 15 MINUTES

10:15	383.9	38.3	0.4	8.61	7.33	1508.9	1.62	1500.3	0.02

10:16	385.7	38.4	0.5	8.55	7.35	1510.1	1.66	1500.6	0.02
10:17	387.2	38.2	0.5	8.55	7.34	1510.1	1.72	1501.5	0.02
10:18	386.1	38.5	0.6	8.57	7.34	1510.2	1.69	1501.8	0.02
10:19	386.3	38.3	0.5	8.53	7.33	1510.1	1.69	1500.7	0.02
10:20	389.0	38.6	0.5	8.47	7.36	1510.1	1.72	1501.9	0.02
10:21	389.2	38.5	0.6	8.57	7.33	1511.1	1.84	1500.9	0.02
10:22	389.0	38.2	0.5	8.54	7.33	1511.4	1.78	1502.4	0.02
10:23	387.6	38.0	0.6	8.58	7.31	1510.7	1.72	1502.2	0.02
10:24	388.1	38.2	0.6	8.59	7.31	1510.8	1.69	1502.7	0.02
10:25	388.5	38.2	0.5	8.55	7.31	1510.9	1.69	1502.4	0.02
10:26	389.6	38.3	0.6	8.55	7.32	1511.2	1.61	1503.3	0.02
10:27	389.6	38.3	0.6	8.53	7.32	1511.1	1.69	1503.6	0.02
10:28	388.6	38.2	0.5	8.51	7.34	1511.2	1.64	1502.7	0.02

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
10:29	388.0	38.3	0.5	8.57	7.31	1511.7	1.68	1503.1	0.02
10:30	388.8	38.5	0.5	8.52	7.33	1511.5	1.49	1503.5	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
10:30	388.1	38.3	0.5	8.55	7.33	1510.8	1.69	1502.2	0.02
10:31	395.8	38.6	0.4	8.55	7.33	1511.3	1.72	1504.0	0.02
10:32	384.3	38.2	0.3	8.52	7.34	1511.7	1.64	1503.8	0.02
10:33	385.1	38.4	0.4	8.47	7.36	1511.6	1.67	1503.7	0.02
10:34	390.5	38.3	0.3	8.46	7.37	1511.6	1.70	1503.7	0.02
10:35	392.8	38.2	0.2	8.44	7.36	1512.3	1.62	1504.0	0.02
10:36	389.9	38.1	0.2	8.49	7.34	1511.9	1.75	1504.2	0.02
10:37	390.5	38.3	0.1	8.47	7.35	1511.9	1.64	1504.8	0.02
10:38	390.9	38.3	0.1	8.43	7.34	1511.8	1.63	1505.3	0.02
10:39	391.2	38.4	0.1	8.41	7.36	1511.8	1.56	1505.2	0.02
10:40	389.0	38.2	0.1	8.49	7.33	1512.8	1.68	1505.0	0.02
10:41	390.0	38.3	0.1	8.46	7.35	1511.9	1.59	1505.1	0.02
10:42	391.0	38.2	0.0	8.45	7.35	1511.8	1.63	1505.5	0.02
10:43	391.2	38.4	0.1	8.44	7.35	1511.7	1.56	1505.5	0.02
10:44	390.7	38.3	0.1	8.47	7.33	1512.5	1.54	1505.6	0.02
10:45	390.7	38.5	0.1	8.46	7.35	1511.6	1.60	1506.3	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
10:45	390.2	38.3	0.2	8.47	7.35	1511.9	1.63	1504.8	0.02
10:46	392.2	38.4	0.1	8.43	7.37	1512.1	1.54	1505.9	0.02
10:47	392.4	38.3	0.2	8.44	7.37	1512.8	1.59	1506.9	0.03
10:48	391.7	38.5	0.2	8.48	7.34	1513.1	1.69	1506.4	0.02
10:49	392.7	38.5	0.2	8.45	7.36	1512.4	1.55	1505.5	0.02
10:50	394.1	38.7	0.3	8.46	7.36	1512.4	1.66	1505.5	0.02
10:51	395.5	38.8	0.3	8.40	7.39	1513.1	1.72	1505.1	0.02
10:52	394.0	38.7	0.2	8.46	7.36	1513.0	1.60	1505.5	0.02
10:53	393.1	38.9	0.2	8.42	7.37	1511.6	1.57	1505.4	0.02
10:54	395.2	38.8	0.2	8.44	7.37	1513.0	1.62	1505.6	0.02
10:55	394.4	38.5	0.2	8.47	7.35	1513.1	1.69	1507.0	0.02
10:56	395.0	38.9	0.3	8.48	7.33	1513.1	1.68	1506.6	0.02
10:57	388.7	38.0	0.3	8.64	7.25	1513.0	1.74	1505.0	0.03
10:58	389.1	38.6	0.2	8.52	7.33	1513.2	1.77	1504.6	0.02
10:59	393.1	38.6	0.3	8.45	7.35	1513.1	1.74	1504.7	0.02
11:00	393.4	39.0	0.2	8.45	7.36	1514.1	1.82	1503.5	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
11:00	393.0	38.6	0.2	8.47	7.35	1512.9	1.67	1505.6	0.02
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
11:00	388.8	38.4	0.3	8.52	7.34	1511.1	1.65	1503.2	0.02
11:01	394.6	38.6	0.2	8.41	7.38	1513.3	1.66	1505.1	0.02
11:02	394.2	38.4	0.2	8.44	7.35	1513.4	1.67	1505.6	0.02
11:03	391.7	38.5	0.2	8.48	7.33	1513.9	1.66	1505.5	0.02
11:04	391.5	38.4	0.2	8.49	7.33	1513.8	1.66	1506.2	0.03
11:05	391.3	38.5	0.1	8.54	7.30	1514.6	1.75	1506.5	0.02
11:06	390.1	38.4	0.0	8.54	7.31	1514.7	1.73	1506.5	0.03
11:07	387.9	37.9	-0.1	8.60	7.27	1515.2	1.78	1506.4	0.02

ENTROPY

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
11:08	386.6	37.7	-0.2	8.60	7.27	1514.4	1.69	1507.0	0.03
11:09	384.7	37.7	-0.2	8.62	7.25	1516.1	1.88	1506.1	0.03
11:10	382.6	37.8	-0.1	8.64	7.26	1515.0	1.60	1506.9	0.03
11:11	383.0	37.6	-0.1	8.63	7.25	1514.7	1.70	1506.9	0.02
11:12	380.2	37.4	-0.2	8.65	7.26	1515.3	1.82	1505.9	0.02
11:13	379.9	37.8	-0.1	8.61	7.28	1516.0	1.74	1505.8	0.02
11:14	380.7	37.7	-0.1	8.60	7.28	1515.6	1.84	1505.7	0.03
11:15	385.7	38.1	-0.1	8.51	7.32	1515.8	1.60	1505.6	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
11:15	387.0	38.0	-0.0	8.56	7.30	1514.8	1.72	1506.1	0.02
11:16	386.5	38.1	-0.2	8.51	7.34	1515.6	1.81	1505.8	0.02
11:17	387.8	38.0	-0.1	8.51	7.33	1515.6	1.78	1505.5	0.02
11:18	388.2	37.9	-0.1	8.53	7.32	1514.7	1.74	1505.3	0.02
11:19	391.0	38.1	-0.0	8.48	7.35	1514.5	1.70	1505.5	0.02
11:20	392.7	38.1	0.0	8.43	7.36	1513.7	1.57	1505.5	0.02
11:21	392.6	38.3	0.0	8.47	7.37	1514.5	1.70	1505.8	0.02
11:22	392.9	38.1	-0.0	8.42	7.37	1515.1	1.77	1505.7	0.02
11:23	391.4	38.0	0.1	8.52	7.35	1514.6	1.69	1505.3	0.03
11:24	391.5	38.1	0.2	8.51	7.35	1514.7	1.75	1505.4	0.02
11:25	392.9	38.4	0.3	8.49	7.37	1514.7	1.78	1505.4	0.02
11:26	393.6	38.5	0.2	8.47	7.37	1515.5	1.84	1504.3	0.02
11:27	394.8	38.4	0.3	8.46	7.37	1516.2	1.78	1504.0	0.02
11:28	393.7	38.6	0.2	8.54	7.35	1515.3	1.75	1504.5	0.02
11:29	393.8	38.4	0.3	8.47	7.34	1515.1	1.78	1504.4	0.02
11:30	394.9	38.5	0.3	8.42	7.37	1516.1	1.76	1504.6	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
11:30	391.9	38.2	0.1	8.48	7.35	1515.1	1.75	1505.1	0.02
11:31	392.8	38.7	0.2	8.49	7.34	1515.6	1.79	1505.3	0.03
11:32	394.2	38.8	0.3	8.43	7.38	1515.6	1.75	1503.8	0.02
11:33	398.9	38.9	0.3	8.34	7.41	1515.6	1.75	1505.2	0.02
11:34	397.7	38.7	0.4	8.37	7.40	1516.1	1.82	1505.5	0.03
11:35	396.3	38.9	0.4	8.42	7.37	1516.2	1.77	1505.4	0.02
11:36	394.4	38.9	0.4	8.44	7.35	1516.0	1.83	1505.2	0.02
11:37	393.5	38.5	0.4	8.45	7.33	1516.7	1.85	1504.8	0.02
11:38	389.5	37.9	0.3	8.54	7.28	1516.2	1.78	1504.6	0.03
11:39	388.7	38.2	0.4	8.47	7.31	1516.2	1.83	1503.6	0.02
11:40	388.6	37.9	0.4	8.44	7.32	1516.2	1.79	1502.8	0.02
11:41	391.1	38.3	0.3	8.41	7.34	1517.3	1.89	1504.0	0.02
11:42	392.7	38.4	0.4	8.41	7.34	1517.6	1.84	1504.0	0.02
11:43	393.1	38.4	0.4	8.42	7.34	1516.4	1.78	1503.8	0.03
11:44	396.9	38.8	0.5	8.32	7.39	1516.8	1.86	1504.0	0.02
11:45	397.9	38.9	0.5	8.28	7.39	1517.3	1.83	1504.5	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
11:45	393.7	38.6	0.4	8.42	7.35	1516.4	1.81	1504.4	0.02
11:46	396.9	39.3	0.6	8.34	7.38	1516.7	1.77	1505.0	0.02
11:47	395.7	39.1	0.6	8.34	7.36	1516.9	1.79	1505.0	0.02
11:48	395.3	39.1	0.6	8.34	7.36	1516.3	1.77	1505.4	0.02
11:49	394.8	39.0	0.7	8.36	7.36	1516.2	1.76	1505.4	0.02
11:50	396.6	38.9	0.7	8.33	7.37	1516.2	1.80	1505.4	0.02

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
11:51	398.0	38.9	0.7	8.32	7.37	1516.2	1.80	1504.6	0.03
11:52	395.9	39.0	0.8	8.37	7.35	1516.0	1.83	1504.2	0.03
11:53	392.2	38.0	0.8	8.58	7.22	1516.9	1.86	1502.4	0.03
11:54	381.5	38.1	0.8	8.66	7.17	1517.4	1.69	1502.5	0.03
11:55	390.3	38.6	0.7	8.51	7.27	1516.3	1.84	1502.7	0.03
11:56	391.9	38.7	0.6	8.44	7.29	1516.1	1.84	1504.4	0.03
11:57	389.2	39.3	0.6	8.56	7.21	1516.2	1.83	1506.3	0.03
11:58	382.9	39.7	0.6	8.71	7.16	1516.2	1.80	1508.4	0.03
11:59	381.6	40.4	0.7	8.71	7.12	1516.0	1.75	1508.8	0.03
12:00	375.9	40.7	0.7	8.84	7.06	1514.7	1.80	1508.5	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
12:00	390.6	39.1	0.7	8.49	7.27	1516.3	1.79	1505.3	0.03
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
12:00	390.8	38.5	0.3	8.49	7.32	1515.6	1.77	1505.2	0.02
12:01	374.9	40.7	0.6	8.83	7.07	1515.9	1.95	1508.5	0.02
12:02	371.9	40.2	0.8	8.89	7.03	1516.9	1.90	1507.9	0.02
12:03	365.8	39.6	0.7	9.09	6.93	1516.1	1.80	1507.9	0.03
12:04	373.5	41.2	0.7	8.79	7.08	1516.1	1.80	1507.8	0.03
12:05	377.4	41.2	0.8	8.76	7.10	1515.1	1.74	1508.0	0.03
12:06	376.2	40.9	0.7	8.79	7.07	1514.9	1.84	1508.5	0.03
12:07	376.8	41.1	0.7	8.81	7.08	1515.7	1.90	1508.6	0.03
12:08	375.3	40.9	0.7	8.83	7.06	1516.0	1.90	1508.6	0.03
12:09	374.2	40.7	0.7	8.85	7.03	1515.1	1.84	1508.5	0.03
12:10	373.9	40.8	0.6	8.88	7.03	1515.3	1.83	1508.5	0.03
12:11	374.7	41.1	0.7	8.83	7.06	1515.3	1.85	1509.1	0.03
12:12	374.4	40.8	0.7	8.81	7.04	1515.0	1.88	1508.6	0.03
12:13	374.6	41.2	0.7	8.77	7.06	1516.1	1.95	1508.9	0.03
12:14	373.3	41.0	0.6	8.86	7.02	1515.1	1.77	1509.0	0.03
12:15	374.4	40.9	0.6	8.81	7.04	1514.7	1.84	1508.8	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
12:15	374.1	40.8	0.7	8.84	7.05	1515.5	1.85	1508.5	0.03
12:16	373.1	41.0	0.6	8.90	7.01	1515.5	1.89	1510.0	0.03
12:17	369.2	41.0	0.5	9.00	6.94	1515.8	1.85	1510.0	0.03
12:18	369.0	41.2	0.5	8.90	7.00	1514.9	1.84	1512.1	0.03
12:19	375.4	41.9	0.6	8.73	7.09	1514.7	1.75	1516.8	0.03
12:20	377.1	42.0	0.5	8.69	7.12	1514.7	1.87	1517.9	0.03
12:21	377.6	42.0	0.4	8.67	7.09	1515.8	1.96	1518.3	0.03
12:22	377.1	42.0	0.5	8.74	7.08	1516.2	1.97	1519.0	0.03
12:23	376.1	41.7	0.5	8.78	7.07	1516.4	1.95	1519.4	0.04
12:24	375.9	41.9	0.5	8.79	7.08	1516.0	1.90	1519.7	0.03
12:25	377.8	42.2	0.5	8.65	7.16	1514.3	1.77	1519.4	0.03
12:26	378.2	42.4	0.5	8.55	7.19	1513.2	1.87	1519.3	0.03
12:27	376.4	42.4	0.6	8.55	7.19	1513.4	1.70	1520.2	0.03
12:28	377.0	42.6	0.5	8.59	7.18	1513.1	1.77	1520.7	0.03
12:29	377.2	42.2	0.5	8.60	7.18	1513.7	1.87	1521.0	0.03
12:30	379.1	42.2	0.6	8.56	7.18	1513.1	1.83	1521.9	0.04

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST 15 MINUTES									
12:30	375.7	41.9	0.5	8.71	7.10	1514.7	1.85	1517.7	0.03
12:31	378.2	42.2	0.6	8.69	7.13	1513.8	1.76	1522.0	0.03
12:32	378.5	42.5	0.7	8.56	7.18	1513.3	1.81	1521.5	0.03
12:33	375.5	40.5	0.6	8.80	7.02	1513.3	1.91	1518.6	0.04
12:34	364.5	38.6	0.6	9.22	6.79	1513.7	1.99	1519.2	0.04
12:35	359.2	37.3	0.5	9.40	6.72	1515.9	1.73	1519.3	0.04
12:36	354.7	37.0	0.5	9.46	6.69	1519.4	1.94	1518.4	0.04
12:37	355.0	37.1	0.4	9.39	6.71	1520.7	1.65	1518.5	0.04
12:38	353.1	36.6	0.4	9.45	6.66	1521.3	1.78	1519.2	0.04
12:39	350.8	36.8	0.4	9.49	6.67	1522.4	1.76	1519.7	0.04
12:40	351.0	36.8	0.4	9.48	6.68	1522.5	1.78	1517.7	0.04
12:41	350.0	36.8	0.5	9.44	6.70	1522.3	1.75	1517.7	0.04
12:42	350.8	36.9	0.6	9.43	6.71	1523.5	1.89	1517.4	0.04
12:43	350.9	37.0	0.7	9.42	6.69	1523.5	1.71	1517.6	0.04
12:44	349.2	36.6	0.8	9.53	6.66	1524.0	1.84	1518.6	0.04
12:45	350.9	36.7	0.8	9.45	6.69	1525.3	1.98	1517.6	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
12:45	358.1	37.9	0.6	9.28	6.78	1519.7	1.82	1518.9	0.04
12:46	347.7	36.1	0.9	9.60	6.61	1525.3	1.80	1517.7	0.04
12:47	346.7	35.9	0.9	9.58	6.63	1524.1	1.64	1519.0	0.05
12:48	347.7	35.8	0.8	9.55	6.64	1524.2	1.76	1519.2	0.04
12:49	347.3	35.8	0.9	9.61	6.61	1524.9	1.85	1518.5	0.04
12:50	346.4	35.9	1.0	9.63	6.61	1525.0	1.85	1518.1	0.04
12:51	346.9	36.0	1.0	9.63	6.62	1526.1	1.98	1519.3	0.05
12:52	344.2	36.2	1.0	9.66	6.58	1526.9	1.89	1519.9	0.05
12:53	343.2	36.0	0.9	9.71	6.55	1526.8	2.03	1519.3	0.04
12:54	344.6	35.8	0.9	9.68	6.55	1527.1	1.68	1519.1	0.04
12:55	344.7	35.9	0.8	9.66	6.58	1525.8	1.72	1519.0	0.05
12:56	345.0	35.6	0.9	9.65	6.59	1525.4	1.65	1519.1	0.05
12:57	342.9	35.3	0.9	9.61	6.61	1525.3	1.82	1519.2	0.04
12:58	343.7	35.8	0.9	9.54	6.64	1523.8	1.81	1519.4	0.04
12:59	344.0	35.6	0.9	9.60	6.61	1523.5	1.75	1518.2	0.04
13:00	342.2	35.5	0.9	9.62	6.60	1522.0	1.83	1517.9	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
13:00	345.2	35.8	0.9	9.62	6.60	1525.1	1.80	1518.9	0.04
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
13:00	363.3	39.1	0.7	9.11	6.88	1518.8	1.83	1516.0	0.04
13:01	343.0	35.6	0.9	9.60	6.61	1521.1	1.75	1517.7	0.04
13:02	344.9	35.5	1.1	9.60	6.62	1521.9	1.79	1517.7	0.04
13:03	344.8	35.9	1.1	9.55	6.65	1522.3	1.75	1518.6	0.04
13:04	345.0	36.2	1.1	9.58	6.62	1523.1	1.84	1518.2	0.04
13:05	343.7	35.7	1.1	9.65	6.59	1523.6	1.66	1519.2	0.05
13:06	341.8	35.7	1.1	9.72	6.54	1522.3	1.64	1518.6	0.05
13:07	342.8	35.8	1.1	9.73	6.55	1522.3	1.75	1517.8	0.04
13:08	342.8	35.2	1.1	9.75	6.53	1522.8	1.85	1517.7	0.04
13:09	341.4	35.1	1.0	9.73	6.53	1522.3	1.79	1518.1	0.05

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
13:10	338.4	34.8	1.1	9.80	6.50	1521.4	1.82	1518.7	0.04
13:11	338.2	34.7	1.0	9.75	6.53	1520.7	1.77	1518.6	0.04
13:12	338.9	34.8	1.0	9.78	6.53	1519.3	1.76	1517.8	0.04
13:13	341.7	35.3	1.1	9.67	6.58	1518.5	1.81	1517.7	0.04
13:14	345.0	35.2	1.1	9.62	6.61	1519.1	1.90	1517.7	0.04
13:15	344.1	35.4	1.1	9.64	6.61	1518.9	1.83	1516.6	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
13:15	342.4	35.4	1.0	9.68	6.57	1521.3	1.78	1518.1	0.04
13:16	341.2	35.2	1.1	9.63	6.61	1517.1	1.85	1516.4	0.04
13:17	341.6	35.2	1.2	9.65	6.59	1517.5	1.86	1515.4	0.04
13:18	343.9	35.4	1.1	9.62	6.61	1516.4	1.81	1516.0	0.04
13:19	342.2	35.4	0.9	9.60	6.60	1517.7	1.89	1515.7	0.04
13:20	342.8	35.1	0.9	9.57	6.61	1517.5	1.73	1515.1	0.04
13:21	339.2	35.1	0.9	9.68	6.56	1517.1	1.94	1515.1	0.04
13:22	339.3	35.0	1.0	9.64	6.58	1516.7	1.95	1514.8	0.04
13:23	336.9	35.0	1.1	9.72	6.53	1516.7	1.95	1514.6	0.04
13:24	336.1	34.6	1.2	9.72	6.55	1514.4	1.82	1512.5	0.04
13:25	336.6	35.0	1.2	9.65	6.59	1512.4	1.96	1512.5	0.04
13:26	337.8	35.3	1.3	9.57	6.61	1513.1	1.79	1513.0	0.04
13:27	338.1	35.6	1.4	9.63	6.61	1513.6	1.59	1515.5	0.05
13:28	337.8	35.3	1.3	9.74	6.55	1512.9	1.78	1515.8	0.04
13:29	333.5	35.5	1.4	9.70	6.57	1512.0	1.99	1513.4	0.03
13:30	335.3	35.2	1.4	9.75	6.53	1512.7	2.20	1511.6	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
13:30	338.8	35.2	1.2	9.66	6.58	1515.2	1.87	1514.5	0.04
13:31	338.1	35.1	1.4	9.70	6.54	1513.4	2.08	1511.6	0.03
13:32	342.2	35.0	1.5	9.64	6.59	1512.0	2.07	1511.6	0.04
13:33	343.8	34.9	1.5	9.63	6.58	1512.1	2.08	1511.6	0.04
13:34	342.5	35.0	1.5	9.66	6.60	1512.8	2.15	1511.5	0.04
13:35	344.5	35.0	1.6	9.57	6.63	1511.9	1.92	1512.6	0.04
13:36	345.9	35.9	1.6	9.54	6.64	1512.0	1.82	1513.5	0.04
13:37	343.3	36.0	1.6	9.60	6.62	1510.2	1.82	1513.2	0.04
13:38	343.0	35.6	1.7	9.57	6.62	1510.0	1.85	1513.1	0.04
13:39	341.7	35.2	1.7	9.59	6.61	1510.8	1.80	1513.1	0.04
13:40	339.0	35.3	1.7	9.62	6.59	1511.4	1.84	1513.1	0.04
13:41	340.0	35.4	1.8	9.60	6.58	1511.6	1.65	1514.1	0.04
13:42	339.8	35.5	1.8	9.63	6.58	1511.6	1.77	1513.4	0.04
13:43	344.4	35.4	1.8	9.67	6.58	1511.3	1.83	1513.2	0.04
13:44	343.5	35.4	2.0	9.60	6.59	1512.2	1.96	1513.3	0.04
13:45	331.5	34.7	1.9	9.73	6.50	1512.4	1.86	1513.2	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
13:45	341.6	35.3	1.7	9.62	6.59	1511.7	1.90	1512.8	0.04
13:46	329.9	34.9	1.7	9.75	6.50	1511.6	1.80	1513.9	0.04
13:47	331.6	35.1	1.7	9.76	6.50	1512.4	1.82	1514.0	0.04
13:48	333.5	35.1	1.6	9.79	6.49	1510.1	1.84	1513.5	0.04
13:49	334.8	34.9	1.5	9.77	6.47	1511.0	1.69	1513.8	0.04
13:50	334.4	35.0	1.6	9.79	6.47	1511.4	1.87	1513.2	0.04
13:51	335.7	35.1	1.4	9.82	6.47	1512.7	1.81	1513.2	0.04
13:52	337.6	34.9	1.4	9.77	6.49	1511.8	1.79	1512.7	0.04

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
13:53	335.2	34.6	1.4	9.70	6.51	1510.9	1.73	1513.1	0.04
13:54	334.1	34.3	1.4	9.75	6.48	1510.1	1.78	1513.1	0.04
13:55	336.4	35.1	1.5	9.68	6.54	1510.1	1.87	1512.9	0.04
13:56	336.7	34.5	1.5	9.68	6.52	1509.7	1.70	1513.1	0.04
13:57	333.4	34.6	1.5	9.73	6.50	1511.3	1.95	1512.7	0.04
13:58	325.9	34.0	1.6	9.81	6.45	1510.5	1.84	1512.3	0.04
13:59	326.1	34.7	1.6	9.67	6.52	1508.1	1.77	1511.9	0.04
14:00	332.2	35.0	1.7	9.61	6.57	1508.2	1.74	1512.2	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
14:00	333.2	34.8	1.5	9.74	6.50	1510.7	1.80	1513.0	0.04
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
14:00	339.0	35.2	1.4	9.67	6.56	1514.7	1.84	1514.6	0.04

COMMENTS: Calibration Time

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Calibration Bias Check

DATE : 10-31-1991 TIME: 14:00 - 14:14

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	3.8
7	Unit 4	ppmSO2	241.0	233.2
9	Unit 4	ppmNOx	0.0	0.1
9	Unit 4	ppmNOx	141.5	138.0
8	Unit 4	ppmCO	0.0	1.8
8	Unit 4	ppmCO	30.2	32.3
5	Unit 4	% O2	0.00	0.05
5	Unit 4	% O2	12.48	12.28
6	Unit 4	% CO2	0.00	-0.03
6	Unit 4	% CO2	11.06	10.60

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
14:17	345.6	34.1	1.9	9.70	6.41	1501.9	1.39	1502.4	0.04
14:18	324.8	33.9	1.9	9.77	6.43	1501.8	1.61	1502.3	0.04
14:19	322.5	34.0	1.9	9.71	6.46	1501.6	1.71	1501.9	0.04
14:20	320.6	34.0	2.0	9.74	6.44	1501.1	1.65	1501.0	0.04
14:21	322.0	34.4	1.9	9.70	6.49	1500.9	1.60	1501.3	0.04
14:22	326.7	34.6	2.0	9.66	6.50	1499.7	1.55	1501.0	0.04
14:23	325.6	34.5	2.0	9.74	6.47	1500.2	1.63	1500.8	0.04
14:24	327.7	34.7	2.0	9.72	6.48	1500.9	1.71	1500.1	0.04
14:25	328.2	34.4	1.9	9.75	6.47	1500.1	1.72	1500.2	0.04
14:26	325.7	34.4	2.0	9.76	6.46	1499.3	1.60	1499.7	0.04
14:27	323.8	34.7	2.0	9.77	6.47	1498.4	1.66	1499.4	0.04
14:28	324.6	34.0	2.0	9.78	6.44	1498.1	1.48	1499.5	0.04
14:29	322.6	33.6	2.0	9.80	6.44	1497.9	1.61	1499.7	0.04
14:30	319.9	33.8	2.0	9.82	6.44	1497.4	1.71	1499.0	0.04
14:31	320.3	34.0	2.1	9.77	6.48	1496.7	1.75	1497.9	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
14:31	325.4	34.2	2.0	9.75	6.46	1499.7	1.63	1500.4	0.04
14:32	324.7	34.1	2.1	9.72	6.50	1496.8	1.66	1497.9	0.03
14:33	328.0	34.2	2.2	9.67	6.51	1496.8	1.66	1498.0	0.03
14:34	328.7	34.7	2.2	9.67	6.52	1496.4	1.53	1498.2	0.04
14:35	326.9	34.1	2.2	9.79	6.46	1496.2	1.62	1498.9	0.04
14:36	325.8	34.0	2.2	9.73	6.47	1495.2	1.68	1497.9	0.03
14:37	327.8	34.2	2.3	9.72	6.48	1495.5	1.83	1497.4	0.03
14:38	328.0	34.4	2.4	9.72	6.49	1495.8	1.82	1497.2	0.03
14:39	327.0	34.2	2.3	9.73	6.48	1493.9	1.65	1497.0	0.04
14:40	327.0	34.1	2.4	9.72	6.50	1493.6	1.62	1497.9	0.04
14:41	328.2	34.4	2.5	9.71	6.51	1493.7	1.52	1498.8	0.04
14:42	329.3	34.8	2.4	9.69	6.52	1493.8	1.71	1498.4	0.04
14:43	327.3	34.4	2.4	9.70	6.52	1494.2	1.67	1498.0	0.03
14:44	323.7	34.4	2.4	9.75	6.48	1493.7	1.54	1498.8	0.04
14:45	322.4	34.4	2.5	9.74	6.48	1493.3	1.53	1497.9	0.04
14:46	322.1	34.5	2.5	9.65	6.52	1493.7	1.78	1498.4	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
14:46	326.5	34.3	2.3	9.71	6.50	1494.8	1.66	1498.0	0.04
14:47	324.6	34.7	2.5	9.68	6.52	1493.4	1.52	1498.4	0.04
14:48	323.3	34.6	2.5	9.70	6.51	1493.8	1.72	1498.3	0.04
14:49	321.4	34.5	2.5	9.74	6.48	1494.0	1.73	1498.1	0.04
14:50	320.3	34.4	2.5	9.74	6.48	1494.0	1.59	1498.7	0.04
14:51	317.0	34.2	2.5	9.77	6.46	1494.3	1.78	1497.9	0.04
14:52	315.4	34.1	2.5	9.81	6.45	1493.2	1.60	1498.9	0.04
14:53	318.0	34.2	2.6	9.74	6.48	1493.4	1.79	1498.0	0.04
14:54	317.0	34.4	2.6	9.80	6.45	1493.4	1.75	1497.9	0.04
14:55	317.1	34.3	2.6	9.81	6.43	1493.3	1.53	1499.1	0.04
14:56	316.9	34.0	2.5	9.86	6.42	1493.7	1.68	1498.1	0.04
14:57	317.4	34.0	2.5	9.85	6.42	1493.3	1.74	1498.4	0.04
14:58	315.5	34.2	2.4	9.85	6.41	1492.9	1.58	1498.3	0.04
14:59	318.9	34.4	2.4	9.79	6.45	1493.3	1.64	1497.9	0.04
15:00	319.7	34.5	2.4	9.79	6.44	1493.3	1.54	1497.9	0.04

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST HOUR: 44 MINUTES OF VALID DATA									
15:00	323.6	34.3	2.3	9.75	6.47	1496.1	1.65	1498.9	0.04
15:01	317.8	34.2	2.5	9.88	6.41	1492.1	1.53	1497.9	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
15:01	318.7	34.3	2.5	9.79	6.45	1493.4	1.65	1498.2	0.04
15:02	315.9	34.2	2.5	9.92	6.39	1492.0	1.62	1498.1	0.04
15:03	315.4	33.9	2.5	9.91	6.39	1492.5	1.75	1497.9	0.04
15:04	315.6	33.7	2.4	9.92	6.39	1492.6	1.54	1497.9	0.04
15:05	314.9	34.1	2.4	9.89	6.41	1492.6	1.76	1496.9	0.04
15:06	316.3	34.2	2.4	9.94	6.38	1491.8	1.67	1496.4	0.04
15:07	313.1	33.9	2.3	9.93	6.38	1491.4	1.79	1496.2	0.04
15:08	316.4	34.3	2.3	9.83	6.43	1490.0	1.82	1495.9	0.04
15:09	318.1	34.5	2.4	9.83	6.44	1489.1	1.57	1496.3	0.04
15:10	314.2	33.7	2.4	9.94	6.36	1488.7	1.79	1496.3	0.03
15:11	313.2	33.8	2.3	9.92	6.39	1488.2	1.66	1496.3	0.04
15:12	315.9	34.0	2.3	9.91	6.40	1487.3	1.75	1496.1	0.03
15:13	317.0	34.4	2.2	9.83	6.45	1487.9	1.67	1497.1	0.03
15:14	319.3	34.6	2.4	9.72	6.49	1487.2	1.74	1498.3	0.03
15:15	323.3	34.7	2.2	9.69	6.52	1487.1	1.74	1499.4	0.04
15:16	321.8	34.3	2.2	9.71	6.52	1486.4	1.85	1499.4	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
15:16	316.7	34.2	2.3	9.86	6.42	1489.7	1.71	1497.2	0.04
15:17	321.7	34.2	2.1	9.69	6.52	1485.9	1.54	1499.5	0.04
15:18	320.9	34.0	2.1	9.65	6.55	1485.3	1.73	1499.1	0.03
15:19	329.1	33.7	2.2	9.32	6.74	1485.2	1.54	1497.8	0.03
15:20	336.1	34.0	2.3	9.23	6.78	1483.4	1.47	1496.5	0.03
15:21	336.6	34.1	2.4	9.28	6.77	1481.4	1.53	1495.4	0.03
15:22	336.5	34.4	2.5	9.30	6.76	1480.0	1.78	1495.0	0.03
15:23	338.1	34.9	2.5	9.24	6.79	1480.2	1.64	1494.4	0.03
15:24	337.9	35.2	2.6	9.22	6.80	1480.5	1.72	1494.5	0.03
15:25	338.0	35.1	2.6	9.20	6.81	1477.5	1.45	1493.9	0.03
15:26	340.5	35.8	2.7	9.04	6.92	1475.1	1.37	1492.1	0.03
15:27	347.5	36.4	2.8	8.92	6.97	1473.8	1.41	1491.7	0.03
15:28	345.9	36.3	2.8	8.96	6.96	1473.4	1.53	1490.6	0.03
15:29	347.1	36.4	2.8	8.92	6.98	1473.3	1.81	1489.3	0.03
15:30	347.2	36.5	2.8	8.89	6.99	1472.1	1.78	1487.5	0.03
15:31	348.5	36.8	2.8	8.85	7.00	1471.9	1.76	1488.6	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
15:31	338.1	35.2	2.5	9.18	6.82	1478.6	1.60	1493.7	0.03
15:32	348.0	36.5	2.9	8.90	6.99	1471.8	1.82	1487.9	0.03
15:33	346.7	36.4	2.8	8.91	6.98	1470.8	1.73	1488.7	0.03
15:34	343.4	36.6	2.8	8.96	6.96	1470.6	1.76	1487.1	0.04
15:35	342.3	36.7	2.8	8.91	6.98	1470.0	1.83	1487.1	0.04
15:36	344.1	36.5	2.7	8.90	6.99	1467.6	1.86	1485.9	0.03
15:37	345.3	36.2	2.9	8.84	7.01	1467.2	1.80	1485.4	0.03
15:38	343.6	36.5	2.8	8.92	6.97	1466.6	1.57	1487.2	0.04
15:39	344.8	36.8	2.9	9.03	6.93	1464.8	1.55	1487.8	0.03

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
15:40	336.0	36.8	2.9	9.07	6.92	1465.6	1.94	1485.2	0.03
15:41	339.1	36.3	2.8	8.97	6.95	1465.1	1.83	1484.6	0.03
15:42	338.2	36.1	2.8	9.01	6.94	1463.8	1.69	1484.5	0.03
15:43	338.6	36.4	2.9	8.91	6.98	1463.7	1.84	1484.5	0.03
15:44	338.9	36.7	2.8	9.00	6.93	1464.2	1.86	1483.8	0.03
15:45	339.7	36.5	2.8	8.99	6.94	1463.4	1.84	1483.9	0.03
15:46	340.4	36.5	2.7	8.99	6.93	1462.7	1.83	1484.0	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
15:46	341.9	36.5	2.8	8.95	6.96	1466.5	1.78	1485.8	0.03
15:47	337.9	36.5	2.9	9.02	6.93	1461.7	1.79	1483.6	0.03
15:48	339.5	35.9	2.8	8.86	7.00	1460.3	1.83	1482.6	0.03
15:49	338.4	35.8	2.7	8.88	6.98	1460.9	1.76	1484.0	0.03
15:50	336.3	36.3	2.7	8.93	6.94	1461.2	1.56	1484.2	0.03
15:51	330.2	36.5	2.8	8.99	6.91	1460.5	1.86	1483.1	0.02
15:52	329.7	36.7	2.8	9.06	6.87	1461.4	1.97	1481.1	0.03
15:53	332.4	36.6	2.8	9.09	6.87	1461.3	1.91	1481.2	0.03
15:54	337.3	36.5	2.9	8.94	6.95	1461.3	1.95	1481.3	0.03
15:55	339.4	36.7	2.9	9.00	6.94	1461.5	2.01	1481.3	0.03
15:56	340.3	36.8	2.9	8.94	6.95	1462.5	1.94	1483.6	0.04
15:57	339.5	37.1	2.9	9.03	6.90	1460.2	1.88	1482.7	0.03
15:58	337.3	37.0	3.0	9.05	6.89	1460.5	1.80	1482.7	0.03
15:59	336.6	37.5	3.0	9.10	6.88	1459.7	1.87	1482.3	0.03
16:00	335.7	37.2	3.0	9.07	6.87	1460.4	1.84	1483.2	0.03
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
16:00	333.0	35.6	2.6	9.26	6.77	1474.5	1.73	1490.1	0.03
16:01	332.7	36.3	3.0	9.24	6.77	1459.8	1.82	1485.0	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
16:01	336.2	36.6	2.9	9.01	6.91	1460.9	1.85	1482.8	0.03
16:02	327.7	37.1	3.0	9.41	6.68	1459.7	1.71	1485.8	0.03
16:03	323.9	37.3	3.0	9.47	6.68	1459.1	1.67	1485.6	0.03
16:04	322.6	37.5	3.0	9.45	6.68	1458.3	1.74	1485.8	0.03
16:05	318.8	37.6	2.8	9.45	6.68	1458.5	1.76	1486.1	0.03
16:06	320.5	39.4	2.9	9.28	6.76	1458.5	1.81	1488.1	0.03
16:07	319.4	42.1	2.8	9.38	6.71	1459.6	1.80	1488.9	0.03
16:08	315.2	42.8	2.8	9.53	6.67	1459.7	1.17	1490.2	0.04
16:09	313.8	43.2	2.9	9.57	6.66	1460.4	0.45	1489.9	0.03
16:10	312.5	43.4	2.8	9.56	6.67	1460.2	0.44	1490.5	0.04
16:11	309.2	43.4	2.9	9.57	6.66	1459.7	2.23	1490.5	0.03
16:12	310.0	43.4	2.9	9.51	6.68	1459.7	2.26	1491.0	0.03
16:13	310.4	43.4	3.0	9.56	6.67	1459.7	2.62	1491.4	0.03
16:14	312.1	43.6	3.0	9.58	6.66	1459.8	2.87	1491.8	0.03
16:15	312.2	43.6	3.0	9.56	6.66	1459.9	1.70	1491.8	0.04
16:16	312.1	43.7	2.9	9.56	6.66	1460.2	1.27	1491.8	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
16:16	316.0	41.4	2.9	9.50	6.68	1459.5	1.70	1489.3	0.03
16:17	312.4	43.9	3.0	9.56	6.66	1460.0	2.10	1492.1	0.03
16:18	310.5	44.0	2.9	9.60	6.64	1459.7	2.72	1492.1	0.03

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
16:19	311.3	44.1	2.9	9.59	6.66	1459.5	1.75	1491.8	0.03
16:20	312.7	43.9	3.0	9.59	6.66	1459.7	1.76	1491.9	0.03
16:21	311.9	44.0	2.9	9.63	6.64	1458.7	1.81	1491.8	0.03
16:22	312.7	44.1	2.8	9.61	6.65	1458.2	1.79	1491.8	0.03
16:23	311.3	43.9	3.0	9.66	6.63	1457.0	1.76	1492.0	0.03
16:24	316.1	44.1	3.0	9.66	6.64	1456.6	1.79	1491.8	0.03
16:25	309.3	43.8	2.9	9.68	6.63	1455.9	1.79	1492.2	0.03
16:26	309.3	43.9	3.0	9.72	6.61	1455.2	1.80	1492.5	0.03
16:27	310.3	44.0	3.0	9.67	6.64	1455.2	1.80	1492.3	0.03
16:28	309.5	43.9	3.1	9.72	6.61	1454.6	1.79	1492.0	0.01
16:29	308.9	43.9	3.1	9.73	6.60	1454.9	1.76	1491.8	0.01
16:30	308.7	44.0	3.1	9.72	6.61	1453.9	1.74	1491.8	0.05*
16:31	308.5	43.7	3.1	9.71	6.61	1453.7	1.79	1491.9	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
16:31	310.9	44.0	3.0	9.66	6.63	1456.9	1.86	1492.0	0.03
16:32	308.0	44.1	3.0	9.73	6.60	1453.6	1.75	1492.3	0.03
16:33	307.1	44.4	3.1	9.80	6.58	1453.4	1.75	1493.2	0.03
16:34	308.1	44.1	3.1	9.74	6.60	1453.5	1.71	1493.2	0.03
16:35	307.6	44.2	3.2	9.74	6.58	1452.3	1.78	1491.8	0.03
16:36	307.9	44.1	3.2	9.73	6.59	1452.4	1.84	1492.1	0.03
16:37	307.3	44.1	3.2	9.75	6.58	1452.3	1.69	1492.8	0.03
16:38	305.7	43.9	3.2	9.79	6.55	1452.1	1.76	1493.3	0.03
16:39	304.9	43.9	3.1	9.82	6.54	1452.6	1.77	1493.3	0.03
16:40	303.8	44.6	3.1	9.80	6.53	1451.9	1.75	1492.7	0.03
16:41	302.2	44.6	3.0	9.82	6.53	1451.3	1.80	1492.8	0.03
16:42	302.2	44.1	3.0	9.79	6.54	1452.1	1.83	1493.3	0.03
16:43	303.2	44.3	3.0	9.77	6.54	1453.3	1.75	1493.2	0.03
16:44	302.3	44.5	2.9	9.80	6.52	1453.6	1.80	1493.3	0.03
16:45	300.8	44.6	3.0	9.83	6.51	1453.7	1.81	1493.1	0.03
16:46	301.3	44.4	3.1	9.78	6.52	1453.7	1.85	1492.3	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
16:46	304.8	44.3	3.1	9.78	6.55	1452.8	1.78	1492.8	0.03
16:47	302.4	44.0	3.1	9.81	6.52	1454.2	1.82	1492.0	0.03
16:48	302.3	44.4	3.1	9.82	6.52	1455.1	1.77	1492.3	0.03
16:49	300.4	44.3	3.1	9.84	6.50	1455.1	1.78	1493.0	0.04
16:50	300.0	44.5	3.2	9.86	6.48	1455.3	1.81	1492.3	0.03
16:51	299.2	44.3	3.2	9.84	6.50	1454.9	1.82	1491.9	0.04
16:52	301.4	44.6	3.3	9.85	6.50	1454.8	1.87	1491.8	0.03
16:53	301.7	44.7	3.4	9.85	6.51	1455.1	1.80	1491.9	0.03
16:54	300.8	44.6	3.4	9.83	6.51	1455.2	1.78	1491.9	0.03
16:55	298.9	44.9	3.4	9.84	6.48	1455.2	1.85	1491.8	0.03
16:56	297.3	44.7	3.4	10.01	6.48	1454.1	1.73	1491.8	0.03
16:57	295.6	44.7	3.2	9.95	6.46	1455.4	1.85	1491.8	0.03
16:58	294.0	44.4	3.3	9.94	6.45	1456.7	1.83	1491.9	0.04
16:59	291.3	44.6	3.1	9.99	6.42	1456.0	1.79	1493.2	0.04
17:00	290.3	44.8	3.0	10.01	6.41	1456.6	1.84	1492.1	0.04
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
17:00	308.1	43.4	3.0	9.69	6.59	1456.2	1.79	1491.4	0.03

COMMENTS: Calibration Time

End Run
IV-2-54-CCM-2

(CONTINUED ON THE NEXT PAGE)

ENTROPY

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Calibration Bias Check

DATE : 10-31-1991 TIME: 17:00 - 17:14

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	2.4
7	Unit 4	ppmSO2	241.0	232.0
9	Unit 4	ppmNOx	0.0	0.1
9	Unit 4	ppmNOx	141.5	139.6
8	Unit 4	ppmCO	0.0	2.8
8	Unit 4	ppmCO	30.2	32.4
5	Unit 4	% O2	0.00	0.08
5	Unit 4	% O2	12.48	12.18
6	Unit 4	% CO2	0.00	-0.09
6	Unit 4	% CO2	11.06	10.59

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Calibration Error Check

DATE : 10-31-1991 TIME: 17:15 - 17:36

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	0.1
7	Unit 4	ppmSO2	241.0	239.9
7	Unit 4	ppmSO2	436.0	436.5
9	Unit 4	ppmNOx	0.0	0.1
9	Unit 4	ppmNOx	141.5	140.0
9	Unit 4	ppmNOx	240.0	241.0
8	Unit 4	ppmCO	0.0	0.5
8	Unit 4	ppmCO	30.2	31.4
8	Unit 4	ppmCO	92.3	92.3
5	Unit 4	% O2	0.00	0.05
5	Unit 4	% O2	12.48	12.52
5	Unit 4	% O2	21.40	21.45
6	Unit 4	% CO2	0.00	0.04
6	Unit 4	% CO2	11.06	10.85
6	Unit 4	% CO2	17.46	17.46

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: System Calibration Bias Check

DATE : 10-31-1991 TIME: 17:36 - 17:52

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	2.5
7	Unit 4	ppmSO2	241.0	239.1
9	Unit 4	ppmNOx	0.0	0.5
9	Unit 4	ppmNOx	141.5	138.0
8	Unit 4	ppmCO	0.0	1.1
8	Unit 4	ppmCO	30.2	30.5
5	Unit 4	% O2	0.00	0.09
5	Unit 4	% O2	12.48	12.48
6	Unit 4	% CO2	0.00	0.06
6	Unit 4	% CO2	11.06	10.76

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
17:56	292.7	42.1	0.2	10.71	6.36	1460.4	1.81	1476.8	0.01
17:57	280.7	42.0	0.2	10.75	6.35	1460.8	1.80	1476.9	0.01
17:58	280.0	42.1	0.1	10.77	6.35	1460.6	1.77	1476.3	0.01
17:59	282.9	42.2	0.1	10.76	6.36	1460.3	1.79	1475.2	0.01
18:00	286.2	42.2	0.0	10.72	6.37	1459.2	1.50	1475.2	0.02
AVERAGE VALUES FOR THE LAST HOUR: 5 MINUTES OF VALID DATA									
18:00	284.5	42.1	0.1	10.74	6.36	1460.3	1.73	1476.1	0.01
18:01	290.5	41.6	-0.0	10.72	6.40	1458.9	1.55	1474.9	0.04
18:02	292.1	41.2	-0.1	10.66	6.42	1459.7	1.79	1473.5	0.04
18:03	292.9	41.2	-0.1	10.63	6.45	1459.8	1.87	1473.3	0.05
18:04	293.6	41.3	-0.1	10.60	6.46	1460.9	1.75	1473.4	0.04
18:05	294.9	41.2	-0.1	10.64	6.46	1459.2	1.44	1473.3	0.04
18:06	296.1	41.0	-0.1	10.65	6.46	1459.7	1.64	1473.2	0.04
18:07	297.1	40.9	-0.1	10.67	6.46	1459.7	1.67	1472.2	0.04
18:08	296.6	40.8	-0.1	10.65	6.48	1460.6	1.80	1471.2	0.04
18:09	296.9	41.0	-0.1	10.66	6.45	1460.9	2.02	1469.3	0.04
18:10	294.5	40.9	-0.1	10.70	6.44	1460.9	1.99	1468.1	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
18:10	291.2	41.5	-0.0	10.69	6.42	1460.1	1.75	1473.5	0.03
18:11	296.4	41.4	-0.2	10.65	6.48	1459.6	1.41	1468.5	0.04
18:12	300.0	41.7	-0.2	10.62	6.51	1459.5	1.75	1469.5	0.03
18:13	297.8	41.5	-0.3	10.63	6.49	1459.0	1.79	1468.3	0.03
18:14	298.4	41.4	-0.4	10.62	6.50	1458.3	1.50	1468.1	0.03
18:15	299.2	41.6	-0.4	10.62	6.52	1457.4	1.40	1469.7	0.03
18:16	299.4	41.5	-0.4	10.61	6.52	1457.9	1.71	1468.5	0.03
18:17	300.4	41.6	-0.2	10.63	6.53	1456.6	1.65	1469.4	0.03
18:18	300.7	41.4	-0.3	10.66	6.52	1457.1	1.51	1469.9	0.04
18:19	299.4	41.5	-0.3	10.71	6.50	1456.6	1.35	1470.8	0.04
18:20	299.0	41.7	-0.4	10.73	6.51	1456.9	1.56	1471.0	0.04
18:21	298.1	41.3	-0.5	10.73	6.50	1457.2	1.82	1471.0	0.04
18:22	298.4	41.2	-0.5	10.75	6.50	1455.4	1.54	1470.4	0.04
18:23	297.7	41.2	-0.5	10.76	6.48	1455.1	1.36	1470.3	0.04
18:24	298.1	41.2	-0.6	10.80	6.49	1455.1	1.35	1470.9	0.04
18:25	298.4	41.2	-0.5	10.78	6.48	1456.5	1.87	1470.8	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
18:25	298.8	41.4	-0.4	10.69	6.50	1457.2	1.57	1469.8	0.04
18:26	295.8	41.2	-0.5	10.83	6.47	1460.6	1.82	1470.6	0.04
18:27	295.0	41.0	-0.5	10.84	6.48	1465.5	1.94	1470.8	0.04
18:28	288.6	40.9	-0.6	10.84	6.48	1467.7	2.04	1469.8	0.04
18:29	286.5	40.9	-0.7	10.82	6.47	1468.9	1.86	1470.0	0.04
18:30	288.5	41.1	-0.9	10.83	6.46	1469.4	1.94	1470.2	0.04
18:31	289.0	41.0	-1.0	10.82	6.47	1470.3	1.89	1470.4	0.04
18:32	291.8	40.8	-1.0	10.82	6.46	1470.4	1.86	1470.1	0.04
18:33	293.1	40.9	-0.9	10.82	6.45	1474.1	2.29	1471.1	0.04
18:34	293.5	41.0	-0.9	10.84	6.47	1477.9	2.48	1471.9	0.04
18:35	291.0	41.2	-0.8	10.84	6.46	1477.5	2.14	1471.8	0.04
18:36	290.7	41.1	-0.8	10.83	6.49	1476.9	2.44	1472.0	0.04
18:37	291.7	40.9	-0.7	10.84	6.49	1478.0	2.40	1472.6	0.04
18:38	291.5	40.8	-0.6	10.88	6.49	1477.3	2.33	1472.8	0.04

Begin Run
I-3-54-(6m-3

ENTROPY

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
18:39	292.4	40.9	-0.5	10.91	6.49	1476.8	2.32	1472.5	0.04
18:40	292.4	40.8	-0.6	10.90	6.49	1477.2	2.13	1472.2	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
18:40	291.4	41.0	-0.7	10.84	6.47	1472.6	2.13	1471.3	0.04
18:41	292.8	40.6	-0.5	10.90	6.50	1478.5	2.36	1472.8	0.03
18:42	292.3	40.7	-0.4	10.90	6.48	1478.0	1.79	1473.2	0.03
18:43	291.1	40.4	-0.4	10.88	6.50	1478.2	2.17	1473.6	0.04
18:44	291.4	40.7	-0.4	10.92	6.47	1479.9	2.28	1473.0	0.03
18:45	290.9	40.8	-0.4	10.92	6.48	1482.4	1.97	1473.4	0.03
18:46	291.6	40.8	-0.3	10.92	6.52	1484.3	2.12	1474.9	0.03
18:47	290.1	40.6	-0.3	10.94	6.49	1486.5	2.52	1475.0	0.03
18:48	288.3	40.7	-0.3	10.95	6.47	1489.7	2.48	1475.2	0.03
18:49	285.9	41.1	-0.3	10.99	6.46	1490.2	1.89	1476.1	0.03
18:50	285.1	40.8	-0.4	10.99	6.47	1492.4	2.61	1476.6	0.03
18:51	284.2	40.5	-0.4	11.02	6.44	1494.5	2.44	1475.1	0.03
18:52	282.5	40.3	-0.4	11.11	6.42	1495.1	2.69	1476.8	0.03
18:53	280.9	40.1	-0.5	11.10	6.40	1494.6	2.46	1476.1	0.03
18:54	279.9	40.2	-0.5	11.10	6.40	1494.8	2.56	1476.3	0.03
18:55	277.3	40.3	-0.5	11.13	6.40	1496.1	2.49	1476.1	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
18:55	287.0	40.6	-0.4	10.98	6.46	1487.7	2.32	1474.9	0.03
18:56	275.5	40.4	-0.5	11.15	6.40	1496.2	2.03	1478.8	0.04
18:57	272.6	40.6	-0.5	11.20	6.39	1498.0	2.12	1480.0	0.04
18:58	271.4	40.5	-0.5	11.19	6.39	1499.4	1.93	1480.1	0.04
18:59	269.6	40.4	-0.5	11.20	6.38	1500.9	2.08	1481.8	0.04
19:00	269.2	40.2	-0.4	11.20	6.39	1504.1	2.05	1480.3	0.04
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
19:00	291.0	41.0	-0.4	10.84	6.47	1472.7	1.97	1472.7	0.04
19:01	267.6	40.3	-0.4	11.24	6.36	1508.1	2.05	1481.6	0.04
19:02	267.4	40.2	-0.5	11.25	6.36	1511.3	1.93	1480.6	0.04
19:03	268.2	40.3	-0.5	11.23	6.38	1514.4	1.89	1479.9	0.04
19:04	268.7	40.1	-0.5	11.24	6.38	1517.9	1.99	1479.5	0.04
19:05	270.0	40.2	-0.6	11.16	6.42	1519.9	1.97	1479.2	0.03
19:06	271.1	40.5	-0.6	11.15	6.42	1520.6	1.99	1478.9	0.03
19:07	271.8	40.4	-0.5	11.17	6.41	1522.8	1.91	1478.8	0.04
19:08	271.4	40.5	-0.5	11.24	6.40	1526.3	1.87	1482.2	0.04
19:09	267.9	40.2	-0.5	11.32	6.35	1531.7	1.90	1483.4	0.05
19:10	265.9	40.5	-0.5	11.35	6.34	1544.6	2.70	1484.5	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
19:10	269.9	40.4	-0.5	11.22	6.39	1514.4	2.03	1480.6	0.04
19:11	259.7	39.7	-0.6	11.59	6.19	1558.0	3.09	1483.9	0.05
19:12	256.1	39.7	-0.6	11.62	6.17	1560.5	3.20	1483.3	0.04
19:13	255.7	39.6	-0.5	11.68	6.17	1560.0	3.09	1482.2	0.04
19:14	256.9	39.2	-0.4	11.69	6.17	1562.1	3.12	1481.7	0.04
19:15	256.5	39.2	-0.5	11.65	6.17	1565.1	3.17	1480.5	0.04
19:16	257.1	39.3	-0.4	11.68	6.18	1568.2	3.20	1480.5	0.04
19:17	256.4	39.9	-0.4	11.68	6.18	1574.2	3.18	1484.3	0.04

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
19:18	255.4	40.9	-0.4	11.76	6.14	1592.4	3.57	1485.7	0.05
19:19	252.1	41.7	-0.3	11.84	6.12	1588.1	3.57	1486.7	0.05
19:20	249.7	42.2	-0.4	11.87	6.12	1587.4	3.50	1490.9	0.04
19:21	248.6	42.1	-0.5	11.86	6.11	1587.2	3.60	1491.8	0.05
19:22	247.0	42.1	-0.4	11.88	6.09	1589.5	3.52	1492.6	0.05
19:23	245.0	41.9	-0.4	11.96	6.07	1591.2	3.53	1493.1	0.05
19:24	244.6	41.5	-0.4	11.98	6.05	1595.6	3.60	1493.4	0.04
19:25	244.4	41.6	-0.5	11.97	6.05	1604.5	3.79	1493.8	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
19:25	252.3	40.7	-0.4	11.78	6.13	1578.9	3.38	1487.0	0.05
19:26	243.3	41.0	-0.6	11.99	6.01	1603.8	3.93	1493.8	0.05
19:27	235.8	39.3	-0.7	12.33	5.79	1600.0	3.82	1491.0	0.06
19:28	232.7	40.0	-0.6	12.36	5.79	1597.6	3.86	1491.3	0.06
19:29	238.8	41.0	-0.5	12.22	5.89	1597.1	3.83	1492.7	0.05
19:30	245.8	42.8	-0.5	12.00	6.01	1597.6	3.70	1495.5	0.05
19:31	250.3	44.9	-0.5	11.80	6.14	1598.6	3.70	1498.6	0.05
19:32	249.0	45.5	-0.6	11.76	6.17	1600.3	3.74	1500.8	0.06
19:33	247.0	46.2	-0.6	11.76	6.21	1602.6	3.74	1504.8	0.05
19:34	234.8	41.2	-0.7	12.21	5.91	1603.7	3.89	1506.7	0.05
19:35	225.0	38.8	-0.7	12.66	5.60	1603.7	3.67	1508.5	0.06
19:36	220.4	42.2	-0.6	12.75	5.57	1602.6	3.62	1510.2	0.05
19:37	227.6	43.8	-0.6	12.51	5.71	1602.4	3.60	1510.4	0.05
19:38	241.8	46.9	-0.6	12.17	5.94	1601.7	3.54	1512.3	0.05
19:39	256.4	51.7	-0.5	11.84	6.08	1601.6	3.56	1516.0	0.05
19:40	272.0	61.2	-0.4	11.43	6.32	1601.3	3.51	1522.3	0.06
AVERAGE VALUES FOR THE LAST 15 MINUTES									
19:40	241.4	44.4	-0.6	12.12	5.94	1601.0	3.71	1503.7	0.05
19:41	289.7	70.1	-0.4	10.64	6.85	1600.2	3.53	1530.5	0.05
19:42	291.4	64.6	-0.5	10.82	6.74	1600.1	3.62	1533.2	0.06
19:43	281.4	59.4	-0.5	11.04	6.58	1600.1	3.60	1535.8	0.06
19:44	284.5	57.8	-0.5	11.07	6.57	1600.1	3.51	1536.7	0.05
19:45	281.9	58.5	-0.4	11.23	6.46	1599.3	3.49	1538.2	0.05
19:46	283.3	57.6	-0.5	11.14	6.50	1598.6	3.50	1538.7	0.05
19:47	295.6	59.4	-0.4	10.91	6.64	1598.6	3.54	1542.6	0.07
19:48	292.7	62.8	-0.4	11.24	6.46	1597.7	3.19	1553.6	0.07
19:49	289.3	70.0	-0.5	11.14	6.50	1597.3	3.52	1560.1	0.08
19:50	301.0	78.3	-0.5	10.69	6.81	1596.9	3.41	1579.7	0.09
19:51	290.6	78.6	-0.6	11.22	6.51	1596.0	3.64	1579.8	0.09
19:52	276.1	72.4	-0.6	11.56	6.30	1594.7	3.57	1579.7	0.08
19:53	270.5	72.1	-0.5	11.75	6.18	1594.3	3.55	1581.0	0.09
19:54	263.1	72.9	-0.5	11.91	6.10	1594.0	3.29	1579.7	0.09
19:55	260.7	71.5	-0.6	11.93	6.08	1594.0	3.40	1579.5	0.09
AVERAGE VALUES FOR THE LAST 15 MINUTES									
19:55	283.5	67.1	-0.5	11.22	6.48	1597.5	3.49	1556.6	0.07
19:56	271.3	75.5	-0.6	11.57	6.28	1594.0	3.31	1583.4	0.08
19:57	283.3	81.4	-0.5	11.27	6.40	1593.6	3.34	1585.6	0.08
19:58	292.8	89.5	-0.5	10.99	6.55	1592.7	3.46	1590.7	0.08
19:59	310.6	96.1	-0.3	10.33	6.98	1593.5	3.12	1606.1	0.09
20:00	308.6	94.8	-0.4	10.84	6.67	1592.5	3.21	1603.1	0.09

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
20:00	263.6	52.1	-0.5	11.57	6.25	1580.7	3.26	1516.4	0.06
20:01	290.9	91.4	-0.4	11.39	6.31	1592.2	2.81	1603.2	0.11
20:02	285.2	93.6	-0.4	11.37	6.32	1592.3	3.19	1600.8	0.09
20:03	285.4	90.7	-0.5	11.42	6.29	1591.4	3.13	1600.8	0.09
20:04	299.2	96.5	-0.4	11.01	6.54	1590.9	3.45	1600.7	0.09
20:05	314.0	101.4	-0.3	10.68	6.67	1590.5	3.02	1608.0	0.10
20:06	321.3	107.6	-0.3	10.52	6.73	1591.1	3.66	1613.9	0.09
20:07	333.8	114.2	-0.3	10.04	7.07	1590.8	3.62	1624.0	0.11
20:08	314.5	108.0	-0.4	11.00	6.44	1589.8	3.68	1625.4	0.10
20:09	293.2	106.5	-0.5	11.38	6.23	1589.4	3.52	1623.7	0.10
20:10	286.4	110.0	-0.4	11.36	6.26	1589.5	3.43	1623.2	0.11
AVERAGE VALUES FOR THE LAST 15 MINUTES									
20:10	299.4	97.1	-0.4	11.01	6.52	1591.6	3.33	1606.2	0.09
20:11	284.8	107.6	-0.4	11.45	6.21	1588.3	3.54	1620.5	0.10
20:12	291.7	111.7	-0.4	11.11	6.40	1587.9	3.42	1623.6	0.11
20:13	296.9	116.7	-0.3	10.85	6.46	1588.0	3.67	1625.7	0.10
20:14	302.3	122.7	-0.3	10.57	6.60	1587.2	3.38	1627.7	0.10
20:15	300.0	118.9	-0.4	10.41	6.76	1588.5	3.32	1629.7	0.11
20:16	334.0	116.5	-0.4	9.57	7.23	1586.0	3.55	1632.8	0.10
20:17	334.7	118.2	-0.4	9.76	7.07	1585.0	3.23	1632.1	0.10
20:18	313.7	118.9	-0.5	10.14	6.87	1584.4	2.88	1629.4	0.10
20:19	311.6	119.1	-0.5	10.03	6.92	1585.4	3.56	1627.8	0.11
20:20	311.4	119.7	-0.4	9.98	6.93	1585.1	3.27	1626.4	0.10
20:21	313.3	119.0	-0.6	9.88	6.97	1584.7	3.32	1625.7	0.10
20:22	314.8	118.3	-0.6	9.90	6.93	1584.6	3.46	1624.7	0.10
20:23	312.4	117.1	-0.5	10.03	6.86	1583.3	3.48	1623.4	0.10
20:24	314.9	115.0	-0.5	10.08	6.84	1582.4	3.59	1621.6	0.10
20:25	311.8	114.8	-0.4	10.12	6.79	1581.8	3.41	1621.6	0.10
AVERAGE VALUES FOR THE LAST 15 MINUTES									
20:25	309.9	117.0	-0.4	10.26	6.79	1585.5	3.40	1626.2	0.10
20:26	309.9	114.8	-0.4	10.18	6.75	1581.8	3.69	1621.6	0.09
20:27	307.4	113.8	-0.3	10.32	6.69	1581.8	3.56	1620.8	0.09
20:28	304.8	113.0	-0.4	10.34	6.65	1581.8	3.32	1619.6	0.10
20:29	304.8	112.9	-0.4	10.36	6.64	1581.0	3.13	1618.7	0.10
20:30	302.1	112.0	-0.3	10.35	6.66	1580.6	3.51	1618.2	0.10
20:31	301.4	111.2	-0.3	10.35	6.64	1580.3	3.27	1617.6	0.10
20:32	300.8	109.7	-0.3	10.32	6.66	1580.3	3.34	1617.5	0.10
20:33	296.5	109.9	-0.4	10.39	6.61	1580.3	3.51	1617.6	0.11
20:34	295.6	110.7	-0.5	10.36	6.62	1580.2	3.52	1616.6	0.10
20:35	294.3	110.1	-0.7	10.32	6.63	1579.8	3.57	1616.6	0.10
20:36	289.1	109.0	-0.7	10.38	6.58	1579.4	3.53	1615.8	0.10
20:37	282.5	108.9	-0.8	10.38	6.57	1580.7	3.50	1614.9	0.11
20:38	275.5	106.5	-0.9	10.34	6.59	1581.7	3.55	1615.4	0.11
20:39	266.3	104.7	-0.9	10.51	6.48	1580.6	3.05	1615.2	0.11
20:40	264.3	104.3	-0.9	10.44	6.50	1579.9	3.40	1615.5	0.10

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST 15 MINUTES									
20:40	293.0	110.1	-0.5	10.36	6.62	1580.7	3.43	1617.4	0.10
20:41	262.9	104.8	-0.9	10.66	6.36	1580.3	3.55	1613.3	0.10
20:42	266.6	104.2	-0.9	10.72	6.33	1579.6	3.23	1613.2	0.10
20:43	272.2	102.6	-0.8	10.76	6.32	1578.3	3.46	1611.8	0.09
20:44	272.8	101.8	-0.8	10.87	6.26	1577.5	3.26	1611.1	0.10
20:45	274.5	101.0	-0.8	10.93	6.22	1577.4	3.28	1610.3	0.09
20:46	275.8	100.9	-0.6	10.94	6.21	1577.7	3.44	1609.1	0.09
20:47	274.2	100.2	-0.1	11.04	6.17	1578.1	3.59	1607.7	0.10
20:48	271.9	98.8	-0.1	11.08	6.13	1577.9	3.06	1607.7	0.10
20:49	272.6	98.8	-0.0	11.06	6.15	1577.3	3.30	1606.6	0.09
20:50	271.2	97.0	-0.1	11.11	6.12	1577.2	3.35	1605.8	0.09
20:51	271.5	97.4	-0.1	11.06	6.14	1577.2	3.56	1604.8	0.09
20:52	267.9	96.3	-0.1	11.19	6.07	1576.3	3.53	1602.9	0.09
20:53	268.7	97.4	-0.0	11.14	6.09	1575.7	3.16	1602.3	0.10
20:54	269.2	97.6	-0.1	11.14	6.09	1575.7	3.54	1601.6	0.10
20:55	267.9	96.7	0.0	11.17	6.08	1575.0	3.31	1600.8	0.09
AVERAGE VALUES FOR THE LAST 15 MINUTES									
20:55	270.7	99.7	-0.4	10.99	6.18	1577.4	3.37	1607.3	0.09
20:56	267.8	95.4	-0.1	11.15	6.07	1574.6	3.48	1600.8	0.09
20:57	266.0	97.1	-0.1	11.20	6.06	1574.5	3.14	1599.8	0.09
20:58	266.3	96.9	-0.1	11.17	6.07	1574.0	3.19	1599.4	0.09
20:59	266.7	96.5	-0.3	11.12	6.07	1572.7	3.51	1598.5	0.09
21:00	262.8	95.8	-0.3	11.25	6.00	1572.1	3.35	1598.0	0.10
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
21:00	290.9	106.7	-0.4	10.67	6.48	1582.2	3.39	1614.7	0.10
21:01	264.7	96.5	-0.2	11.14	6.07	1571.6	3.12	1596.3	0.10
21:02	260.9	93.4	-0.3	11.37	5.94	1571.0	3.23	1593.8	0.08
21:03	260.8	94.9	-0.3	11.31	5.97	1570.9	3.43	1592.9	0.09
21:04	261.2	94.9	-0.2	11.33	5.98	1570.6	3.36	1592.2	0.10
21:05	261.6	96.1	-0.2	11.25	6.03	1570.0	3.43	1592.1	0.10
21:06	260.7	95.2	-0.3	11.21	6.05	1569.6	3.56	1590.5	0.09
21:07	258.3	95.5	-0.3	11.26	6.03	1570.1	3.39	1590.6	0.09
21:08	254.4	95.5	-0.3	11.25	6.02	1570.3	3.52	1590.0	0.10
21:09	249.7	94.3	-0.2	11.26	6.01	1569.6	3.53	1589.5	0.10
21:10	242.6	93.9	-0.3	11.30	6.00	1568.0	3.26	1589.1	0.10
AVERAGE VALUES FOR THE LAST 15 MINUTES									
21:10	260.3	95.5	-0.2	11.24	6.02	1571.3	3.37	1594.2	0.09
21:11	236.8	93.7	-0.3	11.35	5.96	1566.4	3.24	1588.2	0.09
21:12	236.2	92.6	-0.3	11.33	5.97	1563.3	3.27	1587.9	0.09
21:13	237.6	91.7	-0.3	11.41	5.91	1562.8	2.89	1585.9	0.09
21:14	242.2	90.4	-0.2	11.55	5.84	1562.6	3.26	1585.3	0.10
21:15	248.9	89.9	-0.2	11.54	5.85	1561.2	2.96	1583.3	0.09
21:16	252.6	90.2	-0.2	11.49	5.87	1560.6	2.89	1583.2	0.09
21:17	253.1	88.9	-0.2	11.58	5.82	1560.8	3.39	1582.4	0.10
21:18	251.4	89.2	-0.3	11.65	5.79	1560.2	3.22	1580.7	0.10
21:19	252.8	90.1	-0.3	11.63	5.81	1560.4	3.40	1579.7	0.10

Cinder Run I-3-54-Cam-3

Beaver Run II-3-54-Cam-3

ENTROPY

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
21:20	255.2	91.1	-0.3	11.53	5.86	1559.1	3.23	1580.4	0.10
21:21	252.5	90.3	-0.4	11.59	5.83	1559.4	2.93	1579.9	0.11
21:22	251.5	89.9	-0.5	11.51	5.86	1557.3	2.98	1577.2	0.10
21:23	251.1	90.3	-0.4	11.58	5.82	1557.2	3.41	1575.8	0.09
21:24	248.7	89.0	-0.5	11.65	5.76	1557.5	3.65	1573.9	0.09
21:25	248.4	88.1	-0.4	11.72	5.73	1555.9	3.21	1572.7	0.09
AVERAGE VALUES FOR THE LAST 15 MINUTES									
21:25	247.9	90.4	-0.3	11.54	5.84	1560.3	3.20	1581.1	0.09
21:26	249.8	88.5	-0.4	11.67	5.75	1555.9	3.43	1573.0	0.09
21:27	251.4	89.3	-0.4	11.63	5.79	1555.5	3.35	1572.1	0.09
21:28	252.1	89.1	-0.4	11.59	5.81	1555.1	2.97	1571.2	0.09
21:29	250.6	88.9	-0.3	11.60	5.81	1554.5	2.93	1571.3	0.09
21:30	249.5	89.4	-0.3	11.60	5.80	1554.5	3.26	1571.2	0.10
21:31	246.8	89.2	-0.3	11.62	5.80	1553.1	3.02	1569.7	0.10
21:32	242.3	89.1	-0.4	11.69	5.76	1552.2	2.94	1568.0	0.10
21:33	241.2	88.7	-0.3	11.68	5.76	1552.7	3.01	1570.8	0.10
21:34	243.2	88.3	-0.4	11.67	5.77	1553.5	3.27	1570.0	0.09
21:35	244.9	88.0	-0.4	11.66	5.77	1550.9	2.68	1568.5	0.10
21:36	244.1	88.9	-0.5	11.60	5.80	1551.0	3.23	1568.4	0.10
21:37	239.5	87.9	-0.5	11.69	5.75	1550.2	3.03	1566.4	0.10
21:38	235.4	88.0	-0.6	11.69	5.75	1549.3	3.34	1564.6	0.09
21:39	240.2	87.3	-0.5	11.46	5.91	1548.2	3.21	1561.8	0.09
21:40	241.6	86.8	-0.5	11.35	5.98	1547.5	3.18	1560.1	0.09
AVERAGE VALUES FOR THE LAST 15 MINUTES									
21:40	244.8	88.5	-0.4	11.61	5.80	1552.3	3.12	1568.5	0.09
21:41	265.0	90.7	-0.4	10.71	6.34	1547.1	3.24	1561.0	0.09
21:42	270.1	89.2	-0.5	10.62	6.38	1544.2	2.85	1559.8	0.08
21:43	270.5	88.3	-0.6	10.69	6.36	1541.1	2.90	1559.7	0.08
21:44	273.1	88.8	-0.5	10.70	6.35	1540.5	2.95	1560.3	0.08
21:45	272.5	88.4	-0.7	10.68	6.34	1540.6	3.24	1558.5	0.07
21:46	269.2	87.4	-0.8	10.72	6.31	1538.7	2.71	1558.8	0.09
21:47	269.3	86.6	-0.8	10.77	6.28	1536.2	2.41	1557.6	0.09
21:48	268.0	86.5	-0.8	10.72	6.29	1534.5	2.84	1558.9	0.07
21:49	287.0	87.1	-0.8	10.75	6.27	1532.3	2.91	1557.2	0.08
21:50	241.0	85.9	-0.8	10.76	6.26	1533.8	3.26	1556.8	0.08
21:51	262.6	85.0	-0.8	10.87	6.22	1536.3	3.29	1556.1	0.08
21:52	259.7	85.3	-0.7	10.85	6.24	1535.7	3.12	1555.8	0.08
21:53	248.3	86.1	-0.6	10.83	6.25	1533.0	3.00	1555.9	0.08
21:54	267.7	84.1	-0.6	10.88	6.23	1533.9	2.87	1557.1	0.09
21:55	274.0	83.8	-0.6	10.86	6.24	1533.7	2.43	1558.3	0.09
AVERAGE VALUES FOR THE LAST 15 MINUTES									
21:55	266.5	86.9	-0.7	10.76	6.29	1537.4	2.93	1558.1	0.08
21:56	277.4	83.5	-0.6	10.87	6.26	1533.1	2.44	1558.0	0.09
21:57	280.0	84.7	-0.6	10.85	6.26	1531.3	2.25	1558.3	0.09
21:58	280.0	83.6	-0.7	10.87	6.24	1532.0	3.02	1557.1	0.08
21:59	279.9	83.2	-0.7	10.96	6.19	1533.3	3.16	1554.6	0.08
22:00	279.8	83.1	-0.7	10.95	6.20	1536.5	3.17	1554.8	0.08

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
22:00	256.0	89.2	-0.4	11.27	6.01	1552.0	3.11	1571.9	0.09
22:01	282.7	82.9	-0.8	10.94	6.20	1538.3	3.22	1552.7	0.07
22:02	279.1	83.7	-0.8	11.02	6.19	1538.9	3.19	1551.7	0.08
22:03	279.1	82.6	-0.9	10.99	6.19	1539.6	3.17	1550.7	0.08
22:04	280.5	84.3	-0.8	10.87	6.25	1542.0	3.19	1551.7	0.08
22:05	281.6	83.4	-0.8	10.86	6.29	1542.8	3.14	1550.0	0.07
22:06	279.8	83.2	-0.8	10.84	6.28	1544.9	3.46	1549.8	0.08
22:07	274.9	82.9	-0.9	10.86	6.27	1546.7	3.14	1550.2	0.09
22:08	268.2	82.0	-0.8	10.97	6.21	1544.3	2.91	1549.7	0.09
22:09	266.2	80.6	-1.0	10.96	6.22	1542.4	2.82	1550.2	0.08
22:10	275.6	80.3	-0.9	10.83	6.28	1541.5	3.06	1549.0	0.08
AVERAGE VALUES FOR THE LAST 15 MINUTES									
22:10	277.6	82.9	-0.8	10.91	6.24	1539.2	3.02	1552.6	0.08
22:11	283.3	80.2	-0.9	10.87	6.28	1541.4	2.80	1548.3	0.08
22:12	283.3	78.6	-0.9	10.90	6.24	1540.4	2.98	1548.1	0.08
22:13	282.4	79.6	-0.8	10.90	6.23	1540.3	3.00	1547.6	0.07
22:14	281.4	78.7	-0.8	11.04	6.18	1538.8	2.97	1546.4	0.07
22:15	277.9	79.4	-0.8	11.10	6.14	1538.8	3.03	1545.7	0.08
22:16	279.4	79.8	-0.8	11.03	6.18	1538.8	2.94	1545.3	0.07
22:17	280.4	79.3	-0.8	11.06	6.16	1536.2	2.80	1545.1	0.07
22:18	278.7	78.4	-0.8	11.13	6.12	1533.2	2.59	1542.3	0.06
22:19	270.2	77.0	-0.9	11.40	5.97	1532.5	2.72	1538.9	0.05
22:20	272.0	79.1	-1.0	11.14	6.13	1530.6	2.64	1538.7	0.05
22:21	278.3	78.7	-0.9	11.07	6.17	1524.1	2.63	1539.3	0.06
22:22	279.6	77.6	-0.8	11.02	6.18	1519.5	2.71	1538.4	0.01
22:23	278.4	78.1	-0.8	11.16	6.11	1521.2	2.65	1537.6	0.01
22:24	280.4	76.7	-0.8	10.74	6.39	1522.5	2.44	1533.9	0.01
22:25	323.8	69.6	-0.6	9.16	7.31	1523.9	2.31	1528.1	0.09
AVERAGE VALUES FOR THE LAST 15 MINUTES									
22:25	282.0	78.1	-0.8	10.92	6.25	1532.2	2.75	1541.6	0.06
22:26	354.7	60.3	-0.7	8.53	7.66	1523.3	2.32	1525.0	0.05
22:27	359.8	59.0	-0.8	8.56	7.64	1523.7	2.25	1521.5	0.05
22:28	358.5	58.5	-0.8	8.58	7.66	1522.4	2.28	1518.6	0.04
22:29	359.6	59.8	-0.8	8.55	7.68	1520.4	2.33	1517.2	0.04
22:30	361.2	59.4	-0.8	8.50	7.71	1521.6	~~2.87~~	1516.7	0.04
22:31	367.1	59.6	-0.8	8.37	7.78	1521.4	0.04	1518.2	0.04
22:32	370.7	58.8	-0.8	8.32	7.81	1519.1	-0.53	1517.9	0.04
22:33	371.6	59.1	-0.7	8.27	7.84	1519.3	-0.52	1518.6	0.04
22:34	374.5	58.6	-0.7	8.22	7.87	1518.2	-0.51	1518.4	0.04
22:35	373.6	58.1	-0.7	8.26	7.86	1516.5	0.14	1517.8	0.04
22:36	374.6	58.0	-0.9	8.24	7.90	1518.4	-0.76	1518.3	0.05
22:37	374.1	57.9	-0.9	8.18	7.90	1524.6	-0.76	1517.9	0.04
22:38	365.7	57.3	-0.9	8.17	7.92	1525.6	-0.76	1517.6	0.04
22:39	361.2	57.3	-1.0	8.15	7.94	1528.8	-0.76	1517.1	0.04
22:40	359.0	56.9	-1.0	8.11	7.96	1526.3	-0.76	1515.0	0.04

zero

zero

ENTROPY

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST 15 MINUTES									
22:40	365.7	58.6	-0.8	8.33	7.81	1522.0	0.46	1518.4	0.04
22:41	357.6	57.6	-0.9	8.11	7.96	1526.2	-0.76	1516.0	0.04
22:42	355.3	57.1	-0.9	8.17	7.93	1522.3	-0.75	1516.1	0.04
22:43	361.3	57.2	-0.9	8.14	7.98	1520.7	-0.75	1517.0	0.04
22:44	366.6	57.2	-0.9	8.09	8.01	1519.2	-0.75	1517.6	0.04
22:45	363.9	56.9	-0.8	8.11	7.98	1517.9	-0.75	1518.5	0.04
22:46	364.6	56.7	-0.7	8.15	7.96	1519.2	-0.76	1518.6	0.04
22:47	369.5	56.2	-0.8	8.14	7.98	1518.1	-0.75	1517.4	0.04
22:48	375.8	55.9	-0.9	8.09	8.01	1518.2	-0.75	1516.6	0.05
22:49	376.6	56.1	-0.9	8.12	8.02	1519.2	-0.75	1516.5	0.05
22:50	373.9	55.7	-0.9	8.12	7.99	1518.9	-0.75	1514.7	0.04
22:51	370.3	54.6	-0.9	8.13	8.00	1520.5	-0.75	1515.2	0.04
22:52	372.4	54.9	-0.8	8.19	7.97	1519.8	-0.75	1514.6	0.04
22:53	374.3	55.0	-0.8	8.14	8.00	1518.9	0.55	1513.3	0.03
22:54	374.2	54.7	-0.9	8.13	8.01	1515.0	2.30	1513.5	0.04
22:55	372.5	54.6	-0.9	8.13	8.01	1515.1	1.51	1513.4	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
22:55	368.6	56.0	-0.9	8.13	7.99	1519.3	-0.31	1515.9	0.04
22:56	373.0	54.5	-1.0	8.19	7.97	1512.8	-0.04	1512.9	0.03
22:57	372.0	54.2	-1.0	8.23	7.96	1511.8	-0.05	1512.4	0.04
22:58	375.7	54.5	-0.9	8.25	7.95	1513.2	-0.06	1511.1	0.04
22:59	374.9	54.8	-1.0	8.27	7.95	1514.0	1.05	1510.2	0.04
23:00	374.6	54.4	-1.0	8.31	7.91	1512.6	2.21	1509.3	0.04
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
23:00	331.4	66.5	-0.9	9.35	7.21	1526.4	1.30	1528.3	0.05
23:01	376.6	53.9	-1.0	8.27	7.95	1511.7	2.35	1509.3	0.04
23:02	374.8	53.6	-1.0	8.29	7.95	1511.0	2.17	1508.8	0.04
23:03	372.5	53.4	-1.0	8.28	7.95	1511.3	2.18	1509.6	0.04
23:04	371.2	53.5	-1.0	8.31	7.94	1511.1	2.29	1511.1	0.03
23:05	372.3	53.5	-1.1	8.34	7.94	1509.8	2.16	1512.2	0.04
23:06	372.6	53.7	-1.1	8.25	7.97	1510.0	2.42	1512.7	0.04
23:07	373.1	53.2	-1.1	8.24	7.99	1510.8	2.39	1512.1	0.03

COMMENTS: INTERUPT FOR SYSTEM CALIBRATION

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: SYSTEM CALIBRATION

DATE : 10-31-1991 TIME: 23:08 - 23:20

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	4.9
7	Unit 4	ppmSO2	241.0	236.2
9	Unit 4	ppmNOx	0.0	0.3
9	Unit 4	ppmNOx	141.5	135.5
8	Unit 4	ppmCO	0.0	-1.4
8	Unit 4	ppmCO	30.0	29.5
5	Unit 4	% O2	0.00	0.09
5	Unit 4	% O2	12.50	12.42
6	Unit 4	% CO2	0.00	0.10
6	Unit 4	% CO2	11.06	10.77

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: DIRECT CALIBRATION - CO AND CO2

DATE : 10-31-1991 TIME: 23:20 - 23:35

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
8	Unit 4	ppmCO	0.0	0.5
8	Unit 4	ppmCO	30.0	31.7
8	Unit 4	ppmCO	60.0	60.8
8	Unit 4	ppmCO	~~90.0~~ 92.3	91.6
6	Unit 4	% CO2	0.00	0.00
6	Unit 4	% CO2	11.06	10.87
6	Unit 4	% CO2	17.40	17.50

ENTROPY

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: SYSTEM CALIBRATION CO -AND CO2

DATE : 10-31-1991 TIME: 23:35 - 23:40

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
8	Unit 4	ppmCO	0.0	0.4
8	Unit 4	ppmCO	30.0	30.6
6	Unit 4	% CO2	0.00	0.02
6	Unit 4	% CO2	11.06	10.76

Jewell Coal & Coke Engineering 10-31-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
23:46	370.3	56.2	0.1	8.52	7.85	1507.0	2.06	1502.4	0.03
23:47	373.8	56.0	0.1	8.47	7.88	1506.5	1.96	1501.9	0.04
23:48	370.4	55.8	0.1	8.56	7.84	1506.7	2.10	1501.5	0.04
23:49	368.3	55.7	0.1	8.58	7.84	1506.3	2.05	1501.3	0.03
23:50	365.7	55.8	0.0	8.59	7.84	1507.4	2.03	1501.0	0.03
23:51	359.8	55.6	0.1	8.55	7.87	1507.0	1.99	1501.3	0.04
23:52	357.9	55.5	-0.0	8.62	7.82	1506.8	2.04	1501.1	0.03
23:53	356.6	55.7	-0.1	8.84	7.87	1506.9	2.07	1500.8	0.04
23:54	350.9	55.9	-0.1	8.62	7.83	1508.3	2.03	1502.1	0.04
23:55	344.8	56.2	-0.2	8.75	7.74	1509.4	2.09	1502.4	0.04
23:56	342.9	55.9	-0.2	8.82	7.71	1508.7	2.04	1502.5	0.04
23:57	343.3	55.3	-0.2	8.89	7.68	1508.5	2.09	1502.4	0.04
23:58	347.9	55.2	-0.4	8.88	7.68	1507.6	2.09	1502.4	0.04
23:59	348.9	55.4	-0.4	8.77	7.77	1507.4	2.03	1502.2	0.04
24:00	351.3	55.7	-0.4	8.74	7.79	1509.2	2.14	1502.4	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
24:00	356.8	55.7	-0.1	8.68	7.80	1507.6	2.05	1501.8	0.04
AVERAGE VALUES FOR THE LAST HOUR: 15 MINUTES OF VALID DATA									
24:00	356.8	55.7	-0.1	8.68	7.80	1507.6	2.05	1501.8	0.04
00:01	352.1	55.4	-0.3	8.66	7.84	1510.1	2.13	1503.1	0.05
00:02	352.4	55.7	-0.2	8.65	7.86	1510.0	2.07	1504.0	0.04
00:03	352.6	56.1	-0.2	8.69	7.84	1510.1	2.13	1504.0	0.04
00:04	350.4	56.5	-0.4	8.66	7.88	1509.4	2.25	1503.0	0.04
00:05	352.3	56.8	-0.4	8.60	7.93	1509.8	2.13	1503.9	0.04
00:06	353.8	57.2	-0.4	8.59	7.93	1509.5	2.06	1505.0	0.04
00:07	352.2	56.7	-0.4	8.61	7.92	1508.1	2.08	1504.9	0.04
00:08	352.2	56.5	-0.4	8.66	7.90	1508.5	2.10	1505.5	0.04
00:09	350.7	56.5	-0.4	8.80	7.84	1508.1	2.10	1506.1	0.04
00:10	354.1	56.4	-0.5	8.66	7.83	1506.9	2.28	1505.4	0.04
00:11	356.2	56.1	-0.4	8.72	7.84	1505.8	2.10	1505.6	0.04
00:12	356.0	56.0	-0.4	8.71	7.86	1505.5	2.21	1506.4	0.04
00:13	355.1	55.9	-0.4	8.72	7.85	1505.6	2.24	1506.9	0.04
00:14	356.0	55.4	-0.6	8.73	7.84	1506.6	2.23	1507.0	0.04
00:15	354.7	55.7	-0.6	8.74	7.85	1506.9	2.15	1507.6	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
00:15	353.4	56.2	-0.4	8.68	7.87	1508.1	2.15	1505.2	0.04
00:16	355.4	55.2	-0.6	8.79	7.83	1506.0	2.19	1507.7	0.04
00:17	353.5	55.2	-0.6	8.84	7.79	1505.2	2.29	1507.4	0.04
00:18	354.4	55.8	-0.6	8.88	7.78	1505.2	2.24	1507.8	0.04
00:19	354.9	55.6	-0.6	8.86	7.81	1506.9	2.13	1508.2	0.04
00:20	353.7	56.0	-0.6	8.85	7.81	1506.0	2.24	1508.9	0.04
00:21	354.3	55.8	-0.6	8.79	7.84	1505.3	2.27	1508.4	0.04
00:22	354.1	55.7	-0.6	8.86	7.79	1505.3	2.19	1508.0	0.04
00:23	352.0	55.4	-0.6	8.87	7.81	1503.9	2.10	1507.7	0.03
00:24	351.4	55.9	-0.6	8.90	7.79	1504.1	2.19	1508.8	0.03
00:25	351.0	55.6	-0.6	8.92	7.78	1505.3	2.30	1508.5	0.04
00:26	348.4	55.5	-0.6	8.87	7.79	1505.0	2.25	1508.5	0.04
00:27	348.1	55.6	-0.6	8.91	7.77	1503.8	2.23	1507.5	0.04
00:28	348.8	55.8	-0.7	8.91	7.80	1505.1	2.16	1508.8	0.04

Jewell Coal & Coke Engineering 11-01-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
00:29	348.3	55.7	-0.7	8.90	7.82	1505.7	2.15	1509.1	0.04
00:30	348.5	55.8	-0.8	8.84	7.86	1506.7	2.19	1510.0	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
00:30	351.8	55.6	-0.6	8.87	7.81	1505.3	2.21	1508.3	0.04
00:31	351.1	55.5	-0.7	8.74	7.93	1507.0	2.20	1511.1	0.04
00:32	353.1	55.6	-0.7	8.72	7.96	1507.1	2.14	1512.7	0.04
00:33	351.1	55.1	-0.8	8.72	7.95	1507.0	2.17	1513.4	0.03
00:34	349.8	55.0	-0.7	8.76	7.96	1507.2	2.11	1514.5	0.00
00:35	349.1	55.7	-0.7	8.71	7.97	1507.5	2.17	1514.9	0.00
00:36	347.2	56.4	-0.6	8.76	7.96	1507.1	2.13	1515.3	0.00
00:37	347.9	56.1	-0.6	8.72	7.95	1507.0	2.20	1515.2	0.01
00:38	348.1	55.4	-0.6	8.81	7.92	1507.1	2.17	1516.3	0.04
00:39	346.7	55.6	-0.8	8.78	7.94	1507.8	2.19	1515.8	0.04
00:40	347.6	55.9	-0.7	8.75	7.96	1507.9	2.17	1515.8	0.05
00:41	344.3	55.0	-0.7	8.79	7.95	1507.4	2.28	1517.7	0.04
00:42	337.2	55.1	-0.6	8.74	7.97	1507.4	1.24	1516.3	0.04
00:43	330.6	55.1	-0.7	8.81	7.93	1507.9	-0.04	1516.4	0.04
00:44	329.2	55.3	-0.6	8.81	7.93	1509.8	-0.04	1517.7	0.04
00:45	331.0	55.3	-0.6	9.11	7.95	1510.1	-0.04	1519.2	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
00:45	344.3	55.5	-0.7	8.78	7.95	1507.7	1.67	1515.5	0.03
00:46	335.3	55.6	-0.5	8.74	7.99	1509.2	0.17	1519.4	0.04
00:47	327.2	55.7	-0.5	8.77	7.98	1508.5	2.16	1520.2	0.04
00:48	332.8	55.8	-0.5	8.73	7.99	1508.6	2.16	1520.7	0.05
00:49	342.5	56.1	-0.4	8.72	8.00	1508.6	2.21	1520.1	0.04
00:50	342.8	55.6	-0.5	8.73	7.99	1508.2	2.25	1519.4	0.04
00:51	343.4	55.5	-0.5	8.76	7.97	1506.7	1.97	1522.4	0.05
00:52	342.2	55.6	-0.5	8.78	7.95	1505.6	2.22	1521.1	0.04
00:53	341.7	55.8	-0.3	8.75	7.98	1506.7	2.14	1520.9	0.04
00:54	341.5	55.8	-0.4	8.74	7.99	1507.9	2.11	1521.5	0.05
00:55	339.2	55.5	-0.5	8.85	7.92	1508.4	2.00	1522.1	0.05
00:56	337.9	55.5	-0.5	8.80	7.94	1508.5	2.13	1521.5	0.05
00:57	338.8	55.3	-0.4	8.86	7.92	1509.9	2.16	1521.0	0.04
00:58	337.1	55.3	-0.5	8.84	7.92	1509.6	2.05	1521.7	0.05
00:59	338.9	55.5	-0.4	8.85	7.95	1510.0	2.08	1522.9	0.06
01:00	335.3	55.5	-0.5	8.93	7.87	1510.1	2.21	1522.7	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
01:00	338.4	55.6	-0.5	8.79	7.96	1508.5	2.00	1521.2	0.04
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
01:00	347.0	55.7	-0.5	8.78	7.89	1507.4	2.01	1512.6	0.04
01:01	330.7	55.4	-0.6	8.90	7.92	1510.0	2.15	1522.3	0.05
01:02	335.5	55.3	-0.5	8.85	7.93	1508.6	2.13	1522.3	0.04
01:03	338.2	55.6	-0.5	8.83	7.93	1507.9	2.26	1521.9	0.04
01:04	334.1	55.1	-0.6	8.93	7.89	1508.5	2.12	1521.2	0.04
01:05	332.5	54.7	-0.7	8.90	7.89	1508.0	2.13	1521.5	0.04
01:06	336.8	55.1	-0.8	8.86	7.93	1507.1	2.13	1522.1	0.04
01:07	343.1	54.9	-0.7	8.90	7.91	1508.5	2.10	1522.2	0.04

Jewell Coal & Coke Engineering 11-01-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
01:08	346.4	54.8	-0.8	8.90	7.90	1507.8	2.10	1522.0	0.04
01:09	346.4	55.3	-0.6	8.94	7.89	1508.0	2.08	1521.9	0.04
01:10	346.4	54.7	-0.6	8.92	7.87	1506.1	2.20	1521.7	0.04
01:11	345.8	55.2	-0.6	8.99	7.87	1506.1	2.08	1521.4	0.04
01:12	344.9	55.1	-0.7	8.98	7.85	1507.4	2.27	1521.4	0.04
01:13	344.5	54.8	-0.7	9.01	7.83	1507.4	2.26	1521.3	0.04
01:14	344.5	55.1	-0.7	9.02	7.86	1508.3	2.26	1522.0	0.04
01:15	345.0	54.8	-0.7	9.05	7.81	1509.9	2.12	1522.3	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
01:15	341.0	55.1	-0.6	8.93	7.89	1508.0	2.16	1521.8	0.04
01:16	342.0	54.8	-0.6	9.03	7.83	1510.2	2.08	1522.0	0.04
01:17	341.1	54.8	-0.6	8.96	7.91	1510.4	2.17	1521.0	0.04
01:18	345.9	54.4	-0.6	8.91	7.94	1510.1	2.15	1520.6	0.04
01:19	348.5	54.9	-0.7	8.82	7.97	1511.7	2.13	1520.5	0.04
01:20	343.1	54.7	-0.7	8.87	7.97	1511.5	2.13	1520.7	0.04
01:21	335.5	54.4	-0.7	8.88	7.93	1510.5	2.05	1520.6	0.05
01:22	333.4	54.7	-0.7	8.93	7.92	1510.5	2.01	1521.8	0.04
01:23	335.3	54.4	-0.7	8.93	7.91	1511.5	2.04	1522.3	0.05
01:24	336.8	55.0	-0.7	8.94	7.91	1511.2	2.17	1521.3	0.04
01:25	337.9	54.1	-0.6	9.02	7.86	1509.4	2.17	1520.8	0.04
01:26	337.2	54.0	-0.6	9.09	7.82	1508.5	2.16	1520.9	0.04
01:27	341.9	54.6	-0.7	9.00	7.87	1508.5	2.16	1520.8	0.04
01:28	341.8	54.6	-0.7	9.06	7.84	1508.5	2.21	1520.4	0.04
01:29	343.9	54.1	-0.6	9.03	7.88	1509.0	2.14	1520.6	0.04
01:30	345.6	54.4	-0.6	8.94	7.92	1507.6	2.18	1519.5	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
01:30	340.7	54.5	-0.6	8.96	7.90	1509.9	2.13	1520.9	0.04
01:31	344.9	54.3	-0.6	8.98	7.90	1507.5	2.26	1519.5	0.04
01:32	344.4	53.8	-0.6	9.00	7.89	1507.3	2.24	1519.3	0.03
01:33	341.1	54.1	-0.7	8.97	7.91	1508.0	2.29	1519.1	0.04
01:34	337.8	53.6	-0.6	9.00	7.89	1507.6	2.12	1519.1	0.04
01:35	337.6	54.1	-0.7	9.00	7.91	1509.4	2.24	1519.1	0.04
01:36	334.8	54.2	-0.7	9.02	7.86	1510.1	2.43	1519.1	0.03
01:37	332.9	53.8	-0.8	9.03	7.87	1511.0	2.53	1518.6	0.03
01:38	329.2	53.6	-0.8	9.06	7.86	1514.1	2.97	1518.0	0.03
01:39	329.4	53.6	-0.9	9.07	7.85	1514.5	2.44	1517.8	0.04
01:40	328.3	54.1	-0.9	9.05	7.85	1513.3	2.29	1519.0	0.04
01:41	331.2	54.2	-0.9	9.04	7.86	1514.0	2.24	1519.5	0.05
01:42	331.2	53.7	-0.9	9.09	7.83	1513.1	2.36	1518.1	0.04
01:43	330.1	53.6	-1.0	9.06	7.82	1513.2	2.14	1519.2	0.05
01:44	329.2	53.5	-1.0	9.13	7.80	1512.8	2.08	1519.5	0.05
01:45	329.3	53.9	-1.0	9.07	7.83	1512.8	2.17	1519.5	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
01:45	334.1	53.9	-0.8	9.04	7.86	1511.3	2.32	1519.0	0.04
01:46	327.4	53.4	-1.0	9.18	7.75	1513.0	2.09	1519.2	0.05
01:47	327.0	53.4	-1.0	9.13	7.77	1512.9	2.17	1519.6	0.05
01:48	324.3	53.7	-1.0	9.11	7.80	1513.3	2.19	1519.2	0.05
01:49	325.0	54.0	-0.9	9.07	7.82	1514.2	2.47	1518.1	0.05
01:50	326.6	53.5	-0.9	9.11	7.79	1513.5	2.10	1517.2	0.04

Jewell Coal & Coke Engineering 11-01-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
01:51	326.6	54.0	-0.9	9.08	7.84	1511.7	2.13	1516.4	0.04
01:52	329.5	53.5	-1.0	9.09	7.81	1512.9	1.98	1517.1	0.04
01:53	330.1	53.9	-1.0	9.07	7.82	1511.7	2.02	1517.8	0.04
01:54	329.7	53.8	-1.0	9.06	7.84	1511.4	2.09	1516.4	0.04
01:55	331.3	53.7	-1.0	9.02	7.87	1510.3	2.13	1515.7	0.04
01:56	335.0	54.0	-0.9	8.99	7.89	1511.5	2.37	1515.0	0.04
01:57	335.6	53.3	-0.9	9.05	7.83	1511.7	2.19	1514.9	0.04
01:58	332.4	54.0	-1.1	9.04	7.86	1512.2	2.24	1514.7	0.04
01:59	331.9	53.6	-1.2	9.03	7.84	1510.5	2.25	1514.5	0.04
02:00	332.2	53.7	-1.2	9.03	7.84	1511.7	2.17	1514.5	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
02:00	329.6	53.7	-1.0	9.07	7.82	1512.2	2.17	1516.7	0.04
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
02:00	336.3	54.3	-0.8	9.00	7.87	1510.3	2.20	1519.6	0.04
02:01	333.8	53.9	-1.1	8.99	7.87	1511.4	1.97	1515.7	0.05
02:02	332.1	53.7	-1.1	9.13	7.77	1510.9	1.95	1517.3	0.05
02:03	329.8	53.2	-1.2	9.16	7.74	1511.2	1.98	1516.4	0.07*
02:04	328.9	53.6	-1.1	9.10	7.79	1511.3	1.96	1516.6	0.04
02:05	330.0	53.7	-1.1	9.08	7.79	1510.6	2.04	1515.8	0.01
02:06	332.7	53.7	-1.1	9.06	7.82	1510.0	2.16	1514.6	0.01
02:07	336.4	54.1	-1.0	8.93	7.89	1510.8	2.06	1514.5	0.01
02:08	337.3	54.5	-1.0	8.97	7.88	1511.1	2.05	1515.6	0.03
02:09	336.7	53.7	-1.2	9.11	7.79	1511.3	2.10	1515.3	0.05
02:10	328.3	53.5	-1.3	9.05	7.83	1510.5	2.05	1514.2	0.04
02:11	332.9	53.7	-1.4	9.03	7.83	1510.1	2.12	1514.3	0.05
02:12	334.0	53.2	-1.3	9.12	7.77	1510.1	2.23	1513.8	0.04
02:13	334.2	53.3	-1.4	9.03	7.79	1510.0	-0.58	1513.1	0.05
02:14	336.8	53.7	-1.4	9.00	7.82	1508.0	-0.59	1512.3	0.04
02:15	337.2	54.0	-1.4	9.06	7.80	1507.4	-0.59	1511.8	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
02:15	333.4	53.7	-1.2	9.05	7.81	1510.3	1.53	1514.8	0.04
02:16	334.8	53.5	-1.3	9.14	7.76	1508.3	-0.40	1510.8	0.04
02:17	334.6	53.8	-1.2	9.08	7.77	1508.3	2.01	1510.1	0.04
02:18	336.9	53.5	-1.2	9.18	7.78	1507.3	2.09	1510.0	0.04
02:19	339.1	53.9	-1.2	9.01	7.80	1508.3	-0.44	1510.0	0.03
02:20	340.7	53.5	-1.3	9.01	7.81	1508.1	-0.59	1510.2	0.04
02:21	343.1	53.1	-1.3	9.04	7.82	1508.3	-0.60	1510.5	0.04

COMMENTS: INTERUPT FOR CALIBRATION

Rezero THIS hour - [illegible]

ENTROPY

Jewell Coal & Coke Engineering 11-01-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
02:47	349.2	51.0	-1.2	9.03	7.68	1517.7	2.64	1502.7	0.02
02:48	348.7	50.6	-1.3	9.22	7.66	1530.4	2.75	1502.4	0.02
02:49	348.0	49.9	-1.2	9.27	7.67	1523.0	2.78	1501.7	0.02
02:50	345.3	50.1	-1.2	9.18	7.63	1521.5	2.73	1502.3	0.03
02:51	337.9	49.9	-1.2	9.31	7.55	1522.4	2.63	1500.9	0.03
02:52	328.2	49.4	-1.4	9.29	7.55	1520.8	2.68	1499.9	0.02
02:53	325.4	50.0	-1.4	9.17	7.65	1521.4	2.63	1499.7	0.03
02:54	318.6	50.2	-1.4	9.24	7.58	1522.8	2.82	1499.9	0.03
02:55	316.7	50.1	-1.4	9.43	7.53	1524.0	2.68	1500.5	0.03

COMMENTS: INTERUPT FOR CALIBRATION End Run

II-3-54-Cam-3

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: SYSTEM CALIBRATION

DATE : 11-01-1991 TIME: 02:55 - 03:06

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	7.4
7	Unit 4	ppmSO2	241.0	240.5
9	Unit 4	ppmNOx	0.0	0.5
9	Unit 4	ppmNOx	141.5	135.2
8	Unit 4	ppmCO	0.0	-1.5
8	Unit 4	ppmCO	30.6	29.1
5	Unit 4	% O2	0.00	0.08
5	Unit 4	% O2	12.50	12.54
6	Unit 4	% CO2	0.00	0.11
6	Unit 4	% CO2	11.06	10.82

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: RECALIBRATE CO ANALYZER - DIRECT CALIBRATION

DATE : 11-01-1991 TIME: 03:06 - 03:12

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
8	Unit 4	ppmCO	0.0	1.3
8	Unit 4	ppmCO	30.2	31.6
8	Unit 4	ppmCO	60.2	60.7
8	Unit 4	ppmCO	92.3	91.3

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: SYSTEM CALIBRATION FOLLOWING DIRECT CAL OF CO AZR

DATE : 11-01-1991 TIME: 03:13 - 03:16

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
8	Unit 4	ppmCO	0.0	0.7
8	Unit 4	ppmCO	30.2	30.0

Jewell Coal & Coke Engineering 11-01-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
03:31	334.3	50.9	0.5	9.18	7.57	1517.7	2.55	1501.0	0.02
03:32	335.2	50.5	0.4	9.22	7.57	1517.9	2.59	1500.9	0.03
03:33	334.4	50.3	0.3	9.20	7.56	1518.0	2.75	1500.9	0.02
03:34	332.2	49.9	0.4	9.20	7.57	1518.5	2.60	1500.9	0.02
03:35	330.4	50.1	0.4	9.20	7.57	1519.5	2.57	1500.9	0.03
03:36	325.3	50.1	0.4	9.33	7.48	1521.1	2.52	1500.9	0.03
03:37	316.3	49.6	0.3	9.44	7.43	1520.9	2.63	1500.5	0.02
03:38	328.2	50.1	0.3	9.24	7.56	1520.8	2.91	1499.7	0.02
03:39	333.6	49.5	0.2	9.20	7.57	1519.8	2.75	1498.0	0.03
03:40	335.5	50.1	0.4	9.16	7.57	1519.3	2.76	1499.0	0.05
03:41	336.3	50.0	0.4	9.19	7.59	1519.3	2.76	1498.5	0.00
03:42	336.9	49.5	0.4	9.18	7.55	1519.2	2.78	1497.8	0.00
03:43	336.9	49.2	0.4	9.18	7.58	1519.2	2.77	1497.7	0.00
03:44	339.6	49.9	0.4	9.25	7.52	1520.4	2.54	1498.4	0.00
03:45	337.2	49.9	0.4	9.31	7.47	1520.9	2.52	1498.4	0.00
AVERAGE VALUES FOR THE LAST 15 MINUTES									
03:45	332.8	50.0	0.4	9.23	7.54	1519.5	2.67	1499.6	~~0.02~~
03:46	335.4	50.0	0.5	9.41	7.44	1520.8	2.53	1498.3	0.00
03:47	337.4	49.8	0.3	9.36	7.47	1520.4	2.52	1498.0	0.01
03:48	337.0	50.2	0.3	9.37	7.46	1519.0	2.52	1497.3	0.00
03:49	335.6	50.0	0.2	9.37	7.45	1519.2	2.55	1496.4	0.00
03:50	334.7	49.7	0.3	9.39	7.46	1519.7	2.53	1497.3	0.00
03:51	335.4	49.0	0.2	9.36	7.49	1519.2	2.70	1495.7	0.00
03:52	339.0	49.2	0.3	9.24	7.57	1518.2	2.61	1496.0	0.00
03:53	340.8	50.0	0.3	9.20	7.56	1519.7	2.39	1497.9	0.00
03:54	337.9	49.4	0.3	9.39	7.45	1520.2	2.47	1498.6	0.00
03:55	339.3	49.2	0.3	9.28	7.53	1519.6	2.48	1497.4	0.00
03:56	344.0	49.7	0.3	9.15	7.58	1520.0	2.43	1497.8	0.00
03:57	340.7	49.6	0.2	9.31	7.49	1520.2	2.41	1497.6	0.00
03:58	335.8	49.3	0.3	9.37	7.47	1519.5	2.35	1497.5	0.00
03:59	335.4	49.3	0.2	9.34	7.48	1520.1	2.37	1497.2	0.00
04:00	337.6	49.3	0.3	9.56	7.46	1520.7	~~2.56~~	1497.3	0.00
AVERAGE VALUES FOR THE LAST 15 MINUTES									
04:00	337.7	49.6	0.3	9.34	7.49	1519.8	2.49	1497.3	0.00
AVERAGE VALUES FOR THE LAST HOUR: 30 MINUTES OF VALID DATA									
04:00	335.3	49.8	0.3	9.29	7.52	1519.6	2.58	1498.5	~~0.04~~
04:01	337.1	49.2	0.3	9.32	7.47	1520.2	-0.11	1496.8	0.00
04:02	337.8	49.3	0.4	9.33	7.49	1520.8	-0.05	1496.6	0.00
04:03	335.6	49.4	0.3	9.30	7.50	1521.9	2.11	1497.3	0.00
04:04	334.3	49.4	0.4	9.31	7.49	1522.6	2.25	1497.8	0.00
04:05	334.3	49.2	0.3	9.40	7.45	1522.9	2.47	1499.4	0.00
04:06	334.9	49.1	0.2	9.28	7.49	1522.3	2.40	1500.3	0.00
04:07	336.2	49.3	0.3	9.33	7.48	1521.4	2.33	1500.7	0.00
04:08	342.0	49.5	0.3	9.21	7.56	1519.9	2.35	1499.4	0.00
04:09	343.3	49.1	0.3	9.31	7.49	1521.0	2.44	1499.5	0.00
04:10	342.7	49.4	0.3	9.19	7.57	1520.8	2.36	1499.9	0.00
04:11	344.7	49.6	0.3	9.23	7.55	1521.5	2.41	1500.1	0.00
04:12	345.2	49.1	0.1	9.23	7.53	1522.0	2.35	1501.1	0.00
04:13	344.9	49.4	0.2	9.28	7.49	1520.3	2.39	1500.9	0.00

Begin Run
III-3-94-CEM

20'?

Hoses pinched?

zero

ENTROPY

Jewell Coal & Coke Engineering 11-01-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
04:14	344.1	49.4	0.2	9.21	7.53	1518.3	2.45	1500.9	0.00
04:15	346.7	48.9	0.2	9.16	7.59	1517.5	2.30	1497.3	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
04:15	340.2	49.3	0.3	9.27	7.51	1520.9	~~2.03~~	1499.2	~~0.00~~
04:16	349.5	49.4	0.2	9.16	7.58	1518.2	2.34	1499.7	0.05
04:17	348.1	49.0	0.2	9.27	7.51	1519.1	2.44	1500.9	0.02
04:18	348.0	49.0	0.2	9.04	7.48	1519.2	2.50	1498.3	0.03
04:19	350.1	48.7	0.3	9.13	7.59	1518.4	2.68	1499.1	0.00
04:20	352.9	49.1	0.2	9.15	7.57	1520.3	2.40	1500.8	0.00
04:21	352.0	49.3	0.1	9.31	7.47	1520.3	2.33	1500.9	0.04
04:22	350.0	48.9	0.2	9.36	7.49	1520.3	2.42	1500.0	0.03
04:23	348.4	49.0	0.1	9.32	7.48	1520.8	2.32	1499.4	0.03
04:24	344.5	49.2	0.1	9.40	7.48	1520.2	2.52	1498.9	0.03
04:25	342.6	49.6	0.1	9.32	7.47	1522.8	2.61	1498.1	0.03
04:26	343.2	49.5	0.1	9.30	7.50	1524.2	2.47	1497.9	0.03
04:27	344.6	49.4	0.1	9.22	7.53	1526.7	2.45	1498.3	0.03
04:28	347.6	50.3	-0.1	9.16	7.59	1527.1	2.35	1499.4	0.03
04:29	351.2	50.7	0.1	9.02	7.70	1527.9	2.34	1499.2	0.03
04:30	356.5	50.5	0.1	8.91	7.75	1529.9	2.42	1500.8	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
04:30	348.6	49.4	0.1	9.20	7.55	1522.4	2.44	1499.4	~~0.03~~
04:31	354.8	50.5	0.1	8.99	7.71	1529.9	2.38	1500.9	0.03
04:32	351.9	50.1	0.2	9.02	7.68	1529.9	2.39	1500.9	0.03
04:33	353.9	50.4	0.1	8.99	7.72	1530.0	2.31	1500.6	0.03
04:34	356.2	50.2	0.0	9.00	7.70	1530.6	2.48	1499.8	0.02
04:35	357.5	49.9	0.1	9.03	7.70	1531.1	2.31	1499.4	0.03
04:36	356.6	49.6	0.0	9.04	7.67	1532.2	2.23	1500.3	0.03
04:37	358.6	49.8	-0.0	9.01	7.69	1532.9	2.28	1500.7	0.03
04:38	360.9	49.7	-0.0	8.96	7.73	1533.0	2.30	1499.9	0.03
04:39	360.5	49.8	-0.0	8.99	7.69	1533.9	2.27	1500.7	0.03
04:40	359.1	49.7	0.2	9.12	7.62	1532.9	2.22	1500.9	0.03
04:41	359.5	50.7	0.1	8.97	7.71	1532.3	2.32	1499.1	0.02
04:42	364.3	50.7	0.2	8.87	7.75	1532.7	2.29	1499.7	0.03
04:43	365.3	50.6	0.2	8.82	7.79	1531.8	2.24	1500.4	0.03
04:44	367.5	50.4	0.0	8.85	7.78	1532.9	2.27	1501.2	0.03
04:45	363.5	50.2	0.0	8.93	7.71	1532.4	2.24	1501.7	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
04:45	359.4	50.2	0.1	8.97	7.71	1531.9	2.30	1500.4	0.03
04:46	362.6	50.8	-0.0	8.93	7.72	1531.5	2.31	1501.8	0.03
04:47	365.0	50.4	-0.1	8.81	7.79	1532.1	2.22	1502.2	0.03
04:48	364.4	50.0	0.0	8.92	7.72	1533.0	2.28	1502.7	0.03
04:49	364.1	50.2	0.1	8.94	7.70	1532.9	2.36	1501.6	0.03
04:50	365.8	50.3	0.1	8.85	7.77	1532.2	2.21	1502.9	0.03
04:51	365.3	50.1	0.0	8.93	7.69	1533.1	2.26	1502.9	0.03
04:52	365.4	50.1	-0.0	8.88	7.74	1533.6	2.24	1503.4	0.03
04:53	364.0	50.0	-0.0	8.93	7.71	1534.0	2.34	1502.7	0.03
04:54	363.7	49.9	0.1	8.92	7.73	1534.9	2.30	1502.4	0.02
04:55	366.3	50.6	0.1	8.80	7.81	1534.1	2.27	1502.2	0.02
04:56	371.2	50.1	0.1	8.74	7.83	1535.1	2.41	1501.5	0.02

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04:57	373.3	50.5	0.0	8.66	7.90	1536.0	2.38	1502.1	0.03
04:58	370.1	50.2	-0.0	8.80	7.79	1536.1	2.35	1502.5	0.02
04:59	373.2	50.5	-0.0	8.69	7.90	1536.4	2.31	1502.6	0.03
05:00	371.9	50.0	0.0	8.72	7.86	1537.3	2.28	1502.7	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
05:00	367.1	50.2	0.0	8.84	7.78	1534.1	2.30	1502.4	0.03
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
05:00	353.8	49.8	0.1	9.07	7.64	1527.3	~~2.27~~	1500.4	~~0.02~~
05:01	371.5	49.5	0.2	8.78	7.82	1537.4	2.23	1502.8	0.02
05:02	370.6	49.5	0.3	8.69	7.89	1537.5	2.36	1502.7	0.02
05:03	371.9	49.3	0.2	8.73	7.85	1537.6	2.34	1503.1	0.03
05:04	369.3	49.1	0.2	8.75	7.83	1538.1	2.42	1502.5	0.02
05:05	373.5	49.1	0.2	8.60	7.96	1539.0	2.29	1502.4	0.03
05:06	374.7	48.9	0.2	8.66	7.93	1538.6	2.39	1502.3	0.02
05:07	377.8	49.1	0.1	8.60	7.96	1539.4	2.33	1503.3	0.02
05:08	374.2	49.0	0.1	8.68	7.91	1540.4	2.49	1503.1	0.02
05:09	373.1	49.0	0.0	8.70	7.89	1542.7	2.39	1503.1	0.03
05:10	371.5	48.7	0.0	8.77	7.85	1543.6	2.40	1502.4	0.02
05:11	372.2	48.3	0.0	8.79	7.84	1542.3	2.34	1502.1	0.02
05:12	372.2	48.8	-0.0	8.69	7.89	1543.4	2.40	1500.9	0.03
05:13	371.0	48.6	0.1	8.68	7.94	1543.8	2.25	1502.3	0.03
05:14	368.3	48.8	0.2	8.71	7.90	1543.4	2.23	1501.6	0.02
05:15	367.5	49.0	0.0	8.63	7.95	1543.3	2.31	1501.3	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
05:15	371.9	49.0	0.1	8.70	7.89	1540.7	2.35	1502.4	0.02
05:16	368.1	49.1	0.1	8.63	7.97	1543.3	2.30	1501.9	0.03
05:17	368.7	49.4	0.1	8.59	7.99	1542.2	2.34	1501.7	0.02
05:18	373.3	48.7	-0.0	8.62	7.95	1542.9	2.35	1502.9	0.02
05:19	372.5	49.3	-0.1	8.60	7.97	1542.5	2.27	1502.7	0.02
05:20	373.4	49.1	-0.0	8.66	7.90	1542.5	2.27	1503.2	0.02
05:21	373.7	49.3	-0.0	8.72	7.90	1542.1	2.30	1502.6	0.02
05:22	376.3	49.1	-0.1	8.64	7.95	1542.1	2.41	1501.5	0.02
05:23	379.8	49.5	-0.1	8.53	8.02	1540.7	2.37	1501.6	0.02
05:24	379.7	49.3	-0.1	8.59	7.95	1541.0	2.30	1503.8	0.02
05:25	374.7	49.4	-0.1	8.71	7.89	1540.8	2.30	1502.6	0.02
05:26	376.5	49.3	-0.1	8.67	7.92	1541.2	2.45	1502.7	0.02
05:27	380.7	50.0	-0.1	8.60	7.98	1541.0	2.35	1503.2	0.02
05:28	375.3	49.5	-0.0	8.73	7.87	1541.3	2.32	1503.8	0.02
05:29	372.1	49.2	0.0	8.82	7.83	1541.2	2.33	1503.9	0.02
05:30	369.6	49.4	0.1	8.80	7.84	1540.8	2.37	1502.9	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
05:30	374.3	49.3	-0.0	8.66	7.93	1541.7	2.34	1502.7	0.02
05:31	374.4	49.2	0.2	8.62	7.98	1539.7	2.43	1502.5	0.02
05:32	374.6	49.4	0.2	8.71	7.92	1540.0	2.30	1502.5	0.02
05:33	374.9	49.2	0.2	8.67	7.93	1540.2	2.37	1501.4	0.02
05:34	375.0	49.2	0.2	8.64	7.96	1539.9	2.40	1500.3	0.02
05:35	375.6	49.0	0.1	8.70	7.96	1540.3	2.52	1502.4	0.02

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05:36	377.4	49.2	0.2	8.59	7.97	1540.3	2.44	1503.9	0.02
05:37	376.1	49.3	0.2	8.59	8.02	1539.7	2.42	1503.7	0.02
05:38	376.4	49.2	0.1	8.61	7.97	1540.6	2.37	1505.3	0.02
05:39	372.7	49.1	0.1	8.77	7.86	1540.6	2.34	1505.5	0.02
05:40	369.9	48.7	-0.0	8.83	7.83	1540.6	2.37	1505.5	0.02
05:41	372.2	48.9	0.0	8.68	7.90	1540.3	2.42	1504.3	0.02
05:42	374.6	48.9	0.0	8.72	7.92	1540.6	2.32	1504.8	0.02
05:43	372.1	48.5	-0.1	8.71	7.92	1540.0	2.36	1504.7	0.02
05:44	372.0	48.7	-0.1	8.78	7.88	1541.5	2.43	1505.5	0.02
05:45	371.5	48.3	-0.0	8.80	7.85	1542.0	2.35	1506.5	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
05:45	374.0	49.0	0.1	8.69	7.93	1540.4	2.39	1503.9	0.02
05:46	367.9	47.6	0.0	8.86	7.81	1541.2	2.37	1505.5	0.02
05:47	365.6	47.2	0.0	8.97	7.77	1540.7	2.46	1505.2	0.02
05:48	362.7	46.8	-0.0	8.98	7.74	1540.8	2.38	1504.8	0.02
05:49	359.9	47.0	0.0	8.95	7.77	1539.9	2.28	1503.3	0.02
05:50	363.7	47.5	0.0	8.82	7.87	1540.4	2.29	1503.5	0.02
05:51	364.1	47.1	-0.1	8.90	7.80	1540.6	2.24	1503.2	0.02
05:52	362.2	46.8	0.1	8.96	7.77	1541.2	2.31	1503.7	0.02
05:53	362.7	46.7	0.0	8.95	7.78	1542.2	2.27	1503.3	0.02
05:54	362.1	46.9	0.2	8.95	7.79	1542.7	2.36	1502.7	0.02
05:55	361.8	46.6	0.3	8.88	7.84	1543.2	2.33	1502.6	0.02
05:56	360.7	46.6	0.2	8.92	7.82	1543.6	2.30	1502.9	0.02
05:57	362.0	46.6	0.2	8.90	7.83	1543.4	2.31	1502.8	0.02
05:58	363.8	46.4	0.2	8.85	7.84	1542.3	2.37	1502.6	0.02
05:59	364.1	46.5	0.2	8.86	7.83	1543.8	2.38	1503.2	0.02
06:00	363.5	46.2	0.2	8.87	7.85	1545.0	2.42	1502.4	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
06:00	363.1	46.8	0.1	8.91	7.81	1542.1	2.34	1503.5	0.02
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
06:00	370.8	48.5	0.1	8.74	7.89	1541.2	2.35	1503.1	0.02
06:01	364.1	46.1	0.2	8.77	7.93	1547.5	2.63	1503.3	0.02
06:02	364.8	47.2	0.3	8.70	7.94	1548.5	2.62	1503.1	0.02
06:03	359.9	46.7	0.2	8.91	7.81	1548.3	2.23	1503.4	0.02
06:04	355.7	46.5	0.1	8.96	7.79	1548.3	-0.15	1502.2	0.02
06:05	356.3	46.7	0.1	8.92	7.82	1549.2	-0.16	1502.4	0.02
06:06	352.8	46.8	0.3	8.71	7.95	1550.6	-0.16	1502.5	0.02
06:07	343.5	46.6	0.3	8.73	7.95	1551.2	1.18	1502.4	0.02
06:08	337.4	46.9	0.3	8.87	7.85	1551.0	2.44	1502.7	0.02
06:09	336.0	46.9	0.3	8.83	7.87	1550.3	2.21	1501.9	0.03
06:10	336.2	46.7	0.2	8.84	7.88	1549.5	2.42	1501.9	0.03
06:11	341.2	46.6	0.1	8.77	7.93	1545.6	1.99	1501.9	-0.00
06:12	348.4	46.6	0.1	8.64	8.01	1545.2	2.03	1502.9	-0.00
06:13	358.9	46.9	0.1	8.55	8.05	1545.8	2.16	1504.0	-0.00
06:14	363.2	47.3	0.1	8.62	8.00	1546.7	2.08	1503.8	0.00
06:15	364.7	47.3	0.1	8.62	7.98	1546.6	2.15	1503.1	0.02

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AVERAGE VALUES FOR THE LAST 15 MINUTES									
06:15	352.2	46.8	0.2	8.76	7.92	1548.3	1.71	1502.8	0.02
06:16	364.4	47.2	0.1	8.65	7.97	1545.8	1.98	1503.3	0.02
06:17	366.9	47.1	0.2	8.72	7.93	1546.0	1.96	1502.6	0.02
06:18	372.3	46.7	0.2	8.67	7.96	1547.7	2.24	1502.5	0.02
06:19	372.4	47.1	0.2	8.76	7.88	1547.6	2.26	1502.3	0.02
06:20	368.2	47.0	0.3	8.87	7.83	1546.7	2.38	1500.9	0.02
06:21	367.9	46.9	0.3	8.90	7.81	1546.0	2.17	1500.9	0.02
06:22	367.8	47.0	0.2	8.91	7.81	1544.9	2.27	1500.9	0.02
06:23	370.6	47.0	0.2	8.84	7.84	1546.3	2.23	1500.9	0.02
06:24	367.8	46.9	0.3	8.97	7.76	1545.3	2.40	1500.0	0.02
06:25	369.0	46.6	0.3	8.81	7.87	1545.7	2.21	1500.4	0.02
06:26	369.0	46.2	0.2	8.89	7.82	1545.2	2.34	1500.6	0.02
06:27	371.7	46.5	0.3	8.80	7.87	1545.2	2.29	1500.7	0.02
06:28	370.8	46.5	0.3	8.89	7.82	1544.2	2.25	1500.6	0.02
06:29	370.9	46.3	0.5	8.76	7.93	1544.6	2.46	1499.6	0.02
06:30	374.3	46.5	0.4	8.76	7.91	1543.5	2.28	1500.9	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
06:30	369.6	46.8	0.3	8.81	7.87	1545.6	2.25	1501.1	0.02
06:31	370.0	46.2	0.5	8.89	7.83	1544.4	2.22	1501.4	0.02
06:32	370.7	46.3	0.6	8.88	7.83	1543.8	2.18	1500.9	0.03
06:33	369.5	46.2	0.7	8.87	7.88	1543.1	2.21	1500.7	0.02
06:34	371.3	46.4	0.6	8.78	7.90	1542.2	2.03	1501.0	0.02
06:35	374.3	46.5	0.7	8.65	7.99	1543.2	2.09	1502.5	0.02
06:36	376.0	46.2	0.8	8.59	8.04	1544.7	2.07	1503.7	0.02
06:37	377.7	45.9	0.7	8.60	8.02	1544.5	2.10	1503.9	0.02
06:38	373.7	45.2	0.9	8.67	7.98	1545.2	2.15	1502.8	0.02
06:39	372.0	45.1	0.8	8.75	7.93	1544.1	2.04	1502.7	0.02
06:40	372.1	45.3	0.7	8.65	7.99	1544.6	2.09	1503.9	0.02
06:41	373.8	45.6	0.8	8.57	8.04	1540.7	2.13	1504.0	0.02
06:42	375.7	45.8	0.8	8.59	8.04	1538.0	2.10	1504.2	0.02
06:43	373.0	46.6	0.8	8.76	7.92	1536.8	2.11	1504.5	0.02
06:44	369.7	47.0	0.8	8.74	7.92	1535.4	2.04	1505.5	0.02
06:45	370.3	47.6	0.7	8.73	7.91	1534.5	2.29	1505.0	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
06:45	372.7	46.1	0.7	8.72	7.95	1541.7	2.13	1503.1	0.02
06:46	368.8	48.2	0.7	8.78	7.90	1535.3	2.36	1504.1	0.02
06:47	365.0	47.1	0.7	9.07	7.68	1534.4	2.29	1504.0	0.02
06:48	360.4	47.5	0.8	9.01	7.74	1533.3	2.22	1504.0	0.02
06:49	363.8	47.0	0.8	9.02	7.74	1532.3	2.11	1504.0	0.02
06:50	366.3	47.1	0.9	8.87	7.84	1531.4	2.14	1503.8	0.02
06:51	368.9	46.8	0.8	8.76	7.92	1531.5	2.14	1503.8	0.02
06:52	368.3	46.7	0.8	8.69	7.95	1531.4	2.17	1503.2	0.02
06:53	368.2	46.6	0.9	8.72	7.93	1530.8	2.05	1503.3	0.02
06:54	368.5	46.6	0.8	8.76	7.92	1529.9	2.00	1504.0	0.02
06:55	367.6	46.6	0.9	8.78	7.88	1529.8	2.03	1505.0	0.02
06:56	364.9	46.6	0.8	8.83	7.83	1531.6	2.35	1504.2	0.02
06:57	365.2	46.5	1.0	8.75	7.88	1533.9	2.38	1503.2	0.02
06:58	362.9	45.9	1.0	8.86	7.81	1534.0	2.47	1503.0	0.02

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
06:59	358.7	46.1	1.0	8.81	7.87	1532.9	2.37	1502.3	0.02
07:00	355.0	45.9	1.0	8.82	7.85	1531.6	2.25	1502.4	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
07:00	364.8	46.7	0.9	8.84	7.85	1532.3	2.22	1503.6	0.02
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
07:00	364.8	46.6	0.5	8.78	7.90	1542.0	2.08	1502.7	0.02
07:01	351.6	46.0	1.1	8.84	7.85	1531.7	2.36	1502.4	0.02
07:02	348.8	46.0	1.1	8.86	7.83	1531.9	2.11	1502.4	0.02
07:03	348.4	45.4	1.1	8.78	7.90	1529.9	2.19	1502.3	0.02
07:04	350.9	46.2	1.1	8.68	7.96	1530.6	2.22	1502.3	0.02
07:05	351.8	45.8	1.1	8.66	7.98	1530.9	2.16	1502.5	0.02
07:06	351.5	46.0	1.1	8.70	7.94	1530.2	2.19	1502.5	0.02
07:07	352.0	46.0	1.2	8.63	7.98	1530.9	2.10	1503.7	0.02
07:08	353.9	46.1	1.1	8.70	7.91	1531.1	2.09	1504.6	0.02
07:09	351.2	46.3	1.1	8.82	7.85	1530.1	2.08	1503.0	0.02
07:10	354.4	46.4	1.1	8.70	7.93	1529.4	2.10	1504.0	0.02
07:11	358.7	46.3	1.2	8.69	7.94	1529.2	2.04	1504.8	0.03
07:12	359.8	46.4	1.2	8.76	7.88	1529.3	2.00	1505.2	0.02
07:13	361.0	46.4	1.2	8.74	7.89	1528.4	2.05	1504.4	0.02
07:14	365.5	46.3	1.2	8.67	7.94	1528.7	1.02	1504.0	0.02
07:15	367.4	46.2	1.2	8.68	7.90	1528.3	-0.19	1504.0	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
07:15	355.1	46.1	1.1	8.73	7.91	1530.0	1.90	1503.5	0.02
07:16	366.3	46.1	1.2	8.70	7.87	1528.3	-0.19	1504.0	0.03
07:17	366.5	45.9	1.2	8.72	7.90	1528.4	-0.05	1504.1	0.02
07:18	368.5	46.0	1.3	8.66	7.92	1528.4	1.89	1503.9	0.02
07:19	368.6	45.6	1.3	8.67	7.93	1528.4	2.07	1504.7	0.03
07:20	366.1	45.7	1.3	8.71	7.89	1528.8	2.07	1504.3	0.03
07:21	361.8	45.5	1.3	8.79	7.83	1528.0	2.06	1504.1	0.02
07:22	361.6	45.7	1.2	8.79	7.83	1526.9	2.02	1503.3	0.02
07:23	363.1	45.4	1.2	8.73	7.87	1526.9	2.01	1504.0	0.03
07:24	360.4	45.0	1.2	8.78	7.82	1527.1	2.05	1504.4	-0.00
07:25	355.5	45.3	1.3	8.80	7.82	1527.6	2.11	1504.0	-0.00
07:26	350.2	45.4	1.3	8.75	7.85	1526.9	2.15	1503.6	-0.00
07:27	350.9	45.5	1.3	8.66	7.92	1526.9	1.94	1503.9	-0.00
07:28	350.1	45.2	1.3	8.70	7.89	1526.4	1.98	1504.0	-0.00
07:29	351.3	45.4	1.2	8.75	7.85	1526.2	2.08	1504.0	0.04
07:30	354.8	45.7	1.2	8.70	7.87	1527.3	2.15	1504.2	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
07:30	359.7	45.6	1.2	8.73	7.87	1527.5	1.76	1504.0	0.02
07:31	355.7	45.7	1.1	8.79	7.81	1526.7	2.04	1504.2	0.02
07:32	359.5	45.6	1.2	8.86	7.78	1526.8	2.12	1504.0	0.02
07:33	362.2	46.0	1.2	8.81	7.82	1525.9	2.02	1504.5	0.02
07:34	363.0	45.7	1.2	8.78	7.83	1525.9	1.98	1504.3	0.02
07:35	366.0	45.8	1.2	8.68	7.90	1526.0	2.17	1505.4	0.02
07:36	366.6	45.5	1.2	8.69	7.89	1525.5	2.30	1505.3	0.02
07:37	367.4	45.7	1.3	8.62	7.91	1526.9	2.31	1504.3	0.02

zero

zero

ENTROPY

Jewell Coal & Coke Engineering 11-01-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
07:38	366.5	45.3	1.3	8.75	7.85	1525.8	2.15	1504.3	0.02
07:39	366.1	45.4	1.3	8.75	7.84	1525.3	2.27	1505.1	0.02
07:40	366.1	45.3	1.2	8.76	7.83	1525.4	2.32	1504.8	0.02
07:41	367.5	44.9	1.1	8.73	7.85	1526.0	2.40	1504.5	0.02
07:42	368.7	45.1	1.2	8.69	7.88	1526.8	2.39	1504.8	0.02
07:43	369.2	44.5	1.2	8.74	7.85	1526.0	2.32	1505.6	0.02
07:44	368.2	44.4	1.2	8.74	7.84	1524.7	2.16	1505.5	0.02
07:45	367.3	44.1	1.2	8.75	7.83	1524.3	2.31	1505.6	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
07:45	365.3	45.3	1.2	8.74	7.85	1525.9	2.22	1504.8	0.02
07:46	367.4	44.1	1.3	8.79	7.81	1524.7	2.16	1507.0	0.02
07:47	363.8	44.4	1.3	8.90	7.75	1525.1	2.31	1507.1	0.02
07:48	361.8	43.8	1.3	8.98	7.70	1525.7	2.13	1507.6	0.03
07:49	360.7	43.6	1.3	9.04	7.67	1528.1	2.16	1507.9	0.02
07:50	362.4	43.2	1.3	8.98	7.71	1528.4	2.05	1507.2	0.02
07:51	362.0	43.2	1.4	8.94	7.73	1528.4	2.11	1507.0	0.02
07:52	363.0	43.3	1.3	8.91	7.74	1529.7	2.09	1507.1	0.03
07:53	361.2	43.0	1.4	9.01	7.71	1531.0	2.23	1507.5	0.02
07:54	362.2	43.3	1.4	8.94	7.75	1531.1	2.19	1507.0	0.02
07:55	362.6	43.0	1.3	8.97	7.71	1532.1	2.26	1507.0	0.02
07:56	361.4	43.0	1.3	9.01	7.71	1532.6	2.22	1507.0	0.02
07:57	362.5	43.0	1.3	8.98	7.73	1531.4	2.21	1505.8	0.02
07:58	365.7	43.3	1.3	8.83	7.83	1531.3	2.25	1505.5	0.02
07:59	366.8	43.4	1.3	8.77	7.86	1531.4	2.20	1506.5	0.02
08:00	366.5	43.5	1.3	8.82	7.84	1531.4	2.25	1506.0	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
08:00	363.3	43.4	1.3	8.92	7.75	1529.5	2.19	1506.9	0.02
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
08:00	360.9	45.1	1.2	8.78	7.84	1528.2	2.02	1504.8	0.02

COMMENTS: Calibration Time

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Calibration Bias Check

DATE : 11-01-1991 TIME: 08:00 - 08:12

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	6.8
7	Unit 4	ppmSO2	241.0	242.4
9	Unit 4	ppmNOx	0.0	0.1
9	Unit 4	ppmNOx	141.5	136.4
8	Unit 4	ppmCO	0.0	1.4
8	Unit 4	ppmCO	30.2	31.5
5	Unit 4	% O2	0.00	0.05
5	Unit 4	% O2	12.48	12.64
6	Unit 4	% CO2	0.00	0.35
6	Unit 4	% CO2	11.06	11.01

Jewell Coal & Coke Engineering 11-01-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
08:17	354.5	44.3	1.4	8.37	8.06	1534.4	2.44	1510.5	0.01
08:18	358.0	44.4	1.3	8.38	8.07	1536.0	2.46	1511.6	0.01
08:19	360.6	44.6	1.3	8.42	8.04	1535.4	2.38	1511.1	0.01
08:20	363.2	44.6	1.4	8.38	8.06	1534.6	2.19	1511.9	0.01
08:21	363.6	44.5	1.3	8.49	7.98	1533.2	2.13	1513.1	0.02
08:22	362.0	44.1	1.3	8.63	7.90	1532.9	2.29	1512.9	0.02
08:23	362.2	44.5	1.2	8.56	7.96	1532.6	2.23	1511.6	0.02
08:24	358.8	44.4	1.3	8.56	7.93	1533.1	2.10	1511.9	0.02
08:25	358.5	44.2	1.2	8.58	7.89	1534.2	2.18	1513.0	0.03
08:26	360.2	44.1	1.3	8.64	7.88	1533.7	2.13	1512.3	0.02
08:27	360.2	44.2	1.2	8.65	7.86	1535.2	2.21	1513.1	0.02
08:28	362.4	43.9	1.2	8.62	7.88	1535.9	2.20	1513.1	0.02
08:29	363.4	43.8	1.2	8.61	7.90	1534.6	2.17	1512.3	0.02
08:30	363.4	44.0	1.2	8.66	7.89	1534.5	2.13	1513.0	0.02
08:31	362.3	43.8	1.3	8.66	7.87	1534.5	2.15	1513.1	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
08:31	360.9	44.2	1.3	8.55	7.94	1534.3	2.23	1512.3	0.02
08:32	363.9	44.1	1.2	8.71	7.85	1535.7	2.15	1513.1	0.02
08:33	367.3	44.0	1.2	8.63	7.88	1535.3	2.10	1513.1	0.02
08:34	365.8	43.4	1.2	8.65	7.86	1534.5	2.12	1513.1	0.02
08:35	366.7	43.9	1.2	8.60	7.90	1534.6	2.16	1513.1	0.02
08:36	365.9	43.5	1.3	8.65	7.86	1535.1	2.12	1513.1	0.02
08:37	367.7	43.8	1.2	8.64	7.90	1534.6	2.03	1513.1	0.03
08:38	367.8	43.7	1.1	8.63	7.90	1534.9	2.13	1513.2	0.02
08:39	366.7	43.7	1.3	8.55	7.93	1534.3	2.00	1513.2	0.02
08:40	368.5	43.8	1.3	8.56	7.93	1534.3	2.13	1513.8	0.02
08:41	367.2	43.6	1.3	8.56	7.93	1535.8	2.32	1514.1	0.02
08:42	367.1	43.5	1.2	8.43	8.02	1539.4	3.14	1511.7	0.01
08:43	368.9	43.9	1.3	8.54	7.93	1540.9	2.19	1515.6	0.03
08:44	359.8	43.7	1.3	8.76	7.80	1537.5	2.04	1516.8	0.02
08:45	359.0	43.7	1.3	8.55	7.94	1535.5	2.12	1514.7	0.02
08:46	368.3	44.0	1.3	8.47	8.00	1534.5	2.07	1515.7	0.02
AVERAGE VALUES FOR THE LAST 15 MINUTES									
08:46	366.0	43.8	1.2	8.60	7.91	1535.8	2.19	1513.8	0.02
08:47	373.5	43.8	1.2	8.47	7.98	1534.6	2.18	1515.8	0.02
08:48	374.4	44.0	1.2	8.48	7.99	1535.4	2.10	1516.8	0.02
08:49	375.7	43.9	1.2	8.52	7.97	1534.4	2.20	1516.2	0.02
08:50	377.5	44.1	1.2	8.47	7.97	1534.0	2.15	1516.2	0.02
08:51	377.1	44.0	1.2	8.55	7.93	1533.8	2.14	1516.2	0.02
08:52	376.9	44.2	1.1	8.57	7.90	1535.1	2.09	1517.4	0.03
08:53	374.0	44.1	1.1	8.65	7.86	1534.5	2.15	1516.5	0.02
08:54	379.3	44.1	1.2	8.57	7.90	1533.7	1.99	1516.7	0.02
08:55	378.5	44.0	1.2	8.56	7.91	1533.5	2.13	1517.7	0.02
08:56	371.4	43.9	1.2	8.67	7.84	1534.5	2.05	1517.7	0.02
08:57	372.2	43.8	1.2	8.63	7.85	1534.8	2.06	1517.7	0.02
08:58	375.0	43.5	1.2	8.54	7.91	1535.4	1.96	1518.2	0.02
08:59	375.9	42.8	1.2	8.59	7.86	1534.5	2.09	1521.3	0.03
09:00	365.2	42.0	1.2	8.89	7.67	1535.2	2.55	1522.5	0.03

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
AVERAGE VALUES FOR THE LAST HOUR: 44 MINUTES OF VALID DATA									
09:00	367.1	43.9	1.2	8.58	7.92	1534.9	2.18	1514.5	0.02
09:01	362.1	42.1	1.2	8.86	7.71	1534.7	0.57	1523.1	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
09:01	373.9	43.6	1.2	8.60	7.88	1534.6	2.03	1518.0	0.02
09:02	360.4	41.7	1.2	8.88	7.71	1532.9	-0.19	1524.7	0.03
09:03	360.8	41.7	1.2	8.85	7.72	1532.2	-0.20	1525.6	0.03
09:04	357.9	41.5	1.1	8.93	7.67	1531.3	-0.19	1526.7	0.03
09:05	357.4	41.2	1.1	8.92	7.70	1530.0	-0.19	1527.0	0.04
09:06	356.9	40.9	1.2	8.94	7.69	1528.3	-0.20	1529.2	0.05
09:07	354.4	41.0	1.2	8.92	7.69	1524.5	-0.20	1528.8	0.03
09:08	353.0	40.6	1.2	8.92	7.68	1526.7	3.07	1528.0	0.04
09:09	351.2	40.4	1.0	8.97	7.64	1527.6	-0.06	1528.7	0.04
09:10	345.8	39.8	1.1	9.29	7.48	1528.2	2.79	1525.9	0.03
09:11	347.7	41.1	1.2	9.01	7.63	1527.5	6.41	1525.2	0.03
09:12	352.3	41.5	1.1	8.91	7.67	1527.1	4.12	1526.6	0.03
09:13	356.2	41.3	1.1	8.80	7.73	1528.4	1.64	1526.2	0.03
09:14	356.7	41.6	1.1	8.83	7.71	1529.2	0.06	1527.0	0.04
09:15	355.6	41.7	1.1	8.89	7.68	1528.5	-0.22	1527.2	0.03
09:16	354.0	41.5	1.1	8.94	7.65	1528.5	-0.22	1527.4	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
09:16	354.7	41.2	1.1	8.93	7.67	1528.7	1.09	1526.9	0.04
09:17	352.0	41.4	1.2	9.02	7.63	1528.4	-0.22	1528.3	0.04
09:18	351.8	41.4	1.2	8.95	7.63	1528.5	0.39	1528.4	0.03
09:19	352.9	41.5	1.1	8.93	7.66	1529.9	0.05	1528.6	0.03
09:20	352.8	41.1	1.1	8.96	7.65	1529.9	0.53	1528.4	0.04
09:21	355.0	41.4	1.2	8.91	7.68	1529.9	0.43	1528.4	0.04
09:22	353.3	41.6	1.1	9.01	7.61	1529.9	0.09	1528.4	0.04
09:23	348.6	43.3	1.1	8.98	7.61	1530.0	-0.23	1528.3	0.04
09:24	350.3	43.5	1.3	9.02	7.60	1529.9	-0.23	1528.2	0.04
09:25	349.4	43.4	1.2	8.99	7.62	1530.5	-0.08	1527.5	0.04
09:26	350.0	43.4	1.2	9.00	7.63	1530.4	-0.22	1526.9	0.04
09:27	345.2	42.3	1.2	9.19	7.52	1531.4	-0.22	1525.2	0.04
09:28	342.8	42.7	1.2	9.06	7.58	1532.7	1.90	1523.9	0.03
09:29	347.5	43.2	1.1	8.90	7.66	1531.9	4.20	1523.9	0.03
09:30	346.4	42.7	1.2	9.10	7.58	1529.9	3.82	1524.8	0.03
09:31	347.4	42.9	1.1	8.97	7.63	1529.9	0.92	1523.9	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
09:31	349.7	42.4	1.2	9.00	7.62	1530.2	0.74	1526.9	0.04
09:32	345.8	42.8	1.2	9.02	7.62	1530.1	1.26	1524.5	0.03
09:33	345.3	42.5	1.3	9.03	7.60	1529.9	1.55	1524.1	0.03
09:34	347.9	42.6	1.3	8.92	7.66	1529.7	1.81	1524.2	0.04
09:35	348.1	42.9	1.3	8.91	7.67	1530.9	1.49	1523.6	0.03
09:36	345.5	42.8	1.3	9.02	7.62	1531.4	0.91	1524.1	0.04
09:37	342.8	41.9	1.3	9.13	7.56	1529.9	1.12	1525.3	0.04
09:38	343.9	42.1	1.3	8.97	7.62	1529.4	1.71	1525.3	0.05
09:39	343.4	42.0	1.4	9.00	7.61	1528.4	2.19	1525.4	0.05

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
09:40	334.7	42.3	1.4	9.05	7.59	1528.4	2.54	1523.0	0.02
09:41	337.9	41.9	1.4	8.94	7.67	1528.4	3.44	1522.5	0.00
09:42	341.8	42.0	1.4	8.90	7.68	1529.3	3.90	1522.9	0.23*
09:43	342.7	41.9	1.5	8.94	7.64	1529.6	4.11	1523.8	0.09*
09:44	339.5	41.6	1.3	9.08	7.57	1528.4	4.46	1525.0	0.00
09:45	337.9	42.2	1.4	9.07	7.58	1528.4	4.78	1524.6	0.00
09:46	341.8	42.1	1.3	8.95	7.63	1528.0	4.90	1523.5	0.01
AVERAGE VALUES FOR THE LAST 15 MINUTES									
09:46	342.6	42.2	1.3	8.99	7.62	1529.3	2.68	1524.1	0.04
09:47	346.3	42.0	1.3	8.93	7.63	1527.0	4.81	1523.4	0.06*
09:48	352.0	42.2	1.2	8.88	7.67	1527.0	4.69	1523.8	0.04
09:49	353.0	41.7	1.3	8.89	7.66	1527.2	4.03	1523.3	0.04
09:50	355.6	41.5	1.2	8.82	7.68	1528.6	4.28	1522.3	0.04
09:51	356.0	41.1	1.2	8.94	7.63	1527.9	4.60	1523.8	0.05
09:52	350.8	41.3	1.2	9.05	7.55	1526.4	4.76	1523.3	0.04
09:53	351.8	41.3	1.2	9.03	7.56	1526.0	4.83	1522.6	0.05
09:54	355.9	41.2	1.2	8.95	7.62	1526.7	4.80	1523.5	0.05
09:55	352.6	41.5	1.3	9.03	7.58	1525.6	4.96	1522.6	0.05
09:56	349.7	41.7	1.3	9.02	7.58	1525.8	4.90	1522.3	0.04
09:57	353.9	41.3	1.3	8.87	7.64	1526.3	4.80	1522.3	0.05
09:58	353.6	41.2	1.2	8.95	7.60	1525.3	4.78	1522.4	0.04
09:59	353.1	41.2	1.2	8.98	7.59	1525.3	4.69	1522.6	0.05
10:00	357.0	41.2	1.1	8.84	7.66	1525.3	5.46	1522.5	0.05
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
10:00	350.1	41.8	1.2	8.97	7.63	1528.8	2.25	1525.2	0.04
10:01	356.3	41.3	1.2	8.87	7.62	1525.3	6.69	1522.3	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
10:01	353.2	41.4	1.2	8.94	7.62	1526.4	4.87	1522.9	0.05
10:02	354.6	41.1	1.2	8.94	7.60	1525.4	6.88	1522.3	0.05
10:03	356.0	41.6	1.1	8.87	7.62	1525.3	7.15	1522.0	0.04
10:04	356.7	41.8	1.2	8.91	7.61	1525.3	7.17	1520.9	0.04
10:05	356.0	41.4	1.2	8.92	7.62	1525.3	7.22	1521.9	0.05
10:06	354.9	41.0	1.2	8.95	7.59	1525.3	8.00	1522.3	0.05
10:07	355.3	41.3	1.1	8.97	7.59	1525.5	6.60	1520.9	0.04

COMMENTS: Interrupt to adjust transducer unit 3 again

End III-3-SA-CEM-3

Begin Run
II - 3-54-CEM-3

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
10:49	343.9	40.3	1.6	9.12	7.54	1526.3	2.85	1518.9	0.04
10:50	340.3	40.1	1.5	8.93	7.54	1519.3	-0.14	1519.1	0.05
10:51	337.6	40.0	1.5	9.03	7.51	1519.2	-0.19	1519.2	0.04
10:52	344.4	40.2	1.5	8.92	7.62	1518.7	-0.19	1517.9	0.04
10:53	353.3	40.4	1.6	8.90	7.63	1517.6	8.47*	1517.7	0.04
10:54	359.6	40.4	1.6	8.73	7.60	1518.8	-0.19	1517.4	0.03
10:55	362.1	40.5	1.6	8.78	7.64	1517.5	-0.19	1515.5	0.03
10:56	357.8	40.1	1.6	9.10	7.53	1517.1	-0.08	1515.9	0.04
10:57	358.1	39.9	1.6	8.97	7.55	1515.6	0.70	1514.5	0.03
10:58	361.0	40.0	1.7	8.94	7.55	1515.5	0.73	1515.0	0.04
10:59	370.7	40.9	1.7	8.74	7.65	1516.0	-0.20	1516.3	0.05
11:00	372.3	40.3	1.7	8.92	7.56	1516.4	-0.17	1516.2	0.04
AVERAGE VALUES FOR THE LAST HOUR: 12 MINUTES OF VALID DATA									
11:00	355.1	40.3	1.6	8.92	7.58	1518.2	0.95	1517.0	0.04
11:01	353.9	39.8	1.7	8.99	7.55	1515.1	-0.17	1515.3	0.04
11:02	359.9	40.2	1.7	8.84	7.61	1512.4	-0.20	1516.0	0.04
11:03	358.5	39.8	1.7	8.99	7.56	1515.8	-0.21	1515.4	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
11:03	355.6	40.2	1.6	8.93	7.58	1517.4	0.72	1516.7	0.04
11:04	356.4	39.1	1.8	9.17	7.43	1515.6	-0.05	1514.7	0.04
11:05	360.0	39.8	1.8	8.92	7.57	1515.4	0.18	1514.7	0.04
11:06	363.5	40.1	1.7	8.80	7.62	1514.9	3.51	1515.9	0.04
11:07	361.6	39.8	1.8	8.80	7.61	1516.5	0.21	1517.0	0.05
11:08	358.9	39.7	1.8	8.91	7.55	1515.0	-0.19	1516.2	0.05
11:09	350.7	39.2	1.8	9.01	7.48	1514.4	-0.21	1515.3	0.04
11:10	340.8	39.6	1.8	9.02	7.47	1514.2	-0.21	1513.3	0.04
11:11	338.9	39.5	1.8	9.04	7.46	1514.2	-0.21	1514.5	0.04
11:12	344.5	39.2	1.9	8.90	7.55	1514.4	-0.21	1514.4	0.05
11:13	348.2	39.1	1.9	8.77	7.61	1514.7	-0.21	1514.4	0.04
11:14	348.3	39.5	1.8	8.68	7.65	1514.1	-0.21	1514.2	0.05
11:15	349.9	39.9	1.9	8.62	7.69	1513.4	-0.21	1515.0	0.04
11:16	352.7	40.0	2.0	8.67	7.65	1513.2	-0.21	1515.1	0.05
11:17	359.1	40.0	2.0	8.64	7.66	1513.2	-0.21	1516.8	0.04
11:18	367.1	40.1	2.0	8.51	7.74	1513.9	-0.21	1518.7	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
11:18	353.4	39.6	1.8	8.83	7.58	1514.5	0.11	1515.3	0.05
11:19	372.0	40.4	2.0	8.54	7.72	1514.7	-0.21	1519.2	0.05
11:20	374.8	40.2	2.0	8.50	7.73	1516.2	-0.20	1520.7	0.05
11:21	379.7	40.5	2.0	8.53	7.72	1517.7	-0.21	1520.8	0.05
11:22	380.0	40.2	2.0	8.47	7.72	1517.7	-0.21	1522.2	0.05
11:23	385.1	40.2	2.0	8.51	7.74	1519.6	-0.21	1522.1	0.04
11:24	388.7	40.5	2.0	8.55	7.75	1520.6	-0.21	1520.8	0.05
11:25	384.1	39.7	2.1	8.33	7.68	1518.6	-0.21	1522.2	0.05
11:26	385.0	39.8	2.2	8.49	7.73	1518.2	-0.21	1521.0	0.05
11:27	384.1	39.8	2.1	8.47	7.71	1518.5	-0.21	1522.2	0.04
11:28	384.9	40.5	2.1	8.40	7.80	1521.2	-0.21	1520.6	0.03
11:29	384.7	40.0	2.1	8.57	7.67	1520.2	-0.21	1521.2	0.05
11:30	371.7	39.0	2.1	8.72	7.59	1519.5	-0.22	1525.0	0.05
11:31	373.8	39.5	2.1	8.60	7.69	1520.9	-0.22	1524.7	0.05

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
11:32	374.7	39.6	2.2	8.55	7.69	1521.1	-0.22	1524.6	0.05
11:33	370.8	38.7	2.2	8.59	7.66	1520.6	-0.22	1525.4	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
11:33	379.6	39.9	2.1	8.52	7.71	1519.0	-0.21	1522.2	0.05
11:34	379.5	39.4	2.2	8.42	7.77	1522.1	-0.22	1526.7	0.05
11:35	379.6	39.5	2.1	8.58	7.68	1521.7	-0.21	1526.9	0.05
11:36	374.9	39.6	2.2	8.57	7.65	1521.3	-0.22	1526.9	0.05
11:37	371.7	39.6	2.1	8.54	7.67	1520.8	-0.22	1526.9	0.05
11:38	367.8	39.9	2.2	8.53	7.66	1520.1	-0.22	1526.9	0.05
11:39	361.1	39.1	2.3	8.67	7.60	1520.3	-0.22	1526.9	0.05
11:40	359.3	39.0	2.2	8.69	7.61	1520.2	-0.22	1526.9	0.05
11:41	363.0	39.4	2.3	8.60	7.63	1519.7	-0.22	1526.9	0.05
11:42	366.2	38.9	2.3	8.57	7.63	1519.5	-0.22	1526.8	0.05
11:43	366.0	39.4	2.2	8.59	7.64	1519.5	-0.22	1526.7	0.04
11:44	368.3	39.8	2.2	8.52	7.66	1519.3	-0.22	1526.9	0.05
11:45	368.4	39.4	2.2	8.54	7.63	1519.2	-0.22	1527.9	0.05
11:46	369.7	39.4	2.3	8.49	7.69	1520.3	-0.22	1528.4	0.05
11:47	373.7	39.8	2.3	8.48	7.69	1520.4	-0.22	1528.4	0.05
11:48	371.7	39.3	2.3	8.52	7.64	1520.7	-0.22	1528.4	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
11:48	369.4	39.4	2.2	8.55	7.66	1520.3	-0.22	1527.2	0.05
11:49	372.0	39.7	2.4	8.45	7.69	1519.1	-0.22	1527.8	0.04
11:50	373.9	39.3	2.4	8.49	7.68	1517.2	-0.22	1526.5	0.04
11:51	365.0	38.9	2.4	8.55	7.64	1516.2	-0.22	1526.6	0.04
11:52	366.8	39.3	2.4	8.45	7.69	1516.7	-0.22	1526.3	0.04
11:53	370.8	39.4	2.4	8.46	7.67	1517.4	-0.22	1526.9	0.05
11:54	365.2	38.8	2.4	8.56	7.64	1518.8	-0.22	1527.1	0.05
11:55	357.3	38.5	2.4	8.65	7.57	1519.1	-0.22	1527.2	0.05
11:56	359.9	39.0	2.5	8.60	7.61	1518.4	-0.22	1526.9	0.04
11:57	365.1	38.5	2.5	8.60	7.61	1517.9	-0.22	1526.9	0.05
11:58	367.6	38.4	2.5	8.58	7.60	1517.7	-0.22	1526.9	0.05
11:59	364.1	38.5	2.5	8.48	7.67	1517.2	-0.22	1526.8	0.05
12:00	363.2	38.5	2.5	8.51	7.65	1516.0	-0.22	1527.0	0.05
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
12:00	366.6	39.5	2.1	8.63	7.64	1517.7	-0.14	1522.3	0.05
12:01	362.8	38.3	2.5	8.47	7.66	1513.9	-0.22	1525.6	0.04
12:02	361.1	38.5	2.5	8.37	7.72	1515.6	-0.22	1525.7	0.04
12:03	356.7	38.3	2.6	8.58	7.58	1516.7	-0.22	1526.9	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
12:03	364.8	38.8	2.5	8.52	7.65	1517.2	-0.22	1526.7	0.05
12:04	356.0	38.2	2.5	8.58	7.60	1516.3	-0.22	1526.3	0.04
12:05	360.2	38.2	2.5	8.53	7.60	1516.2	-0.22	1526.9	0.05
12:06	362.1	38.1	2.6	8.52	7.64	1516.6	-0.22	1528.0	0.05
12:07	364.3	38.1	2.6	8.55	7.62	1517.6	-0.22	1528.3	0.05
12:08	363.0	37.8	2.6	8.67	7.56	1517.3	-0.22	1528.4	0.05
12:09	361.7	38.0	2.6	8.61	7.61	1517.5	-0.22	1528.4	0.04
12:10	360.6	37.8	2.6	8.64	7.58	1517.6	-0.22	1529.3	0.05

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
12:11	357.3	37.8	2.6	8.68	7.54	1517.7	-0.22	1529.9	0.05
12:12	359.7	37.8	2.7	8.58	7.60	1517.5	-0.22	1529.6	0.05
12:13	362.9	37.9	2.6	8.49	7.64	1517.5	-0.22	1529.7	0.05
12:14	363.5	38.2	2.6	8.54	7.62	1517.8	-0.22	1529.6	0.04
12:15	364.7	38.0	2.7	8.43	7.68	1517.7	-0.22	1529.7	0.05
12:16	368.7	38.4	2.7	8.42	7.68	1517.5	-0.22	1529.9	0.05
12:17	363.5	37.6	2.7	8.68	7.56	1517.6	-0.22	1529.9	0.05
12:18	361.0	37.3	2.9	8.68	7.55	1517.2	-0.22	1529.3	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
12:18	361.9	38.0	2.6	8.57	7.60	1517.3	-0.22	1528.9	0.05
12:19	358.2	37.5	2.8	8.62	7.56	1517.0	-0.22	1528.6	0.05
12:20	362.9	37.6	2.6	8.53	7.61	1517.7	-0.22	1529.5	0.05
12:21	362.1	37.6	2.7	8.55	7.60	1517.8	-0.22	1529.5	0.04
12:22	357.4	38.2	2.7	8.61	7.58	1517.7	-0.22	1528.4	0.01
12:23	360.3	38.4	2.8	8.42	7.69	1516.7	-0.22	1528.4	0.00
12:24	358.3	38.6	2.8	8.44	7.67	1515.3	-0.22	1528.4	0.04
12:25	354.6	38.0	2.8	8.42	7.67	1514.7	-0.22	1528.4	0.05
12:26	358.0	37.9	2.8	8.38	7.69	1514.3	-0.22	1527.7	0.04
12:27	361.0	37.3	2.8	8.41	7.68	1513.5	-0.22	1526.9	0.04
12:28	363.1	36.7	2.7	8.34	7.69	1512.7	-0.22	1526.9	0.04
12:29	363.7	36.8	2.7	8.35	7.72	1512.6	-0.22	1526.9	0.04
12:30	361.0	37.2	2.7	8.31	7.68	1513.1	-0.22	1526.9	0.04
12:31	358.8	37.4	2.8	8.35	7.69	1512.6	-0.22	1526.8	0.04
12:32	359.0	37.3	2.8	8.49	7.64	1512.1	-0.22	1526.6	0.04
12:33	360.6	37.2	2.9	8.46	7.64	1512.2	-0.22	1526.7	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
12:33	359.9	37.6	2.8	8.44	7.65	1514.7	-0.22	1527.8	0.04
12:34	361.0	36.6	2.8	8.44	7.66	1511.8	-0.22	1526.0	0.04
12:35	363.1	36.5	2.8	8.38	7.69	1511.9	-0.22	1525.7	0.05
12:36	361.8	36.7	2.8	8.38	7.69	1512.5	-0.22	1525.3	0.05
12:37	362.0	36.4	2.8	8.51	7.71	1511.7	-0.22	1525.3	0.04
12:38	360.7	37.0	2.8	8.41	7.71	1510.7	-0.22	1525.3	0.04
12:39	358.9	37.0	2.8	8.39	7.66	1511.6	-0.22	1525.4	0.04
12:40	361.0	37.0	2.9	8.44	7.66	1509.6	-0.22	1524.0	0.03
12:41	362.1	37.3	2.9	8.41	7.64	1509.3	-0.22	1524.9	0.05
12:42	359.8	36.5	3.0	8.60	7.58	1512.1	-0.21	1523.7	0.03
12:43	358.6	36.4	2.9	8.38	7.69	1511.1	-0.21	1522.1	0.04
12:44	356.1	36.1	2.9	8.46	7.66	1511.0	-0.21	1524.5	0.05
12:45	356.1	36.2	2.9	8.36	7.73	1510.2	-0.21	1525.2	0.04
12:46	364.1	36.0	3.0	8.23	7.81	1509.8	-0.21	1525.9	0.04
12:47	366.8	36.0	3.1	8.19	7.83	1508.6	-0.21	1527.2	0.05
12:48	364.7	35.8	3.1	8.16	7.85	1507.1	-0.20	1528.3	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
12:48	361.1	36.5	2.9	8.38	7.71	1510.6	-0.22	1525.3	0.04
12:49	364.4	35.8	3.3	8.27	7.75	1506.2	-0.21	1528.0	0.05
12:50	365.0	35.4	3.3	8.28	7.74	1506.1	-0.21	1527.3	0.05
12:51	368.1	35.3	3.2	8.34	7.72	1505.8	-0.20	1526.4	0.05
12:52	368.0	35.5	3.1	8.31	7.72	1506.0	-0.21	1525.3	0.05
12:53	367.1	35.4	3.3	8.24	7.79	1506.0	-0.21	1525.4	0.05

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
12:54	371.1	35.3	3.3	8.27	7.76	1505.3	-0.20	1526.1	0.05
12:55	371.8	35.6	3.4	8.27	7.74	1504.5	-0.20	1525.4	0.05
12:56	370.8	35.5	3.5	8.30	7.74	1504.8	-0.21	1526.0	0.05
12:57	372.5	35.3	3.4	8.22	7.78	1504.4	-0.20	1526.8	0.05
12:58	371.8	35.1	3.4	8.22	7.78	1504.5	-0.20	1525.9	0.05
12:59	370.9	35.5	3.4	8.29	7.72	1504.7	-0.21	1524.9	0.05
13:00	367.1	35.8	3.4	8.32	7.71	1503.0	-0.21	1525.3	0.05
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
13:00	362.6	37.0	2.9	8.43	7.67	1512.4	-0.22	1527.0	0.04
13:01	368.1	35.2	3.4	8.19	7.76	1502.4	-0.21	1525.2	0.04
13:02	367.5	35.6	3.4	8.29	7.71	1502.6	-0.21	1524.5	0.05
13:03	362.0	35.9	3.4	8.42	7.63	1504.1	-0.20	1521.4	0.05
AVERAGE VALUES FOR THE LAST 15 MINUTES									
13:03	368.4	35.5	3.3	8.28	7.74	1504.7	-0.21	1525.6	0.05
13:04	358.8	35.6	3.4	8.45	7.63	1503.9	-0.20	1523.2	0.05
13:05	357.4	35.2	3.4	8.36	7.67	1504.5	-0.20	1523.9	0.05
13:06	359.4	35.5	3.4	8.39	7.66	1504.0	-0.20	1523.8	0.05
13:07	359.9	35.6	3.5	8.26	7.73	1503.3	-0.20	1524.0	0.05
13:08	358.3	35.4	3.6	8.27	7.71	1502.5	-0.20	1525.1	0.05
13:09	362.3	35.3	3.5	8.21	7.75	1502.4	-0.20	1525.3	0.06
13:10	365.4	35.5	3.6	8.29	7.70	1501.8	-0.20	1525.1	0.05
13:11	365.6	35.6	3.6	8.39	7.66	1500.9	-0.20	1524.0	0.04
13:12	365.1	35.6	3.6	8.44	7.65	1501.3	-0.19	1522.8	0.04
13:13	365.8	36.0	3.7	8.35	7.67	1500.9	-0.20	1520.8	0.04
13:14	363.3	35.8	3.7	8.43	7.63	1499.7	-0.20	1519.5	0.04
13:15	365.8	35.7	3.7	8.34	7.67	1498.2	-0.20	1519.8	0.04
13:16	363.8	35.4	3.7	8.47	7.62	1497.9	-0.19	1519.2	0.04
13:17	364.6	35.1	3.8	8.38	7.66	1498.4	-0.20	1519.2	0.04
13:18	365.3	35.3	3.7	8.40	7.64	1500.1	-0.20	1519.3	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
13:18	362.7	35.5	3.6	8.36	7.67	1501.3	-0.20	1522.3	0.05
13:19	363.8	35.1	3.8	8.43	7.63	1499.6	-0.19	1519.2	0.04
13:20	367.6	35.8	4.0	8.22	7.73	1500.5	-0.19	1517.8	0.04
13:21	362.2	36.0	3.9	8.37	7.65	1500.6	-0.20	1516.2	0.04
13:22	361.2	35.9	4.0	8.30	7.67	1498.6	-0.20	1516.7	0.04
13:23	363.9	36.2	4.0	8.32	7.68	1497.7	-0.20	1516.0	0.04
13:24	367.9	35.9	4.0	8.29	7.66	1496.6	-0.19	1515.4	0.04
13:25	367.4	35.9	4.0	8.39	7.62	1496.2	-0.20	1514.5	0.04
13:26	366.2	35.9	4.0	8.35	7.63	1495.8	-0.20	1513.8	0.04
13:27	368.4	35.9	4.0	8.35	7.65	1495.1	-0.20	1513.7	0.04
13:28	368.6	35.7	3.9	8.33	7.66	1495.4	-0.20	1514.3	0.04
13:29	367.7	35.5	4.0	8.32	7.68	1495.4	-0.20	1514.8	0.04
13:30	361.5	35.7	4.1	8.27	7.69	1494.8	-0.20	1516.2	0.05

COMMENTS: Calibration Time

(CONTINUED ON THE NEXT PAGE)

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Calibration Bias Check

DATE : 11-01-1991 TIME: 13:30 - 13:40

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	5.5
7	Unit 4	ppmSO2	241.0	238.4
9	Unit 4	ppmNOx	0.0	0.2
9	Unit 4	ppmNOx	141.5	136.0
8	Unit 4	ppmCO	0.0	4.0
8	Unit 4	ppmCO	30.2	33.7
5	Unit 4	% O2	0.00	0.08
5	Unit 4	% O2	12.48	12.52
6	Unit 4	% CO2	0.00	0.27
6	Unit 4	% CO2	11.06	10.84

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: CO Calibration Error Check

DATE : 11-01-1991 TIME: 13:41 - 13:45

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
8	Unit 4	ppmCO	0.0	0.7
8	Unit 4	ppmCO	30.2	31.6
8	Unit 4	ppmCO	92.3	91.2

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: CO Calibration Bias Check

DATE : 11-01-1991 TIME: 13:45 - 13:47

A/D CHAN	MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
8	Unit 4	ppmCO	0.0	0.7
8	Unit 4	ppmCO	30.2	29.9

Jewell Coal & Coke Engineering 11-01-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
13:50	366.0	35.6	-0.1	8.34	7.56	1492.5	-0.20	1513.1	0.04
13:51	368.5	35.8	-0.2	8.30	7.61	1491.7	-0.20	1513.2	0.04
13:52	364.0	36.1	-0.1	8.26	7.62	1491.7	-0.20	1513.2	0.04
13:53	360.6	36.1	-0.1	8.33	7.59	1491.9	-0.20	1512.0	0.04
13:54	360.9	36.1	-0.2	8.29	7.60	1492.5	-0.20	1510.8	0.04
13:55	359.0	36.0	-0.1	8.40	7.54	1491.9	-0.20	1510.4	0.04
13:56	355.1	36.0	-0.1	8.39	7.56	1492.2	-0.20	1511.3	0.04
13:57	358.9	36.0	-0.1	8.42	7.55	1491.3	-0.20	1510.6	0.04
13:58	362.4	35.8	-0.1	8.36	7.57	1490.3	-0.20	1511.4	0.04
13:59	361.4	35.9	-0.2	8.37	7.58	1490.5	-0.20	1511.6	0.04
14:00	359.4	35.8	-0.1	8.42	7.55	1490.3	-0.20	1510.6	0.04
AVERAGE VALUES FOR THE LAST HOUR: 11 MINUTES OF VALID DATA									
14:00	361.5	35.9	-0.1	8.35	7.57	1491.5	-0.20	1511.7	0.04
14:01	358.1	35.7	-0.2	8.35	7.59	1491.7	-0.20	1512.4	0.04
14:02	358.9	35.5	-0.2	8.37	7.58	1491.8	-0.20	1510.8	0.03
14:03	356.0	36.0	-0.2	8.35	7.56	1492.2	-0.20	1508.7	0.04
14:04	347.5	35.8	-0.2	8.52	7.49	1490.0	-0.20	1507.7	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
14:04	359.8	35.9	-0.2	8.36	7.57	1491.5	-0.20	1511.2	0.04
14:05	342.6	35.6	-0.5	8.56	7.47	1489.4	-0.20	1507.0	0.04
14:06	343.3	35.7	-0.3	8.51	7.50	1489.4	-0.20	1508.0	0.04
14:07	348.4	35.4	-0.3	8.44	7.54	1488.7	-0.20	1509.1	0.04
14:08	353.1	35.4	-0.4	8.43	7.53	1490.4	-0.20	1510.1	0.05
14:09	351.9	35.6	-0.4	8.54	7.49	1489.1	-0.20	1508.4	0.04
14:10	347.9	35.8	-0.4	8.52	7.50	1487.1	-0.20	1506.8	0.04
14:11	346.8	35.8	-0.4	8.47	7.53	1485.7	-0.20	1506.0	0.03
14:12	346.1	36.0	-0.5	8.49	7.51	1485.2	-0.21	1505.4	0.03
14:13	343.5	35.9	-0.5	8.55	7.47	1484.1	-0.21	1505.5	0.04
14:14	343.1	35.6	-0.5	8.51	7.50	1485.3	-0.21	1506.2	0.04
14:15	345.2	35.5	-0.4	8.52	7.51	1485.7	-0.21	1505.6	0.04
14:16	344.2	35.9	-0.4	8.55	7.48	1485.5	-0.21	1505.8	0.03
14:17	347.9	36.1	-0.5	8.52	7.50	1484.7	-0.21	1506.1	0.04
14:18	348.5	35.4	-0.4	8.55	7.49	1485.9	-0.21	1506.1	0.04
14:19	349.9	35.8	-0.4	8.59	7.46	1486.0	-0.21	1505.5	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
14:19	346.8	35.7	-0.4	8.52	7.50	1486.8	-0.21	1506.8	0.04
14:20	352.5	35.3	-0.5	8.61	7.47	1485.8	-0.21	1505.9	0.04
14:21	353.5	35.7	-0.4	8.55	7.49	1486.3	-0.21	1505.5	0.04
14:22	353.5	35.6	-0.4	8.54	7.51	1486.4	-0.21	1505.5	0.03
14:23	351.5	35.9	-0.3	8.55	7.49	1486.3	-0.21	1504.2	0.03
14:24	350.7	35.7	-0.3	8.55	7.49	1485.6	-0.21	1504.0	0.04
14:25	349.4	35.4	-0.1	8.49	7.53	1484.2	-0.21	1503.5	0.03
14:26	347.3	36.6	-0.3	8.49	7.52	1484.8	-0.21	1504.9	0.04
14:27	339.5	38.2	-0.4	8.79	7.35	1485.2	-0.21	1506.2	0.04
14:28	338.2	38.0	-0.4	8.89	7.36	1485.6	-0.21	1505.8	0.04
14:29	341.7	37.7	-0.4	8.83	7.36	1485.7	-0.22	1505.5	0.04
14:30	342.7	37.4	-0.4	8.86	7.35	1485.0	-0.21	1505.5	0.04
14:31	341.3	37.2	-0.3	8.93	7.32	1484.2	-0.21	1505.3	0.04
14:32	340.0	37.2	-0.4	8.84	7.36	1485.2	-0.22	1505.0	0.04

ENTROPY

Jewell Coal & Coke Engineering 11-01-1991

TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
14:33	337.0	36.9	-0.3	8.90	7.34	1484.8	-0.22	1505.3	0.04
14:34	338.8	37.0	-0.3	8.85	7.36	1485.1	-0.22	1504.5	0.03
AVERAGE VALUES FOR THE LAST 15 MINUTES									
14:34	345.2	36.6	-0.3	8.71	7.42	1485.3	-0.21	1505.1	0.04
14:35	338.1	37.1	-0.5	8.92	7.33	1485.1	-0.21	1503.8	0.04
14:36	335.2	36.5	-0.5	9.00	7.29	1485.5	-0.21	1502.7	0.04
14:37	333.9	36.8	-0.5	9.00	7.28	1483.2	-0.21	1501.6	0.04
14:38	337.2	37.1	-0.6	8.82	7.36	1481.5	-0.21	1501.2	0.04
14:39	335.2	37.1	-0.5	8.87	7.32	1483.0	-0.21	1500.2	0.03
14:40	332.1	36.9	-0.5	9.00	7.25	1481.7	-0.21	1497.7	0.04
14:41	336.4	36.9	-0.5	8.78	7.39	1480.4	-0.21	1500.7	0.04
14:42	338.3	37.3	-0.5	8.76	7.39	1480.1	-0.21	1500.9	0.04
14:43	339.4	36.9	-0.4	8.73	7.41	1479.9	-0.21	1501.1	0.04
14:44	342.1	37.1	-0.5	8.67	7.43	1481.2	-0.21	1501.5	0.03
14:45	342.0	36.8	-0.6	8.67	7.44	1481.0	-0.21	1502.6	0.04
14:46	338.3	36.8	-0.5	8.75	7.40	1479.6	-0.21	1501.4	0.04
14:47	335.8	37.1	-0.4	8.78	7.40	1481.0	-0.20	1500.2	0.03
14:48	333.4	38.0	-0.5	8.84	7.33	1481.9	-0.20	1495.0	0.03
14:49	333.7	37.2	-0.6	8.83	7.36	1480.4	-0.20	1499.0	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
14:49	336.8	37.0	-0.5	8.83	7.36	1481.7	-0.21	1500.6	0.04
14:50	333.3	37.0	-0.5	8.90	7.33	1480.3	-0.20	1500.7	0.04
14:51	333.5	37.0	-0.6	8.97	7.29	1480.5	-0.20	1499.4	0.04
14:52	332.0	37.0	-0.6	9.08	7.24	1479.3	-0.20	1499.4	0.04
14:53	329.8	36.6	-0.6	9.05	7.25	1479.2	-0.20	1498.2	0.03
14:54	333.6	36.3	-0.6	8.93	7.33	1479.1	-0.20	1496.9	0.04
14:55	333.1	36.5	-0.6	8.85	7.36	1478.0	-0.20	1496.4	0.04
14:56	331.2	36.3	-0.5	8.87	7.34	1477.9	-0.20	1495.7	0.03
14:57	332.7	36.5	-0.6	8.89	7.34	1478.4	-0.20	1495.3	0.03
14:58	334.4	36.3	-0.5	8.82	7.37	1479.6	-0.20	1496.7	0.04
14:59	333.9	36.0	-0.5	8.88	7.35	1478.3	-0.20	1497.5	0.04
15:00	334.3	36.6	-0.5	8.85	7.36	1477.6	-0.19	1497.4	0.04
AVERAGE VALUES FOR THE LAST HOUR: 60 MINUTES OF VALID DATA									
15:00	341.9	36.4	-0.4	8.71	7.42	1484.0	-0.21	1503.4	0.04
15:01	336.0	36.1	-0.6	8.87	7.35	1477.4	-0.20	1497.8	0.04
15:02	337.7	36.1	-0.5	8.83	7.38	1476.5	-0.20	1497.7	0.04
15:03	339.8	36.3	-0.7	8.83	7.37	1476.5	-0.20	1497.8	0.04
15:04	341.4	35.9	-0.7	8.83	7.37	1476.5	-0.20	1497.8	0.04
AVERAGE VALUES FOR THE LAST 15 MINUTES									
15:04	334.4	36.4	-0.6	8.90	7.34	1478.3	-0.20	1497.6	0.04
15:05	339.1	35.8	-0.6	8.87	7.36	1476.5	-0.19	1496.7	0.03
15:06	335.0	36.0	-0.7	8.83	7.37	1477.8	-0.19	1496.9	0.04
15:07	332.4	35.6	-0.7	8.90	7.33	1477.0	-0.19	1496.7	0.04
15:08	331.8	35.5	-0.7	8.89	7.32	1476.5	-0.20	1497.4	0.04
15:09	330.4	35.8	-0.8	8.91	7.33	1475.0	-0.20	1496.6	0.04
15:10	331.1	35.5	-0.7	8.88	7.33	1474.0	-0.20	1495.4	0.03
15:11	328.4	35.6	-0.7	8.95	7.31	1474.3	-0.20	1495.9	0.03

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TIME	CHAN 7 Unit 4 ppmSO2	CHAN 9 Unit 4 ppmNOx	CHAN 8 Unit 4 ppmCO	CHAN 5 Unit 4 % O2	CHAN 6 Unit 4 % CO2	CHAN11 Unit 3 TEMPF	CHAN12 Unit 3 PRESS	CHAN13 Unit 4 TEMPF	CHAN14 Unit 4 PRESS
15:12	329.2	35.8	-0.7	9.03	7.33	1474.4	-0.20	1495.1	0.03
15:13	331.9	35.4	-0.6	8.91	7.32	1473.4	-0.20	1496.1	0.05
15:14	332.5	35.7	-0.7	8.89	7.35	1473.4	-0.20	1494.4	0.04
15:15	333.7	35.4	-0.6	8.90	7.34	1474.3	-0.20	1493.3	0.03
15:16	334.8	35.6	-0.7	8.90	7.32	1475.0	-0.20	1493.8	0.04

COMMENTS: End of Testing

End Run IV-3-S4-CEM-3

CALIBRATION SUMMARY

SOURCE: Jewell Coal & Coke Engineering

REASON: Calibration Bias Check

DATE : 11-01-1991 TIME: 15:16 - 15:30

A/D CHAN	MONITOR MONITOR DESCRIPTION	UNITS	GAS VALUE	MONITOR RESPONSE
7	Unit 4	ppmSO2	0.0	4.3
7	Unit 4	ppmSO2	241.0	236.0
9	Unit 4	ppmNOx	0.0	0.2
9	Unit 4	ppmNOx	141.5	137.0
8	Unit 4	ppmCO	0.0	-0.3
8	Unit 4	ppmCO	30.2	29.2
5	Unit 4	% O2	0.00	0.07
5	Unit 4	% O2	12.48	12.45
6	Unit 4	% CO2	0.00	0.24
6	Unit 4	% CO2	11.06	10.75

It was decided to calculate a time weighted average for the concentration, emission rate (lb/hr), and emission rate (lb/ton charged) for the metals, particulates, and continuous emissions data based on the charging times per day. Since each compound was measured in only one stack, it was assumed that the concentrations were the same for each stack. The emission rates, per compound, per stack, were then calculated using the measured concentrations and the flow rates, per stack, per condition.

The following calculations were used to determine the emission rates for metals (μg/SCM), particulates (gr/SCF), and continuous emissions data (ppm).

METALS:

Change μg/SCM to g/SCF: (μg/10^6)/(SCM * 35.31)

Change g/SCF to lb/SCF: (g/SCF)/(453.592 g/lb)

Calculate emission rate: (lb/SCF) * (flow rate SCF/min) * (60 min/hr)

PARTICULATES:

Change gr/SCF to g/SCF: (gr/SCF) * 0.0648

Change g/SCF to lb/SCF: (g/SCF)/(453.592 g/lb)

Calculate emission rate: (lb/SCF) * (flow rate SCF/min) * (60 min/hr)

Continuous emissions:

Change ppm to lb/SCF: (ppm) * conversion factor, where

conversion factor = 1.66E-7 for SO_2

conversion factor = 1.194E-7 for NO_x

conversion factor = 7.263E-8 for CO

Calculate emission rate: (lb/SCF) * (flow rate SCF/min) * (60 min/hr)

The following is an example of the calculations involved in determining the weighted averages for the concentration, emission rate (lb/hr), and emission rate (lb/ton charged) of Antimony for Day 1. These same procedures were used to calculate all weighted averages.

Antimony was measured in Stack 1. The following concentrations were found for Day 1:

Condition I - 9.02 μg/SCM

II - 12.5 μg/SCM

III - 15.1 μg/SCM

IV - 16.5 μg/SCM

Using these measured concentrations and the measured flow rates, per stack, per condition, the following emission rates, per stack, per condition, were calculated.

	Stack 1	Stack 2	Stack 3	Stack 4
I	0.00076	0.000725	0.000764	0.000744
II	0.000882	0.000896	0.000955	0.000903
III	0.00105	0.000941	0.000819	0.000964
IV	0.000962	0.001089	0.001149	0.001064

Charging occurred only during Condition I; thus, the emission rates for the other three conditions, per stack, were averaged. Then, the time weighted average was calculated. On Day 1, charging lasted 2.7 hours. Therefore, for Stack 1, the weighted average emission rate (lb/hr) is:

$$\frac{(2.7)(0.00076) + (21.3)(0.0009647)}{24} = 0.00094167$$

The weighted average emission rate (lb/hr) was calculated for each stack, and a total weighted average emission rate (lb/hr) was obtained by adding the four stack emission rates together.

Stack 1	Stack 2	Stack 3	Stack 4	Total
0.000941	0.000947	0.000951	0.000948	0.00379

The weighted average emission rate (lb/ton charged) was calculated by dividing the total weighted average emission rate (lb/hr) by the tons of coal charged per hour. For example, on Day 1, the total weighted average emission rate (lb/hr) for Antimony was 0.00379 lb/hr. There was 717 tons of coal charged for the 24 hour period; thus, there was a charge rate of 29.875 tons charged/hr. The total weighted average emission rate (lb/ton charged) is obtained by:

$$\text{lb/ton charged} = \frac{0.00379 \text{ lb/hr}}{29.875 \text{ tons charged/hr}} = 0.12686\text{E-}3 \text{ lb/tons charged.}$$

The following is an example of the calculations involved in determining the total weighted average concentration (μg/SCM) of Antimony on Day 1.

	I	II	III	IV
μg/SCM	9.02	12.5	15.1	16.5

The above concentrations were measured on Stack 1, Day 1. The average of conditions II, III, and IV is calculated and the total weighted average concentration is determined by:

$$\mu\text{g/SCM} = \frac{(2.7)(9.02) + (21.3)(14.7)}{24} \times 4 = 56.24\ \mu\text{g/SCM.}$$

EXAMPLE EMISSION RATE CALCULATIONS

The velocity in each of the four stacks will be measured. Stacks 1 and 2 will be traversed. For stacks 3 and 4, an initial velocity profile will be conducted and then measure the delta p and temperature continuously at a point of average velocity. From these velocities, the flow rate per stack will be calculated.

Each compound will be measured in only one stack. However, it can reasonably be assumed that the concentration for each compound in each of the stacks will be the same. The emission rate for each compound can be calculated by multiplying the concentration from the measured stack by the flow rate of each stack. Adding the four individual stack emission rates together will yield the total emission rate.

For example, toluene will be measured in stack 2. Suppose a concentration of 90 $\mu g/m^3$ is found. Thus, it is assumed that the other three stacks also have a concentration of toluene of 90 $\mu g/m^3$. Suppose the following are the flow rates for each of the stacks:

Stack 1	18,000 DSCFM
Stack 2	16,000 DSCFM
Stack 3	20,000 DSCFM
Stack 4	21,000 DSCFM

The following calculations are used to determine the emission rate in lb/hr for each stack.

SAMPLE CALCULATION OF TOLUENE EMISSION RATE FOR STACK 1

Change $\mu g/m^3$ to gm/SCF : $\frac{90\ \mu g/10^6}{m^3 * 35.31} = 2.5489 \times 10^{-6}$ gm/SCF

Change gm/SCF to lb/SCF : $(2.5489 \times 10^{-6}$ gm/SCF$)/(453.592$ gm/lb$) = 5.6194 \times 10^{-9}$ lb/SCF

Calculate emission rate: 5.6194×10^{-9} lb/SCF * 18,000 SCF/min * 60 min/hr = 6.069×10^{-3} lb/hr

SAMPLE CALCULATION OF TOLUENE EMISSION RATE FOR STACK 2

5.6194×10^{-9} lb/SCF * 16,000 SCF/min * 60 min/hr = 5.3946×10^{-3} lb/hr

SAMPLE CALCULATION OF TOLUENE EMISSION RATE FOR STACK 3

5.6194×10^{-9} lb/SCF * 20,000 SCF/min * 60 min/hr = 6.7433×10^{-3} lb/hr

SAMPLE CALCULATION OF TOLUENE EMISSION RATE FOR STACK 4

5.6194×10^{-9} lb/SCF * 21,000 SCF/min * 60 min/hr = 7.0804×10^{-3} lb/hr

TOTAL TOLUENE EMISSION RATE

$(6.069 + 5.3946 + 6.7433 + 7.0804) \times 10^{-3}$ lb/hr = 2.5287×10^{-2} lb/hr

TEST CALCULATIONS
METHOD 5, MMTL, MM5

VOLUME OF DRY GAS SAMPLED AT STANDARD CONDITIONS

$$Vmstd = 17.647 * Y * Vm * \frac{Pbar + (Delta\ H/13.6)}{tm\ ^{\circ}R}$$

VOLUME OF WATER AT STANDARD CONDITIONS

$$Vwstd = 0.04707 * Vlc$$

PERCENT MOISTURE, BY VOLUME, AS MEASURED IN FLUE GAS

$$\%H_2O = 100 * Vwstd/(Vwstd + Vmstd)$$

ABSOLUTE FLUE GAS PRESSURE

$$Ps = Pbar + (Pg/13.6)$$

DRY MOLE FRACTION OF FLUE GAS

$$Mfd = 1 - \%H_2O/100$$

DRY MOLECULAR WEIGHT OF FLUE GAS

$$Md = (\%CO_2/100 * 44) + (\%O_2/100 * 32) + ((\%N_2 + \%CO)/100 * 28)$$

WET MOLECULAR WEIGHT OF FLUE GAS

$$Ms = (Md * Mfd) + (0.18 * \%H_2O)$$

AVERAGE FLUE GAS VELOCITY [Note:(Delta P)avg is square of average square root]

$$Vs = 85.49 * Cp * \text{square root} \left[\frac{(Delta\ P)avg * (460 + ts)}{Ps * Ms} \right]$$

DRY VOLUMETRIC FLUE GAS FLOW RATE AT STANDARD CONDITIONS

$$Qsd = \frac{60}{144} * Mfd * Vs * A * \frac{Tstd}{460 + ts} * \frac{Ps}{Pstd}$$

DRY VOLUMETRIC FLUE GAS FLOW RATE AT STANDARD CONDITIONS

$$Qmsd = Qsd * 0.02832$$

WET VOLUMETRIC FLUE GAS FLOW RATE AT ACTUAL CONDITIONS

$$Qaw = 60/144 * Vs * A$$

PERCENT ISOKINETIC OF SAMPLING RATE

$$\%I = \frac{Pstd}{Tstd} * \frac{100}{60} * \frac{(ts + 460) * Vmstd}{Ps * Vs * Mfd * Theta * (\pi * (Dia/2)^2/144)}$$

PERCENT EXCESS AIR

$$\%EA = \frac{\%O_2 - (0.5 * \%CO)}{0.264 * (100 - \%CO_2 - \%O_2) - (\%O_2 - (0.5 * \%CO))}$$

APPROXIMATE HEAT INPUT RATE

$$10^6 Btu/hr = 60 * \frac{Qsd}{F} * \frac{20.9 - \%O_2}{20.9}$$

CONCENTRATION, MILLIGRAMS PER DRY STANDARD CUBIC METER

$$mg/DSCM = \frac{(mg/10^3)}{Vmstd * 0.02832} * 10^3$$

CONCENTRATION, GRAINS PER DRY STANDARD CUBIC FOOT

$$gr/DSCF = \frac{7000}{453.592} * \frac{(mg/10^3)}{Vmstd}$$

EMISSION RATE, POUNDS PER HOUR

$$lb/hr = \frac{60}{453.592} * \frac{(mg/10^3)}{Vmstd} * Qsd$$

EMISSION RATE, POUNDS PER MILLION BTU

$$lb/10^6 BTU = \frac{(mg/10^3)}{453.592 * Vmstd} * F * \frac{20.9}{20.9 - \%O_2}$$

CONCENTRATION, MICROGRAMS PER DRY STANDARD CUBIC METER

$$\mu g/DSCM = \frac{(\mu g/10^6)}{Vmstd * 0.02832} * 10^6$$

TEST CALCULATIONS
CEM

CORRECTED CONCENTRATION, PARTS PER MILLION (Dry Basis)

$CC = Cma*(\bar{C} - Co)/(Cm - Co)$, where

$\bar{C}$ = mean reference measurement
CC = corrected concentration
Co = mean zero calibration response
Cm = mean mid or upscale calibration gas response
Cma = actual mid or upscale calibration gas concentration

EMISSION RATE, POUNDS PER HOUR

lb/hr = CC * DSCFM flow * conversion factor * 60, where

SO_2 conversion factor = 1.660E-7 lb SO_2/DSCF - ppm SO_2
NO_x conversion factor = 1.194E-7 lb NO_x/DSCF - ppm NO_x
CO conversion factor = 7.263E-8 lb CO/DSCF - ppm CO

MEASUREMENT SYSTEM CALIBRATION BIAS

$$SCB = \frac{SCR - ACR}{SPAN} \times 100, \text{ where}$$

SCB = system calibration bias
SCR = system calibration response
ACR = analyzer calibration error response
SPAN = upper limit of gas measurement range

MEASUREMENT SYSTEM DRIFT

$$DRIFT = \frac{FSCR - ICR}{SPAN} \times 100, \text{ where}$$

FSCR = final system calibration response
ISCR = initial system calibration response
SPAN = upper limit of gas measurement range

APPENDIX B. FIELD AND ANALYTICAL DATA

- Field Data Sheets

  Test Location Schematics
  Process Observation Data Sheets
  Orsat Field Data
  Data Acquisition Sheets

- Moisture and Laboratory Results
  - Moisture Analytical Results
  - Particulate and Impinger Water Results (M5/202)

Field Data Sheets

Sampling and Velocity Traverse Point Determination
EPA Method 1

PLANT NAME: Jewell Coal + Coke Co
CITY, STATE: Vansant, VA
SAMPLING LOCATION: Stack #1

NO. OF PORTS AVAILABLE: 2
NO. OF PORTS USED: 2
PORT INSIDE DIAMETER: 4"

DISTANCE FROM FAR WALL TO OUTSIDE OF PORT: 108"
NIPPLE LENGTH AND/OR WALL THICKNESS: 9 1/2
DEPTH OF STACK OR DUCT: 98.5
STACK OR DUCT WIDTH (IF RECTANGULAR): _____

EQUIVALENT DIAMETER:
$D_E = \frac{2 \times \text{DEPTH} \times \text{WIDTH}}{\text{DEPTH} + \text{WIDTH}} = \frac{2(\quad)(\quad)}{(\quad + \quad)} =$ _____

DISTANCE FROM PORTS TO FLOW DISTURBANCES	UPSTREAM	DOWNSTREAM
	540"	75"
DIAMETERS	5.45	.75

STACK/DUCT AREA = $4725^2 \cdot \pi$ = ~~7697.69~~ IN^2 7620.13

LOCATION OF POINTS IN CIRCULAR STACKS OR DUCTS

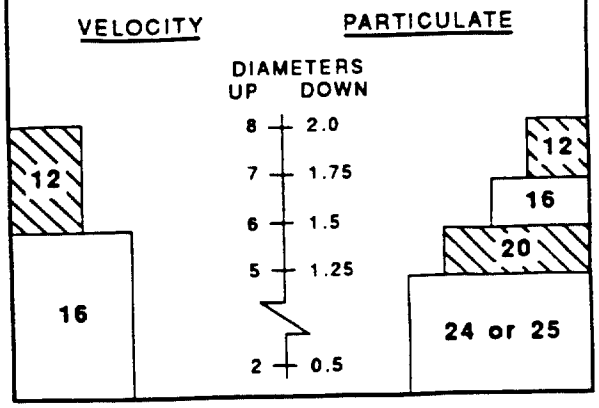
	4	6	8	10	12	14	16	18	20	22	24
1	5.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.5	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.5	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9

LOCATION OF POINTS IN RECTANGULAR STACKS OR DUCTS

	2	3	4	5	6	7	8	9	10	11	12
1	25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5				90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6					91.7	78.6	68.8	61.1	55.0	50.0	45.8
7						92.9	81.3	72.2	65.0	59.1	54.2
8							93.8	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

DRAW HORIZONTAL LINE THROUGH DIAMETERS

If more than 8 and 2 diameters and if duct dia. is less than 24", use 8 or 9 points.



POINT	% OF DUCT DEPTH	DISTANCE FROM INSIDE WALL	DISTANCE FROM OUTSIDE OF PORT
1	2.1	2.079	11 5/8
2	6.7	6.633	16 1/8
3	11.8	11.682	21 1/8
4	17.7	17.523	27.0
5	25.0	24.75	34 1/4
6	35.6	35.244	44 3/4
7	64.4	63.756	73 1/4
8	75.0	74.25	83 3/4
9	82.3	81.477	91.0
10	88.2	87.318	96 7/8
11	93.3	92.367	101 7/8
12	97.9	96.921	106 3/8
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

SEE REVERSE FOR FIELD USE CHECKLIST

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ENTROPY

Sampling and Velocity Traverse Point Determination
EPA Method 1

PLANT NAME Jewell Coal + Coke
CITY, STATE Vansant Va
SAMPLING LOCATION Battery Stack #2

NO. OF PORTS AVAILABLE 2
NO. OF PORTS USED 2
PORT INSIDE DIAMETER 4"

DISTANCE FROM FAR WALL TO OUTSIDE OF PORT 104 1/2
NIPPLE LENGTH AND Insulation WALL THICKNESS 8 1/2"
DEPTH OF STACK OR DUCT 96"
STACK OR DUCT WIDTH (IF RECTANGULAR) —

EQUIVALENT DIAMETER:
$D_E = \frac{2 \times \text{DEPTH} \times \text{WIDTH}}{\text{DEPTH} + \text{WIDTH}} = \frac{2(\quad)(\quad)}{(\quad + \quad)} =$ _____

DISTANCE FROM PORTS TO FLOW DISTURBANCES	UPSTREAM	DOWNSTREAM
	5.18	.822
DIAMETERS	41 1/2' = 498	79"

STACK/DUCT AREA = 96" = 7,238 IN²

LOCATION OF POINTS IN CIRCULAR STACKS OR DUCTS

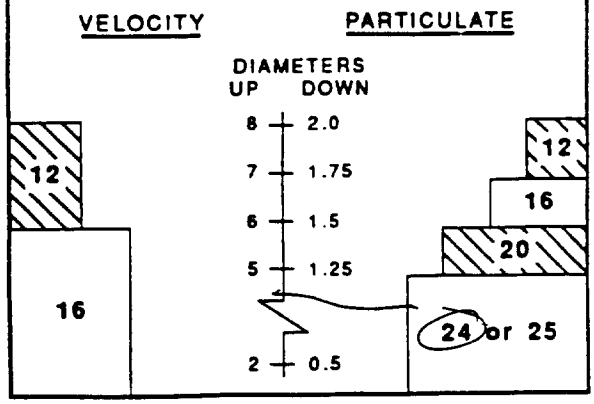
	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.5	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.8	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.5	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.6
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9

LOCATION OF POINTS IN RECTANGULAR STACKS OR DUCTS

	2	3	4	5	6	7	8	9	10	11	12
1	25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5				90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6					91.7	78.6	68.8	61.1	55.0	50.0	45.8
7						92.9	81.3	72.2	65.0	59.1	54.2
8							93.8	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

DRAW HORIZONTAL LINE THROUGH DIAMETERS

If more than 8 and 2 diameters and if duct dia. is less than 24", use 8 or 9 points.



POINT	% OF DUCT DEPTH	DISTANCE FROM INSIDE WALL (+8 1/2)	DISTANCE FROM OUTSIDE OF PORT
1	2.1	2.0	10 1/2
2	6.7	6 3/8	14 7/8
3	11.8	11 3/8	19 7/8
4	17.7	17	25 1/2
5	25.0	24	32 1/2
6	35.6	34 1/8	42 5/8
7	64.4	61 7/8	70 3/8
8	75.0	72	80 1/2
9	82.3	79	87 1/2
10	88.2	84 5/8	93 7/8
11	93.3	89 5/8	98 1/8
12	97.9	94	102 1/2
13			
14			
15			
16			
17			
18			
19			
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21			
22			
23			
24			

SEE REVERSE FOR FIELD USE CHECKLIST

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ENTROPY

Sampling and Velocity Traverse Point Determination
EPA Method 1

PLANT NAME: Jewell Coal & Coke
CITY, STATE: VANSANT, VA
SAMPLING LOCATION: Stack 3

NO. OF PORTS AVAILABLE: 2
NO. OF PORTS USED: 1
PORT INSIDE DIAMETER: 4"

DISTANCE FROM FAR WALL TO OUTSIDE OF PORT: 109 3/8
NIPPLE LENGTH AND/OR WALL THICKNESS: 11 3/8
DEPTH OF STACK OR DUCT: 98"
STACK OR DUCT WIDTH (IF RECTANGULAR): NA

EQUIVALENT DIAMETER:
$D_E = \frac{2 \times \text{DEPTH} \times \text{WIDTH}}{\text{DEPTH} + \text{WIDTH}} = \frac{2(\quad)(\quad)}{(\quad + \quad)} = \_\_\_\_$

DISTANCE FROM PORTS TO FLOW DISTURBANCES	UPSTREAM	DOWNSTREAM
	540	75
DIAMETERS		

STACK/DUCT AREA = 98" = 7543 IN^2

LOCATION OF POINTS IN CIRCULAR STACKS OR DUCTS

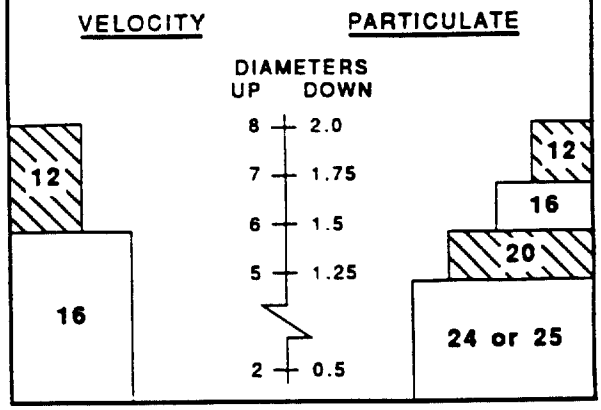
	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.5	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.6	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.5	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9

LOCATION OF POINTS IN RECTANGULAR STACKS OR DUCTS

	2	3	4	5	6	7	8	9	10	11	12
1	25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5				90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6					91.7	78.6	68.8	61.1	55.0	50.0	45.8
7						92.9	81.3	72.2	65.0	59.1	54.2
8							93.8	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

DRAW HORIZONTAL LINE THROUGH DIAMETERS

If more than 8 and 2 diameters and if duct dia. is less than 24", use 8 or 9 points.



POINT	% OF DUCT DEPTH	DISTANCE FROM INSIDE WALL	DISTANCE FROM OUTSIDE OF PORT
1	12.2	12"	23 3/8
2	24.5	24	35 3/8
3	36.7	36	47 3/8
4	48.9	48	59 3/8
5	61.2	60	71 3/8
6	73.5	72	83 3/8
7	95.7	84	95 3/8
8			
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SEE REVERSE FOR FIELD USE CHECKLIST

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ENTROPY

Sampling and Velocity Traverse Point Determination
EPA Method 1

PLANT NAME Jewell Coal and Coke

CITY, STATE Vansant

SAMPLING LOCATION Stack 4

NO. OF PORTS AVAILABLE 2

NO. OF PORTS USED ~~2~~ 1

PORT INSIDE DIAMETER ~~96.125~~ 4"

DISTANCE FROM FAR WALL TO OUTSIDE OF PORT 107.5

NIPPLE LENGTH AND/OR WALL THICKNESS 11 3/8

DEPTH OF STACK OR DUCT 96.125

STACK OR DUCT WIDTH (IF RECTANGULAR) _____

EQUIVALENT DIAMETER:

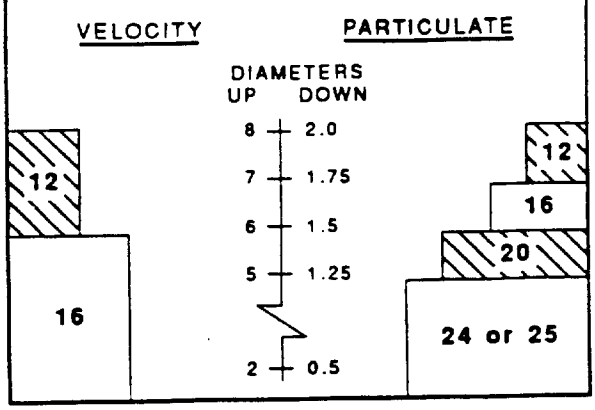
$$D_E = \frac{2 \times \text{DEPTH} \times \text{WIDTH}}{\text{DEPTH} + \text{WIDTH}} = \frac{2(\quad)(\quad)}{(\quad + \quad)} = \_\_\_\_$$

DISTANCE FROM PORTS TO FLOW DISTURBANCES	UPSTREAM	DOWNSTREAM
	540	75
DIAMETERS		

STACK/DUCT AREA = 96.125" = 7,257 IN²

DRAW HORIZONTAL LINE THROUGH DIAMETERS

If more than 8 and 2 diameters and if duct dia. is less than 24", use 8 or 9 points.



LOCATION OF POINTS IN CIRCULAR STACKS OR DUCTS

	4	6	8	10	12	14	16	18	20	22	24
1	6.7	4.4	3.2	2.6	2.1	1.8	1.6	1.4	1.3	1.1	1.1
2	25.0	14.6	10.5	8.2	6.7	5.7	4.9	4.4	3.9	3.5	3.2
3	75.0	29.6	19.4	14.6	11.8	9.9	8.5	7.5	6.7	6.0	5.5
4	93.3	70.4	32.3	22.8	17.7	14.6	12.5	10.9	9.7	8.7	7.9
5		85.4	67.7	34.2	25.0	20.1	16.9	14.6	12.9	11.6	10.5
6		95.6	80.6	65.8	35.6	26.9	22.0	18.8	16.5	14.6	13.2
7			89.5	77.4	64.4	36.6	28.3	23.6	20.4	18.0	16.1
8			96.8	85.4	75.0	63.4	37.5	29.6	25.0	21.8	19.4
9				91.8	82.3	73.1	62.5	38.2	30.6	26.2	23.0
10				97.4	88.2	79.9	71.7	61.8	38.8	31.5	27.2
11					93.3	85.4	78.0	70.4	61.2	39.3	32.3
12					97.9	90.1	83.1	76.4	69.4	60.7	39.8
13						94.3	87.5	81.2	75.0	68.5	60.2
14						98.2	91.5	85.4	79.6	73.8	67.7
15							95.1	89.1	83.5	78.2	72.8
16							98.4	92.5	87.1	82.0	77.0
17								95.6	90.3	85.4	80.6
18								98.6	93.3	88.4	83.9
19									96.1	91.3	86.8
20									98.7	94.0	89.5
21										96.5	92.1
22										98.9	94.5
23											96.8
24											98.9

LOCATION OF POINTS IN RECTANGULAR STACKS OR DUCTS

	2	3	4	5	6	7	8	9	10	11	12
1	25.0	16.7	12.5	10.0	8.3	7.1	6.3	5.6	5.0	4.5	4.2
2	75.0	50.0	37.5	30.0	25.0	21.4	18.8	16.7	15.0	13.6	12.5
3		83.3	62.5	50.0	41.7	35.7	31.3	27.8	25.0	22.7	20.8
4			87.5	70.0	58.3	50.0	43.8	38.9	35.0	31.8	29.2
5				90.0	75.0	64.3	56.3	50.0	45.0	40.9	37.5
6					91.7	78.6	68.8	61.1	55.0	50.0	45.8
7						92.9	81.3	72.2	65.0	59.1	54.2
8							93.8	83.3	75.0	68.2	62.5
9								94.4	85.0	77.3	70.8
10									95.0	86.4	79.2
11										95.5	87.5
12											95.8

POINT	% OF DUCT DEPTH	DISTANCE FROM INSIDE WALL	DISTANCE FROM OUTSIDE OF PORT
1	2.1	~~11 3/8~~ 2.0	13.595
2	6.7	6.44	17.815
3	11.8	11.34	22.72
4	17.7	17.01	28.39
5	25.0	24.03	35.4
6	35.6	34.22	45.590
7	64.4	63.92	75.298
8	75.0	72.09	83.45
9	82.3	79.11	90.49
10	88.2	84.78	96.16
11	93.3	89.68	101.06
12	97.9	94.1	105.5
13			
14			
15			
16			
17			
18			
19			
20			
21			
22			
23			
24			

SEE REVERSE FOR FIELD USE CHECKLIST

F-0016
10-90

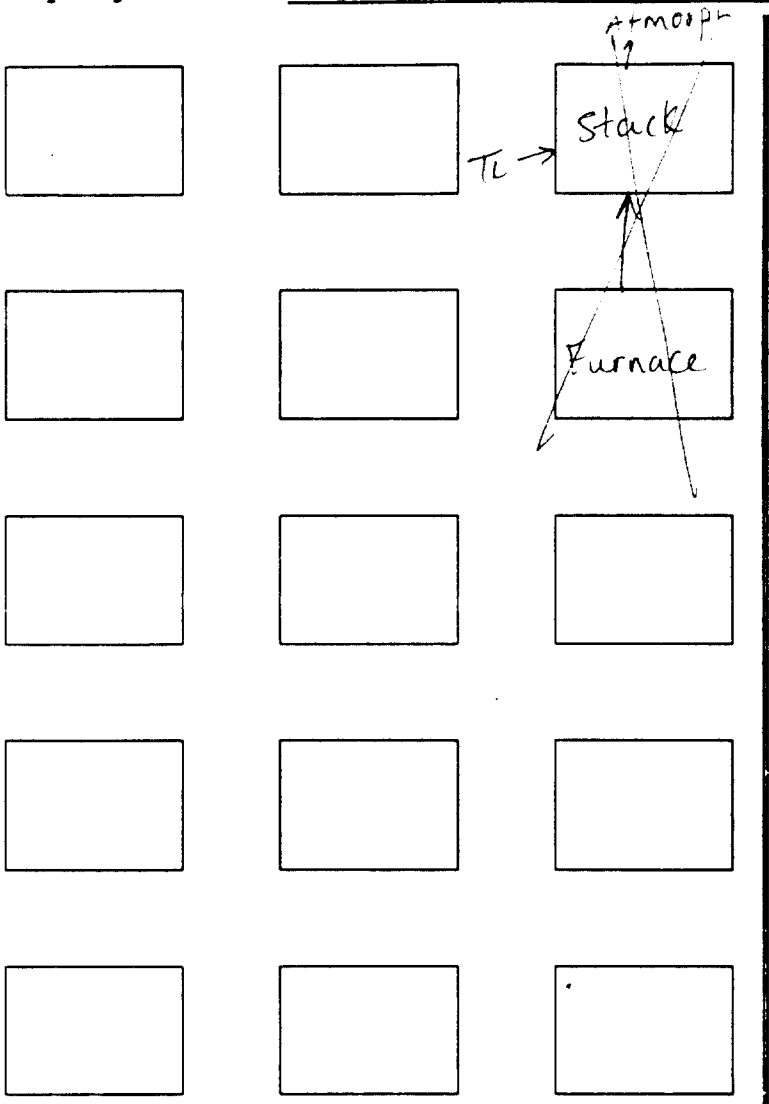
ENTROPY

PROCESS/AIR FLOW AND TEST LOCATION SCHEMATICS

Plant Name: Jewell Coal and Coke Job No. 3694

City/State: Vansant, Va. Date _____

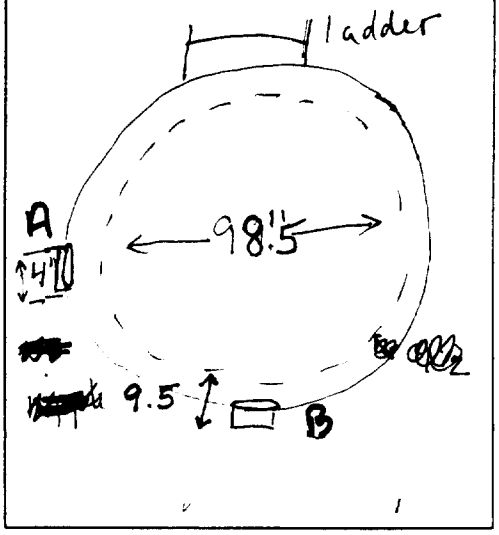
Sampling Location: Stack 1 Initials _____



PROCESS/AIR FLOW

Show all components including process. Show direction of air flow from process to atmosphere (when applicable). Show all test locations (TL). Check schematic with plant coordinator prior to leaving test site.

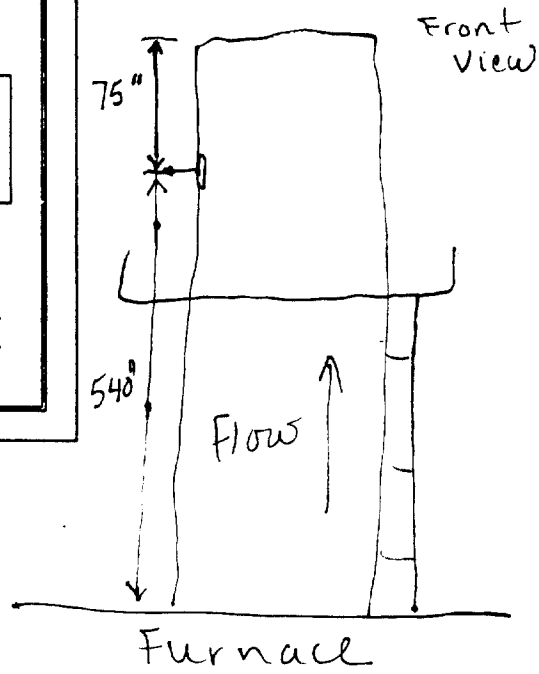
CROSS SECTION



Show/label all ports; indicate No. of points/port. Show dimensions (with and without insulation, etc.).

DIMENSIONS

Indicate view (top, etc.)



Show distance to nearest flow disturbance in each direction (~ if nec.). Indicate the nature of disturbances (direction/angle of bends, etc). Show direction of air flow. Indicate when separate traverse/sampling ports used.

NOTE: USE CHECK LIST PRINTED ON REVERSE SIDE

ENTROPY

PROCESS/AIR FLOW AND TEST LOCATION SCHEMATICS

Plant Name: Sewell Coal & Coke

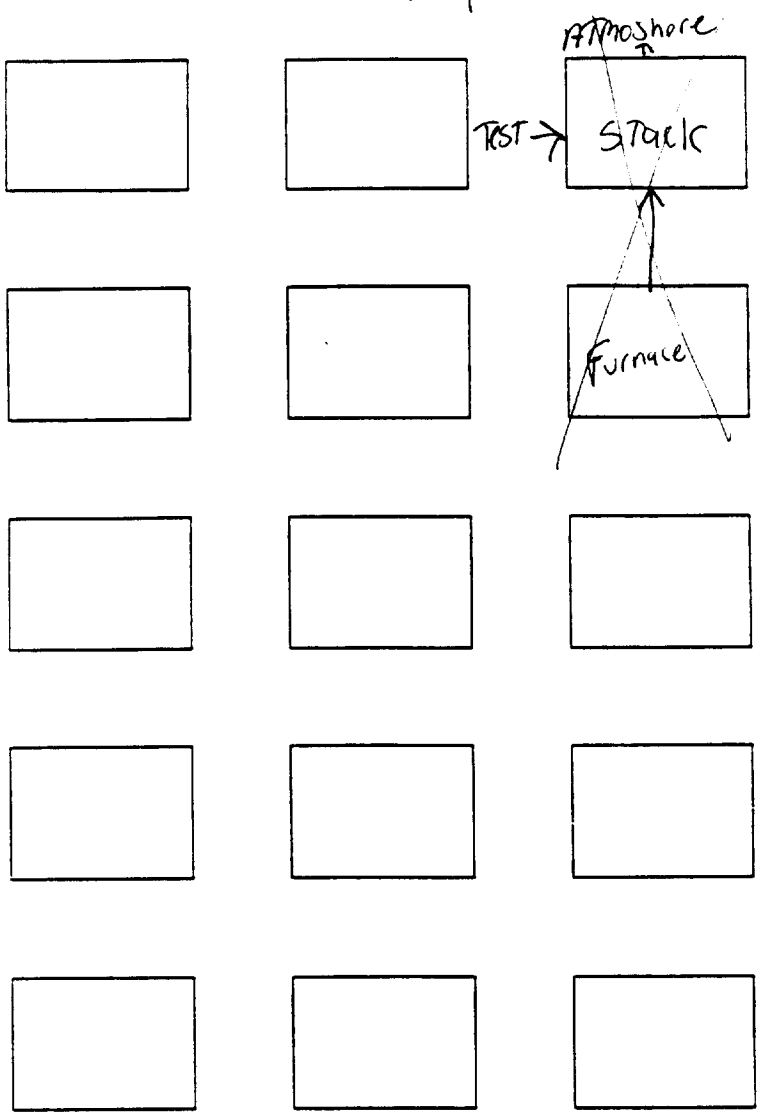
Job No. 3676

City/State: Vansant, Va.

Date 10-31-91

Sampling Location: Battery "C" Stack #2

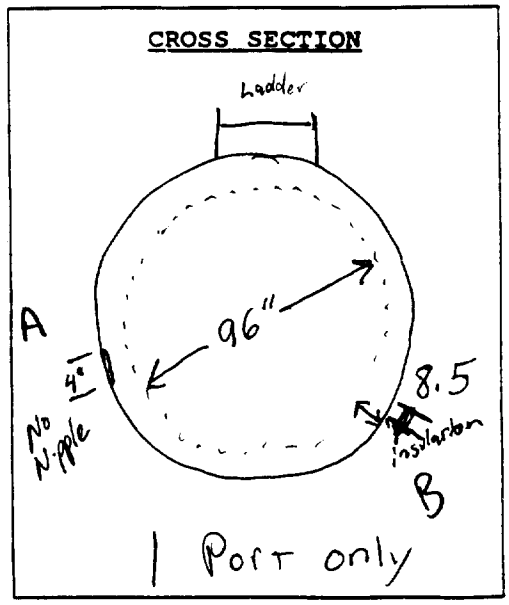
Initials VTL



PROCESS/AIR FLOW

Show all components including process. Show direction of air flow from process to atmosphere (when applicable). Show all test locations (TL). Check schematic with plant coordinator prior to leaving test site.

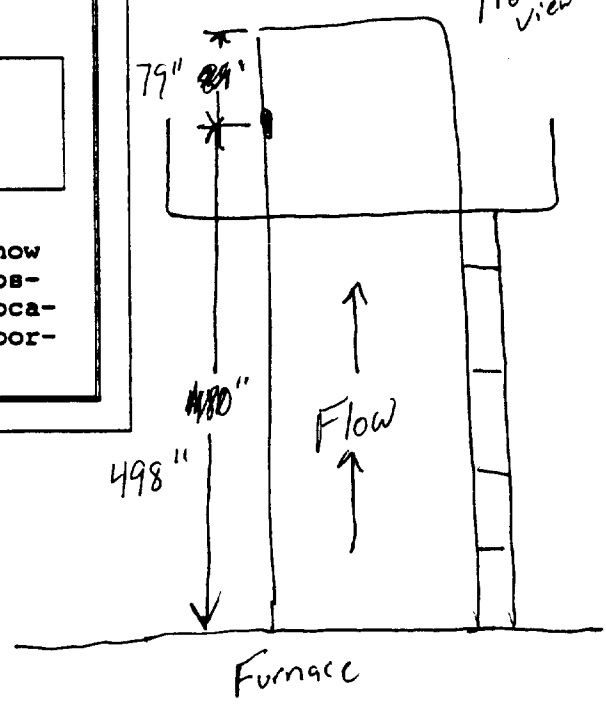
CROSS SECTION



Show/label all ports; indicate No. of points/port. Show dimensions (with and without insulation, etc.).

DIMENSIONS

Indicate view (top, etc.)



Show distance to nearest flow disturbance in each direction (~ if nec.). Indicate the nature of disturbances (direction/angle of bends, etc). Show direction of air flow. Indicate when separate traverse/sampling ports used.

****NOTE: USE CHECK LIST PRINTED ON REVERSE SIDE****

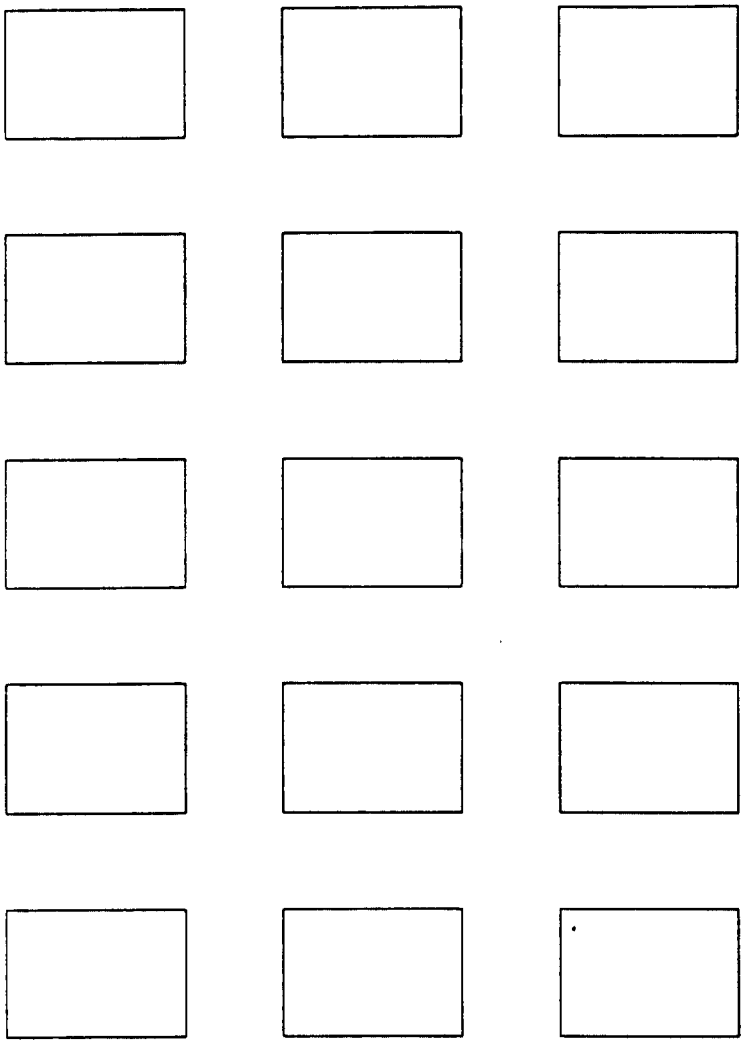
ENTROPY

PROCESS/AIR FLOW AND TEST LOCATION SCHEMATICS

Plant Name: Jewell Coal and Coke Job No. 3694

City/State: Vansant, Va Date _____

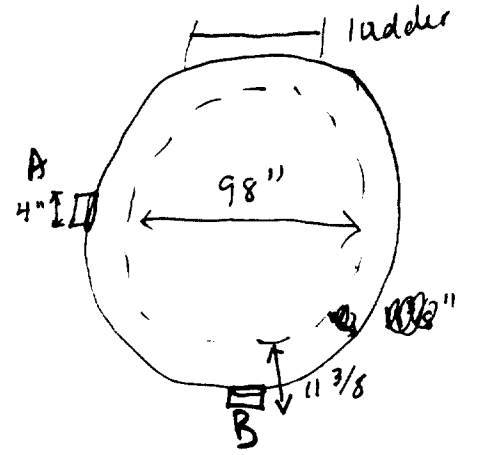
Sampling Location: Stack 3 Initials _____



PROCESS/AIR FLOW

Show all components including process. Show direction of air flow from process to atmosphere (when applicable). Show all test locations (TL). Check schematic with plant coordinator prior to leaving test site.

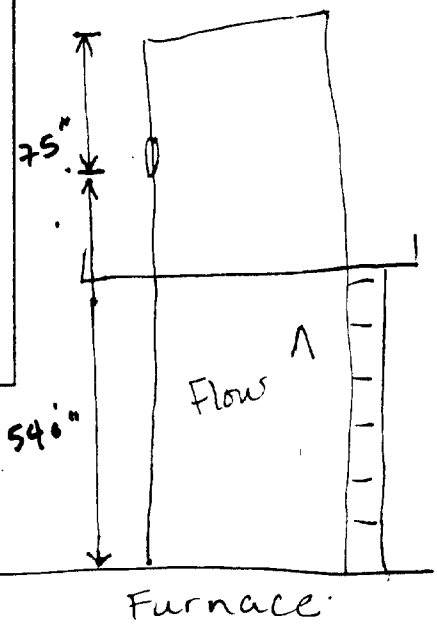
CROSS SECTION



Show/label all ports; indicate No. of points/port. Show dimensions (with and without insulation, etc.).

DIMENSIONS

Indicate view (top, etc.)



Show distance to nearest flow disturbance in each direction (" if nec.). Indicate the nature of disturbances (direction/angle of bends, etc). Show direction of air flow. Indicate when separate traverse/sampling ports used.

NOTE: USE CHECK LIST PRINTED ON REVERSE SIDE

ENTROPY

PROCESS/AIR FLOW AND TEST LOCATION SCHEMATICS

Plant Name: Jewell Coal & Coke

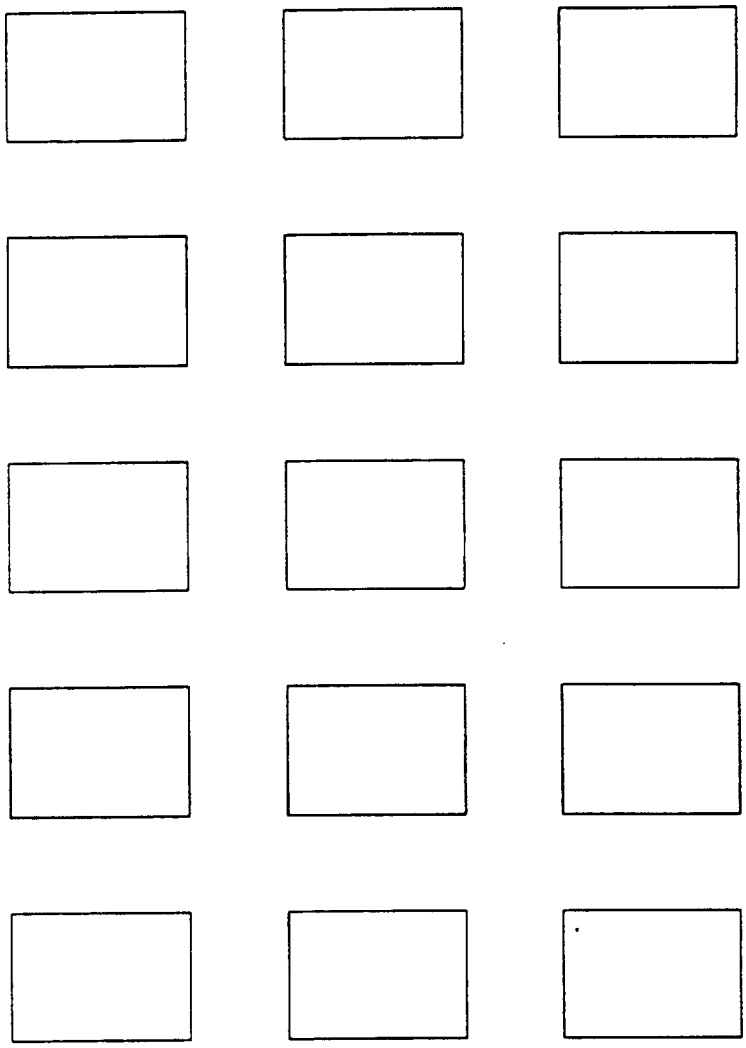
Job No. 3694

City/State: Vansant, Va.

Date

Sampling Location: Stack 4

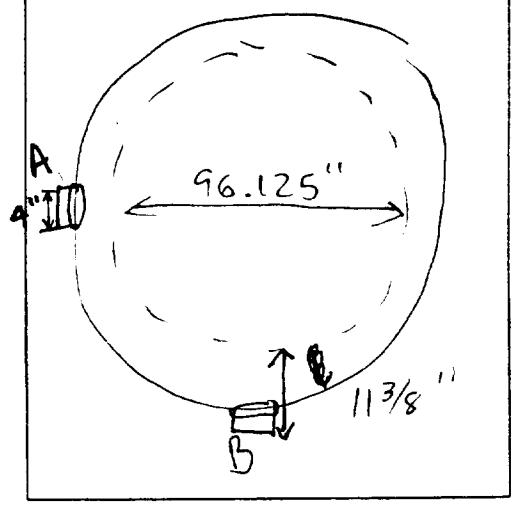
Initials



PROCESS/AIR FLOW

Show all components including process. Show direction of air flow from process to atmosphere (when applicable). Show all test locations (TL). Check schematic with plant coordinator prior to leaving test site.

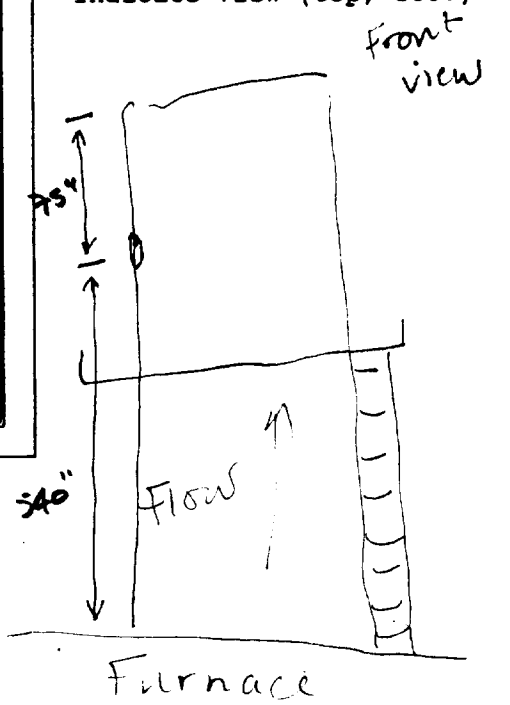
CROSS SECTION



Show/label all ports; indicate No. of points/port. Show dimensions (with and without insulation, etc.).

DIMENSIONS

Indicate view (top, etc.)



Show distance to nearest flow disturbance in each direction (~ if nec.). Indicate the nature of disturbances (direction/angle of bends, etc). Show direction of air flow. Indicate when separate traverse/sampling ports used.

NOTE: USE CHECK LIST PRINTED ON REVERSE SIDE

ENTROPY

Test Location Schematics

Process Observation Data Sheets

RESEARCH TRIANGLE INSTITUTE

Center for Environmental Analysis

Ms. Helen Yoest
Entropy Environmentalists, Inc.
P.O. Box 12291
Research Triangle Park, NC 27709-2291

November 20, 1991

Dear Helen:

Enclosed please find copies of process observation sheets for Jewell's stack testing. Part of the information on these sheets is considered CBI and it is blocked during copying.

Production observations were made from both pusher-side and coke-side of the battery. For coke-side observation, the clock times, when the oven door was opened and closed, were recorded in column 2. For pusher-side observation, the clock time when the oven door was opened for pushing was recorded on the left-hand side of column 2, and the clock time when the oven door was opened again for charging was recorded on the right-hand side of column 2.

If you have any questions, please call me at 541-5942. I will prepare some description for the process in your report. But the write-up has to be clarified with Jewell before it can be incorporated into the report. I will keep you posted on the progress. I enjoyed working with you and learning from your work attitude.

Truly yours,

Emery J. Kong

Emery J. Kong

Enclosure

Post Office Box 12194 Research Triangle Park, North Carolina 27709-2194
Telephone 919 541-6577 Fax: 919 541-5945

CHECK LIST FOR PROCESS OBSERVATIONS AT JEWELL COAL AND COKE COMPANY DURING STACK TESTING PERIOD

DATE: 10/29/91 OBSERVER: Emery J. Kong

BATTERY NO.: C WEATHER CONDITION: Clear

COKE SIDE/PUSH SIDE OBSERVATION (CIRCLE ONE)

LOCATION OF OBSERVATION: outside coke-side shed by coke conveyor belt

SOURCE AND ADEQUACY OF LIGHT: Halogen lights within this shed

GENERAL COMMENTS: can't observe stack from the location of observation

Oven No.	Starting Time for ~~Pushing/Charging~~ (door opened / door closed)	Door VE (Sec. if any)	Stack VE (Sec. if any)	Door sill cleaning/ patching
64	5:41 / 5:44	14		Y / Y
66	5:49 / 5:51	8		Y / Y
68	5:59 / 6:01	6		Y / Y
70	6:03 / 6:09	6:00		Y / Y
72	6:11 / 6:13	11		Y / Y
74	6:20 / 6:22	23		Y / Y
76	~~6:38~~ / 6:34	47		Y / Y
78	6:42 / 6:46	12		Y / Y
80	6:52 / 6:52	18		Y / Y
82	7:01 / 7:03	24		Y / Y
84	7:09 / 7:11	5		Y / Y
86	7:17 / 7:20	17		Y / Y
88	7:26 / 7:28	8		Y / Y
90	7:35 / 7:37	6		Y / Y
92	7:43 / 7:46	7		Y / Y
94	7:53 / 7:55	0		Y / Y
96	8:02 / 8:05	15		Y / Y
98	8:23 / 8:26	6		Y / Y
70	8:36 / 8:38	no push	needs 2-3 hr coke ally time	
	/			/
	/			/

door opened before #68 finish charging coke spill on yard did not push

coke ~~side door opened for 2 min then charging starts~~ some coke spilled when door opened

oven door opened before charging finishes on oven #90

delay due to conveyor belt problem

abnormal work prac did not push

push 2m door op -pushing 3min after opened

Enter clock time in column 2.
Enter Y for item observed or performed, N for item not observed, and NP for item not performed in columns 3-5.

Cleaned by compress-air jet

pushed 10/31/91

CHECK LIST FOR PROCESS OBSERVATIONS AT JEWELL COAL AND COKE COMPANY DURING STACK TESTING PERIOD

DATE: 10/30/91 OBSERVER: Emery J. Kong

BATTERY NO.: C WEATHER CONDITION: Cloudy, Hazy, windy

COKE SIDE/PUSH SIDE OBSERVATION (CIRCLE ONE)

LOCATION OF OBSERVATION: on charging machine

SOURCE AND ADEQUACY OF LIGHT: Halogen lights on charging machine (sky is dark already)

GENERAL COMMENTS:

clock time door opened

Oven No.	Starting Time for Pushing/Charging	Door VE (Sec. If any)	Stack VE (Sec. If any)	Door sill cleaning/ patching	Da (%
63	6:19 / 6:23	55	N	Y / Y	0
65	6:28 / 6:30	47	N	Y / Y	0
67	6:34 / 6:37	36	N	Y / Y	0
69	6:42 / 6:44	49	N	Y / Y	0
71	6:49 / 6:51	1:17	N	Y / Y	0
73	6:56 / 6:58	46	N	Y / Y	0
75	7:04 / 7:06	57	N	Y / Y	0
77	7:11 / 7:14	36	N	Y / Y	0
79	7:19 / 7:21	35	N	Y / Y	0
81	7:26 / 7:28	1:37	N	Y / Y	0
83	7:33 / 7:35	45	N	Y / Y	60
85	7:39 / 7:42	~2:00 sign omiss	#3 Y minor dur charg	Y / Y	0
87	7:47 / 7:49	2:17	#3 Y	Y / Y	5
89	7:54 / 7:56	47	#3 Y minor	Y / Y	0
91	8:02 / 8:04	47	#3 Y redish smoke	Y / Y	5
93	8:09 / 8:11	42	N	Y / Y	10
95	8:16 / 8:19	48	N	Y / Y	0
97	8:26 / 8:29	1:04	N	Y / Y	0
	/			/	
	/			/	
	/			/	

more flame on coke bed than in other ovens

fire on door hinge sprayed w/ water

some flame on the coke bed

dusty during charging period

Sig. emi. dur pushing

some flame on coke bed

dusty during charging

Enter clock time in column 2.
Enter Y for item observed or performed, N for item not observed, and NP for item not performed in columns 3-5.

pushing

charging

CHECK LIST FOR PROCESS OBSERVATIONS AT JEWELL COAL AND COKE COMPANY DURING STACK TESTING PERIOD

DATE: 10/31 OBSERVER: J. Myers

BATTERY NO.: C WEATHER CONDITION: _____

COKE SIDE/PUSH SIDE OBSERVATION (CIRCLE ONE)

LOCATION OF OBSERVATION: _____

SOURCE AND ADEQUACY OF LIGHT: _____

GENERAL COMMENTS: Pushing/Charging was quite unmeaningful.

small amount coke dumped on ground

Oven No.	Starting Time for Pushing/Charging	Door VE (Sec. if any)	Stack VE (Sec. if any)	Door sill cleaning/ patching	Damper co (% open i D1/D2/D
64	5:50 /			/	/ /
66	5:57 /			/	/ /
68	6:05 /	75		/	/ /
70	6:12 /	71		/	/ /
72	6:19 /	71		/	/ /
74	6:27 /	67		/	/ /
76	6:35 /	62		/	/ /
78	6:42 /	66		/	/ /
80	6:50 /			/	/ /
82	6:57 /			/	/ /
84	7:05 /			/	/ /
86	7:12 /			/	/ /
88	7:20 /			/	/ /
90	7:28 /			/	/ /
92	7:37 /			/	/ /
94	7:45 /			/	/ /
96	7:54 /			/	/ /
98	8:01 /			/	/ /
	/			/	/ /
	/			/	/ /
	/			/	/ /

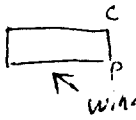
Enter clock time in column 2.
Enter Y for item observed or performed, N for item not observed, and NP for item not performed in columns 3-5.

6:32 Coke conveyor stopped running; up and running in about 2 minutes.

CHECK LIST FOR PROCESS OBSERVATIONS AT JEWELL COAL AND COKE COMPANY DURING STACK TESTING PERIOD

DATE: 10/31/91 OBSERVER: Emery J. Kong

BATTERY NO.: C WEATHER CONDITION: Hazy



COKE SIDE/PUSH SIDE OBSERVATION (CIRCLE ONE)

LOCATION OF OBSERVATION: on charging machine

SOURCE AND ADEQUACY OF LIGHT: Halogen lights on charging machine

GENERAL COMMENTS:

very dusty emission during charging

Oven No.	Starting Time for Pushing/Charging	Door VE (Sec. if any)	Stack VE (Sec. if any)	Door sill cleaning/ patching
80	6:53 / 6:55	46	Y #2	Y / Y
82	7:01 / 7:03	1:23	N	Y / Y
84	7:08 / 7:10	2:00	Y #3 cont	Y / Y
86	7:15 / 7:17	1:29	Y #3 cont	Y / Y
88	7:23 / 7:25	2:33	N	Y / Y
90	7:31 / 7:33	3:06	N	Y / Y
92	7:40 / 7:42	1:07	N	Y / Y
94	7:49 / 7:51	2:08	N	Y / Y
96	7:57 / 7:59	2:56	N	Y / Y
98	8:05 / 8:07	1:27	N	Y / Y
	/			/
	/			/
	/			/
	/			/
	/			/
	/			/
	/			/
	/			/
	/			/
	/			/
	/			/

Enter clock time in column 2.
Enter Y for item observed or performed, N for item not observed, and NP for item not performed in columns 3-5.

Orsat Field Data

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address Jewell Coal and Coke Job No. 3694

Sampling Location Vansant, VA Fuel Type Coal

Run/Sample No. II-1-91-M3-1 Leak √ 1 Date 10/28/91 Operator LGM

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
~~2210~~ 9	415	6.3	17.1	–	10.8	–	
to	to	6.3	17.0	–	10.7	–	
0300	730	6.3	17.0	–	10.7	–	
	Avg.	6.3		Avg.	10.7	–	83.0

Orsat I.D. 1 Tedlar Bag I.D. 10 F_o _____

Run/Sample No. _____ Leak √ ___ Date _____ Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

Run/Sample No. _____ Leak √ ___ Date _____ Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

F-1009 Rev. 10-91

(For field check of fuel type, refer to page 2)

ENTROPY

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address JEWELL COAL & COKE COMPANY Job No. 3676

Sampling Location STACK # 1 Fuel Type COAL

Run/Sample No. IV-1-S1-M5/TSO/202-1 Leak √ ✓ Date 10/30/91 Operator WKS

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	16:00	7.1	16.5	—	9.4		
	/	7.2	16.7	—	9.5		
	16:25	7.0	16.7	—	9.7		
	Avg.	7.1		Avg.	~~9.8~~ 9.5		83.4

Orsat I.D. 7 Tedlar Bag I.D. 12 F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/ /91 Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/ /91 Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

F-1009 Rev. 10-91

(For field check of fuel type, refer to page 2)

ENTROPY

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address JEWELL COAL & COKE COMPANY Job No. 3676

Sampling Location STACK = 1 Fuel Type COAL

Run/Sample No. T-2-S1-M5/TS0/202-2 Leak √ ✓ Date 10/30/91 Operator KC

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	22:30	6.3	17.4	—	11.1	—	
		6.4	17.7	—	11.3	—	
		6.4	17.7	—	11.3	—	
	Avg.	6.4		Avg.	11.2	—	82.4

Orsat I.D. 7 Tedlar Bag I.D. 41 F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/ /91 Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/ /91 Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

F-1009 Rev. 10-91

(For field check of fuel type, refer to page 2)

ENTROPY

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address JEWELL COAL & COKE COMPANY Job No. 3676

Sampling Location STACK # 1 Fuel Type COAL

Run/Sample No. II-2-S1-M3-2 Leak √ ✓ Date 10/31/91 Operator lwl

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	04:35	7.8	16.8	—	9.0	—	
		7.8	16.8	—	9.0	—	
		7.8	16.8	—	9.0	—	
	Avg.	7.8		Avg.	9.0	—	83.2

Orsat I.D. 1 Tedlar Bag I.D. 12 F_o _____

Run/Sample No. IV-2-S1-MS-2 Leak √ ✓ Date 10/31/91 Operator WLCS

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	14:45	7.9	16.2	—	8.3	—	
	/	7.9	16.1	—	8.2	—	
	15:05	7.9	16.1	—	8.2	—	
	Avg.	7.9		Avg.	8.2	—	83.9

Orsat I.D. 7 Tedlar Bag I.D. 12 F_o _____

Run/Sample No. I-3-S1-M3-3 Leak √ ✓ Date 10/31/91 Operator lwl

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	21:45	6.5	17.1	—	10.6	—	
		6.5	17.1	—	10.6	—	
		6.5	17.1	—	10.6	—	
	Avg.	6.5		Avg.	10.6	—	82.9

Orsat I.D. 7 Tedlar Bag I.D. 11 F_o _____

F-1009 Rev. 10-91

(For field check of fuel type, refer to page 2)

ENTROPY

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address JEWELL COAL & COKE COMPANY Job No. 3676

Sampling Location STACK # 1 Fuel Type COAL

Run/Sample No. II-3-S1-M3-3 Leak √ ✓ Date 10/ 1 /91 Operator L.T

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
~~3:15~~	3:15	7.9	16.8	—	8.9	—	
	↓	7.8	16.8	—	9.0	—	
~~3:40~~	3:40	7.9	16.8	—	8.9	—	
	Avg.	7.9		Avg.	8.9	—	83.2

Orsat I.D. _____ Tedlar Bag I.D. 41 F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/ /91 Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/ /91 Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

F-1009 Rev. 10-91

(For field check of fuel type, refer to page 2)

ENTROPY

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address JEWELL COAL & COKE COMPANY Job No. 3676

Sampling Location STACK # 1 Fuel Type COAL

Run/Sample No. III-M5/202/-51-3 Leak √ ✓ Date 10/01/91 Operator TS

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	9:05	7.3	16.8	–	9.5	–	
	↓	7.1	16.6	–	9.5	–	
		7.2	16.6	–	9.4	–	
	Avg.	7.2		Avg.	9.5	–	83.3

Orsat I.D. 7 Tedlar Bag I.D. 53 F_o _____

Run/Sample No. IV-3-51-M5-3 Leak √ ✓ Date 10/01/91 Operator TS

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	14:25	7.6	16.1		8.5		
	↓	7.4	16.0		8.6		
		7.6	15.9		8.3		
	Avg.	7.5		Avg.	8.5		84.0

Orsat I.D. 7 Tedlar Bag I.D. 41 F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/ /91 Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

F-1009 Rev. 10-91

(For field check of fuel type, refer to page 2)

ENTROPY

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address Jewell Coal & Coke Job No. 3694

Sampling Location Vansant, VA Fuel Type Coal

Run/Sample No. ~~I-1-S2-M3-1~~ I-1-S2-M3-1 Leak √ ✓ Date 10-29-91 Operator [illegible]

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	1035						
	to						
	Avg.				Avg.		

Void Run — Bag Broken [illegible]

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

Run/Sample No. _____ Leak √ ___ Date _____ Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.				Avg.		

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

Run/Sample No. _____ Leak √ ___ Date _____ Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.				Avg.		

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

F-1009 Rev. 10-91

(For field check of fuel type, refer to page 2)

ENTROPY

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address JEWELL COAL & COKE COMPANY Job No. 3676

Sampling Location STACK # 1 Fuel Type COAL

Run/Sample No. III-1-S1-202-1 (M5) Leak √ ✓ Date 10/30/91 Operator WKS

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	11:45	~~20.90~~	20.9	—	20.9	—	
		~~20.90~~	~~20.9~~	—	~~20.9~~	—	
		~~20.90~~	20.9	—	20.9	—	
	Avg.	~~20.90~~		Avg.	20.9	—	—

Orsat I.D. 7 Tedlar Bag I.D. 63 F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/ /91 Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/ /91 Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

F-1009 Rev. 10-91

(For field check of fuel type, refer to page 2)

ENTROPY

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address JEWELL COAL & COKE COMPANY Job No. 3676

Sampling Location STACK # 2 Fuel Type COAL

Run/Sample No. II-2-S2-M3-2A Leak √ ✓ Date 10/31/91 Operator [illegible]

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	04:00	8.1	17.0	—	8.9	—	
		8.0	16.9	—	8.9	—	
		8.1	17.0	—	8.9	—	
	Avg.	8.1		Avg.	8.9	—	83.0

Orsat I.D. 7 Tedlar Bag I.D. 53 F_o _____

THIS IS STACK 1

Run/Sample No. III-2-S1-M5-2 Leak √ ✓ Date 10/31/91 Operator TS

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	9:30	7.3	16.3	—	9.0	—	
	—	7.5	16.5	—	9.0	—	
	10:10	7.5	16.5	—	9.0	—	
	Avg.	7.4		Avg.	9.0	—	83.6

Orsat I.D. 7 Tedlar Bag I.D. 41 F_o _____

Run/Sample No. III-2-S2-~~M3~~ M5-2A Leak √ ✓ Date 10/31/91 Operator WKS

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	10:25	0.2	20.7	—	20.5	—	
	—	0.2	20.7	—	20.5	—	
		0.2	20.7	—	20.5	—	
	Avg.	0.2		Avg.	20.5	—	—

Orsat I.D. 7 Tedlar Bag I.D. 49-BAD BAG F_o _____

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(For field check of fuel type, refer to page 2)

ENTROPY

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address Jewell Coal and Coke Job No. 3694

Sampling Location Vansant, VA Fuel Type Coal

AFLR II-0-52-M3-0

Run/Sample No. II-1-52-M3-1 Leak √ ✓ Date 10.28.91 Operator Hamilton

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
~~2235~~ 2235 (S)	430	8.4	15.6	—	7.2	—	
↑↑	↑↑	8.4	15.6	—	7.2	—	
~~2335~~ 2435 (E)	445	8.4	15.5	—	7.1	—	
	Avg.	8.4		Avg.	7.2	—	84.4

Orsat I.D. 1 Tedlar Bag I.D. 63 F_o _____

Run/Sample No. _____ Leak √ ___ Date _____ Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

Run/Sample No. _____ Leak √ ___ Date _____ Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

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(For field check of fuel type, refer to page 2)

ENTROPY

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address JEWELL COAL & COKE COMPANY Job No. 3676

Sampling Location STACK # 2 Fuel Type COAL

Run/Sample No. ~~N~~-2-S2-MM5-2A Leak √ ✓ Date 10/31/91 Operator TS

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	14:30	0.2	20.7	—	20.5		
	—	0.2	20.7	—	20.5		
		0.2	20.7	—	20.5		
	Avg.	0.2		Avg.	20.5		

Orsat I.D. 7 Tedlar Bag I.D. 53 F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/ /91 Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/ /91 Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

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(For field check of fuel type, refer to page 2)

ENTROPY

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address Jewell Coal and Coke — Job No. 3694

Sampling Location Vansant, VA Stack #2 — Fuel Type Coal

Run/Sample No. I-1-S2-M3-1 Leak √ ✓ Date Oct 30 91 Operator [illegible]

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	0015	6.0	17.2	—	11.2	—	
	to	6.0	17.2	—	11.2	—	
	0050	6.0	17.1	—	11.1	—	
Orsat I.D. 63	Avg.	6.0		Avg.	11.2	—	82.8

Run/Sample No. II-1-S2-MM5-1 Leak √ ✓ Date 10-30-91 Operator SLB

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	0755						
	1						
Orsat I.D.	Avg.			Avg.			

Run/Sample No. _____ Leak √ ___ Date _____ Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
Orsat I.D.	Avg.			Avg.			

F-1009 Rev. 4-91

(For field check of fuel type, refer to page 2)

ENTROPY

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address JEWELL COAL & COKE COMPANY Job No. 3676

Sampling Location STACK # 2 Fuel Type COAL

Run/Sample No. II-1-S2-MMS-2A Leak √ ✓ Date 10/30/91 Operator WKS

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	10:20	8.8	16.3	—	7.5	—	
		8.9	16.1	—	7.2	—	
	10:45	9.0	16.1	—	7.1	—	
	Avg.	8.9		Avg.	7.3	—	83.8

Orsat I.D. 7 Tedlar Bag I.D. 12 F_o _____

Run/Sample No. III-1-S2-MMS-1A Leak √ ✓ Date 10/30/91 Operator WKS

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	10:55	5.6	17.5	—	11.9	—	
		5.7	17.4	—	11.7	—	
	11:20	5.7	17.5	—	11.8	—	
	Avg.	5.7		Avg.	11.8	—	82.5

Orsat I.D. 7 Tedlar Bag I.D. 53 F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/30/91 Operator WKS

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

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(For field check of fuel type, refer to page 2)

ENTROPY

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address JEWELL COAL & COKE COMPANY Job No. 3676

Sampling Location STACK # 2 Fuel Type COAL

Run/Sample No. ~~IV~~ -1-S2-MM5-~~19~~ 1A Leak √ ✓ Date 10/30/91 Operator WKS

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	17:00	2.2	19.6	—	17.4	—	
		2.4	19.7	—	17.3	—	
	17:20	2.4	19.7	—	17.3	—	
	Avg.	2.3		Avg.	17.3	—	

Orsat I.D. 7 Tedlar Bag I.D. 49 F_o _____

Run/Sample No. I-2-S2-M3-2A Leak √ ✓ Date 10/30/91 Operator K.D.

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	20:30	7.3	16.8	—	9.5	—	
		7.3	16.8	—	9.5	—	
	20:50	7.3	16.8	—	9.5	—	
	Avg.	7.3		Avg.	9.5	—	83.2

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/ /91 Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

F-1009 Rev. 10-91

(For field check of fuel type, refer to page 2)

ENTROPY

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address JEWELL COAL & COKE COMPANY Job No. 3676

Sampling Location STACK # 2 Fuel Type COAL

Run/Sample No. I-3-S2-MM3-3 Leak √ ✓ Date 10/31/91 Operator TK

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
		7.8	17.3				
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

Run/Sample No. I-3-S2-MM3-3 Leak √ ✓ Date 10/31/91 Operator [illegible]

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	21:30	7.8	17.2	—	9.4	—	
		7.8	17.2	—	9.4	—	
		7.8	17.2	—	9.4	—	
	Avg.	7.8		Avg.	9.4	—	82.8

Orsat I.D. 7 Tedlar Bag I.D. 41 F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/ /91 Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

F-1009 Rev. 10-91

(For field check of fuel type, refer to page 2)

ENTROPY

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address JEWELL COAL & COKE COMPANY Job No. 3676

Sampling Location STACK # 2 Fuel Type COAL

Run/Sample No. II-3-S2-MM3-3B Leak √ ___ Date 10/ 1 /91 Operator L-T

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	3:55	9.1	16.5	—	7.4	—	
	↓	9.1	16.5	—	7.4	—	
	4:25	9.1	16.5	—	7.4	—	
	Avg.	9.1		Avg.	7.4	—	83.5

Orsat I.D. _____ Tedlar Bag I.D. 11 F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/ /91 Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/ /91 Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

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(For field check of fuel type, refer to page 2)

ENTROPY

METHOD 3 (ORSAT) FIELD DATA

Plant Name/Address JEWELL COAL & COKE COMPANY Job No. 3676

Sampling Location STACK # 2 Fuel Type COAL

Run/Sample No. III-3-S2-MMS-3B Leak √ ✓ Date 10/01/91 Operator TS

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	9:55	8.6	15.8		7.2		
	↗	8.6	15.8		7.2		
		8.5	15.6		7.0		
	Avg.	8.6		Avg.	7.2		84.2

Orsat I.D. 7 Tedlar Bag I.D. 12 F_o _____

Run/Sample No. IV-3-S2-MMS-3A Leak √ ✓ Date 10/01/91 Operator 91

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	14:50	7.9	15.9	—	8.0	—	
	↗	7.9	15.8	—	7.9	—	
		7.8	15.8	—	8.0	—	
	Avg.	7.9		Avg.	8.0	—	84.1

Orsat I.D. 7 Tedlar Bag I.D. 11 F_o _____

Run/Sample No. _____ Leak √ ___ Date 10/ /91 Operator _____

Time of Sample Collection	Time of Analysis	CO_2 Reading (A)	O_2 Reading (B)	CO Reading (C)	% O_2 (B-A)	% CO (C-B)	% N_2 (100-C)
	Avg.			Avg.			

Orsat I.D. _____ Tedlar Bag I.D. _____ F_o _____

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(For field check of fuel type, refer to page 2)

ENTROPY

Data Acquisition Sheets
M5/TSO/M202

FIELD DATA - METHOD(S) 15/15C/202

PLANT Jewell Coal & Coke Company — RUN NO. II-1-51-MS 15/202

CITY/STATE Vansant VA — JOB NO. 3694 — DATE 10-28-91

SAMPLING LOC. Stack 1 — TIME START 2210

BAROMETRIC PRESSURE, IN. HG 29.0 — STATIC PRESSURE, IN. H_2O -.10 — TIME FINISH 0010 0300

LEAK CHECK, VACUUM IN. HG 15 15 — OPERATOR LCM/EG

LEAK RATE, CUBIC FEET/MIN 0.150 0.030 — ASST(S)

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ___ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 73 °F PRE
- ___ TC ___ °F POST
- ___ ORSAT SYSTEM

FILTER/XAD	TARE WT.
1292	.5032

EQUIPMENT I.D. NUMBERS

REAGENT BOX 0234 — METER BOX N27 — Y 1.0095

PITOT WC-10-1 — C_p .84 — NOZ'L 813 — DIA. .1506

TC READOUT F2 — TC PROBE WC10-1 — UMBILICAL 070183

SAMPL'G BOX 61 — ORSAT PUMP 34 — TEDLAR BAG 10

NOMOGRAPH DATA

DELTA Hø	1.778
METER TEMP	95
EST. $\%H_2O$	13
C FACTOR	.863
STACK TEMP	1500
REF DELTA P	.116
K FACTOR	15.891

LEAK CHECKS

B 67.028	B
E 67.137	E
B	B
E	E
B	B
E	E

FYRITES

7%
6.5%
6.5%

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A-1	0	0.002	.0464	73	1591	.68	.68	2	245	58	240	
2		5	2.00	.0654	74	1580	.95	.95	3	245	58	240	
3	2	10	5.27	.0690	74	1605	.99	.99	3	245	58	245	
4		15	8.06	.060	74	1607	.86	.86	3	245	58	245	
5	3	20	10.85	.062	84	1611	.90	.90	3	245	58	245	
6		25	13.59	.062	85	1614	.90	.90	3	246	56	244	
7	4	30	16.34	.052	86	1605	.76	.76	3	246	54	248	
8		35	18.89	.062	88	1602	.92	.92	4	246	52	248	
9	5	40	21.65	.062	90	1606	.92	.92	4	245	52	246	
10		45	24.42	.062	91	1601	.92	.92	5	244	50	246	
11	6	50	27.19	.066	92	1606	.95	.98	5	246	49	244	
12		55	30.01	.06	94	1605	.89	.89	5	246	48	245	
13	7	60	32.88	.064	94	1608	.90	.95	5	248	48	245	
14		65	35.51	.055	95	1612	.82	.82	5	248	51	246	
15	8	70	38.15	.058	95	1612	.85	.86	5	250	52	248	
16		75	40.86	.058	96	1614	.85	.86	5	249	51	245	
17	9	80	43.54	.071	96	1610	1.06	1.06	6	248	50	246	
18		85	46.49	.070	96	1603	1.0	1.05	6	250	51	246	
19	10	90	49.45	.068	96	1609	1.0	1.01	6	248	52	248	
20		95	52.34	.066	96	1610	.95	.98	6	245	54	250	
21	11	100	55.19	.07	97	1606	1.0	1.05	6	247	52	250	
22		105	58.13	.067	97	1608	1.0	1.0	7	248	53	252	
23	12	110	61.03	.072	97	1606	1.05	1.08	8	250	53	252	
24		115	64.06	.074	97	1604	1.1	1.11	8	249	52	250	
25	1	120	67.028	.041	84	1521	.63	.63	5	250	54	250	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal + Coke Co RUN NO. II-1-S1-M8/TSO/202-1

SAMPLING LOC. Stack 1 JOB. NO. 3654

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26	1	5	69.54	.043	84	1518	.66	.66	5	252	54	254
27	2	10	71.89	.042	85	1511	.65	.65	5	252	54	254
28		15	74.22	.048	86	1512	.74	.74	6	250	52	250
29	3	20	76.68	.048	87	1510	.74	.74	6	254	52	252
30		25	79.19	.058	88	1511	.90	.90	7	254	54	252
31	4	30	81.86	.054	88	1521	.83	.83	7	254	54	254
32		35	84.52	.064	89	1506	1.00	1.00	8	254	54	254
33	5	40	87.37	.057	90	1509	.89	.89	8	254	56	254
34		45	90.15	.065	90	1506	1.01	1.01	9	250	56	252
35	6	50	93.03	.055	90	1509	.86	.86	8	250	56	254
36		55	95.74	.060	90	1511	.93	.93	9	252	56	254
37	7	60	98.55	.048	90	1512	.74	.74	8	250	56	244
38		65	101.15	.041	90	1507	.64	.64	7	256	54	250
39	8	70	103.47	.058	90	1508	.90	.90	8	255	54	250
40		75	106.15	.060	90	1502	.94	.94	9	252	54	246
41	9	80	108.87	.054	90	1510	.84	.84	8	250	54	248
42		85	111.52	.055	89	1512	.85	.85	8	251	54	250
43	10	90	114.16	.060	89	1514	.93	.93	9	252	54	250
44		95	116.91	.052	88	1507	.81	.81	8	252	52	250
45	11	100	119.55	.054	88	1508	.84	.84	9	250	54	250
46		105	122.19	.056	87	1502	.87	.87	9	252	54	252
47	12	110	124.86	.056	87	1496	.87	.87	9	253	54	252
48		115	127.48	.053	87	1498	.82	.82	9	253	54	252
49	off	60	130.119									
50												
51												
52												
53												
54												
55												
56												
57												
58												
59												
60												
61												
62												
63												
64												
65												

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH
	130.008	0.0581	89	1557	0.88

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ENTROPY

[redacted]

FIELD DATA - METHOD(S) M5/TSO/202

PLANT Jewell Coal & Coke Company — RUN NO. I-1-S1-M5/TSO/202-1

CITY/STATE Vansant, Virginia — JOB NO. 3694 — DATE 10/29/91

SAMPLING LOC. Stack 1 — TIME START 1741

BAROMETRIC PRESSURE, IN. HG 29.0 — STATIC PRESSURE, IN. H_2O -.08 — TIME FINISH 2009

LEAK CHECK, VACUUM IN. HG 15 [redacted] 11 - test loc — OPERATOR ECS

LEAK RATE, CUBIC FEET/MIN. .02 .02 .002 — ASST(S)

EQUIPMENT CHECKS*

- ___ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ___ NOZZLE, PRE/POST
- ___ TC ___ °F PRE
- ___ TC ___ °F POST
- ___ ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS

REAGENT BOX 0238 — METER BOX N27 — Y 1.0095

PITOT WC10-1 — C_p .84 — NOZ'L 813 — DIA. .506

TC READOUT ~~WC10-1~~ N27 — PROBE WC10-1 — UMBILICAL 11-7-0/83

SAMPL'G BOX 161 — ORSAT PUMP 34 — TEDLAR BAG 10

NOMOGRAPH DATA

DELTA H@ 1.778

METER TEMP .84

EST. %H_2O ~~[illegible]~~ 20

C FACTOR .750

STACK TEMP 1500

REF DELTA P .07

K FACTOR 13.823

LEAK CHECKS

B 165.869	B
E 166.232	E
B	B
E	E
B	B
E	E

FYRITES

6%

6.5%

FILTER/XAD	TARE WT.
1291	0.5024

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A-1	0	132.469	.03	86	1530	.40	.39	2	269	68	245	
2	2	5	134.36	.036	88	1540	.47	.47	2	270	65	245	
3	3	10	136.47	.054	89	1551	.71	.71	3	265	61	246	
4	4	15	138.75	.063	90	1570	.82	.82	3	264	58	248	
5	5	20	141.40	.078	91	1575	1.02	1.02	3	261	56	251	
6	6	25	144.32	.075	92	1603	.97	.97	4	250	55	252	
7	7	30	147.20	.072	93	1600	.93	.93	4	245	52	250	
8	8	35	150.00	.086	95	1602	1.12	1.12	5	245	53	248	
9	9	40	152.02	.087	94	1603	1.13	1.13	5	246	50	250	
10	10	45	156.10	.09	94	1605	1.15	1.17	5	247	48	252	
11	11	50	159.18	.106	93	1600	1.35	1.37	7	245	51	252	
12	12	55	162.34	.11	92	1598	1.42	1.42	8	246	50	254	
13	B-1	60	165.869	.037	85	1595	.47	.47	3	253	58	245	
14	2	5	168.21	.086	84	1590	1.10	1.10	6	251	55	248	
15	3	10	171.14	.079	84	1590	1.0	1.016	6	250	53	250	
16	4	15	174.10	.084	84	1590	1.08	1.081	6	247	49	248	
17	5	20	177.09	.085	85	1588	1.09	1.096	7	248	50	249	
18	6	25	180.11	.095	83	1587	1.22	1.22	8	245	51	250	
19	7	30	183.28	.103	84	1580	1.33	1.33	9	247	48	250	
20	8	35	186.59	.09	85	1573	1.15	1.17	9	248	49	252	
21	9	40	189.68	.092	85	1573	1.19	1.19	9	248	50	252	
22	10	45	192.79	.113	84	1571	1.46	1.46	11	249	50	250	
23	11	50	196.22	.092	84	1566	1.19	1.19	10	251	52	252	
24	12	55	199.40	.097	84	1560	1.26	1.27	11	252	52	252	
25	END	60/OFF	202.618										

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	69.780	0.0790	88	1,581	1.043

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ENTROPY

FIELD DATA - METHOD(S) MS/TSO/202

PLANT: Jewell Coal & Coke Company — RUN NO. I-2-S1-M5/TSO/202-2
CITY/STATE: Vansant, Virginia — JOB NO. 3694 — DATE 10/30/91
SAMPLING LOC.: Stack 1 — TIME START 1752
BAROMETRIC PRESSURE, IN. HG: 29.0 — STATIC PRESSURE, IN. H2O: -.08 — TIME FINISH 1853
LEAK CHECK, VACUUM IN. HG: 15 10 7 — OPERATOR ECS
LEAK RATE, CUBIC FEET/MIN.: .01 .008 .012 — ASST(S) LCM

EQUIPMENT CHECKS*
- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 68 °F PRE
- ✓ TC ____ °F POST
- ✓ ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS
REAGENT BOX 202 — METER BOX N-27 — Y 1.0095
PITOT W C12-1 Cp .84 — NOZ'L ____ — DIA. .500
TC READOUT N-27 — TC PROBE F26 — UMBILICAL U7415
SAMPL'G BOX 61 — ORSAT PUMP 34 — TEDLAR BAG 41

LEAK CHECKS
B 521.604 / E 521.718
~~B 558.898 / E 558.978~~
B ____ / E ____
B ____ / E ____

FILTER/XAD	TARE WT.
1156	.5088

NOMOGRAPH DATA
DELTA H@ 1.778
METER TEMP 90
EST. %H2O 20
C FACTOR .724
STACK TEMP 1500
REF DELTA P .142
K FACTOR 12.944

PYRITES
6%
5½% BAG
6%

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A-12	0/ON	492.722	.045	78	1456	.58	.58	2	245	62	241	
2	11	5	494.95	.042	79	1463	.54	.54	2	246	59	244	
3	10	10	497.00	.045	80	1474	.58	.58	2	247	58	242	
4	9	15	499.28	.049	81	1474	.63	.63	2	245	55	246	
5	8	20	501.55	.055	81	1475	.71	.71	2	245	56	244	
6	7	25	503.95	.052	83	1477	.67	.67	2	246	51	245	
7	6	30	506.31	.042	84	1485	.54	.54	2	246	49	243	
8	5	35	508.42	.062	85	1527	.78	.79	2	248	50	245	
9	4	40	510.93	.074	86	1543	.93	.93	2	246	48	244	
10	3	45	513.64	.064	87	1572	.8	.8	3	249	49	244	
11	2	50	516.26	.076	87	1588	.94	.94	3	251	48	246	
12	1	55	519.01	.063	88	1592	.78	.78	3	250	50	248	
13	B-12	60/0	521.604	.128	84	1610	1.55	1.55	2	250	58	245	
14	11	5	525.18	.055	84	1619	1.15	1.15	4	248	56	246	
15	10	10	528.27	.122	84	1622	1.47	1.47	4	248	54	246	
16	9	15	531.68	.140	84	1624	1.69	1.69	5	249	51	248	
17	8	20	535.37	.12	84	1626	1.44	1.44	5	250	49	248	
18	7	25	538.83	.131	84	1622	1.58	1.58	5	249	49	247	
19	6	30	542.41	.109	84	1620	1.32	1.32	4	250	50	248	
20	5	35	545.69	.076	84	1612	.92	.92	3	250	49	248	
21	4	40	548.47	.082	83	1602	1.0	1.0	3	251	48	250	
22	3	45	551.32	.077	81	1606	.93	.93	3	252	48	249	
23	2	50	554.07	.053	81	1597	.64	.64	3	252	50	250	
24	1	55	556.39	.063	80	1586	.77	.77	3	252	51	250	
25	OFF	60/OFF	558.898										

1810

2010

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conder

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	66.062	0.0749	83	1,561	0.96

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ENTROPY

FIELD DATA - METHOD(S) M5/TSO/202

PLANT Jewell Coal & Coke Company — RUN NO. I-3-S1-M5/TSO/202-3

CITY/STATE Vansant, Virginia — JOB NO. 3694 — DATE 10/31/91

SAMPLING LOC. Stack 1 — TIME START 1719

BAROMETRIC PRESSURE, IN. HG 29.0 — STATIC PRESSURE, IN. H_2O -0.08 — TIME FINISH 1932

LEAK CHECK, VACUUM IN. HG 14 8 8 — OPERATOR ECS

LEAK RATE, CUBIC FEET/MIN. .001 .001 .001 — ASST(S) LCM

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 74 °F PRE
- ✓ TC 73 °F POST
- ✓ ORSAT SYSTEM

FILTER/XAD	TARE WT.
1262	.5041

EQUIPMENT I.D. NUMBERS

REAGENT BOX 0501 — METER BOX N-27 — Y 1.0095

PITOT WC 12-1 — C_p .84 — NOZ'L — DIA. .500

TC READOUT F57 — TC PROBE WC 12-1 — UMBILICAL 8C 73

SAMPL'G BOX 61 — ORSAT PUMP 34 — TEDLAR BAG 11

NOMOGRAPH DATA

DELTA H@	1.778
METER TEMP	85
EST. $\%H_2O$	17
C FACTOR	.777
STACK TEMP	1500
REF DELTA-P	.07
K FACTOR	13.638

LEAK CHECKS

B 915.823	B
E 915.944	E
B	B
E	E
B	B
E	E

PYRITES

4%
6%
6½%

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	B-1	0	887.855	.017	84	1360	.25	.25	1	241	63	244	
2	2	5	889.32	.02	85	1365	.29	.29	1	244	61	245	
3	3	10	890.82	.028	85	1431	.40	.40	1	244	58	248	
4	4	15	892.58	.045	86	1431	.64	.64	2	246	57	246	
5	5	20	894.82	.044	88	1433	.63	.63	2	246	53	248	
6	6	25	897.08	.045	90	1432	.64	.64	2	245	49	248	
7	7	30	899.36	.063	92	1441	.90	.90	3	245	50	250	
8	8	35	902.03	.071	94	1457	1.	1.	3	246	50	251	
9	9	40	904.88	.064	96	1494	.9	.9	3	245	48	250	
10	10	45	907.60	.063	98	1506	.88	.88	3	248	47	247	
11	11	50	910.27	.072	99	1541	.99	.99	3	251	47	248	
12	12	55	913.10	.065	100	1559	.87	.87	3	255	49	250	
13	A-1	60/0	915.823	.027	100	1556	.37	.37	3	258	48	253	
14	2	5	917.48	.043	99	1553	.59	.59	3	260	50	251	
15	3	10	919.68	.061	97	1560	.83	.83	3	259	50	252	
16	4	15	922.22	.069	97	1562	.93	.93	3	258	51	252	
17	5	20	925.04	.068	98	1565	.92	.92	4	255	51	253	
18	6	25	927.80	.096	100	1564	1.3	1.3	5	256	50	251	
19	7	30	931.04	.120	100	1564	1.63	1.63	6	255	49	250	
20	8	35	934.68	.12	100	1562	1.63	1.63	6	256	49	250	
21	9	40	938.38	.11	102	1546	1.50	1.50	5	254	50	250	
22	10	45	941.94	.092	104	1550	1.27	1.27	5	255	49	250	
23	11	50	945.18	.093	104	1552	1.28	1.28	5	256	51	253	
24	12	55	948.40	.105	105	1549	1.45	1.45	5	258	50	252	
25		120/off	951.866										

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	63.890	0.0631	96	1506	0.92

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ENTROPY

FIELD DATA - METHOD(S) NJ 1 5 & 202

PLANT Jewell Coal + Coke — RUN NO. II-1-51-M5/M202-1

CITY/STATE Vasant, Va — JOB NO. 3694 — DATE 10-29-91

SAMPLING LOC. STACK 1 — TIME START 2157

BAROMETRIC PRESSURE, IN. HG 29.6 — STATIC PRESSURE, IN. H_2O -1 — TIME FINISH 0323

LEAK CHECK, VACUUM IN. HG 15 6 — OPERATOR CGA

LEAK RATE, CUBIC FEET/MIN. .002 .002 — ASST(S)

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 63 °F PRE
- ✓ TC 70 °F POST
- ✓ ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS

WC-10-2

REAGENT BOX 0238 — METER BOX N-27 — Y 1.0095

PITOT ~~0238~~ — Cp .84 — NOZ'L 814 — DIA. .515

TC READOUT F2 — TC PROBE F-26 — UMBILICAL 4-30/33

SAMPL'G BOX 84 — ORSAT PUMP 34 — TEDLAR BAG 53

LEAK CHECKS

B	B
E	E
B	B
E	E
B	B
E	E

FILTER/XAD	TARE WT.
1296	.5021

NOMOGRAPH DATA

DELTA H@	1.778
METER TEMP	80
EST. %H_2O	20
C FACTOR	.863
STACK TEMP	1600
REF DELTA P	.116
K FACTOR	15.891

FYRITES

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	B-1	0	203.762	.043	74	1570	.58	.58	2	265	58	267	
2		3¾	205.43	.059	73	1563	.81	.81	3	268	58	268	
3		7½	207.41	.0531	73	1562	.73	.73	3	251	57	244	
4	B-2	11¼	209.32	.055	74	1560	.76	.76	3	240	58	242	
5		15	211.18	.053	74	1557	.73	.73	3	242	56	242	
6		18¾	213.04	.055	74	1560	.75	.75	3	245	53	244	
7	B-3	22½	214.90	.062	75	1559	.85	.86	3	246	52	245	
8		26¼	216.98	.045	75	1559	.62	.62	3	244	50	247	
9		30	218.69	.050	75	1558	.69	.69	3	245	50	247	
10	B-4	33¾	220.45	.057	75	1559	.79	.79	3	245	51	246	
11		37½	222.32	.056	75	1559	.77	.77	3	244	50	248	
12		41¼	224.22	.060	75	1559	.83	.83	3	241	48	250	
13	5	45	226.13	.063	75	1555	.87	.87	3	244	45	253	
14		48¾	228.14	.07	75	1556	.97	.97	3	247	46	251	
15		52½	230.25	.065	75	1555	.90	.90	3	249	45	249	
16	6	56¼	232.30	.068	75	1555	.94	.94	3	250	47	246	
17		60	234.40	.065	75	1552	.90	.90	3	251	46	253	
18		63¾	236.44	.067	75	1552	.93	.93	3	251	45	250	
19	7	67½	238.56	.064	75	1550	.89	.89	3	252	46	257	
20		71¼	240.58	.065	76	1547	.90	.90	3	255	46	260	
21		75	242.59	.063	76	1547	.88	.88	3	253	48	264	
22	8	78¾	244.62	.065	78	1545	.91	.91	4	255	49	266	
23		82½	246.67	.067	78	1545	.94	.94	4	255	46	268	
24		86¼	248.75	.066	78	1545	.9	.92	4	256	46	267	
25	9	90	250.79	.063	78	1544	.88	.88	4	259	47	265	

* FILTER EXIT for NJ Method 1. FILTER BOX for all oth

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condens

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH
	134.438	0.0555	74	1,549	0.77

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal + Coke

SAMPLING LOC. Stack 1

RUN NO. II-1-51-M5/M202

JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	√
26		93 3/4	252.84	.065	79	1542	.91	.91	4	257	47	264	
27		97 1/2	254.9	.066	79	1541	.92	.92	4	254	48	264	
28	10	101 1/4	257.05	.063	80	1541	.88	.88	4	252	48	263	
29		105	258.98	.063	80	1540	.88	.88	4	251	47	266	
30		108 3/4	260.97	.062	80	1540	.87	.87	4	251	48	267	
31	11	112 1/2	262.97	.063	80	1550	.88	.88	4	252	49	262	
32		116 1/4	265.01	.070	79	1553	.97	.97	5	251	49	260	
33		120	267.07	.06	78	1554	.83	.83	5	251	47	259	
34	12	123 3/4	269.02	.063	78	1567	.87	.87	5	251	49	261	
35		127 1/2	271.00	.065	78	1570	.89	.80	5	251	51	261	
36		131 1/4	273.03	.065	78	1579	.89	.89	5	249	53	258	
37	A-1	135	275.047	.040	70	1562	.55	.55	3	246	54	251	
38		3 3/4	276.63	.036	68	1562	.49	.49	3	244	54	255	
39		7 1/2	278.20	.036	68	1555	.49	.49	3	246	53	254	
40	-2	11 1/4	279.68	.045	69	1554	.62	.62	4	250	52	256	
41		15	281.34	.042	70	1562	.57	.57	4	249	52	256	
42		18 3/4	282.58	.046	70	1561	.63	.63	4	247	54	256	
43	3	22 1/2	284.67	.048	71	1560	.66	.66	4	245	54	260	
44		26 1/4	286.37	.044	71	1559	.60	.60	4	243	54	258	
45		30	288.01	.043	71	1557	.59	.59	4	244	52	258	
46	4	33 3/4	289.63	.048	71	1554	.66	.66	4	244	52	258	
47		37 1/2	291.30	.051	72	1558	.70	.70	5	244	54	256	
48		41 1/4	293.18	.058	72	1557	.80	.80	5	244	56	254	
49	5	45	295.09	.058	73	1558	.80	.80	5	244	56	256	
50		48 3/4	297.00	.057	73	1554	.78	.78	5	245	54	254	
51		52 1/2	298.88	.056	73	1554	.77	.77	5	246	54	252	
52	6	56 1/4	300.72	.048	73	1552	.66	.66	4	249	54	254	
53		60	302.52	.054	74	1550	.75	.75	5	249	52	254	
54		63 3/4	304.25	.052	74	1543	.72	.72	4	254	52	256	
55	7	67 1/2	306.06	.049	74	1532	.68	.68	5	256	52	258	
56		71 1/4	307.81	.051	74	1535	.71	.71	5	256	52	258	
57		75	309.55	.052	74	1539	.72	.72	5	252	54	256	
58	8	78 3/4	311.33	.052	73	1536	.72	.72	5	248	56	256	
59		82 1/2	313.09	.060	71	1538	.83	.83	5	246	56	256	
60		86 1/4	318.94	.058	70	1538	.80	.80	5	247	56	259	
61	9	90	316.90	.06	68	1533	.83	.83	5	248	56	258	
62		93 3/4	318.78	.051	68	1539	.70	.70	5	250	56	258	
63		97 1/2	320.56	.051	68	1531	.70	.70	5	251	56	256	
64	10	101 1/4	322.33	.052	68	1530	.72	.72	5	250	56	256	
65		105	324.08	.048	69	1528	.66	.66	5	249	56	255	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal & Coke RUN NO. JJ-1-S1-MS/M202-1

SAMPLING LOC. Stack 1 JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26		108¾	325.83	.052	70	1530	.72	.72	5	246	52	252
27	11	112½	327.58	.053	70	1534	.73	.73	5	247	52	252
28		116¼	329.33	.054	70	1532	.75	.75	5	246	52	249
29		120	331.11	.054	71	1530	.75	.75	5	245	52	247
30	12	123¾	332.90	.052	72	1534	.72	.72	5	247	52	248
31		127½	334.69	.051	73	1531	.71	.71	5	246	54	248
32		131¼	336.51	.062	73	1532	.72	.72	5	246	54	248
33	0SF	135	338.200									
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* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

ENTROPY

FIELD DATA - METHOD(S) M5/TSO/202

PLANT Jewell Coal & Coke Company — RUN NO. II-2-S1-M5/TSO/202

CITY/STATE Vansant, Virginia — JOB NO. 3694 — DATE 10/30/91

SAMPLING LOC. Stack 1 — TIME START 2202

BAROMETRIC PRESSURE, IN. HG 29.0 — STATIC PRESSURE, IN. H2O -.08 — TIME FINISH 0305

LEAK CHECK, VACUUM IN. HG 15 12 6 — OPERATOR ECS

LEAK RATE, CUBIC FEET/MIN. .01 .01 .010 — ASST(S) LCM

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 68 °F PRE
- TC 46 °F POST
- ✓ ORSAT SYSTEM

FILTER/XAD	TARE WT.
1251	.5048

EQUIPMENT I.D. NUMBERS

REAGENT BOX 10237 — METER BOX N-27 Y 1.0095

PITOT WC 10- Cp .99 — NOZ'L — DIA. .5

TC READOUT F-2 — TC PROBE WC 10- — UMBILICAL U75-8

SAMPL'G BOX 84 — ORSAT PUMP 34 — TEDLAR BAG 12

NOMOGRAPH DATA

DELTA H@	1.778
METER TEMP	85
EST. %H2O	20
C FACTOR	.730
STACK TEMP	1600
REF DELTA P	.151
K FACTOR	12.203

LEAK CHECKS

B	628.068	B	
E	628.169	E	
B		B	
E		E	
B		B	
E		E	
B		B	
E		E	

PYRITES

6%

6 1/2%

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

TIME	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A-1	0	559.165	.028	69	1464	.36	.36	2	268	60	248	
2		3 3/4	560.42	.039	70	1473	.5	.5	2	266	57	249	
3		7 1/2	561.89	.039	71	1455	.49	.49	2	265	57	249	
4	2	11 1/4	563.38	.048	72	1517	.60	.60	2	259	56	247	
5		15	565.01	.045	73	1520	.56	.56	2	260	53	250	
6		18 3/4	566.60	.045	74	1519	.56	.56	2	259	53	252	
7	3	22 1/2	568.20	.044	74	1519	.55	.55	2	261	51	253	
8		26 1/4	569.77	.054	74	1520	.67	.67	2	260	52	255	
9		30	571.50	.045	74	1520	.56	.56	2	259	51	255	
10	4	33 3/4	577.12	.058	75	1525	.64	.64	2	260	49	252	
11		37 1/2	574.8	.051	75	1525	.64	.64	2	263	49	252	
12		41 1/4	576.48	.05	76	1517	.63	.63	2	264	48	252	
13	5	45	578.16	.085	77	1525	1.06	1.06	2	256	48	254	
14		48 3/4	580.34	.085	77	1525	1.06	1.06	2	249	46	254	
15		52 1/2	582.55	.085	77	1525	1.06	1.06	2	250	46	253	
16	6	56 1/4	584.7	.085	77	1522	1.06	1.06	2	254	47	256	
17		60	586.92	.077	76	1524	.96	.96	3	253	47	254	
18		63 3/4	588.05	.104	76	1531	1.29	1.29	4	256	49	254	
19	7	68 1/2	591.47	.086	76	1532	1.07	1.07	3	259	49	253	
20		72 1/4	593.67	.075	76	1521	.94	.94	3	249	49	252	
21		75	595.75	.065	76	1518	.81	.81	3	258	49	251	
22	8	78 3/4	597.73	.07	75	1507	.88	.88	3	254	48	254	
23		82 1/2	599.70	.083	74	1495	1.05	1.05	3	255	48	252	
24		86 1/4	601.85	.083	72	1487	1.05	1.05	3	260	47	252	
25	9	90	603.03	.064	72	1470	.82	.82	3	263	47	252	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
129.633	0.0557	78	1,473	0.73	

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal + Coke Co. RUN NO. II-2-S1-M5/TS

SAMPLING LOC. STACK 1 JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT
26		93 3/4	606.02	.088	72	1466	1.12	1.12	3	260	48	250
27		97 1/2	608.32	.068	72	1462	.87	.87	3	259	48	252
28	10	101 1/4	610.3	.068	72	1466	.87	.87	3	258	49	252
29		105	612.28	.087	72	1467	1.11	1.11	3	255	51	249
30		108 3/4	614.48	.068	72	1462	.87	.87	3	251	50	248
31	11	112 1/2	616.50	.071	76	1462	.90	.90	3	249	51	250
32		116 1/4	618.54	.067	70	1458	.86	.86	3	249	53	254
33		120	620.47	.067	70	1458	.86	.86	3	254	52	254
34	12	123 3/4	622.41	.066	69	1459	.84	.84	3	257	52	251
35		127 1/2	624.34	.067	69	1460	.85	.85	3	260	51	248
36		131 1/4	626.27	.055	68	1457	.70	.70	3	266	52	250
37	B-1	135/0	628.068	.044	64	1434	.56	.56	2	245	58	240
38		3 3/4	629.63	.033	64	1432	.42	.42	2	245	56	241
39		7 1/2	631.10	.030	65	1432	.38	.38	2	245	56	242
40	2	11 1/4	632.38	.035	66	1460	.44	.44	2	245	56	242
41		15	633.69	.030	67	1462	.38	.38	2	247	54	246
42		18 3/4	634.91	.032	68	1456	.41	.41	2	248	54	246
43	3	22 1/2	636.24	.028	67	1466	.36	.36	2	250	54	248
44		26 1/4	637.51	.036	67	1462	.46	.46	2	250	54	246
45		30	638.95	.041	68	1459	.52	.52	2	250	56	2
46	4	33 3/4	640.45	.050	68	1476	.63	.63	2	250	56	250
47		37 1/2	642.08	.050	68	1476	.63	.63	2	246	54	252
48		41 1/4	643.79	.035	72	1460	.45	.45	2	246	54	250
49	5	45	645.29	.051	74	1455	.66	.66	2	246	54	250
50		48 3/4	646.64	.048	76	1456	.62	.62	2	246	54	252
51		52 1/2	648.23	.061	80	1456	.80	.80	3	248	52	252
52	6	56 1/4	650.10	.054	84	1457	.71	.71	3	246	52	252
53		60	651.92	.055	85	1455	.72	.72	3	246	54	254
54		63 3/4	653.76	.050	89	1453	.66	.66	3	246	54	256
55	7	67 1/2	655.54	.054	90	1454	.77	.77	3	248	54	256
56		71 1/4	657.46	.056	92	1447	.75	.75	3	250	52	256
57		75	659.33	.054	92	1449	.72	.72	3	250	52	254
58	8	78 3/4	661.19	.062	92	1456	.83	.83	3	250	52	254
59		82 1/2	663.12	.059	92	1450	.79	.79	3	252	54	256
60		86 1/4	665.03	.058	92	1446	.78	.78	3	252	54	256
61	9	90	666.95	.061	92	1445	.82	.82	3	252	54	256
62		93 3/4	668.88	.057	92	1443	.76	.76	3	250	54	254
63		97 1/2	670.80	.060	93	1441	.81	.81	3	246	54	254
64	10	101 1/4	672.77	.056	94	1440	.76	.76	3	246	52	250
65		105	674.64	.053	94	1445	.71	.71	3	247	52	2

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conde

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

F-1112 (P

ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal & Coke RUN NO. II-2-S1-MS/ISO/012

SAMPLING LOC. STACK 1 JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	√
26		108 3/4	676.48	.049	94	1446	.66	.66	3	246	54	250	
27	11	112 1/2	678.23	.054	94	1441	.73	.73	3	246	52	252	
28		116 1/4	680.05	.052	94	1434	.70	.70	3	248	52	252	
29		120	681.85	.040	94	1440	.54	.54	3	248	52	254	
30	12	123 3/4	683.63	.057	94	1427	.73	.73	3	246	52	254	
31		127 1/2	685.44	.046	93	1427	.62	.62	3	246	52	254	
32		131 1/4	687.16	.048	91	1430	.65	.65	3	248	52	256	
33	END	135	688.899										
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* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

ENTROPY

FIELD DATA - METHOD(S) M5/TSO/202

PLANT Jewell Coal & Coke Company — RUN NO. II-3-S1-M5/TSO/202-3

CITY/STATE Vansant, Virginia — JOB NO. 3694 — DATE 10/31/91

SAMPLING LOC. Stack 1 — TIME START 2205

BAROMETRIC PRESSURE, IN. HG 29.0 — STATIC PRESSURE, IN. H2O -.08 — TIME FINISH

LEAK CHECK, VACUUM IN. HG 15 5 5 — OPERATOR ECS

LEAK RATE, CUBIC FEET/MIN. .003 0.002 .002 — ASST(S) LCM

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 68 °F PRE
- ✓ TC 52 °F POST
- ✓ ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS

REAGENT BOX 0501 — METER BOX N 27 — Y 1.0095

PITOT WC 12-1 — Cp .84 — NOZ'L ~~WC12-1~~ — DIA. .500

TC READOUT F57 — TC PROBE WC12-1 — UMBILICAL 28.80

SAMPL'G BOX 84 — ORSAT PUMP 34 — TEDLAR BAG 41

LEAK CHECKS

B 1205.236 — B
E 1205.265 — E

B — B
E — E

B — B
E — E

NOMOGRAPH DATA

DELTA H@	1.778
METER TEMP	90
EST. %H2O	17
C FACTOR	.784
STACK TEMP	1500
REF DELTA P	.134
K FACTOR	13.763

FILTER/XAD	TARE WT.
1252	.5045

FYRITES

6.5%
6.5% BAG

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

TIME	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A-1	0	952.166	.041	76	1473	.56	.56	2	240	59	245	
2		3 3/4	953.76	.048	77	1487	.65	.65	2	241	57	245	
3		7 1/2	955.44	.050	77	1485	.68	.68	2	244	56	246	
4	2	11 1/4	957.19	.052	76	1490	.70	.70	2	254	54	247	
5		15	958.95	.048	76	1490	.65	.65	2	259	52	248	
6		18 3/4	960.65	.050	77	1491	.68	.68	2	260	52	24	
7	3	22 1/2	962.38	.053	77	1493	.72	.72	2	256	51	250	
8		26 1/4	964.16	.054	77	1496	.73	.73	2	253	51	250	
9		30	965.96	.057	78	1497	.77	.77	2	252	50	252	
10	4	33 3/4	967.80	.061	78	1496	.83	.83	2	249	51	253	
11		37 1/2	969.72	.063	80	1495	.86	.86	3	251	50	255	
12		41 1/4	971.67	.066	82	1497	.90	.90	3	251	49	254	
13	5	45	973.68	.069	83	1496	.94	.94	3	250	49	254	
14		48 3/4	975.74	.070	83	1499	.95	.95	3	248	47	255	
15		52 1/2	977.78	.081	84	1500	1.1	1.1	3	244	48	257	
16	6	56 1/4	979.95	.09	85	1500	1.23	1.23	3	247	48	256	
17		60	982.28	.075	88	1499	1.03	1.03	3	251	47	257	
18		63 3/4	984.52	.077	90	1499	1.06	1.06	3	255	47	254	
19	7	67 1/2	986.70	.076	91	1498	1.05	1.05	3	257	46	254	
20		71 1/4	988.90	.068	91	1492	.94	.94	3	259	46	255	
21		75	990.98	.081	91	1497	1.12	1.12	3	266	46	259	
22	8	~~78 3/4~~	993.25	.082	90	1494	1.13	1.13	3	265	48	260	
23		82 1/2	995.51	.080	89	1493	1.1	1.1	3	268	48	258	
24		86 1/4	997.76	.070	89	1493	.97	.97	3	266	47	260	
25	9	90	999.85	.073	88	1493	1.0	1.0	3	263	48	261	

* FILTER EXIT for NJ Method 1. FILTER BOX for all other

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a cc

Min. (θ)	m	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
149.602	0.0693	83	1483	0.95	

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ENTROPY

FIELD DATA (continued)

pg 2 of 3

PLANT Jewell Coal & Coke Co. RUN NO. II-3-51-MS/202-3

SAMPLING LOC. Stack JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	√
26		93 3/4	1002.00	.077	88	1490	1.06	1.06	3	260	47	260	
27		97 1/2	1004.19	.075	88	1489	1.04	1.04	3	262	46	262	
28	10	101 1/4	1006.38	.076	88	1488	1.05	1.05	3	262	45	260	
29		105	1008.54	.073	88	1487	1.01	1.01	3	261	46	258	
30		108 3/4	1010.69	.071	88	1488	.98	.98	3	260	46	258	
31	11	112 1/2	1012.76	.072	86	1487	.99	.99	3	266	47	260	
32		116 1/4	1014.86	.067	86	1483	.93	.93	3	264	48	260	
33		120	1016.92	.066	84	1484	.91	.91	3	264	48	259	
34	12	123 3/4	1018.94	.067	83	1486	.92	.92	3	266	49	255	
35		127 1/2	1020.96	.076	82	1488	1.04	1.04	3	260	48	255	
36		131 1/4	1023.12	.072	80	1487	.98	.98	3	260	48	254	
37	B 1	135	1025.236	0.043	74	1484	0.58	0.58	2	256	57	249	
38		3 3/4	1026.92	0.042	76	1481	0.57	0.57	2	255	55	250	
39		7 1/2	1028.56	0.052	78	1482	0.71	0.71	2	255	53	250	
40	2	11 1/4	1030.39	0.048	79	1483	0.65	0.65	2	254	52	249	
41		15	1032.13	0.058	79	1481	0.79	0.79	3	253	51	248	
42		18 3/4	1034.00	0.054	80	1481	0.74	0.74	3	253	51	247	
43	3	22 1/2	1035.85	0.058	80	1481	0.79	0.79	3	250	49	245	
44		26 1/4	1037.76	0.074	80	1486	1.01	1.01	3	250	49	242	
45		30	1039.90	0.054	80	1485	0.74	0.74	3	250	48	241	
46	4	33 3/4	1041.76	0.069	78	1486	0.94	0.94	3	249	48	241	
47		37 1/2	1043.83	0.053	78	1488	0.72	0.72	3	249	47	240	
48		41 1/4	1045.66	0.070	77	1486	0.95	0.95	3	248	47	240	
49	5	45	1047.89	0.058	78	1486	0.79	0.79	3	248	47	240	
50		48 3/4	1049.66	0.073	78	1485	0.99	0.99	3	248	46	240	
51		52 1/2	1051.78	0.076	79	1486	1.03	1.03	3	249	46	239	
52	6	56 1/4	1053.86	0.076	80	1482	1.04	1.04	3	249	46	239	
53		60	1056.03	0.079	81	1479	1.08	1.08	3	249	46	239	
54		63 3/4	1058.19	0.083	83	1477	1.14	1.14	3	251	46	240	
55	7	67 1/2	1060.44	0.087	84	1473	1.20	1.20	4	250	45	240	
56		71 1/4	1062.67	0.077	86	1470	1.07	1.07	3	250	45	240	
57		75	1064.99	0.087	86	1470	1.21	1.21	4	249	45	239	
58	8	78 3/4	1067.31	0.076	88	1468	1.06	1.06	4	249	45	239	
59		82 1/2	1069.52	0.088	89	1469	1.23	1.23	4	249	45	239	
60		86 1/4	1071.84	0.081	89	1468	1.13	1.13	4	248	44	240	
61	9	90	1074.12	0.078	89	1468	1.09	1.09	4	248	45	241	
62		93 3/4	1076.34	0.065	89	1465	0.91	0.91	3	247	45	240	
63		97 1/2	1078.44	0.086	89	1465	1.21	1.21	4	247	45	240	
64	10	101 1/4	1080.82	0.089	89	1466	1.25	1.25	4	248	46	241	
65		105	1082.20	0.085	90	1465	1.19	1.19	4	248	46	241	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal + Coke Co.

RUN NO. II-3-51-M5/TSO/202-

SAMPLING LOC. STACK 1

JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26		108 3/4	1085.61	0.092	90	1465	1.29	1.29	4	250	46	239
27	11	112 1/2	1087.95	0.080	90	1465	1.12	1.12	4	250	46	238
28		116 1/4	1090.29	0.087	87	1458	1.22	1.22	4	249	46	239
29		120	1092.50	0.082	87	1459	1.15	1.15	4	248	47	239
30	12	123 3/4	1094.76	0.087	86	1458	1.22	1.22	4	248	47	240
31		127 1/2	1097.09	0.095	84	1457	1.32	1.32	4	249	47	241
32		131 1/4	1099.56	0.078	85	1456	1.09	1.09	4	250	47	241
33	END	135	1101.797									
34												
35												
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* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condens...

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

ENTROPY

FIELD DATA - METHOD(S) M5/TSO/202

PLANT Jewell Coal & Coke Company — RUN NO. III-1-S1-M5/TSO/202-1

CITY/STATE Vansant, Virginia — JOB NO. 3694 — DATE 10/30/91

SAMPLING LOC. Stack 1 — TIME START 0555

BAROMETRIC PRESSURE, IN. HG ____ STATIC PRESSURE, IN. H2O ____ — TIME FINISH 0948

LEAK CHECK, VACUUM IN. HG 15 5 5 — OPERATOR CGM

LEAK RATE, CUBIC FEET/MIN. .012 .010 .001 — ASST(S) ____

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 44 °F PRE
- ✓ TC 64 °F POST
- ✓ ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS

REAGENT BOX RB3702 — METER BOX N-7 Y 1.0095

PITOT WL-10-1 Cp .84 — NOZ'L 814 DIA. .515

TC READOUT 27 — TC PROBE WL-13-1 — UMBILICAL W70/83

SAMPL'G BOX 61 — ORSAT PUMP 34 — TEDLAR BAG 63

LEAK CHECKS

B 385.456 — B ____

E 385.515 — E ____

Reagent Box

NOMOGRAPH DATA

DELTA Hø	1.778
METER TEMP	80
EST. %H2O	20
C FACTOR	.724
STACK TEMP	1500
REF DELTA P	.129
K FACTOR	14.304

FILTER/XAD	TARE WT.
1394	.5008

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

TIME	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	1	0	339.000	.047	48	1509	.59	.59	2	244	56	248	
2		4	341.09	.051	48	1508	.64	.64	2	244	56	248	
3	2	8	343.27	.048	48	1506	.60	.60	2	244	56	248	
4		12	344.19	.048	50	1504	.60	.60	2	242	54	250	
5	3	16	345.88	.058	52	1506	.80	.80	3	242	54	250	
6		20	347.63	.059	54	1503	.80	.80	3	242	56	250	
7	4	24	349.52	.047	55	1504	.64	.64	3	243	58	250	
8		28	351.28	.057	58	1504	.78	.78	3	242	54	250	
9	5	32	353.24	.054	60	1503	.74	.74	3	244	52	248	
10		36	355.15	.055	62	1504	.76	.76	3	244	52	250	
11	6	40	357.09	.054	62	1506	.75	.75	3	248	52	254	
12		44	359.02	.062	62	1506	.86	.86	3	248	54	254	
13	7	48	360.99	.060	64	1504	.83	.83	3	248	54	256	
14		52	362.98	.051	64	1505	.71	.71	3	250	54	256	
15	8	56	364.90	.059	64	1502	.82	.82	3	247	54	254	
16		60	366.91	.064	66	1505	.89	.89	3	249	52	254	
17	9	64	368.98	.064	66	1504	.89	.89	3	249	52	256	
18		68	371.21	.054	66	1500	.91	.91	3	251	52	256	
19	10	72	373.37	.053	66	1489	.74	.74	3	251	54	256	
20		76	375.26	.063	66	1502	.88	.88	3	252	54	257	
21	11	80	377.28	.054	66	1500	.75	.75	3	253	56	257	
22		84	379.23	.064	66	1504	.89	.89	3	255	56	255	
23	12	88	381.32	.054	66	1504	.75	.75	3	248	54	250	
24		92	383.42	.057	66	1501	.80	.80	3	246	54	258	
25	B1	96	385.456	.04	61	1504	.55	.55	2	238	54	240	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

____	92.008	0.0545	64	1,503	~~0.54~~ 0.75
min. (θ)	.m	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal + Coke Company RUN NO. III-1-S1-M5/TSO/202-

SAMPLING LOC. Stack 1 JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26		100	387.12	.053	62	1501	.74	.74	3	240	56	240
27	2	104	388.71	.053	63	1502	.74	.74	3	240	56	244
28		108	390.44	.048	64	1504	.67	.67	3	242	54	248
29	3	112	392.26	.056	64	1500	.77	.77	3	240	54	248
30		116	394.20	.052	64	1501	.72	.72	3	240	54	246
31	4	120	396.15	.049	64	1503	.68	.68	3	242	54	245
32		124	398.03	.054	64	1505	.75	.75	3	242	53	244
33	5	128	399.91	.057	65	1504	.79	.79	3	243	53	246
34		132	401.86	.058	65	1505	.81	.81	3	243	53	246
35	6	136	403.86	.054	66	1505	.75	.75	3	242	52	245
36		140	405.80	.055	67	1504	.77	.77	3	242	53	245
37	7	144	407.75	.061	67	1504	.85	.85	3	241	53	246
38		148	409.79	.059	67	1502	.83	.83	3	241	54	245
39	8	152	411.80	.051	67	1501	.71	.71	3	240	54	244
40		156	413.69	.049	67	1501	.69	.69	3	240	55	244
41	9	160	415.53	.051	68	1500	.72	.72	4	241	55	244
42		164	417.38	.053	70	1502	.75	.75	4	242	56	245
43	10	168	419.29	.055	72	1502	.78	.78	4	242	56	245
44		172	421.19	.054	73	1502	.76	.76	4	241	56	245
45	11	176	423.18	.057	75	1506	.81	.81	4	241	57	244
46		180	425.12	.058	76	1505	.82	.82	4	241	57	245
47	12	184	427.11	.055	76	1503	.78	.78	5	242	57	246
48		188	429.11	.056	76	1498	.80	.80	5	243	57	248
49	End	192	431.067									
50												
51												
52												
53												
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55												
56												
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* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

Run no. on disk (3-S12021)

ENTROPY

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FIELD DATA - METHOD(S) M5/TSO/202

PLANT: Jewell Coal & Coke Company — RUN NO. III-2-S1-M5/TSO/202

CITY/STATE: Vansant, Virginia — JOB NO. 3694 — DATE 10/30/91

SAMPLING LOC.: Stack 1 — TIME START 505

BAROMETRIC PRESSURE, IN. HG 28.8 — STATIC PRESSURE, IN. H2O -.08 — TIME FINISH 923

LEAK CHECK, VACUUM IN. HG 15 5 5 — OPERATOR CGM

LEAK RATE, CUBIC FEET/MIN. .008 .006 — ASST(S)

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 46 °F PRE
- ✓ TC 60 °F POST
- ✓ ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS

REAGENT BOX 0237 — METER BOX 27 — Y 1.0095

PITOT — Cp .84 — NOZ'L — DIA. .501

TC READOUT E57 — TC PROBE — UMBILICAL 677-80

SAMPL'G BOX 45 — ORSAT PUMP 34 — TEDLAR BAG 41

LEAK CHECKS

B 744.543 — B — B — B — B — B

E 744.576 — E — E — E — E — E

FILTER/XAD	TARE WT.
1259	.5050

NOMOGRAPH DATA

DELTA Hø	1.778
METER TEMP	80
EST. %H2O	20
C FACTOR	.724
STACK TEMP	1500
REF DELTA P	.145
K FACTOR	12.709

PYRITES

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

TIME	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A 1	0	689.257	.025	63	1421	.32	.32	2	250	58	268	
2	"	5	690.74	.034	64	1473	.43	.43	2	256	56	258	
3	2	10	692.56	.050	66	1470	.63	.63	2	246	56	258	
4		15	694.15	.037	70	1470	.47	.47	2	246	54	254	
5	3	20	696.65	.040	72	1471	.51	.51	2	246	54	254	
6		25	698.63	.046	74	1471	.59	.59	2	244	54	254	
7	4	30	700.64	.046	76	1470	.59	.59	2	244	54	254	
8		35	702.50	.046	78	1467	.54	.59	2	244	56	254	
9	5	40	705.01	.045	78	1471	.58	.58	2	242	54	254	
10		45	707.20	.059	80	1477	.76	.76	2	244	54	254	
11	6	50	709.63	.060	80	1475	.78	.78	2	245	56	254	
12		55	712.13	.061	81	1474	.79	.79	3	245	54	255	
13	7	60	714.68	.062	82	1479	.80	.80	3	246	54	255	
14		65	717.24	.049	84	1480	.64	.64	3	246	54	255	
15	8	70	719.54	.063	85	1484	.82	.82	3	242	52	256	
16		75	722.09	.073	86	1486	.95	.95	3	247	52	254	
17	9	80	724.87	.068	86	1480	.88	.88	3	252	52	256	
18		85	727.65	.057	88	1480	.74	.74	3	250	54	254	
19	10	90	730.13	.051	88	1482	.67	.66	3	250	54	254	
20		95	732.42	.055	88	1476	.72	.72	3	254	52	256	
21	11	100	734.86	.067	88	1480	.88	.88	3	250	52	258	
22		105	737.54	.044	89	1477	.58	.58	3	250	52	258	
23	12	110	739.10	.057	90	1472	.75	.75	3	250	52	256	
24		115	742.12	.054	90	1471	.71	.71	3	254	54	256	
25	B 1	120	744.543	.028	47	1492	.36	.36	3	246	54	252	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	.m	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	109.272	0.0499	84	1492	0.65

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal & Coke RUN NO. TU-2-51-MS1202-2

SAMPLING LOC. Stack 1 JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26		5	746.25	.030	87	1496	.39	.39	2	245	58	256
27	2	10	747.98	.039	87	1492	.51	.51	2	251	58	256
28		15	749.94	.038	88	1495	.44	.44	2	254	56	258
29	3	20	751.94	.032	89	1496	.42	.42	2	250	56	252
30		25	753.76	.051	90	1513	.66	.66	3	248	54	252
31	4	30	756.03	.043	90	1495	.56	.56	3	248	54	252
32		35	758.19	.052	90	1508	.67	.67	3	254	54	256
33	5	40	760.52	.055	88	1511	.71	.71	3	250	54	250
34		45	762.87	.054	86	1512	.69	.69	3	244	54	247
35	6	50	765.25	.051	86	1514	.65	.65	3	251	53	253
36		55	767.57	.051	86	1515	.65	.65	3	248	53	249
37	7	60	769.86	.053	87	1516	.68	.68	3	246	52	247
38		65	772.19	.056	88	1515	.72	.72	3	244	52	245
39	8	70	774.58	.058	88	1517	.74	.74	3	243	52	245
40		75	777.05	.059	89	1518	.76	.76	3	245	50	248
41	9	80	779.56	.061	90	1520	.78	.78	3	254	50	257
42		85	782.13	.063	91	1523	.81	.81	3	248	50	250
43	10	90	784.74	.055	88	1525	.70	.70	3	239	52	240
44		95	787.16	.056	86	1525	.71	.71	3	240	52	242
45	11	100	789.57	.051	86	1523	.65	.65	3	242	53	243
46		105	791.88	.050	86	1522	.64	.64	3	244	53	245
47	12	110	794.15	.048	87	1521	.61	.61	3	245	53	247
48		115	796.38	.046	87	1519	.59	.59	3	247	54	247
49	END	120	798.562									
50												
51												
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* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

ENTROPY

FIELD DATA - METHOD(S) M5/T50/202

PLANT JEWELL COAL & COKE — RUN NO. III-3-51-M5/T50/202

CITY/STATE VANSANT, VA. — JOB NO. 3694 — DATE 11/1/91

SAMPLING LOC. STACK 1 — TIME START 0421

BAROMETRIC PRESSURE, IN. HG 28.7 — STATIC PRESSURE, IN. H_2O -0.07 — TIME FINISH

LEAK CHECK, VACUUM IN. HG 15 5 8 — OPERATOR DLS

LEAK RATE, CUBIC FEET/MIN. .002 .001 .001 — ASST(S) CGM

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 52 °F PRE
- ✓ TC 60 °F POST
- ✓ ORSAT SYSTEM

FILTER/~~XAD~~	TARE WT.
1252	0.5045

EQUIPMENT I.D. NUMBERS

REAGENT BOX 0501 — METER BOX N27 — Y 1.0095

PITOT WC-12-1 — C_p .84 — NOZ'L — DIA. .500

TC READOUT F57 — TC PROBE WC-12-1 — UMBILICAL 78,80

SAMPL'G BOX 84 — ORSAT PUMP 34 — TEDLAR BAG 53

NOMOGRAPH DATA

DELTA H@	1.778
METER TEMP	80
EST. $\%H_2O$	17
C FACTOR	0.769
STACK TEMP	1500
REF DELTA P	0.136
K FACTOR	13.513

LEAK CHECKS

B 161.168	B
E 161.212	E
B	B
E	E
B	B
E	E

FYRITES

6.5%
6.5%

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A1	0	102.917	0.028	60	1457	0.37	0.37	2	251	58	239	
2		4	104.28	0.025	60	1456	0.33	0.33	2	249	56	241	
3		8	105.53	0.026	60	1456	0.35	0.35	2	249	54	242	
4	2	12	106.82	0.033	61	1454	0.44	0.44	2	250	53	242	
5		16	108.27	0.029	63	1459	0.39	0.39	2	250	53	242	
6		20	109.66	0.027	64	1457	0.36	0.36	2	252	51	242	
7	3	24	111.02	0.029	66	1457	0.39	0.39	2	251	49	240	
8		28	112.45	0.043	67	1460	0.58	0.58	2	253	47	240	
9		32	114.22	0.041	68	1461	0.55	0.55	2	253	46	241	
10	4	36	115.88	0.045	68	1450	0.61	0.61	2	254	46	240	
11		40	117.62	0.044	69	1460	0.60	0.60	2	252	45	240	
12		44	119.35	0.032	70	1459	0.44	0.44	2	252	45	239	
13	5	48	120.82	0.055	71	1459	0.75	0.75	2	251	44	238	
14		52	122.60	0.042	73	1460	0.57	0.57	2	251	45	239	
15		56	123.74	0.051	74	1461	0.70	0.70	2	250	45	239	
16	6	60	125.58	0.059	74	1461	0.81	0.81	2	250	44	240	
17		64	127.53	0.052	75	1462	0.71	0.71	2	251	44	240	
18		68	129.57	0.056	74	1461	0.77	0.77	2	251	44	239	
19	7	72	131.84	0.048	74	1459	0.66	0.66	2	251	44	239	
20		76	133.47	0.049	73	1458	0.67	0.67	2	249	45	239	
21		80	135.36	0.033	72	1455	0.45	0.45	2	249	45	241	
22	8	84	136.86	0.040	73	1457	0.55	0.55	2	249	45	241	
23		88	138.52	0.034	74	1457	0.47	0.47	2	249	45	242	
24		92	140.04	0.030	75	1458	0.41	0.41	2	250	45	241	
25	9	96	141.49	0.032	76	1457	.44	0.44	2	249	45	241	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	116.348	0.0385	71	1460	0.53

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ENTROPY

FIELD DATA (continued)

PLANT JEWELL COAL + COKE

RUN NO. III-3-51-M5/T50/202-3

SAMPLING LOC. STACK 1

JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26		100	142.95	.039	76	1455	.54	.54	2	250	45	247
27		104	144.58	.044	78	1457	.61	.61	2	250	45	244
28	10	108	146.36	.046	77	1459	.63	.63	2	248	45	244
29		112	148.14	.038	76	1458	.52	.52	2	248	45	246
30		116	149.76	.047	75	1458	.64	.64	2	248	45	246
31	11	120	151.50	.036	73	1458	.49	.49	2	246	44	246
32		124	153.10	.035	72	1450	.48	.48	2	246	44	246
33		128	154.66	.034	72	1450	.47	.47	2	247	45	244
34	12	132	156.23	.040	72	1448	.55	.55	2	246	45	248
35		136	157.92	.038	73	1450	.52	.52	2	246	47	248
36		140	159.6	.035	74	1455	.48	.48	2	248	47	248
37	1	144/0	161.168	0.020	69	1449	0.27	0.27	2	249	48	242
38		4	162.43	0.033	69	1452	0.45	0.45	2	249	47	242
39		8	163.92	0.023	70	1452	0.31	0.31	2	251	46	240
40	2	12	165.15	0.028	70	1454	0.38	0.38	2	251	46	240
41		16	166.31	0.028	71	1453	0.38	0.38	2	252	45	240
42		20	167.54	0.036	72	1454	0.49	0.49	2	252	45	240
43	3	24	169.11	0.034	73	1454	0.47	0.47	2	251	45	240
44		28	170.67	0.038	73	1459	0.52	0.52	2	251	44	239
45		32	172.30	0.040	72	1461	0.55	0.55	2	250	44	240
46	4	36	174.03	0.026	72	1460	0.35	0.35	2	250	45	240
47		40	175.39	0.026	69	1461	0.35	0.35	2	250	45	240
48		44	176.76	0.044	68	1463	0.59	0.59	2	249	44	239
49	5	48	178.62	0.039	67	1464	0.53	0.53	2	248	45	240
50		52	180.21	0.037	67	1465	0.50	0.50	2	248	45	240
51		56	181.78	0.042	67	1465	0.57	0.57	2	247	45	239
52	6	60	183.47	0.051	66	1465	0.69	0.69	2	247	46	239
53		64	184.91	.051	66	1468	.68	.68	3	246	46	244
54		68	186.64	.052	67	1469	.70	.70	4	246	46	245
55	7	72	188.60	.043	68	1470	.58	.58	6	248	46	248
56		76	190.50	.044	69	1467	.59	.59	6	247	47	246
57		80	192.29	.042	70	1467	.57	.57	3	247	47	245
58	8	84	194.08	.048	72	1467	.65	.65	3	250	47	251
59		88	195.88	.047	74	1470	.64	.64	3	250	46	250
60		92	197.69	.047	74	1468	.64	.64	3	253	46	255
61	9	96	199.50	.044	75	1470	.60	.60	3	252	46	252
62		100	201.24	.044	75	1470	.60	.60	3	250	47	251
63		104	203.00	.045	76	1469	.62	.62	3	249	47	250
64	10	108	204.79	.044	77	1470	.60	.60	3	247	47	247
65		112	206.53	.044	77	1468	.60	.60	3	247	48	249

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

ENTROPY

FIELD DATA (continued)

PLANT JEWELL COAL + COKE

RUN NO. III-3-51-NJ/TJO/202-3

SAMPLING LOC. STACK 1

JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
26		118	208.28	.043	77	1465	.59	.59	3	249	49	251	
27	11	120	210.01	.038	77	1463	.52	.52	3	248	49	247	
28		124	211.68	.037	75	1462	.51	.51	3	243	49	248	
29		128	213.26	.036	74	1459	.49	.49	3	245	49	246	
30	12	132	214.82	.033	72	1458	.45	.45	3	247	50	248	
31		136	216.29	.034	72	1458	.46	.46	3	250	50	252	
32		140	217.80	.033	72	1459	.45	.45	3	251	50	251	
33	OFF	288	219.309										
34													
35													
36													
37													
38													
39													
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62													
63													
64													
65													

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

ENTROPY

FIELD DATA - METHOD(S) M5/TSO/202

PLANT: Jewell Coal & Coke Company — RUN NO. IV-1-S1-M5/TSO/202-1

CITY/STATE: Vansant, Virginia — JOB NO. 3694 — DATE 10/30/91

SAMPLING LOC.: Stack 1 — TIME START 1200

BAROMETRIC PRESSURE, IN. HG 29.0 — STATIC PRESSURE, IN. H2O -.08 — TIME FINISH 1456

LEAK CHECK, VACUUM IN. HG 15 5 5 — OPERATOR JMC

LEAK RATE, CUBIC FEET/MIN. .001 .001 .001 — ASST(S)

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 75 °F PRE
- ✓ TC 77 °F POST
- ✓ ORSAT SYSTEM

FILTER/XAD	TARE WT.
1295	.5028

EQUIPMENT I.D. NUMBERS

REAGENT BOX 202 — METER BOX N-27 — Y 1.0095

PITOT WC12-1 — Cp .84 — NOZ'L [redacted] — DIA. .500

TC READOUT N-27 — TC PROBE E-26 — UMBILICAL 470/13

SAMPL'G BOX 84 — ORSAT PUMP 34 — TEDLAR BAG 12

NOMOGRAPH DATA

DELTA H@	1.778	
METER TEMP	90	
EST. %H2O	20	
C FACTOR	.737	
STACK TEMP	1500	
REF DELTA P	~~.120~~	.142
K FACTOR	~~14.569~~	12.944

LEAK CHECKS

B	E	B	E
444.121	464.165		

PYRITES

6½

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

RUN	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	B-1	0 ON	431.898	.029	88	1496	.38	.38	2	238	61	241	
2		3	433.14	.028	88	1498	.36	.36	2	240	60	242	
3	2	6	434.02	.034	89	1500	.44	.44	2	240	58	242	
4		9	435.14	.035	90	1500	.46	.46	2	239	58	242	
5	3	12	436.27	.041	91	1501	.53	.53	2	240	57	243	
6		15	437.48	.043	91	1502	.56	.56	2	241	57	244	
7	4	18	438.76	.047	92	1503	.61	.61	2	240	57	244	
8		21	440.09	.047	91	1502	.61	.61	2	240	56	244	
9	5	24	441.42	.049	90	1504	.64	.64	2	241	56	244	
10		27	442.76	.048	90	1507	.62	.62	2	241	56	245	
11	6	30	444.12	.052	90	1517	.67	.67	2	240	55	246	
12		33	445.53	.052	90	1521	.67	.67	2	240	55	245	
13	7	36	446.94	.053	91	1522	.68	.68	2	239	55	243	
14		39	448.34	.054	92	1522	.70	.70	2	238	55	241	
15	8	42	449.78	.056	93	1524	.72	.72	2	239	54	243	
16		45	451.24	.054	92	1524	.70	.70	2	237	53	243	
17	9	48	452.68	.057	91	1526	.73	.73	2	238	53	242	
18		51	454.15	.057	91	1525	.73	.73	2	239	52	240	
19	10	54	455.61	.053	91	1523	.68	.68	2	240	52	242	
20		57	457.03	.052	92	1522	.67	.67	2	242	53	245	
21	11	60	458.42	.053	93	1519	.69	.69	2	244	53	247	
22		1:03	459.82	.054	94	1516	.70	.70	2	242	53	246	
23	12	1:06	461.27	.053	95	1515	.69	.69	2	242	54	245	
24		1:09	462.69	.052	96	1515	.68	.68	2	243	54	244	
25	A-1	1:12/0	464.121	.022	98	1500	.29	.29	2	248	63	249	

* FILTER EXIT for NJ Method 1. FILTER BOX for all r

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a con

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
60.177	0.0416	94	1,520	0.55	

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal + Coke RUN NO. W-1-S1-MS/TS0/202-

SAMPLING LOC. Stack 1 JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	√
26	A-1	3	465.09	.023	99	1501	.30	.30	2	247	60	248	
27	2	6	466.01	.029	99	1505	.38	.38	2	246	59	248	
28		9	467.01	.028	99	1507	.37	.37	2	246	59	247	
29	3	12	468.04	.032	99	1514	.42	.42	2	244	58	246	
30		15	469.12	.033	99	1516	.43	.43	2	241	58	244	
31	4	18	470.23	.034	99	1520	.44	.44	2	238	57	241	
32		21	471.36	.037	99	1522	.48	.48	2	237	57	241	
33	5	24	472.55	.036	99	1527	.47	.47	2	238	57	242	
34		27	473.74	.037	99	1531	.48	.48	2	238	56	242	
35	6	30	474.93	.039	99	1534	.51	.51	2	237	56	240	
36		33	476.13	.039	100	1535	.51	.51	2	236	56	240	
37	7	36	477.33	.041	100	1535	.53	.53	2	236	55	240	
38		39	478.56	.040	99	1536	.52	.52	2	237	55	240	
39	8	42	479.80	.040	98	1536	.52	.52	2	238	54	241	
40		45	481.04	.041	98	1536	.53	.53	2	240	54	242	
41	9	48	482.29	.043	97	1538	.56	.56	2	239	55	242	
42		51	483.57	.044	96	1538	.57	.57	2	241	55	244	
43	10	54	484.86	.041	95	1539	.53	.53	2	243	56	245	
44		57	486.13	.040	94	1540	.51	.51	2	242	56	244	
45	11	60	487.40	.039	93	1541	.50	.50	2	245	56	247	
46		1:03	488.62	.038	92	1540	.49	.49	2	246	57	248	
47	12	1:06	489.81	.036	91	1539	.46	.46	2	248	57	250	
48		1:09	490.98	.036	91	1539	.46	.46	2	245	58	248	
49	OFF	1:12	492.119										
50		2:24											
51													
52													
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65													

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

ENTROPY

FIELD DATA - METHOD(S) M5/TSO/202

PLANT Jewell Coal & Coke Company — RUN NO. IV-2-S1-M5/TSO/202-2

CITY/STATE Vansant, Virginia — JOB NO. 3694 — DATE 10/31/91

SAMPLING LOC. Stack 1 — TIME START 1100

BAROMETRIC PRESSURE, IN. HG 28.8 — STATIC PRESSURE, IN. H2O -.08 — TIME FINISH 1428

LEAK CHECK, VACUUM IN. HG 15 5 5 — OPERATOR JMC

LEAK RATE, CUBIC FEET/MIN. .002 .001 .001 — ASST(S)

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 69 °F PRE
- ✓ TC 75 °F POST
- ✓ ORSAT SYSTEM

FILTER/XAD	TARE WT.
1261	.5075

EQUIPMENT I.D. NUMBERS

REAGENT BOX ____ METER BOX N-27 Y 1.0095

PITOT ____ Cp .84 NOZ'L ____ DIA. .500

TC READOUT N-27 TC PROBE ____ UMBILICAL 12

SAMPL'G BOX 30 ORSAT PUMP 34 TEDLAR BAG 12

NOMOGRAPH DATA

DELTA H@	1.778
METER TEMP	85
EST. %H2O	17
C FACTOR	.777
STACK TEMP	1500
REF DELTA P	.135
K FACTOR	13.638

LEAK CHECKS

B 843.810 E 843.898

FYRITES

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

RUN NO.	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	B-1	0/0N	800.605	.025	77	1500	.34	.34	2	244	65	248	
2		4	801.91	.027	78	1501	.36	.36	2	248	63	250	
3	2	8	803.24	.031	80	1506	.42	.42	2	251	60	252	
4		12	804.65	.033	81	1505	.45	.45	2	249	59	250	
5	3	16	806.20	.038	83	1505	.52	.52	2	249	59	249	
6		20	807.79	.037	86	1505	.51	.51	2	252	59	253	
7	4	24	809.37	.041	88	1507	.56	.56	2	254	58	256	
8		28	811.11	.042	91	1508	.58	.58	2	256	58	257	
9	5	32	812.86	.046	94	1509	.64	.64	2	256	58	256	
10		36	814.72	.048	96	1511	.67	.67	2	252	57	253	
11	6	40	816.58	.049	98	1515	.68	.68	2	251	57	252	
12		44	818.51	.050	100	1517	.70	.70	2	250	57	250	
13	7	48	820.45	.049	101	1520	.68	.68	2	251	56	251	
14		52	822.37	.050	103	1520	.70	.70	2	250	56	250	
15	8	56	824.30	.048	105	1518	.67	.67	2	252	55	252	
16		1:00	826.22	.048	106	1516	.68	.68	2	252	55	252	
17	9	1:04	828.10	.052	107	1515	.73	.73	3	252	54	253	
18		1:08	830.12	.051	107	1514	.72	.72	3	255	54	256	
19	10	1:12	832.08	.052	108	1514	.74	.74	3	256	53	258	
20		1:16	834.07	.052	108	1513	.74	.74	3	254	53	258	
21	11	1:20	836.09	.049	107	1511	.69	.69	3	253	54	255	
22		1:24	838.00	.049	107	1510	.69	.69	3	253	54	253	
23	12	1:28	839.94	.050	107	1508	.71	.71	3	251	55	252	
24		1:32	841.87	.050	106	1507	.71	.71	3	249	55	250	
25	A-1	1:36/0	843.810	.024	103	1498	.40	.40	2	240	63	242	

* FILTER EXIT for NJ Method 1. FILTER BOX for all other

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a con

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	86.895	0.0443	101	1511	0.63

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal + Coke Co. RUN NO. IV-2-S1-MS/2021-2

SAMPLING LOC. Stack 1 JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
26	A-1	4	845.32	.031	103	1498	.44	.44	2	237	61	240	
27	2	8	846.84	.030	103	1500	.42	.42	2	238	60	240	
28		12	848.32	.032	104	1501	.45	.45	2	245	57	245	
29	3	16	849.84	.036	104	1502	.51	.51	2	250	56	251	
30		20	851.43	.036	105	1503	.51	.51	2	252	56	252	
31	4	24	853.09	.038	105	1507	.54	.54	2	250	56	256	
32		28	854.78	.039	105	1510	.55	.55	2	253	55	253	
33	5	32	856.50	.041	105	1513	.58	.58	2	255	55	256	
34		36	858.25	.042	106	1515	.59	.59	2	248	54	249	
35	6	40	860.01	.043	105	1517	.60	.60	2	250	54	251	
36		44	861.79	.045	105	1518	.63	.63	3	251	53	251	
37	7	48	863.65	.049	106	1520	.69	.69	3	249	53	249	
38		52	865.59	.050	106	1526	.70	.70	3	244	53	245	
39	8	56	867.53	.056	107	1523	.79	.79	3	245	54	247	
40		1:00	869.55	.056	105	1522	.79	.79	3	247	54	248	
41	9	1:04	871.61	.054	104	1520	.76	.76	3	248	55	249	
42		1:08	873.62	.055	104	1519	.77	.77	3	253	55	254	
43	10	1:12	875.64	.056	104	1516	.79	.79	3	254	56	254	
44		1:16	877.68	.056	105	1515	.79	.79	3	253	56	254	
45	11	1:20	879.76	.051	105	1514	.72	.72	3	257	57	257	
46		1:24	881.73	.051	105	1512	.72	.72	3	256	57	256	
47	12	1:28	883.70	.052	106	1512	.73	.73	3	253	58	255	
48		1:32	885.66	.054	107	1513	.76	.76	3	249	58	250	
49	OFF	1:36	887.588										
50		3:12											
51													
52													
53													
54													
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* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

ENTROPY

FIELD DATA - METHOD(S) M5/TSO/202

PLANT Jewell Coal & Coke Company — RUN NO. IV-3-S1-M5/TSO/202-

CITY/STATE Vansant, Virginia — JOB NO. 3694 — DATE 10/1/91

SAMPLING LOC. Stack 1 — TIME START 1030

BAROMETRIC PRESSURE, IN. HG 28.7 — STATIC PRESSURE, IN. H2O -0.1 — TIME FINISH 1440

LEAK CHECK, VACUUM IN. HG 14 4 5 — OPERATOR JMC

LEAK RATE, CUBIC FEET/MIN. .002 .002 .002 — ASST(S)

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 61 °F PRE
- ✓ TC 64 °F POST
- ✓ ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS

REAGENT BOX ____ METER BOX N-27 Y 1.0095

PITOT ____ Cp .84 NOZ'L ____ DIA. .500

TC READOUT N-27 TC PROBE ____ UMBILICAL ____

SAMPL'G BOX 61 ORSAT PUMP — TEDLAR BAG ____

LEAK CHECKS

B 273.649	B
E 273.684	E
B	B
E	E
B	B
E	E

NOMOGRAPH DATA

DELTA Hø	1.778
METER TEMP	85
EST. %H2O	17
C FACTOR	.777
STACK TEMP	1500
REF DELTA P	.135
K FACTOR	13.638

FILTER/XAD	TARE WT.
1260	~~1.524~~ .5029

FYRITES

6.5 6.5

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	B-12	0/0N	219.551	.042	70	1499	.56	.56	2	240	67	242	
2		5	221.63	.048	71	1502	.64	.64	2	250	62	250	
3	21	10	223.89	.051	73	1503	.68	.68	2	252	60	251	
4		15	226.22	.053	75	1505	.71	.71	2	250	58	252	
5	30	20	228.60	.054	76	1506	.72	.72	2	245	57	246	
6		25	231.02	.054	80	1508	.73	.73	2	250	56	252	
7	9	30	233.43	.052	82	1504	.70	.70	2	248	56	249	
8		35	235.80	.053	84	1510	.72	.72	2	250	55	251	
9	8	40	238.22	.054	85	1510	.73	.73	2	250	55	250	
10		45	240.65	.052	86	1511	.71	.71	2	248	55	250	
11	7	50	243.06	.055	88	1514	.75	.75	2	246	53	247	
12		55	245.53	.055	90	1513	.75	.75	2	247	53	250	
13	6	1:00	248.00	.051	91	1511	.70	.70	2	250	53	250	
14		1:05	250.39	.052	92	1511	.72	.72	3	250	52	250	
15	5	1:10	252.748	0.040	93	1512	0.55	0.55	2	251	52	250	
16		1:15	254.961	0.037	93	1511	0.51	0.51	2	252	51	249	
17	4	1:20	256.975	0.048	94	1510	0.66	0.66	2	253	50	250	
18		1:25	259.28	.048	94	1510	.66	.66	2	251	50	250	
19	3	1:30	261.72	.045	94	1511	.62	.62	2	250	50	249	
20		1:35	263.95	.044	93	1510	.61	.61	2	248	51	249	
21	2	1:40	266.17	.037	93	1510	.51	.51	2	250	51	250	
22		1:45	268.19	.035	93	1509	.48	.48	2	250	51	249	
23	1	1:50	270.18	.028	93	1502	.39	.39	2	247	52	248	
24		1:55	271.92	.026	93	1500	.36	.36	2	248	52	250	
25	A-12	2:00/0	273.649	.059	90	1516	.81	.81	2	252	61	255	

* FILTER EXIT for NJ Method 1. FILTER BOX for all othe

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a co

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
____	111.212	0.0479	90	1508	0.66

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal + Coke Co. RUN NO. III-3-S1-MS/202-5

SAMPLING LOC. Stack 1 JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
26	A-12	5	276.25	.056	88	1517	.76	.76	2	254	60	255	
27	11	10	278.75	.053	88	1515	.72	.72	2	251	58	250	
28		15	281.17	.053	88	1515	.72	.72	2	250	57	250	
29	10	20	283.60	.051	90	1514	.70	.70	2	250	57	249	
30		25	286.00	.052	90	1514	.71	.71	2	251	56	250	
31	9	30	288.40	.057	91	1512	.78	.78	3	250	55	249	
32		35	290.94	.056	92	1511	.77	.77	3	248	55	248	
33	8	40	293.47	.060	93	1511	.83	.83	3	250	55	251	
34		45	296.09	.059	94	1510	.82	.82	3	248	54	247	
35	7	50	298.73	.056	95	1508	.78	.78	3	246	54	245	
36		55	301.28	.056	94	1510	.77	.77	3	250	54	250	
37	6	1:00	303.79	.055	95	1510	.76	.76	3	252	54	251	
38		1:05	306.30	.055	96	1509	.76	.76	3	254	53	255	
39	5	1:10	308.81	.053	96	1508	.74	.74	3	251	53	252	
40		1:15	311.29	.054	95	1508	.75	.75	3	250	53	250	
41	4	1:20	313.75	.052	95	1505	.72	.72	3	250	54	250	
42		1:25	316.18	.051	95	1505	.71	.71	3	248	54	250	
43	3	1:30	318.62	.048	93	1501	.67	.67	3	250	55	251	
44		1:35	320.94	.047	92	1500	.65	.65	3	250	55	250	
45	2	1:40	323.25	.038	93	1500	.53	.53	2	248	56	247	
46		1:45	325.34	.037	93	1498	.51	.51	2	250	57	250	
47	1	1:50	327.35	.027	92	1499	.38	.38	2	251	57	252	
48		1:55	329.13	.025	92	1497	.35	.35	2	250	58	250	
49	OFF	4:00	330.798										
50													
51													
52													
53													
54													
55													
56													
57													
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59													
60													
61													
62													
63													
64													
65													

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

ENTROPY

Data Acquisition Sheets
MMTL

FIELD DATA - METHOD(S) MMTL

AFWR

PLANT Jewell Coal + Coke Co — RUN NO. II-0-S1-MMTL-C

CITY/STATE Vansant VA — JOB NO. 3694 — DATE 10/28/91

SAMPLING LOC. Stack 1 — TIME START 2210

BAROMETRIC PRESSURE, IN. HG 29.0 — STATIC PRESSURE, IN. H_2O -.09 — TIME FINISH 0100

LEAK CHECK, VACUUM IN. HG 15 3 3 — OPERATOR Rum

LEAK RATE, CUBIC FEET/MIN. 0.005 0.005 .000 — ASST(S) Lem

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 73 °F PRE
- TC ___ °F POST
- N/A ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS

REAGENT BOX M138 — METER BOX N20 — Y (0.498) .9842

PITOT WC12-2 — Cp .84 — NOZ'L Q1209 — DIA. [illegible]

TC READOUT F57 — TC PROBE F-[illegible]57 — UMBIL [illegible]

SAMPL'G BOX 37 — ORSAT PUMP N/A — TEDLAR BAG N/A

LEAK CHECKS

B	E
817.157	
817.236	

FILTER/XAD	TARE WT.
unnumb.	u.n/tare

NOMOGRAPH DATA

DELTA H@	1.740	1.740
METER TEMP	95	95
EST. %H_2O	13	13
C FACTOR	.844	.537
STACK TEMP	1500	1500
REF DELTA P	.124	.125
K FACTOR		14.694

FYRITES

7%

6 1/2%

6 1/2%

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	B-12	0	776.600	0.0009	72	1568	0.1	.012	1	230	65	230	
2		5	777.518	0.001	73	1562	0.04	.014	1	235	61	232	
3	11	10	778.100	0.004	74	1552	.05	.055	1	240	58	235	
4		15	778.676	0.003	75	1551	.05	.042	1	245	55	240	
5	10	20	779.265	0.002	76	1548	.03	.028	1	245	51	241	
6		25	779.695	0.004	77	1545	.05	.056	1	246	50	242	
7	9	30	780.401	0.004	78	1539	.05	.056	1	245	49	241	
8		35	781.107	0.004	79	1543	.05	.056	1	244	49	240	
9	8	40	781.827	0.006	80	1538	.08	.084	1	245	50	241	
10		45	782.602	0.005	81	1541	.07	.070	1	247	51	242	
11	7	50	783.380	0.005	82	1544	.07	.07	1	248	51	242	
12		55	784.151	0.005	82	1546	.07	.07	1	249	51	241	
13	6	60	784.96	0.065	83	1544	.92	.92	2	248	52	240	
14		65	787.48	0.069	84	1545	.97	.97	2	247	52	240	
15	5	70	790.26	0.062	85	1538	.88	.88	2	245	51	240	
16		75	793.01	0.065	85	1539	.94	.94	2	246	50	241	
17	4	80	795.83	0.07	85	1537	.99	.99	2	247	50	242	
18		85	798.76	0.072	86	1532	1.03	1.03	2	248	50	242	
19	3	90	801.75	0.055	86	1532	.78	.78	2	250	49	243	
20		95	804.34	0.062	87	1533	.88	.88	2	247	49	244	
21	2	100	807.10	0.055	87	1521	.79	.79	2	245	50	242	
22		105	809.68	0.054	88	1528	.77	.77	2	244	52	241	
23	1	110	812.24	0.049	87	1525	.70	.70	2	243	53	240	
24		115	814.68	0.050	85	1523	.71	.71	2	241	54	240	
25	A-12	120	817.157	0.085	79	1517	1.20	1.20	3	244	52	239	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA (continued)

2 of 2 Atur

PLANT Jewell Coal + Coke Co RUN NO. B-1-51-MMTC

SAMPLING LOC. Stack #1 JOB. NO. 3654

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26		5	820.47	0.089	79	1511	1.26	1.26	3	246	50	240
27	11	10	823.71	0.090	79	1511	1.28	1.28	3	248	48	239
28		15	827.00	0.082	81	1509	1.17	1.17	2	248	47	241
29	10	20	830.19	0.076	81	1510	1.08	1.08	2	249	47	240
30		25	833.22	0.083	81	1509	1.18	1.18	2	249	46	241
31	9	30	836.43	0.076	82	1507	1.09	1.09	2	247	46	242
32		35	839.53	0.086	82	1506	1.23	1.23	2	247	46	243
33	8	40	842.73	0.070	84	1509	1.00	1.00	2	248	45	242
34		45	845.72	0.083	84	1507	1.19	1.19	2	249	45	243
35	7	50	848.95	0.067	84	1509	0.96	0.96	2	247	45	241
36		55	851.83	0.059	85	1509	0.85	0.85	2	247	44	240
37	6	60	854.59	0.065	85	1504	0.94	0.94	2	248	44	240
38		65	857.34	0.068	87	1507	0.98	0.98	2	249	43	242
39	5	70	860.25	0.058	86	1481	0.85	0.85	2	249	44	243
40		75	862.93	0.063	85	1483	0.92	0.92	2	247	44	242
41	4	80	865.75	0.078	85	1498	1.13	1.13	2	246	44	240
42		85	868.78	0.055	85	1497	0.80	0.80	2	246	45	241
43	3	90	871.33	0.066	85	1502	0.95	0.95	2	247	45	242
44		95	874.16	0.053	85	1489	0.77	0.77	2	244	44	239
45	2	100	876.75	0.054	84	1478	0.79	0.79	2	242	44	238
46		105	878.98	0.049	83	1478	0.71	0.71	2	240	45	237
47	1	110	881.67	0.047	83	1472	0.69	0.69	2	241	46	235
48		115	884.04	0.043	82	1472	0.63	0.63	2	242	46	235
49	END	120/off	886.241									
50												
51												
52												
53												
54												
55												
56												
57												
58												
59												
60												
61												
62												
63												
64												
65												

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH
	109.562	0.0426	82	1520	0.73

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ENTROPY

FIELD DATA - METHOD(S) MMTL

PLANT Jewell Coal & Coke Company — RUN NO. I-1-S1-MMTL-1

CITY/STATE Vansant, Virginia — JOB NO. 3694 — DATE 10/29/91

SAMPLING LOC. Stack 1 — TIME START 1741

BAROMETRIC PRESSURE, IN. HG 29.0 — STATIC PRESSURE, IN. H_2O -.07 — TIME FINISH 2009

LEAK CHECK, VACUUM IN. HG 15 6 6 — OPERATOR RWM

LEAK RATE, CUBIC FEET/MIN. 0.004 0.003 0.006 — ASST(S) LCM

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 83 °F PRE
- ✓ TC 63 °F POST
- ✓ ORSAT SYSTEM

FILTER/XAD	TARE WT.
Quartz	Untare

EQUIPMENT I.D. NUMBERS

REAGENT BOX M138 — METER BOX N20 — Y .9842

PITOT WC172 — Cp .84 — NOZ'L 01209 — DIA. .249 / .500

TC READOUT F-2,57 — TC PROBE R38 — UMBILICAL U87

SAMPL'G BOX 37 — ORSAT PUMP N/A — TEDLAR BAG N/A

NOMOGRAPH DATA

DELTA H@	1.740
METER TEMP	95
EST. $\%H_2O$	20
C FACTOR	.728
STACK TEMP	1500
REF DELTA P	.144
K FACTOR	12.282

LEAK CHECKS

B	E
919.397	919.448

PYRITES

6%

6½%

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	B-12	0	886.452	.065	84	1525	.81	.81	3	251	65	240	
2	11	5	889.03	.066	84	1551	.81	.81	3	242	63	238	
3	10	10	891.64	.063	85	1571	.77	.77	3	246	60	235	
4	9	15	894.18	.063	85	1581	.76	.76	3	248	56	233	
5	8	20	896.72	.090	86	1588	1.09	1.09	5	246	52	242	
6	7	25	899.79	.085	87	1602	1.02	1.02	5	251	48	247	
7	6	30	902.79	.078	88	1602	.94	.94	5	252	46	249	
8	5	35	905.72	.098	88	1607	1.18	1.18	5	251	46	257	
9	4	40	908.89	.095	89	1605	1.14	1.14	5	251	45	258	
10	3	45	912.04	.070	86	1602	.84	.84	4	251	45	249	
11	2	50	914.80	.055	85	1601	.66	.66	3	249	46	245	
12	1	55	917.16	.052	83	1600	.62	.62	3	244	47	240	
13	A-12	60/0	919.397	.110	77	1594	1.30	1.30	5	240	56	230	
14	11	5	922.77	.098	76	1588	1.16	1.16	5	243	52	232	
15	10	10	925.94	.120	76	1591	1.42	1.42	6	251	50	238	
16	9	15	929.42	.130	76	1588	1.54	1.54	6	255	48	248	
17	8	20	933.02	.125	76	1586	1.48	1.48	6	250	47	255	
18	7	25	936.58	.105	75	1585	1.24	1.24	6	256	46	258	
19	6	30	939.85	.095	75	1576	1.13	1.13	5	257	47	258	
20	5	35	943.00	.100	75	1571	1.15	1.19	5	247	49	245	
21	4	40	946.13	.088	74	1573	1.05	1.05	5	244	50	241	
22	3	45	949.14	.084	74	1574	.95	1.0	5	240	51	238	
23	2	50	952.05	.065	73	1567	.75	.77	4	244	51	240	
24	1	55	954.57	.055	72	1561	.65	.66	3	241	53	241	
25	END	60/off	956.865										

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	70.362	0.0842	80	1583	1.02

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ENTROPY

FIELD DATA - METHOD(S) MMTL

PLANT Jewell Coal & Coke Company
RUN NO. I-2-S1-MMTL-2
CITY/STATE Vansant, Virginia
JOB NO. 3694
DATE 10/30/91
SAMPLING LOC. Stack 1
TIME START 1752
BAROMETRIC PRESSURE, IN. HG 29.00
STATIC PRESSURE, IN. H2O
TIME FINISH
LEAK CHECK, VACUUM IN. HG 15
OPERATOR RWM
LEAK RATE, CUBIC FEET/MIN. 0.005
ASST(S) LCM

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 68 °F PRE
- TC °F POST
- N/A ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS

REAGENT BOX
METER BOX N20 Y .9842
PITOT Cp .84 NOZ'L G1209 DIA. .0493 .0500
TC READOUT F57 TC PROBE F57 UMBILICAL U87
SAMPL'G BOX 37 ORSAT PUMP N/A TEDLAR BAG N/A

LEAK CHECKS

B		B	
E		E	
B		B	
E		E	
B		B	
E		E	

FILTER/XAD	TARE WT.
UN #	UNTARED

NOMOGRAPH DATA

DELTA H@	1.740
METER TEMP	90
EST. %H2O	20
C FACTOR	.721
STACK TEMP	1500
REF DELTA P	.145
K FACTOR	12.668

FYRITES

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	B-1	0	236.486	.02	80	1448	.26	.26	4	243	62	238	
2	2	5	238.00	.025	82	1455	.32	.32	4	242	60	239	
3	3	10	239.65	.032	84	1470	.41	.41	5	242	56	240	
4	4	15	241.50	.045	86	1470	.58	.58	6	243	53	241	
5	5	20	243.68	.045	89	1475	.58	.58	6	244	50	241	
6	6	25	245.86	.055	92	1475	.71	.71	7	244	48	241	
7	7	30	248.28	.065	94	1490	.84	.84	7	242	47	242	
8	8	35	250.93	.065	95	1520	.83	.83	11	242	48	243	
9	9	40	253.63	.095	96	1555	1.19	1.19	16	246	48	246	
10	10	45											
11	11	50											
12	12	55											
13	A-1	60/0											
14	2	5											
15	3	10											
16	4	15											
17	5	20											
18	6	25											
19	7	30											
20	8	35											
21	9	40											
22	10	45											
23	11	50											
24	12	55											
25		120/OFF											

257.638

ABORTED RUN

* FILTER EXIT for NJ Method 1. FILTER BOX for all o

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conc

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA - METHOD(S) MMTL

PLANT Jewell Coal & Coke Company — RUN NO. I-3-S1-MMTL-3

CITY/STATE Vansant, Virginia — JOB NO. 3694 — DATE 10/31/91

SAMPLING LOC. Stack 1 — TIME START 1719

BAROMETRIC PRESSURE, IN. HG 29.80 — STATIC PRESSURE, IN. H_2O -.08 — TIME FINISH 1932

LEAK CHECK, VACUUM IN. HG 15 6 5 — OPERATOR Rwm

LEAK RATE, CUBIC FEET/MIN. 0.004 0.003 .003 — ASST(S)

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 74 °F PRE
- ✓ TC 73 °F POST
- N/A ORSAT SYSTEM

FILTER/XAD	TARE WT.
40N #	UNTARED

EQUIPMENT I.D. NUMBERS

REAGENT BOX M101 — METER BOX N20 — Y .9842

PITOT WC12-2 — Cp .84 — NOZ'L G1209 — DIA. 0.398

TC READOUT F2 — TC PROBE WC12-2 — UMBILICAL U87

SAMPL'G BOX 56 — ORSAT PUMP N/A — TEDLAR BAG N/A

NOMOGRAPH DATA

DELTA Hø	1.740
METER TEMP	90
EST. %H_2O	17
C FACTOR	.767
STACK TEMP	1500
REF DELTA P	.137
K FACTOR	13.416

LEAK CHECKS

B 621.082	B
E 621.138	E
B	B
E	E
B	B
E	E

FYRITES

6%
6/27
6.0 bag

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A-12	0	591.60	.045	82	1442	.62	.62	2	237	60	231	
2	4	5	593.85	.048	82	1440	.66	.66	2	237	56	232	
3	10	10	596.18	.052	83	1435	.72	.72	2	240	54	236	
4	9	15	598.61	.056	84	1435	.77	.77	2	243	50	240	
5	8	20	601.15	.052	85	1438	.72	.72	2	249	50	241	
6	7	25	603.58	.048	88	1430	.67	.67	2	252	49	245	
7	6	30	605.93	.065	91	1448	.91	.91	2	256	49	247	
8	5	35	608.74	.065	93	1461	.90	.90	2	262	49	250	
9	4	40	611.56	.060	96	1486	.82	.82	2	258	50	250	
10	3	45	614.20	.058	97	1496	.79	.79	2	261	51	249	
11	2	50	616.81	.045	98	1522	.61	.61	2	256	52	251	
12	1	55	619.07	.035	95	1550	.47	.47	2	249	53	242	
13	B-12	60/0	621.082	.090	90	1560	1.18	1.18	3	240	57	240	
14	11	5	624.37	.100	87	1569	1.30	1.30	3	237	55	240	
15	10	10	627.73	.095	86	1562	1.23	1.23	3	240	52	241	
16	9	15	631.04	.085	86	1561	1.10	1.10	3	244	50	240	
17	8	20	634.17	.095	87	1570	1.23	1.23	3	240	48	241	
18	7	25	637.46	.120	87	1565	1.56	1.56	4	240	47	240	
19	6	30	641.18	.110	88	1565	1.43	1.43	4	248	46	241	
20	5	35	644.66	.085	89	1558	1.11	1.11	3	256	46	244	
21	4	40	647.82	.085	90	1555	1.12	1.12	3	250	47	241	
22	3	45	650.95	.075	91	1554	.99	.99	3	250	48	242	
23	2	50	653.91	.07	91	1543	.93	.93	3	252	49	241	
24	1	55	656.79	.075	92	1541	1.0	1.0	3	253	51	243	
25		120/1A	659.764										

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	68.108	0.0697	89	1511	0.95

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ENTROPY

FIELD DATA - METHOD(S) MMTL

PLANT Jewell Coal & Coke Co — RUN NO. II-1-51-MMTL-1
CITY/STATE Vansant Va — JOB NO. 3694 — DATE 10-29,30-91
SAMPLING LOC. Stack 1 — TIME START 2157
BAROMETRIC PRESSURE, IN. HG 29 — STATIC PRESSURE, IN. H_2O -.06 — TIME FINISH 2723
LEAK CHECK, VACUUM IN. HG 15 6 5 — OPERATOR RWM
LEAK RATE, CUBIC FEET/MIN. 0.002 0.018 .025 — ASST(S) LCM

EQUIPMENT CHECKS*
- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 63 °F PRE
- ✓ TC 72 °F POST
- N/A ORSAT SYSTEM

FILTER/XAD	TARE WT.
unnum	untare

EQUIPMENT I.D. NUMBERS
REAGENT BOX M138 — METER BOX N20 — Y .9842 — 0.998
PITOT WC12-V — C_p .84 — NOZ'L Q1709 — DIA. ~~.260~~ .259
TC READOUT E 2,57 — TC PROBE F53 — UMBILICAL U87
SAMPL'G BOX 56 — ORSAT PUMP N/A — TEDLAR BAG N/A

NOMOGRAPH DATA

DELTA H@	1.740
METER TEMP	80
EST. $\%H_2O$	20
C FACTOR	.708
STACK TEMP	1600
REF DELTA P	.155
K FACTOR	11.834

LEAK CHECKS

B 1021.347	B
E 1021.517	E
B	B
E	E
B	B
E	E

FYRITES

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A-12	0	957.432	.065	65	1566	.76	.76	3	240	60	238	
2	·	3¾	959.300	.065	67	1562	.77	.77	3	242	58	245	
3	·	7½	961.200	.065	68	1558	.77	.77	3	241	51	248	
4	11	11¼	963.09	.068	69	1560	.81	.81	3	240	50	243	
5	·	15	965.03	.068	71	1560	.81	.81	3	240	48	240	
6	·	18¾	966.97	.068	72	1560	.81	.81	3	249	47	241	
7	10	22½	968.92	.070	73	1560	.84	.84	3	250	46	242	
8	·	26¼	970.92	.070	73	1560	.84	.84	3	252	45	240	
9	·	30	972.91	.070	74	1560	.84	.84	3	251	45	241	
10	9	33¾	974.90	.086	75	1560	.96	.96	3	244	44	240	
11	·	37½	977.04	.066	75	1556	.79	.79	3	245	45	240	
12	·	41¼	979.00	.075	75	1556	.90	.90	3	248	45	241	
13	8	45	981.07	.055	75	1554	.66	.66	3	245	46	241	
14		48¾	982.84	.066	75	1556	.79	.79	3	246	46	242	
15	·	52½	984.74	.064	75	1555	.77	.77	3	246	46	240	
16	7	56¼	986.72	.057	75	1556	.69	.69	3	240	47	242	
17	·	60	988.56	.065	75	1556	.78	.78	3	240	47	238	
18	·	63¾	990.35	.060	77	1552	.73	.73	3	242	48	239	
19	6	67½	992.17	.064	77	1550	.77	.77	3	248	49	242	
20	·	71¼	994.09	.065	77	1546	.79	.79	3	251	49	243	
21	·	75	996.02	.062	79	1548	.75	.75	3	255	49	241	
22	5	78¾	997.90	.045	81	1544	.55	.55	3	253	48	240	
23	·	82½	999.49	.045	82	1547	.55	.55	3	252	48	241	
24	·	86¼	1001.09	.055	83	1547	.67	.67	3	250	48	240	
25	4	90	1002.86	.043	84	1543	.53	.53	3	250	49	241	

* FILTER EXIT for NJ Method 1. FILTER BOX for all ot

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conde.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal & Coke RUN NO. II-1-51-MMTL-1

SAMPLING LOC. Stack #1 JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	√
26		93¾	1004.46	.045	85	1542	.56	.56	3	250	49	243	
27		97½	1006.10	.045	87	1540	.56	.56	3	250	49	245	
28	3	101¼	1007.74	.040	88	1543	.50	.50	3	252	50	245	
29	·	105	1009.28	.040	89	1540	.50	.50	3	253	50	243	
30	·	108¾	1010.82	.040	90	1540	.50	.50	3	255	51	244	
31	2	112½	1012.38	.045	90	1545	.56	.56	3	252	51	242	
32	·	116¼	1014.02	.045	90	1563	.55	.55	3	250	52	240	
33		120	1015.65	.035	90	1555	.43	.43	3	250	52	241	
34	1	123¾	1017.10	.032	90	1573	.39	.39	3	250	52	242	
35		127½	1018.49	.034	90	1578	.42	.42	3	251	52	243	
36		131¼	1019.91	.035	90	1586	.43	.43	3	252	53	241	
37	B-12	135/0	1021.347	0.059	75	1562	0.71	0.71	3	248	56	239	
38		3¾	1023.31	0.062	78	1559	0.75	0.75	3	247	52	238	
39		7½	1025.18	0.059	78	1560	0.71	0.71	3	247	51	240	
40	11	11¼	1026.87	0.068	79	1560	0.82	0.82	3	246	49	239	
41	·	15	1028.78	0.069	81	1560	0.84	0.84	3	246	47	239	
42	·	18¾	1030.89	0.067	82	1559	0.81	0.81	3	247	47	241	
43	10	22½	1032.89	0.07	83	1558	0.85	0.85	3	247	46	242	
44	·	26¼	1034.86	0.071	85	1558	0.87	0.87	3	248	46	241	
45	·	30	1036.90	0.055	85	1559	0.67	0.67	3	248	45	240	
46	9	33¾	1038.68	0.071	86	1555	0.87	0.87	3	249	45	239	
47	·	37½	1040.71	0.064	86	1560	0.78	0.78	3	249	45	238	
48		41¼	1042.89	0.06	85	1558	0.73	0.73	3	251	44	238	
49	8	45	1044.57	0.065	83	1557	0.79	0.79	3	251	44	238	
50	·	48¾	1046.50	0.074	83	1553	0.90	0.90	3	252	43	239	
51	·	52½	1048.64	0.081	83	1554	0.99	0.99	3	249	44	241	
52	7	56¼	1050.58	0.058	81	1553	0.71	0.71	3	249	45	240	
53	·	60	1052.47	0.052	82	1554	0.64	0.64	3	248	45	241	
54		63¾	1054.38	0.060	82	1542	0.74	0.74	3	248	45	242	
55	6	67½	1056.20	0.054	83	1536	0.67	0.67	3	249	44	241	
56	·	71¼	1058.05	0.062	83	1540	0.76	0.76	3	249	44	242	
57	·	75	1059.82	0.042	86	1535	0.52	0.52	3	247	45	240	
58	5	78¾	1061.39	0.061	84	1536	0.75	0.75	3	247	46	240	
59		82½	1063.29	0.076	84	1541	0.94	0.94	3	246	46	241	
60		86¼	1065.35	0.048	84	1538	0.59	0.59	3	246	45	241	
61	4	90	1067.94	0.056	84	1535	0.56	0.56	3	247	45	242	
62		93¾	1068.64	0.052	85	1534	0.64	0.64	3	247	45	241	
63		97½	1070.35	0.051	85	1525	0.63	0.63	3	246	44	240	
64	3	101¼	1071.95	0.062	86	1530	0.77	0.77	3	246	44	240	
65		105	1073.91	0.045	86	1531	0.56	0.56	3	245	44	242	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (Θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal & Coke Co RUN NO. II-1-SI-MMTL-1

SAMPLING LOC. Stack #1 JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26	.	108 3/4	1075.53	0.049	86	1533	0.61	0.61	3	250	45	240
27	2	112 1/2	1077.19	0.054	87	1534	0.67	0.67	3	249	44	241
28	.	116 1/4	1078.95	0.041	87	1533	0.51	0.51	3	249	44	241
29	.	120	1080.51	0.056	88	1530	0.70	0.70	3	248	43	242
30	1	123 3/4	1082.27	0.053	88	1530	0.66	0.66	3	248	44	241
31	.	127 1/2	1084.01	0.061	89	1529	0.76	0.76	3	247	45	241
32	.	131 1/4	1085.87	0.049	90	1531	0.61	0.61	3	247	45	240
33	END	135 1/4	1087.542									
34												
35												
36												
37												
38												
39												
40												
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* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condens...

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	129.940	0.0570	82	1550	0.70

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ENTROPY

FIELD DATA - METHOD(S) MMTL

PLANT Jewell Coal + Coke Co — RUN NO. II-2-S'L-MMTL
CITY/STATE Vansant VA — JOB NO. 3694 — DATE 10/30/91
SAMPLING LOC. Stack 1 — TIME START 1202
BAROMETRIC PRESSURE, IN. HG 29.0 — STATIC PRESSURE, IN. H_2O -.07 — TIME FINISH
LEAK CHECK, VACUUM IN. HG 15 / 5 / 5 — OPERATOR RWM
LEAK RATE, CUBIC FEET/MIN. 0.002 / .018 / .008 — ASST(S) LCM

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 66 °F PRE
- ✓ TC 46 °F POST
- N/A ORSAT SYSTEM

FILTER/XAD	TARE WT.
un	un

EQUIPMENT I.D. NUMBERS

REAGENT BOX M140 — METER BOX N20 — Y .9842
PITOT WC12-1 — C_p .84 — NOZ'L B1209 — DIA. 0.375
TC READOUT F26 — TC PROBE WC-12" — UMBILICAL 0.87
SAMPL'G BOX 56 — ORSAT PUMP N/A — TEDLAR BAG N/A

NOMOGRAPH DATA

DELTA H@	1.740
METER TEMP	85
EST. $\%H_2O$	20
C FACTOR	.715
STACK TEMP	1600
REF DELTA P	.154
K FACTOR	11.943

LEAK CHECKS

B 323.650	B
E 324.320	E
B	B
E	E
B	B
E	E

FYRITES

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	B-12	0	258.700	.053	72	1479	.66	.66	2	265	60	247	
2		3 3/4	260.45	.053	72	1476	.66	.66	2	263	57	248	
3		7 1/2	262.21	.053	73	1477	.66	.66	2	258	55	249	
4	11	11 1/4	263.97	.070	75	1475	.88	.88	2	255	53	247	
5		15	266.01	.070	76	1474	.88	.88	2	251	52	245	
6		18 3/4	268.06	.070	77	1473	.88	.88	2	246	50	241	
7	10	22 1/2	270.12	.065	78	1478	.82	.82	2	240	49	241	
8		26 1/4	272.08	.065	79	1478	.82	.82	2	242	49	242	
9		30	274.05	.065	80	1477	.82	.82	2	243	48	241	
10	9	33 3/4	276.02	.090	81	1485	1.13	1.13	3	241	48	240	
11		37 1/2	278.35	.090	82	1480	1.14	1.14	3	240	48	240	
12		41 1/4	280.70	.090	84	1475	1.14	1.14	4	242	49	241	
13	8	45	283.08	.095	85	1490	1.20	1.20	4	245	49	242	
14		48 3/4	285.51	.085	85	1478	1.08	1.08	3	245	50	243	
15		52 1/2	287.80	.085	85	1480	1.08	1.08	3	246	50	241	
16	7	56 1/4	290.09	.070	85	1481	.89	.89	3	246	51	242	
17		60	292.18	.050	85	1481	.64	.64	2	249	51	243	
18		63 3/4	293.91	.075	85	1485	.95	.95	2	241	50	241	
19	6	67 1/2	296.05	.065	83	1481	.82	.82	2	237	49	235	
20		71 1/4	298.03	.050	82	1476	.63	.63	2	239	48	239	
21		75	299.76	.050	81	1475	.63	.63	2	249	48	243	
22	5	78 3/4	301.47	.048	80	1473	.61	.61	2	256	48	244	
23		82 1/2	303.15	.048	80	1477	.61	.61	2	245	49	244	
24		86 1/4	304.84	.048	80	1472	.61	.61	2	249	49	243	
25	4	90	306.53	.040	79	1463	.51	.51	2	255	50	247	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

ENTROPY

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FIELD DATA (continued)

PLANT Jewell Coal & Coke Co RUN NO. II-2-Sy-[illegible]-2

SAMPLING LOC. Stack #1 JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26		93¾	308.10	.035	79	1467	.44	.44	2	255	50	247
27		97½	309.55	.040	78	1461	.51	.51	2	262	51	253
28	3	101¼	311.10	.035	77	1462	.44	.44	2	265	52	255
29		105	312.57	.040	77	1464	.51	.51	2	266	53	251
30		108¾	314.13	.040	77	1464	.51	.51	2	259	53	252
31	2	112½	315.67	.035	77	1455	.45	.45	2	256	53	251
32		116¼	317.13	.035	77	1451	.45	.45	2	254	53	250
33		120	318.57	.035	77	1451	.45	.45	2	251	54	246
34	1	123¾	320.01	.025	77	1448	.32	.32	2	250	54	240
35		127½	321.24	.025	76	1450	.32	.32	2	250	53	241
36		131¼	322.45	.025	76	1453	.32	.32	2	248	53	242
37	A 12	135/0	323.650	.045	75	1461	.57	.57	2	242	55	240
38		3¾	325.92	.050	75	1463	.63	.63	2	241	54	240
39		7½	327.61	0.052	75	1462	0.66	0.66	2	241	52	238
40	11	11¼	329.34	0.049	76	1460	0.62	0.62	2	242	50	239
41		15	331.04	0.065	77	1459	0.82	0.82	2	242	50	239
42		18¾	333.00	0.046	77	1459	0.58	0.58	2	241	51	240
43	10	22½	334.64	0.066	77	1461	0.84	0.84	2	241	50	240
44		26¼	336.63	0.062	78	1462	0.79	0.79	2	240	50	240
45		30	338.62	0.043	78	1460	0.56	0.56	2	240	49	237
46	9	33¾	340.26	0.068	78	1480	0.85	0.85	2	242	49	237
47		37½	342.26	0.055	78	1461	0.70	0.70	2	242	48	236
48		41¼	344.08	0.066	79	1458	0.84	0.84	2	241	47	235
49	8	45	346.07	0.060	81	1458	0.77	0.77	2	241	47	235
50		48¾	347.98	0.057	83	1456	0.73	0.73	2	240	47	236
51		52½	349.81	0.077	84	1456	0.99	0.99	2	240	46	235
52	7	56¼	352.01	0.067	85	1456	0.86	0.86	2	241	46	235
53		60	354.04	0.08	87	1454	1.035	1.035	2	241	46	234
54		63¾	356.27	0.067	87	1453	0.87	0.87	2	241	46	234
55	6	67½	358.35	0.088	88	1452	1.14	1.14	2	240	47	233
56		71¼	360.77	0.067	89	1449	0.87	0.87	2	240	47	233
57		75	363.02	0.071	89	1447	0.93	0.93	2	242	47	232
58	5	78¾	364.88	0.058	90	1456	0.75	0.75	2	242	48	231
59		82½	366.81	0.062	90	1457	0.81	0.81	2	241	48	230
60		86¼	368.69	0.055	90	1446	0.72	0.72	2	241	47	229
61	4	90	370.53	0.058	90	1444	0.76	0.76	2	240	47	229
62		93¾	372.42	0.050	91	1442	0.66	0.66	2	240	47	229
63		97½	374.22	0.052	91	1441	0.68	0.68	2	239	47	228
64	3	101¼	375.98	0.045	92	1439	0.59	0.59	2	242	46	228
65		105	377.64	0.040	91	1437	0.53	0.53	2	242	46	228

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal & Coke Co RUN NO. II-2-S1-MMTC

SAMPLING LOC. Stack #1 JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
26		108¾	379.32	0.047	92	1440	0.62	0.62	2	241	47	229	
27	2	112½	381.01	0.047	92	1437	0.62	0.62	2	241	47	229	
28		116¼	382.67	0.033	92	1433	0.44	0.44	2	240	48	230	
29		120	384.13	0.054	91	1429	0.71	0.71	2	240	48	230	
30	1	123¾	385.90	0.048	91	1429	0.63	0.63	2	241	47	228	
31		127½	387.60	0.034	91	1430	0.45	0.45	2	242	47	228	
32		131¼	389.07	0.038	90	1438	0.50	0.50	2	242	46	229	
33	End	135	390.624										
34													
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* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH
	131.254	0.0548	82	1461	0.71

ENTROPY

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FIELD DATA - METHOD(S) MMTL

PLANT Jewell Coal & Coke Company — RUN NO. III-1-S1-MMTL-1

CITY/STATE Vansant, Virginia — JOB NO. 3694 — DATE 10/30/91

SAMPLING LOC. Stack 1 — TIME START 0555

BAROMETRIC PRESSURE, IN. HG 29.0 — STATIC PRESSURE, IN. H_2O -0.07 — TIME FINISH 0948

LEAK CHECK, VACUUM IN. HG 15 3 3 — OPERATOR DLS

LEAK RATE, CUBIC FEET/MIN. .005 .001 0.001 — ASST(S) CGM

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 72 °F PRE
- ✓ TC 63 °F POST
- N/A ORSAT SYSTEM

FILTER/XAD	TARE WT.
N/A	

EQUIPMENT I.D. NUMBERS

REAGENT BOX	M114	METER BOX	N20 Y 0.9842
PITOT	WC-10	C_p .84	NOZ'L 1209 DIA. 0.500
TC READOUT	F57	TC PROBE	WC-10 UMBILICAL 4.87
SAMPL'G BOX	37	ORSAT PUMP	N/A TEDLAR BAG N/A

NOMOGRAPH DATA

DELTA H@	1.74
METER TEMP	80
EST. %H_2O	20
C FACTOR	0.708
STACK TEMP	1500
REF DELTA P	0.148
K FACTOR	12.437

LEAK CHECKS

B 135.391	B
E 135.449	E
B	B
E	E
B	B
E	E

FYRITES

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE IN. H_2O ACTUAL	ORIFICE IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	B 12	0	88.255	0.055	70	1504	0.67	0.67	3	250	50	239	
2		54	90.56	0.038	70	1507	0.46	0.46	3	248	50	239	
3	11	108	92.52	0.055	70	1504	0.62	0.62	3	248	49	240	
4		15 12	93.28	0.065	70	1503	0.80	0.80	3	247	48	240	
5	10	20 16	95.25	0.047	70	1502	0.56	0.56	3	247	48	241	
6		25 20	97.30	0.063	70	1504	0.77	0.77	3	246	47	241	
7	9	30 24	99.31	0.064	70	1503	0.78	0.78	3	246	47	240	
8		35 28	101.33	0.063	70	1504	0.77	0.77	3	247	48	240	
9	8	40 32	103.35	0.074	70	1503	0.90	0.90	3	247	48	240	
10		45 36	105.52	0.058	69	1501	0.71	0.71	3	247	47	239	
11	7	40	107.55	0.053	68	1504	0.65	0.65	3	248	46	239	
12		44	109.34	0.060	67	1506	0.73	0.73	3	248	46	240	
13	6	48	111.29	0.078	67	1506	0.95	0.95	3	249	45	240	
14		52	113.24	0.060	67	1505	0.73	0.73	3	249	45	239	
15	5	56	115.45	0.067	66	1503	0.81	0.81	3	247	44	240	
16		60	117.57	0.054	66	1506	0.65	0.65	3	247	44	240	
17	4	64	119.58	0.061	67	1506	0.74	0.74	3	246	44	241	
18		68	121.37	0.054	67	1485	0.66	0.66	3	246	45	241	
19	3	72	123.23	0.050	67	1485	0.61	0.61	3	247	45	242	
20		76	125.05	0.072	67	1503	0.88	0.88	3	247	45	242	
21	2	80	127.10	0.065	67	1500	0.79	0.79	3	246	44	240	
22		84	129.19	0.078	67	1493	0.95	0.95	3	246	44	240	
23	1	88	131.44	0.058	67	1501	0.71	0.71	3	247	45	241	
24		92	133.43	0.062	67	1501	0.75	0.75	3	248	45	241	
25	A 12	96	135.391	0.052	65	1496	0.63	0.63	3	251	49	240	✓

* FILTER EXIT for NJ Method 1. FILTER BOX for all others

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a cond

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA (continued)

PLANT JEWELL COAL + COKE RUN NO. III-1 S1-MMTL-1

SAMPLING LOC. UNIT 1 STACK JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	√
26		100	137.23	0.048	65	1497	0.58	0.58	3	252	52	241	
27	11	104	138.99	0.058	65	1498	0.70	0.70	3	251	49	240	
28		108	140.89	0.045	65	1499	0.55	0.55	3	250	48	239	
29	10	112	142.63	0.043	65	1498	0.52	0.52	3	249	48	239	
30		116	144.35	0.045	65	1498	0.55	.55	3	252	45	235	
31	9	120	146.80	.053	65	1499	.64	.64	3	252	45	235	
32		124	147.82	.048	66	1052	.58	.58	3	250	45	238	
33	8	128	149.88	.042	66	1500	.51	.51	3	250	45	240	
34		132	151.26	.053	67	1501	.65	.65	3	255	45	240	
35	7	136	153.07	.054	67	1501	.66	.66	3	255	47	240	
36		140	154.38	.052	68	1500	.63	.63	3	250	48	245	
37	6	144	156.64	.055	68	1501	.67	.67	3	250	48	245	
38		148	158.43	.047	70	1498	.58	.58	3	255	45	241	
39	5	152	160.28	.052	73	1498	.64	.64	3	255	45	238	
40		156	161.98	.048	75	1497	.59	.59	3	260	48	240	
41	4	160	163.72	.054	78	1496	.66	.66	3	258	45	240	
42		164	165.53	.044	80	1498	.55	.55	3	255	45	235	
43	3	168	167.27	.039	84	1498	.49	.49	3	255	45	235	
44		172	168.93	.043	85	1499	.54	.54	3	255	49	242	
45	2	176	170.65	.043	89	1504	.54	.54	3	255	50	240	
46		180	172.38	.037	91	1506	.47	.47	3	260	50	240	
47	1	184	174.01	.036	92	1508	.46	.46	3	260	50	240	
48		188	175.65	.025	93	1500	.32	.32	3	255	48	236	
49	OFF	192	176.904										
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51													
52													
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65													

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	88.591	0.0529	71	1501	0.65

ENTROPY

FIELD DATA - METHOD(S) MMTL

PLANT Jewell Coal & Coke Company — RUN NO. III-2-S1-MMTL-2

CITY/STATE Vansant, Virginia — JOB NO. 3694 — DATE 10/31/91

SAMPLING LOC. Stack 1 — TIME START 0505

BAROMETRIC PRESSURE, IN. HG 28.8 — STATIC PRESSURE, IN. H2O -0.08 — TIME FINISH 0923

LEAK CHECK, VACUUM IN. HG 15 6 5 — OPERATOR DLS, SRD

LEAK RATE, CUBIC FEET/MIN. .004 .003 .001 — ASST(S) CEM, JMC

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 46 °F PRE
- ✓ TC 59 °F POST
- N/A ORSAT SYSTEM

FILTER/XAD	TARE WT.
N/A	

EQUIPMENT I.D. NUMBERS

REAGENT BOX M140 — METER BOX N20 — Y .9842 (0.998)

PITOT WC-12 — Cp .84 — NOZ'L G1209 — DIA. .500 (A)

TC READOUT F26 — TC PROBE WC-12 — UMBILICAL U87

SAMPL'G BOX J6 — ORSAT PUMP N/A — TEDLAR BAG N/A

NOMOGRAPH DATA

DELTA H@	1.74
METER TEMP	80
EST. %H2O	20
C FACTOR	0.708
STACK TEMP	1500
REF DELTA P	0.148
K FACTOR	12.437

LEAK CHECKS

B 443.973	B
E 448.027	E
B	B
E	E
B	B
E	E

FYRITES

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	B12	0	390.818	0.06	64	1420	0.76	0.76	2	252	59	239	
2		5	393.28	0.057	63	1470	0.70	0.70	2	251	57	239	
3	11	10	395.64	0.071	64	1472	0.87	0.87	2	250	55	241	
4		15	398.36	0.058	66	1467	0.72	0.72	2	250	54	241	
5	10	20	400.79	0.043	68	1470	0.53	0.53	2	249	54	240	
6		25	402.90	0.041	69	1472	0.51	0.51	2	249	53	240	
7	9	30	404.93	0.038	70	1470	0.47	0.47	2	248	51	241	
8		35	406.91	0.054	71	1468	0.67	0.67	2	248	50	241	
9	8	40	409.26	0.059	73	1471	0.74	0.74	2	248	50	240	
10		45	411.73	0.060	74	1474	0.74	0.74	2	248	50	240	
11	7	50	414.14	0.062	74	1474	0.78	0.78	2	248	50	242	
12		55	416.66	0.062	76	1473	0.78	0.78	2	246	48	242	
13	6	60/0	419.19	0.060	77	1482	0.75	0.75	2	247	49	242	
14		5	421.71	0.049	78	1488	0.61	0.61	2	247	49	241	
15	5	10	423.95	0.041	80	1487	0.52	0.52	2	247	48	239	
16		15	426.04	0.057	81	1486	0.72	0.72	2	248	48	239	
17	4	20	428.46	0.042	82	1480	0.53	0.53	2	248	47	238	
18		25	430.55	0.034	83	1481	0.43	0.43	2	249	47	238	
19	3	30	432.42	0.038	84	1480	0.48	0.48	2	249	46	239	
20		35	434.40	0.044	85	1478	0.56	0.56	2	247	46	239	
21	2	40	436.58	0.030	87	1481	0.38	0.38	2	246	47	239	
22		45	438.44	0.025	88	1475	0.32	0.32	2	246	47	240	
23	1	50	440.13	0.037	89	1472	0.48	0.48	2	247	48	240	
24		55	442.97	0.034	90	1473	0.44	0.44	2	247	48	241	
25	A12	120/0	443.973	0.051	86	1492	0.65	0.65	2	246	47	238	✓

* FILTER EXIT for NJ Method 1. FILTER BOX for all others

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a cond

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA (continued)

PLANT JEWELL COAL & COKE RUN NO. III-2-SI-MMTL-2

SAMPLING LOC. ~~UNIT 1~~ STACK #1 JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	√
26		5	446.39	0.062	85	1496	0.78	0.78	2	247	50	239	
27	All	10	448.94	0.055	84	1494	0.69	0.69	2	248	48	237	
28		15	451.38	0.066	85	1495	0.83	0.83	2	248	47	237	
29	10	20	454.06	0.067	86	1495	0.85	0.85	2	249	48	236	
30		25	456.77	0.059	87	1497	0.75	0.75	2	249	48	236	
31	9	30	459.26	0.061	87	1496	0.77	0.77	2	250	49	237	
32		35	461.85	0.070	84	1520	0.87	0.87	2	250	47	236	
33	8	40	464.63	.066	83	1524	.82	.82	2	250	48	233	
34		45	467.31	.067	82	1518	.83	.83	2	250	48	235	
35	7	50	469.97	.064	82	1516	.79	.79	2	254	48	234	
36		55	472.60	.075	82	1517	.93	.93	2	255	48	235	
37	6	180/0	475.45	.077	83	1513	.96	.96	3	255	45	235	
38		5	478.37	.068	84	1512	.85	.85	2	255	45	231	
39	5	10	481.07	.064	84	1512	.80	.80	2	255	45	231	
40		15	483.69	.066	85	1515	.82	.82	2	257	45	233	
41	4	20	486.34	.048	84	1524	.60	.60	2	258	45	236	
42		25	488.62	.059	82	1528	.73	.73	2	258	48	234	
43	3	30	491.06	.045	81	1507	.56	.56	2	256	48	236	
44		35	493.28	.040	80	1505	.50	.50	2	256	49	235	
45	2	40	495.35	.038	79	1506	.47	.47	2	255	49	235	
46		45	497.34	.041	79	1507	.51	.51	2	255	50	231	
47	1	50	499.41	.038	81	1498	.48	.48	2	252	50	230	
48		55	501.44	.037	80	1499	.46	.46	2	252	50	230	
49	OFF	240	503.450										
50													
51													
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64													
65													

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH
	112.578	0.0521	80	1491	0.66

ENTROPY

FIELD DATA - METHOD(S) MMTL

PLANT Jewell Coal & Coke Company — RUN NO. IX-1-S1-MMTL-1

CITY/STATE Vansant, Virginia — JOB NO. 3694 — DATE 10/30/91

SAMPLING LOC. Stack 1 — TIME START 1200

BAROMETRIC PRESSURE, IN. HG 29.00 — STATIC PRESSURE, IN. H2O -.07 — TIME FINISH 1456

LEAK CHECK, VACUUM IN. HG 15 5 5 — OPERATOR SRD

LEAK RATE, CUBIC FEET/MIN. .001 .001 .001 — ASST(S) JMC

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 76 °F PRE
- ✓ TC 76 °F POST
- N/A ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS

REAGENT BOX M 114 — METER BOX N20 Y .9842 (0.994)

PITOT WC10 Cp .84 — NOZ'L Q4209 DIA. .500

TC READOUT FZ — TC PROBE WC10 — UMBILICAL U87

SAMPL'G BOX 56 — ORSAT PUMP N/A — TEDLAR BAG N/A

LEAK CHECKS

B 206-569 — B
E 206-611 — E

FILTER/XAD	TARE WT.
UN#	UNTARED

NOMOGRAPH DATA

DELTA Ha	1.740
METER TEMP	100
EST. %H2O	20
C FACTOR	.734
STACK TEMP	1500
REF DELTA P	.143
K FACTOR	12.898

PYRITES

6 1/2 %

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A 12	0	177.300	.043	81	1521	.53	.53	2	260	57	235	
2		3	178.59	.045	81	1518	.56	.56	2	260	55	235	
3	11	6	179.90	.044	82	1524	.54	.54	2	260	50	230	
4		9	181.19	.047	83	1525	.58	.58	2	257	50	232	
5	10	12	182.59	.048	84	1526	.60	.60	2	250	50	230	
6		15	183.82	.045	85	1525	.56	.56	2	252	47	231	
7	9	18	185.13	.052	85	1529	.65	.65	2	252	47	233	
8		21	186.42	.050	85	1530	.62	.62	2	250	48	237	
9	8	24	187.85	.046	85	1528	.57	.57	2	251	45	236	
10		27	189.14	.051	85	1530	.63	.63	2	252	45	235	
11	7	30	190.48	.045	86	1524	.56	.56	2	255	45	235	
12		33	191.81	.047	86	1528	.59	.59	2	255	47	235	
13	6	36	193.12	.040	87	1523	.50	.50	2	255	46	241	
14		39	194.41	.041	88	1524	.51	.51	2	258	48	240	
15	5	42	195.59	.038	88	1526	.48	.48	2	258	48	240	
16		45	196.83	.036	89	1524	.45	.45	2	258	45	236	
17	4	48	198.04	.035	89	1523	.44	.44	2	255	45	235	
18		51	199.20	.039	89	1521	.49	.49	2	255	45	235	
19	3	54	200.40	.031	89	1516	.39	.39	2	250	48	231	
20		57	201.53	.030	91	1514	.38	.38	2	250	48	230	
21	2	60	202.62	.028	91	1511	.36	.36	2	250	48	230	
22		63	203.67	.025	92	1510	.32	.32	2	253	52	227	
23	1	66	204.64	.021	93	1508	.28	.28	2	250	52	230	
24		69	205.60	.022	94	1500	.28	.28	2	250	50	230	
25	12	72/0	206.569	.055	96	1539	.69	.69	2	250	62	210	

1312
1344

* FILTER EXIT for NJ Method 1. FILTER BOX for all other

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a cond

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA (continued)

PLANT JEWELL COAL + COKE CO. RUN NO. IV-1-SI-MMTL-1

SAMPLING LOC. UNIT #2 STACK JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	√
26		3	208.14	.053	96	1538	.67	.67	2	250	57	229	
27	11	6	209.60	.047	96	1540	.59	.59	2	255	55	231	
28		9	210.95	.055	97	1542	.69	.69	2	256	52	237	
29	10	12	212.39	.045	98	1542	.57	.57	2	260	50	235	
30		15	213.85	.048	98	1543	.61	.61	2	260	50	235	
31	9	18	215.30	.051	99	1542	.65	.65	2	260	48	232	
32		21	216.72	.045	99	1540	.57	.57	2	255	48	230	
33	8	24	218.02	.043	99	1539	.55	.55	2	253	48	231	
34		27	219.32	.046	99	1538	.58	.58	2	253	48	230	
35	7	30	220.60	.044	100	1539	.56	.56	2	254	45	230	
36		33	221.92	.043	101	1540	.55	.55	2	254	45	230	
37	6	36	223.22	.038	101	1537	.48	.48	2	255	45	230	
38		39	224.48	.039	101	1536	.50	.50	2	255	47	232	
39	5	42	225.70	.035	101	1535	.45	.45	2	255	47	235	
40		45	226.85	.040	101	1534	.51	.51	2	250	48	230	
41	4	48	228.01	.030	101	1527	.38	.38	2	250	48	230	
42		51	229.10	.028	100	1518	.36	.36	2	250	45	230	
43	3	54	230.22	.025	100	1503	.32	.32	2	250	45	229	
44		57	231.20	.025	100	1504	.32	.32	2	247	46	229	
45	2	60	232.18	.020	99	1501	.26	.26	2	247	46	229	
46		63	233.17	.019	99	1500	.25	.25	2	246	48	228	
47	1	66	230.06	.021	98	1498	.27	.27	2	246	48	228	
48		69	234.98	.020	98	1498	.26	.26	2	245	48	229	
49		72/off	235.912										
50													
51													
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54													
55													
56													
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65													

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	58.570	.00381	93	1525	0.49

ENTROPY

FIELD DATA - METHOD(S) MMTL

PLANT Jewell Coal & Coke Company — RUN NO. IV-2-S1-MMTL-2
CITY/STATE Vansant, Virginia — JOB NO. 3694 — DATE 10/29/91
SAMPLING LOC. Stack 1 — TIME START 1100
BAROMETRIC PRESSURE, IN. HG 28.80 — STATIC PRESSURE, IN. H_2O -.09 — TIME FINISH 1428
LEAK CHECK, VACUUM IN. HG 15 5 5 — OPERATOR SRD
LEAK RATE, CUBIC FEET/MIN. .001 .001 .001 — ASST(S) JMC

EQUIPMENT CHECKS*
- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 77 °F PRE
- ✓ TC 76 °F POST
- N/A ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS
REAGENT BOX M130 — METER BOX N20 — Y .9842 (.994)
PITOT WC12 — C_p .84 — NOZ'L Glass — DIA. .500
TC READOUT F2 — TC PROBE WC12 — UMBILICAL U87
SAMPL'G BOX 18 — ORSAT PUMP N/A — TEDLAR BAG N/A

NOMOGRAPH DATA
DELTA H@ 1.740
METER TEMP 85
EST. %H_2O 17
C FACTOR .760
STACK TEMP 1500
REF DELTA P .138
K FACTOR 13.347

FILTER/XAD	TARE WT.
UN #	UNTARED

LEAK CHECKS
B 547.872 — B
E 547.950 — E
B — B
E — E
B — B
E — E
B — B
E — E

FYRITES

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A 12	0	503.764	.055	74	1489	.72	.72	2	245	60	210	
2		4	505.72	.042	76	1494	.55	.55	2	245	57	215	
3	11	8	507.44	.059	78	1499	.78	.78	2	250	55	220	
4		12	509.42	.058	79	1499	.77	.77	2	252	55	222	
5	10	16	511.48	.063	81	1501	.84	.84	2	255	49	224	
6		20	513.60	.062	84	1501	.83	.83	2	255	48	223	
7	9	24	515.72	.057	86	1506	.76	.76	2	260	48	231	
8		28	517.78	.059	89	1507	.79	.79	2	260	48	235	
9	8	32	519.86	.056	91	1509	.75	.75	2	258	47	233	
10		36	521.88	.056	93	1512	.76	.76	2	258	47	234	
11	7	40	523.90	.054	95	1514	.73	.73	2	255	45	230	
12		44	525.87	.057	97	1515	.77	.77	2	255	45	230	
13	6	48	527.92	.042	98	1515	.57	.57	2	255	45	231	
14		52	529.72	.045	99	1514	.61	.61	2	258	47	230	
15	5	56	531.54	.042	100	1514	.57	.57	2	260	47	230	
16		60	533.36	.044	100	1515	.60	.60	2	260	48	235	
17	4	64	535.20	.040	101	1514	.55	.55	2	260	48	235	
18		68	537.00	.036	101	1514	.49	.49	2	256	48	237	
19	3	72	538.68	.033	98	1512	.45	.45	2	255	48	235	
20		76	540.32	.034	96	1508	.46	.46	2	255	49	231	
21	2	80	541.78	.031	96	1495	.42	.42	2	255	52	233	
22		84	543.68	.027	95	1496	.37	.37	2	255	52	230	
23	1	88	545.19	.023	94	1494	.31	.31	2	255	52	230	
24		92	546.55	.021	94	1494	.29	.29	2	250	52	230	
1236 25	B 12	96/0	547.872	.048	96	1513	.65	.65	2	248	61	219	
1252													

* FILTER EXIT for NJ Method 1. FILTER BOX for all others

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a cond

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA (continued)

PLANT JEWELL COAL + COKE CO. RUN NO. IV-2-S1-MM16

SAMPLING LOC. STACK #1 JOB. NO. #3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	√
26		4	549.81	.047	97	1517	.64	.64	2	252	53	222	
27	11	8	551.65	.055	98	1515	.75	.75	2	255	50	224	
28		12	553.68	.044	99	1511	.60	.60	2	255	45	231	
29	10	16	555.54	.052	101	1521	.71	.71	2	255	45	230	
30		20	557.53	.055	101	1519	.75	.75	2	258	45	230	
31	9	24	559.60	.049	101	1521	.68	.68	2	258	47	230	
32		28	561.56	.054	100	1523	.73	.73	2	260	48	235	
33	8	32	563.62	.050	101	1523	.68	.68	2	260	48	235	
34		36	565.68	.053	100	1522	.72	.72	2	257	48	235	
35	7	40	567.75	.051	100	1521	.69	.69	2	256	50	230	
36		44	569.76	.052	100	1522	.71	.71	2	256	50	230	
37	6	48	571.77	.055	101	1517	.75	.75	2	255	51	233	
38		52	573.80	.051	101	1518	.70	.70	2	255	52	230	
39	5	56	575.79	.047	101	1517	.64	.64	2	255	52	230	
40		60	577.73	.043	100	1514	.59	.59	2	255	52	227	
41	4	64	579.57	.038	100	1513	.52	.52	2	249	50	228	
42		68	581.29	.035	99	1510	.48	.48	2	250	50	230	
43	3	72	583.01	.023	100	1510	.32	.32	2	250	50	230	
44		76	584.46	.026	100	1508	.36	.36	2	250	50	232	
45	2	80	585.92	.025	100	1498	.34	.34	2	250	52	231	
46		84	587.31	.026	101	1497	.36	.36	2	247	52	227	
47	1	88	588.68	.022	102	1499	.30	.30	2	245	53	230	
48		92	589.97	.020	102	1499	.28	.28	2	245	52	230	
49		96/off	591.231										
50													
51													
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56													
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62													
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64													
65													

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (●)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	87.389	0.0431	96	1510	0.60

ENTROPY

Data Acquisition Sheets
MM5

FIELD DATA - METHOD(S) MM5

AFWR II-0-S2-M

PLANT Jewell
CITY/STATE Vergent Va
SAMPLING LOC. Unit #2 Stack "C" Battery
BAROMETRIC PRESSURE, IN. HG 29.0 STATIC PRESSURE, IN. H_2O -.1
LEAK CHECK, VACUUM IN. HG 15 12
LEAK RATE, CUBIC FEET/MIN. .005 .005

RUN NO. ~~II-1-S2-MM5-1A~~
JOB NO. 3694
DATE 10-28-91
TIME START 22:25
TIME FINISH 24:25
OPERATOR MH
ASST(S)

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE PRE/POST
- ✓ TC 88 °F PRE
- ✓ TC 81 °F POST
- ✓ ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS

REAGENT BOX DF 624 METER BOX N-18 Y .9842
PITOT Cp .84 NOZ'L Q 1206 DIA. ~~.504~~
TC READOUT 1-52 TC PROBE UMBILICAL 4-88
SAMPL'G BOX 64 ORSAT PUMP 28 TEDLAR BAG 63

LEAK CHECKS

B	E	B	E
756.008	756.104		

FILTER/XAD	TARE WT.
369.25	NA
	355.5

NOMOGRAPH DATA

DELTA H@	1.846
METER TEMP	~~100~~ 95
EST. $\%H_2O$	13
C FACTOR	.888
STACK TEMP	1625
REF DELTA P	.124
K FACTOR	14.669

FYRITES

10

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F ~~FILTER~~ PROBE *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A-12	0	677.668	.117	86	1647	.167	1.67	7	~~245~~ 225	65	66	
2		5	681.21	.122	83	1621	1.77	1.77	8	~~245~~ 236	62	64	
3	-11	10	684.93	.120	86	1611	1.75	1.75	8	245	~~60~~ 55	~~60~~ 57	
4		15	688.61	.113	88	1608	1.66	1.66	8	250	50	55	
5	-10	20	692.25	.113	90	1608	1.67	1.67	8	245	50	55	
6		25	695.89	.109	92	1606	1.61	1.61	8	243	50	55	
7	-9	30	699.52	0.091	94	1603	1.36	1.36	7	236	49	54	
8		35	702.84	0.093	95	1603	1.39	1.39	7	238	49	54	
9	-8	40	706.18	0.092	96	1596	1.38	1.38	7	240	49	54	
10		45	709.52	.095	96	1594	1.43	1.43	7	240	50	55	
11	-7	50	712.88	.085	97	1591	1.28	1.28	7	240	50	55	
12		55	716.46	.093	98	1591	1.40	1.40	7	246	51	56	
13	-6	60	~~722.94~~	.082	98	1566	1.25	1.25	7	236	52	56	
14		65	722.74	.088	98	1582	1.33	1.33	7	235	52	57	
15	-5	70	726.62	.090	97	1585	1.36	1.36	7	235	52	58	
16		75	729.40	.089	97	1581	1.35	1.35	7	235	52	58	
17	-4	80	732.70	.07	97	1575	1.06	1.06	6	237	52	58	
18		85	735.73	.0706	97	1574	1.16	1.16	6	235	50	56	
19	-3	90	738.77	.061	97	1570	.93	.93	5	235	50	55	
20		95	741.63	.075	97	1568	1.14	1.14	5	235	50	55	
21	-2	100	~~750.21~~	.057	95	1541	.88	.88	5	235	50	54	
22		105	747.33	.070	93	1547	1.07	1.07	5	235	50	54	
23	-1	110	750.21	.066	91	1548	1.01	1.01	5	236	49	54	
24		115	753.12	.065	89	1545	.99	.99	5	236	49	54	
25	B-12	120/0	756.008										

719.52

744.68

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	78.304	0.0878	93	1586	1.33

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ENTROPY

FIELD DATA - METHOD(S) MM5

RUN NO: ~~[illegible]~~ 0-52-MM5-03

PLANT Jewell Coal and Coke
CITY/STATE Vansant, VA
SAMPLING LOC. Stack #2
BAROMETRIC PRESSURE, IN. HG 29.0
STATIC PRESSURE, IN. H_2O -0.1
LEAK CHECK, VACUUM IN. HG 15
LEAK RATE, CUBIC FEET/MIN. 0.007

JOB NO. 3676
DATE 10-28-91
TIME START 2225
TIME FINISH 0025
OPERATOR JDK,
ASST(S) HWL,

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ___ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 88 °F PRE
- ___ TC ___ °F POST
- NA ORSAT SYSTEM

FILTER/XAD	TARE WT.
3640-B	359.5

EQUIPMENT I.D. NUMBERS

REAGENT BOX DF0214 METER BOX N-23 Y .9823
PITOT ___ C_p .84 NOZ'L Q-1207 DIA. .499
TC READOUT E-34 TC PROBE ___ UMBILICAL U-91
SAMPL'G BOX 70 ORSAT PUMP NA TEDLAR BAG NA

NOMOGRAPH DATA

DELTA H@	1.827
METER TEMP	80
EST. $\%H_2O$	13
C FACTOR	.855
STACK TEMP	1550
REF DELTA P	0.127
K FACTOR	14.522

LEAK CHECKS

B 80.072	B ___
E ___	E ___
B ___	B ___
E ___	E ___
B ___	B ___
E ___	E ___

FYRITES

10%

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A-12	0/on	2.071	.117	79	1647	1.619	1.619	6	225	61	56	
2		5	5.62	.122	81	1621	1.71	1.71	6	230	60	55	
3	A-11	10	9.26	.120	83	1611	1.70	1.70	6	249	55	55	
4		15	12.51	.113	86	1608	1.65	1.61	6	249	57	58	
5	A-10	20	16.51	.113	89	1608	1.65	1.62	6	251	57	58	
6		25	20.14	.109	90	1606	1.60	1.57	6	244	50	57	
7	A-9	30	23.83	.091	92	1603	1.32	1.32	5	239	50	60	
8		35	27.01	.093	93	1603	1.35	1.35	5	235	50	60	
9	A-8	40	30.28	.092	93	1596	1.37	1.37	5	237	49	64	
10		45	33.59	.095	94	1594	1.40	1.39	5	240	49	66	
11	A-7	50	37.01	.085	95	1591	1.26	1.24	5	238	50	62	
12		55	40.21	.093	96	1591	1.39	1.36	5	235	52	61	
13	A-6	60	43.52	.082	96	1586	1.24	1.22	5	232	52	63	
14		65	46.72	.088	97	1582	1.33	1.30	5	232	53	64	
15	A-5	70	50.02	.090	97	1585	1.35	1.33	5	236	52	59	
16		75	53.34	.089	97	1581	1.33	1.31	5	237	50	56	
17	A-4	80	56.63	.070	96	1575	1.05	1.03	5	238	51	57	
18		85	59.68	.076	95	1574	1.15	1.12	5	237	48	55	
19	A-3	90	62.72	.061	95	1570	.92	.90	4	237	47	55	
20		95	65.54	.075	94	1568	1.12	1.11	5	236	49	56	
21	A-2	100	68.58	.058	93	1541	.88	.87	5	236	51	57	
22		105	71.34	.070	91	1547	1.07	1.04	5	235	52	55	
23	A-1	110	74.34	.066	90	1548	1.00	.98	4	237	52	56	
24		115	77.20	.065	89	1545	1.00	.96	5	237	54	55	
25	B-12	120	80.072										

* FILTER EXIT for NJ Method 1. FILTER BOX for all oth

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conde

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH
___	78.001	0.0879	92	1586	1.31

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ENTROPY

FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal & Coke Company
CITY/STATE Vansant, Virginia
SAMPLING LOC. Stack 2
BAROMETRIC PRESSURE, IN. HG 29.0
STATIC PRESSURE, IN. H2O -.10
LEAK CHECK, VACUUM IN. HG 15 7
LEAK RATE, CUBIC FEET/MIN. .005 .004

RUN NO. I-1-S2-MM5-1A
JOB NO. 3676
DATE 10/29/91
TIME START 17:20
TIME FINISH 20:20
OPERATOR MLH
ASST(S) HWL

EQUIPMENT CHECKS*
- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 89 °F PRE
- ✓ TC 66 °F POST
- ✓ ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS
REAGENT BOX
METER BOX N18 Y .9842
PITOT Cp .84 NOZ'L DIA. .500
TC READOUT F-52 TC PROBE H.S. temp UMBILICAL 4-86
SAMPL'G BOX ORSAT PUMP 28 TEDLAR BAG 63

LEAK CHECKS
B E B E
B E B E
B E B E

FILTER/XAD	TARE WT.
3684-10	401.0

NOMOGRAPH DATA
DELTA H@ 1.846
METER TEMP 85
EST. %H2O 20
C FACTOR .772
STACK TEMP 1625
REF DELTA P .143
K FACTOR 12.856

FYRITES
8 7½

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F PROBE/FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1		0	774.253	.045	85	1485	.61	.61	3	230	65	58	
2		5	776.52	.059	87	1487	.80	.80	4	235	50	57	
3		10	779.03	.055	89	1484	.75	.75	5	240	50	55	
4		15	781.55	.054	90	1482	.74	.74	5	250	50	55	
5			784.05	.052	92	1481	.72	.72	5	245	52	56	
6			786.5	.059	93	1494	.81	.81	5	245	51	56	
7		30	789.08	.063	94	1494	.87	.87	5	245	50	55	
8		35	791.77	.066	96	1507	.90	.90	5	250	50	54	
9		40	794.51	.072	96	1520	.98	.98	5	250	50	54	
10	-9	45	797.35	.073	97	1529	.99	.99	5	250	49	54	
11		50	800.21	.077	97	1527	1.04	1.04	5	250	49	54	
12		55	803.12	.066	99	1538	.89	.89	5	245	50	54	
13	-8	60	805.85	.079	99	1556	1.06	1.06	5	245	50	55	
14		65	808.76	.093	98	1573	1.24	1.24	6	235	50	53	
15		70	811.98	.095	97	1595	1.25	1.25	6	232	49	51	
16	-7	75	815.06	.096	95	1593	1.26	1.26	6	231	47	49	
17		80	818.22	.097	95	1610	1.26	1.26	6	236	45	48	
18		85	821.39	.106	94	1614	1.37	1.37	6	234	44	48	
19	-6	90	824.71	.085	92	1615	1.09	1.09	6	246	44	49	
20		95	827.72	.085	91	1621	1.09	1.09	5	238	44	50	
21		100	830.72	.086	91	1625	1.10	1.10	5	237	45	51	
22	-5	105	833.69	.100	90	1622	1.28	1.28	6	238	46	51	
23		110	836.84	.099	89	1619	1.25	1.25	6	240	45	50	
24		115	840.00	.107	88	1617	1.35	1.35	6	240	45	50	
25	-4	120	843.23	.115	87	1612	1.46	1.46	6	235	46	51	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	106.263	0.0832	90	1564	1.10

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal & Coke RUN NO. I-1-52-MM5-1A

SAMPLING LOC. Battery C Stack #2 JOB. NO. 3676

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26	-4	125	846.57	.108	86	1603	1.37	1.37	6	240	48	52
27		130	849.87	.107	85	1603	1.36	1.36	6	235	49	53
28	-3	135	853.11	.104	84	1597	1.32	1.32	6	235	48	52
29		140	856.31	.101	83	1594	1.28	1.28	6	235	47	51
30		145	859.47	.090	83	1590	1.14	1.14	6	236	47	51
31	-2	150	862.50	.083	82	1569	1.06	1.06	5	234	48	52
32		155	865.43	.081	80	1573	1.03	1.03	5	235	48	52
33		160	868.29	.101	80	1573	1.29	1.29	6	235	48	53
34	-1	165	871.39	.106	80	1567	1.35	1.35	6	240	47	52
35		170	874.62	.093	80	1567	1.19	1.19	5	240	47	51
36		175	877.69	.076	79	1566	.97	.97	5	235	48	53
37	~~[illegible]~~	~~[illegible]~~	880.516									
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* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condens...

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal and Coke — RUN NO. E-1-S2-MM5-1B
CITY/STATE Vansant, VA — JOB NO. 3626 — DATE 10-29-91
SAMPLING LOC. Stack #2 — TIME START 1720
BAROMETRIC PRESSURE, IN. HG 29.0 — STATIC PRESSURE, IN. H_2O -0.1 — TIME FINISH 2020
LEAK CHECK, VACUUM IN. HG 15 13 — OPERATOR JDK,
LEAK RATE, CUBIC FEET/MIN. 0.007 0.011 — ASST(S) HWL,

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 89 °F PRE
- ✓ TC 166 °F POST
- NA ORSAT SYSTEM

FILTER/XAD	TARE WT.
3694-19	334.5

EQUIPMENT I.D. NUMBERS

REAGENT BOX DF179 METER BOX N-23 Y .9823
PITOT ____ Cp .84 NOZ'L Q- DIA. .500
TC READOUT F-34 TC PROBE ____ UMBILICAL 4-91
SAMPL'G BOX 86 ORSAT PUMP -NA- TEDLAR BAG -NA-

NOMOGRAPH DATA

DELTA H@	1.827
METER TEMP	90
EST. $\%H_2O$	20
C FACTOR	.757
STACK TEMP	1550
REF DELTA P	.143
K FACTOR	12.866

LEAK CHECKS

B ____ E ____	B ____ E ____
B ____ E ____	B ____ E ____
B ____ E ____	B ____ E ____

FYRITES

8%
7½%

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A-12	0/ON	81.353	.045	82	1485	.60	.59	4	230	61	58	
2		5	83.61	.059	84	1487	.78	.78	6	235	55	52	
3		10	86.12	.055	85	1484	.73	.73	6	244	53	50	
4	A-11	15	88.61	.054	86	1482	.72	.72	5	254	51	50	
5		20	91.07	.052	87	1481	.69	.69	5	257	50	49	
6		25	93.35	.059	88	1484	.78	.78	9	258	50	49	
7	A-10	30	95.92	.063	89	1494	.84	.84	9	255	49	49	
8		35	98.66	.066	90	1507	.87	.87	9	250	48	48	
9		40	101.40	.072	90	1520	.94	.94	9	249	48	48	
10	A-9	45	104.59	.073	90	1529	.95	.95	9	247	50	48	
11		50	106.99	.077	90	1527	1.00	1.00	9	247	49	48	
12		55	109.89	.066	90	1538	.86	.86	7	248	49	48	
13	A-8	60	112.63	.079	90	1556	1.02	1.02	8	248	51	49	
14		65	115.51	.093	91	1573	1.19	1.19	9	248	49	49	
15		70	118.68	.095	91	1595	1.20	1.20	10	232	49	49	
16	A-7	75	121.82	.096	91	1593	1.21	1.21	10	230	50	50	
17		80	124.99	.097	90	1610	1.21	1.21	10	236	50	49	
18		85	128.18	.106	90	1614	1.32	1.32	11	235	52	51	
19	A-6	90	131.47	.085	90	1615	1.06	1.06	9	236	53	51	
20		95	134.57	.085	90	1621	1.06	1.06	9	232	53	52	
21		100	137.48	.086	89	1625	1.07	1.07	9	238	50	51	
22	A-5	105	140.46	.100	89	1622	1.24	1.24	10	239	51	50	
23		110	143.65	.099	89	1619	1.23	1.23	11	240	50	48	
24		115	146.89	.107	88	1617	1.33	1.33	12	241	50	48	
25	A-4	120	150.17	.115	88	1612	1.43	1.43	12	239	49	47	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
____	107.135	0.0832	88	1564	1.07

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal and Coke RUN NO. I-1-S2-MM5-1B

SAMPLING LOC. Stack A2 JOB. NO. 36376

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26	A-4	125	153.57	.108	88	1603	1.35	1.35	11	236	50	48
27		130	156.97	.107	88	1603	1.34	1.34	11	235	49	48
28	A-3	135	160.34	.104	86	1597	1.30	1.30	10	235	49	49
29		140	163.64	.101	86	1594	1.26	1.26	10	237	49	50
30		145	166.92	.090	86	1590	1.13	1.13	9	238	48	50
31	A-2	150	170.02	.083	85	1589	1.05	1.05	7	238	48	51
32		155	172.96	.081	84	1573	1.02	1.02	7	240	48	51
33		160	175.90	.101	84	1573	1.27	1.27	9	244	49	50
34	A-1	165	179.09	.106	84	1567	1.34	1.34	10	248	50	51
35		170	182.32	.093	83	1567	1.17	1.17	9	249	49	52
36		175	185.61	.076	82	1560	.96	.96	7	250	49	53
37		180/end	188.488									
38												
39												
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* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conden...

Min. (θ) _____ Vm _____ $(\sqrt{\Delta p})^2$ _____ tm _____ ts _____ ΔH _____

ENTROPY

FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal & Coke — RUN NO. I-2-82-MM5-2A
CITY/STATE Vansant Va — JOB NO. 3676 — DATE 10-30-91
SAMPLING LOC. "C" Battery Stack 2 — TIME START 18:21
BAROMETRIC PRESSURE, IN. HG 29.0 — STATIC PRESSURE, IN. H_2O -1.15 — TIME FINISH 20:45
LEAK CHECK, VACUUM IN. HG 15 10 — OPERATOR MCH
LEAK RATE, CUBIC FEET/MIN. .003 .008 — ASST(S) JOK

EQUIPMENT CHECKS*
- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 78 °F PRE
- ✓ TC 92 °F POST
- ✓ ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS
REAGENT BOX DP102 — METER BOX N-18 — Y .9842
PITOT — Cp .84 — NOZ'L — DIA. .500
TC READOUT E-52 — TC PROBE High temp — UMBILICAL 480
SAMPL'G BOX 82 — ORSAT PUMP 28 — TEDLAR BAG 53

LEAK CHECKS
B — B
E — E
B — B
E — E
B — B
E — E

FILTER/XAD	TARE WT.
10-24	344.0

NOMOGRAPH DATA
DELTA H@ 1.846
METER TEMP 90
EST. %H_2O 20
C FACTOR .765
STACK TEMP ~~1600~~ 1600
REF DELTA P .144
K FACTOR 12.786

FYRITES
6

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	D-12	0	218.297	.052	82	1488	.69	.69	4	225	60	65	
2		4	220.24	.070	81	1488	.93	.93	5	230	56	60	
3		8	222.44	.075	81	1492	1.00	1.00	5	235	54	58	
4	A-11	12	224.69	.074	82	1491	.99	.99	5	240	50	55	
5		16	226.88	.078	83	1491	1.04	1.04	5	240	49	53	
6		20	229.25	.079	84	1488	1.06	1.06	5	245	44	49	
7	10	24	231.56	.076	85	1488	1.02	1.02	5	245	44	48	
8		28	233.90	.095	85	1514	1.26	1.26	6	245	44	48	
9		32	236.35	.091	86	1523	1.07	1.07	6	250	43	47	
10	9	36	238.73	.095	87	1536	1.25	1.25	6	250	42	47	
11		40	241.20	.115	89	1550	1.50	1.50	6	245	43	48	
12		44	243.94	.134	91	1570	1.74	1.74	7	245	43	48	
13	8	48	246.87	.121	91	1588	1.56	1.56	7	245	43	47	
14		52	249.69	.126	91	1603	1.61	1.61	7	245	42	47	
15		56	252.51	.141	91	1619	1.79	1.79	8	250	42	47	
16	7	60	255.52	.132	92	1616	1.68	1.68	8	250	41	46	
17		64	258.45	.101	93	1623	1.28	1.28	6	250	40	45	
18		68	261	.125	93	1634	1.58	1.58	8	250	40	45	
19	6	72	263.76	.100	93	1631	1.26	1.26	6	255	40	46	
20		76	266.33	.094	93	1622	1.19	1.19	6	255	41	47	
21		80	268.86	.091	93	1621	1.16	1.16	6	250	41	47	
22	5	84	271.32	.099	92	1616	1.26	1.26	6	245	42	48	
23		88	273.82	.117	92	1617	1.49	1.49	6	245	42	49	
24		92	276.53	.123	91	1612	1.56	1.56	6	245	43	49	
25	4	96	279.33	.121	91	1603	1.54	1.54	6	245	43	48	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

ENTROPY

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FIELD DATA (continued)

PLANT Jewell Coal + Coke RUN NO. F-2-S2-M5-2A

SAMPLING LOC. "C" Battery Stack #2 JOB. NO. 3676

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26	A-4	100	282.15	.119	91	1602	1.52	1.52	6	245	43	48
27		104	284.92	.117	92	1604	1.50	1.50	6	245	45	49
28	3	108	287.73	.124	91	1602	1.58	1.58	6	245	45	49
29		112	290.53	.116	92	1578	1.50	1.50	6	247	44	49
30		116	293.28	.107	92	1588	1.38	1.38	6	249	44	50
31	2	120	295.96	.094	92	1542	1.24	1.24	5	250	46	50
32		124	298.51	.096	92	1545	1.26	1.26	5	250	45	50
33		128	301.04	.098	92	1549	1.29	1.25	6	251	45	50
34	1	132	303.60	.091	91	1546	1.20	1.20	5	251	46	51
35		136	306.07	.093	88	1545	1.22	1.22	5	251	47	52
36		140	308.56	.093	88	1548	1.18	1.18	5	250	48	54
37	END	144	311.030									
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* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conde.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	92.733	0.1007	89	1566	1.32

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ENTROPY

FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal + Coke
RUN NO. ~~[illegible]~~ 3 I-3-52-MM5
CITY/STATE Vansant Va
JOB NO. ~~[illegible]~~ 3676
DATE November 91
SAMPLING LOC. "C" Battery Stack #2
TIME START 17:15
BAROMETRIC PRESSURE, IN. HG 28.7
STATIC PRESSURE, IN. H_2O -.10
TIME FINISH 20:15
LEAK CHECK, VACUUM IN. HG 15
OPERATOR MLH
LEAK RATE, CUBIC FEET/MIN. .004 12.13/~~[illegible]~~
ASST(S) HWL

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 93 °F PRE
- ✓ TC 76 °F POST
- ✓ ORSAT SYSTEM

FILTER/XAD	TARE WT.
3694-1	346.5

EQUIPMENT I.D. NUMBERS

REAGENT BOX DF103 METER BOX N18 Y .9842
PITOT ____ C_p .84 NOZ'L ____ DIA. .500
TC READOUT ~~[illegible]~~ N18 TC PROBE ____ UMBILICAL 4-80
SAMPL'G BOX 85 ORSAT PUMP 18 TEDLAR BAG 71

NOMOGRAPH DATA

DELTA H@ 1.846
METER TEMP 100
EST. $\%H_2O$ 20
C FACTOR .779
STACK TEMP 1600
REF DELTA P .041
K FACTOR 13.018

LEAK CHECKS

B ____ B ____
E ____ E ____
B ____ B ____
E ____ E ____
B ____ B ____
E ____ E ____

FYRITES

6 5½
8 ~~[illegible]~~ Bag
7½

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F PROBE OR COND EXIT**	GAS TEMPERATURES °F IMPING. EXIT	GAS TEMPERATURES °F FILTER*	✓
1	A-12	0	674.288	.043	86	1513	.57	.57	4	47	45	225	
2		5	676.52	.056	85	1516	.74	.74	5	45	40	230	
3		10	678.90	.049	86	1516	.65	.65	5	46	41	230	
4	A-11	15	681.33	.054	87	1516	.72	.72	5	47	42	230	
5		20	683.78	.051	88	1514	.68	.68	5	49	43	235	
6		25	686.21	.061	89	1514	.82	.82	5	50	45	235	
7	10	30	688.79	.056	88	1514	.75	.75	5	49	44	240	
8		35	691.29	.052	89	1530	.69	.69	5	49	44	245	
9		40	693.74	.075	91	1544	.99	.99	6	49	45	250	
10	9	45	696.62	.078	93	1553	1.00	1.00	6	48	45	255	
11		50	699.51	.077	95	1560	1.02	1.02	6	47	44	260	
12		55	702.46	.078	96	1560	1.03	1.03	6	47	44	255	
13	8	60	705.32	.073	95	1565	.96	.96	6	47	43	250	
14		65	708.16	.089	96	1577	1.17	1.17	6	47	43	250	
15		70	711.24	.072	97	1585	.94	.94	6	47	43	255	
16	7	75	714.07	.104	97	1622	1.34	1.34	7	48	43	255	
17		80	717.36	.100	97	1645	1.27	1.27	7	49	44	250	
18		85	720.57	.103	97	1669	1.29	1.29	7	47	43	250	
19	6	90	723.81	.107	98	1694	1.33	1.33	7	48	43	250	
20		95	727.10	.106	98	1705	1.31	1.31	7	49	44	245	
21		100	730.36	.111	98	1712	1.37	1.37	7	50	45	245	
22	5	105	733.66	.122	98	1712	1.50	1.50	7	46	42	250	
23		110	737.14	.105	100	1704	1.30	1.30	7	48	43	250	
24		115	740.40	.112	100	1699	1.39	1.39	7	49	44	255	
25	4	120	743.77	1.21	100	1696	1.51	1.51	7	49	45	255	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH
____	108.471	0.0861	95	1621	1.12

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal + Coke RUN NO. I-3-52-MMS
SAMPLING LOC. "C" Battery Stack #2 JOB. NO. 3676

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26		125	747.27	.116	100	1693	1.45	1.45	7	250	45	48
27		130	750.75	.117	100	1686	1.46	1.46	7	250	43	47
28	3	135	754.22	.110	100	1689	1.37	1.37	7	255	44	48
29		140	757.57	.107	100	1681	1.34	1.34	7	250	45	49
30		145	760.88	.096	101	1678	1.21	1.21	6	245	45	50
31	2	150	764.08	.094	99	1669	1.18	1.18	6	245	44	48
32		155	767.26	.093	98	1671	1.17	1.17	6	245	44	48
33		160	770.32	.096	97	1671	1.20	1.20	6	245	44	48
34	1	165	773.45	.095	97	1669	1.19	1.19	6	250	44	48
35		170	776.59	.094	96	1664	1.18	1.18	6	250	45	49
36		175	779.73	.087	96	1657	1.10	1.10	6	245	46	49
37	END	180	782.759									
38												
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* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

ENTROPY

FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal and Coke — RUN NO. I-3-52-MM5-3B
CITY/STATE Vansant, VA — JOB NO. 3676 — DATE 10-31-91
SAMPLING LOC. Stack #2 — TIME START 1715
BAROMETRIC PRESSURE, IN. HG 28.7 — STATIC PRESSURE, IN. H_2O -0.1 — TIME FINISH 2015
LEAK CHECK, VACUUM IN. HG 15 — OPERATOR JDK
LEAK RATE, CUBIC FEET/MIN. .002 — ASST(S) MLH, HWL

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 93 °F PRE
- ✓ TC 76 °F POST
- NA ORSAT SYSTEM

FILTER/XAD	TARE WT.
3694-29	338.0

EQUIPMENT I.D. NUMBERS

REAGENT BOX DF183 — METER BOX N-23 — Y .9823
PITOT ____ — C_p .84 — NOZ'L ____ — DIA. .500
TC READOUT F-34 — TC PROBE C-36 — UMBILICAL U-91
SAMPL'G BOX 82 — ORSAT PUMP NA — TEDLAR BAG NA

NOMOGRAPH DATA

DELTA H@	1.827
METER TEMP	85
EST. $\%H_2O$	20
C FACTOR	.750
STACK TEMP	1550
REF DELTA P	.143
K FACTOR	12.851

LEAK CHECKS

B ____	B ____
E ____	E ____
B ____	B ____
E ____	E ____
B ____	B ____
E ____	E ____

FYRITES

6%
5½%
7½%

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A-12	0/ON	893.054	.043	80	1513	.56	.56	2	249	59	56	
2		5	895.26	.056	80	1516	.73	.73	3	245	50	49	
3		10	897.72	.049	80	1576	.64	.64	3	245	50	48	
4	A-11	15	900.05	.054	80	1516	.70	.70	3	248	43	50	
5		20	902.44	.051	80	1514	.66	.66	3	249	44	50	
6		25	904.79	.061	80	1514	.79	.79	3	244	46	50	
7	A-10	30	907.34	.056	80	1514	.73	.73	3	240	46	49	
8		35	909.83	.052	80	1530	.67	.67	3	241	48	50	
9		40	912.17	.075	82	1544	.96	.96	4	242	46	48	
10	A-9	45	914.98	.076	83	1553	.97	.97	4	244	46	49	
11		50	917.83	.077	83	1560	.98	.98	4	245	45	46	
12		55	902.69	.078	84	1560	1.00	1.00	4	246	48	47	
13	A-8	60	923.55	.073	83	1565	.93	.93	4	247	48	46	
14		65	926.34	.089	83	1577	1.13	1.13	4	251	48	47	
15		70	929.40	.072	84	1585	.91	.91	4	254	49	47	
16	A-7	75	932.17	.104	84	1622	1.29	1.29	4	248	50	48	
17		80	935.42	.100	85	1645	1.23	1.23	5	247	50	49	
18		85	938.61	.103	87	1669	1.26	1.26	5	248	50	48	
19	A-6	90	941.84	.107	88	1694	1.29	1.29	5	248	50	48	
20		95	945.13	.106	89	1705	1.28	1.28	5	249	50	49	
21		100	948.42	.111	88	1712	1.33	1.33	5	248	51	50	
22	A-5	105	951.72	.122	88	1712	1.46	1.46	5	247	51	50	
23		110	955.21	.105	88	1704	1.26	1.26	5	245	52	51	
24		115	958.47	.112	89	1699	1.35	1.35	5	246	51	51	
25	A-4	120	961.82	.121	90	1696	1.47	1.47	5	246	51	50	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal and Coke RUN NO. I-3-52-MM5-38

SAMPLING LOC. Stack #2 JOB. NO. 3626

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26	A-4	125	965.33	.116	90	1693	1.41	1.41	5	245	50	48
27		130	968.78	.117	88	1686	1.42	1.42	5	244	49	47
28	A-3	135	972.22	.110	88	1689	1.33	1.33	5	244	49	47
29		140	975.57	.107	87	1681	1.30	1.30	5	246	49	48
30		145	978.87	.096	87	1678	1.17	1.17	5	248	49	49
31	A-2	150	981.99	.094	87	1669	1.15	1.15	5	249	50	49
32		155	985.10	.093	87	1671	1.13	1.13	5	249	50	49
33		160	988.18	.096	88	1671	1.17	1.17	5	250	50	48
34	A-1	165	991.32	.095	88	1669	1.16	1.16	5	253	51	48
35		170	994.46	.094	88	1664	1.15	1.15	5	252	51	49
36		175	997.58	.087	87	1657	1.07	1.07	5	251	50	49
37		180/OFF	1000.606									
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* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conden...

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	107.552	0.0861	85	1621	1.08

ENTROPY

FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal + Coke
RUN NO. II-1-S2-MM5-1A
CITY/STATE Vansant Va
JOB NO. 3676
DATE 10-29-91
SAMPLING LOC. Battery "C" Stack #2
TIME START 2212
BAROMETRIC PRESSURE, IN. HG 29.0
STATIC PRESSURE, IN. H_2O -.105
TIME FINISH 03:00 (0)037
LEAK CHECK, VACUUM IN. HG 15 6
OPERATOR MLH
LEAK RATE, CUBIC FEET/MIN. .006 .005
ASST(S) HAL Lee

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- NOZZLE, PRE/POST
- ✓ TC 65 °F PRE
- ✓ TC 58 °F POST
- ✓ ORSAT SYSTEM

FILTER/XAD	TARE WT.
3694-4	910.0

EQUIPMENT I.D. NUMBERS

REAGENT BOX
METER BOX N-18 Y .9842
PITOT Naturecraft Cp .84 NOZ'L DIA. .500
TC READOUT
TC PROBE High temp UMBILICAL 4-80
SAMPL'G BOX
ORSAT PUMP 28 TEDLAR BAG 12

NOMOGRAPH DATA

DELTA H@	1.846
METER TEMP	75
EST. %H_2O	20
C FACTOR	.744
STACK TEMP	1575
REF DELTA P	.146
K FACTOR	12.590

LEAK CHECKS

B	B
E	E
B	B
E	E
B	B
E	E

FYRITES

9.5 9.5

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A-12	0	881.396	.065	64	1552	.81	.81	4	225	65	62	
2		4	883.38	.084	64	1563	1.05	1.05	5	230	61	62	
3		8	885.68	.069	65	1557	.86	.86	5	230	60	62	
4		12	887.79	.071	66	1561	.89	.89	5	230	58	61	
5		16	889.88	.060	67	1558	.75	.75	5	235	55	59	
6		20	891.87	.065	67	1557	.82	.82	5	235	53	58	
7	-11	24	893.88	.086	68	1560	1.08	1.08	5	235	50	55	
8		28	896.12	.079	68	1557	.99	.99	5	235	50	55	
9		32	898.34	.077	69	1558	.97	.97	5	240	49	53	
10		36	900.55	.078	69	1555	.98	.98	5	240	48	52	
11		40	902.77	.084	70	1556	1.06	1.06	5	235	48	51	
12		44	905.00	.087	70	1553	1.10	1.10	5	235	47	51	
13	-16	48	907.39	.086	71	1553	1.09	1.09	5	240	47	50	
14		52	909.69	.094	71	1553	1.19	1.19	5	240	46	49	
15		56	912.09	.085	72	1546	1.08	1.08	5	235	46	49	
16		60	914.43	.086	73	1544	1.10	1.10	5	235	45	49	
17		64	916.75	.083	74	1545	1.06	1.06	5	240	45	49	
18		68	919.04	.080	75	1543	1.03	1.03	5	240	44	49	
19	-9	72	921.32	.085	76	1544	1.09	1.09	5	240	44	48	
20		76	923.63	.090	77	1544	1.16	1.16	5	245	44	48	
21		80	926.01	.087	79	1544	1.12	1.12	5	245	45	48	
22		84	928.37	.086	80	1542	1.11	1.11	5	250	45	49	
23		88	930.73	.084	81	1540	1.09	1.09	5	250	45	49	
24		92	933.16	.090	82	1539	1.17	1.17	5	250	46	50	
25	-8	96	935.50	.090	83	1544	1.17	1.17	5	245	47	51	

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal + Coke
SAMPLING LOC. Battery "C"

RUN NO. II-1-M52-MM5-1A
JOB. NO. 3676

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26	8	100	937.53	.083	83	1552	1.08	1.08	5	240	48	52
27		104	940.28	.080	80	1545	1.03	1.03	5	235	49	54
28		108	942.63	.080	80	1549	1.03	1.03	5	235	49	55
29	8	112	944.91	.079	80	1550	1.02	1.02	5	240	48	53
30		116	947.18	.076	80	1551	.98	.98	5	240	48	52
31	7	120	949.41	.065	80	1556	.84	.84	5	245	47	51
32		124	951.50	.067	79	1557	.86	.86	5	250	47	51
33		128	953.59	0.07	78	1559	.90	.90	5	250	47	51
34		132	955.74	0.067	78	1558	.86	.86	5	255	47	51
35		136	957.84	0.075	75	1558	.96	.96	5	255	48	52
36		140	960.02	0.082	75	1559	1.04	1.04	5	250	48	52
37	6	144	962.28	0.076	76	1559	0.97	0.97	5	248	48	52
38		148	964.50	0.076	76	1559	0.97	0.97	5	248	48	52
39		152	966.72	0.074	78	1561	0.95	0.95	5	248	48	52
40		156	968.93	0.077	76	1563	0.98	0.98	5	248	48	52
41		160	971.16	0.076	75	1561	0.97	0.96	5	248	48	53
42		164	973.33	0.050	74	1563	0.63	0.63	5	250	48	53
43	5	168	975.20	0.067	76	1564	0.85	0.85	5	253	48	53
44		172	977.46	0.067	76	1567	0.85	0.85	5	253	48	53
45		176	979.55	0.055	79	1566	0.70	0.70	5	253	48	53
46		180	981.45	0.055	80	1567	0.70	0.70	5	253	48	53
47		184	983.37	0.063	80	1572	0.80	0.80	5	250	48	53
48		188	985.39	0.055	80	1568	0.70	0.70	5	250	48	53
49	4	192	987.31	0.057	78	1569	0.73	0.73	5	250	48	53
50		196	989.19	0.067	76	1573	0.85	0.85	5	245	48	53
51		200	991.30	0.061	76	1570	0.77	0.77	5	245	48	53
52		204	993.27	0.067	76	1574	0.85	0.85	5	250	48	53
53		208	995.35	0.063	75	1570	0.80	0.80	5	250	46	52
54		212	997.39	0.060	75	1571	0.76	0.76	5	250	46	50
55	3	216	999.38	0.063	75	1569	0.80	0.80	5	250	45	48
56		220	1001.37	0.060	75	1569	0.76	0.76	5	248	45	48
57		224	1003.33	0.060	75	1570	0.76	0.76	5	248	45	48
58		228	1005.32	0.065	75	1572	0.82	0.82	5	249	43	48
59		232	1007.37	0.065	75	1571	0.82	0.82	5	250	43	45
60		236	1009.41	0.063	73	1577	0.79	0.79	5	255	43	45
61	2	240	1011.40	0.065	72	1586	0.81	0.81	5	255	43	45
62		244	1013.43	0.067	70	1586	0.83	0.83	5	255	43	45
63		248	1015.47	0.055	70	1583	0.69	0.69	5	255	43	45
64		252	1017.34	0.050	69	1574	0.63	0.63	5	255	43	45
65		256	1019.12	0.050	69	1571	0.63	0.63	5	255	43	45

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conden.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

ENTROPY

FIELD DATA (continued)

3 of 3

PLANT Jewell Coal + coke RUN NO. II-1-S2-mm5-1A

SAMPLING LOC. Van Sant Va. Battery "E" Stack #2 JOB. NO. 3625

COMMENTS

	LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	√
6	26		260	1020.87	.053	70	1571	0.68	.68	5	250	43	45	
	27	1	264	1022.70	.048	70	1548	.61	.61	5	250	43	45	
	28		268	1024.48	.045	70	1540	.57	.57	5	250	43	45	
	29		272	1026.19	.045	72	1539	.58	.58	5	250	43	45	
7	30		276	1027.89	.045	72	1539	.58	.58	5	255	43	47	
	31		280	1029.60	.043	73	1538	.55	.55	5	255	45	47	
	32		284	1031.28	.045	74	1538	.58	.58	5	255	45	47	
7	33	off	288	1032.987										
	34													
	35													
	36													
	37													
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	65													

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	151.591	0.0689	74	1558	0.89

ENTROPY

FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal and Coke — RUN NO. II-1-S2-MM5-1B
CITY/STATE Vansant, VA — JOB NO. 3676 — DATE 10-29/30-91
SAMPLING LOC. Stack #2 — TIME START 2212
BAROMETRIC PRESSURE, IN. HG 29.0 — STATIC PRESSURE, IN. H_2O -0.105 — TIME FINISH 0326
LEAK CHECK, VACUUM IN. HG 15 — OPERATOR JDK
LEAK RATE, CUBIC FEET/MIN. 0.008 Pitot after — ASST(S) HWL

EQUIPMENT CHECKS*
- ✓ PITOT, PRETEST
- ___ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 65 °F PRE
- ___ TC ___ °F POST
- ___ ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS
REAGENT BOX DF103 — METER BOX N-23 — Y .9823
PITOT ___ — Cp .84 — NOZ'L Q — DIA. .1499
TC READOUT E-34 — TC PROBE C-18 — UMBILICAL U-91
SAMPL'G BOX 14 — ORSAT PUMP NA — TEDLAR BAG NA

LEAK CHECKS
B ___ E ___ B ___ E ___
B ___ E ___ B ___ E ___
B ___ E ___ B ___ E ___

FILTER/XAD	TARE WT.
3654-7	344.5

NOMOGRAPH DATA

DELTA H@	1.827
METER TEMP	90
EST. %H_2O	20
C FACTOR	.757
STACK TEMP	1550
REF DELTA P	.143
K FACTOR	12.866

FYRITES
9
9.5

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	√
1	A-12	0/00	188.792	.065	64	1552	.80	.80	4	239	61	60	
2		4	190.83	.084	65	1563	1.03	1.03	5	239	56	55	
3		8	193.08	.069	65	1557	.85	.85	5	241	55	52	
4		12	195.19	.071	65	1561	.87	.87	5	243	50	48	
5		16	197.30	.060	68	1558	.74	.74	4	243	49	46	
6		20	199.28	.065	69	1557	.80	.80	5	244	48	45	
7	A-11	24	201.31	.086	70	1560	1.06	1.06	6	244	49	45	
8		28	203.58	.079	72	1557	.98	.98	6	250	48	46	
9		32	205.88	.077	72	1558	.96	.96	6	251	47	45	
10		36	208.13	.078	73	1555	.97	.97	6	248	47	46	
11		40	210.38	.084	74	1556	1.05	1.05	6	248	47	46	
12		44	212.69	.087	74	1553	1.09	1.09	6	246	48	48	
13	A-10	48	215.11	.086	75	1553	1.08	1.08	6	245	48	46	
14		52	217.48	.094	75	1553	1.18	1.18	6	244	49	47	
15		56	219.78	.085	76	1546	1.07	1.07	6	246	48	47	
16		60	222.36	.086	76	1544	1.08	1.08	6	245	48	46	
17		64	224.76	.083	76	1545	1.05	1.05	6	241	49	46	
18		68	227.12	.080	77	1543	1.01	1.01	6	239	50	48	
19	A-9	72	229.46	.085	78	1544	1.08	1.08	6	238	51	48	
20		76	231.82	.090	79	1544	1.14	1.14	6	240	51	49	
21		80	234.25	.087	80	1544	1.10	1.10	6	240	52	50	
22		84	236.69	.086	80	1542	1.09	1.09	6	241	52	49	
23		88	239.08	.084	80	1540	1.07	1.07	6	242	50	46	
24		92	241.49	.090	80	1539	1.12	1.15	6	242	49	45	
25	A-8	96	243.87	.090	80	1544	1.14	1.14	6	241	46	45	

* FILTER EXIT for NJ Method 1. FILTER BOX for all oth

** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conde

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH
	153.179	0.0689	74	1558	0.87

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ENTROPY

FIELD DATA (continued)

2 of 3

PLANT Jewell Coal and Coke RUN NO. A-1-52-MMS-1B

SAMPLING LOC. Stack #2 JOB. NO. 3676

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	√
26	A-8	100	246.32	.083	80	1552	1.05	1.05	6	238	48	45	
27		104	248.71	.080	77	1545	1.01	1.01	6	239	48	46	
28		108	251.03	.080	76	1549	1.01	1.01	6	240	49	46	
29		112	253.33	.079	75	1556	.99	.99	6	240	47	44	
30		116	255.60	.076	75	1551	.95	.95	6	240	46	43	
31	A-7	120	257.87	.065	76	1556	.81	.81	5	241	45	43	
32		124	259.96	.067	76	1557	.84	.84	5	242	45	44	
33		128	262.05	.067	76	1559	.88	.88	5	242	44	44	
34		132	264.18	.067	75	1558	0.84	0.84	5	243	45	43	
35		136	266.28	0.075	76	1558	0.94	0.94	5	244	45	43	
36		140	268.475	0.082	76	1559	1.03	1.03	5	244	45	43	
37	A-6	144	270.749	0.076	75	1559	0.95	0.95	5	245	44	42	
38		148	272.991	0.076	75	1559	0.95	0.95	6	245	45	42	
39		152	275.311	0.074	76	1561	0.93	0.93	6	244	45	43	
40		156	277.479	0.077	76	1563	0.96	0.96	6	245	44	44	
41		160	279.624	0.076	77	1561	0.95	0.95	6	246	45	43	
42		164	281.811	0.05	77	1563	0.63	0.63	5	245	44	42	
43	A-5	168	283.831	0.067	76	1564	0.84	0.84	5	244	45	41	
44		172	285.811	0.067	76	1567	0.84	0.84	5	243	44	40	
45		176	287.981	0.055	77	1566	0.68	0.68	5	244	45	40	
46		180	289.895	0.055	77	1567	0.69	0.69	5	245	44	40	
47		184	291.785	0.063	76	1572	0.78	0.78	5	245	44	41	
48		188	293.811	0.055	76	1568	0.69	0.69	5	245	43	41	
49	A-4	192	295.741	0.057	76	1569	0.71	0.71	5	246	44	41	
50		196	297.675	0.067	76	1573	0.83	0.83	5	247	44	42	
51		200	299.755	0.061	76	1570	0.76	0.76	5	248	43	42	
52		204	301.769	0.067	76	1574	0.83	0.83	5	249	44	42	
53		208	303.839	0.063	77	1570	0.79	0.79	5	248	43	41	
54		212	305.873	0.06	77	1571	0.75	0.75	5	247	44	40	
55	A-3	216	307.875	0.063	76	1569	0.79	0.79	5	246	44	40	
56		220	309.881	0.06	75	1569	0.75	0.75	5	245	45	41	
57		224	311.869	0.06	75	1570	0.75	0.75	5	245	45	42	
58		228	313.890	0.065	74	1572	0.81	0.81	5	244	46	41	
59		232	315.911	0.065	74	1571	0.81	0.81	5	244	46	41	
60		236	317.959	0.063	73	1577	0.78	0.78	5	243	45	42	
61	A-2	240	320.011	0.065	73	1586	0.80	0.80	5	244	46	41	
62		244	322.020	0.067	73	1586	0.82	0.82	5	244	46	40	
63		248	324.010	0.055	73	1583	0.68	0.68	5	243	47	41	
64		252	326.050	0.05	73	1574	0.62	0.62	5	242	46	42	
65		256	327.897	0.05	73	1571	0.62	0.62	5	242	47	41	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

ENTROPY

3095

FIELD DATA (continued)

PLANT Jewell Coal and Coke RUN NO. II-1-52-MM5-1B

SAMPLING LOC. Stack #2 JOB. NO. 3676

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26		260	329.719	0.053	72	1571	0.66	0.66	5	241	46	41
27	A-1	264	331.571	0.048	71	1548	0.60	0.60	5	242	45	40
28		268	333.391	0.045	70	1540	0.56	0.56	5	243	45	41
29		272	335.241	0.045	70	1539	0.56	0.56	5	244	46	42
30		276	336.895	0.045	70	1539	0.56	0.56	5	243	45	41
31		280	338.611	0.043	70	1538	0.54	0.54	5	244	45	41
32		284	340.291	0.045	70	1538	0.56	0.56	5	244	46	40
33		288/off	341.971	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
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* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condens...

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal + Coke
RUN NO. II-2-S2-MM5-2A
CITY/STATE Vansant Va
JOB NO. 3676
DATE 10/30/91
SAMPLING LOC. "C" Battery Stack #2
TIME START 2300
BAROMETRIC PRESSIONE, IN. HG 29.86
STATIC PRESSURE, IN. H_2O -.11
TIME FINISH 0300
LEAK CHECK, VACUUM IN. HG 15 7
OPERATOR MCH
LEAK RATE, CUBIC FEET/MIN. .007 .002
ASST(S) HWL

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 67 °F PRE
- ✓ TC 62 °F POST
- ✓ ORSAT SYSTEM

FILTER/XAD	TARE WT.
3694-78	343.5

EQUIPMENT I.D. NUMBERS

REAGENT BOX DF102 METER BOX N18 Y .9842
PITOT ____ C_p .84 NOZ'L ____ DIA. .500
TC READOUT F52 TC PROBE ____ UMBILICAL 4-80
SAMPL'G BOX 14 ORSAT PUMP Synergy TEDLAR BAG 53

NOMOGRAPH DATA

DELTA H@	1.846
METER TEMP	80
EST. %H_2O	20
C FACTOR	.751
STACK TEMP	1550
REF DELTA P	.1441
K FACTOR	12.763

LEAK CHECKS

B	E	B	E

FYRITES

8 7½

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A-12	0	311.282	.076	65	1575	.93	.93	5	235	45	49	
2		5	313.95	.045	65	1561	.56	.56	5	235	45	48	
3		10	316.10	.061	65	1564	.75	.75	5	240	40	46	
4		15	318.51	.065	67	1573	1.05	1.05	5	245	39	45	
5	-11	20	~~323.83~~	.063	68	1571	.78	.78	5	245	39	44	
6		25	~~326.24~~	.059	69	1568	.73	.73	5	245	40	44	
7		30	326.24	.073	69	1571	.91	.91	5	245	40	44	
8		35	328.88	.082	70	~~1563~~	1.02	1.02	6	245	40	44	
9	-10	40	331.69	.075	71	1569	.93	.93	6	245	40	44	
10		45	334.39	.081	71	1569	1.01	1.01	6	245	40	44	
11		50	337.17	.089	71	1570	1.11	1.11	6	245	40	45	
12		55	340.06	.083	72	1567	1.04	1.04	6	245	41	45	
13	-9	60	342.92	.085	73	1567	1.06	1.06	6	245	41	44	
14		65	345.76	.091	73	1568	1.14	1.14	6	244	40	44	
15		70	348.70	.082	73	1566	1.03	1.03	6	250	40	44	
16		75	351.58	.085	73	1562	1.07	1.07	6	251	40	44	
17	-8	80	354.45	.086	73	1565	1.08	1.08	6	251	40	44	
18		85	357.33	.085	73	1566	1.06	1.06	6	251	40	44	
19		90	360.20	.087	73	1565	1.09	1.09	6	250	41	45	
20		95	363.09	.090	73	1566	1.13	1.13	6	250	41	45	
21	-7	100	366.02	.086	72	1564	1.08	1.08	6	251	41	46	
22		105	368.94	.085	72	1561	1.07	1.07	6	251	42	46	
23		110	371.85	.078	73	1559	.98	.98	6	252	41	45	
24		115	374.66	.079	73	1561	.99	.99	6	253	41	45	
25	-6	120	377.46	.075	73	1562	.94	.94	6	254	41	45	

321.33
323.83
.090

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

ENTROPY

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FIELD DATA (continued)

PLANT Jewell Coal + Coke RUN NO. II-2-52-MM5-2A

SAMPLING LOC. Battery "C" Stack #2 JOB. NO. 3676

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26	1-6	125	380.23	.076	74	1563	.96	.96	6	255	41	45
27		130	383.01	.065	73	1562	.82	.82	6	256	41	46
28		135	385.58	.082	74	1563	1.03	1.03	6	255	42	47
29	-5	140	388.38	.077	73	1563	.97	.97	6	254	40	45
30		145	391.15	.070	73	1560	.88	.88	6	254	39	45
31		150	393.82	.085	73	1559	1.07	1.07	6	253	39	44
32		155	396.69	.067	73	1557	.84	.84	6	253	39	44
33	-4	160	399.29	.063	73	1554	.79	.79	6	253	39	44
34		165	401.82	.076	72	1555	.96	.96	6	253	39	44
35		170	404.57	.075	72	1554	.94	.94	6	252	39	45
36		175	407.32	.072	72	1552	.91	.91	6	251	40	45
37	-3	180	410.0	.065	72	1549	.82	.82	6	250	41	46
38		185	412.55	.077	73	1549	.97	.97	6	251	41	46
39		190	415.30	.075	73	1548	.95	.95	6	252	42	46
40		195	418.01	.060	73	1546	.76	.76	6	253	42	46
41	-2	200	420.55	.066	74	1547	.84	.84	6	253	43	47
42		205	423.13	.064	74	1542	.81	.81	6	254	43	48
43		210	425.67	.057	74	1539	.73	.73	6	255	42	47
44		215	428.10	.066	74	1540	.84	.84	6	255	42	46
45	-1	220	430.68	.068	73	1537	.86	.86	6	254	42	47
46		225	433.27	.067	73	1540	.85	.85	6	253	43	48
47		230	435.87	.062	73	1542	.79	.79	6	253	44	48
48		235	438.39	.070	73	1541	.89	.89	6	253	45	49
49	END	240	441.09									
50												
51												
52												
53												
54												
55												
56												
57												
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59												
60												
61												
62												
63												
64												
65												

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conden...

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH
	~~127.08~~	0.0740	72	1559	0.93

129.808

ENTROPY

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FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal and Coke — RUN NO. II-2-S2-MM5-2B
CITY/STATE Vansant, VA — JOB NO. 3676 — DATE 10-30-91
SAMPLING LOC. Stack #2 — TIME START 2300
BAROMETRIC PRESSURE, IN. HG 29.0 — STATIC PRESSURE, IN. H_2O -0.11 — TIME FINISH 0300
LEAK CHECK, VACUUM IN. HG 15 88 — OPERATOR JDK
LEAK RATE, CUBIC FEET/MIN. 0.004 0.003 — ASST(S) HWL, MLH

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 62 °F PRE
- ✓ TC 62 °F POST
- NA ORSAT SYSTEM

FILTER/XAD	TARE WT.
3694-3	349.0

EQUIPMENT I.D. NUMBERS

REAGENT BOX DF102 METER BOX N-23 Y .9823
PITOT ____ C_p .84 NOZ'L ____ DIA. .500
TC READOUT F-34 TC PROBE C-22 UMBILICAL U-91
SAMPL'G BOX 86 ORSAT PUMP NA TEDLAR BAG NA

NOMOGRAPH DATA

DELTA H@	1.827
METER TEMP	75
EST. %H_2O	20
C FACTOR	.737
STACK TEMP	1550
REF DELTA P	.146
K FACTOR	12.615

LEAK CHECKS

B ____	B ____
E ____	E ____
B ____	B ____
E ____	E ____
B ____	B ____
E ____	E ____

FYRITES

8 %
7½ %

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	√
1	A-12	0/on	528.617	.076	63	1575	.93	.93	5	235	63	62	
2		5	531.34	.045	63	1561	.55	.55	4	238	51	49	
3		10	533.51	.061	64	1564	.75	.75	5	240	48	44	
4		15	535.97	.085	65	1573	1.04	1.04	7	241	46	44	
5	A-11	20	538.83	.063	66	1571	.78	.78	5	242	47	45	
6		25	541.38	.059	66	1568	.73	.73	5	244	47	44	
7		30	543.80	.073	67	1571	.90	.90	6	244	46	44	
8		35	546.49	.082	68	1568	1.01	1.01	6	245	46	44	
9	A-10	40	549.33	.075	68	1569	.93	.93	6	245	45	44	
10		45	552.09	.081	69	1569	1.00	1.00	6	245	47	45	
11		50	554.92	.089	69	1570	1.10	1.10	7	246	47	45	
12		55	557.94	.083	70	1567	1.03	1.03	6	246	48	45	
13	A-9	60	560.82	.085	70	1567	1.06	1.06	6	245	48	44	
14		65	563.73	.091	70	1568	1.13	1.13	7	246	47	44	
15		70	566.75	.082	70	1566	1.02	1.02	6	250	47	44	
16		25	569.64	.085	70	1565	1.06	1.06	6	251	46	44	
17	A-8	80	572.58	.086	70	1565	1.07	1.07	6	251	46	44	
18		85	575.52	.085	70	1566	1.06	1.06	6	250	46	45	
19		90	578.48	.087	70	1565	1.08	1.08	6	250	45	44	
20		95	581.44	.090	70	1566	1.12	1.12	7	251	46	45	
21	A-7	100	584.42	.086	69	1564	1.07	1.07	6	252	48	46	
22		105	587.38	.085	69	1561	1.06	1.06	6	249	48	45	
23		110	590.32	.078	70	1559	.97	.97	6	252	47	45	
24		115	593.12	.079	70	1561	.98	.98	6	253	47	45	
25	A-6	120	595.93	.075	69	1562	.93	.93	5	254	47	45	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (Θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal and Coke / Vansant, VA RUN NO. II-2-S2-MM5-2B

SAMPLING LOC. Stack #2 JOB. NO. 3676

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26	A-6	125	598.70	.076	69	1563	.94	.94	6	255	49	46
27		130	601.46	.065	69	1562	.81	.81	5	255	49	46
28		135	604.06	.082	69	1563	1.02	1.02	6	255	49	47
29	A-5	140	606.91	.077	70	1563	.96	.96	6	254	48	46
30		145	609.75	.070	70	1560	.87	.87	6	254	47	45
31		150	612.36	.085	69	1557	1.06	1.06	6	253	47	45
32		155	615.31	.067	69	1557	.84	.84	5	253	47	44
33	A-4	160	617.91	.063	69	1554	.79	.79	5	253	46	44
34		165	620.47	.076	69	1555	.95	.95	6	254	50	48
35		100	623.24	.075	69	1554	.94	.94	6	254	50	47
36		175	626.01	.072	68	1552	.90	.90	6	252	49	47
37	A-3	180	628.71	.065	68	1549	.78	.81	5	250	49	47
38		185	631.27	.077	69	1549	.96	.96	6	252	48	46
39		190	634.01	.075	69	1548	.94	.94	6	252	48	47
40		195	636.76	.060	69	1546	.72	.75	5	253	47	47
41	A-2	200	639.22	.066	69	1547	.81	.83	5	254	48	48
42		205	641.79	.064	69	1542	.78	.80	5	254	49	48
43		210	644.32	.057	68	1539	.72	.72	5	255	49	48
44		215	646.74	.066	69	1540	.81	.83	5	253	49	46
45	A-1	220	649.30	.068	68	1537	.83	.85	5	254	49	47
46		225	651.89	.067	68	1540	.82	.84	5	253	50	44
47		230	654.49	.062	68	1542	.75	.78	5	254	50	49
48		235	656.97	.070	68	1541	.85	.88	5	253	52	50
49		~~240~~ OFF	659.462									
50												
51												
52												
53												
54												
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56												
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58												
59												
60												
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62												
63												
64												
65												

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conden.

Min. (Θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH
	130.845	0.0740	68	1559	0.92

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ENTROPY

FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal and Coke — RUN NO. II-3-32-MM5-3B
CITY/STATE Vansant, VA — JOB NO. 3626 — DATE 10-31-91/11-1-91
SAMPLING LOC. Stack #2 — TIME START 2300
BAROMETRIC PRESSURE, IN. HG 28.7 — STATIC PRESSURE, IN. H_2O -0.1 — TIME FINISH 0300
LEAK CHECK, VACUUM IN. HG 15 4 — OPERATOR JDK
LEAK RATE, CUBIC FEET/MIN. 0.003 0.006 (b) — ASST(S) MLH, HWL

EQUIPMENT CHECKS*
- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 64 °F PRE
- ✓ TC 66 °F POST
- ✓ ORSAT SYSTEM

FILTER/XAD	TARE WT.
3694-23	357.0

EQUIPMENT I.D. NUMBERS

REAGENT BOX DF0213 METER BOX N-23 Y .9823
PITOT 1848 C_p .84 NOZ'L DIA. .500
TC READOUT F-34 TC PROBE 1848 UMBILICAL 4-91
SAMPL'G BOX 64 ORSAT PUMP 18 TEDLAR BAG 11

NOMOGRAPH DATA

DELTA H@	1.823
METER TEMP	80
EST. %H_2O	20
C FACTOR	.744
STACK TEMP	1575
REF DELTA P	.146
K FACTOR	12.577

LEAK CHECKS

B		B	
E		E	
B		B	
E		E	
B		B	
E		E	

FYRITES

8%
8%

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A-12	0/on	1.483	.027	64	1566	.33	.33	2	261	53	50	
2		5	3.17	.036	62	1566	.44	.44	3	260	49	47	
3		10	5.11	.054	60	1567	.66	.66	3	256	49	46	
4		15	7.42	.071	61	1566	.87	.87	3	255	47	46	
5	A-11	20	10.07	.062	64	1557	.77	.77	3	252	47	46	
6		25	12.55	.063	67	1556	.78	.78	3	253	48	46	
7		30	15.09	.061	69	1555	.76	.76	3	255	49	47	
8		35	17.61	.064	72	1554	.80	.80	3	253	50	47	
9	A-10	40	20.13	.058	74	1553	.73	.73	3	249	48	45	
10		45	22.57	.057	75	1552	.72	.72	3	252	47	44	
11		50	25.02	.054	77	1550	.69	.69	3	254	49	44	
12		55	27.41	.056	77	1550	.71	.71	3	259	48	46	
13	A-9	60	29.81	.057	77	1551	.72	.72	3	257	48	47	
14		65	32.22	.054	78	1552	.69	.69	3	260	50	49	
15		70	34.63	.048	78	1552	.61	.61	3	261	51	49	
16		75	36.89	.051	78	1556	.65	.65	3	262	52	50	
17	A-8	80	39.23	.055	77	1556	.70	.70	3	260	53	50	
18		85	41.64	.049	77	1554	.62	.62	3	255	51	50	
19		90	44.01	.052	76	1554	.66	.66	3	258	48	48	
20		95	46.27	.050	76	1552	.63	.63	3	258	47	46	
21	A-7	100	48.54	.057	76	1551	.72	.72	3	257	47	46	
22		105	50.92	.048	77	1549	.61	.61	3	256	47	47	
23		110	53.15	.045	77	1548	.62	.62	3	252	46	46	
24		115	55.41	.051	78	1549	.65	.65	3	253	46	46	
25	A-6	120	57.71	.056	78	1546	.71	.71	3	255	47	46	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	116.058	0.8560	75	1549	0.71

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal and Coke RUN NO. II-3-52-MM5-3B

SAMPLING LOC. Stack #2 JOB. NO. 3676

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26	A-6	125	60.11	.061	77	1550	.78	.78	3	254	47	46
27		130	62.66	.058	77	1550	.74	.74	3	255	46	45
28		135	65.09	.059	76	1549	.75	.75	3	254	46	45
29	A-5	140	67.52	.054	76	1546	.69	.69	3	252	46	46
30		145	69.89	.048	76	1547	.61	.61	3	252	47	46
31		150	72.27	.064	76	1552	.81	.81	3	253	48	46
32		155	74.84	.056	75	1545	.71	.71	3	252	48	47
33	A-4	160	77.27	.063	76	1545	.80	.80	3	251	49	47
34		165	79.83	.065	76	1546	.83	.83	3	251	49	47
35		170	82.44	.066	77	1549	.84	.84	3	255	50	47
36		175	85.04	.069	77	1547	.88	.88	3	258	50	48
37	A-3	180	87.73	.059	78	1543	.75	.75	3	257	50	48
38		185	90.25	.062	78	1541	.79	.79	3	257	51	49
39		190	92.80	.065	78	1541	.83	.83	3	255	50	49
40		195	95.37	.059	78	1543	.75	.75	3	257	51	50
41	A-2	200	100.26	.062	78	1537	.78	.78	3	257	51	51
42		205	102.80	.062	78	1536	.79	.79	3	255	52	50
43		210	97.88	.052	78	1532	.67	.67	3	257	50	49
44		215	105.36	.061	78	1535	.78	.78	3	254	50	49
45	A-1	220	107.89	.058	78	1537	.74	.74	3	255	51	51
46		225	110.37	.054	79	1536	.69	.69	3	256	52	51
47		230	112.74	.052	79	1534	.67	.67	3	255	54	51
48		235	115.10	.056	79	1533	.72	.72	3	248	55	53
49		240/end	117.541									
50												
51												
52												
53												
54												
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56												
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61												
62												
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65												

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conden.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA - METHOD(S) mm5

PLANT Jewell Coal + Coke
RUN NO. III-1-52-mm5-1A
CITY/STATE Vansant, Va
JOB NO. 3676
DATE 10-30-91
SAMPLING LOC. Battery "C" Stack #2
TIME START 0623
BAROMETRIC PRESSURE, IN. HG 29.0
STATIC PRESSURE, IN. H_2O -0.105
TIME FINISH ~~0940~~ 0935
LEAK CHECK, VACUUM IN. HG 15 5
OPERATOR KBB
LEAK RATE, CUBIC FEET/MIN. .003 .000
ASST(S)

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ___ NOZZLE, PRE/POST
- ✓ TC 56 °F PRE
- ✓ TC 70 °F POST
- ✓ ORSAT SYSTEM

FILTER/XAD	TARE WT.
3694-20	335.0

EQUIPMENT I.D. NUMBERS

REAGENT BOX DF203 METER BOX N-18 Y 0.9842
PITOT water cooled C_p 0.84 NOZ'L ___ DIA. .50
TC READOUT F-52 TC PROBE High temp UMBILICAL U-80
SAMPL'G BOX 82 ORSAT PUMP 28 TEDLAR BAG 53

NOMOGRAPH DATA

DELTA H@ 1.846
METER TEMP 70
EST. $\%H_2O$ 20
C FACTOR 0.744
STACK TEMP 1560
REF DELTA P 0.145
K FACTOR 12.684

LEAK CHECKS

B ___	B ___
E ___	E ___
B ___	B ___
E ___	E ___
B ___	B ___
E ___	E ___

FYRITES

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A 12	0	34.641	.045	58	1543	.56	.56	5	245	49	55	
2		4	36.34	.045	59	1548	.56	.56	5	245	48	56	
3		8	38.02	.037	59	1548	.46	.46	5	240	48	56	
4		12	39.57	.043	60	1545	.54	.54	5	248	48	56	
5	A 11	16	41.19	.055	60	1548	.68	.68	5	245	45	52	
6		20	43.03	.047	60	1549	.58	.58	5	245	42	50	
7		24	44.74	.035	60	1548	.44	.44	5	245	42	48	
8		28	46.26	.043	60	1547	.44	.44	5	250	42	48	
9	A 10	32	47.82	.040	60	1546	.50	.50	5	250	40	46	
10		36	49.43	.044	60	1548	.55	.55	5	250	40	46	
11		40	51.04	.053	60	1544	.66	.66	5	255	40	46	
12		44	52.84	.055	60	1543	.69	.69	5	250	40	47	
13	A 9	48	54.69	.055	60	1542	.69	.69	5	250	40	47	
14		52	56.56	.056	60	1540	.70	.70	5	245	41	45	
15		56	58.42	.057	60	1541	.71	.71	5	240	41	47	
16		60	60.31	.055	60	1541	.69	.69	5	245	42	49	
17	A 8	64	62.18	.057	60	1541	.71	.71	5	245	42	47	
18		68	64.04	.057	60	1541	.71	.71	5	245	42	49	
19		72	65.89	.060	58	1541	.75	.75	5	250	42	49	
20		76	67.77	0.065	57	1541	.81	.81	5	250	42	51	
21	A 7	80	69.75	.053	57	1540	.66	.66	5	250	42	50	
22		84	71.52	.056	56	1541	.69	.69	5	253	42	49	
23		88	73.40	.053	56	1541	.66	.66	5	250	45	49	
24		92	75.22	.050	56	1540	.62	.62	5	250	45	49	
25	A 6	96	76.97	.050	56	1540	.62	.62	5	250	45	49	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (Θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
___	85.399	0.0502	60	1533	0.63

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal + Coke RUN NO. DI-1-52-MM5-1A

SAMPLING LOC. Battery C Stack #2 JOB. NO. 3676

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26		100	78.67	.053	56	1525	.66	.66	5	252	45	50
27		104	80.46	.050	56	1525	.62	.62	5	252	45	50
28		108	82.20	.050	56	1524	.63	.63	5	250	43	47
29	A5	112	83.96	.050	56	1524	.63	.63	5	245	43	47
30		116	85.72	.053	58	1525	.66	.66	5	245	43	47
31		120	87.53	.051	58	1526	.63	.63	5	245	43	46
32		124	89.31	.050	58	1527	.62	.62	5	245	42	46
33	A4	128	91.08	.054	58	1522	.67	.67	5	242	42	46
34		132	92.90	.055	58	1520	.69	.69	5	248	43	52
35		136	94.81	.052	59	1521	.65	.65	5	248	43	55
36		140	96.66	.057	59	1522	.71	.71	5	248	44	56
37	A3	144	98.52	.056	59	1524	.70	.70	5	248	45	56
38		148	100.42	.055	60	1526	.69	.69	5	248	45	53
39		152	102.29	.055	60	1527	.69	.69	5	248	45	52
40		156	104.17	.050	60	1526	.62	.62	5	248	45	52
41	A2	160	106.00	.046	62	1522	.58	.58	5	248	45	54
42		164	108.00	.045	60	1518	.56	.56	5	247	45	54
43		168	109.60	.047	64	1518	.59	.59	5	247	45	56
44		172	111.30	.048	68	1519	.61	.61	5	247	47	57
45	A1	176	113.09	.045	72	1511	.58	.58	5	247	47	57
46		180	114.86	.044	74	1509	.57	.57	5	247	48	57
47		184	116.63	.042	76	1510	.54	.54	5	247	48	57
48		188	118.35	.043	79	1509	.56	.56	5	249	48	58
49	END	192	120.040									
50												
51												
52												
53												
54												
55												
56												
57												
58												
59												
60												
61												
62												
63												
64												
65												

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conden...

Min. (Θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA - METHOD(S) MM5

III-1-S2-MM5-1B

PLANT Jewell Coal & Coke Company

RUN NO. ~~I-2-S2-MM5-2B~~ WEM 10-30-91

CITY/STATE Vasant, Virginia

JOB NO. 3694

DATE 10/30/91

SAMPLING LOC. Stack 2

TIME START 623

BAROMETRIC PRESSURE, IN. HG 29.0

STATIC PRESSURE, IN. H2O -0.102

TIME FINISH 0937

LEAK CHECK, VACUUM IN. HG 15 5

OPERATOR WEM

LEAK RATE, CUBIC FEET/MIN. 0.003 0.002 (F)

ASST(S) KBB

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 61 °F PRE
- TC °F POST
- ✓ ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS

REAGENT BOX DF205 METER BOX N23 Y .9823

PITOT Cp 0.84 NOZ'L Q DIA. .50

TC READOUT F34 TC PROBE C18 UMBILICAL D91

SAMPL'G BOX 98 ORSAT PUMP N/A TEDLAR BAG N/A

NOMOGRAPH DATA

DELTA Ha 1.827

METER TEMP 65

EST. %H2O 20

C FACTOR 0.723

STACK TEMP 1550

REF DELTA P 0.149

K FACTOR 12.380

LEAK CHECKS

B		B	
E		E	
B		B	
E		E	
B		B	
E		E	

FYRITES

FILTER/XAD	TARE WT.
DF	
3694-5	359.5

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A-12	0	343.131	0.045	52	1543	0.55	0.55	3	241	45	38	
2		4	344.811	0.045	53	1548	0.55	0.55	5	242	45	39	
3		8	346.511	0.037	54	1548	0.45	0.45	5	242	46	40	
4		12	348.021	0.043	54	1545	0.52	0.52	5	241	45	41	
5	-11	16	349.66	0.055	53	1548	0.67	0.67	5	242	44	40	
6		20	351.511	0.047	53	1549	0.57	0.57	5	243	43	41	
7		24	353.225	0.035	54	1548	0.43	0.43	5	244	44	42	
8		28	354.730	0.043	55	1547	0.53	0.53	5	244	45	41	
9	10	32	356.511	0.040	56	1540	0.49	0.49	5	245	44	40	
10		36	358.241	0.044	57	1548	0.54	0.54	5	246	43	39	
11		40	359.911	0.053	58	1547	0.65	0.65	5	245	44	40	
12		44	361.725	0.055	58	1543	0.68	0.68	5	245	43	40	
13	9	48	363.611	0.055	59	1542	0.68	0.68	5	244	43	40	
14		52	365.475	0.056	60	1540	0.69	0.69	5	243	44	39	
15		56	367.399	0.057	59	1541	0.70	0.70	5	242	44	40	
16	8	60	369.331	0.055	59	1541	0.68	0.68	5	241	43	39	
17	8	64	371.151	0.057	59	1541	0.70	0.70	5	241	42	38	
18		68	373.111	0.057	59	1541	0.70	0.70	5	240	42	37	
19	7	72	374.989	0.060	60	1541	0.74	0.74	5	240	43	38	
20		76	376.941	0.065	60	1541	0.80	0.80	5	241	42	38	
21	7	80	378.969	0.053	59	1540	0.65	0.65	5	241	42	39	
22		84	380.875	0.056	59	1541	0.69	0.69	5	242	43	38	
23		88	382.711	0.053	59	1541	0.65	0.65	5	243	44	37	
24		92	384.639	0.05	59	1540	0.62	0.62	5	244	44	36	
25	6	96	386.330	0.05	60	1540	0.62	0.62	5	243	43	37	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA (continued)

PLANT JEWELL COAL & COKE

RUN NO. III-1-32-mm5-13

SAMPLING LOC. STACK 2

JOB. NO. 369A

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26		100	388.112	0.053	60	1525	0.66	0.66	5	243	45	39
27		104	390.075	0.050	60	1525	0.62	0.62	5	244	44	40
28		108	391.878	0.050	59	1524	0.62	0.62	5	245	44	41
29	5	112	393.55	0.05	60	1524	0.62	0.62	5	244	45	40
30		116	395.531	0.053	60	1524	0.66	0.66	5	245	45	41
31		120	397.37	0.051	60	1526	0.64	0.64	5	245	44	40
32		124	399.25	0.05	60	1527	0.62	0.62	5	244	44	40
33	4	128	401.04	0.054	59	1522	0.67	0.67	5	245	45	39
34		132	402.89	0.055	59	1520	0.69	0.69	5	247	46	39
35		136	404.79	0.052	59	1521	0.65	0.65	5	248	46	40
36		140	406.66	0.057	60	1522	0.71	0.71	5	247	45	41
37	3	144	408.58	0.056	60	1524	0.70	0.70	5	247	45	41
38		148	410.50	0.055	60	1526	0.69	0.69	5	247	45	41
39		152	412.41	0.055	60	1527	0.68	0.68	5	248	45	42
40		156	414.34	0.050	60	1526	0.62	0.62	5	248	45	41
41	2	160	416.19	0.046	61	1522	0.58	0.58	5	248	45	41
42	2	164	417.95	0.045	61	1518	0.56	0.56	5	248	45	42
43		168	419.67	0.047	63	1518	0.59	0.59	5	247	45	42
44		172	421.42	0.048	64	1519	0.60	0.60	5	247	47	42
45	1	176	423.21	0.045	65	1511	0.57	0.57	5	247	47	42
46	1	180	424.96	0.044	66	1509	0.56	0.56	5	247	48	42
47		184	426.71	0.042	68	1510	0.54	0.54	5	247	48	42
48		188	428.41	0.043	69	1509	0.55	0.55	5	249	48	42
49	END	192	430.132	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
50												
51												
52												
53												
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64												
65												

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condens...

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	87.001	0.0502	59	1533	0.62

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ENTROPY

FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal and Coke — RUN NO. III-2-S2-MM5-2A
CITY/STATE Vansant, Va. — JOB NO. 3632 — DATE 10-31-91
SAMPLING LOC. Battery "C" Stack #2 — TIME START 0515
BAROMETRIC PRESSURE, IN. HG 28.8 — STATIC PRESSURE, IN. H_2O -.10 — TIME FINISH 0915
LEAK CHECK, VACUUM IN. HG 15 5 — OPERATOR WTL
LEAK RATE, CUBIC FEET/MIN. .001 .000 — ASST(S)

EQUIPMENT CHECKS*
- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 54 °F PRE
- ✓ TC 60 °F POST
- ✓ ORSAT SYSTEM

FILTER/XAD	TARE WT.

EQUIPMENT I.D. NUMBERS
REAGENT BOX ____ METER BOX N-18 Y .9842
PITOT Water cooled Cp .84 NOZ'L Quartz DIA. .500
TC READOUT F-52 TC PROBE ____ UMBILICAL U-80
SAMPL'G BOX Wood ORSAT PUMP 28 TEDLAR BAG 49

NOMOGRAPH DATA

DELTA Hø	1.846
METER TEMP	80
EST. %H_2O	20
C FACTOR	.751
STACK TEMP	1550
REF DELTA P	0.144
K FACTOR	12.763

LEAK CHECKS

B ____	B ____
E ____	E ____
B ____	B ____
E ____	E ____
B ____	B ____
E ____	E ____

FYRITES
9.5
9.5

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A12	0	441.24	.070	60	1547	.86	.86	4	230	45	38	
2		5	443.80	.072	60	1547	.88	.86	4	230	45	38	
3		10	446.20	.073	60	1546	.90	.90	5	230	44	36	
4		15	448.67	.070	62	1545	.86	.86	5	230	44	36	
5	A11	20	451.34	.075	62	1543	.90	.90	5	230	44	36	
6		25	454.04	.072	63	1543	.90	.90	5	230	45	36	
7		30	456.71	.079	63	1544	.98	.98	5	230	45	37	
8		35	459.45	.080	63	1543	.99	.99	5	232	45	37	
9	A10	40	462.25	.075	63	1544	.93	.93	5	232	45	37	
10		45	465.00	.076	64	1544	.94	.94	5	232	45	38	
11		50	467.68	.077	64	1545	.95	.95	5	232	45	38	
12		55	470.45	.078	65	1543	.97	.97	5	232	45	38	
13	A9	60	473.21	.070	65	1543	.87	.87	5	238	45	39	
14		65	476.01	.076	65	1542	.94	.94	5	236	46	40	
15		70	478.79	.082	65	1544	1.02	1.02	5	233	46	40	
16		75	481.45	.073	67	1539	.91	.91	5	240	46	40	
17	A8	80	484.20	.076	70	1539	.96	.96	5	241	46	40	
18		85	487.12	.076	70	1540	.96	.96	5	241	47	40	
19		90	489.680	.075	72	1539	.95	.95	5	240	46	41	
20		95	492.441	.077	74	1540	.98	.98	5	239	46	40	
21	A7	100	495.249	.073	76	1544	.93	.93	5	240	46	39	
22		105	497.969	.069	78	1544	.88	.88	5	240	47	40	
23		110	500.641	.073	79	1546	.93	.93	5	241	46	40	
24		115	503.359	.075	80	1548	.96	.96	5	241	46	41	
25	A6	120	506.131	.077	80		.99	.99	5	240	45	40	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA (continued)

PLANT JEWELL COAL AND COKE RUN NO. III-2-92-MM5-29

SAMPLING LOC. STACK 2 JOB NO. 3437

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26	A6	125	508.955	0.076	81	1550	0.97	0.97	5	2A1	A6	39
27		130	511.761	0.069	80	1550	0.88	0.88	5	2A2	A5	40
28		135	514.411	0.055	81	1543	0.71	0.71	5	2A3	A5	A1
29	A5	140	516.873	0.054	81	1542	0.70	0.70	5	2A2	A5	40
30		145	519.259	0.053	80	1542	0.68	0.68	5	2A2	A4	39
31		150	521.629	0.051	81	1543	0.66	0.66	5	2A3	A5	40
32		155	523.950	0.049	81	1542	0.68	0.63	5	2A3	A6	A1
33	A4	160	526.299	0.089	81	1550	1.14	1.14	5	2A3	A6	40
34		165	529.225	0.065	81	1547	0.83	0.83	5	2A3	A7	40
35		170	531.829	0.069	74	1545	0.88	0.88	5	2A4	A6	39
36		175	534.461	0.065	72	1548	0.82	0.82	5	2A5	A6	40
37	A3	180	537.049	0.061	70	1547	0.77	0.77	5	2A5	A5	39
38		185	539.551	0.060	70	1549	0.75	0.75	5	2A6	A4	39
39		190	542.010	0.058	70	1548	0.73	0.73	5	2A6	A4	40
40		195	544.429	0.056	70	1552	0.70	0.70	5	2A7	A5	40
41	A2	200	546.791	0.062	70	1554	0.78	0.78	5	2A6	A4	A1
42		205	549.279	0.060	70	1554	0.75	0.75	5	2A5	A3	40
43		210	551.751	0.058	69	1546	0.73	0.73	5	2A6	A3	40
44		215	554.175	0.055	69	1542	0.69	0.69	5	2A6	A4	40
45	A1	220	556.585	0.069	68	1555	0.86	0.86	5	2A5	A5	A1
46		225	559.151	0.051	68	1548	0.64	0.64	5	2A5	A4	A1
47		230	~~561.465~~ ~~563.695~~	0.048	68	~~1549~~ ~~1552~~	0.60 ~~0.61~~	0.60 ~~0.61~~	5	2A4	A4	40
48		235	563.695	0.049	68	1552	0.61	0.61	5	2A4	A5	40
49	END	240	565.923	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
50												
51												
52												
53												
54												
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* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (Θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH
	124.683	0.0673	71	1546	0.85

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ENTROPY

FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal + Coke RUN NO. III-2-52-mm5-28
CITY/STATE Vansant, Va. JOB NO. 3676 DATE 10-31-91
SAMPLING LOC. Stack #2 Battery C TIME START 0515
BAROMETRIC PRESSURE, IN. HG 28.8 STATIC PRESSURE, IN. H_2O ~~28.8~~ -.1 TIME FINISH 0915
LEAK CHECK, VACUUM IN. HG 15 OPERATOR KBB
LEAK RATE, CUBIC FEET/MIN. 0.002 ASST(S)

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ___ PITOT, POSTTEST
- ___ NOZZLE, PRE/POST
- ✓ TC 60 °F PRE
- ___ TC ___ °F POST
- N/A ORSAT SYSTEM

FILTER/XAD	TARE WT.
3694-9	327.0

EQUIPMENT I.D. NUMBERS

REAGENT BOX DF-130 METER BOX N-23 Y 0.9823
PITOT water cooled C_p 0.84 NOZ'L ___ DIA. 0.50
TC READOUT F-34 TC PROBE High temp UMBILICAL U-91
SAMPL'G BOX 85 ORSAT PUMP N/A TEDLAR BAG N/A

NOMOGRAPH DATA

DELTA H@	1.827
METER TEMP	75
EST. %H_2O	20
C FACTOR	0.737
STACK TEMP	1550
REF DELTA P	0.146
K FACTOR	12.615

LEAK CHECKS

B ___	B ___
E ___	E ___
B ___	B ___
E ___	E ___
B ___	B ___
E ___	E ___

FYRITES

95
9.5

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	X12	0	661.758	0.07	60	1547	0.86	0.86	3	245	40	33	
2		5	664.36	0.072	60	1547	0.89	0.89	3	245	40	34	
3		10	667.05	0.073	60	1546	0.90	0.90	3	250	41	34	
4		~~15~~ 20	672.34	0.075	60	1543	0.93	0.93	3	248	41	35	
5	X11	~~20~~ 25	675.06	0.072	60	1543	0.89	0.89	3	245	40	35	
6		~~25~~ 30	677.74	0.079	62	1544	0.98	0.98	3	240	40	35	
7		~~30~~ 35	680.50	0.080	64	1543	0.99	0.99	4	235	40	35	
8		~~35~~ 40	683.30	0.075	64	1544	0.93	0.93	4	235	40	35	
9	X10	~~40~~ 45	686.03	0.076	64	1544	0.94	0.94	4	235	40	35	
10		~~45~~ 50	688.72	0.077	64	1545	0.96	0.96	4	233	40	35	
11		~~50~~ 55	691.47	0.078	64	1543	0.97	0.97	4	233	40	33	
12		~~55~~ 15	669.72	0.070	64	1545	0.86	0.86	3	250	41	34	*
13	X9	60	694.23	0.070	64	1543	0.87	0.87	4	235	40	35	
14		65	696.84	0.076	64	1544	0.94	0.94	4	237	40	35	
15		70	699.60	0.082	64	1544	1.02	1.02	4	240	41	34	
16		75	702.45	0.073	64	1539	0.91	0.91	4	240	41	34	
17	X8	80	705.10	0.076	64	1539	0.95	0.95	4	238	40	35	
18		85	707.83	0.076	64	1540	0.95	0.95	4	237	40	35	
19		90	710.59	0.075	70	1539	0.95	0.95	4	240	38	31	
20		95	713.37	0.077	74	1540	0.98	0.98	4	240	38	32	
21	X7	100	716.16	0.073	74	1544	0.93	0.93	4	243	38	32	
22		105	718.87	0.069	75	1544	0.88	0.88	4	243	39	34	
23		110	721.50	0.073	76	1546	0.93	0.93	4	245	39	34	
24		115	724.24	0.075	76	1548	0.95	0.95	4	240	39	34	
25	X6	120	727.02	0.077	76	1550	0.98	0.98	4	240	38	35	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
___	124.990	0.0675	69	1545	0.85

* out of sequence

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal + Coke RUN NO. III-2-52-MM5-28

SAMPLING LOC. Stack # 2 JOB. NO. 3676

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26		125	729.83	0.076	76	1550	0.96	0.96	4	240	38	35
27		130	732.64	0.069	78	1550	0.86	0.86	4	248	39	35
28		135	735.27	0.055	78	1543	0.70	0.70	4	247	39	35
29	A5	140	737.72	0.054	80	1542	0.69	0.69	4	232	39	35
30		145	740.10	0.053	80	1542	0.68	0.68	4	235	39	35
31		150	742.44	0.051	80	1543	0.65	0.65	4	240	38	35
32		155	744.75	0.049	80	1542	0.63	0.63	4	245	38	33
33	W	160	747.03	0.089	80	1550	1.14	1.14	4	253	38	33
34		165	750.07	0.065	77	1547	0.83	0.83	4	260	38	34
35		170	752.65	0.069	72	1545	0.87	0.87	4	265	36	35
36		175	755.31	0.065	70	1548	0.82	0.82	4	260	36	35
37	A3	180	757.89	0.061	70	1547	0.77	0.77	4	254	34	34
38		185	760.37	0.069	68	1549	0.86	0.86	4	250	34	35
39		190	762.99	0.058	68	1548	0.73	0.73	4	244	34	35
40		195	765.38	0.056	68	1552	0.69	0.69	4	244	35	35
41	A2	200	767.76	0.062	68	1554	.77	.77	4	245	35	36
42		205	770.26	0.060	68	1554	.74	.74	4	245	35	35
43		210	772.72	0.058	68	1554	.72	.72	4	242	36	36
44		215	775.18	0.055	67	1541	.68	.68	4	241	36	36
45	A1	220	777.57	0.069	67	1555	.85	.85	4	241	37	36
46		225	780.08	0.051	66	1528	.64	.64	4	241	37	36
47		230	782.33	0.048	67	1548	.59	.59	4	240	37	38
48		235	784.51	0.049	70	1552	.61	.61	4	240	37	38
49	END	240	786.748	0.0								
50												
51												
52												
53												
54												
55												
56												
57												
58												
59												
60												
61												
62												
63												
64												
65												

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conden

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

ENTROPY

FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal + Coke — RUN NO. III-3-S2-MM
CITY/STATE Vansant, Va. — JOB NO. 3676 — DATE 11-1-9
SAMPLING LOC. Battery "C" Stack #2 — TIME START 0500
BAROMETRIC PRESSURE, IN. HG 28.7 — STATIC PRESSURE, IN. H_2O -.10 — TIME FINISH 0900
LEAK CHECK, VACUUM IN. HG 15 6 — OPERATOR RBB,
LEAK RATE, CUBIC FEET/MIN. 0.004 0.001 — ASST(S)

EQUIPMENT CHECKS*
- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 54 °F PRE
- ✓ TC 64 °F POST
- ✓ ORSAT SYSTEM

FILTER/XAD	TARE WT.
3694-23	357.0

EQUIPMENT I.D. NUMBERS
REAGENT BOX DF-213 METER BOX N-23 Y 0.9823
PITOT Water Cooled Cp .84 NOZ'L Quartz DIA. .500
TC READOUT F-34-F-52 TC PROBE High Temp UMBILICAL 0.91
SAMPL'G BOX 86 ORSAT PUMP 18 TEDLAR BAG 12

NOMOGRAPH DATA
DELTA H@ 1.827
METER TEMP 80
EST. $\%H_2O$ 17
C FACTOR .791
STACK TEMP 1550
REF DELTA P .138
K FACTOR 13.373

LEAK CHECKS
B E B E
B E B E
B E B E

FYRITES
9.0 9.5 9.

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHE

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR CON EXIT*
1	12	0	118.910	0.065	60	1575	0.84	0.84	4	235	45	39
2		5	121.29	0.066	60	1574	0.85	0.85	5	263	40	45
3		10	123.94	0.055	62	1575	0.71	0.71	5	251	40	48
4		15	126.37	0.063	64	1581	0.82	0.82	5	265	40	49
5	11	20	128.94	0.063	64	1577	0.82	0.82	5	257	41	50
6		25	131.51	0.063	66	1575	0.82	0.82	5	258	41	50
7		30	134.09	0.064	66	1577	0.83	0.83	5	255	46	55
8		35	136.63	0.067	66	1579	0.87	0.87	5	260	48	57
9	10	40	139.30	0.062	67	1576	0.81	0.81	5	266	49	57
10		45	141.95	0.045	68	1572	0.59	0.59	4	262	50	58
11		50	144.18	0.055	68	1574	.72	0.72	5	265	50	58
12		55	146.56	0.06	68	1576	.79	0.79	5	261	50	57
13	9	60	149.16	0.05	69	1573	0.66	0.66	5	264	48	50
14		65	151.48	0.045	69	1571	0.592	0.592	4	255	49	50
15		70	153.67	.065	69	1577	0.85	0.85	5	252	49	50
16		75	156.29	.065	69	1579	0.853	0.853	5	253	49	51
17	8	80	158.93	.055	69	1576	0.72	0.72	4	260	49	50
18		85	161.35	.065	69	1577	0.85	0.85	4	258	48	50
19		90	163.95	0.070	69	1577	0.92	0.918	5	255	48	50
20		95	166.67	0.065	70	1579	0.85	0.85	5	252	47	45
21	7	100	169.24	0.065	70	1578	0.853	0.853	5	261	47	45
22		105	171.93	0.070	70	1576	0.92	0.92	5	267	48	46
23		110	174.864	0.067	71	1575	0.88	0.88	5	267	49	45
24		115	177.32	0.086	72	1576	1.12	1.12	6	261	50	48
25	6	120	180.31	0.075	72	1573	0.99	0.99	5	258	50	48

* FILTER EXIT for NJ Method 1. FILTER BOX for all

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a con

Min. (θ) Vm $(\sqrt{\Delta p})^2$ tm ts ΔH

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal + Coke RUN NO. III-3-52-MM5-3G

SAMPLING LOC. Battery C Stack #2 JOB. NO. 3626

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26		125	183.15	0.061	71	1570	0.81	0.81	5	259	50	48
27		130	185.69	0.057	71	1571	0.75	0.75	5	255	52	49
28		135	188.16	0.063	71	1563	0.83	0.83	5	244	52	49
29	A5	140	190.76	0.066	71	1573	0.86	0.857	5	258	55	50
30		145	193.39	0.065	70	1575	0.86	0.855	5	250	55	50
31		150	196.01	0.065	70	1575	0.86	0.855	5	251	55	51
32		155	198.64	0.07	70	1576	0.92	0.92	5	243	55	51
33	A4	160	201.28	0.065	70	1574	0.860	0.855	5	253	55	51
34		165	203.81	0.065	70	1575	0.85	0.853	5	247	54	52
35		170	206.53	0.064	69	1575	0.84	0.84	5	244	54	52
36		175	208.65	0.07	69	1576	0.92	0.918	5	257	54	52
37	A3	180	211.87	0.065	69	1576	0.85	0.853	5	252	54	50
38		185	214.51	0.055	69	1571	0.72	0.723	5	2	54	53
39		190	217.09	0.055	69	1572	0.72	0.723	5	288	54	54
40		195	219.54	0.05	69	1574	0.66	0.657	5	265	54	56
41	A2	200	221.87	0.065	69	1580	0.85	0.857	5	267	48	48
42		205	224.11	0.06	68	1576	0.79	0.786	5	260	48	48
43		210	226.82	0.06	66	1574	0.78	0.784	5	262	48	48
44		215	229.42	0.06	66	1579	0.787	0.78	5	252	50	50
45	A1	220	231.95	0.045	66	1570	0.59	0.589	5	249	51	51
46		225	234.16	0.05	68	1561	0.66	0.66	5	260	51	57
47		230	236.31	0.045	67	1557	0.59	0.59	5	260	53	53
48		235	238.47	0.05	68	1567	0.66	0.664	5	263	53	53
49	END	240	240.749									
50												
51												
52												
53												
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60												
61												
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63												
64												
65												

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conden...

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH
	121.839	0.0610	68	1574	0.80

XAD W 0.357
XAD 3694.23

ENTROPY

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FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal + Coke — RUN NO. IV-1-52-MM5-1

CITY/STATE Vansant, Va. — JOB NO. 3676 — DATE 10-30-91

SAMPLING LOC. Battery "C" Stack #2 — TIME START 1325

BAROMETRIC PRESSURE, IN. HG 29.0 — STATIC PRESSURE, IN. H_2O -.095 — TIME FINISH 1627

LEAK CHECK, VACUUM IN. HG 15 5 — OPERATOR WTL

LEAK RATE, CUBIC FEET/MIN. 0.008 0.002 — ASST(S) JWA

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 82 °F PRE
- ✓ TC ____ °F POST
- ✓ ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS

REAGENT BOX OP 205 — METER BOX N-18 — Y .9842

PITOT Water Cooled C_p .84 — NOZ'L Quartz — DIA. .500

TC READOUT F-52 — TC PROBE High Temp. — UMBILICAL U-80

SAMPL'G BOX 87 — ORSAT PUMP 28 — TEDLAR BAG 49

LEAK CHECKS

B	B
E	E
B	B
E	E
B	B
E	E

FILTER/XAD	TARE WT.
3694-27	354.0

NOMOGRAPH DATA

DELTA Hg	1.846
METER TEMP	75
EST. $\%H_2O$	20%
C FACTOR	.744
STACK TEMP	1560
REF DELTA P	0.145
K FACTOR	12.684

FYRITES

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A12	0	123.497	.057	92	1559	.74	.74	4	240	58	39	
2		4	125.49	.057	94	1573	.74	.74	4	240	58	39	
3	10	8	127.51	.073	96	1577	.95	.95	4	240	56	38	
4		12	129.77	.060	98	1571	.65	.65	4	242	55	34	
5	11	16	131.800	.059	100	1572	.78	.78	4	242	55	34	
6		20	133.75	.065	100	1575	.85	.85	4	245	55	34	
7		24	135.90	.061	100	1576	.80	.80	4	245	55	35	
8		28	138.00	.072	100	1577	.95	.95	4	245	55	33	
9	10	32	140.13	.065	102	1574	.86	.86	4	247	55	34	
10		36	142.41	.074	102	1576	.98	.98	4	247	55	39	
11		40	144.73	.062	103	1574	.82	.82	4	250	55	35	
12		44	147.00	.065	104	1575	.86	.86	4	250	55	37	
13	9	48	148.93	.065	104	1573	.86	.86	4	250	55	39	
14		52	151.16	.063	104	1573	.83	.83	4	250	55	41	
15		56	153.30	.061	106	1573	.81	.83	4	250	54	43	
16		60	155.43	.064	106	1572	.85	.85	4	250	54	43	
17	8	64	158.00	.056	106	1572	.74	.74	4	250	54	43	
18		68	159.78	.068	106	1574	.90	.90	4	252	54	40	
19		72	162.00	.070	106	1574	.93	.93	4	252	54	34	
20		76	164.00	.060	106	1572	.80	.80	4	252	55	37	
21	7	80	166.31	.068	105	1573	.90	.90	4	252	55	37	
22		84	168.60	.060	102	1574	.79	.79	4	252	55	37	
23		88	170.58	.055	98	1571	.72	.72	4	252	56	33	
24		92	172.68	.057	98	1572	.75	.75	4	252	56	33	
25	6	96	174.93	.048	95	1575	.62	.62	4	252	56	33	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

ENTROPY

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FIELD DATA (continued)

PLANT Jewell Coal + Coke RUN NO. IV-1-52-MM5

SAMPLING LOC. Battery "C" Stack #2 JOB. NO. 3676

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26		100	176.55	.044	95	1574	.57	.57	4	255	57	34
27		104	178.77	.042	95	1573	.55	.55	4	255	57	35
28		108	180.11	.042	95	1572	.55	.55	4	255	58	37
29	5	112	181.91	.047	90	1572	.61	.61	4	255	58	33
30		116	183.66	.050	90	1572	.65	.65	4	255	58	34
31		120	185.47	.051	88	1572	.66	.66	4	252	58	36
32		124	187.30	.50	88	1572	.64	.64	4	252	58	36
33	4	128	189.30	.051	88	1572	.66	.66	4	252	58	36
34		132	190.95	.051	88	1572	.66	.66	4	252	56	38
35		136	192.69	.053	88	1575	.68	.68	4	252	56	38
36		140	194.52	.050	88	1575	.64	.64	4	252	56	40
37	3	144	196.30	.056	90	1576	.72	.72	4	252	56	40
38		148	198.20	.048	92	1575	.62	.62	4	252	56	42
39		152	200.17	.050	92	1574	.65	.65	4	252	56	42
40		156	202.10	.050	92	1575	.65	.65	4	254	57	44
41	2	160	203.97	.046	92	1570	.60	.60	4	254	57	44
42		164	205.85	.050	94	1568	.65	.65	4	254	57	44
43		168	207.65	.043	94	1566	.56	.56	4	255	57	45
44		172	209.46	.046	96	1567	.60	.60	4	255	57	46
45	1	176	211.30	.040	98	1534	.53	.53	4	255	56	46
46		180	212.90	.042	98	1553	.55	.55	4	255	56	52
47		184	214.51	.040	100	1551	.53	.53	4	255	58	53
48		188	216.21	.040	100	1551	.53	.53	4	255	58	53
49	off	192	217.912									
50		~~196~~										
51		~~2~~										
52												
53												
54												
55												
56												
57												
58												
59												
60												
61												
62												
63												
64												
65												

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condens...

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	94.415	0.0547	97	1571	0.72

ENTROPY

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FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal & Coke Co. RUN NO. IL-1-52-MM5-1B
CITY/STATE Vasant, Virginia JOB NO. 3694 DATE 10-30-91
SAMPLING LOC. Stack 2 TIME START 1315
BAROMETRIC PRESSURE, IN. HG 5 STATIC PRESSURE, IN. H_2O -0.095 TIME FINISH 1627
LEAK CHECK, VACUUM IN. HG 15 5 OPERATOR RFH
LEAK RATE, CUBIC FEET/MIN. 0.004 0.002 ASST(S) JWB

EQUIPMENT CHECKS*
- ✓ PITOT, PRETEST
- ___ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 89 °F PRE
- ___ TC ___ °F POST
- ✓ ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS
REAGENT BOX DF180 METER BOX N-23 Y 0.9823
PITOT ___ C_p 0.84 NOZ'L ___ DIA. 0.500
TC READOUT F-34 TC PROBE C-18 UMBILICAL U91
SAMPL'G BOX 14 ORSAT PUMP N4 TEDLAR BAG N4

LEAK CHECKS
B ___ B ___
E ___ E ___
B ___ B ___
E ___ E ___
B ___ B ___
E ___ E ___

FILTER/XAD	TARE WT.
3694-18	350.0

NOMOGRAPH DATA

DELTA H@	1.827
METER TEMP	100
EST. %H_2O	20
C FACTOR	0.77
STACK TEMP	1550
REF DELTA P	0.139
K FACTOR	13.205

FYRITES

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A-12	0	431.17	0.057	88	1559	0.74	0.74	2	240	58	57	
2		4	433.16	0.057	92	1573	0.74	0.74	3	240	58	57	
3		8	435.14	0.073	95	1577	0.95	0.95	3	240	56	58	
4		12	437.23	0.060	96	1571	0.78	0.78	4	242	55	58	
5	11	16	439.52	0.059	97	1572	0.77	0.77	4	242	55	58	
6		20	441.59	0.065	98	1575	0.85	0.85	4	245	55	58	
7		24	443.78	0.061	98	1576	0.79	0.79	4	245	55	60	
8		28	445.84	0.072	100	1577	0.94	0.94	4	245	55	57	
9	10	32	448.08	0.065	101	1574	0.85	0.85	4	247	55	58	
10		36	449.72	0.074	101	1576	0.97	0.97	4	247	55	59	
11		40	452.67	0.062	101	1574	0.81	0.81	4	250	55	60	
12		44	454.74	0.065	102	1575	0.85	0.85	4	250	55	61	
13	9	48	456.85	0.065	102	1573	0.85	0.85	4	250	55	60	
14		52	458.97	0.063	101	1573	0.83	0.83	4	250	55	60	
15		56	461.19	0.061	101	1573	0.80	0.80	4	250	54	60	
16		60	463.30	0.064	102	1572	0.84	0.84	4	250	54	60	
17	8	64	465.45	0.056	102	1572	0.74	0.74	4	250	54	58	
18		68	467.52	0.068	101	1574	0.89	0.89	4	252	54	61	
19		72	469.68	0.070	100	1574	0.92	0.92	4	252	54	60	
20		76	471.95	0.060	100	1572	0.79	0.79	4	252	55	60	
21	7	80	474.16	0.068	98	1573	0.88	0.88	4	252	55	59	
22		84	476.22	0.060	95	1574	0.78	0.78	4	252	55	59	
23		88	478.32	0.055	93	1571	0.71	0.71	4	252	56	57	
24		92	480.38	0.057	92	1573	0.74	0.74	4	252	56	57	
25	6	96	482.38	0.048	90	1573	0.62	0.62	4	252	55	56	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal & Coke Co. RUN NO. IV-1 S2-MMS-1

SAMPLING LOC. STACK 2 JOB. NO. 3694

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26		100	484.27	0.044	89	1574	0.57	0.57	3	252	55	57
27		104	486.04	0.042	87	1573	0.54	0.54	3	254	56	56
28		108	487.78	0.042	86	1572	0.54	0.54	3	255	57	56
29	5	112	489.52	0.047	86	1572	0.60	0.60	3	255	58	56
30		116	491.32	0.050	86	1572	0.64	0.64	3	255	58	56
31		120	493.18	0.051	86	1573	0.65	0.65	3	252	58	57
32		124	495.07	0.050	86	1572	0.64	0.64	3	252	58	57
33	4	128	496.92	0.051	86	1572	0.65	0.65	3	252	58	58
34		132	498.86	0.051	86	1572	0.65	0.65	3	252	56	57
35		136	500.71	0.053	86	1572	0.68	0.68	3	252	56	58
36		140	502.63	0.050	86	1573	0.64	0.64	3	252	56	57
37	3	144	504.50	0.056	87	1576	0.72	0.72	3	252	56	58
38		148	506.43	0.048	87	1575	0.61	0.61	3	252	56	59
39		152	508.27	0.050	87	1574	0.64	0.64	3	252	56	59
40		156	510.13	0.050	87	1575	0.64	0.64	3	254	57	58
41	2	160	511.98	0.046	85	1570	0.59	0.59	3	254	57	58
42		164	513.79	0.050	90	1568	0.65	0.65	3	254	57	58
43		168	515.66	0.043	90	1566	0.56	0.56	3	255	57	59
44		172	517.42	0.046	91	1567	0.60	0.60	3	255	57	59
45	1	176	519.25	0.040	92	1534	0.53	0.53	3	255	56	59
46		180	520.95	0.042	92	1553	0.55	0.55	3	255	56	61
47		184	522.68	0.040	92	1551	0.52	0.52	3	255	58	62
48		188	524.38	0.040	92	1551	0.52	0.52	3	255	58	62
49	END	192	526.065									
50												
51												
52												
53												
54												
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56												
57												
58												
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65												

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	94.895	0.0547	93	1570	0.72

ENTROPY

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FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal & Coke — RUN NO. IV-2-52-MM5-2A
CITY/STATE Vansant, Va. — JOB NO. 3676 — DATE 10-31-91
SAMPLING LOC. Battery "C" Stack #2 — TIME START 1035
BAROMETRIC PRESSURE, IN. HG 28.8 — STATIC PRESSURE, IN. H_2O -.10 — TIME FINISH 1345
LEAK CHECK, VACUUM IN. HG 15 6 — OPERATOR VTL
LEAK RATE, CUBIC FEET/MIN. .010 .001 — ASST(S)

EQUIPMENT CHECKS*
- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 75 °F PRE
- ✓ TC 82 °F POST
- ✓ ORSAT SYSTEM

FILTER/XAD	TARE WT.
3694-15	367.0

EQUIPMENT I.D. NUMBERS
REAGENT BOX OF112 — METER BOX N-18 — Y .9842
PITOT Water Cooled — C_p .84 — NOZ'L Quartz — DIA. .500
TC READOUT F-52 — TC PROBE C-22 — UMBILICAL U-80
SAMPL'G BOX ~~[illegible]~~ 186 — ORSAT PUMP 28 — TEDLAR BAG 53

NOMOGRAPH DATA
DELTA H@ 1.846
METER TEMP 80
EST. %H_2O 17
C FACTOR .79
STACK TEMP 1550
REF DELTA P .136
K FACTOR 13.57

LEAK CHECKS
B ___ B ___
E ___ E ___
B ___ B ___
E ___ E ___
B ___ B ___
E ___ E ___

FYRITES
9
9

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	12	0	566.542	.08	84	1565	1.02	1.02	4	225	58	44	
2		4	568.84	.069	86	1565	.88	.88	5	225	55	44	
3		8	571.03	.067	86	1564	.86	.86	5	228	54	43	
4		12	573.22	.076	90	1564	1.04	1.04	5	228	52	40	
5	11	16	575.61	.077	92	1564	1.06	1.06	5	229	50	40	
6		20	578.04	.075	94	1562	1.03	1.03	5	229	50	40	
7		24	580.42	.078	94	1563	1.08	1.08	5	230	50	40	
8		28	582.80	.077	94	1562	1.06	1.06	5	235	52	42	
9	10	32	585.24	.075	95	1561	1.04	1.04	5	241	52	44	
10		36	587.43	.080	95	1562	1.11	1.11	5	240	52	45	
11		40	589.82	.081	96	1561	1.12	1.12	6	242	54	45	
12		44	592.22	.073	96	1561	1.01	1.01	6	254	54	45	
13	9	48	594.55	.070	97	1558	.97	.97	6	257	54	46	
14		53	596.83	.067	97	1555	.93	.93	5	258	54	46	
15		56	599.08	.073	98	1557	1.02	1.02	5	270	55	48	
16		60	601.39	.070	100	1556	.98	.98	5	260	55	48	
17	8	64	603.70	.080	100	1555	1.12	1.12	6	260	55	48	
18		69	606.10	.065	103	1556	.91	.91	5	262	55	50	
19		72	608.51	.064	104	1558	.90	.90	5	259	56	50	
20		76	610.79	.078	105	1559	1.10	1.10	5	260	55	52	
21	7	80	613.04	.070	105	1557	.99	.99	5	261	55	52	
22		84	615.43	.085	105	1562	1.20	1.20	5	264	55	48	
23		88	618.151	.083	106	1560	1.18	1.18	5	263	54	47	
24		92	620.44	.075	107	1559	1.07	1.07	5	263	54	46	
25	6	96	~~[illegible]~~	.075	107	1559	1.07	1.07	5	262	53	45	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

ENTROPY

FIELD DATA (continued)

PLANT JEWELL COKE & COAL RUN NO. II-2 52-MM5-2A

SAMPLING LOC. UNIT 2 STACK JOB. NO. 3676

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26	16	100	624.981	0.073	108	1558	1.04	1.04	5	261	52	47
27		104	627.181	0.061	106	1556	0.87	0.87	5	260	51	46
28		108	629.311	0.060	105	1556	0.85	0.85	5	259	50	45
29	15	112	631.57	0.064	104	1554	0.98	0.98	5	259	49	45
30		116	633.811	0.064	103	1553	0.91	0.91	5	260	48	46
31		120	635.33	0.073	102	1555	1.03	1.03	5	259	48	45
32		124	638.411	0.065	102	1554	0.92	0.92	5	258	47	45
33	14	128	640.654	0.061	101	1553	0.86	0.86	5	257	46	44
34		132	642.885	0.065	101	1552	0.92	0.92	5	256	45	44
35		136	645.085	0.066	102	1553	0.93	0.93	5	255	44	43
36		140	647.324	0.043	103	1554	0.61	0.61	5	255	45	43
37	13	144	649.221	0.048	102	1552	0.68	0.68	5	254	46	44
38		148	651.141	0.045	103	1554	0.64	0.64	5	253	45	43
39		152	653.010	0.039	104	1548	0.56	0.56	5	253	44	42
40		156	654.865	0.050	105	1552	0.71	0.71	5	252	45	43
41	12	160	656.829	0.044	106	1544	0.63	0.63	5	251	44	42
42		164	658.745	0.040	107	1544	0.57	0.57	5	252	44	42
43		168	660.541	0.047	108	1541	0.68	0.68	5	251	43	41
44		172	662.321	0.048	109	1555	0.69	0.69	5	250	42	40
45	11	176	664.389	0.043	108	1557	0.61	0.61	5	250	43	39
46		180	666.310	0.042	108	1567	0.61	0.61	5	249	42	40
47		184	668.191	0.040	109	1566	0.57	0.57	5	250	41	39
48		188	670.035	0.045	109	1567	0.64	0.64	5	251	42	40
49	END	192	671.881	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
50												
51												
52												
53												
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62												
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65												

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH
	105.339	0.0637	101	1557	0.90

ENTROPY

FIELD DATA - METHOD(S) mm5

PLANT Sewell Coal + Coke — RUN NO. IV-2-52-MM5-2B
CITY/STATE Vansant, Va. — JOB NO. 3676 — DATE 10-31-91
SAMPLING LOC. Battery "C" Stack #2 — TIME START 1035
BAROMETRIC PRESSURE, IN. HG 28.8 — STATIC PRESSURE, IN. H_2O -.1 — TIME FINISH 1345
LEAK CHECK, VACUUM IN. HG 15 6 — OPERATOR KBB
LEAK RATE, CUBIC FEET/MIN. .004 .002 — ASST(S)

EQUIPMENT CHECKS*
- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 74 °F PRE
- ✓ TC 50 °F POST
- ✓ ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS
REAGENT BOX DF112 — METER BOX N-23 Y 9823
PITOT Water Cooled C_p .84 — NOZ'L Quartz — DIA. .50
TC READOUT F-34 — TC PROBE C-18 — UMBILICAL U-91
SAMPL'G BOX 14 — ORSAT PUMP N/A — TEDLAR BAG N/A

LEAK CHECKS
B ___ E ___ B ___ E ___
B ___ E ___ B ___ E ___
B ___ E ___ B ___ E ___

FILTER/XAD	TARE WT.
XAD 3694-21	345.6

NOMOGRAPH DATA

DELTA Ha	1.827
METER TEMP	80
EST. %H_2O	17
C FACTOR	0.798
STACK TEMP	1550
REF DELTA P	0.135
K FACTOR	13.665

FYRITES
9.0 9.0 9.5

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	A2	0	787.296	0.08	76	1565	1.01	1.01	4	225	40	44	
2		4 8	789.58	0.069	80	1565	0.93	0.93	4	225	38	44	
3		8 ~~10~~	793.93	0.076	84	1564	1.03	1.03	4	228	38	44	*
4		12 13	791.77	0.067	82	1564	0.91	0.91	4	225	38	44	
5	A11	16 20	796.25	0.077	86	1564	1.05	1.05	~~4~~ 5	229	38	44	
6		20 25	798.61	0.075	87	1562	1.02	1.02	5	230	39	45	
7		24 30	800.95	0.078	88	1563	1.07	1.07	5	230	39	45	
8		28 35	803.30	0.077	89	1562	1.06	1.06	5	235	39	45	
9	A10	32 40	805.70	0.075	90	1561	1.03	1.03	5	241	39	45	
10		36 45	808.04	0.080	90	1562	1.10	1.10	5	240	39	45	
11		40	810.46	0.081	90	1561	1.11	1.11	5	240	39	45	
12		44	812.92	0.073	91	1561	1.0	1.0	5	255	39	46	
13	A9	48	815.23	0.070	92	1558	0.97	0.97	5	257	~~47~~ 40	46	
14		52	817.51	0.067	93	1555	0.93	0.93	5	258	40	46	
15		56	819.75	0.073	94	1557	1.01	1.01	5	270	40	47	
16		60	822.68	0.070	94	1556	0.97	0.97	5	260	43	47	
17	A8	64	824.37	0.080	96	1555	1.11	1.11	5	260	44	47	
18		68	826.75	0.065	96	1556	0.90	0.90	5	262	44	47	
19		72	829.02	0.064	97	1558	0.89	0.89	5	259	44	49	
20		76	831.24	0.078	97	1559	~~0~~ 1.09	1.09	5	260	46	49	
21	A7	80	833.65	0.070	98	1557	0.98	0.98	5	267	46	47	
22		84	835.95	0.085	99	1562	1.19	1.19	5	264	48	49	
23		88	838.47	0.083	100	1560	1.16	1.16	5	259	48	51	
24		92	841.02	0.075	101	1559	1.05	1.05	5	250	48	51	
25	A6	96	843.39	0.075	102	1559	1.05	1.05	5	250	48	51	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.
* out of sequence

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal + Coke RUN NO. IV-2-S2-MM5-2B

SAMPLING LOC. Stack #2 JOB. NO. 3676

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**
26		100	845.79	0.073	102	1558	1.03	1.03	5	248	48	55
27		104	848.18	0.061	101	1556	0.86	0.86	5	248	48	55
28		108	850.41	0.060	100	1556	0.84	0.86	5	250	48	54
29	A5	112	852.52	0.069	98	1554	0.97	0.97	5	255	50	54
30		116	854.83	0.064	98	1553	0.90	0.90	5	257	50	54
31		120	857.07	0.073	98	1555	1.02	1.02	5	260	50	54
32		124	859.41	0.065	98	1554	0.91	0.91	5	260	50	54
33	A4	128	861.63	0.061	98	1553	0.85	0.85	5	250	50	52
34		132	863.77	0.065	98	1552	0.91	0.91	5	243	50	48
35		136	865.99	0.066	98	1553	0.92	0.92	5	240	48	47
36		140	868.21	0.043	96	1554	0.60	0.60	5	243	46	45
37	A3	144	870.05	0.048	98	1552	0.67	0.67	5	264	46	46
38		148	871.93	0.045	99	1554	0.63	0.63	5	260	46	47
39		152	873.79	0.039	100	1548	0.55	0.55	5	260	45	47
40		156	875.51	0.050	100	1552	0.70	0.70	5	255	45	49
41	A2	160	877.47	0.044	102	1544	0.62	0.62	5	250	45	50
42		164	879.31	0.040	103	1544	0.57	0.57	5	260	45	50
43		168	881.08	0.047	103	1541	0.67	0.67	5	260	45	50
44		172	883.00	0.048	104	1555	0.68	0.68	5	250	43	50
45	A1	176	884.93	0.043	105	1557	0.61	0.61	5	245	43	51
46		180	886.78	0.042	105	1567	0.59	0.59	4	245	46	52
47		184	888.61	0.040	105	1566	0.56	0.56	4	257	48	52
48		188	890.37	0.045	104	1567	0.63	0.63	4	260	49	53
49	END	192	892.255	0.								
50												
51												
52												
53												
54												
55												
56												
57												
58												
59												
60												
61												
62												
63												
64												
65												

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conden.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH
	104.959	0.0637	96	1557	0.89

ENTROPY

FIELD DATA - METHOD(S) MM5

PLANT Jewell Coal + Coke — RUN NO. IV-3-52-MM5-3A

CITY/STATE Vansant, Va. — JOB NO. 3676 — DATE 10-31-91

SAMPLING LOC. Battery C Stack #2 — TIME START 1025

BAROMETRIC PRESSURE, IN. HG 28.7 — STATIC PRESSURE, IN. H_2O -0.1 — TIME FINISH ~~1508~~ 1532

LEAK CHECK, VACUUM IN. HG 15 6 — OPERATOR KBB LBJ WE

LEAK RATE, CUBIC FEET/MIN. 0.002 0.004 — ASST(S)

EQUIPMENT CHECKS*

- ✓ PITOT, PRETEST
- ✓ PITOT, POSTTEST
- ✓ NOZZLE, PRE/POST
- ✓ TC 73 °F PRE
- ✓ TC 84 °F POST
- ✓ ORSAT SYSTEM

EQUIPMENT I.D. NUMBERS

REAGENT BOX DF-0206 METER BOX N-23 Y 0.9873

PITOT WC-122 C_p 0.84 NOZ'L 0.5 DIA. 0.50

TC READOUT F-34,52 TC PROBE High Temp UMBILICAL V-91

SAMPL'G BOX 85 ORSAT PUMP 18 TEDLAR BAG 11

LEAK CHECKS

B	E	B	E
266.986	267.183		

FILTER/XAD	TARE WT.
3694-22	337.0

NOMOGRAPH DATA

DELTA H@	1.827
METER TEMP	80
EST. $\%H_2O$	17
C FACTOR	0.791
STACK TEMP	1575
REF DELTA P	0.138
K FACTOR	13.373

FYRITES

9.0 9.5 9.0
9.5

* PITOT: VISUAL INSPECTION/LEAK CHECK; NOZZLE: VISUAL INSPECTION; TC: AMBIENT TEMPS.; ORSAT SYSTEM: LEAK CHECK

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
1	1	0	241.258	0.062	78	1574	0.83	0.83	4	260	47	46	
2		3	243.31	0.063	79	1591	0.84	0.84	4	266	37	40	
3		6	244.89	0.073	79	158[illegible]	.97	0.97	4	251	40	40	
4		9	246.57	0.066	80	1594	0.88	0.88	4	249	40	40	
5		12	248.17	0.066	80	1591	0.88	0.88	4	247	40	39	
6		15	249.79	0.067	80	1595	0.89	0.89	4	236	41	38	
7		18	251.43	0.067	80	1593	0.89	0.89	4	239	[illegible]	38	
8		21	253.02	0.065	82	1591	0.87	0.87	4	242	40	37	
9	2	24	254.63	0.060	84	1584	0.81	0.81	4	240	[illegible]	37	
10		27	256.16	0.077	86	1590	1.04	1.04	4	241	40	37	
11		30	257.88	0.055	87	1586	0.74	0.74	4	228	40	37	
12		33	259.37	0.067	88	1580	0.91	0.91	4	228	40	37	
13		36	260.85	0.057	89	1577	0.78	0.78	4	228	40	37	
14		39	262.47	0.053	89	1577	0.78	0.78	4	225	40	37	
15		42	263.92	0.053	89	1584	0.72	0.72	4	226	43	39	
16		45	265.47	0.060	90	1584	0.82	0.82	4 200	~~229~~	~~44~~	39	
17	3	48	266.90	0.070	90	1591	0.95	0.95	4	260	44	39	
18		51	268.70	0.056	87	1579	0.76	0.76	4	271	44	35	
19		54	270.20	0.055	87	1578	0.75	0.75	4	272	44	38	
20		57	271.71	0.061	88	1578	0.83	0.83	4	258	46	38	
21		60	273.31	0.063	86	1577	0.86	0.86	4	259	46	39	
22		63	274.84	0.060	88	1574	0.82	0.82	4	260	46	36	
23		66	276.40	0.063	90	1575	0.86	0.86	4	263	48	39	
24		69	278.00	0.065	90	1577	0.89	0.89	4	263	48	40	
25	4	72	279.65	0.060	90	1578	0.82	0.82	4	266	49	42	
		75	281.21	0.070	90	1580	0.95	0.95	4	259	49	42	

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.

** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta P})^2$	tm	ts	ΔH

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ENTROPY

FIELD DATA (continued)

PLANT Jewell Coal & Coke RUN NO. IV-3-S2-MM5-3A

SAMPLING LOC. Stack # 2 JOB. NO. 3676

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H2O ACTUAL	ORIFICE SETTING IN. H2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND. EXIT**
26		[illegible]	282.88	0.070	90	1580	0.95	0.95	4	256	50	43
27		[illegible]1	284.57	0.063	90	1581	0.86	0.86	4	256	50	43
28		8 4	286.161	0.061	90	1577	0.83	0.83	4	255	49	42
29		[illegible]	[illegible].775	0.60	90	1577	0.82	0.82	4	254	50	41
30		[illegible]	289.369	0.055	91	1576	0.75	0.75	4	253	49	42
31		9 [illegible]	290.881	0.063	90	1582	0.86	.86	4	252	50	41
32		[illegible]	292.471	0.061	90	1584	0.83	0.83	4	253	50	41
33		[illegible]	294.039	0.066	89	1584	0.90	0.90	4	253	50	41
34		[illegible]2	295.691	0.069	89	1584	0.94	0.94	4	252	49	40
35		[illegible]5	297.381	0.059	89	1580	0.80	0.80	4	251	48	39
36		108	298.941	0.069	88	1581	0.94	0.94	4	250	47	38
37		[illegible]1	300.619	0.065	88	1583	0.88	0.88	4	249	46	39
38		[illegible]	302.310	0.060	87	1583	0.81	0.81	4	248	45	40
39		12[illegible]	303.841	0.055	87	1582	0.74	0.74	4	248	46	40
40		[illegible]	305.381	0.068	87	1581	0.92	0.92	4	249	45	41
41		123	307.010	0.065	86	1583	0.88	0.88	4	250	45	41
42		126	308.711	0.066	85	1581	0.89	0.89	4	251	46	42
43		[illegible]	310.331	0.059	84	1579	0.80	0.80	4	252	45	43
44		132	311.849	0.061	83	1580	0.82	0.82	4	252	46	[illegible]
45		135	313.42	0.055	84	1581	0.74	0.74	4	253	46	45
46		138	314.94	0.060	84	[illegible]	0.81	0.81	4	251	45	45
47		141	316.48	0.065	84	[illegible]	0.87	0.87	4	250	44	46
48	7	14[illegible]	318.09	0.055	86	1577	0.74	0.74	4	259	[illegible]	[illegible]
49	[illegible]	147	319.58	0.054	88	1578	0.73	0.73	4	254	45	49
50		150	321.05	0.055	88	1579	0.75	0.75	4	261	45	49
51		153	322.56	0.056	90	1579	0.76	0.76	4	260	45	49
52		156	324.05	0.057	90	1582	0.78	0.78	4	258	43	49
53		15[illegible]	325.58	0.053	91	1579	0.72	0.72	4	260	43	49
54		162	327.04	0.064	92	1582	0.87	0.87	4	252	45	49
55		165	328.65	0.062	92	1578	0.85	0.85	4	259	48	52
56	8	168	330.25	0.060	92	1579	0.82	0.82	4	260	48	51
57		171	331.81	0.0[illegible]	88	1579	0.84	0.84	4	258	48	51
58		174	333.39	[illegible]	87	1580	0.85	0.85	4	261	49	50
59		177	334.99	0.065	87	1580	0.88	0.88	4	260	47	49
60		180	336.60	0.059	88	1578	0.80	0.80	4	263	47	49
61		183	338.15	0.052	88	1576	0.71	0.71	4	251	43	44
62		[illegible]	339.60	0.060	88	1579	0.81	0.81	4	261	43	44
63		189	341.15	0.056	88	1575	0.76	0.76	4	262	44	44
64	9	192	342.66	0.052	88	1573	0.71	0.71	4	260	45	44
65		195	344.12	0.064	87	1576	0.87	0.87	4	260	45	43

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & √ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a conden

Min. (θ) Vm $(\sqrt{\Delta p})^2$ tm ts ΔH

FIELD DATA (continued)

PLANT Jewell Coal + Coke RUN NO. III-3-52-MM5-3A

SAMPLING LOC. Stack #2 JOB. NO. 3626

COMMENTS

LINE	SAMPLE POINT	CLOCK TIME MINUTES	DRY GAS METER READING CUBIC FEET	PITOT READING IN. H_2O	GAS METER TEMP. °F	STACK TEMP. °F	ORIFICE SETTING IN. H_2O ACTUAL	ORIFICE SETTING IN. H_2O IDEAL	GAUGE VACUUM IN. HG	GAS TEMPERATURES °F FILTER *	IMPING. EXIT	PROBE OR COND EXIT**	✓
26		198	345.72	0.055	82	1573	0.75	0.75	4	254	45	46	
27		201	347.24	0.063	82	1573	0.86	0.86	4	256	45	47	
28		204	348.83	0.05	88	1570	0.68	.681	4	259	45	47	
29		207	350.26	0.055	86	1569	0.75	0.748	4	260	45	47	
30		210	351.74	0.055	85	1570	0.75	0.746	4	258	45	47	
31		213	353.22	0.05	85	1568	0.68	0.679	4	256	46	48	
32	10	216	354.64	0.06	85	1570	0.81	0.81	4	261	46	48	
33		219	356.19	0.055	85	1567	0.74	0.744	4	261	46	48	
34		222	357.99	0.055	83	1569	0.74	0.743	4	254	46	48	
35		225	359.86	0.05	82	1567	.68	0.675	4	258	47	49	
36		228	360.63	0.055	82	1568	0.74	0.742	4	254	47	44	
37		231	362.09	0.05	80	1565	0.67	0.675	4	254	39	38	
38		234	363.53	0.055	80	1562	0.74	0.742	4	251	39	38	
39		237	364.99	0.055	80	1564	0.74	0.741	4	257	39	39	
40	11	240	366.48	0.045	81	1561	0.61	0.608	4	255	39	39	
41		243	367.68	0.055	81	1559	0.75	0.745	4	255	39	39	
42		246	369.49	0.055	82	1560	0.75	0.745	4	252	39	40	
43		249	370.83	0.055	82	1560	0.75	0.746	4	252	39	40	
44		252	372.33	0.05	82	1559	0.68	0.676	4	254	39	40	
45		255	373.78	0.055	83	1559	0.75	0.747	4	258	39	40	
46		258	375.25	0.06	84	1561	0.66	0.680	4	256	40	41	
47		261	376.22	0.055	84	1560	0.75	0.748	4	257	40	41	
48	12	264	378.19	0.05	84	1557	0.68	0.68	4	259	40	41	
49		267	379.65	0.05	83	1554	0.68	0.681	4	256	40	41	
50		270	381.07	0.055	84	1552	0.75	0.751	4	261	40	41	
51		273	382.55	0.055	84	1562	0.75	0.747	4	252	40	41	
52		276	384.04	0.05	84	1552	0.68	0.683	4	252	40	41	
53		279	385.49	0.05	85	1551	0.68	0.684	4	255	40	41	
54		282	386.93	0.055	85	1550	0.75	0.753	4	255	40	41	
55	~~END~~	285	388.40	0.055	85	1545	0.76	0.756	4	254	40	41	
56	END	288	389.895	0									
57													
58													
59													
60													
61													
62													
63													
64													
65													

* FILTER EXIT for NJ Method 1. FILTER BOX for all others.
** PROBE EXIT & ✓ (probe & filter heat off) apply to NJ Method 1. COND EXIT applies if sampling train has a condenser.

Min. (θ)	Vm	$(\sqrt{\Delta p})^2$	tm	ts	ΔH
	148.020	0.0589	86	1575	0.80

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ENTROPY

Data Acquisition Sheets
VOST

AFWR Archive

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

I-O-S3-V-O

Company Name JEWELL COAL & COKE COMPANY

Run # ~~I-1-S3-VOST-1A~~

Address VANSANT, VIRGINA

Date 10/28/91

Sampling Location STACK # 3

Start 1800

Sampling Objective VOCs

Meter Box # V5 GLOVS

Finish 1820

Barometric Pressure 28.8 in.Hg

Sample Box # BOX

Operator [illegible]

Filter Used? (Yes) No

Leak Test, in. Hg 10 10

Ambient Temperature 88 °F

Leak Rate, L/min 000 000

Condensate Final Volume, mL

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 17 Tenax/Charcoal: Tube A 32 Tube B ✓

Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H2O	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0	1583.381	1.0	1.0	7	95	13	752
5	1591.11	1.0	1.0	7	95	12	800
10	1596.97	1.0	1.0	7	95	12	1000
15	1603.11	1.0	1.0	7	96	12	96
20/OF	1607.613						
	24.232 Volume Metered, L		1.0 Average Pressure		95 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

AFnr
Air Chemie

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

II-0-S3-VOA
~~II-1-S3-VOST-~~

Company Name JEWELL COAL & COKE COMPANY

Run # ~~I-1-S3-VOST-2A~~

Address VANSANT, VIRGINA

Date 10/28/91

Sampling Location STACK # 3

Start 2210

Sampling Objective VOCs

Meter Box # V5

Finish 2250

Barometric Pressure 29.4 in.Hg

Sample Box # Colove Box

Operator CEW

Filter Used? (Yes) No

Leak Test, in. Hg 10 15 *

Ambient Temperature 90 °F

Leak Rate, L/min 000 000

Condensate Final Volume, mL

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - -

Tenax Tube 53

Tenax/Charcoal: Tube A 54

Tube B

Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H2O	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0	1611.680	.50	.80	4	93	13	120
5	1614.61	.50	.80	5	93	13	120
10	1617.37	.50	.80	5	93	13	132
15	1620.57	.50	.80	5	93	12	132
20	1623.13	.50	.80	5	93	12	13
25	1625.31	.50	.80	5	93	12	132
30	1628.97	.50	.80	5	93	12	132
35	1631.96	.50	.80	5	93	12	132
40	1634.545						
	22.865 Volume Metered, L		0.80 Average Pressure		93 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

A FWR

Archive

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

II-0-S3-V-0

~~II-1-S3-VOST-~~

Company Name JEWELL COAL & COKE COMPANY

Run # ~~I-1-S3-VOST-~~

Address VANSANT, VIRGINA

Date 10/28/91

Sampling Location STACK # 3

Start 2400

Sampling Objective VOCs

Meter Box # V8

Finish 2440

Barometric Pressure 29.4 in.Hg

Sample Box # Glove Box

Operator CCL

Filter Used? (Yes) No

Leak Test, in. Hg 10 10 *

Ambient Temperature 90 °F

Leak Rate, L/min 000 ~~000~~

Condensate Final Volume, mL 50

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 61 Tenax/Charcoal: Tube A 62 Tube B ✓

Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H20	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0	5657.961	.50	.75	4	93	15	180
5	5660.84	.50	.75	4	93	15	130
10	5663.31	.50	.75	4	93	15	132
15	5665.21	.50	.70	4	93	15	132
20	5668.11	50	.70	.4	93	15	132
25	5670.99	.50	.70	4	93	14	130
30	5672.48	50	70	4	93	14	130
35	5674.99	.50	.70	4	93	14	130
40	5676.33						
	18.37 Volume Metered, L		0.72 Average Pressure		93 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

A Run
Air dried

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

II-0-S3-V-OC
~~II-1-S3-VOST-1~~

Company Name JEWELL COAL & COKE COMPANY

Run # ~~I-1~~-S3-VOST-2C (B)

Address VANSANT, VIRGINA

Date 10/29/91

Sampling Location STACK # 3

Start 2:00

Sampling Objective VOCs

Meter Box # V5

Finish 2:40

Barometric Pressure 29.4 in.Hg

Sample Box # Glass Box

Operator SPS

Filter Used? (Yes) No

Leak Test, in. Hg 10 10 •

Ambient Temperature 90 °F

Leak Rate, L/min 000 000

Condensate Final Volume, mL 50

- - - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - - -

Tenax Tube 57 Tenax/Charcoal: Tube A 58 Tube B ✓

Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H2O	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0	1634.131	0.5	0.8	5	90	15	130
~~10~~ 5	1638.13	0.5	0.8	5	83	15	130
~~20~~ 10	1641.44	0.5	0.8	5	82	15	130
15	1644.75	0.5	0.8	5	82	15	130
20	1648.02	0.5	0.8	5	81	15	132
25	1651.32	0.5	0.8	5	81	17	131
30	1654.62	0.5	0.8	5	81	16	132
35	1657.91	0.5	0.8	5	81	16	131
~~40~~ 40	1661.292						
	27.151 Volume Metered, L		0.8 Average Pressure		83 Average Temperature		

• Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN (VOST) FIELD DATA

Plant Name JEWEL COAL + COKE Run No. I-1-S3-V-1A

City/State VANSANT VA Job No. 3694 Date 10-29-91

Sampling Loc. # 3 STACK Time Start 1715

Barometric Press. 29.0 In. Hg Ambient Temp. 78 °F Time Finish 1735

Sample Box No. GLOVE BOX Operator CEN Assistant(s) _____

Meterbox I.D. V-5 Meterbox Gamma 9722 Condensate Final Vol. 50 mL

Leak Test In. Hg 10 12 ____ DGM Used (√) ✓ Singer ___ Rockwell

Leak Rate* 000 000 ____ (√) ✓ L/min. ___ cf/min.

(CONDUCT POSTTEST LEAK CHECK AT A VACUUM OF 10 IN. HG ABOVE NORMAL OPERATING PRESSURE.) √

Sorbent Traps I.D. Tenax Tube A 49 Tube B _____

Tenax/Charcoal Tube A 50 Tube B _____

* LITERS FOR SINGER DRY GAS METER; CUBIC FEET FOR ROCKWELL DRY GAS METER.

Time Clock	Time Net	DGM Reading* (l)(cf)	Rotameter Setting	DGM Pressure In. H_2O	Train Vacuum In. Hg	DGM Temp. °F	Temp (Indicate) (°F) (°C) Cond.	Probe
1715	0	1651.700	1.0	1.0	5	95	17	130
1720	5	1656.989	1.0	1.0	5	95	17	130
1725	10	1662.01	1.0	1.0	5	95	15	132
1730	15	1668.18	1.0	1.0	5	95	13	132
1735	20	1673.341						

21.641 Vol. Metered (l)(cf)* | 1.0 Average Pressure | 95 Average Temp.

F-1047 rev. 10-91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN (VOST) FIELD DATA

Plant Name Jewel Coal + Coke Run No. I-1-S3-V-1B

City/State Vansant VA Job No. 3694 Date 10-29-94

Sampling Loc. # 3 Stack Time Start 1741

Barometric Press. 29.0 In. Hg Ambient Temp. 78 °F Time Finish 1821

Sample Box No. Glove Box Operator CEN Assistant(s) _____

Meterbox I.D. V-8 Meterbox Gamma .9921 Condensate Final Vol. 50 mL

Leak Test In. Hg 15 10 ____ DGM Used (√) ✓ Singer ___ Rockwell

Leak Rate* .000 .001 ____ (√) ✓ L/min. ___ cf/min.

(CONDUCT POSTTEST LEAK CHECK AT A VACUUM OF 10 IN. HG ABOVE NORMAL OPERATING PRESSURE.) ✓

Sorbent Traps I.D. Tenax Tube A 5 Tube B _____

Tenax/Charcoal Tube A 6 Tube B _____

* LITERS FOR SINGER DRY GAS METER; CUBIC FEET FOR ROCKWELL DRY GAS METER.

Time Clock	Time Net	DGM Reading* (l)(cf)	Rotameter Setting	DGM Pressure In. H_2O	Train Vacuum In. Hg	DGM Temp. °F	Temp (Indicate) (°F) (°C) Cond.	Probe
1741	0	5677.015	.50	.40	4	93	17	130
1746	5	5680.99	.50	.40	4	93	17	130
1751	10	5682.77	.50	.60	4	93	15	132
1756	15	5684.31	.50	.60	4	93	15	132
1801	20	5686.16	.50	.60	4	94	13	132
1806	25	5689.72	.50	.60	4	94	13	132
1811	30	5692.65	.50	.60	4	94	13	132
1816	35	5694.42	.50	.60	4	94	13	132
1821	40	5696.45						

19.43 Vol. Metered (l)(cf)*

0.55 Average Pressure

94 Average Temp.

F-1047 rev. 10-91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN (VOST) FIELD DATA

Plant Name JEWEL COAL & COKE Run No. I-153-V-1C

City/State VANSANT VA Job No. 3694 Date 10-29-91

Sampling Loc. #3 STACK Time Start 1835

Barometric Press. 29.0 In. Hg Ambient Temp. 80 °F Time Finish 1915

Sample Box No. GLOVE BOX Operator CEN Assistant(s) _____

Meterbox I.D. V5 Meterbox Gamma .9722 Condensate Final Vol. 50 mL

Leak Test In. Hg 15 10 ____ DGM Used (√) ✓ Singer ___ Rockwell

Leak Rate* 000 000 ____ (√) ✓ L/min. ___ cf/min. ✓

(CONDUCT POSTTEST LEAK CHECK AT A VACUUM OF 10 IN. HG ABOVE NORMAL OPERATING PRESSURE.)

Sorbent Traps I.D. Tenax Tube A 25 Tube B _____

Tenax/Charcoal Tube A 26 Tube B _____

* LITERS FOR SINGER DRY GAS METER; CUBIC FEET FOR ROCKWELL DRY GAS METER.

Time		DGM Reading* (l)(cf)	Rotameter Setting	DGM Pressure In. H_2O	Train Vacuum In. Hg	DGM Temp. °F	Temp (Indicate) (°F) (°C)	
Clock	Net						Cond.	Probe
1835	0	1684.615	.50	.80	4	93	16	130
1840	5	1687.18	.50	.80	4	93	16	130
1845	10	1689.93	.50	.80	4	93	16	131
1850	15	1692.01	50	.80	4	93	16	130
1855	20	1695.32	.50	.80	4	93	16	130
1900	25	1697.83	.50	.80	4	93	16	130
1905	30	1700.46	.50	.80	4	94	15	130
1910	35	1703.13	.50	.80	4	94	15	130
1915	40	1705.965						

21.35 Vol. Metered (l)(cf)* 0.80 Average Pressure 93 Average Temp.

F-1047 rev. 10-91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN (VOST) FIELD DATA

Plant Name Jewel Coal + Coke Run No. I-1-S3-V-1D

City/State Vansant VA Job No. 369A Date 10-29-91

Sampling Loc. # 3 Stack Time Start 1935

Barometric Press. 29.0 In. Hg Ambient Temp. 80 °F Time Finish 1955

Sample Box No. Glove Box Operator CEW Assistant(s) _____

Meterbox I.D. V8 Meterbox Gamma 9927 Condensate Final Vol. 50 mL

Leak Test In. Hg 10 10 ____ DGM Used (√) ✓ Singer ___ Rockwell

Leak Rate* 000 001 ____ (√) ✓ L/min. ___ cf/min. ✓

(CONDUCT POSTTEST LEAK CHECK AT A VACUUM OF 10 IN. HG ABOVE NORMAL OPERATING PRESSURE.)

Sorbent Traps I.D. Tenax Tube A 19 Tube B _____

Tenax/Charcoal Tube A 20 Tube B _____

* LITERS FOR SINGER DRY GAS METER; CUBIC FEET FOR ROCKWELL DRY GAS METER.

Time Clock	Time Net	DGM Reading* (l)(cf)	Rotameter Setting	DGM Pressure In. H_2O	Train Vacuum In. Hg	DGM Temp. °F	Temp (Indicate) (°F) (°C) Cond.	Temp (Indicate) (°F) (°C) Probe
1935	0	5696.825	1.0	.80	6	92	15	130
1940	5	5701.11	1.0	.80	6	92	15	130
1945	10	5705.41	1.0	.80	6	92	15	130
1950	15	5710.16	1.0	.80	6	93	16	133
1955	20	5714.712						

17.887 Vol. Metered (l)(cf)* 0.80 Average Pressure 92 Average Temp.

F-1047 rev. 10-91

ENTROPY

~~JL~~ -1-55-VOST-1A

VOLATILE ORGANIC SAMPLING TRAIN (VOST) FIELD DATA

Plant Name JEWEL COAL + COKE Run No. ~~FT-1-53-V-24~~ 3

City/State NAUSAUT VA Job No. 369A Date 10-29-91

Sampling Loc. # 3 STACK Time Start 2145

Barometric Press. 29.0 In. Hg Ambient Temp. 78 °F Time Finish 2225

Sample Box No. GLOVE BOX Operator CCW Assistant(s) _____

Meterbox I.D. V5 Meterbox Gamma 9722 Condensate Final Vol. 50 mL

Leak Test In. Hg 15 10 ____ DGM Used (✓) ✓ Singer ___ Rockwell

Leak Rate* 000 000 ____ (✓) ✓ L/min. ___ cf/min.

(CONDUCT POSTTEST LEAK CHECK AT A VACUUM OF 10 IN. HG ABOVE NORMAL OPERATING PRESSURE.)

Sorbent Traps I.D. Tenax Tube A 1 Tube B _____ ✓

Tenax/Charcoal Tube A 2 Tube B _____

* LITERS FOR SINGER DRY GAS METER; CUBIC FEET FOR ROCKWELL DRY GAS METER.

Time Clock	Time Net	DGM Reading* (l)(cf)	Rotameter Setting	DGM Pressure In. H_2O	Train Vacuum In. Hg	DGM Temp. °F	Temp (Indicate) (°F) Cond.	Temp (Indicate) (°C) Probe
2145	0	1705.925	.50	.80	3	80	15	130
2150	5	1708.99	.50	.80	3	80	15	130
2145	10	1712.73	.50	.80	3	80	14	131
2150	15	1715.49	.50	.80	3	80	14	130
2155	20	1718.22	.50	.80	3	80	14	130
2200	25	1720.87	.50	.80	3	80	13	130
2205	30	1722.89	.50	.80	3	80	13	130
2210	35	1725.27	.50	.80	3	80	13	130
2215	40	1728.024						

22.046 Vol. Metered (l)(cf)*

0.80 Average Pressure

80 Average Temp.

F-1047 rev. 10-91

ENTROPY

II -1-53-V051 · 1

VOLATILE ORGANIC SAMPLING TRAIN (VOST) FIELD DATA

Plant Name Jewel Coal & Coke Run No. ~~II-1-53-V2B~~ 3

City/State Vansant VA Job No. 369A Date 10-29-91

Sampling Loc. #3 Stack Time Start 2300

Barometric Press. 29.0 In. Hg Ambient Temp. 78 °F Time Finish 2340

Sample Box No. Glove Box Operator CRL Assistant(s) _____

Meterbox I.D. V8 Meterbox Gamma 9921 Condensate Final Vol. _____ mL

Leak Test In. Hg 15 10 _____ DGM Used (√) ___ Singer ___ Rockwell

Leak Rate* 000 000 _____ (√) ___ L/min. ___ cf/min.

(CONDUCT POSTTEST LEAK CHECK AT A VACUUM OF 10 IN. HG ABOVE NORMAL OPERATING PRESSURE.) ✓

Sorbent Traps I.D. Tenax Tube A 37 Tube B _____

Tenax/Charcoal Tube A 38 Tube B _____

* LITERS FOR SINGER DRY GAS METER; CUBIC FEET FOR ROCKWELL DRY GAS METER.

Time Clock	Time Net	DGM Reading* (l)(cf)	Rotameter Setting	DGM Pressure In. H_2O	Train Vacuum In. Hg	DGM Temp. °F	Temp (Indicate) (°F) Cond.	(°C) Probe
2300	0	5714.825	.50	.60	4	71	16	130
2305	5	5717.31	.50	.60	4	71	15	130
2310	10	5719.81	.50	60	5	72	15	132
2315	15	5721.57	.50	.60	5	72	14	132
2320	20	5725.19	.50	.60	5	72	14	132
2325	25	5727.41	.50	.60	5	72	14	132
2330	30	5729.99	.50	60	5	72	14	132
2340	35	5732.41	.50	60	5	72	14	132
2345	40	5734.760						

19.935 Vol. Metered (l)(cf)*

0.60 Average Pressure

72 Average Temp.

F-1047 rev. 10-91

ENTROPY

II -1-53-V03(-

VOLATILE ORGANIC SAMPLING TRAIN (VOST) FIELD DATA

Plant Name Jewel Coal & Coke Run No. ~~I-2-53-V-2~~

City/State Vansant VA Job No. 369 Date 10-30-91

Sampling Loc. # 3 Stack Time Start 2:00

Barometric Press. 29.0 In. Hg Ambient Temp. 59 °F Time Finish 2:40

Sample Box No. ~~V-5~~ Glove Box Operator SPS Assistant(s) —

Meterbox I.D. V-5 Meterbox Gamma 0.9722 Condensate Final Vol. _____ mL

Leak Test In. Hg 15 10 _____ DGM Used (√) ___ Singer ___ Rockwell

Leak Rate* 000 000 _____ (√) ___ L/min. ___ cf/min.

(CONDUCT POSTTEST LEAK CHECK AT A VACUUM OF 10 IN. HG ABOVE NORMAL OPERATING PRESSURE.)

Sorbent Traps I.D. Tenax Tube A 59 Tube B ~~60~~ ✓

Tenax/Charcoal Tube A 60 Tube B _____

* LITERS FOR SINGER DRY GAS METER; CUBIC FEET FOR ROCKWELL DRY GAS METER.

	Time Clock	Time Net	DGM Reading* (l)(cf)	Rotameter Setting	DGM Pressure In. H_2O	Train Vacuum In. Hg	DGM Temp. °F	Temp (Indicate) (°F) Cond.	Temp (Indicate) (°C) Probe
0200	0	0	1729.305	0.5	0.8	4	67.2	15	130
0205	5		1732.65	0.5	0.9	4	66.	15	130
0210	10		1735.85	0.5	0.8	4	66	16	130
0215	15		1739.15	0.5	0.8	4	66	16	130
0220	20		1742.28	0.5	0.9	4	66	15	130
0225	25		1745.55	0.5	0.9	4	65	16	130
0230	30		1748.75	0.5	0.8	4	65	15	130
0235	35		1752.05	0.5	0.8	4	65	16	130
0240	40		1755.279						

25.898	0.8	66
Vol. Metered (l)(cf)*	Average Pressure	Average Temp.

F-1047 rev. 10-91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

III - 1-S3-VOST-1A

Company Name JEWELL COAL & COKE COMPANY

Run # ~~1-3-S3-VOST-3A~~ 3

Address VANSANT, VIRGINA 3694

Date 10/30/91

Sampling Location STACK # 3

Start 4:10

Sampling Objective VOCs

Meter Box # 1-8

Finish 4:50

Barometric Pressure 29.0 in.Hg

Sample Box # Vost Box

Operator SPS

Filter Used? (Yes) No

Leak Test, in. Hg 15 15 *

Ambient Temperature 50 °F

Leak Rate, L/min 000 000

Condensate Final Volume, mL 50

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 55 Tenax/Charcoal: Tube A 56 Tube B _____ ✓

	Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H2O	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0410	0	5734.761	0.5	0.6	4	58	15	130
0415	5	5737.82	0.5	0.6	5	59	15	130
0420	10	5740.05	0.5	0.6	5	61	16	130
0425	15	5742.75	0.5	0.6	5	62	16	131
0430	20	5745.15	0.5	0.6	5	62	15	130
0435	25	5748.11	0.5	0.6	5	62	15	130
0440	30	5750.67	0.5	0.6	5	62	15	130
0445	35	5753.72	0.5	0.6	5	62	15	130
0450	40	5756.689						
		21.928 Volume Metered, L		0.6 Average Pressure		61 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

III - 1-S3-V057-1

Company Name JEWELL COAL & COKE COMPANY

Run # ~~I-3-S3-VOST-3~~ C

Address VANSANT, VIRGINA 3694

Date 10/30/91

Sampling Location STACK # 3

Start 6:30

Sampling Objective VOCs

Meter Box # V-5

Finish 7:10

Barometric Pressure 29.0 in.Hg

Sample Box # Vost Box

Operator SPS

Filter Used? Yes No

Leak Test, in. Hg 15 10 *

Ambient Temperature 50 °F

Leak Rate, L/min 000 000

Condensate Final Volume, mL 50 ✓

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 29 Tenax/Charcoal: Tube A 30 Tube B

	Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H2O	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0630	0	2758.919	0.5	0.8	7	64	16	130
0635	5	2762.60	0.5	0.8	7	65	15	130
0640	10	2765.56	0.5	0.8	7	66	15	130
0645	15	2768.51	0.5	0.8	7	66	15	131
0650	20	2771.53	0.5	0.8	7	65	16	130
0655	25	2774.45	0.5	0.8	7	67	15	132
0700	30	2777.35	0.5	0.8	7	68	15	130
0705	35	2780.37	0.5	0.8	7	67	16	130
0710	40	2783.289						
		24.37 Volume Metered, L		0.8 Average Pressure		66 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

III-1-S3-VOST-1

Company Name JEWELL COAL & COKE COMPANY

Run # ~~I-3-S3-VOST-3C~~ (8)

Address VANSANT, VIRGINA 3694

Date 10/30/91

Sampling Location STACK # 3

Start 9:30

Sampling Objective VOCs

Meter Box # V-8

Finish 10:10

Barometric Pressure 29.0 in.Hg

Sample Box # VOST Box

Operator Ed Pott

Filter Used? (Yes) No

Leak Test, in. Hg 15 15

Ambient Temperature 60 °F

Leak Rate, L/min ~~.000~~ .01 l/min .02

V-8 = ∂ = .9921

Condensate Final Volume, mL 50

- - - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 63 Tenax/Charcoal: Tube A 64 Tube B

	Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H20	Train Vac. inches Hg	Dry Gas Mtr Temp, °F Ed Pott	Temp., °C Cond.	Temp., °C Probe
0930	0	5769	0.5 l/min	5	4	66 °F	15	130
0935	5	5772.5	.05 l	.5	4	65,66	15	126
0940	10	5774	.5 l/min	.5	5	71,71	20	138
0945	15	5776.5		.5	5	~~102~~ 74	13	139
0950	20	5779		.5	4	75 °F	16	14
0955	25	5781.5		.5	4	72	16	125
1000	30	5784		.5	4	72	16	127
1005	35	5786.5		.5	4	73	14	139
1010	40	5789		.5	4	74	12.0	137
		20 Volume Metered, L		0.5 Average Pressure		83 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN (VOST) FIELD DATA

VOST

Plant Name Jewell Coal & Coke Run No. IV-1-S3-V-1A Cond. -1A

City/State Vansant VA Job No. 3694 Date 10-30-90

Sampling Loc. Stack 3 Time Start 11:30

Barometric Press. 29.0 In. Hg Ambient Temp. 76 °F Time Finish 12:10

Sample Box No. _____ Operator Ed Potts Assistant(s) _____

Meterbox I.D. V-8 Meterbox Gamma .9927 Condensate Final Vol. 15 ml added to start ml

Leak Test In. Hg 15 15 ____ DGM Used (✓) ___ Singer ___ Rockwell Final Volume to 50 ml

Leak Rate* .005 .02 ____ (✓) ___ L/min. ___ cf/min.

(CONDUCT POSTTEST LEAK CHECK AT A VACUUM OF 10 IN. HG ABOVE NORMAL OPERATING PRESSURE.)

Sorbent Traps I.D. Tenax Tube A 23 Tube B _____

Tenax/Charcoal Tube A 24 Tube B _____

* LITERS FOR SINGER DRY GAS METER; CUBIC FEET FOR ROCKWELL DRY GAS METER.

Time Clock	Time Net	DGM Reading* (l)(cf)	Rotameter Setting	DGM Pressure In. H_2O	Train Vacuum In. Hg	DGM Temp. °F	Temp (Indicate) (°F) (°C) Cond.	Probe
11:30	0	5790	.5 l/min	.6	5	84 °F	15 °C	128 °C
11:35	5	5792.5		.6	5	85	15°	130 °C
40	10	5795		.6	4	86	15°	129 °C
45	15	5797.5		.6	4	86	15	122
50	20	5800.		.6	4	86	17	121
55	25	5802.5		.6	4	89	13.°C	129
12:00	30	5805		.6	4	89	18 °C	129
05	35	5807.5		.6	4	89	14	132
12:10	40/off	5810.0		.6	4	91	10.	137

Exit Condenser water 7 °C

20	0.6	~~78~~ 87
Vol. Metered (l)(cf)*	Average Pressure	Average Temp.

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ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN (VOST) FIELD DATA

Plant Name: Jewell Coal & Coke Run No.: IV - 1B

City/State: Vansant VA Job No.: 3690 Date: 10-30-90

Sampling Loc.: Stack 3 Time Start: 13:02

Barometric Press.: 29 In. Hg Ambient Temp.: 80 °F Time Finish: 13:42

Sample Box No.: _____ Operator: Sol Pitts Assistant(s): Add 15 ml to start

Meterbox I.D.: V-8 Meterbox Gamma: .9927 Condensate Final Vol.: _____ mL Final Volume To 50 ml

Leak Test In. Hg: 15 DGM Used (√) ___ Singer ___ Rockwell

Leak Rate*: .005 (√) ___ L/min. ___ cf/min.

(CONDUCT POSTTEST LEAK CHECK AT A VACUUM OF 10 IN. HG ABOVE NORMAL OPERATING PRESSURE.)

Sorbent Traps I.D. Tenax Tube A: 67 Tube B: _____

Tenax/Charcoal Tube A: 68 Tube B: _____

* LITERS FOR SINGER DRY GAS METER; CUBIC FEET FOR ROCKWELL DRY GAS METER.

Time Clock	Time Net	DGM Reading* (l)(cf)	Rotameter Setting	DGM Pressure In. H_2O	Train Vacuum In. Hg	DGM Temp. °F	Temp (Indicate) (°F) (°C) Cond.	Probe
13:02	0	5811	.5 l/min	.6	4	87°F	20 °C	117°C
	5	5813.5		.6	4	88	14 °C	117 °C
	10	16		.6	4	88	18°C	124 °C
	15	18.5		.6	4	89	12 °C	129 °C
	20	21		.6	4	92	10	135
	25	23.5		.6	4	93	16	130
	30	26		.6	4	94	16	131
	35	28.5		.6	4	96	20	125
13:42	40/0	cf 5831		.6	4	97	22	125

Extra Condensate H_2O 4 °C

No Or Burned Two. Tedlon Line In

Vol. Metered (l)(cf)* Average Pressure Average Temp.

F-1047 rev. 10-91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN (VOST) FIELD DATA IV-1-53-V-1C

Plant Name Jewell Coal & Coke Run No. IV (CIV - 1C

City/State Vansant VA Job No. 3494 Date 10-30-91

Sampling Loc. Stack 3 Time Start 14:51

Barometric Press. 29 In. Hg Ambient Temp. 50 °F Time Finish 15:31

Sample Box No. _____ Operator Ed P. Hr Assistant(s) Israel Stuart

Meterbox I.D. V-8 Meterbox Gamma .99 Condensate Final Vol. Volume to 50 mL mL Em

Leak Test In. Hg 15 17 ____ DGM Used (✓) ___ Singer ___ Rockwell

Leak Rate* .005 .01 ____ (✓) ___ L/min. ___ cf/min.

(CONDUCT POSTTEST LEAK CHECK AT A VACUUM OF 10 IN. HG ABOVE NORMAL OPERATING PRESSURE.)

Sorbent Traps I.D. Tenax Tube A 39 Tube B _____

Tenax/Charcoal Tube A 40 Tube B _____

* LITERS FOR SINGER DRY GAS METER; CUBIC FEET FOR ROCKWELL DRY GAS METER.

Time Clock	Time Net	DGM Reading* (l)(cf)	Rotameter Setting	DGM Pressure In. H_2O	Train Vacuum In. Hg	DGM Temp. °F	Temp (Indicate) (°F) (°C) Cond.	Probe
14:51	0	5832	.5 l/min	.6	5	92	17°	112° C
	5	5834.5		.6	6	92	17	109
15:01	10	7		.6	6	93	15	107° C
	15	9.5		.6	6	92	13	108
11	20	2		.6	5	92	14	109
	25	4.5		.6	7	89	13	106° C
21	30	7		.6	7	90	14	106
	35	9.5		.6	6	92	14	112
15:31	40 cf	5852						109
							Broken	B Tube
				Vost				
		Field	Blank	Tubes		~~73~~	~~74~~	
						3	4	

Condenser Discharge H2O 7°C

20	0.6	92
Vol. Metered (l)(cf)*	Average Pressure	Average Temp.

F-1047 rev. 10-91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

I-2-S3-VOST-

Company Name JEWELL COAL & COKE COMPANY

Run # ~~II-1-S3-VOST-1~~

Address VANSANT, VIRGINA 3694

Date 10/30/91

Sampling Location STACK # 3

Start 1744

Sampling Objective VOCs

Meter Box # V-5

Finish 1804

Barometric Pressure 29.0 in.Hg

Sample Box # Glove Box

Operator CEA

Filter Used? (Yes) No

Leak Test, in. Hg 15 15 *

Ambient Temperature 74 °F

Leak Rate, L/min 000 000

Condensate Final Volume, mL 50

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 77 Tenax/Charcoal: Tube A 78 Tube B

	Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H20	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
1744	0	2846.28	1.0	1.0	5	82	15	130
1749	5	2852.01	1.0	1.0	5	82	15	130
1754	10	2858.58	1.0	1.0	5	82	15	133
1759	15	2863.71	1.0	1.0	5	82	15	133
1804	20	2868.475						
		22.195 Volume Metered, L		1.0 Average Pressure		82 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

Day

2

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

I-2-S3-VOST-

Company Name JEWELL COAL & COKE COMPANY

Run # ~~II-1-S3-VOST-~~

Address VANSANT, VIRGINA

Date 10/30/91

Sampling Location STACK # 3

Start 1820

Sampling Objective VOCs

Meter Box # V-8

Finish 1900

Barometric Pressure 29.0 in.Hg

Sample Box # GLOVE BOX

Operator CEW

Filter Used? Yes No

Leak Test, in. Hg 15 17 *

Ambient Temperature 74 °F

Leak Rate, L/min 000 000

Condensate Final Volume, mL 50

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 85 Tenax/Charcoal: Tube A 86 Tube B

	Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H2O	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
1820	0	5856.115	.50	.60	5	78	13	130
1825	5	5859.35	.50	.60	5	78	13	130
1830	10	5861.58	.50	.60	5	78	13	130
1835	15	5864.28	.50	.60	5	78	10	130
1840	20	5866.77	.50	.60	5	78	10	130
1845	25	5869.07	.50	.60	5	78	10	131
1850	30	5872.00	.50	.60	5	78	10	131
1855	35	5875.72	.50	.60	5	78	10	131
1900	40	5878.53						
		22.415 Volume Metered, L		0.60 Average Pressure		78 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

Company Name JEWELL COAL & COKE COMPANY

Run # I-2-53-V-20 ~~II-2-53-VOST~~

Address VANSANT, VIRGINA 3694

Date 10/30/91

Sampling Location STACK # 3

Start 1915

Sampling Objective VOCs

Meter Box # V-5

Finish 1955

Barometric Pressure 29.0 in.Hg

Sample Box # GLOVE BOX

Operator CEN

Filter Used? (Yes) No

Leak Test, in. Hg 15 16 *

Ambient Temperature 78 °F

Leak Rate, L/min 000 000

Condensate Final Volume, mL 50

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 9 Tenax/Charcoal: Tube A 10 Tube B

	Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H20	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
1915	0	2868.625	.50	.80	4	80	9	130
1920	5	2871.63	.50	.80	4	80	9	130
1925	10	2874.27	.50	.80	4	80	9	130
1930	15	2877.41	.50	.80	4	80	10	131
1935	20	2880.49	.50	.80	4	80	10	13:
1940	25	2883.21	.50	.80	4	80	10	133
1945	30	2886.00	.50	.80	4	80	11	133
1950	35	2888.92	.50	.80	4	80	11	133
1955	40	2890.700						
		22.075 Volume Metered, L		0.80 Average Pressure		80 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

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ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN (VOST) FIELD DATA

Plant Name Jewell Coal + Coke Run No. I-2-S3-V-2D

City/State Vansant VA Job No. 3694 Date 10-30-91

Sampling Loc. #3 Stack Time Start 2010

Barometric Press. 29.0 In. Hg Ambient Temp. 80 °F Time Finish 2030

Sample Box No. Clover Box Operator CEW Assistant(s) —

Meterbox I.D. V-8 Meterbox Gamma .9921 Condensate Final Vol. 50 mL

Leak Test In. Hg 15 15 ____ DGM Used (√) ✓ Singer ___ Rockwell

Leak Rate* 000 000 ____ (√) ✓ L/min. ___ cf/min.

(CONDUCT POSTTEST LEAK CHECK AT A VACUUM OF 10 IN. HG ABOVE NORMAL OPERATING PRESSURE.)

Sorbent Traps I.D. Tenax Tube A 81 Tube B ____

Tenax/Charcoal Tube A 82 Tube B ____

* LITERS FOR SINGER DRY GAS METER; CUBIC FEET FOR ROCKWELL DRY GAS METER.

Time Clock	Time Net	DGM Reading* (l)(cf)	Rotameter Setting	DGM Pressure In. H_2O	Train Vacuum In. Hg	DGM Temp. °F	Temp (Indicate) (°F) Cond.	Temp (Indicate) (°C) Probe
2010	0	5878.655	1.0	.80	7	82	20	130
2015	5	5883.69	1.0	.80	10	82	19	130
2020	10	5888.99	1.0	.80	10	82	19	130
2025	15	5893.73	1.0	.80	10	82	19	132
2030	20	5898.455						

19.8 Vol. Metered (l)(cf)* 0.80 Average Pressure 82 Average Temp.

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ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN (VOST) FIELD DATA

Plant Name JEWEL COAL + COKE Run No. [redacted]-V-2A

City/State VANSANT VA Job No. 3694 Date 10-30-91

Sampling Loc. # 3 STACK Time Start 2310

Barometric Press. 29.0 In. Hg Ambient Temp. 78 °F Time Finish 2350

Sample Box No. Glovebox Operator CBW Assistant(s) ____

Meterbox I.D. V5 Meterbox Gamma 9722 Condensate Final Vol. 50 mL

Leak Test In. Hg 15 15 ____ DGM Used (√) ✓ Singer ___ Rockwell

Leak Rate* 000 000 ____ (√) ✓ L/min. ___ cf/min.

(CONDUCT POSTTEST LEAK CHECK AT A VACUUM OF 10 IN. HG ABOVE NORMAL OPERATING PRESSURE.)

Sorbent Traps I.D. Tenax Tube A 27 Tube B ____

Tenax/Charcoal Tube A 28 Tube B ____

* LITERS FOR SINGER DRY GAS METER; CUBIC FEET FOR ROCKWELL DRY GAS METER.

Time Clock	Time Net	DGM Reading* (l)(cf)	Rotameter Setting	DGM Pressure In. H_2O	Train Vacuum In. Hg	DGM Temp. °F	Temp (Indicate) (°F) Cond.	Temp (Indicate) (°C) Probe
2310	0	2891.710	.50	1.0	4	80	20	130
2315	5	2894.00	.50	1.0	4	80	19	130
2320	10	2898.11	.50	1.0	4	80	19	130
2325	15	2900.84	.50	1.0	4	80	19	130
2330	20	2902.56	.50	1.0	4	80	19	130
2335	25	2905.11	.50	1.0	4	80	19	130
2340	30	2908.99	.50	1.0	4	80	19	130
2345	35	2910.45	.50	1.0	4	80	17	130
2350	40	2913.040						

21.33 Vol. Metered (l)(cf)*

1.0 Average Pressure

80 Average Temp.

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ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

Company Name JEWELL COAL & COKE COMPANY

Run # II-2-S3-VOST-

Address VANSANT, VIRGINA 3694

Date 10/30/91

Sampling Location STACK # 3

Start 2352

Sampling Objective VOCs

Meter Box # V-8

Finish 0042 00

Barometric Pressure 29.0 in.Hg

Sample Box # GLOVE BOX

Operator CSU

Filter Used? Yes No

Leak Test, in. Hg 15 *

Ambient Temperature 80 °F

Leak Rate, L/min 000

Condensate Final Volume, mL

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 75 Tenax/Charcoal: Tube A 76 Tube B

	Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H2O	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
2352	0	5898.460	.50	.80	4	80	17	130
2357	5	5901.41	.50	.80	4	80	15	130
2402	10	5903.79	.50	.80	4	80	15	130
2407	15	5905.71	.50	.80	4	80	15	130
2412	20	5907.87	.50	.80	4	80	15	130
2417	25	5910.00	.50	.80	4	80	15	130
2422	30	5912.91	.50	.80	4	80	13	131
2427	35	5914.87	.50	.80	4	80	13	131
2432	40	5916.77						
		18.31 Volume Metered, L		0.80 Average Pressure		80 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

Company Name JEWELL COAL & COKE COMPANY

Run # III-2-S3-VOST-2

Address VANSANT, VIRGINA 3694

Date 10/31/91

Sampling Location STACK = 3

Start 5:00

Sampling Objective VOCs

Meter Box # 1-S

Finish 5:40

Barometric Pressure 28.8 in.Hg

Sample Box # Vost Box

Operator SPS

Filter Used? Yes No

Leak Test, in. Hg 15 10 *

Ambient Temperature 58 °F

Leak Rate, L/min 000 000

Condensate Final Volume, mL 50

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 83 Tenax/Charcoal: Tube A 84 Tube B

	Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H2O	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0500	0	2914.045	0.5	0.8	3	71	12	131
0505	5	2918.20	0.5	0.8	3	69	8	130
0510	10	2921.48	0.5	0.8	3	68	8	130
0515	15	2924.80	0.5	0.8	3	69	8	130
0520	20	2928.12	0.5	0.8	3	69	8	131
0525	25	2931.31	0.5	0.8	3	69	8	130
0530	30	2934.45	0.5	0.8	3	71	8	130
0535	35	2937.61	0.5	0.8	3	72	8	131
0540	40	2940.805						
		26.76 Volume Metered, L		0.8 Average Pressure		70 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

Company Name JEWELL COAL & COKE COMPANY — Run # III-2-S3-VOST-

Address VANSANT, VIRGINA 3694 — Date 10/31/91

Sampling Location STACK # 3 — Start 7:00

Sampling Objective VOCs — Meter Box # V-8 — Finish 7:40

Barometric Pressure 28.8 in.Hg — Sample Box # Vost Box — Operator SPS

Filter Used? (Yes) No — Leak Test, in. Hg 15 15 *

Ambient Temperature 56 °F — Leak Rate, L/min 000 000

Condensate Final Volume, mL 50

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 41 — Tenax/Charcoal: Tube A 42 — Tube B

Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H20	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0	5916.599	0.5	0.6	6	62	12	130
5	5919.36	0.5	0.6	6	63	12	131
10	5922.14	0.5	0.6	6	60	12	130
15	5924.79	0.5	0.6	6	62	12	130
20	5927.64	0.5	0.6	6	63	11	130
25	5930.25	0.5	0.6	6	64	11	130
30	5933.12	0.5	0.6	6	63	11	130
35	5935.73	0.5	0.6	6	64	11	131
40	5938.559						
	21.96 Volume Metered, L		0.6 Average Pressure		63 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

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ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

Company Name JEWELL COAL & COKE COMPANY

Run # IV-2-S3-VOST-2A

Address VANSANT, VIRGINA

Date 10/31/91

Sampling Location STACK # 3

Start 12:00

Sampling Objective VOCs

Meter Box # V-5

Finish 12:40

Barometric Pressure 28.8 in.Hg

Sample Box # Vost Box

Operator SPS

Filter Used? Yes No

Leak Test, in. Hg 15 15 *

Ambient Temperature 74 °F

Leak Rate, L/min 000 006

Condensate Final Volume, mL 50

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 11 Tenax/Charcoal: Tube A 12 Tube B

Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H20	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0	2941.331	0.5	0.6	3	93.1	15	135
5	2944.35	0.5	0.8	3	94	14	135
10	2947.31	0.5	0.8	3	92	14	133
15	2950.22	0.5	0.8	3	91	14	130
20	2953.14	0.5	0.8	3	90	14	130
25	2956.06	0.5	0.8	3	93	14	135
30	2958.83	0.5	0.8	3	93	14	133
35	2961.83	0.5	0.8	3	95	14	130
40	2964.619	0.5					
	23.288 Volume Metered, L		0.8 Average Pressure		93 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

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ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

Company Name JEWELL COAL & COKE COMPANY

Run # IV-2-S3-VOST-2

Address VANSANT, VIRGINA

Date 10/31/91

Sampling Location STACK = 3

Start 1420

Sampling Objective VOCs

Meter Box # V-8

Finish 1500

Barometric Pressure 28.8 in.Hg

Sample Box # Vost Box

Operator SPS

Filter Used? (Yes) No

Leak Test, in. Hg 15 15 *

Ambient Temperature 84 °F

Leak Rate, L/min 000 000

Condensate Final Volume, mL 50

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 21 Tenax/Charcoal: Tube A 22 Tube B

Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H2O	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0	6938.919	0.5	0.6	4	86	19	130
5	6941.35	0.5	0.6	4	86	19	130
10	6943.91	0.5	0.5	5	84	19	130
15	6946.25	0.5	0.6	5	86	16	130
20	6948.78	0.5	0.5	5	84	16	130
25	6951.25	0.5	0.6	4	85	16	130
30	6953.61	0.5	0.6	5	85	15	131
35	6956.22	0.5	0.6	5	85	15	130
40	6958.511						
	19.592 Volume Metered, L		0.6 Average Pressure		85 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

I -3-S3-VOST-3

Company Name JEWELL COAL & COKE COMPANY

Run # ~~III-1-S3-VOST-1~~

Address VANSANT, VIRGINA

Date 10/31/91

Sampling Location STACK # 3

Start 1905

Sampling Objective VOCs

Meter Box # V 5

Finish 1945

Barometric Pressure 29.05 in.Hg

Sample Box # GLOVE BOX

Operator CEN

Filter Used? (Yes) No

Leak Test, in. Hg 15 10 *

Ambient Temperature 82 °F

Leak Rate, L/min 000 000

Condensate Final Volume, mL 50

- - - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 43 Tenax/Charcoal: Tube A 44 Tube B

Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H20	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0	2964.935	.50	80	4	79	13	133
5	2968.00	.50	.80	4	79	12	133
10	2970.84	.50	.80	4	79	12	133
15	2973.91	.50	.80	4	79	12	130
20	2976.56	.50	.80	.4	78	12	130
25	2979.24	.50	.80	.4	78	11	130
30	2982.51	.50	.80	.4	78	10	133
35	2984.47	.50	.80	.4	78	10	133
to/off	2987.995						
	23.06 Volume Metered, L		0.80 Average Pressure		79 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

Day

#3

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

II-353-VOST-3

Company Name JEWELL COAL & COKE COMPANY

Run # ~~III-1-S3-VOST-~~

Address VANSANT, VIRGINA

Date 10/31/91

Sampling Location STACK # 3

Start 2240

Sampling Objective VOCs

Meter Box # V-5

Finish 2320

Barometric Pressure 29.04 in.Hg

Sample Box # ~~Box~~ Glove

Operator CEW

Filter Used? Yes No

Leak Test, in. Hg 15 15 *

Ambient Temperature 74 °F

Leak Rate, L/min 000 000

Condensate Final Volume, mL 50

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 33 Tenax/Charcoal: Tube A 34 Tube B

Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H2O	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0	2088.42	.50	.80	4	78	12	137
5	2091.92	.50	.80	5	78	8	137
10	2094.87	.50	.80	5	76	8	134
15	2097.62	.50	.80	5	76	8	134
20	2100.59	.50	.80	5	76	8	134
25	2103.51	.50	.80	5	76	8	134
30	2105.37	.50	.80	5	74	10	134
35	2108.26	.50	.80	5	74	10	134
40	2112.210						
	23.798 Volume Metered, L		0.80 Average Pressure		76 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

Company Name JEWELL COAL & COKE COMPANY

Run # II-3-S3-VOST-3B

Address VANSANT, VIRGINA

Date 11 ~~10/31~~ /91

Sampling Location STACK = 3

Start 0040

Sampling Objective VOCs

Meter Box # V5

Finish 0120

Barometric Pressure 29.04 in.Hg

Sample Box # Glove Box

Operator [illegible]

Filter Used? (Yes) No

Leak Test, in. Hg 15 *

Ambient Temperature 68 °F

Leak Rate, L/min 000

Condensate Final Volume, mL

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 79 Tenax/Charcoal: Tube A 80 Tube B

Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H20	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0	2012.210	.50	.80	5	74	8	130
5	2016.52	.50	.80	5	74	8	138
10	2018.05	.50	.80	5	74	8	138
15	2022.61	50	.80	5	74	9	130
20	2025.41	.50	.80	5	74	9	130
25	2028.28	50	.80	5	74	9	132
30	2031.06	50	.80	5	74	9	132
35	2033.76	50	.80	5	74	9	132
40	2036.43						
	24.22 Volume Metered, L		0.80 Average Pressure		74 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

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ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

II-3-S3-V3C

Company Name JEWELL COAL & COKE COMPANY

Run # ~~III-3-S3-VOST-~~

Address VANSANT, VIRGINA

Date [redacted] 1 /91

Sampling Location STACK = 3

Start 205[redacted]

Sampling Objective VOCs

Meter Box # V5

Finish 245

Barometric Pressure 29.04 in.Hg

Sample Box # Glove Box

Operator CEW

Filter Used? Yes No

Leak Test, in. Hg 15 10 *

Ambient Temperature 70 °F

Leak Rate, L/min 000 000

Condensate Final Volume, mL 50

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 45 Tenax/Charcoal: Tube A 46 Tube B

Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H2O	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0	2038.000	.50	80	4	72	8	130
5	2040.37	.50	.80	4	72	8	130
10	2043.35	.50	.80	4	72	8	131
15	2046.31	.50	.80	4	72	8	134
20	2048.76	50	80	4	72	8	132
25	2051.31	50	80	4	70	10	132
30	2054.73	50	80	5	70	10	132
35	2056.48	50	80	5	70	10	132
40	2060.231						
	22.231 Volume Metered, L		0.80 Average Pressure		71 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

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ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

Company Name JEWELL COAL & COKE COMPANY

Run # III-3-S3-VOST-3

Address VANSANT, VIRGINA

Date 11/11/91

Sampling Location STACK # 3

Start 5:00

Sampling Objective VOCs

Meter Box # V-5

Finish 5:40

Barometric Pressure 29 in.Hg

Sample Box # Vost Box

Operator SPS

Filter Used? Yes No

Leak Test, in. Hg 15 10 *

Ambient Temperature 59 °F

Leak Rate, L/min 000 000

Condensate Final Volume, mL 50

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 65 Tenax/Charcoal: Tube A 66 Tube B

Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H2O	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0	2060.231	0.5	0.8	3	70	10	130
5	2063.24	0.5	0.8	3	69	10	130
10	2066.18	0.5	0.8	3	68	7	131
15	2069.09	0.5	0.8	3	68	6	130
20	2072.04	0.5	0.8	3	68	6	132
25	2074.99	0.5	0.8	3	67	6	130
30	2077.91	0.5	0.8	3	67	6	131
35	2080.86	0.5	0.8	3	68	6	130
40	2083.726						
	23.495 Volume Metered, L		0.8 Average Pressure		68 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

Company Name JEWELL COAL & COKE COMPANY

Address VANSANT, VIRGINA

Sampling Location STACK # 3

Sampling Objective VOCs

Barometric Pressure 29.0 in.Hg

Filter Used? Yes No

Ambient Temperature 58 °F

Run # III-3-S3-VOST-3B

Date 11/1/91

Start 700

Meter Box # V-5

Finish 740

Sample Box # Vost Box

Operator SPS

Leak Test, in. Hg 15 15 *

Leak Rate, L/min 000 000

Condensate Final Volume, mL 50

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 13 Tenax/Charcoal: Tube A 14 Tube B

Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H20	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0	2084.645	0.5	0.8	3	65	9	131
5	2087.57	0.5	0.8	3	65	9	130
10	2090.42	0.5	0.8	3	65	8	130
15	2093.38	0.5	0.8	3	66	7	130
20	2096.22	0.5	0.8	3	67	7	130
25	2099.07	0.5	0.8	3	66	8	130
30	2102.01	0.5	0.8	3	66	8	130
35	2104.82	0.5	0.8	3	66	9	131
40	2107.741						
	23.096 Volume Metered, L		0.8 Average Pressure		66 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

VOLATILE ORGANIC SAMPLING TRAIN FIELD DATA

(liters)

Company Name JEWELL COAL & COKE COMPANY

Run # IV-3-S3-VOST-3A

Address VANSANT, VIRGINA

Date 1/1/91

Sampling Location STACK # 3

Start 1200

Sampling Objective VOCs

Meter Box # V-5

Finish 1240

Barometric Pressure 29.0 in.Hg

Sample Box # Vost Box

Operator SPS

Filter Used? Yes No

Leak Test, in. Hg 15 15 *

Ambient Temperature 78 °F

Leak Rate, L/min 0.00 0.06

Condensate Final Volume, mL 50

- - - - - - - - Unique Identification Numbers of Transfer Tubes - - - - - - - -

Tenax Tube 71 Tenax/Charcoal: Tube A 72 Tube B

Clock Time	DGM Reading, L	Rotameter Setting	DGM Press. inches H20	Train Vac. inches Hg	Dry Gas Mtr Temp., °F	Temp., °C Cond.	Temp., °C Probe
0	2107.995	0.5	0.8	4	87	17	132
5	1110.15	0.5	0.8	4	88	15	130
10	2114.24	0.5	0.8	4	88	15	130
15	2117.21	0.5	0.8	4	88	15	132
20	2120.19	0.5	0.8	4	90	14	130
25	2123.38	0.5	0.8	4	88	10	131
30	2126.36	0.5	0.8	4	88	9	130
35	2130.439	0.5	0.8	4	88	13	130
40	2132.435						
	24.44 Volume Metered, L		0.8 Average Pressure		88 Average Temperature		

* Post-test leak check at 10 in.Hg above highest vacuum during sampling.

F1047a 01/91

ENTROPY

Moisture Analytical Results

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/7 Reagent Box(es): 0238/0202/0501

Run Number	I-1-S1-M5/202-1	I-2-S1-M5/202-2	I-3-S1-M5/2
Run Date	10/29	10/30	10/31

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)			
Final Weight, g.	882.0	900.5	875.0
Tared Weight, g.	679.5	678.0	686.5
	==========	==========	======
Water Catch,g.	202.5	222.5	188.5
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.			
	==========	==========	======
Water Catch,g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
	==========	==========	======
Water Catch,g.			
CONDENSED WATER, g.	202.5	222.5	188.5
Silica Gel:			
Final Weight, g.	466.0	451.5	434.5
Tared Weight, g.	434.0	421.5	412.0
	==========	==========	======
ADSORBED WATER, g.	32.0	30.0	22.5
TOTAL WATER COLLECTED, g.	234.5	252.5	211.0

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/7 Reagent Box(es): 0238/0237/0501

Run Number	II-1-S1-M5/202-1	II-2-S1-M5/202-2	II-3-S1-M5/2
Run Date	10/29	10/30	11/1

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)			
Final Weight, g.	1084.5	1110.5	1233.5
Tared Weight, g.	679.0	677.0	678.0
	==========	==========	======
Water Catch,g.	405.5	433.5	555.5
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.			
	==========	==========	======
Water Catch,g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
	==========	==========	======
Water Catch,g.			
CONDENSED WATER, g.	405.5	433.5	555.5
Silica Gel:			
Final Weight, g.	442.0	451.5	441.5
Tared Weight, g.	415.5	416.0	400.0
	==========	==========	======
ADSORBED WATER, g.	26.5	35.5	41.5
TOTAL WATER COLLECTED, g.	432.0	469.0	597.0

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/7 Reagent Box(es): 0238

Run Number II-1-S1-M5/202-1 (ABORTED)
Run Date 10/28

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)

Final Weight, g.	1271.0
Tared Weight, g.	676.0
	==========
Water Catch,g.	595.0

Reagent 2 ( )

Final Weight, g.	
Tared Weight, g.	
	==========
Water Catch,g.	

Reagent 3 ( )

Final Weight, g.	
Tared Weight, g.	
	==========
Water Catch,g.	

CONDENSED WATER, g.	595.0

Silica Gel:

Final Weight, g.	462.0
Tared Weight, g.	412.5
	==========
ADSORBED WATER, g.	49.5

TOTAL WATER COLLECTED, g.	644.5

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/7 Reagent Box(es): 0202/0237/0501

Run Number	III-1-S1-M5/202-1	III-2-S1-M5/202-2	III-3-S1-M5/
Run Date	10/30	10/31	11/1

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)			
Final Weight, g.	942.5	990.5	974.0
Tared Weight, g.	678.0	678.5	650.0
	==========	==========	======
Water Catch,g.	264.5	312.0	324.0
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.			
	==========	==========	======
Water Catch,g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
	==========	==========	======
Water Catch,g.			
CONDENSED WATER, g.	264.5	312.0	324.0
Silica Gel:			
Final Weight, g.	428.0	453.0	464.5
Tared Weight, g.	400.0	424.0	432.5
	==========	==========	======
ADSORBED WATER, g.	28.0	29.0	32.0
TOTAL WATER COLLECTED, g.	292.5	341.0	356.0

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/7 Reagent Box(es): 0202/0237/0507

Run Number	IV-1-S1-M5/202-1	IV-2-S1-M5/202-2	IV-3-S1-M5/
Run Date	10/30	10/31	11/1

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)			
Final Weight, g.	809.5	892.0	947.0
Tared Weight, g.	677.5	678.0	678.5
	==========	==========	======
Water Catch,g.	132.0	214.0	268.5
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.			
	==========	==========	======
Water Catch,g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
	==========	==========	======
Water Catch,g.			
CONDENSED WATER, g.	132.0	214.0	268.5
Silica Gel:			
Final Weight, g.	423.0	455.0	458.0
Tared Weight, g.	400.0	430.0	417.0
	==========	==========	======
ADSORBED WATER, g.	23.0	25.0	41.0
TOTAL WATER COLLECTED, g.	155.0	239.0	309.5

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/7 Reagent Box(es): 0238/0202/0501

Run Number	I-1-S1-M5/202-1	I-2-S1-M5/202-2	I-3-S1-M5/2
Run Date	10/29	10/30	10/31

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)			
Final Weight, g.	882.0	900.5	875.0
Tared Weight, g.	679.5	678.0	686.5
	==========	==========	======
Water Catch,g.	202.5	222.5	188.5
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.			
	==========	==========	======
Water Catch,g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
	==========	==========	======
Water Catch,g.			
CONDENSED WATER, g.	202.5	222.5	188.5
Silica Gel:			
Final Weight, g.	466.0	451.5	434.5
Tared Weight, g.	434.0	421.5	412.0
	==========	==========	======
ADSORBED WATER, g.	32.0	30.0	22.5
TOTAL WATER COLLECTED, g.	234.5	252.5	211.0

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/7 Reagent Box(es): 0238/0237/0501

Run Number	II-1-S1-M5/202-1	II-2-S1-M5/202-2	II-3-S1-M5/2
Run Date	10/29	10/30	11/1

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)			
Final Weight, g.	1084.5	1110.5	1233.5
Tared Weight, g.	679.0	677.0	678.0
	==========	==========	======
Water Catch,g.	405.5	433.5	555.5
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.			
	==========	==========	======
Water Catch,g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
	==========	==========	======
Water Catch,g.			
CONDENSED WATER, g.	405.5	433.5	555.5
Silica Gel:			
Final Weight, g.	442.0	451.5	441.5
Tared Weight, g.	415.5	416.0	400.0
	==========	==========	======
ADSORBED WATER, g.	26.5	35.5	41.5
TOTAL WATER COLLECTED, g.	432.0	469.0	597.0

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/7 Reagent Box(es): 0238

Run Number II-1-S1-M5/202-1 (ABORTED)
Run Date 10/28

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)	
Final Weight, g.	1271.0
Tared Weight, g.	676.0
	==========
Water Catch,g.	595.0
Reagent 2 ( )	
Final Weight, g.	
Tared Weight, g.	
	==========
Water Catch,g.	
Reagent 3 ( )	
Final Weight, g.	
Tared Weight, g.	
	==========
Water Catch,g.	
CONDENSED WATER, g.	595.0
Silica Gel:	
Final Weight, g.	462.0
Tared Weight, g.	412.5
	==========
ADSORBED WATER, g.	49.5
TOTAL WATER COLLECTED, g.	644.5

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/7 Reagent Box(es): 0202/0237/0501

Run Number	III-1-S1-M5/202-1	III-2-S1-M5/202-2	III-3-S1-M5/
Run Date	10/30	10/31	11/1

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)			
Final Weight, g.	942.5	990.5	974.0
Tared Weight, g.	678.0	678.5	650.0
	==========	==========	======
Water Catch,g.	264.5	312.0	324.0
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.			
	==========	==========	======
Water Catch,g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
	==========	==========	======
Water Catch,g.			
CONDENSED WATER, g.	264.5	312.0	324.0
Silica Gel:			
Final Weight, g.	428.0	453.0	464.5
Tared Weight, g.	400.0	424.0	432.5
	==========	==========	======
ADSORBED WATER, g.	28.0	29.0	32.0
TOTAL WATER COLLECTED, g.	292.5	341.0	356.0

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/7 Reagent Box(es): 0202/0237/0507

Run Number	IV-1-S1-M5/202-1	IV-2-S1-M5/202-2	IV-3-S1-M5/
Run Date	10/30	10/31	11/1

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)			
Final Weight, g.	809.5	892.0	947.0
Tared Weight, g.	677.5	678.0	678.5
	==========	==========	======
Water Catch,g.	132.0	214.0	268.5
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.			
	==========	==========	======
Water Catch,g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
	==========	==========	======
Water Catch,g.			
CONDENSED WATER, g.	132.0	214.0	268.5
Silica Gel:			
Final Weight, g.	423.0	455.0	458.0
Tared Weight, g.	400.0	430.0	417.0
	==========	==========	======
ADSORBED WATER, g.	23.0	25.0	41.0
TOTAL WATER COLLECTED, g.	155.0	239.0	309.5

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location:

Date Received: 11/4 Date Analyzed: 11/4 Reagent Box(es): DF179

Run Number	I-1-S2-MM5-1A	I-1-S2-MM5-1B
Run Date	10/28	10/28

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H20)		
Final Weight, g.	904.0	915.5
Tared Weight, g.	582.0	593.0
	==========	==========
Water Catch,g.	322.0	322.5
Reagent 2 (XAD)		
Final Weight, g.	337.0	408.0
Tared Weight, g.	334.5	401.0
	==========	==========
Water Catch,g.	2.5	7.0
Reagent 3 ( )		
Final Weight, g.		
Tared Weight, g.		
	==========	==========
Water Catch,g.	0.0	0.0
CONDENSED WATER, g.	324.5	329.5
Silica Gel:		
Final Weight, g.	426.5	456.0
Tared Weight, g.	400.0	436.5
	==========	==========
ADSORBED WATER, g.	26.5	19.5
TOTAL WATER COLLECTED, g.	351.0	349.0

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: MM5-STACK 2

Date Received: 11/4 Date Analyzed: 11/4 Reagent Box(es): ?

Run Number I-2-S2-MM5-2A
Run Date 10/30

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)	
Final Weight, g.	941.5
Tared Weight, g.	583.5
	==========
Water Catch,g.	358.0
Reagent 2 (XAD)	
Final Weight, g.	352.0
Tared Weight, g.	344.0
	==========
Water Catch,g.	8.0
Reagent 3 ( )	
Final Weight, g.	
Tared Weight, g.	
	==========
Water Catch,g.	0.0
CONDENSED WATER, g.	366.0
Silica Gel:	
Final Weight, g.	423.5
Tared Weight, g.	400.0
	==========
ADSORBED WATER, g.	23.5
TOTAL WATER COLLECTED, g.	389.5

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: MM5-STACK 2

Date Received: 11/4 Date Analyzed: 11/4 Reagent Box(es): DF183

Run Number	I-3-S2-MM5-3A	I-3-S2-MM5-3B
Run Date	10/31	10/31

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)		
Final Weight, g.	909.0	920.0
Tared Weight, g.	578.5	579.0
	==========	==========
Water Catch,g.	330.5	341.0
Reagent 2 (XAD)		
Final Weight, g.	358.0	342.0
Tared Weight, g.	346.5	338.0
	==========	==========
Water Catch,g.	11.5	4.0
Reagent 3 ( )		
Final Weight, g.		
Tared Weight, g.		
	==========	==========
Water Catch,g.	0.0	0.0
CONDENSED WATER, g.	342.0	345.0
Silica Gel:		
Final Weight, g.	442.5	425.5
Tared Weight, g.	414.5	400.0
	==========	==========
ADSORBED WATER, g.	28.0	25.5
TOTAL WATER COLLECTED, g.	370.0	370.5

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: MM5-STACK 2

Date Received: 11/4 Date Analyzed: 11/4 Reagent Box(es): DF103

Run Number	II-1-S2-MM5-1A	II-1-S2-MM5-1B
Run Date	10/30	10/30

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)		
Final Weight, g.	1170.0	1093.5
Tared Weight, g.	584.0	584.5
	==========	==========
Water Catch,g.	586.0	509.0
Reagent 2 (XAD)		
Final Weight, g.	416.0	351.5
Tared Weight, g.	410.0	344.5
	==========	==========
Water Catch,g.	6.0	7.0
Reagent 3 ( )		
Final Weight, g.		
Tared Weight, g.		
	==========	==========
Water Catch,g.	0.0	0.0
CONDENSED WATER, g.	592.0	516.0
Silica Gel:		
Final Weight, g.	487.5	486.5
Tared Weight, g.	456.5	455.0
	==========	==========
ADSORBED WATER, g.	31.0	31.5
TOTAL WATER COLLECTED, g.	623.0	547.5

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: MM5-STACK 2

Date Received: 11/4 Date Analyzed: 11/4 Reagent Box(es): 210

Run Number	II-2-S2-MM5-2A	II-2-S2-MM5-2B
Run Date	10/31	10/31

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)		
Final Weight, g.	1072.0	1063.5
Tared Weight, g.	585.0	578.5
	==========	==========
Water Catch,g.	487.0	485.0
Reagent 2 (XAD)		
Final Weight, g.	353.0	356.0
Tared Weight, g.	345.0	349.0
	==========	==========
Water Catch,g.	8.0	7.0
Reagent 3 ( )		
Final Weight, g.		
Tared Weight, g.		
	==========	==========
Water Catch,g.	0.0	0.0
CONDENSED WATER, g.	495.0	492.0
Silica Gel:		
Final Weight, g.	456.0	436.0
Tared Weight, g.	428.0	391.0
	==========	==========
ADSORBED WATER, g.	28.0	45.0
TOTAL WATER COLLECTED, g.	523.0	537.0

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: MM5-STACK 2

Date Received: 11/4 Date Analyzed: 11/4 Reagent Box(es): DF0213

Run Number	II-3-S2-MM5-3B	III-3-S2-MM5-3B
Run Date	11/1	11/1

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)		
Final Weight, g.	1058.0	973.5
Tared Weight, g.	586.0	577.5
	==========	==========
Water Catch,g.	472.0	396.0
Reagent 2 (XAD)		
Final Weight, g.	336.5	363.5
Tared Weight, g.	357.0	337.0
	==========	==========
Water Catch,g.	-20.5	26.5
Reagent 3 ( )		
Final Weight, g.		
Tared Weight, g.		
	==========	==========
Water Catch,g.	0.0	0.0
CONDENSED WATER, g.	451.5	422.5
Silica Gel:		
Final Weight, g.	456.0	451.5
Tared Weight, g.	424.0	426.5
	==========	==========
ADSORBED WATER, g.	32.0	25.0
TOTAL WATER COLLECTED, g.	483.5	447.5

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: MM5-STACK 2

Date Received: 11/4 Date Analyzed: 11/4 Reagent Box(es): DF0205

Run Number	III-1-S2-MM5-1A	III-1-S2-MM5-1B
Run Date	10/30	10/30

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)		
Final Weight, g.	850.0	839.0
Tared Weight, g.	578.0	525.0
	==========	==========
Water Catch,g.	272.0	314.0
Reagent 2 (XAD)		
Final Weight, g.	343.0	364.0
Tared Weight, g.	335.0	359.5
	==========	==========
Water Catch,g.	8.0	4.5
Reagent 3 ( )		
Final Weight, g.		
Tared Weight, g.		
	==========	==========
Water Catch,g.	0.0	0.0
CONDENSED WATER, g.	280.0	318.5
Silica Gel:		
Final Weight, g.	421.0	438.5
Tared Weight, g.	400.0	415.0
	==========	==========
ADSORBED WATER, g.	21.0	23.5
TOTAL WATER COLLECTED, g.	301.0	342.0

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: MM5-STACK 2

Date Received: 11/4 Date Analyzed: 11/4 Reagent Box(es): DF130

Run Number	III-2-S2-MM5-2A	III-2-S2-MM5-2B
Run Date	10/31	10/31

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H20)		
Final Weight, g.	985.0	995.0
Tared Weight, g.	585.0	583.5
	==========	==========
Water Catch,g.	400.0	411.5
Reagent 2 (XAD)		
Final Weight, g.	348.0	335.0
Tared Weight, g.	341.5	327.0
	==========	==========
Water Catch,g.	6.5	8.0
Reagent 3 ( )		
Final Weight, g.		
Tared Weight, g.		
	==========	==========
Water Catch,g.	0.0	0.0
CONDENSED WATER, g.	406.5	419.5
Silica Gel:		
Final Weight, g.	432.5	454.5
Tared Weight, g.	404.0	425.5
	==========	==========
ADSORBED WATER, g.	28.5	29.0
TOTAL WATER COLLECTED, g.	435.0	448.5

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: MM5-STACK 2

Date Received: 11/4 Date Analyzed: 11/4 Reagent Box(es): DF180

Run Number	IV-1-S2-MM5-1A	IV-1-S2-MM5-1B
Run Date	10/30	10/30

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)		
Final Weight, g.	812.5	818.5
Tared Weight, g.	582.0	581.0
	==========	==========
Water Catch,g.	230.5	237.5
Reagent 2 (XAD)		
Final Weight, g.	356.5	352.5
Tared Weight, g.	354.0	350.0
	==========	==========
Water Catch,g.	2.5	2.5
Reagent 3 ( )		
Final Weight, g.		
Tared Weight, g.		
	==========	==========
Water Catch,g.	0.0	0.0
CONDENSED WATER, g.	233.0	240.0
Silica Gel:		
Final Weight, g.	430.0	426.5
Tared Weight, g.	400.0	400.0
	==========	==========
ADSORBED WATER, g.	30.0	26.5
TOTAL WATER COLLECTED, g.	263.0	266.5

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref#3676

Sampling Location: MM5-STACK 2

Date Received: 11/4 Date Analyzed: 11/4 Reagent Box(es): DF112

Run Number	IV-2-S2-MM5-2A	IV-2-S2-MM5-2B
Run Date	10/31	10/31

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H2O)		
Final Weight, g.	871.0	875.0
Tared Weight, g.	584.5	584.0
	==========	==========
Water Catch,g.	286.5	291.0
Reagent 2 (XAD)		
Final Weight, g.	370.5	350.5
Tared Weight, g.	367.0	345.6
	==========	==========
Water Catch,g.	3.5	4.9
Reagent 3 ( )		
Final Weight, g.		
Tared Weight, g.		
	==========	==========
Water Catch,g.	0.0	0.0
CONDENSED WATER, g.	290.0	295.9
Silica Gel:		
Final Weight, g.	425.0	425.0
Tared Weight, g.	400.0	400.0
	==========	==========
ADSORBED WATER, g.	25.0	25.0
TOTAL WATER COLLECTED, g.	315.0	320.9

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: MM5-STACK 2

Date Received: 11/4 Date Analyzed: 11/4 Reagent Box(es): DF206

Run Number	IV-3-S2-MM5-3A	S2-MM5-FB-A
Run Date	11/1	11/1

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H20)		
Final Weight, g.	997.0	578.5
Tared Weight, g.	579.5	578.5
Water Catch,g.	417.5	~~578.5~~ 0
Reagent 2 (XAD)		
Final Weight, g.	344.0	332.0
Tared Weight, g.	337.0	332.0
Water Catch,g.	7.0	~~332.0~~ 0
Reagent 3 ( )		
Final Weight, g.		
Tared Weight, g.		0.
Water Catch,g.	0.0	0.0
CONDENSED WATER, g.	424.5	~~910.5~~ 0
Silica Gel:		
Final Weight, g.	431.0	406.00
Tared Weight, g.	400.0	400.0
ADSORBED WATER, g.	31.0	~~400.0~~ 0
TOTAL WATER COLLECTED, g.	455.5	~~1310.5~~ 0

datasheet 7. - ash cont
Tare weight
And final should be the same see lab log.

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: MMTL STACK 1

Date Received: 11/7 Date Analyzed: 11/7 Reagent Box(es): M130, M138

Run Number	I-1-S1-MMTL-1	I-3-S1-MMTL-3
Run Date	10/30	10/31

ANALYSIS OF MOISTURE CATCH

Reagent 1 (5%HNO3/10%H2O2)		
Final Weight, g.	492.0	500.5
Tared Weight, g.	272.5	272.0
	==========	==========
Water Catch,g.	219.5	228.5
Reagent 2 (Impinger 4)		
Final Weight, g.	0.0	42.0
Tared Weight, g.	0.0	40.5
	==========	==========
Water Catch,g.	0.0	1.5
Reagent 3 (4%KMnO4/10%H2SO4)		
Final Weight, g.	447.5	426.0
Tared Weight, g.	441.0	427.0
	==========	==========
Water Catch,g.	6.5	-1.0
CONDENSED WATER, g.	226.0	229.0
Silica Gel:		
Final Weight, g.	418.0	449.0
Tared Weight, g.	400.0	432.5
	==========	==========
ADSORBED WATER, g.	18.0	16.5
TOTAL WATER COLLECTED, g.	244.0	245.5

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: MMTL STACK 1

Date Received: 11/7 Date Analyzed: 11/7 Reagent Box(es): M138, M140

Run Number	II-1-SI-MMTL-1	II-2-SI-MMTL-2
Run Date	10/30	10/30

ANALYSIS OF MOISTURE CATCH

Reagent 1 (5%HNO3/10%H2O2)		
Final Weight, g.	647.5	620.0
Tared Weight, g.	272.0	271.5
Water Catch,g.	375.5	348.5
Reagent 2 (Impinger 4)		
Final Weight, g.	0.5	42.5
Tared Weight, g.	0.0	41.5
Water Catch,g.	0.5	1.0
Reagent 3 (4%KMnO4/10%H2SO4)		
Final Weight, g.	445.0	441.5
Tared Weight, g.	441.5	441.5
Water Catch,g.	3.5	0.0
CONDENSED WATER, g.	379.5	349.5
Silica Gel:		
Final Weight, g.	442.0	426.5
Tared Weight, g.	416.5	400.0
ADSORBED WATER, g.	25.5	26.5
TOTAL WATER COLLECTED, g.	405.0	376.0

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: MMTL STACK 1

Date Received: 11/7 Date Analyzed: 11/7 Reagent Box(es): M114, M140

Run Number	III-1-S1-MMTL-1	III-2-S1-MMTL-2
Run Date	10/30	10/31

ANALYSIS OF MOISTURE CATCH

Reagent 1 (5%HNO3/10%H2O2)		
Final Weight, g.	529.5	589.5
Tared Weight, g.	272.5	271.5
	==========	==========
Water Catch,g.	257.0	318.0
Reagent 2 ( )		
Final Weight, g.		
Tared Weight, g.		
	==========	==========
Water Catch,g.	0.0	0.0
Reagent 3 (4%KMnO4/10%H2SO4)		
Final Weight, g.	437.5	432.5
Tared Weight, g.	445.0	440.5
	==========	==========
Water Catch,g.	-7.5	-8.0
CONDENSED WATER, g.	249.5	310.0
Silica Gel:		
Final Weight, g.	418.5	442.0
Tared Weight, g.	400.0	421.0
	==========	==========
ADSORBED WATER, g.	18.5	21.0
TOTAL WATER COLLECTED, g.	268.0	331.0

MOISTURE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: MMTL STACK 1

Date Received: 11/7 Date Analyzed: 11/7 Reagent Box(es): M114, M130

Run Number	IV-1-S1-MMTL-1	IV-2-S1-MMTL-2
Run Date	10/30	10/31

ANALYSIS OF MOISTURE CATCH

Reagent 1 (5%HNO3/10%H2O2)		
Final Weight, g.	432.0	507.0
Tared Weight, g.	272.5	273.5
	==========	==========
Water Catch,g.	159.5	233.5
Reagent 2 (Impinger 4)		
Final Weight, g.		43.0
Tared Weight, g.		42.0
	==========	==========
Water Catch,g.	0.0	1.0
Reagent 3 (4%KMnO4/10%H2SO4)		
Final Weight, g.	435.0	427.5
Tared Weight, g.	440.0	432.5
	==========	==========
Water Catch,g.	-5.0	-5.0
CONDENSED WATER, g.	154.5	229.5
Silica Gel:		
Final Weight, g.	424.0	438.5
Tared Weight, g.	400.0	418.5
	==========	==========
ADSORBED WATER, g.	24.0	20.0
TOTAL WATER COLLECTED, g.	178.5	249.5

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: Jewell Coal and Coke EEI Ref# 5676

Sampling Location: Stack #1

Date Received: Date Analyzed: Reagent Box(es): 0507

Run Number	IV-3-S1-M5/202-3	M5/202-FB	
Run Date	Nov / / /91	11/ 1/91	/ /91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (DI H_2O)			
Final Weight, g.	947.0		
Tared Weight, g.	678.5	678.0	==========
Water Catch, g.			
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.	==========	==========	==========
Water Catch, g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.	==========	==========	==========
Water Catch, g.			
CONDENSED WATER, g.			
Silica Gel:			
Final Weight, g.	458.0		
Tared Weight, g.	417.0	441.0	==========
ADSORBED WATER, g.			
TOTAL WATER COLLECTED, g.			

(circle one)

Triple beam or Electronic

Balance # 23

Initials ---> TR2 TR2

DRR 11-6-91

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: JCoC EEI Ref# 3676

Sampling Location: STACK 1

Date Received: Date Analyzed: Reagent Box(es): 0501

Run Number	I-3-[illegible]	[illegible]	[illegible]
Run Date	10/31/91	10/30/91	11/1/91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (D_2O)			
Final Weight, g.	875.0	1233.5	974.0
Tared Weight, g.	686.5	678.0	650.0
Water Catch, g.	188.5	555.5	324.0
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch, g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch, g.			
CONDENSED WATER, g.			
Silica Gel:			
Final Weight, g.	434.5	441.5	464.5
Tared Weight, g.	412.0	400.0	432.5
ADSORBED WATER, g.	22.5	41.5	32.0
TOTAL WATER COLLECTED, g.	211.0	597.0	356.0

(circle one)

Triple beam or Electronic

Balance # _____

Initials ---> JIGP/RRS CEO TR2

DRPA 11-6-91

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: Jewell Coal and Coke EEI Ref# 3676/3644

Sampling Location: Stack 1 Battery 3C

Date Received: Date Analyzed: Reagent Box(es): 0238

Run Number	II-1-S1-MS/202-1- ~~Aborted Run~~	AFUR II-1-S1-MS/202-1	I-1-S1-M -1
Run Date	10/28/91	10/29/91	10/29/9

ANALYSIS OF MOISTURE CATCH

Reagent 1 (DI H_2O)			
Final Weight, g.	1271.0	1084.5	882.0
Tared Weight, g.	676.0	679.0	679.5
Water Catch, g.	595.0	405.~~0~~ 5	202.5
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch, g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch, g.			
CONDENSED WATER, g.			
Silica Gel:			
Final Weight, g.	462.0	442.0	466.0
Tared Weight, g.	412.5	415.5	434.0
ADSORBED WATER, g.	49.5	26.5	32.0
TOTAL WATER COLLECTED, g.	644.5	~~431.5~~ 432	234.5

(circle one)

Triple beam or Electronic

Balance # EEI 20

Initials --->	JIGP	?	?

DRP 11-6-91

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: Jewell Coal & Coke EEI Ref# 3676

Sampling Location: Stack #1

Date Received: Date Analyzed: Reagent Box(es):

Run Number	III-1-S1-M5/202-1	IV-1-S1-M5/202-1	I-2-S1-M5/202-2
Run Date	10 30 /91	10 / 30 /91	10 / 30 /91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (DiH_2O)			
Final Weight, g.	942.5	809.5	900.5
Tared Weight, g.	678.0g	677.5	678.0
Water Catch, g.	264.0	132.0	222.5
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch, g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch, g.			
CONDENSED WATER, g.		132.0	222.5
Silica Gel:			
Final Weight, g.	428.0	423.0	451.5
Tared Weight, g.	400.0g	400.0	421.5
ADSORBED WATER, g.	28.0	23.0	30.0
TOTAL WATER COLLECTED, g.	292.0	155.0	252.5

(circle one)

Triple beam or Electronic

Balance # EEI 20

Initials ---> CLT JFSP JFSP

DRPS 11-6-91

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: Jewell Coal + Coke

EEI Ref# 3676/3694

Sampling Location: Stack 1

Date Received:

Date Analyzed:

Reagent Box(es): 0237

Run Number	II-2-S1-M5/202-2	III-2-S1-M5/202-2	IV-2-S1-M5/20
Run Date	10/30/91	10/31/91	10/31/91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (DI H_2O)			
Final Weight, g.	1110.5	990.5	892.0 ~~990.5~~
Tared Weight, g.	677.0	678.5	678.0
Water Catch, g.	433.5	312.0	214.0
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch, g.			
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch, g.			
CONDENSED WATER, g.			
Silica Gel:			
Final Weight, g.	451.5	453.0	455.0
Tared Weight, g.	416.0 ~~400.0~~	424.5 ~~400.0~~	480.0
ADSORBED WATER, g.	35.5	29.0	25.0
TOTAL WATER COLLECTED, g.	469.0	341.0	239.

(circle one)

Triple beam or Electronic

Balance # EE120

Initials ---> CEO TR2 AB

DRP 11-6-91

inputting of these ~~are~~ is not completed. Waiting for debriefing from above.

PLK

E MOISTURE SAMPLING
BORATORY RESULTS

EEI Ref# 3676

11/11/91 — ation: STACK 2

Received: Date Analyzed: Reagent Box(es): DF179

Run Number	[redacted]1-S2-MM5-A	[redacted]1-S2-MM5-B	
Run Date	/ /91	/ /91	/ /91

ANALYSIS OF MOISTURE CATCH

Reagent 1 ($D_1 H_2O$)			
Final Weight, g.	904.0	915.5	
Tared Weight, g.	582.0	593.0	
Water Catch, g.	322.0	322.5	
Reagent 2 (YAD)			
Final Weight, g.	332.0	408.0	
Tared Weight, g.	334.5	401.0	
Water Catch, g.	2.5	7.0	
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch, g.			
CONDENSED WATER, g.	324.5	329.5	
Silica Gel:			
Final Weight, g.	426.5	456.0	
Tared Weight, g.	400.0	436.5	
ADSORBED WATER, g.	26.5	19.5	
TOTAL WATER COLLECTED, g.	351.0	349.0	

11.5
324.5
329.5
456
D

(circle one)

Triple Beam or Electronic

Balance # 23

Initials ---> [illegible] [illegible]

DR Pat 11-4-91 2:45 PM

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: Sewell Coal & Coke EEI Ref# 36716

Sampling Location: Stack 2

Date Received: Date Analyzed: Reagent Box(es):

Run Number	~~II~~ I-2-S2-MM5-2A	~~II~~ I-2-S2-MM5-2B	
Run Date	10/30/91	10/32/91	/91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (H_2O)			
Final Weight, g.	941.5		
Tared Weight, g.	583.5	==========	==========
Water Catch, g.	10		
Reagent 2 (XAD)			
Final Weight, g.	352.0		
Tared Weight, g.	344.0	==========	==========
Water Catch, g.	8.0		
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.	==========	==========	==========
Water Catch, g.			
CONDENSED WATER, g.			
Silica Gel:			
Final Weight, g.	423.5		
Tared Weight, g.	400.0	==========	==========
ADSORBED WATER, g.	23.5		
TOTAL WATER COLLECTED, g.			

(circle one)

Triple beam or Electronic

Balance # 23

Initials ---> ~~JAB~~ ---------- ---------- ----------

DR PJA 11-4-91

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: JCC

EEI Ref# ~~DF 183~~ 3694

Sampling Location: Stack 2

Date Received: Date Analyzed: Reagent Box(es): DF 183

Run Number	I-3-52-MM5-3A	I-3-52-MM5-3B	
Run Date	10 /31 /91	10 /31 /91	/ /91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (200 ml DI H_2O)			
Final Weight, g.	909.0	920.0	
Tared Weight, g.	578.5	579.0	
Water Catch, g.	330.5	341.0	
Reagent 2 (XAD) (3694-1) (3694-2)			
Final Weight, g.	358.0	342.0	
Tared Weight, g.	346.5	338.0	
Water Catch, g.	11.5	4.0	
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch, g.			
CONDENSED WATER, g.	342.0	345.0	
Silica Gel:			
Final Weight, g.	442.5	425.5	
Tared Weight, g.	414.5	400.0	
ADSORBED WATER, g.	28.0	25.5	
TOTAL WATER COLLECTED, g.	370.0	370.5	

(circle one)

Triple beam or Electronic

Balance # 25

Initials ---> JRP JRP

DR [illegible]

11-4-91

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: Jewett Coal + Coke EEI Ref# 8676

Sampling Location: STACK 2

Date Received: Date Analyzed: Reagent Box(es): DF103

Run Number	II-1-SD-MM5-14	II-1-SD-MM5-13	
Run Date	10 / 30 /91	10 / 30 /91	/ /91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (DI H_2O)			
Final Weight, g.	1170.0	1093.5	
Tared Weight, g.	584.0	584.5	==========
Water Catch, g.	586.0	509.0	
Reagent 2 (KAD)			
Final Weight, g.	416.0	351.5	
Tared Weight, g.	410.0 (4)	~~334.5~~ (0) ~~344.5~~	=======
Water Catch, g.	4.0	7.0	
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.	==========	==========	==========
Water Catch, g.			
	592.0	516.0	
CONDENSED WATER, g.			
Silica Gel:			
Final Weight, g.	487.5	486.5	
Tared Weight, g.	456.5	455.0	==========
ADSORBED WATER, g.	31.0	31.5	
TOTAL WATER COLLECTED, g.	623.0	547.5	

(circle one)

Triple beam or Electronic

Balance # 23

Initials ---> JRP JRP ---------

JRP 11-4-91 2:35

ON SITE MOISTURE SAMPLING

LABORATORY RESULTS

Plant Name: JCC

EEI Ref# 3694.

Sampling Location: stack 2

Date Analyzed:

Reagent Box(es): 210

Run Number	II-2-S2-MM5-2A	II-2-S-2-MM5-2B	
Run Date	10 / 31 / 91	10 / 31 /91	/ /91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (200 ml/s DI H_2O)			
Final Weight, g.	1072.0	1063.5	
Tared Weight, g.	585.0	578.5	
Water Catch, g	487.0	485.0	
Reagent 2 (XAD)	(3694.2B)	(3694.3)	
Final Weight, g.	353.0		
Tared Weight, g.	345.0	356.0 ~~349.0~~	
Water Catch, g.	8.0	7.0	
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch, g.			
CONDENSED WATER, G.			
Silica Gel:			
Final Weight, g.	456.0	436.0	
Tared Weight, g.	428.0	391.0	
ADSORBED WATER, g.	28.0	45.	
TOTAL WATER COLLECTED, g.	523.0	537.0	
Balance #	23		
Initials --->	TR2	TR2	

Sample Custodian (init.) DR Pat Received into custody 11-4-91

ON SITE MOISTURE SAMPLING

LABORATORY RESULTS

Plant Name: Jewett Coal & Coke EEI Ref# 3626

Sampling Location: Stack 2

Date Analyzed: TR2 DRP Reagent Box(es): DF0213 TR2 DRP

Run Number	II-3-SO-MM5-3A	II-3-SO-MM5-3A	
Run Date	11/1/91	11/1/91	/91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (Δ1 H_2O)			
Final Weight, g.	1058.0	973.5	
Tared Weight, g.	586.0	577.5	
Water Catch, g	472.0	396.0	
Reagent 2 (XAD)			
Final Weight, g.	(3694.23) 336.5	(3694.22) 363.5	
Tared Weight, g.	357.0	337.0	
Water Catch, g.	-20.5	26.5	
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch, g.			
CONDENSED WATER, G.			
Silica Gel:			
Final Weight, g.	456.0	451.5	
Tared Weight, g.	424.	426.5	
ADSORBED WATER, g.	32.0	25.0	
TOTAL WATER COLLECTED, g.	483.5	447.5	

Balance # 23

Initials ---> TR2 TR2

Sample Custodian (init.) DRPutto Received into custody 11-4-91

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: Jewett Coal & Coke EEI Ref# 3676

Sampling Location: Stack # 2

Date Received: Date Analyzed: Reagent Box(es): DF0205

Run Number	III-1-S2-MM5-1A	III-1-S2-MM5-1B	
Run Date	10/30/91	10/30/91	/ /91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (DI H_2O)					
Final Weight, g.		850.0		839.0	
Tared Weight, g.		578.0		525.0	
Water Catch, g.		272		314.0	
Reagent 2 (KMnO4)					
Final Weight, g.		343.0 ~~421.0~~		364.0	
Tared Weight, g.	3691-20	335.0	3691-5	359.5	
Water Catch, g.		8.0		4.5	
Reagent 3 ( )					
Final Weight, g.					
Tared Weight, g.					
Water Catch, g.					
CONDENSED WATER, g.					
Silica Gel:					
Final Weight, g.		421.0		438.5	
Tared Weight, g.		400.0		415.0	
ADSORBED WATER, g.		21.0		23.5	
TOTAL WATER COLLECTED, g.		301.0		342.0	

(circle one)

Triple beam or Electronic

Balance # 23

Initials ---> TCM JR2

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: Jewell Coal & Coke EEI Ref# 3676

Sampling Location: Stack 2

Date Received: Date Analyzed: Reagent Box(es): AF 130

Run Number	III-2-S2-MMS-2A	III-2-S2-MMS-2B	
Run Date	9/13/91	9/13/91	/ /91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (DI H_2O)			
Final Weight, g.	985.6	995.0	
Tared Weight, g.	585.0	583.5	==========
Water Catch, g.	400.0	411.5	
Reagent 2 (KMnO4)			
Final Weight, g.	348.0	335.0	
Tared Weight, g. 3694-12	341.5	327.0	=======
Water Catch, g.	6.5	8.0	
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.	==========	==========	==========
Water Catch, g.			
CONDENSED WATER, g.			
Silica Gel:			
Final Weight, g.	432.5	454.5	
Tared Weight, g.	404.0	425.5	==========
ADSORBED WATER, g.	28.5	29.0	
TOTAL WATER COLLECTED, g.	435	448.5	

(circle one)

Triple beam or Electronic

Balance # EEI 23

Initials ---> TCM TCM

DR 11-4-91

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: Tanner Coal & Coke EEI Ref# 367c

Sampling Location: Stack #2

Date Received: Date Analyzed: Reagent Box(es): DF180

Run Number	IV-1-32-MMS-1A	IV-1-32-MMS-1B	
Run Date	10/30 /91	10/30 /91	/ /91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (Kool)					
Final Weight, g.	(3694-27)	354.5	3694-1B	352.5	
Tared Weight, g.		354.0		350.0	3694-
Water Catch, g.				2.5	
Reagent 2 (DE40)					
Final Weight, g.		812.5		818.5	
Tared Weight, g.		582.0		581.0	
Water Catch, g.					
~~Reagent 3 ( )~~					
Final Weight, g.					
Tared Weight, g.					
Water Catch, g.					
CONDENSED WATER, g.					
Silica Gel:					
Final Weight, g.		[illegible].0		426.5	
Tared Weight, g.		[illegible]00.0		400.0	
ADSORBED WATER, g.		30.0		26.5	
TOTAL WATER COLLECTED, g.					

(circle one)

Triple beam or Electronic

Balance # 25

Initials ---> 11-4-91

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: JCC

EEI Ref# 3694 3676

Sampling Location: Stack 2

Date Received: Date Analyzed: Reagent Box(es): DF112

Run Number	IV	IV-2-S2-HMS-2B	
Run Date	10/31 /91	10/31 /91	/ /91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (200 mls DI H2O)			
Final Weight, g.	871.0	875.0	
Tared Weight, g.	584.5	584.0	
Water Catch, g.	286.5	291.0	
Reagent 2 (XAD)	(3694-15) 370.5	(3694-21) 350.5	
Final Weight, g.		345.6	
Tared Weight, g.	367.0	~~402.5~~	
Water Catch, g.	3.5	4.9	
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch, g.			
CONDENSED WATER, g.			
Silica Gel:			
Final Weight, g.	425.	425.0	
Tared Weight, g.	400.0	400.0	
ADSORBED WATER, g.	25	25.0	
TOTAL WATER COLLECTED, g.	315	320.9	

(circle one)

Triple beam or Electronic

Balance # _____

Initials ---> _____ _____ _____

DR Pt

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: Jewell Coal & Coke EEI Ref# 3676

Sampling Location: Stack #2

Date Received: Date Analyzed: Reagent Box(es): DF 0214

Run Number	II-1-S2-MM5-1B		II-1-S2-MM5-1A
Run Date	II-0-S2-mm5-0B 10/28/91	/ /91	II-0-S2-mm5-0A 10/28/91

AFUR

ANALYSIS OF MOISTURE CATCH

AFUR

Reagent 1 (DI H_2O)			
Final Weight, g.	969.0g		984.0
Tared Weight, g.	579.5g		580.0
Water Catch, g.	389.5g		404.0
Reagent 2 (XAD)			
Final Weight, g.	364.0g		364.0
Tared Weight, g.	359.5 ~~355.5g~~		355.5
Water Catch, g.	~~4~~.5		8.5
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch, g.			
CONDENSED WATER, g.	394.0		412.5
Silica Gel:			
Final Weight, g.	440.0g	~~434.0~~	434.0
Tared Weight, g.	417.5g	~~411.0~~	411.0
ADSORBED WATER, g.	22.5g	~~23.0~~	23.0
TOTAL WATER COLLECTED, g.	416.5 ~~420.5g~~		435.5

(circle one)

Triple beam or Electronic

Balance # EE123

Initials ---> CED

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: JCC

EEI Ref# 3694

Sampling Location: stack 2

Date Received:

Date Analyzed:

Reagent Box(es): DF 206

Run Number	IV·3·S2·MM5·3A	S2·MM5·FB A	
Run Date	11 / 1 /91	11 / 1 /91	/ /91

ANALYSIS OF MOISTURE CATCH

Reagent 1 (200 mls DI H_2O)			
Final Weight, g.	997.0	—	
Tared Weight, g.	579.5	578.5	
Water Catch, g.	+18.0		
Reagent 2 (XAD)	(3694.22) 344.0	(3694.17) —	
Final Weight, g.			
Tared Weight, g.	337.0	337.0	
Water Catch, g.	7.0		
Reagent 3 ( )			
Final Weight, g.			
Tared Weight, g.			
Water Catch, g.			
CONDENSED WATER, g.			
Silica Gel:			
Final Weight, g.	431.0	—	
Tared Weight, g.	400	400	
ADSORBED WATER, g.	31.0		
TOTAL WATER COLLECTED, g.	456.0	0	

(circle one)

Triple beam or Electronic

Balance # 23

Initials ---> TR2

DR Parks 11-4-91

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: Jewell Coal and Coke EEI Ref# 3694

Sampling Location: Stack 1 Battery C

Date Received: Date Analyzed: Reagent Box(es): M120

Run Number	Reagent Blanks		
Run Date	10 / 31 /91	/ /91	/ /91

Analysis of Moisture Catch for MMTL/Hg Trains

Reagent 1 (5%HNO3/10%H2O2)			
Final Weight, g.			
Tared Weight, g.	-	-	-
	==========	==========	==========
Water Catch,g.			
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.	-	-	-
	==========	==========	==========
Water Catch,g.			
Reagent 3 (4%KMnO4/10%H2SO4)			
Final Weight, g.			
Jar Tared Weight, g.	-	-	-
	==========	==========	==========
Difference			
*100 ml.KMnO4 reagent, g.	-110.0	-110.0	-110.0
Water Catch,g.			
CONDENSED WATER, g.			
Silica Gel:			
Final Weight, g.			
Tared Weight, g.	-	-	-
	==========	==========	==========
ADSORBED WATER, g.			
TOTAL WATER COLLECTED, g.			
Balance # _____			
Initials --->	RPS		

*NOTE: 4% KMnO4 / 10% H2SO4 weighs 1.1g./ml. Therefore, if any volume is used to charge the permanganate impinger other than 100 mls., the tare of the reagent charge must likewise be adjusted, (i.e. total mls. X 1.1 g/ml. = total grams tare to be subtracted).

DR Peters 11-7-91

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: Jewell Coal & Coke EEI Ref# 3676

Sampling Location: Stack #1

Date Received: Date Analyzed: Reagent Box(es): M114

Run Number	III-1-S1-MMTL-1	IV-1-S1-MMTL-1	
Run Date	10/30/91	10/30/91	/ /91

Analysis of Moisture Catch for MMTL/Hg Trains

Reagent 1 (5%HNO3/10%H2O2)			
Final Weight, g.	529.5	432.0	
Tared Weight, g.	- 272.5	- 272.5	-
Water Catch, g.	257.0	159.5	
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.	-	-	-
Water Catch, g.			
Reagent 3 (4%KMnO4/10%H2SO4)			
Final Weight, g.	437.5	435.0	
Jar Tared Weight, g + KMnO4	445.0g	- 440.0g	-
Difference	-7.5	-5.0	
*100 ml. KMnO4 reagent, g.	~~-110.0~~	~~-110.0~~	-110.0
Water Catch, g.			
CONDENSED WATER, g.			
Silica Gel:			
Final Weight, g.	418.5	424.0	
Tared Weight, g.	- 400.0g	- 400.0g	-
ADSORBED WATER, g.	18.5	24.0	
TOTAL WATER COLLECTED, g.	268.0	178.5	
Balance #	EEI 20		
Initials --->	TP2	RRS	

*NOTE: 4% KMnO4 / 10% H2SO4 weighs 1.1g./ml. Therefore, if any volume is used to charge the permanganate impinger other than 100 mls., the tare of the reagent charge must likewise be adjusted, (i.e. total mls. X 1.1 g/ml. = total grams tare to be subtracted).

DR 11-7-91

All imputted 11-11-91

SITE MOISTURE SAMPLING LABORATORY RESULTS

Pl. [illegible]

EEI Ref# 3

Sampling Location: Stack 1

Date Received: Date Analyzed: Reagent Box(es): M140

Run Number	I-2-S1-MMTL-2	II-2-S1-MMTL-2	III-2-S1-MMTL
Run Date	10/30/91	10/30/91	10/30/91

Analysis of Moisture Catch for MMTL/Hg Trains

Reagent 1 (5%HNO3/10%H2O2)			
Final Weight, g.		620.0	589.5
Tared Weight, g.	- 272.5	- 271.5	- 271.5
Water Catch, g.		348.5	318.0
Reagent 2 ( )			
Final Weight, g.		42.5	
Tared Weight, g.	-	- 41.5	-
Water Catch, g.		1.0	
Reagent 3 (4%KMnO4/10%H2SO4)			
Final Weight, g.		441.5	432.5
Jar Tared Weight, g.	-	- 221.5	- 220.5
Difference		220.0	
	-220.0	-220.0	~~-220.0~~
*100 ml. KMnO4 reagent, g.	~~-110.0~~	~~-110.0~~	~~-110.0~~
Water Catch, g.		0	-8.5
CONDENSED WATER, g.			
Silica Gel:			
Final Weight, g.		426.5	442.0
Tared Weight, g.	- 400.0	- 400.0	- 421.0
ADSORBED WATER, g.		26.5	21.0
TOTAL WATER COLLECTED, g.		376.0	330.5
Balance # EEI-20			
Initials --->	RRS	CEO/RRS	TR2

Abortted

*NOTE: 4% KMnO4 / 10% H2SO4 weighs 1.1g./ml. Therefore, if any volume is used to charge the permanganate impinger other than 100 mls., the tare of the reagent charge must likewise be adjusted, (i.e. total mls. X 1.1 g/ml. = total grams tare to be subtracted).

DRR 11-7-91

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: Jewell Coal and Coke EEI Ref# 3694

Sampling Location: Stack #1 Battery 5C

Date Received: Date Analyzed: Reagent Box(es): M138

Run Number	II-0-S1-MMTL-0	II-1-S1-MMTL-1 — AFUR — I-2-S1-MMTL-2	II-1-S1-MMT
Run Date	10/28/91 ABORT	10/30/91	10/30/9

Analysis of Moisture Catch for MMTL/Hg Trains

Reagent 1 (5%HNO3/10%H2O2)			
Final Weight, g.	782.5	492.0	647.5
Tared Weight, g.	- 273.0	- 272.5	- 272
Water Catch, g.	509.5	219.5	375.
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.	-	-	-
Water Catch, g.			
Reagent 3 (4%KMnO4/10%H2SO4)			
Final Weight, g.	435.5	447.5g	44
Jar Tared Weight, g.	- 443.3	- 221.0g jar	- 221.
Difference	<-7.8>	+ 200mL KMnO4	+220
*100 ml. KMnO4 reagent, g.	~~-110.0~~ Ø	~~-110.0~~ 220	~~440~~
Water Catch, g.	509.5	6.5	3.5
CONDENSED WATER, g.			Imp 4 .5
Silica Gel:			
Final Weight, g.	427.5	418.0	442
Tared Weight, g.	- 400.0	- 400.0	- 416
ADSORBED WATER, g.	27.5	18.0	25.
TOTAL WATER COLLECTED, g.	537.0	244.0	405 406.
Balance # EEI-20			
Initials --->	JRST	CRD	CRD

*NOTE: 4% KMnO4 / 10% H2SO4 weighs 1.1g./ml. Therefore, if any volume is used to charge the permanganate impinger other than 100 mls., the tare of the reagent charge must likewise be adjusted, (i.e. total mls. X 1.1 g/ml. = total grams tare to be subtracted).

DRA 11-7-91

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: Jewell Coal + Coke EEI Ref# 3676/3694

Sampling Location: Stack 1, C Battery

Date Received: Date Analyzed: Reagent Box(es): M130

Run Number	IV-2-S1-MMTL-2	I-3-S1-MMTL-3	~~[illegible]~~
Run Date	10/31 /91	10/31 /91	/ /91

Analysis of Moisture Catch for MMTL/Hg Trains

Reagent 1 (5%HNO3/10%H2O2)			
Final Weight, g.	507.0	500.5	
Tared Weight, g.	- 273.5	- 272.0	-
Water Catch, g.	233.5	228.5	
Reagent 2 (Impinger 4)			
Final Weight, g.	43.0	42.0	
Tared Weight, g.	- 42.0	- 40.5	-
Water Catch, g.	1.0	1.5	
Reagent 3 (4%KMnO4/10%H2SO4)			
Final Weight, g.	427.5	426.0	
Jar Tared Weight, g.	- 432.5	- 427.0 w/ Bag	-
Difference	-5.0	-1.0	
*100 ml. KMnO4 reagent, g.	~~-110.0~~ ~~220.0~~	~~-110.0~~ ~~220.0~~	-110.0
Water Catch, g.			
CONDENSED WATER, g.			
Silica Gel:			
Final Weight, g.	438.5	449.0	
Tared Weight, g.	418.5 ~~428.0~~	- 432.5	-
ADSORBED WATER, g.	20.0	16.5	
TOTAL WATER COLLECTED, g.	249.5	245.5	
Balance # EEI-20			
Initials --->	RRS	RRS	

*NOTE: 4% KMnO4 / 10% H2SO4 weighs 1.1g./ml. Therefore, if any volume is used to charge the permanganate impinger other than 100 mls., the tare of the reagent charge must likewise be adjusted, (i.e. total mls. X 1.1 g/ml. = total grams tare to be subtracted).

DRR 11-7-91

ON SITE MOISTURE SAMPLING
LABORATORY RESULTS

Plant Name: Jewell Coal & Coke EEI Ref# 3676

Sampling Location: Stack #1

Date Received: Date Analyzed: Reagent Box(es): M101

Run Number	I-3-S1-MMTL-3	~~II-3-S1~~-MMTL-~~3~~	III-3-S1-MMTL
Run Date	10/31/91	~~10/31~~ /91 11-1-91	FB 10/31/91

Analysis of Moisture Catch for MMTL/Hg Trains

Reagent 1 (5%HNO3/10%H2O2)			
Final Weight, g.		N/a	
Tared Weight, g.	- 272.0g	- 271.5	- ==========
Water Catch, g.			
Reagent 2 ( )			
Final Weight, g.			
Tared Weight, g.	- ==========	- ==========	- ==========
Water Catch, g.			
Reagent 3 (4%KMnO4/10%H2SO4)			
Final Weight, g.			
Jar Tared Weight, g.	- 427.0	- ==========	- ==========
~~Difference~~			
*100 ml. KMnO4 reagent, g.	~~-110.0~~	~~-110.0~~	-110.0
Water Catch, g.			
CONDENSED WATER, g.			
Silica Gel:		N/a	
Final Weight, g.			
Tared Weight, g.	- 432.5g	- 430.5g	- ==========
ADSORBED WATER, g.			
TOTAL WATER COLLECTED, g.			
Balance # EEI 20			
Initials --->	----------	----------	----------

*NOTE: 4% KMnO4 / 10% H2SO4 weighs 1.1g./ml. Therefore, if any volume is used to charge the permanganate impinger other than 100 mls., the tare of the reagent charge must likewise be adjusted, (i.e. total mls. X 1.1 g/ml. = total grams tare to be subtracted).

DRPut 11-7-91

Particulate and Impinger Water Results (M5/202)

PARTICULATE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/25 Reagent Box(es): 0238

Run Number II-1-S1-M5/202-1 (ABORT)
Run Date 10/28

Front Half Toluene Rinses

Sample ID/Container #	init.	date	R / 761
	ES	11/12	4.1076
	JC	11/11	4.1078
Tare Wt., g.			4.1035
SAMPLE WT., g.			0.0041

Filter + Particulate., mg.	4.1
Total Filter Tare, mg.	
Blank Residue, mg. (100 ml)	0.2
TOTAL PARTICULATE CATCH, mg.	3.9

Blank Beaker #	2003
Final wt., mg.	99546.3
Tare wt., mg.	99545.9
Residue, mg.	0.4
Volume, ml.	200
Concentration, mg/ml	0.002

---Legend---
✓ = Final Weight
F = Filter R = Rinse

1 = Light 2 = Medium
3 = Heavy or Dark

Sample Description		
Run #	Color	Loading
-1	1 2 3	1 2 3
-2	1 2 3	1 2 3
-3	1 2 3	1 2 3

Notes and comments:
Predominate color of samples is: CLEAR
Date of full balance span 11/25/91

PARTICULATE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 12/6 Reagent Box(es): 0238

Run Number II-1-S1-M5/202-1(ABORT)
Run Date 10/28

Sample ID/Container # F / 727

	init.	date	==========
	DK	11/15	4.6438
	VP	11/14	✓4.6438
	VP	11/13	4.6402
	JC	11/12	4.6376
Tare Weight., g.			3.9705
			==========
SAMPLE WT., g.			0.6733

Sample ID/Container # R / 728

	init.	date	==========
	DK	11/15	✓4.1039
	VP	11/14	4.1049
Tare Wt., g.			3.8827
			==========
SAMPLE WT., g.			0.2212

Filter + Particulate., mg.	894.5
Total Filter Tare, mg.	503.2
Blank Residue, mg. (125 ml)	0.3
	==========
TOTAL PARTICULATE CATCH, mg.	391.0

Blank Beaker #	2003
Final wt., mg.	99546.3
Tare wt., mg.	99545.9
Residue, mg.	0.4
Volume, ml.	200
Concentration, mg/ml	0.002

---Legend---
✓= Final Weight
F = Filter R = Rinse
---
1 = Light 2 = Medium
3 = Heavy or Dark

Sample Description

Run #	Color	Loading
-	(1) 2 3	1 (2) 3
-	1 2 3	1 2 3
-	1 2 3	1 2 3

Notes and comments:
Predominate color of samples is: WHITISH GREY
Date of full balance span 11/11/91

PARTICULATE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/25 Reagent Box(es): 0238,0202,0501

Run Number	I-1-S1-M5/202-1	I-2-S1-M5/202-2	I-3-S1-M5/202-3
Run Date	10/29	10/30	10/31

Front Half Toluene Rinses

Sample ID/Container #	init.	date	R / 755	date	R / 756	date	R / 757
	ES			11/13	3.9785		
	ES	11/12	4.0524	11/12	3.9788	11/12	4.2036
	JC	11/11	4.0527	11/11	3.9796	11/11	4.2041
Tare Wt., g.			4.0500		3.9763		4.2015
SAMPLE WT., g.			0.0024		0.0022		0.0021

Filter + Particulate., mg.	2.4	2.2	2.1
Total Filter Tare, mg.			
Blank Residue, mg.	(200 ml) 0.4	(225 ml) 0.5	(175 ml) 0.4
TOTAL PARTICULATE CATCH, mg.	2.0	1.7	1.7

Blank Beaker #	2003
Final wt., mg.	99546.3
Tare wt., mg.	99545.9
Residue, mg.	0.4
Volume, ml.	200
Concentration, mg/ml	0.002

---Legend---
✓ = Final Weight
F = Filter R = Rinse

1 = Light 2 = Medium
3 = Heavy or Dark

Sample Description		
Run #	Color	Loading
-1	1 2 3	1 2 3
-2	1 2 3	1 2 3
-3	1 2 3	1 2 3

Notes and comments:
Predominate color of samples is: CLEAR
Date of full balance span 11/25/91

PARTICULATE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/25 Reagent Box(es): 0238,0237,0501

Run Number	II-1-S1-M5/202-1	II-2-S1-M5/202-2	II-3-S1-M5/202-3
Run Date	10/30	10/30	11/1

Front Half Toluene Rinses

Sample ID/Container #	init.	date	R / 758	date	R / 759	date	R / 760
	ES	11/13	✓ 3.9864				
	ES	11/12	3.9866	11/12	✓ 3.9121	11/12	✓ 4.0659
	JC	11/11	3.9872	11/11	3.9124	11/11	4.0662
Tare Wt., g.			3.9848		3.9087		4.0640
SAMPLE WT., g.			0.0016		0.0034		0.0019

Filter + Particulate., mg.		1.6		3.4	1.9
Total Filter Tare, mg.					
Blank Residue, mg.	(175 ml)	0.4	(200 ml)	0.4	(225 ml) 0.5
TOTAL PARTICULATE CATCH, mg.		1.2		3.0	1.4

Blank Beaker #	2003
Final wt., mg.	99546.3
Tare wt., mg.	99545.9
Residue, mg.	0.4
Volume, ml.	200
Concentration, mg/ml	0.002

---Legend---
✓ = Final Weight
F = Filter R = Rinse

1 = Light 2 = Medium
3 = Heavy or Dark

Sample Description

Run #	Color	Loading
-1	1 2 3	1 2 3
-2	1 2 3	1 2 3
-3	1 2 3	1 2 3

Notes and comments:
Predominate color of samples is: CLEAR
Date of full balance span 11/25/91

SUMMARY OF IMPINGERS' WATER ANALYSIS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Run Number			II-1-SI-M5/202-1		II-2-SI-M5/202-2		II-3-SI-M5/202-3
Run Date			10/30		10/30		11/1
Sample ID/Container #			1 / 783		1 / 788		1 / 790
	init.	date	==========	date	==========	date	==========
	VP	11/20	✓3.8440				
	ES	11/19	3.8443	11/19	✓3.7280	11/19	✓3.6237
	VP	11/14	3.8492	11/14	3.7285	11/14	3.6242
Tare Weight., g.			3.8370		3.7250		3.6206
			==========		==========		==========
SAMPLE WT., g.			0.0070		0.0030		0.0031
Sample ID/Container #			2 / 784		2 / 789		2 / 791
	init.	date	==========		==========		==========
	DK					12/04	3.8620
	DK	12/02	3.8233	12/02	✓3.5866	12/02	✓3.8619
	BN	11/29	✓3.8281	11/29	3.5870	11/29	3.8626
Tare Wt., g.			3.7603		3.4769		3.8176
			==========		==========		==========
SAMPLE WT., g.			0.0630		0.1097		0.0443
Sample ID/Container #			4 /		4 /		4 /
	init.	date	==========		==========		==========
		/	0.0000	/	0.0000	/	0.0000
Tare Wt., g.							
			==========		==========		==========
SAMPLE WT., g.			0.0000		0.0000		0.0000

1	Organic Fraction Catch, mg.		7.0		3.0		3.1
2	Inorganic Fraction Catch, mg		63.0		109.7		44.3
4	Acetone Soluble Catch, mg.		0.0		0.0		0.0
	Acetone Residue, mg. (ml)	(ml)	0.0	(ml)	0.0	(ml)	0.0
	TOTAL IMPINGERS' CATCH, mg.		70.0		112.7		47.4
	TOTAL TRAIN CATCH, mg.		518.9		344.8		478.2

Procedure Explanation
1 - Extractable with toluene
2 - Water catch after extraction and heating to 210 F
3 - Water catch after heating to _____ F
4 - Acetone rinsings of impingers and connecting glassware

Blank Bag # 1-236
Final wt., mg. 4234.6
Tare wt., mg. 4234.6
Residue, mg. 0.0
Volume, ml. 200
Conc., mg/ml 0.0

SUMMARY OF IMPINGERS' WATER ANALYSIS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Run Number II-1-BI-M5/202-1(ABORT)
Run Date

Sample ID/Container #	init.	date	1 / 785
	VP	11/20	3.7600
	ES	11/19	3.7601
	VP	11/14	3.7632
Tare Weight., g.			3.7092
SAMPLE WT., g.			0.0508

Sample ID/Container #	init.	date	2 / 786
	DK	12/02	3.8514
	BN	11/29	3.8511
Tare Wt., g.			3.6465
SAMPLE WT., g.			0.2046

Sample ID/Container #	init.	date	4 /
		/	0.0000
Tare Wt., g.			
SAMPLE WT., g.			0.0000

1	Organic Fraction Catch, mg.	50.8
2	Inorganic Fraction Catch,mg	204.6
4	Acetone Soluble Catch, mg.	0.0
	Acetone Residue, mg.(ml)	0.0
	TOTAL IMPINGERS' CATCH, mg.	255.4
	TOTAL TRAIN CATCH, mg.	255.4

Procedure Explanation
1 - Extractable with toluene
2 - Water catch after extraction and heating to 210 F
3 - Water catch after heating to _____ F
4 - Acetone rinsings of impingers and connecting glassware

Blank Bag #	1-236
Final wt.,mg.	423
Tare wt., mg.	423
Residue, mg.	0.0
Volume, ml.	200
Conc., mg/ml	0.0

SUMMARY OF IMPINGERS' WATER ANALYSIS

Plant Name: JEWELL COAL & COKE — EEI Ref# 3676

Run Number			III-1-SI-M5/202-1		III-2-SI-M5/202-2		III-3-SI-M5/202-3
Run Date			10/30		10/31		10/31
Sample ID/Container #			1 / 792		1 / 794		1 / 797
	init.	date	==========	date	==========	date	==========
	JC	11/21	3.7181	11/20	✓3.6699		
	VP	11/20	✓3.7179	11/19	3.6703	11/19	✓3.7534
	ES	11/19	3.7188	11/14	3.6714	11/14	3.7536
Tare Weight., g.			3.7146		3.6689		3.7511
			==========		==========		==========
SAMPLE WT., g.			0.0033		0.0010		0.0023
Sample ID/Container #			2 / 793		2 / 795		2 / 798
	init.	date	==========		==========		==========
	DK	12/02	✓3.7788	12/02	✓3.7145	12/02	✓3.8599
	BN	11/29	3.7789	11/29	3.7148	11/29	3.8600
Tare Wt., g.			3.7416		3.6882		3.8329
			==========		==========		==========
SAMPLE WT., g.			0.0372		0.0263		0.0270
Sample ID/Container #			4 /		4 /		4 /
	init.	date	==========		==========		==========
		/	0.0000	/	0.0000	/	0.0000
Tare Wt., g.							
			==========		==========		==========
SAMPLE WT., g.			0.0000		0.0000		0.0000
1 Organic Fraction Catch, mg.			3.3		1.0		2.3
2 Inorganic Fraction Catch,mg			37.2		26.3		27.0
4 Acetone Soluble Catch, mg.			0.0		0.0		0.0
Acetone Residue, mg.(ml)			0.0	(ml)	0.0	(ml)	0.0
TOTAL IMPINGERS' CATCH, mg.			40.5		27.3		29.3
TOTAL TRAIN CATCH, mg.			1250.2		389.0		350.6

Procedure Explanation
1 - Extractable with toluene
2 - Water catch after extraction and heating to 210 F
3 - Water catch after heating to _____ F
4 - Acetone rinsings of impingers and connecting glassware

Blank Bag # 1-236
Final wt.,mg. 4234.6
Tare wt., mg. 4234.6
Residue, mg. 0.0
Volume, ml. 200
Conc., mg/ml 0.0

SUMMARY OF IMPINGERS' WATER ANALYSIS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Run Number M5/M202 R.B.
Run Date 10/30

Sample ID/Container # 1 / 773

	init.	date	==========
	ES	11/20	✓3.7954
	VP	11/14	3.7958
Tare Weight., g.			3.7943
			==========
SAMPLE WT., g.			0.0011

Sample ID/Container # 2 /

	init.	date	==========
		/	0.0000
Tare Wt., g.			
			==========
SAMPLE WT., g.			0.0000

Sample ID/Container # 4 /

	init.	date	==========
		/	0.0000
Tare Wt., g.			
			==========
SAMPLE WT., g.			0.0000

1	Organic Fraction Catch, mg.	1.1
2	Inorganic Fraction Catch.mg	0.0
4	Acetone Soluble Catch, mg.	0.0
	Acetone Residue, mg.(ml)	0.0
	TOTAL IMPINGERS' CATCH, mg.	1.1

TOTAL TRAIN CATCH, mg. 1.1

Procedure Explanation
1 - Extractable with toluene
2 - Water catch after extraction and heating to 210 F
3 - Water catch after heating to _____ F
4 - Acetone rinsings of impingers and connecting glassware

Blank Bag #	1-236
Final wt.,mg.	423
Tare wt., mg.	423
Residue, mg.	0.0
Volume, ml.	200
Conc., mg/ml	0.0

SUMMARY OF IMPINGERS' WATER ANALYSIS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Run Number I-2-SI-M5/202-FB
Run Date 10/31

Sample ID/Container #	init.	date	1 / 771
	ES	11/19	3.8054
	VP	11/14	3.8057
Tare Weight., g.			3.8036
SAMPLE WT., g.			0.0018

Sample ID/Container #	init.	date	2 / 772
	DK		3.8345
	DK		3.8342
	BN	11/29	3.8366
Tare Wt., g.			3.8305
SAMPLE WT., g.			0.0037

Sample ID/Container #	init.	date	4 /
		/	0.0000
Tare Wt., g.			
SAMPLE WT., g.			0.0000

1	Organic Fraction Catch, mg.	1.8
2	Inorganic Fraction Catch,mg	3.7
4	Acetone Soluble Catch, mg.	0.0
	Acetone Residue, mg.(ml)	0.0
	TOTAL IMPINGERS' CATCH, mg.	5.5

TOTAL TRAIN CATCH, mg. 122.6

Procedure Explanation
1 - Extractable with toluene
2 - Water catch after extraction and heating to 210 F
3 - Water catch after heating to _____ F
4 - Acetone rinsings of impingers and connecting glassware

Blank Bag #	1-236
Final wt.,mg.	4234.6
Tare wt., mg.	4234.6
Residue, mg.	0.0
Volume, ml.	200
Conc., mg/ml	0.0

SUMMARY OF IMPINGERS' WATER ANALYSIS

Plant Name: JEWELL COAL & COKE EEI Re#: 3676

Run Number I-2-SI-M5/202-FB
Run Date 10/31

Sample ID/Container #			1 / 771
	init.	date	==========
	ES	11/19	3.8054
	VP	11/14	3.8057
Tare Weight., g.			3.8036
			==========
SAMPLE WT., g.			0.0018

Sample ID/Container #			2 / 772
	init.	date	==========
	DK	12/4	3.8345
	DK	12/2	3.8342
	BN	11/29	3.8366
Tare Wt., g.			3.8305
			==========
SAMPLE WT., g.			0.0037

Sample ID/Container #			4 /
	init.	date	==========
		/	0.0000
Tare Wt., g.			
			==========
SAMPLE WT., g.			0.0000

1	Organic Fraction Catch, mg.	1.8
2	Inorganic Fraction Catch,mg	3.7
4	Acetone Soluble Catch, mg.	0.0
	Acetone Residue, mg.(ml)	0.0
	TOTAL IMPINGERS' CATCH, mg.	5.5

TOTAL TRAIN CATCH, mg. 122.6

Procedure Explanation
1 - Extractable with toluene
2 - Water catch after extraction and heating to 210 F
3 - Water catch after heating to _____ F
4 - Acetone rinsings of impingers and connecting glassware

Blank Bag #	1-236
Final wt.,mg.	423
Tare wt., mg.	423
Residue, mg.	0.0
Volume, ml.	200
Conc., mg/ml	0.0

PARTICULATE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE — EEI Ref# 3676
Sampling Location: Stack 1
Date Received: 11/7 — Date Analyzed: 12/6 — Reagent Box(es): 0202/0237/0507

Run Number	IV-1-S1-M5/202-1	IV-2-S1-M5/202-2	IV-3-S1-M5/202-3
Run Date	10/30	10/31	11/1

Sample ID/Container #			F / 744		F / 746		F / 748
	init.	date	==========	date	==========	date	==========
	VP						
	VP	11/13	4.6802	11/13	4.5089	11/13	✓ 4.7702
	JC	11/12	✓ 4.6795	11/12	✓ 4.5075	11/12	4.7710
Tare Weight., g.			4.0644		3.8486		4.0671
			==========		==========		==========
SAMPLE WT., g.			0.6151		0.6589		0.7031

Sample ID/Container #			R / 745		R / 747		R / 749
	init.	date	==========	date	==========	date	==========
	DK	12/5	✓ 4.0632			12/5	✓ 4.1241
	DK	12/4	4.0636			12/4	4.1247
	DK	12/3	4.0713			12/3	4.1265
	DK	12/2	4.0739			12/2	4.1351
	BN	11/29	4.0638	11/29	✓ 4.0708	11/29	4.1253
	VP	11/27	4.0620	11/27	4.0708	11/27	4.1235
	BN	11/26	4.0635	11/26	4.0726	11/26	4.1245
	DK	11/25	4.0626	11/25	4.0704	11/25	4.1254
	JC	11/21	4.0652	11/21	4.0736	11/21	4.1277
	VP	11/20	4.0720	11/20	4.0848	11/20	4.1336
	ES	11/19	4.0649	11/19	4.0763	11/19	4.1297
	DK	11/15	4.0694	11/15	4.0810	11/15	4.1307
	VP	11/14	4.0681	11/14	4.0792	11/14	4.1270
Tare Wt., g.			3.9778		3.9379		4.0486
			==========		==========		==========
SAMPLE WT., g.			0.0854		0.1329		0.0755

Filter + Particulate., mg.	700.5	791.8	778.6
Total Filter Tare, mg.	500.8	505.0	502.9
Blank Residue, mg.	(250 ml) 0.5	(150 ml) 0.3	(150 ml) 0.3
	==========	==========	==========
TOTAL PARTICULATE CATCH, mg.	199.2	286.5	275.4

Blank Beaker # 2003
Final wt., mg. 99546.3
Tare wt., mg. 99545.9
Residue, mg. 0.4
Volume, ml. 200

Concentration, mg/ml 0.002

---Legend---
✓ = Final Weight
F = Filter R = Rinse
---
1 = Light 2 = Medium
3 = Heavy or Dark

Sample Description		
Run #	Color	Loading
-	(1) 2 3	1 (2) 3
-	1 2 (3)	1 (2) 3
-	1 (2) 3	1 (2) 3

Notes and comments:
Predominate color of samples is: MEDIUM GREY
Date of full balance span 11/11/91

SUMMARY OF IMPINGERS' WATER ANALYSIS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Run Number	IV-1-SI-M5/202-1	IV-2-SI-M5/202-2	IV-3-SI-M5/20[illegible]
Run Date	10/30	10/31	11/1
Sample ID/Container #	1 / 799	1 / 801	1 / 803
init. / date	==========	date ==========	date ==========
ES 11/19	✓3.8387	11/19 ✓3.6518	11/19 ✓3.8023
VP 11/14	3.8390	11/14 3.6519	11/14 3.8024
Tare Weight., g.	3.8363	3.6487	3.8010
	==========	==========	==========
SAMPLE WT., g.	0.0024	0.0031	0.0013
Sample ID/Container #	2 / 800	2 / 802	2 / 804
init. / date	==========	==========	==========
DK 12/04	3.7884		12/4 3.7857
DK 12/02	✓3.7883	12/2 ✓3.8952	12/02 ✓3.7852
BN 11/29	3.7896	11/29 3.8957	11/29 3.7862
Tare Wt., g.	3.7525	3.8743	3.7689
	==========	==========	==========
SAMPLE WT., g.	0.0358	0.0209	0.01
Sample ID/Container #	4 /	4 /	4 /
init. / date	==========	==========	==========
/	0.0000	/ 0.0000	/ 0.0000
Tare Wt., g.	==========	==========	==========
SAMPLE WT., g.	0.0000	0.0000	0.0000
1 Organic Fraction Catch, mg.	2.4	3.1	1.3
2 Inorganic Fraction Catch, mg	35.8	20.9	16.3
4 Acetone Soluble Catch, mg.	0.0	0.0	0.0
Acetone Residue, mg. (ml)	0.0	(ml) 0.0	(ml) 0.0
TOTAL IMPINGERS' CATCH, mg.	38.2	24.0	17.6
TOTAL TRAIN CATCH, mg.	237.4	310.5	279.2

Procedure Explanation
1 - Extractable with toluene
2 - Water catch after extraction and heating to 210 F
3 - Water catch after heating to _____ F
4 - Acetone rinsings of impingers and connecting glassware

Blank Bag # 1-236
Final wt., mg. 423
Tare wt., mg. 42[illegible]
Residue, mg. 0.0
Volume, ml. 200
Conc., mg/ml 0.0

PARTICULATE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/25 Reagent Box(es): 0202,0237,0507

Run Number	IV-1-S1-M5/202-1	IV-2-S1-M5/202-2	IV-3-S1-M5/202-3
Run Date	10/30	10/31	11/1

Front Half Toluene Rinses

Sample ID/Container #	init.	date	R / 766	date	R / 767	date	R / 768
	ES	11/12	✓ 3.8075	11/12	3.6840	11/12	3.6958
	JC	11/11	3.8078	11/11	✓ 3.6838	11/11	✓ 3.6956
Tare Wt., g.			3.8059		3.6818		3.6937
SAMPLE WT., g.			0.0016		0.0020		0.0019

Filter + Particulate., mg.		1.6		2.0	1.9
Total Filter Tare, mg.					
Blank Residue, mg.	(175 ml)	0.4	(50 ml)	0.1	(125 ml) 0.3
TOTAL PARTICULATE CATCH, mg.		1.2		1.9	1.6

Blank Beaker #	2003
Final wt., mg.	99546.3
Tare wt., mg.	99545.9
Residue, mg.	0.4
Volume, ml.	200
Concentration, mg/ml	0.002

---Legend---
✓ = Final Weight
F = Filter R = Rinse

1 = Light 2 = Medium
3 = Heavy or Dark

Sample Description

Run #	Color	Loading
-1	1 2 3	1 2 3
-2	1 2 3	1 2 3
-3	1 2 3	1 2 3

Notes and comments:
Predominate color of samples is: CLEAR
Date of full balance span 11/25/91

PARTICULATE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/25 Reagent Box(es):

Run Number	III-1-S1-M5/202-1	III-2-S1-M5/202-2	III-3-S1-M5/202-3
Run Date	10/31	10/31	11/01

Front Half Toluene Rinses

Sample ID/Container #	init.	date	R / 763	date	R / 764	date	R / 765
	VP	11/14	✓ 3.7120				
	ES	11/13	3.7125				
	ES	11/12	3.7132	11/12	✓ 3.8864	11/12	✓ 3.7440
	JC	11/11	3.7189	11/11	3.8866	11/11	3.7443
Tare Wt., g.			3.6972		3.8837		3.7415
SAMPLE WT., g.			0.0148		0.0027		0.0025

Filter + Particulate., mg.	14.8	2.7	2.5
Total Filter Tare, mg.			
Blank Residue, mg.	(125 ml) 0.3	(75 ml) 0.2	(175 ml) 0.4
TOTAL PARTICULATE CATCH, mg.	14.5	2.5	2.1

Blank Beaker #	2003
Final wt., mg.	99546.3
Tare wt., mg.	99545.9
Residue, mg.	0.4
Volume, ml.	200
Concentration, mg/ml	0.002

---Legend---
✓ = Final Weight
F = Filter R = Rinse

1 = Light 2 = Medium
3 = Heavy or Dark

Sample Description		
Run #	Color	Loading
-1	1 2 3	1 2 3
-2	1 2 3	1 2 3
-3	1 2 3	1 2 3

Notes and comments:
Predominate color of samples is: CLEAR
Date of full balance span 11/25/91

SUMMARY OF IMPINGERS' WATER ANALYSIS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Run Number			I-1-SI-M5/202-1		I-2-SI-M5/202-2		I-3-SI-M5/202-3
Run Date			10/31		10/30		10/31
Sample ID/Container #			1 / 787		1 / 779		1 / 781
	init.	date	==========	date	==========	date	==========
	ES	11/19	✓3.7023	11/19	✓3.7821	11/19	✓3.6848
	VP	11/14	3.7025	11/14	3.7825	11/14	3.6849
Tare Weight., g.			3.6887		3.7796		3.6819
			==========		==========		==========
SAMPLE WT., g.			0.0136		0.0025		0.0029
Sample ID/Container #			2 / 778		2 / 780		2 / 782
	init.	date	==========		==========		==========
	DK					12/04	3.6244
	DK	12/02	3.8744	12/02	✓3.9201	12/02	✓ 3.6240
	BN	11/29	✓3.8743	11/29	3.9201	11/29	3.6261
Tare Wt., g.			3.7981		3.8790		3.5930
			==========		==========		==========
SAMPLE WT., g.			0.0762		0.0411		0.0310
Sample ID/Container #			4 /		4 /		4 /
	init.	date	==========		==========		==========
		/	0.0000	/	0.0000	/	0.0000
Tare Wt., g.							
			==========		==========		==========
SAMPLE WT., g.			0.0000		0.0000		0.0000
1 Organic Fraction Catch, mg.			13.6		2.5		2.9
2 Inorganic Fraction Catch, mg			76.2		41.1		31.0
4 Acetone Soluble Catch, mg.			0.0		0.0		0.0
Acetone Residue, mg. (ml)			0.0	(ml)	0.0	(ml)	0.0
TOTAL IMPINGERS' CATCH, mg.			89.8		43.6		33.9
TOTAL TRAIN CATCH, mg.			312.5		733.5		702.3

Procedure Explanation
1 - Extractable with toluene
2 - Water catch after extraction and heating to 210 F
3 - Water catch after heating to _____ F
4 - Acetone rinsings of impingers and connecting glassware

Blank Bag #	1-236
Final wt., mg.	4234.6
Tare wt., mg.	4234.6
Residue, mg.	0.0
Volume, ml.	200
Conc., mg/ml	0.0

SUMMARY OF IMPINGERS' WATER ANALYSIS

PARTICULATE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Samoling Location: Stack 1

Date Received: 11/7 Date Analyzed: 12/6 Reagent Box(es): 0507

RUN NUMBER M5/202-FB
RUN DATE 11/1

Sample ID/Container #	init.	date	F / 752
	DK	11/15	4.3735
	VP	11/14	✓4.3733
	VP	11/13	4.3746
	JC	11/12	4.3736
Tare Weight., g.			3.8668
SAMPLE WT., g.			0.5065

Sample ID/Container #	init.	date	R / 753
	DK	11/15	4.0777
	VP	11/14	✓4.0772
Tare Wt., g.			3.9611
SAMPLE WT., g.			0.1161

Filter + Particulate., mg.	622.6
Total Filter Tare, mg.	505.4
Blank Residue, mg. (50 ml)	0.1
TOTAL PARTICULATE CATCH, mg.	117.1

Blank Beaker #	2003
Final wt., mg.	99546.3
Tare wt., mg.	99545.9
Residue, mg.	0.4
Volume, ml.	200
Concentration, mg/ml	0.002

---Legend---
✓ = Final Weight
F = Filter R = Rinse

1 = Light 2 = Medium
3 = Heavy or Dark

Sample Description		
Run #	Color	Loading
-	① 2 3	① 2 3
-	1 2 3	1 2 3
-	1 2 3	1 2 3

Notes and comments:
Predominate color of samples is: CLEAR
Date of full balance span 11/11/91

PARTICULATE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/25 Reagent Box(es): 0507

Run Number M5/202-FB
Run Date 11/1

Front Half Toluene Rinses

Sample ID/Container #	init.	date	R / 769
	ES	11/12	3.7240
	JC	11/11	3.7240
Tare Wt., g.			3.7230
SAMPLE WT., g.			0.0010

Filter + Particulate., mg.	1.0	0.0	0.0
Total Filter Tare, mg.			
Blank Residue, mg. (75 ml)	0.2 (ml)	0.0 (ml)	0.0
TOTAL PARTICULATE CATCH, mg.	0.8	0.0	0.0

Blank Beaker # 2003
Final wt., mg. 99546.3
Tare wt., mg. 99545.9
Residue, mg. 0.4
Volume, ml. 200

Concentration, mg/ml 0.002

---Legend---
✓ = Final Weight
F = Filter R = Rinse

1 = Light 2 = Medium
3 = Heavy or Dark

Sample Description		
Run #	Color	Loading
-1	1 2 3	1 2 3
-2	1 2 3	1 2 3
-3	1 2 3	1 2 3

Notes and comments:
Predominate color of samples is: CLEAR
Date of full balance span 11/25/91

PARTICULATE SAMPLING LABORATORY RESULTS

Job Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 12/6 Reagent Box(es): 0238/0202/0501

Run Number			I-1-S1-M5/202-1		I-2-S1-M5/202-2		I-3-S1-M5/202-3
Run Date			10/31		10/30		10/31
Sample ID/Container #	init.	date	F / 715	date	F / 717	date	F / 719
	ES			11/19	4.4801	11/19	4.4368
	DK	11/18	✓4.5835	11/18	✓4.4794	11/18	✓4.4360
	DK	11/15	4.5840	11/15	4.4809	11/15	4.4374
	VP	11/14	4.5883	11/14	4.4883	11/14	4.4430
	ES	11/13	4.5845	11/13	4.4809	11/13	4.4363
	JC	11/12	4.5812	11/12	4.4781	11/12	4.4352
Tare Weight., g.			3.9430		3.8734		3.8319
SAMPLE WT., g.			0.6405		0.6067		0.6041

Sample ID/Container #	init.	date	R / 716	date	R / 718	date	R / 720
	ES	11/19	✓4.0049				
	DK	11/15	4.0049	11/15	✓4.0218	11/15	✓3.8814
	VP	11/14	4.0038	11/14	4.0222	11/14	3.8814
Tare Wt., g.			3.9196		3.9382		3.8167
SAMPLE WT., g.			0.0853		0.0836		0.0647

Filter + Particulate., mg.		725.8		690.3	668.8
Total Filter Tare, mg.		502.4		508.8	504.1
Blank Residue, mg.	(350 ml)	0.7	(200 ml)	0.4	(200 ml) 0.4
TOTAL PARTICULATE CATCH, mg.		222.7		181.1	164.3

Blank Beaker # 2003
Final wt., mg. 99546.3
Tare wt., mg. 99545.9
Residue, mg. 0.4
Volume, ml. 200

Concentration, mg/ml 0.002

---Legend---
✓ = Final Weight
F = Filter R = Rinse

1 = Light 2 = Medium
3 = Heavy or Dark

Sample Description

Run #	Color	Loading
1	1 (2) 3	1 (2) 3
2	(1) 2 3	1 (2) 3
3	1 (2) 3	1 (2) 3

Notes and comments:
Predominate color of samples is: MEDIUM GREY
Date of full balance span 11/11/91

PARTICULATE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 12/6 Reagent Box(es): 0238/0237/0501

Run Number	II-1-S1-M5/202-1	II-2-S1-M5/202-2	II-3-S1-M5/202-3
Run Date	10/30	10/30	11/1

Sample ID/Container #			F / 721		F / 723		F / 725
	init.	date	==========	date	==========	date	==========
	VP	11/20	✓4.9007				
	ES	11/19	4.9008			11/19	4.6934
	DK	11/18	4.8970			11/18	✓4.6912
	DK	11/15	4.9019			11/15	4.6992
	VP	11/14	4.9214	11/14	✓4.5569	11/14	4.7253
	VP	11/13	4.9002	11/13	4.5573	11/13	4.6959
	VP	11/12	4.8921	11/12	4.5564	11/12	4.6876
Tare Weight., g.	JC		4.1262		4.0003		3.9338
			==========		==========		==========
SAMPLE WT., g.			0.7659		0.5561		0.7538

Sample ID/Container #			R / 722		R / 724		R / 726
	init.	date	==========	date	==========	date	==========
	DK			11/25	✓3.9166	11/25	✓4.2658
	JC			11/21	3.9173	11/21	4.2672
	VP			11/20	3.9252	11/20	4.2779
	ES	11/19	✓4.2014	11/19	3.9188	11/19	4.2733
	DK	11/15	4.2030	11/15	3.9264	11/15	4.2758
	VP	11/14	4.2059	11/14	3.9287	11/14	4.2825
Tare Wt., g.			4.0159		3.7355		4.0839
			==========		==========		==========
SAMPLE WT., g.			0.1855		0.1811		0.1819

Filter + Particulate., mg.	951.4	737.2	935.7
Total Filter Tare, mg.	502.1	504.8	504.5
Blank Residue, mg.	(200 ml) 0.4	(150 ml) 0.3	(200 ml) 0.4
	==========	==========	==========
TOTAL PARTICULATE CATCH, mg.	448.9	232.1	430.8

Blank Beaker # 2003
Final wt., mg. 99546.3
Tare wt., mg. 99545.9
Residue, mg. 0.4
Volume, ml. 200

Concentration, mg/ml 0.002

---Legend---
✓= Final Weight
F = Filter R = Rinse
---

1 = Light 2 = Medium
3 = Heavy or Dark

Sample Description

Run #	Color	Loading
-	1 2 3	1 2 3
-	1 2 3	1 2 3
-	1 2 3	1 2 3

Notes and comments:
Predominate color of samples is: DARK CHARCOAL BLACK
Date of full balance span 11/11/91

PARTICULATE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 12/6 Reagent Box(es): 0202/0237/0501

Run Number	III-1-S1-M5/202-1	III-2-S1-M5/202-2	III-3-S1-M5/202-3
Run Date	10/30	10/31	11/1

Sample ID/Container #	init.	date	F / 729	date	F / 731	date	F / 742
	ES			11/19	4.7757		
	DK			11/18	✓ 4.7740		
	DK			11/15	4.7807		
	VP			11/14	4.7993		
	VP	11/13	4.8069	11/13	4.7782	11/13	4.8233
	JC	11/12	✓ 4.8007	11/12	4.7747	11/12	✓ 4.8221
Tare Weight., g.			4.1261		4.0734		4.1085
SAMPLE WT., g.			0.6746		0.7006		0.7136

Sample ID/Container #	init.	date	R / 730	date	R / 741	date	R / 74
	BN					11/26	✓ 4.0663
	JC					11/21	4.0664
	VP					11/20	4.0756
	ES	11/19	4.0912	11/19	4.3018	11/19	4.0665
	DK	11/15	✓ 4.0909	11/15	✓ 4.3022	11/15	4.0716
	VP	11/14	4.0933	11/14	4.3037	11/14	4.0679
Tare Wt., g.			4.0548		4.1355		3.9418
SAMPLE WT., g.			0.0361		0.1663		0.1245

Filter + Particulate., mg.	710.7	866.9	838.1
Total Filter Tare, mg.	500.8	505.0	516.7
Blank Residue, mg.	(100 ml) 0.2	(100 ml) 0.2	(100 ml) 0.2
TOTAL PARTICULATE CATCH, mg.	209.7	361.7	321.2

Blank Beaker # 2003
Final wt., mg. 99546.3
Tare wt., mg. 99545.9
Residue, mg. 0.4
Volume, ml. 200

Concentration, mg/ml 0.002

---Legend---
✓ = Final Weight
F = Filter R = Rinse

1 = Light 2 = Medium
3 = Heavy or Dark

Sample Description

Run #	Color	Loading
-	1 2 3	1 2 3
-	1 2 3	1 2
-	1 2 3	1 2

Notes and comments:
Predominate color of samples is: LIGHT GREY
Date of full balance span 11/11/91

PARTICULATE SAMPLING LABORATORY RESULTS

Plant Name: JEWELL COAL & COKE EEI Ref# 3676

Sampling Location: Stack 1

Date Received: 11/7 Date Analyzed: 11/25 Reagent Box(es): NA

Run Number TOLUENE BLANK
Run Date 11/25

Front Half Toluene Rinses

Sample ID/Container #	init.	date	R / 770
	ES	11/12	3.6904
	JC	11/11	3.6903
Tare Wt., g.			3.6891
SAMPLE WT., g.			0.0012

Filter + Particulate., mg.	1.2	0.0	0.0
Total Filter Tare, mg.			
Blank Residue, mg.	(ml) 0.0	(ml) 0.0	(ml) 0.0
TOTAL PARTICULATE CATCH, mg.	1.2	0.0	0.0

Blank Beaker # 2003
Final wt., mg. 99546.3
Tare wt., mg. 99545.9
Residue, mg. 0.4
Volume, ml. 200
Concentration, mg/ml 0.002

---Legend---
✓ = Final Weight
F = Filter R = Rinse
1 = Light 2 = Medium
3 = Heavy or Dark

Sample Description

Run #	Color	Loading
-1	1 2 3	1 2 3
-2	1 2 3	1 2 3
-3	1 2 3	1 2 3

Notes and comments:
Predominate color of samples is: CLEAR
Date of full balance span 11/25/91

APPENDIX C. QA/QC DOCUMENTATION

- Calibrations
- Sample and Analyses Logs
- Field Sample Recovery Quality Control Logs
  - M5/TSO/M202
  - MMTL
  - MM5
  - VOST

- Record of Custody Sheets
  M5/TSO/M202
  MMTL
  MM5
  VOST

- Request for Analyses
  M5/TSO/M202
  MMTL
  MM5
  VOST

- Laboratory Logs
  MMTL

Calibrations

CALIBRATION DATA CHECKLIST

ISOKINETIC METERBOXES

Meterbox Number	Full Test	Field Audit	Post Test	Meterbox Number	Full Test	Field Audit	Post Test
✓N18							
✓N23							
✓N27	~~.995 vs 1.0095~~						
✓N20	O.K.						

STANDARD METERS (For Above)

Yds _____ Yds _____ Yds _____ Yds _____

NONISOKINETIC METERBOXES

Meterbox Number	Pre Test	Post Test	Meterbox Number	Pre Test	Post Test

I-3-MMMT-

NOZZLES (Initial Calibration)

Nozzle Number	Dia.	Nozzle Number	Dia.	Nozzle Number	Dia.	Nozzle Number	Dia.
✓813	.506						
✓814	.515						
?	~~.500~~						
✓Q1206	.501	→ .499					
✓Q1207	.499						
✓Q1209	.500	→ .498					

PITOTS (Initial Calibration)

Pitot No.	Pitot No.	Pitot No.	Pitot No.	Pitot No.	Pitot No.
✓WC12-2	✓WC10-2				
✓WC10-1	~~[illegible]~~				
✓WC12-1					
1848 pitot probe	? not found				

THERMOCOUPLES (Initial Calibration)

Number	Number	Number	Number	Number	Number	Number
✓E57	✓C22					
R38	C36	not found				
E53	✓F26					
✓C18						

EQUIPMENT CHECKLIST COMPLETE? _____ GAS CYLINDER CERT. SHEETS REQUESTED? _____

OTHER DEVICES _____

POSTTEST/NOZZLE CALIBRATION REQUEST

Job No. 3694 Plant Name Jewell Coke + Coal

Writer DH Request Date 11/19/91 Report Due Date 12/31

ISOKINETIC SAMPLING METERBOXES (N AND RAC SERIES)

Meterbox Number	Average Delta-H*	High Vacuum	Delta-P Range (Lowest/Highest)	Test Date(s)/Comments
N18	0.99	8	0.037 / 0.134	10/28 - 11/1
N23	0.89	12	0.035 / 0.122	
N27	0.77	11	0.017 / 0.14	
N20	0.72	6	0.0009 / 0.13	
			/	
			/	
			/	
			/	

Standard Meter No. _____ (standard meter to be used for posttest--OPTIONAL)

* Enter separate line items if Delta-H averages are greater than 2.0 from low to high.

NONISOKINETIC SAMPLING METERBOXES (V, P, AND G SERIES)

Meterbox Number	Test Date(s)/Comments
V5	10/28 - 11/1
V8	" "

Meterbox Number	Test Date(s)/Comments

GLASS/QUARTZ NOZZLES (NOT IN BOX)

Number/Dia.	Number/Dia.	Number/Dia.	Number/Dia.	Number/Dia.
____/____	____/____	____/____	____/____	____/____
____/____	____/____	____/____	____/____	____/____

(or provide copy of CALIBRATION DATA CHECKLIST with required nozzles circled/hi-lighted)

OTHER DEVICES

(if thermocouple calibrations are not in box, they have not been done)

_____

_____

ISOKINETIC METERBOX FULLTEST CALIBRATION

Meterbox No. N18 Calibrated By MBC/BWS

Date 10-22-91 Barometric Pressure (P_b) 29.76 (In. Hg)

Date _____* Barometric Pressure (P_b) _____ (In. Hg)*

Standard Meter No. 3586003 Standard Meter Coefficient .9908

STANDARD METER			METERBOX METERING SYSTEM				
Gas Volume (V_{ds}) cf	Temp. (t_{ds}) °F	Time (θ) Min.	Orifice Setting (ΔH) In. H2O	Gas Volume (V_d) cf	Temp. (t_d) °F	Coeff. (Y_d)	$\Delta H@$ In. H_2O
3.984	74	10	0.5	4.084	82	.9798	1.798
3.974	74		0.5	4.088	84	.9800	1.801
7.769	74		2.0	7.989	88	.9839	1.871
7.739	75		2.0	7.996	92	.9846	1.879
11.974	75		4.8	12.316	95	.9876	1.873
12.002	75		4.8	12.390	98	.9893	1.856
					Average	.9842	1.846

1. Coefficient range: 0.97-1.03.
2. Coefficient tolerance: for individual runs, ± 0.02 from average.
3. $\Delta H@$ range: 1.6-2.0.
4. $\Delta H@$ tolerance: ≤ 0.15 In. H_2O over ΔH range of 0.4 In.-4.0 In.

$$Y_d = \frac{Y_{ds} * V_{ds} * (t_d + 460) * P_b}{V_d * (t_{ds} + 460) * (P_b + (\Delta H / 13.6))}$$

$$\Delta H@ = \frac{0.0317 * \Delta H}{P_b * (t_d + 460)} * \left[\frac{(t_{ds} + 460) * \theta}{Y_{ds} * V_{ds}} \right]^2$$

R-0030 rev. 2-90

ENTERGY

SAMPLING EQUIPMENT AUDIT

Plant Name Jewell Coal + Coke Job No. 3676

City/State Vansant Va Auditor(s) MLH

Test Loc. @ C-Battery stack #2 Date 10-28-91

BAROMETER
Entropy In-House Ref. Barometer 29.71 "Hg vs Field Barometer 29.7 "Hg

Date Compared 10-25-91 Dev. .01 "Hg (Max. Allowable Dev.: ± 0.1 "Hg)

Ref. Therm. Initial Ambient Temp., °F 80

	Allowable Deviation From Ambient	Ambient Temperature, °F				Audit OK (√)
THERMOMETERS *						
Dry Gas Meter	± 5.4 °F	82	(Meterbox No. N-18)			✓
Impinger Exit	± 2.0 °F	82				
Filter Box	± 5.4 °F					

* Adjust thermometer until acceptable. If it cannot be adjusted, use as back-up. If no backup, record ambient temperature indicated by unadjusted thermometer and label with correction factor (indicate):

THERMOCOUPLES Allowable Deviation from Ambient: ± 8.0°F* (± 2.0°F)**

TC No. / °F	√ OK	TC No. / °F	√ OK	TC No. / °F	√ OK	TC No. / °F	√ OK	TC No. / °F	√ OK
/		/		/		/		/	

* ± 8.0 °F = ± 1.5% of ambient absolute temperature.
** (± 2.0 °F if used in saturated or water droplet-laden gas stream.)

ISOKINETIC METERBOX I.D. N-18 Gamma (Y) .9842 ΔH@ 1.846

As Applicable (check): Zero Magnehelics? ✓ Zero/Level Manometer? ____

Barometric Pressure (P_{bar}) 28.6 Auditor MLH Date 10-27-91

Dry Gas Meter Reading (Cubic Ft.)	Meter Temperature (°F)	Lower and Upper Limits for Audit Gamma
Final 663.453	Final 97	0.96 * Y = .9448
Initial 655.608	Initial 97	1.04 * Y = 1.0236

Dry Gas Volume Metered (Cubic Ft.)	Average Meter Temp. (°F)	Run Time (Base = 10)	
		(Minutes)	(Seconds)
Vm = 7.845	Tm = 97	10	00

$$Y_c = \frac{[\text{Min.} + (\text{Sec.} / 60)]}{Vm} * \left[\frac{0.0319\ (Tm + 460)}{P_{bar}}\right]^{1/2}$$

$$Y_c = \frac{[10 + (00 / 60)]}{7.845} * \left[\frac{0.0319\ (97 + 460)}{28.6}\right]^{1/2} = 1.0047$$

Audit Gamma

Audit Gamma Acceptable (between lower & upper limits)? (√) ✓ Yes ____ No

F-1113 9-91

ENTROPY

ISOKINETIC METERBOX POSTTEST CALIBRATION

METERBOX NO. N18

Date 11-21-91 Calibrated By JD/SWJ Job Number 3694

Barometric Pressure (P_b) 29.66 (In. Hg) Meterbox Vacuum 8 (In. Hg)

Standard Meter No. 3586003 Standard Meter Coefficient .9908

STANDARD METER			METERBOX METERING SYSTEM				
Gas Volume (V_{ds}) cf	Temp. (t_{ds}) °F	Time (θ) Min.	Orifice Setting (ΔH) In. H2O	Gas Volume (V_d) cf	Temp. (t_d) °F	Coeff. (Y_d)	ΔH@ In. H_2O
5.515	73	10	1.0	5.736	94	.9877	1.836
5.506	↓	↓	↓	5.759	96	.9857	1.835
5.503	↓	↓	↓	5.784	98	.9844	1.830
					Average	.9859	1.834

Fulltest Y_d .9842 Date 10-22-91 % Dev. 0.2 Allowed Dev.: ± 5%

$$Y_d = \frac{Y_{ds} * V_{ds} * (t_d + 460) * P_b}{V_d * (t_{ds} + 460) * (P_b + \{\Delta H / 13.6\})}$$

$$\Delta H@ = \frac{0.0319 * \Delta H}{P_b * (t_d + 460)} * \left[\frac{(t_{ds} + 460) * \theta}{Y_{ds} * V_{ds}} \right]^2$$

R-0031 rev. 10-91

ENTROPY

ISOKINETIC METERBOX FULLTEST CALIBRATION

Meterbox No. N20 Calibrated By MBC/SWJ

Date 10-22-91 Barometric Pressure (P_b) 29.74 (In. Hg)

Date _____* Barometric Pressure (P_b) _____ (In. Hg)*

Standard Meter No. 3586003 Standard Meter Coefficient .9908

STANDARD METER			METERBOX METERING SYSTEM				
Gas Volume (V_{ds}) cf	Temp. (t_{ds}) °F	Time (θ) Min.	Orifice Setting (ΔH) In. H2O	Gas Volume (V_d) cf	Temp. (t_d) °F	Coeff. (Y_d)	$\Delta H@$ In. H_2O
3.997	76	10	0.5	4.091	83	.9795	1.798
3.973	76		0.5	4.082	86	.9811	1.810
8.062	77		2.0	8.268	91	.9864	1.749
8.038			2.0	8.299	94	.9851	1.750
12.731			4.8	13.149	98	.9851	1.667
12.646			4.8	13.114	102	.9882	1.672
					Average	.9842	1.740

1. Coefficient range: 0.97-1.03.
2. Coefficient tolerance: for individual runs, ± 0.02 from average.
3. $\Delta H@$ range: 1.6-2.0.
4. $\Delta H@$ tolerance: ≤ 0.15 In. H_2O over ΔH range of 0.4 In.-4.0 In.

$$Y_d = \frac{Y_{ds} * V_{ds} * (t_d + 460) * P_b}{V_d * (t_{ds} + 460) * (P_b + (\Delta H / 13.6))}$$

$$\Delta H@ = \frac{0.0317 * \Delta H}{P_b * (t_d + 460)} * \left[\frac{(t_{ds} + 460) * \theta}{Y_{ds} * V_{ds}} \right]^2$$

R-0030 rev. 2-90

ENTROPY

ISOKINETIC METERBOX POSTTEST CALIBRATION

METERBOX NO. N20

Date 11-21-91 Calibrated By PJ/SWS Job Number 3694

Barometric Pressure (P_b) 29.66 (In. Hg) Meterbox Vacuum 6 (In. Hg)

Standard Meter No. 3586003 Standard Meter Coefficient .9908

STANDARD METER			METERBOX METERING SYSTEM				
Gas Volume (V_{ds}) cf	Temp. (t_{ds}) °F	Time (θ) Min.	Orifice Setting (ΔH) In. H2O	Gas Volume (V_d) cf	Temp. (t_d) °F	Coeff. (Y_d)	ΔH@ In. H_2O
4.599	73	10	0.7	4.720	85	.9854	1.878
4.585	↓	↓	↓	4.721	87	.9858	1.883
4.581	↓	↓	↓	4.728	89	.9871	1.879
					Average	.9861	1.880

Fulltest Y_d .9842 Date 10-22-91 % Dev. 0.2 Allowed Dev.: ± 5%

$$Y_d = \frac{Y_{ds} * V_{ds} * (t_d + 460) * P_b}{V_d * (t_{ds} + 460) * (P_b + \{\Delta H / 13.6\})}$$

$$\Delta H@ = \frac{0.0319 * \Delta H}{P_b * (t_d + 460)} * \left[\frac{(t_{ds} + 460) * \theta}{Y_{ds} * V_{ds}} \right]^2$$

R-0031 rev. 10-91

ENTROPY

ISOKINETIC METERBOX FULLTEST CALIBRATION

Meterbox No. N23 Calibrated By mBc/sr

Date 9-13-91 Barometric Pressure (P_b) 29.58 (In. Hg

Date _____* Barometric Pressure (P_b) _____ (In. Hg

Standard Meter No. 10170577 Standard Meter Coefficient 1.0083

STANDARD METER			METERBOX METERING SYSTEM				
Gas Volume (V_{ds}) cf	Temp. (t_{ds}) °F	Time (θ) Min.	Orifice Setting (ΔH) In. H2O	Gas Volume (V_d) cf	Temp. (t_d) °F	Coeff. (Y_d)	$\Delta H@$ In. H_2O
4.679	78	12	0.5	4.901	86	.9757	1.838
6.193	78	16	0.5	6.518	88	.9746	1.858
7.794	77		2.0	8.152	91	.9843	1.816
7.811			2.0	8.210	95	.9830	1.802
12.007			4.8	12.512	93	.9882	1.8[illegible]
12.042			4.8	12.459	91	.9882	1.826
					Average	.9823	1.827

1. Coefficient range: 0.97-1.03.
2. Coefficient tolerance: for individual runs, ± 0.02 from average.
3. $\Delta H@$ range: 1.6-2.0.
4. $\Delta H@$ tolerance: ≤ 0.15 In. H_2O over ΔH range of 0.4 In.-4.0 In.

$$Y_d = \frac{Y_{ds} * V_{ds} * (t_d + 460) * P_b}{V_d * (t_{ds} + 460) * (P_b + \{\Delta H / 13.6\})}$$

$$\Delta H@ = \frac{0.0317 * \Delta H}{P_b * (t_d + 460)} * \left[\frac{(t_{ds} + 460) * \theta}{Y_{ds} * V_{ds}}\right]^2$$

R-0030 rev. 2-90

ENTROPY

SAMPLING EQUIPMENT AUDIT

Plant Name: JEWELL COAL AND COKE — Job No. 3676

City/State: VANSANT, VA — Auditor(s): JDK

Test Loc.: STACK #2 — Date: 10-27-91

BAROMETER

Entropy In-House Ref. Barometer _____ "Hg vs Field Barometer _____ "Hg

Date Compared _____ Dev. _____ "Hg (Max. Allowable Dev.: ± 0.1 "Hg)

Ref. Therm. Initial Ambient Temp., °F 80

THERMOMETERS *	Allowable Deviation From Ambient	Ambient Temperature, °F				Audit OK (√)
Dry Gas Meter	± 5.4 °F	83	(Meterbox No. N-23)			✓
Impinger Exit	± 2.0 °F	80				
Filter Box	± 5.4 °F					

* Adjust thermometer until acceptable. If it cannot be adjusted, use as back-up. If no backup, record ambient temperature indicated by unadjusted thermometer and label with correction factor (indicate):

THERMOCOUPLES Allowable Deviation from Ambient: ± 8.0°F* (± 2.0°F)**

TC No. / °F	√ OK	TC No. / °F	√ OK	TC No. / °F	√ OK	TC No. / °F	√ OK	TC No. / °F	√ OK
/		/		/		/		/	

* ± 8.0 °F = ± 1.5% of ambient absolute temperature.

** (± 2.0 °F if used in saturated or water droplet-laden gas stream.)

ISOKINETIC METERBOX I.D. N-23 Gamma (Y) .9823 ΔH@ 1.827

As Applicable (check): Zero Magnehelics? ✓ Zero/Level Manometer? ____

Barometric Pressure (P_{bar}) 28.6 Auditor MLH Date 10-27-91

Dry Gas Meter Reading (Cubic Ft.)	Meter Temperature (°F)	Lower and Upper Limits for Audit Gamma
Final 1000.849	Final 88	0.96 * Y = .9430
Initial ~~993.018~~ 993.018	Initial 97	1.04 * Y = 1.0216

Dry Gas Volume Metered (Cubic Ft.)	Average Meter Temp. (°F)	Run Time (Base = 10) (Minutes)	(Seconds)
Vm = 7.831	Tm = 93	10	00

$$Y_c = \frac{[\text{Min.} + (\text{Sec.} / 60)]}{Vm} * \left[\frac{0.0319\ (Tm + 460)}{P_{bar}}\right]^{1/2}$$

$$Y_c = \frac{[10 + (0 / 60)]}{7.831} * \left[\frac{0.0319\ (93 + 460)}{28.6}\right]^{1/2} = 1.0029$$

Audit Gamma

Audit Gamma Acceptable (between lower & upper limits)? (√) ✓ Yes ____ No

F-1113 9-91

ENTROPY

ISOKINETIC METERBOX POSTTEST CALIBRATION

METERBOX NO. N23

Date 11-21-91 Calibrated By PJ/SWS Job Number 3694

Barometric Pressure (P_b) 29.6 (In. Hg) Meterbox Vacuum 12 (In. Hg)

Standard Meter No. 3586003 Standard Meter Coefficient .9908

STANDARD METER			METERBOX METERING SYSTEM				
Gas Volume (V_{ds}) cf	Temp. (t_{ds}) °F	Time (θ) Min.	Orifice Setting (ΔH) In. H2O	Gas Volume (V_d) cf	Temp. (t_d) °F	Coeff. (Y_d)	ΔH@ In. H_2O
5.261	74	10	0.9	5.584	97	.9715	1.816
5.256	↓	↓	↓	5.496	100	.9915	1.810
9.261	↓	↓	↓	5.507	101	.9922	1.803
					Average	.9851	1.810

Fulltest Y_d .9823 Date 9-13-91 % Dev. 0.3 Allowed Dev.: ± 5.

$$Y_d = \frac{Y_{ds} * V_{ds} * (t_d + 460) * P_b}{V_d * (t_{ds} + 460) * (P_b + \{\Delta H / 13.6\})}$$

$$\Delta H@ = \frac{0.0319 * \Delta H}{P_b * (t_d + 460)} * \left[\frac{(t_{ds} + 460) * \theta}{Y_{ds} * V_{ds}} \right]^2$$

R-0031 rev. 10-91

ENTROPY

ISOKINETIC METERBOX FULLTEST CALIBRATION

Meterbox No. N27 Calibrated By MBC/JWS

Date 5-8-91 Barometric Pressure (P_b) 29.9 (In. Hg)

Date _____* Barometric Pressure (P_b) _____ (In. Hg)*

Standard Meter No. 1054682 Standard Meter Coefficient 1.0026

STANDARD METER			METERBOX METERING SYSTEM				
Gas Volume (V_{ds}) cf	Temp. (t_{ds}) °F	Time (θ) Min.	Orifice Setting (ΔH) In. H2O	Gas Volume (V_d) cf	Temp. (t_d) °F	Coeff. (Y_d)	$\Delta H@$ In. H_2O
3.965	72	10	0.5	4.071	86	1.0010	1.739
3.958	↓	10	0.5	4.070	88	1.0031	1.739
15.604	↓	20	2.0	15.901	92	1.0159	1.777
7.711	↓	10	2.0	7.962	96	1.0098	1.806
11.948	↓	10	4.8	12.294	99	1.0119	1.796
11.861	↓	10	4.8	12.232	102	1.0150	1.812
					Average	1.0095	1.778

1. Coefficient range: 0.97-1.03.
2. Coefficient tolerance: for individual runs, ± 0.02 from average.
3. $\Delta H@$ range: 1.6-2.0.
4. $\Delta H@$ tolerance: ≤ 0.15 In. H_2O over ΔH range of 0.4 In.-4.0 In.

$$Y_d = \frac{Y_{ds} * V_{ds} * (t_d + 460) * P_b}{V_d * (t_{ds} + 460) * (P_b + (\Delta H / 13.6))}$$

$$\Delta H@ = \frac{0.0317 * \Delta H}{P_b * (t_d + 460)} * \left[\frac{(t_{ds} + 460) * \theta}{Y_{ds} * V_{ds}} \right]^2$$

R-0030 rev. 2-90

ENTROPY

ISOKINETIC METERBOX POSTTEST CALIBRATION

METERBOX NO. N27

Date 11-25-91 Calibrated By PJ/SWS Job Number 3694

Barometric Pressure (P_b) 29.7 (In. Hg) Meterbox Vacuum 11 (In. Hg)

Standard Meter No. 1054682 Standard Meter Coefficient .9940

STANDARD METER			METERBOX METERING SYSTEM				
Gas Volume (V_{ds}) cf	Temp. (t_{ds}) °F	Time (θ) Min.	Orifice Setting (ΔH) In. H2O	Gas Volume (V_d) cf	Temp. (t_d) °F	Coeff. (Y_d)	ΔH@ In. H_2O
5.008	68	10	0.8	5.226	91	.9921	1.743
5.007	↓	↓	↓	5.222	91	.9926	1.744
5.048	↓	↓	↓	5.256	93	.9939	1.710
					Average	.9942	1.732

Fulltest Y_d 1.0095 Date 5-8-91 % Dev. 1.5 Allowed Dev.: ± 5%

$$Y_d = \frac{Y_{ds} * V_{ds} * (t_d + 460) * P_b}{V_d * (t_{ds} + 460) * (P_b + \{\Delta H / 13.6\})}$$

$$\Delta H@ = \frac{0.0319 * \Delta H}{P_b * (t_d + 460)} * \left[\frac{(t_{ds} + 460) * \theta}{Y_{ds} * V_{ds}} \right]^2$$

R-0031 rev. 10-91

NOZZLE NUMBER: 813

Date	Initials	Dia. 1	Dia. 2	Dia. 3	Dia. 4	Dia. 5	Average
2/27/84	PLO	.494	.497	.497	.497	.496	0.496
4/5/84	JNC	.495	.497	.494	.495	.496	0.495
8/10/84	GMC	.495	.496	.494	.493	.493	0.494
9/21/84	BDR	.495	.493	.492	.493	.496	0.494
1/5/85	GMC	.490	.492	.491	.491	.492	0.491
3/12/86	BB	.501	.501	.501	.501	.501	.501
9/13/88	JE	.506	.510	.509	.510	.508	.509
8-12-88	DC	.500	.503	.503	.502	.500	.502
8-25-88	SRD	.505	.504	.505	.504	.503	.505
7/18/89	BKG	.527	.529	.529	.530	.528	.529
3-8-91	TRR	.505	.506	.504	.506	.507	.506

NOTE: All diameters measured in inches.

ENTROPY ENVIRONMENTALISTS, INC.

NOZZLE NUMBER: 814

Date	Initials	Dia. 1	Dia. 2	Dia. 3	Dia. 4	Dia. 5	Average
2/27/84	PLO	.494	.497	.497	.495	.497	0.496
4/5/84	JNC	.496	.493	.496	.494	.496	0.495
8/10/84	GMC	.494	.492	.491	.492	.494	0.493
9/21/84	BDR	.495	.496	.496	.497	.498	0.496
12/7/84	SSH	.506	.505	.502	.506	.506	0.505
1/3/85	GMC	.505	.506	.505	.507	.505	0.506
6/28/85	ST	.503	.502	.503	.504	.503	0.503
2/28/86	BDR	.510	.514	.511	.511	.512	0.512
3/3/86	BB	.511	.511	.510	.511	.511	0.511
4/13/88	J.E.	.513	.514	.516	.515	.516	0.515
8-12-88	DC	.496	.500	.495	.498	.500	.498
8-25-88	SRD	.518	.519	.517	.518	.518	.518
7/18/89	BKG	.524	.523	.524	.524	.525	.524
3-8-91	TRR	.515	.516	.516	.514	.513	.515

NOTE: All diameters measured in inches.

ENTROPY ENVIRONMENTALISTS, INC.

NOZZLE CALIBRATION

NOZZLE NUMBER Q-1206

Date	Calib. By	Dia. 1	Dia. 2	Dia. 3	Dia. 4	Dia. 5	Average
10-23-91	JPW	.498	.499	.499	.499	.500	.499

Note: 1. All diameters measured in inches.
2. Maximum 0.004 inches from lowest to highest diameter.

R-0033a rev. 3-91

NOZZLE CALIBRATION

NOZZLE NUMBER Q-1207

Date	Calib. By	Dia. 1	Dia. 2	Dia. 3	Dia. 4	Dia. 5	Average
10-23-91	JPW	.500	.500	.498	.499	.497	.499

Note: 1. All diameters measured in inches.
2. Maximum 0.004 inches from lowest to highest diameter.

R-0033a rev. 3-91

ENTROPY

NOZZLE CALIBRATION

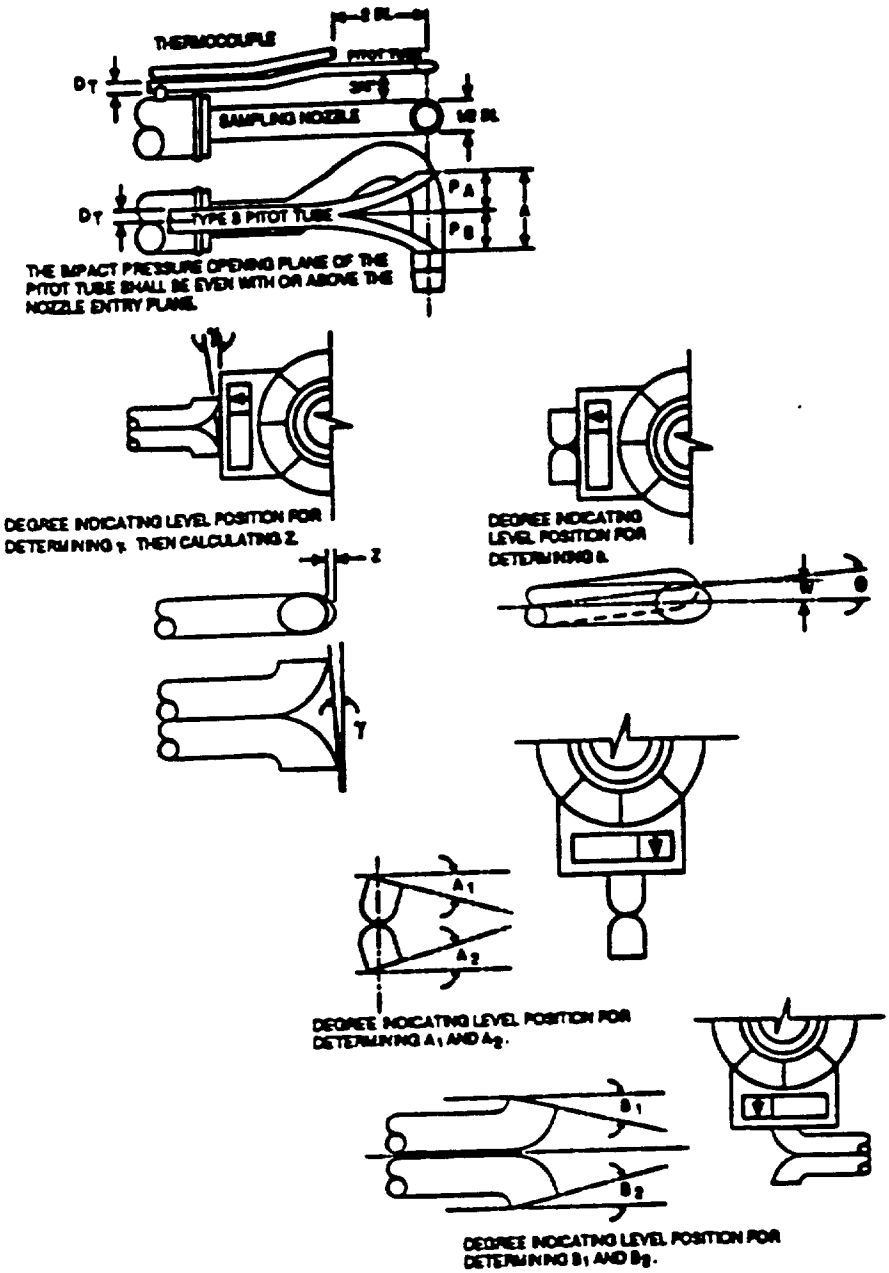
NOZZLE NUMBER Q-1209

Date	Calib. By	Dia. 1	Dia. 2	Dia. 3	Dia. 4	Dia. 5	Average
10-24-91	JPW	.498	.498	.498	.497	.499	.498

Note: 1. All diameters measured in inches.
2. Maximum 0.004 inches from lowest to highest diameter.

R-0033a rev. 3-91

PITOT TUBE INSPECTION



level?	yes
obstructions?	NONE
damaged?	NONE
$-10° < \alpha_1 < +10°$	0°
$-10° < \alpha_2 < +10°$	0°
$-5° < B1 < +5°$	0°
$-5° < B2 < +5°$	0°
γ	1°
θ	0
A	.929
$1.05\ D_t < P_a < 1.5\ D_t$	.465
$1.05\ D_t < P_b < 1.5\ D_t$	.464
$3/16" < D_t < 3/8"$	.250
$A \tan \gamma < 0.125"$	.015
$A \tan \theta < 0.03125"$	0
$P_a = P_b \pm 0.063"$	yes .001

See 40 CFR 60, Vol. 42 No. 160 EPA Method 2. Verify the minimum 2-inch setback of the thermocouple and the minimum 3/4-inch separation between the pitot tube and the nozzle as shown at the top of this page.

Comments: NEW Pitots

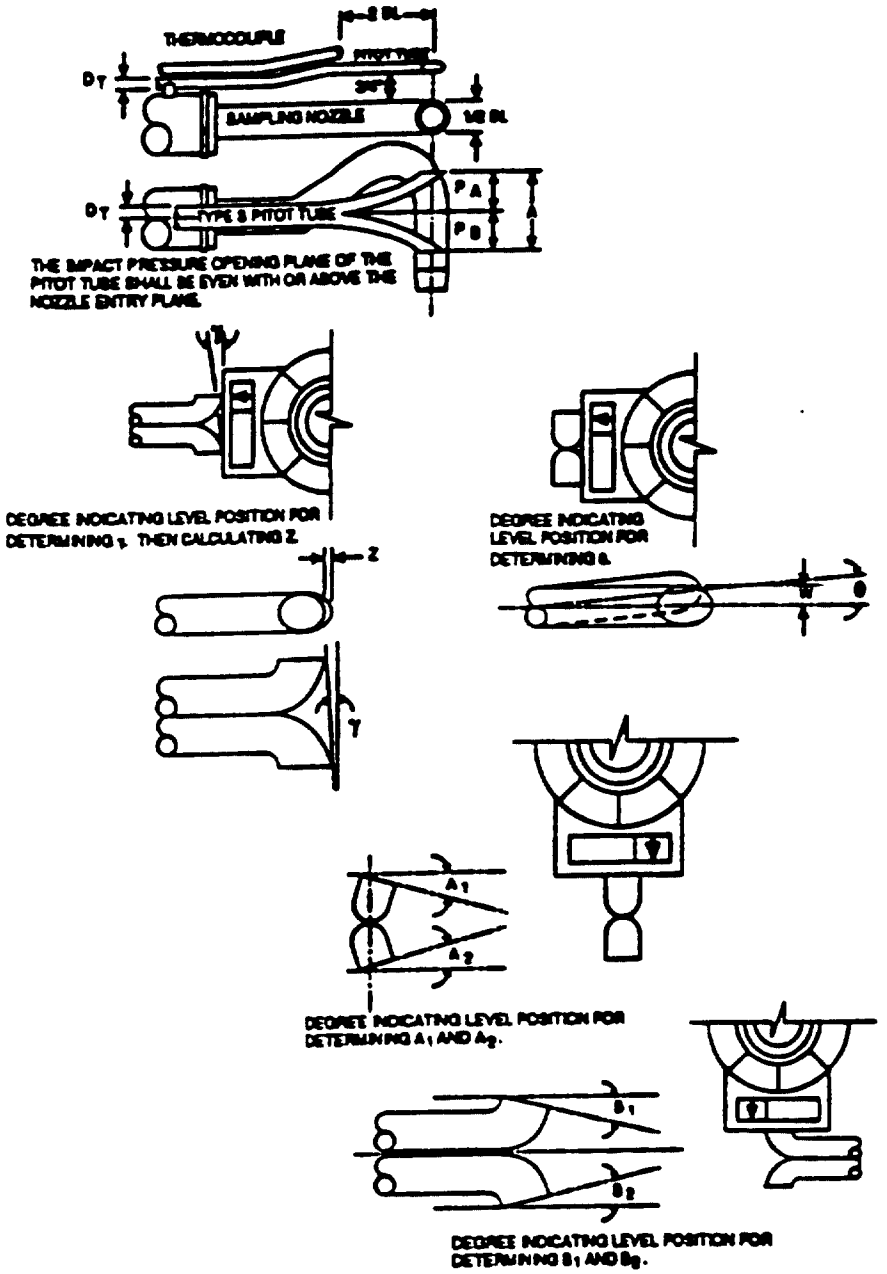
I certify that pitot tube/probe number W.C. 10-1 meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube calibration factor of 0.84.

Signature Jeff W

Date 10-23-91

R-0028 rev. 3/90

PITOT TUBE INSPECTION



level?	yes
obstructions?	NONE
damaged?	NONE
$-10° < \alpha_1 < +10°$	1°
$-10° < \alpha_2 < +10°$	1°
$-5° < B1 < +5°$	0°
$-5° < B2 < +5°$	0°
γ	1°
θ	0
A	.925
$1.05\ D_t < P_a < 1.5\ D_t$	.464
$1.05\ D_t < P_b < 1.5\ D_t$	.461
$3/16" < D_t < 3/8"$	.250
$A \tan \gamma < 0.125"$	.015
$A \tan \theta < 0.03125"$	0
$P_a = P_b \pm 0.063"$	yes .003

See 40 CFR 60, Vol. 42 No. 160 EPA Method 2. Verify the minimum 2-inch setback of the thermocouple and the minimum 3/4-inch separation between the pitot tube and the nozzle as shown at the top of this page.

Comments: NEW Pitots

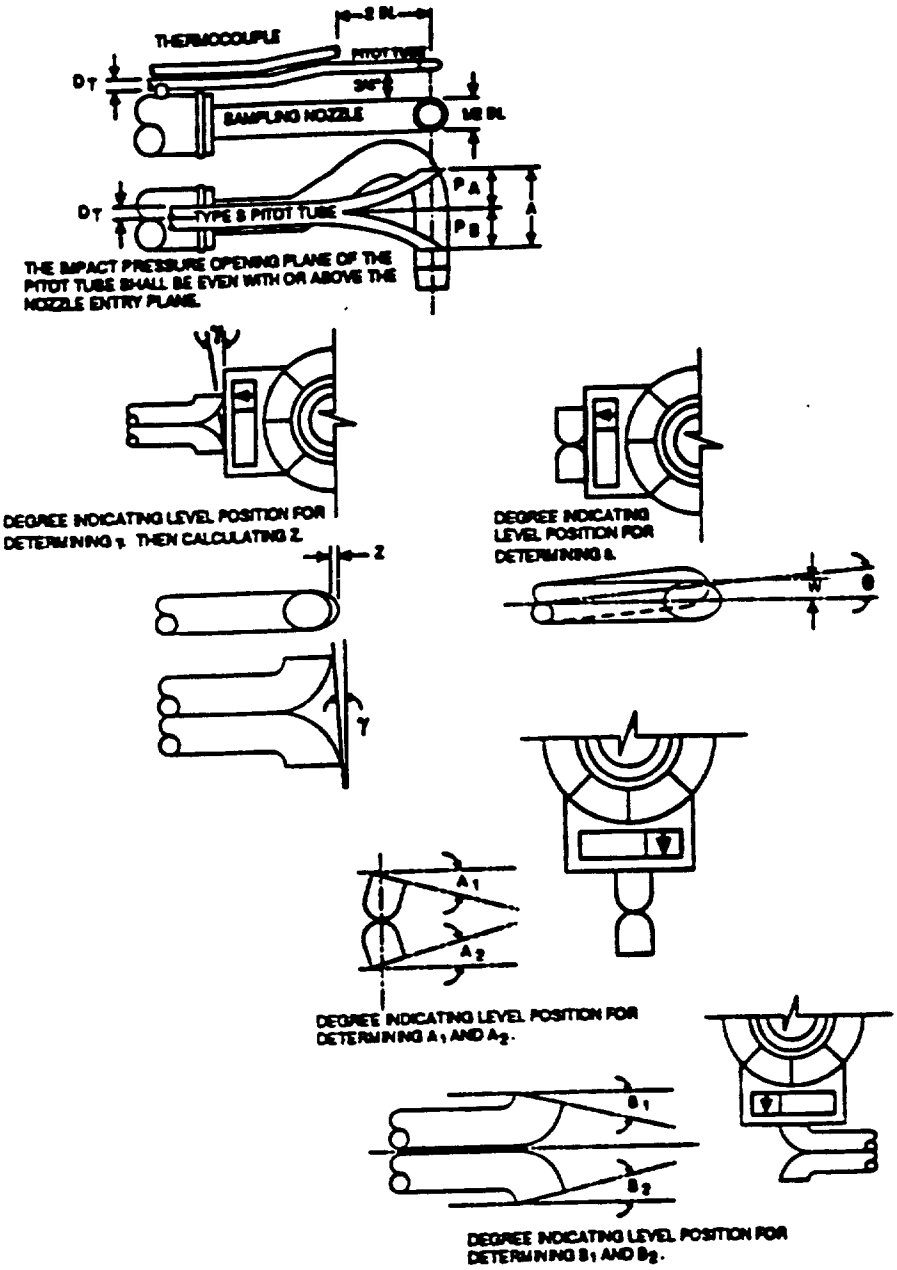
I certify that pitot tube/probe number W.C. 10-2 meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube calibration factor of 0.84.

Signature [illegible]

Date 10-23-91

R-0028 rev. 3/90

PITOT TUBE INSPECTION WC12-1



level?	Yes
obstructions?	NONE
damaged?	NONE
$-10° < \alpha_1 < +10°$	0
$-10° < \alpha_2 < +10°$	0
$-5° < B1 < +5°$	0
$-5° < B2 < +5°$	0
γ	1°
θ	0
A	.6116
$1.05\ D_t < P_a < 1.5\ D_t$	= .322
$1.05\ D_t < P_b < 1.5\ D_t$	.294
$3/16" < D_t < 3/8"$	.250
$A \tan \gamma < 0.125"$	.010
$A \tan \theta < 0.03125"$	0
$P_a = P_b \pm 0.063"$	Yes .028

See 40 CFR 60, Vol. 42 No. 160 EPA Method 2. Verify the minimum 2-inch setback of the thermocouple and the minimum 3/4-inch separation between the pitot tube and the nozzle as shown at the top of this page.

Comments: Inconel 1/4" O.D. on water cooled 12'

I certify that pitot tube/probe number WC 12-1 meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube calibration factor of 0.84.

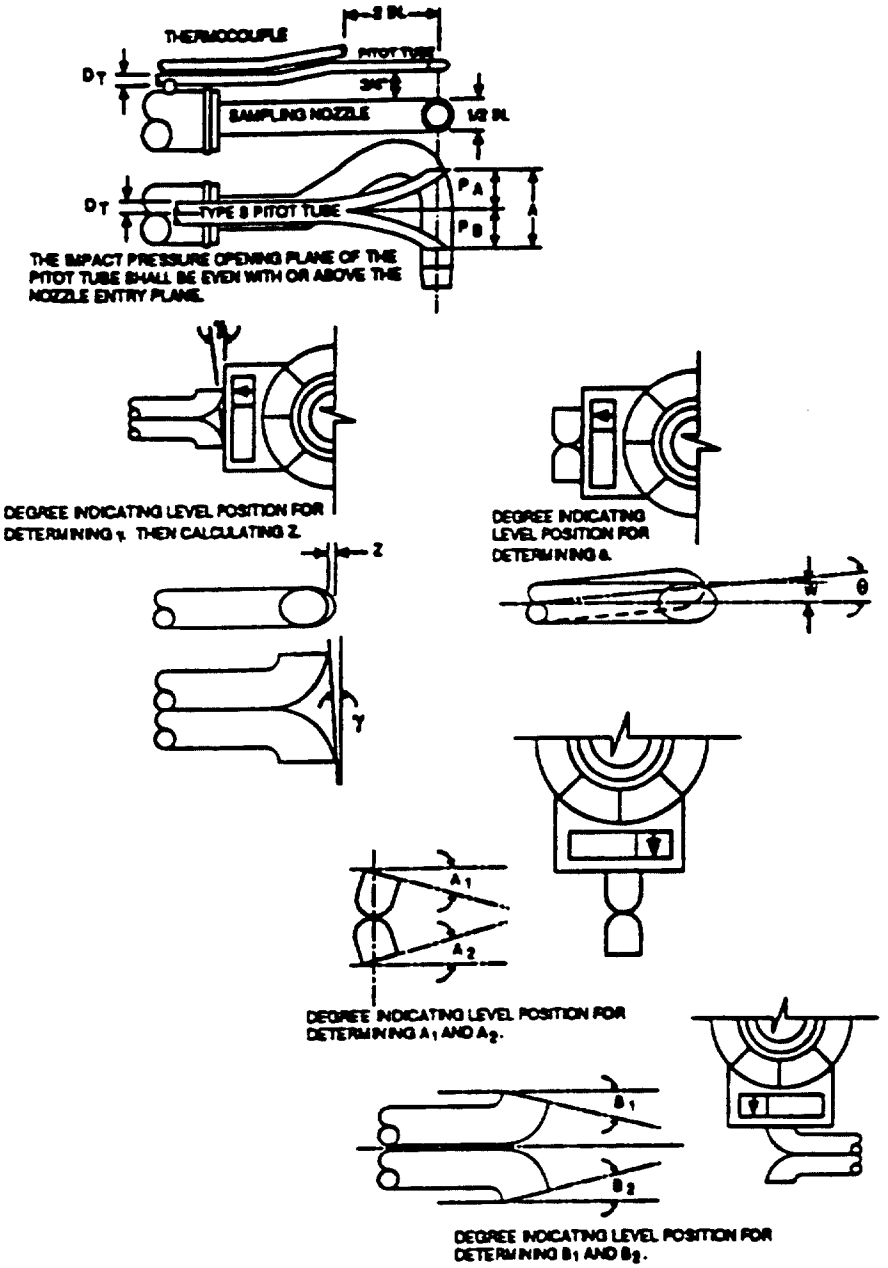
Signature [signature]

Date 9-20-91

R-0028 rev. 3/90

ENTROPY

PITOT TUBE INSPECTION WC12-2



level?	Yes
obstructions?	NONE
damaged?	NONE
$-10° < \alpha_1 < +10°$	0
$-10° < \alpha_2 < +10°$	0
$-5° < B1 < +5°$	0
$-5° < B2 < +5°$	0
γ	0
θ	0
A	.645
$1.05\ D_t < P_a < 1.5\ D_t$	.329
$1.05\ D_t < P_b < 1.5\ D_t$	.316
$3/16" < D_t < 3/8"$	.250
$A \tan \gamma < 0.125"$	0
$A \tan \theta < 0.03125"$	0
$P_a = P_b \pm 0.063"$	Yes .013

See 40 CFR 60, Vol. 42 No. 160 EPA Method 2. Verify the minimum 2-inch setback of the thermocouple and the minimum 3/4-inch separation between the pitot tube and the nozzle as shown at the top of this page.

Comments: Inconel 1/4" O.D. on water cooled 12'

I certify that pitot tube/probe number WC 12-2 meets or exceeds all specifications, criteria and/or applicable design features and is hereby assigned a pitot tube calibration factor of 0.84.

Signature [signature]

Date 9-20-91

R-0028 rev. 3/90

ENTROPY

THERMOCOUPLE CALIBRATION

Thermocouple No.: C018

Date: 3/24/90

Calibrated By: TAB

Barometric Pressure, Inches Hg: 29.74

Ambient Temperature, °F: 72.0

Mercury-In-Glass Thermometer I.D. No.: 7121K

Calibration System Used	Potentiometer I.D. Number	Reference Thermometer Temperature T_o °F	Reference Thermometer Temperature T_c °F	Mean Temperature of Hg Column T_m °F	Thermocouple Thermometer Temperature T_t °F	Temperature Diff., % (Allowable: ≤ 1.5 %)
Ice Bath	F24	32.0	31.97	64.0	34.0	-.41
		32.0	31.97	64.0	34.0	-.41
		32.0	31.97	64.0	34.0	-.41
Boiling Water	F24	214.0	215.82	110.0	211.0	.71
		214.0	215.82	110.0	212.0	.56
		214.0	215.82	110.0	212.0	.56
Boiling Oil	F24	388.0	396.88	120.0	387.0	1.15
		388.0	396.88	120.0	387.0	1.15
		388.0	396.88	120.0	388.0	1.04

Corrected Temperature $= T_c = T_o + [(.00009) * (T_o - 20) * (T_o - T_m)]$

$$\text{Temperature Difference} = \frac{[(T_c + 460) - (T_t + 460)]}{(T_c + 460)} * 100$$

THERMOCOUPLE CALIBRATION

Thermocouple No.: C022

Date: 3/31/90

Calibrated By: TAB

Barometric Pressure, Inches Hg: 29.61

Ambient Temperature, °F: 70.0

Mercury-In-Glass Thermometer I.D. No.: 7121K

Calibration System Used	Potentiometer I.D. Number	Reference Thermometer Temperature T_o °F	Reference Thermometer Temperature T_c °F	Mean Temperature of Hg Column T_m °F	Thermocouple Thermometer Temperature T_t °F	Temperature Diff., % (Allowable: ≤ 1.5 %)
Ice Bath	5	32.0	31.97	64.0	32.0	-.01
		32.0	31.97	64.0	33.0	-.21
		32.0	31.97	64.0	31.0	.20
Boiling Water	5	212.0	213.76	110.0	211.0	.41
		212.0	213.76	110.0	211.0	.41
		212.0	213.76	110.0	211.0	.41
Boiling Oil	5	388.0	396.88	120.0	386.0	1.27
		388.0	396.88	120.0	386.0	1.27
		388.0	396.88	120.0	387.0	1.15

Corrected Temperature $= T_c = T_o + [(.00009) * (T_o - 20) * (T_o - T_m)]$

$$\text{Temperature Difference} = \frac{[(T_c + 460) - (T_t + 460)]}{(T_c + 460)} * 100$$

THERMOCOUPLE CALIBRATION

Thermocouple No.: F026

Date: 4/16/90

Calibrated By: CCB

Barometric Pressure, Inches Hg: 29.58

Ambient Temperature, °F: 71.0

Mercury-In-Glass Thermometer I.D. No.: 7121K

Calibration System Used	Potentiometer I.D. Number	Reference Thermometer Temperature T_o °F	Reference Thermometer Temperature T_c °F	Mean Temperature of Hg Column T_m °F	Thermocouple Thermometer Temperature T_t °F	Temperature Diff., % (Allowable: ≤ 1.5 %)
Ice Bath	F28	32.0	31.97	64.0	32.6	-.13
		32.0	31.97	64.0	32.6	-.13
		32.0	31.97	64.0	32.4	-.09
Boiling Water	F28	214.0	215.82	110.0	211.4	.65
		214.0	215.82	110.0	211.2	.68
		214.0	215.82	110.0	211.2	.68
Boiling Oil	F28	388.0	396.88	120.0	386.2	1.25
		388.0	396.88	120.0	386.2	1.25
		388.0	396.88	120.0	386.0	1.27

$$\text{Corrected Temperature} = T_c = T_o + [(.00009) * (T_o - 20) * (T_o - T_m)]$$

$$\text{Temperature Difference} = \frac{[(T_c + 460) - (T_t + 460)]}{(T_c + 460)} * 100$$

THERMOCOUPLE CALIBRATION

Thermocouple No.: F057

Date: 12/05/90

Calibrated By: RDS

Barometric Pressure, Inches Hg: 29.71

Ambient Temperature, °F: 73.0

Mercury-In-Glass Thermometer I.D. No.: 7121K

Calibration System Used	Potentiometer I.D. Number	Reference Thermometer Temperature T_o °F	Reference Thermometer Temperature T_c °F	Mean Temperature of Hg Column T_m °F	Thermocouple Thermometer Temperature T_t °F	Temperature Diff., % (Allowable: ≤ 1.5 %)
Ice Bath	F43	32.0	31.96	72.0	32.6	-.13
		32.0	31.96	72.0	31.8	.03
		32.0	31.96	72.0	32.2	-.05
Boiling Water	F43	215.0	216.81	112.0	211.2	.83
		215.0	216.88	108.0	211.0	.87
		215.0	216.84	110.0	211.0	.86
Boiling Oil	F43	390.0	400.16	85.0	388.6	1.34
		390.0	400.16	85.0	388.5	1.36
		390.0	400.19	84.0	388.4	1.37

Corrected Temperature $= T_c = T_o + [(.00009) * (T_o - 20) * (T_o - T_m)]$

$$\text{Temperature Difference} = \frac{[(T_c + 460) - (T_t + 460)]}{(T_c + 460)} * 100$$

NONISOKINETIC METERBOX CALIBRATION

PRETEST ✓ POSTTEST ____

Meterbox No. V 8 Calibrated By WLS Date 10-25-91

Rockwell Dry Gas Meter			Singer Dry Gas Meter		
MR_I (cf)	MR_F (cf)	ΔP_M* (In. H_2O)	MR_I (l)	MR_F (l)	DGM (In. WC)
		.6	5593.32	5610.08	~~.6~~ .5
		.8	5611.67	5628.62	.7
		1.6	5629.60	5646.64	1.2

* ΔP_M must be ≤ 2.0 inches of H_2O for Rockwell DGM and ≤ 3.0 for Singer DGM.

Flow Rate (lpm)*	Pbar (In. Hg)	t_{SPR} (°F)	P_{H2O} (In. Hg)	t_M (°F)	V_{SPR} (cf)	Y
.5	29.78	76	.90	77	.615	1.0085
1.0	29.78	76	.90	77	.610	.9886
2.0	29.78	77	.93	77	.610	.9794
					Average Y	.9921

* Spirometer

Prior Test Y 1.0077 Date 10-7-91 % Dev. 1.5 Allowed Dev.: ±5%

MR_I = Initial Dry Gas Meter Reading
MR_F = Final Dry Gas Meter Reading
t_{SPR} = Temperature of Gas in Spirometer
P_{H2O} = Vapor Pressure of H_2O at T_{SPR}
t_M = Dry Gas Meter Temperature

DGM_{WC} = Dry Gas Meter Pressure, In. WC
ΔP_M = Reading from Manometer at DGM Inlet
V_{SPR} = Volume Displaced Within Spirometer
Pbar = Barometric Pressure
Y = Dry Gas Meter Coefficient (Gamma)

For Dry Gas Meter Reading in Cubic Feet per Hour (cfh) (i.e., $DGM_{WC} = 0$):

$$Y = \left[\frac{V_{SPR}}{MR_F - MR_I}\right]\left[1 - \frac{P_{H2O}}{Pbar + \frac{\Delta P_M}{13.6}}\right]\left[\frac{T_M + 460}{T_{SPR} + 460}\right]$$

For Dry Gas Meter Reading in Liters per Minute (lpm):

$$Y = \left[\frac{V_{SPR}}{MR_F - MR_I}\right]\left[1 - \frac{P_{H2O}}{Pbar + \frac{\Delta P_M}{13.6}}\right]\left[\frac{T_M + 460}{T_{SPR} + 460}\right]\left[\frac{Pbar}{Pbar + \frac{DGM_{WC}}{13.6}}\right]$$

R-0008 rev. 3-90

ENTROPY

NONISOKINETIC METERBOX CALIBRATION

PRETEST ___ POSTTEST ✓

Meterbox No. V-8 Calibrated By JPW Date 11-4-91

Rockwell Dry Gas Meter			Singer Dry Gas Meter		
MR_I (cf)	MR_F (cf)	ΔP_M* (In. H_2O)	MR_I (l)	MR_F (l)	DGM (In. WC)
		1.2	6085.91	6102.43	1.7
		.7	6102.75	6119.68	1.0
		.5	6120.36	6137.00	.7

* ΔP_M must be ≤ 2.0 inches of H_2O for Rockwell DGM and ≤ 3.0 for Singer DGM.

Flow Rate (lpm)*	Pbar (In. Hg)	t_{SPR} (°F)	P_{H2O} (In. Hg)	t_M (°F)	V_{SPR} (cf)	Y
2.0	29.71	74	.85	72	.61	1.0079
1.0	29.71	73	.82	72	.61	.9880
0.5	29.71	73	.82	72	.61	1.0059
					Average Y	1.0006

* Spirometer

Prior Test Y .9921 Date 10-25-91 % Dev. 0.9 Allowed Dev.: ±5%

MR_I = Initial Dry Gas Meter Reading
MR_F = Final Dry Gas Meter Reading
t_{SPR} = Temperature of Gas in Spirometer
P_{H2O} = Vapor Pressure of H_2O at T_{SPR}
t_M = Dry Gas Meter Temperature

DGM_{WC} = Dry Gas Meter Pressure, In. WC
ΔP_M = Reading from Manometer at DGM Inlet
V_{SPR} = Volume Displaced Within Spirometer
Pbar = Barometric Pressure
Y = Dry Gas Meter Coefficient (Gamma)

For Dry Gas Meter Reading in Cubic Feet per Hour (cfh) (i.e., $DGM_{WC} = 0$):

$$Y = \left[\frac{V_{SPR}}{MR_F - MR_I}\right]\left[1 - \frac{P_{H2O}}{Pbar + \frac{\Delta P_M}{13.6}}\right]\left[\frac{T_M + 460}{T_{SPR} + 460}\right]$$

For Dry Gas Meter Reading in Liters per Minute (lpm):

$$Y = \left[\frac{V_{SPR}}{MR_F - MR_I}\right]\left[1 - \frac{P_{H2O}}{Pbar + \frac{\Delta P_M}{13.6}}\right]\left[\frac{T_M + 460}{T_{SPR} + 460}\right]\left[\frac{Pbar}{Pbar + \frac{DGM_{WC}}{13.6}}\right]$$

R-0008 rev. 3-90

ENTROPY

NONISOKINETIC METERBOX CALIBRATION

PRETEST ✓ POSTTEST ___

Meterbox No. V-5 Calibrated By JPW/WLS Date 10-25-91

Rockwell Dry Gas Meter			Singer Dry Gas Meter		
MR_I (cf)	MR_F (cf)	ΔP_M* (In. H_2O)	MR_I (l)	MR_F (l)	DGM (In. WC)
		1.4	1513.98	1531.28	1.2
		1.0	1531.60	1548.72	.9
		.6	1549.12	1566.24	.5

* ΔP_M must be ≤ 2.0 inches of H_2O for Rockwell DGM and ≤ 3.0 for Singer DGM.

Flow Rate (lpm)*	Pbar (In. Hg)	t_{SPR} (°F)	P_{H2O} (In. Hg)	t_M (°F)	V_{SPR} (cf)	Y
2.0	29.78	77	~~29.79~~ .93	77	.61	.9647
1.0	29.78	77	.93	77	.61	.9755
.5	29.78	77	.93	77	.61	.9764
					Average Y	.9722

* Spirometer

Prior Test Y .9741 Date 10-14-91 % Dev. 0.2 Allowed Dev.: ±5%

MR_I = Initial Dry Gas Meter Reading
MR_F = Final Dry Gas Meter Reading
t_{SPR} = Temperature of Gas in Spirometer
P_{H2O} = Vapor Pressure of H_2O at T_{SPR}
t_M = Dry Gas Meter Temperature

DGM_{WC} = Dry Gas Meter Pressure, In. WC
ΔP_M = Reading from Manometer at DGM Inlet
V_{SPR} = Volume Displaced Within Spirometer
Pbar = Barometric Pressure
Y = Dry Gas Meter Coefficient (Gamma)

For Dry Gas Meter Reading in Cubic Feet per Hour (cfh) (i.e., $DGM_{WC} = 0$):

$$Y = \left[\frac{V_{SPR}}{MR_F - MR_I}\right]\left[1 - \frac{P_{H2O}}{Pbar + \frac{\Delta P_M}{13.6}}\right]\left[\frac{T_M + 460}{T_{SPR} + 460}\right]$$

For Dry Gas Meter Reading in Liters per Minute (lpm):

$$Y = \left[\frac{V_{SPR}}{MR_F - MR_I}\right]\left[1 - \frac{P_{H2O}}{Pbar + \frac{\Delta P_M}{13.6}}\right]\left[\frac{T_M + 460}{T_{SPR} + 460}\right]\left[\frac{Pbar}{Pbar + \frac{DGM_{WC}}{13.6}}\right]$$

R-0008 rev. 3-90

ENTROPY

NONISOKINETIC METERBOX CALIBRATION

PRETEST ____ POSTTEST ✓

Meterbox No. U-5 Calibrated By JPW/SWS Date 11-4-91

Rockwell Dry Gas Meter			Singer Dry Gas Meter		
MR_I (cf)	MR_F (cf)	ΔP_M* (In. H_2O)	MR_I (l)	MR_F (l)	DGM (In. WC)
		.8	2168.20	2185.44	.8
		.9	2221.93	2239.12	1.0
		1.2	2204.79	2221.91	1.4

* ΔP_M must be ≤ 2.0 inches of H_2O for Rockwell DGM and ≤ 3.0 for Singer DGM.

Flow Rate (lpm)*	Pbar (In. Hg)	t_{SPR} (°F)	P_{H2O} (In. Hg)	t_M (°F)	V_{SPR} (cf)	Y
0.5	29.76	70	.74	69	.61	.9734
1.0	29.76	7	.76	70	.61	.9751
2.0	29.76	70	.74	69	.61	.9788
					Average Y	.9758

* Spirometer

Prior Test Y .9722 Date 10-25-91 % Dev. 0.4 Allowed Dev.: ±5%

MR_I = Initial Dry Gas Meter Reading
MR_F = Final Dry Gas Meter Reading
t_{SPR} = Temperature of Gas in Spirometer
P_{H2O} = Vapor Pressure of H_2O at T_{SPR}
t_M = Dry Gas Meter Temperature

DGM_{WC} = Dry Gas Meter Pressure, In. WC
ΔP_M = Reading from Manometer at DGM Inlet
V_{SPR} = Volume Displaced Within Spirometer
Pbar = Barometric Pressure
Y = Dry Gas Meter Coefficient (Gamma)

For Dry Gas Meter Reading in Cubic Feet per Hour (cfh) (i.e., $DGM_{WC} = 0$):

$$Y = \left[\frac{V_{SPR}}{MR_F - MR_I}\right]\left[1 - \frac{P_{H2O}}{Pbar + \frac{\Delta P_M}{13.6}}\right]\left[\frac{T_M + 460}{T_{SPR} + 460}\right]$$

For Dry Gas Meter Reading in Liters per Minute (lpm):

$$Y = \left[\frac{V_{SPR}}{MR_F - MR_I}\right]\left[1 - \frac{P_{H2O}}{Pbar + \frac{\Delta P_M}{13.6}}\right]\left[\frac{T_M + 460}{T_{SPR} + 460}\right]\left[\frac{Pbar}{Pbar + \frac{DGM_{WC}}{13.6}}\right]$$

Sample and Analyses Logs

FIELD TEST LOG

Plant Name Jewell Coal & Coke Co. Job No. 3694

Sampling Location Stack 1

Start	Stop	Comments/Problems*	Run No. II-1-S1-M5/TS0202 APMR
2210	0010	port change	Date 10-28-91
0100	0300	End Test	
		M5/TS0202	
		was not simultaneous will Archive	

Sampling Team Initials CM (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___YES ___NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. I-1-S1-M5/TS0/202
1741	1841	change ports / leak ✓	Date 10/29/91
1909	2009	finish run / leak ✓	
			✓
		leak check @ 11" .002 thru the probe - not incl. no	

Sampling Team Initials _____ (Team Leader) ECS, LCM (Others)

Posttest Leak Rate .002 Sample Appearance _____

Good Run (check)? ✓ YES ___NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. II-1-S1-M5/TS0/20
2157	2412	change Ports	Date 10/29-30/91
0108	0323	problems with water temp	
		good Run	

Sampling Team Initials CGM LCM (Team Leader) _____ (Others)

Posttest Leak Rate .002 Sample Appearance _____

Good Run (check)? ✓ YES ___NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

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ENTROPY

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FIELD TEST LOG

Plant Name Jewell Coal & Coke Job No. 3694

Sampling Location Stack #1

Start	Stop	Comments/Problems*
555	731	port change AK ✓
810	948	Good run

Run No. III-1-S1-MS/MT.

Date 10-30-91

Sampling Team Initials CGM (Team Leader) _____ (Others)

Posttest Leak Rate .001 JMC Sample Appearance _____

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*
1200	1312	Port change
1344	1456	Good run
		Forest fires in area causing hazy vision

Run No. IV-1-S1-MS/TSO/202-1

Date 10/30/91

Sampling Team Initials JMC (Team Leader) _____ (Others)

Posttest Leak Rate .001 Sample Appearance _____

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*
1752	1752 33sec	STOP TEST / EPA instructions
1753	1853	STOP (PORT change)
1910	2010	

Run No. I-2-S1-MS/TSO/20

Date 10-30-91

Sampling Team Initials ECS (Team Leader) LCM (Others)

Posttest Leak Rate .012 Sample Appearance _____

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

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ENTROPY

FIELD TEST LOG

Plant Name Jewell Coal & Coke Job No. 3694

Sampling Location Stack 1

Start	Stop	Comments/Problems*	Run No. IV-3-St-MS/202-3
1030	1230	Port change	Date 11/1/97
1240	1440	Good run	

Sampling Team Initials JMC (Team Leader) _____ (Others)

Posttest Leak Rate .002 Sample Appearance _____

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No.
			Date

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No.
			Date

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

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ENTROPY

FIELD TEST LOG

Plant Name Jewell COAL + COKE Job No. 3694

Sampling Location STACK 1

Start	Stop	Comments/Problems*	Run No. II-2-S1-202-
2202	0017	Port change Leak ck GOOD!	Date 10-30-91
0050	0305		
		good Run	

Sampling Team Initials ECS (Team Leader) LCM (Others)

Posttest Leak Rate .010 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. III-2-S1-202-2
0505	0705	port change & Lk ✓	Date 10-31-91
0723	0923	Good run	

Sampling Team Initials CGM (Team Leader) (Others)

Posttest Leak Rate .001 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. IV-2-S1-202-2
1100	1236	Port change - Leak check	Date 10/31/91
1252	1428	Good run	

Sampling Team Initials JMK (Team Leader) SRD (Others)

Posttest Leak Rate .001 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

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ENTROPY

FIELD TEST LOG

Plant Name Jewell Coal & Coke Co. Job No. 3694

Sampling Location Stack #1

Start	Stop	Comments/Problems*	Run No. I-3-S1-M5/202-3
1719	1819	Port change Leak check Good	Date 10/31/91
1832	1932	finish test leak ✓ Good	
		Radio Squelch Button broke when we arrived	
		Broken ORSAT BAG had to replace	

Sampling Team Initials ECS (Team Leader) LCM (Others)

Posttest Leak Rate .001 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. II-3-S1-M5/T50/2
2205	2420	change ports / leak ✓ Good	Date 10/31/91
2434	2649	NO PROBLEMS	

Sampling Team Initials ECS (Team Leader) DLS, CGM, LCM (Others)

Posttest Leak Rate .002 Sample Appearance LCM

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. III-3-S1-M5/T50/202-3
0421	0645	CHANGE PORTS GOOD LEAK ✓	Date 11/1/91
0655	0919	Good run	

Sampling Team Initials DLS (Team Leader) CGM (Others)

Posttest Leak Rate .001 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

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ENTROPY

FIELD TEST LOG

Plant Name Newell Coal + Coke Job No. 3694

Sampling Location Stack #1

Start	Stop	Comments/Problems*	Run No. AFWR II-1-S1-MMT
2210	0010	change ports / leak ✓	Date 10-28,29-91
0100	0300	AT 0100 DLS ~~[illegible]~~ SWITCHED W/ RWM FOR THE	
		REMAINDER OF THE RUN	
		No PROBLEMS	
		NOT Simultaneous, Archive	

Sampling Team Initials RWM, DLS (Team Leader) RWM, LCM, DLS, CGM (Others)

Posttest Leak Rate .000 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. I-1-S1-MMTL-
1741	1841	change ports / leak ✓	Date 10-29-91
1909	2009	Finish test / leak ✓ Good	
		Good Run - No problems	

Sampling Team Initials RWM (Team Leader) LCM (Others)

Posttest Leak Rate .006 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. II-1-S1-MMTL-
2157	2412	change ports / lk ✓	Date 10-29,30-91
(2308) 0108	0323 (2723)	- at 2350 there was a "green push"	
		DLS SWITCHED W/ RWM AT 0108 FOR THE REMAINDER	
		OF THE RUN. No PROBLEMS FINAL LEAK ✓ WAS	
		CHECKED 5" UNABLE TO GO AS LOW AS 3"	

Sampling Team Initials RWM, DLS (Team Leader) RWM, LCM (Others)

Posttest Leak Rate .003 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

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ENTROPY

FIELD TEST LOG

Plant Name JEWELL COAL & COKE Job No. 3694

Sampling Location UNIT 1 STACK

Start	Stop	Comments/Problems*	Run No. III-1-S1-MMTL-1
0555	0731	PORT CHANGE, GOOD LEAK ✓	Date 10/30/91
0810	0948	END RUN	

Sampling Team Initials DWS, SRD (Team Leader) CGM (Others)

Posttest Leak Rate .001 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. IV-1-S1-MMTL-1
1200	1312	PORT CHANGE	Date 10/30/91
1344	1456	END RUN	
		FOREST FIRES IN AREA - HAZY CONDITIONS	

Sampling Team Initials SRD (Team Leader) JMC (Others)

Posttest Leak Rate .001 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. I-2-S1-MMTL-
1752	1752'38"	stop testing / EPA instructions	Date 10-30-91
1755	1840	VACUUM @ 20" - "ABORT" as per Helen Yoest 46'20"	
		- lost probe heat - moisture condensed in	
		probe	
		NO GOOD	

Sampling Team Initials RWN (Team Leader) LCM (Others)

Posttest Leak Rate ___ Sample Appearance

Good Run (check)? ___ YES ✓ NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

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ENTROPY

FIELD TEST LOG

Plant Name Jewell Coal + Coke Co Job No. 3694

Sampling Location Stack #1

RADIO squelch was broken + partially melted when we got to location

Start	Stop	Comments/Problems*	Run No. I-3-S1-MMT1
1719	1819	change parts / leak ✓ good	Date 10/31/91
1832	1932	Finish test / lk ✓ good	
		Good run – no problems	

Sampling Team Initials RWM (Team Leader) LCM (Others)

Posttest Leak Rate .003 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No.
			Date

Sampling Team Initials ___ (Team Leader) ___ (Others)

Posttest Leak Rate ___ Sample Appearance

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No.
			Date

Sampling Team Initials ___ (Team Leader) ___ (Others)

Posttest Leak Rate ___ Sample Appearance

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

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ENTROPY

FIELD TEST LOG

Plant Name Jewell Coal & Coke Co. Job No. 3694

Sampling Location Stack #1

Start	Stop	Comments/Problems*	Run No. II-2-S1-MMTL-1
2207	2417	change ports / leak ✓	Date 10/30,31/91
0050	0205	sucked "U" down - got .055 leak	
		pulled "U" up tighten cap - .015	
		No Problems	

Sampling Team Initials RWM (Team Leader) LCM, DLS, CGM (Others)

Posttest Leak Rate .008 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. III-2-S1-MMTL-2
0505	0705	PORT CHANGE, GOOD LEAK ✓	Date 10/31/91
0723	0923	END RUN	

Sampling Team Initials SRD (Team Leader) CGM, JMC (Others)

Posttest Leak Rate .001 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. IV-2-S1-MMTL-2
1100	1236	PORT CHANGE	Date 10/31/91
1252	1428	END RUN	

Sampling Team Initials SRD (Team Leader) JMC (Others)

Posttest Leak Rate .001 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

F-0006 rev. 9-90

ENTROPY

FIELD TEST LOG

Plant Name Jewell Coal + Coke Job No. 3676

Sampling Location Battery C Stack #2

Start	Stop	Comments/Problems*	Run No. III-3-52-MM5-3B
0500	0900	End of Run No Prob.	Date 11-1-91

Sampling Team Initials KBB (Team Leader) LBJ, WEM (Others)

Posttest Leak Rate 0.001 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No. IV-3-52-MM5-3B
1025	1113	Water In Filter Box Low Box Heat	Date 11-1-91
~~1132~~	~~1132~~	Train was Hit by rail. Did a leak check to assure train	
		was still intact.	
1132	1532	END of RUN	

Sampling Team Initials KBB (Team Leader) WEM LBJ (Others)

Posttest Leak Rate 0.004 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*	Run No.
			Date

Sampling Team Initials ___ (Team Leader) ___ (Others)

Posttest Leak Rate ___ Sample Appearance

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

F-0006 rev. 9-90

ENTROPY

FIELD TEST LOG (USE REVERSE SIDE ALSO)

Plant Name Jewell Coke & Coke Job No. 3637

Sampling Location Battery "C" Stack #2

Start	Stop	Comments/Problems
0515	0915	

Run No. III-2-52-MMS-2B

Date 10-31-91

Sampling Team Initials UTL (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___YES ___NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems
1035	1345	END OF RUN

Run No. IV-2-52-MMS-2B

Date 10-31-91

Sampling Team Initials KBB (Team Leader) _____ (Others)

Posttest Leak Rate 0.002 Sample Appearance _____

Good Run (check)? ✓ YES ___NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems

Run No. _____

Date _____

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___YES ___NO (if NO, explain in "Comments/Problems")

FIELD TEST LOG (USE REVERSE SIDE ALSO)

Plant Name Jewell Coal + coke Job No. 3676

Sampling Location Battery C Stack 2

Start	Stop	Comments/Problems
0815		

Run No. III-2-S2-MAS-2

Date 10-31-91

Sampling Team Initials KBK (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___YES ___NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems
0515	915	No Problems

Run No. III-2-S2-MAS-2A

Date 10-31-91

Sampling Team Initials WEM (Team Leader) WTL (Others)

Posttest Leak Rate .001 @ 5" Sample Appearance clear

Good Run (check)? ✓ YES ___NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems
1035	1345	No Problems

Run No. W-2-S2-MAS-2A

Date 10-31-91

Sampling Team Initials WEM (Team Leader) WTL (Others)

Posttest Leak Rate @ .001 Sample Appearance clear

Good Run (check)? ✓ YES ___NO (if NO, explain in "Comments/Problems")

F-0006 rev. 10-91

ENTROPY

FIELD TEST LOG

Plant Name Jewell Coal + Coke Job No. 3676

Sampling Location "C" Battery Stack "2"

Start	Stop	Comments/Problems*
17:15	20:15	
		1 ft³ / m 12.13
		Both probes broke

Run No. I-3-52 mins-3

Date Halloween 91

Sampling Team Initials MLH (Team Leader) JDK-"B" train HWL (Others)

Posttest Leak Rate Undetectable Sample Appearance

Good Run (check)? ___YES X NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*

Run No. Halloween 91

Date II-3-52 mins-3

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___YES ___NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems*

Run No. _____

Date _____

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___YES ___NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

F-0006 rev. 9-90

ENTROPY

FIELD TEST LOG (USE REVERSE SIDE ALSO)

Plant Name JEWELL COAL AND COKE Job No. 3676

Sampling Location STACK #2

Run No. I-3-S2-MM5-3L

Start	Stop	Comments/Problems
1715	2015	END OF TEST - FAILED POST
		TEST LEAK CHECK. PROBES BROKE DUE
		TO FLEXING OF WATER COOLED PROBE

Date 10-31-91

Sampling Team Initials JDK (Team Leader) MLH, HWL (Others)

Posttest Leak Rate 6 ft³/min Sample Appearance NA

Good Run (check)? ___YES ✓ NO (if NO, explain in "Comments/Problems")

Run No. II-3-S2-MM5-3B

Start	Stop	Comments/Problems
2300	0300	END OF RUN. FAILED POST TEST
		LEAK CHECK WITH 0.06. AFTER TIGHTENING
		CAPS ON FILTER, A 0.005 WAS OBTAINED.
		NOT KNOWN IS WHY OR WHEN THE FILTER
		CAPS LOOSENED.

Date 10-31-91/11-1-91

Sampling Team Initials JDK (Team Leader) MLH, HWL (Others)

Posttest Leak Rate 0.06 (0.005) Sample Appearance NA

Good Run (check)? ___YES ✓ NO (if NO, explain in "Comments/Problems")

Run No. _____

Start	Stop	Comments/Problems

Date _____

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___YES ___NO (if NO, explain in "Comments/Problems")

F-0006 rev. 10-91

ENTROPY

FIELD TEST LOG (USE REVERSE SIDE ALSO)

Plant Name Jewell Coal & Coke Job No. 3676

Sampling Location "C" Battery Stack #2

Run No. I-1-S2-MM5-1A

Date 10/29/91

Start	Stop	Comments/Problems
17:20	20:20	redoing 10/28/91 fresh start
		Used Nozzle size .501 in computer / really .500
		Blew up orsat bag

Sampling Team Initials MLH (Team Leader) HWL (Others)

Posttest Leak Rate .004 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Run No. II-1-S2-MM5-1A

Date 10-30-91

Start	Stop	Comments/Problems
2212	0054	Stack 1 Problems
0118	0326	END of RUN
		WATER WAS 180°F entering the
		probe.

Sampling Team Initials KBB (Team Leader) MLH, JDK, WEM (Others)

Posttest Leak Rate 0.005 Sample Appearance

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

Run No. III-1-S2-MM5-1A

Date 10-30-91

Start	Stop	Comments/Problems
0623	0937	Good run

Sampling Team Initials KBB (Team Leader) WEM (Others)

Posttest Leak Rate .000 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

F-0006 rev. 10-91

ENTROPY

FIELD TEST LOG (USE REVERSE SIDE ALSO)

Plant Name Jewel Coke & Coke Job No. 3676

Sampling Location Stack #2

Run No. F-1-S2-MM5-1

Date 10-29/30-91

Start	Stop	Comments/Problems
2212	326	END OF RUN LEAK CHECK WAS
		WIDE OPEN. H_2O IN PROBE
		*GREEN PUSH @ ~ 2300 10-29-91

Sampling Team Initials WEM (Team Leader) KBB (Others)

Posttest Leak Rate @ Sample Appearance

Good Run (check)? ___YES ✓ NO (if NO, explain in "Comments/Problems")

Run No.

Date

Start	Stop	Comments/Problems

Sampling Team Initials ____ (Team Leader) ____ (Others)

Posttest Leak Rate ____ Sample Appearance

Good Run (check)? ___YES ___NO (if NO, explain in "Comments/Problems")

Run No.

Date

Start	Stop	Comments/Problems

Sampling Team Initials ____ (Team Leader) ____ (Others)

Posttest Leak Rate ____ Sample Appearance

Good Run (check)? ___YES ___NO (if NO, explain in "Comments/Problems")

F-0006 rev. 10-91

ENTROPY

FIELD TEST LOG (USE REVERSE SIDE ALSO)

Plant Name Jewell Coal and Coke Job No. 3628

Sampling Location Battery "C" stack #2

Run No. IV-1-S2-MM5-1A

Date 10-30-91

Start	Stop	Comments/Problems
1315	1627	Very Hazy from forest fires
		orsat bad

Sampling Team Initials MTL? (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___YES ___NO (if NO, explain in "Comments/Problems")

Run No. I-2-S2-MM5-2A

Date 10-30-91

Start	Stop	Comments/Problems
~~23:00~~	~~03:00~~	hand squeeze orsat
18:21	20:45	"B" train did not run (no probe heat)

Sampling Team Initials MLH (Team Leader) Hal Lee JDK (Others)

Posttest Leak Rate .008 Sample Appearance _____

Good Run (check)? ✓YES ___NO (if NO, explain in "Comments/Problems")

Run No. II-2-S2-MM5-2A

Date 10-30-91

Start	Stop	Comments/Problems
23:00	:0320	
		Hand Squeeze orsat

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Sampling Team Initials MLH (Team Leader) _____ (Others)

Posttest Leak Rate .002 Sample Appearance _____

Good Run (check)? ✓YES ___NO (if NO, explain in "Comments/Problems")

F-0006 rev. 10-91

ENTROPY

144 of ≈ 2½

FIELD TEST LOG (USE REVERSE SIDE ALSO)

Plant Name Jewell Coal and Coke Job No. 3676

Sampling Location Stack #2

Run No. II-2-S2-MM5-G

Date 10-30/31-91

Start	Stop	Comments/Problems
2300	0300	Good Run

Sampling Team Initials JDK (Team Leader) MCH, HWL (Others)

Posttest Leak Rate .0003 Sample Appearance NA

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Run No. _____

Date _____

Start	Stop	Comments/Problems

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

Run No. _____

Date _____

Start	Stop	Comments/Problems

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

FIELD TEST LOG (USE REVERSE SIDE ALSO)

Plant Name JEWELL COAL & COKE COMPANY Job No. 369A

Sampling Location STACK 2

Run No. III-S2-1-MM5-1B / I-2-S2-MM5-2B

Date 10-30-91

Start	Stop	Comments/Problems
623	0937	
		* GREEN RUSH @ 10-30-91

Sampling Team Initials RFH (Team Leader) WTL (Others)

Posttest Leak Rate 0.002 Sample Appearance

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Run No. ___

Date ___

Start	Stop	Comments/Problems

Sampling Team Initials ___ (Team Leader) ___ (Others)

Posttest Leak Rate ___ Sample Appearance ___

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

Run No. ___

Date ___

Start	Stop	Comments/Problems

Sampling Team Initials ___ (Team Leader) ___ (Others)

Posttest Leak Rate ___ Sample Appearance ___

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

F-0006 rev. 10-91

ENTROPY

FIELD TEST LOG (USE REVERSE SIDE ALSO)

Plant Name Jewell Coal and Coke Job No. 3676

Sampling Location Stack #2

Start	Stop	Comments/Problems	Run No. I-1-S2-MM5-12
1720	2020	End of Test, Good Run	Date 10-29-91

Sampling Team Initials ~~BH~~ JDK (Team Leader) HWL, MLH (Others)

Posttest Leak Rate .011 Sample Appearance NA

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems	Run No.
			Date

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems	Run No.
			Date

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

FIELD TEST LOG (USE REVERSE SIDE ALSO)

Plant Name Jewell Coal & Coke Job No. 3676

Sampling Location Stack #2

Start	Stop	Comments/Problems	Run No. II-1-S2-MM5-1B AFUR
2225	0025	Port Change, Nozzle broke on way out;	Date 10-28-91/10-29
		had 78.340 CF. Traversed 1 axis. Sample	
		was archived; Analyzes held until	
		word from EPA	

Sampling Team Initials DK (Team Leader) HWL (Others)

Posttest Leak Rate NA Sample Appearance NA

Good Run (check)? ___YES ___NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems	Run No. II-1-S2-MM5-1A AFUR
2225	0025	Port Change, Good Leak	Date 10-28/29-91
		Check, End Run Due to Problems	
		with Rails	

Sampling Team Initials MLH (Team Leader) HWL (Others)

Posttest Leak Rate .005 Sample Appearance

Good Run (check)? ___YES ___NO (if NO, explain in "Comments/Problems")

Start	Stop	Comments/Problems	Run No.
			Date

Sampling Team Initials ____ (Team Leader) ____ (Others)

Posttest Leak Rate ____ Sample Appearance ____

Good Run (check)? ___YES ___NO (if NO, explain in "Comments/Problems")

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ENTROPY

FIELD TEST LOG

Plant Name Jewell Coal & Coke Job No. 3694

Sampling Location Stack 3

Run No. I-1-53-V-1A 1A-1D

Date 10-29-91

	Start	Stop	Comments/Problems*
1A	1715	1735	.000 Leak ✓ Good Run
1B	1741	1821	.000 " "
1C	1835	1915	.000 " "
1D	1935	1955	.001 " "
			FB

Sampling Team Initials CN (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance good

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Run No. _____

Date _____

Start	Stop	Comments/Problems*

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

Run No. _____

Date _____

Start	Stop	Comments/Problems*

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

* USE REVERSE SIDE IF MORE SPACE REQUIRED.

F-0006 rev. 9-90

ENTROPY

Ed Potts

FIELD TEST LOG (USE REVERSE SIDE ALSO)

Plant Name Jewell Coal & Coke Job No. 3694

Sampling Location Stack 3 VOST III

Cycle 1 Day 1

Cond 3 1C

Start	Stop	Comments/Problems
9:30	10:10	Could be Aborted Due to burned Teflon Line

Run No. _____

Date 10-30-91

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___YES ? ___NO (if NO, explain in "Comments/Problems")

Cond IV 1A

Start	Stop	Comments/Problems
11:30	12:10	Could be Aborted Due to Burned Teflon Line

Run No. _____

Date 10-30-91

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___YES ? ___NO (if NO, explain in "Comments/Problems")

Cond IV 1B

Start	Stop	Comments/Problems
13:02		Aborted
13:42		Heated Teflon Line Burned In To Two Pieces
		Dont Know when Line Burned ?

Run No. _____

Date 10-30-91

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___YES X NO (if NO, explain in "Comments/Problems")

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ENTROPY

FIELD TEST LOG (USE REVERSE SIDE ALSO)

Plant Name Jewell Coal + Coke Job No. 3694

Sampling Location Stack 3 VOST

Cond IV Run No. 1 C

Start	Stop	Comments/Problems
14:51	15:31	

Date 10-30-91

Sampling Team Initials Ed Roths (Team Leader) _____ (Others)

Posttest Leak Rate .01 Sample Appearance _____

Good Run (check)? ✓ YES ___ NO (if NO, explain in "Comments/Problems")

Run No. 14:51 - 15:31

Start	Stop	Comments/Problems
		Field Blank
		First Tubes #3 & #4
		#4 was Broken
		Substituted Tubes 3 & 4

Date 10-30-91

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

Run No. _____

Start	Stop	Comments/Problems

Date _____

Sampling Team Initials _____ (Team Leader) _____ (Others)

Posttest Leak Rate _____ Sample Appearance _____

Good Run (check)? ___ YES ___ NO (if NO, explain in "Comments/Problems")

FIELD LABORATORY LOG

Plant Name/Address JCC Job No. 3694

Test Location Stack 2 Project Mgr./Supvr. H. Yoest

Lab Location EPA trailer Team Leader TRZ

Analysis Equipment OK? (check) ___YES ___NO If "NO", explain under "PROBLEMS"

Problems (equipment, lab site, sampling, etc.)* _____

Run No. III·2·51·MMTL·2 Method MMTL Date of Analysis 10·31·91

Lab Technician(s) TRZ, TCM Time of Analysis 11:30

Good Run? (check) ✓YES ___NO Cleanup/Analysis OK? (check) ✓YES ___NO

If "NO", explain* used 200 ml of KMnO4 for rinse instead of 100 (100 extra ml of DI in HCL rinse)

Run No. III·2·51·MMTL·2 Method MMTL Date of Analysis ~~12:30~~ 15:30

Lab Technician(s) TRZ / RRS Time of Analysis 10·31·91

Good Run? (check) ✓YES ___NO Cleanup/Analysis OK? (check) ✓YES ___NO

If "NO", explain* Filter shows dark gray - different than earlier

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Run No. MMTL·FB Method MMTL Date of Analysis 11·1·91

Lab Technician(s) TRZ, TCM Time of Analysis 12:30

Good Run? (check) ✓YES ___NO Cleanup/Analysis OK? (check) ✓YES ___NO

If "NO", explain* no nitric rinse for 4th impinger

Run No. III·3·51·M5/202·3 Method M5/202 Date of Analysis 11·1·91

Lab Technician(s) TRZ Time of Analysis 4:30 pm

Good Run? (check) ✓YES ___NO Cleanup/Analysis OK? (check) ✓YES ___NO

If "NO", explain* _____

---

*If more space needed, use other side and check here ___.

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ENTROPY

FIELD LABORATORY LOG

Plant Name/Address Jewell Coal and Coke Job No. 3694

Test Location Stack 1 Battery 3C Project Mgr./Supvr. HHY/TTB

Lab Location EPA Van Team Leader _____

Analysis Equipment OK? (check) ___YES ___NO If "NO", explain under "PROBLEMS"

Problems (equipment, lab site, sampling, etc.)* _____

Run No. IV-1-S1-MMH-1 Method MMH Date of Analysis _____

Lab Technician(s) RRS Time of Analysis _____

Good Run? (check) ✓YES ___NO Cleanup/Analysis OK? (check) ✓YES ___NO

If "NO", explain* HCl rinse was ~ 30 ml w/ ~300 ml DI H_2O. Rinsed U-tube from $KMnO_4$ impinger into ~~bitbc~~ CONI.

Run No. I-2-S1-MMH-2 Method MMH Date of Analysis _____

Lab Technician(s) RRS Time of Analysis _____

Good Run? (check) ___YES ✓NO Cleanup/Analysis OK? (check) ___YES ___NO

If "NO", explain* Run aborted due to water in probe

Run No. _____ Method _____ Date of Analysis _____

Lab Technician(s) _____ Time of Analysis _____

Good Run? (check) ___YES ___NO Cleanup/Analysis OK? (check) ___YES ___NO

If "NO", explain* _____

Run No. _____ Method _____ Date of Analysis _____

Lab Technician(s) _____ Time of Analysis _____

Good Run? (check) ___YES ___NO Cleanup/Analysis OK? (check) ___YES ___NO

If "NO", explain* _____

---

*If more space needed, use other side and check here ___.

F-0020 5-91

ENTROPY

FIELD LABORATORY LOG

Plant Name/Address Jewel Coal and Coke, Vansant Job No. 3676/3694

Test Location Stack 1 Project Mgr./Supvr. HHY

Lab Location EPA Lab Team Leader CEO

Analysis Equipment OK? (check) ✓ YES ___ NO If "NO", explain under "PROBLEMS"

Problems (equipment, lab site, sampling, etc.)* _____

Run No. II-1-S1-MMTL-1 (Abort) Method MMTL (M5/202) Date of Analysis 10/29/91

Lab Technician(s) CEO/JTGP Time of Analysis 6:00 am

Good Run? (check) ___ YES ✓ NO Cleanup/Analysis OK? (check) ✓ YES ___ NO

If "NO", explain* Test Equipment failure; Filter from M5/202 heavy; one from MMtl lighter, M5/202 Probe Rinse Contains brownish PM

Run No. I-1-S1-MMtl-1 Method MMtl Date of Analysis 10/30/91

Lab Technician(s) RRS/CEO Time of Analysis 00:30

Good Run? (check) ✓ YES ___ NO Cleanup/Analysis OK? (check) ✓ YES ___ NO

If "NO", explain* PM light gray spots, much lighter than M5/202

Run No. I-1-S1-M5/202-1 Method M5/202/TSO Date of Analysis 10/30/91

Lab Technician(s) RRS/CEO Time of Analysis 00:30

Good Run? (check) ✓ YES ___ NO Cleanup/Analysis OK? (check) ✓ YES ___ NO

If "NO", explain* Purplish heavy PM different than that on MMtl train; some brownish PM in acetone rinse, but lighter than abort r

---

Run No. _____ Method _____ Date of Analysis _____

Lab Technician(s) _____ Time of Analysis _____

Good Run? (check) ___ YES ___ NO Cleanup/Analysis OK? (check) ___ YES ___ NO

If "NO", explain* _____

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*If more space needed, use other side and check here ___.

F-0020 5-91

ENTROPY

FIELD LABORATORY LOG

Plant Name/Address JCC Job No. 3694

Test Location Stack 2 Project Mgr./Supvr. H. Yoest

Lab Location EPA trailer Team Leader TR2

Analysis Equipment OK? (check) ___YES ___NO If "NO", explain under "PROBLEMS"

Problems (equipment, lab site, sampling, etc.)* _____

Run No. ~~III:2:5~~ S1 ~~2~~:M5/202-2 Method M5/202 Date of Analysis 10.31.91

Lab Technician(s) TR2, TCM Time of Analysis 1:00 pm

Good Run? (check) ✓YES ___NO Cleanup/Analysis OK? (check) ✓YES ___NO

If "NO", explain* _____

Run No. ~~IV:2:5~~ S1 ~~2~~:M5/202-2 Method M5/202 Date of Analysis 10.31.91

Lab Technician(s) TR2 / ~~[illegible]~~ JIGP Time of Analysis 3:00 pm

Good Run? (check) ✓YES ___NO Cleanup/Analysis OK? (check) ✓YES ___NO

If "NO", explain* filter shows dark gray — different that earlier runs —

Run No. M5/202-FB Method M5/202 Date of Analysis 11.1.91

Lab Technician(s) TR2/TCM Time of Analysis 1:30 pm

Good Run? (check) ✓YES ___NO Cleanup/Analysis OK? (check) ✓YES ___NO

If "NO", explain* _____

Run No. ~~III:3:5~~ M5/202-3 Method M5/202 Date of Analysis 11.1.91

Lab Technician(s) TR2, TCM Time of Analysis 1:00 pm

Good Run? (check) ✓YES ___NO Cleanup/Analysis OK? (check) ✓YES ___NO

If "NO", explain* _____

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*If more space needed, use other side and check here ___.

F-0020 5-91

ENTROPY

(1)

FIELD LABORATORY LOG

Plant Name/Address Tiswell Coal and Coke Job No. 3676

Test Location Stack #1 Project Mgr./Supvr. HY

Lab Location EPA Trailer Team Leader

Analysis Equipment OK? (check) ✓ YES ___ NO If "NO", explain under "PROBLEMS"

Problems (equipment, lab site, sampling, etc.)*

Run No. I-1-S2-MM5-1A Method MM5 Date of Analysis Oct 28 91

Lab Technician(s) LAS Time of Analysis

Good Run? (check) ___ YES X NO Cleanup/Analysis OK? (check) N/A YES ___ NO

If "NO", explain* No run performed; time runs past condition TI-1

Run No. I-1-S2-MM5-1B Method MM5 Date of Analysis Oct 28 91

Lab Technician(s) LAS Time of Analysis

Good Run? (check) ___ YES X NO Cleanup/Analysis OK? (check) N/A YES ___ NO

If "NO", explain* No run performed

Run No. I-1-S2-MM5-1A Method MM5 Date of Analysis Oct 29 91

Lab Technician(s) JIGP Time of Analysis

Good Run? (check) ___ YES ___ NO Cleanup/Analysis OK? (check) ✓ YES ___ NO

If "NO", explain*

Run No. I-1-S2-MM5-1A Method MM5 Date of Analysis 10-29-91

Lab Technician(s) LAS, RBS Time of Analysis

Good Run? (check) ✓ YES ___ NO Cleanup/Analysis OK? (check) ✓ YES ___ NO

If "NO", explain*

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*If more space needed, use other side and check here ___.

F-0020 5-91

ENTROPY

(2)

FIELD LABORATORY LOG

Plant Name/Address Jacksonville Coal & Coke Job No. 36716

Test Location Stack II Project Mgr./Supvr. HY

Lab Location EPA Trailer Team Leader

Analysis Equipment OK? (check) ✓ YES ___ NO If "NO", explain under "PROBLEMS"

Problems (equipment, lab site, sampling, etc.)*

Run No. II-1-S2-MM5-1B Method MM5 Date of Analysis 10-29-91

Lab Technician(s) LAS Time of Analysis

Good Run? (check) ✓ YES ___ NO Cleanup/Analysis OK? (check) ✓ YES ___ NO

If "NO", explain*

Run No. II-1-S2-MM5-1A Method MM5 Date of Analysis 10-30-91

Lab Technician(s) SIGP-CEO Time of Analysis

Good Run? (check) ___ YES ___ NO Cleanup/Analysis OK? (check) ___ YES ___ NO

If "NO", explain*

Run No. II-1-S2-MM5-1B Method MM5 Date of Analysis 10-30-91

Lab Technician(s) SIGP-CEO Time of Analysis

Good Run? (check) ✓ YES ✓ NO Cleanup/Analysis OK? (check) ✓ YES ___ NO

If "NO", explain* Leak check wide open

Run No. III-1-S2-MM5-1A Method MM5 Date of Analysis 10-30-91

Lab Technician(s) TCMCTR² Time of Analysis

Good Run? (check) ✓ YES ___ NO Cleanup/Analysis OK? (check) ✓ YES ___ NO

If "NO", explain*

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*If more space needed, use other side and check here ___.

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ENTROPY

FIELD LABORATORY LOG

(3)

Plant Name/Address JCC Job No. 5626

Test Location Stack 2 Project Mgr./Supvr. HY

Lab Location EPA Trailer Team Leader

Analysis Equipment OK? (check) ✓ YES ___ NO If "NO", explain under "PROBLEMS"

Problems (equipment, lab site, sampling, etc.)*

Run No. III-1-S2-MM5-1B Method MM5 Date of Analysis 10-30-91

Lab Technician(s) HD, TCM Time of Analysis

Good Run? (check) ✓ YES ___ NO Cleanup/Analysis OK? (check) ✓ YES ___ NO

If "NO", explain*

Run No. III-1-S2-MM5-1A Method MM5 Date of Analysis 10-30-91

Lab Technician(s) LASERS Time of Analysis

Good Run? (check) ___ YES ___ NO Cleanup/Analysis OK? (check) ___ YES ___ NO

If "NO", explain*

Run No. III-1-S2-MM5-1B Method MM5 Date of Analysis 10-30-91

Lab Technician(s) LASERS Time of Analysis

Good Run? (check) ✓ YES ___ NO Cleanup/Analysis OK? (check) ✓ YES ___ NO

If "NO", explain*

Run No. Method Date of Analysis

Lab Technician(s) Time of Analysis

Good Run? (check) ___ YES ___ NO Cleanup/Analysis OK? (check) ___ YES ___ NO

If "NO", explain*

---

*If more space needed, use other side and check here ___.

F-0020 5-91

ENTROPY

FIELD LABORATORY LOG

(4)

Plant Name/Address Jewell Coal & Coke Job No. 36760

Test Location STACK 2 Project Mgr./Supvr. HY

Lab Location EDA Trailer Team Leader _____

Analysis Equipment OK? (check) ___YES ___NO If "NO", explain under "PROBLEMS"

Problems (equipment, lab site, sampling, etc.)* _____

Run No. I-2-S2-MM5-2A Method MM5 Date of Analysis 10-30-91

Lab Technician(s) _____ Time of Analysis _____

Good Run? (check) ✓YES ___NO Cleanup/Analysis OK? (check) ✓YES ___NO

If "NO", explain* _____

Run No. I-2-S2-MM5-2B Method MM5 Date of Analysis 10-30-91

Lab Technician(s) _____ Time of Analysis _____

Good Run? (check) ___YES ✓NO Cleanup/Analysis OK? (check) ___YES ___NO

If "NO", explain* Never began run → no probe heat → train used as II-2-S2-MM5-2B

Run No. _____ Method _____ Date of Analysis _____

Lab Technician(s) _____ Time of Analysis _____

Good Run? (check) ___YES ___NO Cleanup/Analysis OK? (check) ___YES ___NO

If "NO", explain* _____

Run No. _____ Method _____ Date of Analysis _____

Lab Technician(s) _____ Time of Analysis _____

Good Run? (check) ___YES ___NO Cleanup/Analysis OK? (check) ___YES ___NO

If "NO", explain* _____

---

*If more space needed, use other side and check here ___.

F-0020 5-91

ENTROPY

FIELD LABORATORY LOG

Plant Name/Address JCC Job No. 3694

Test Location Stack 2 Project Mgr./Supvr. H. Yoest

Lab Location EPA Trailer Team Leader TR2

Analysis Equipment OK? (check) ___YES ✓NO If "NO", explain under "PROBLEMS"

Problems (equipment, lab site, sampling, etc.)* TC filters are a pain.

Run No. II-2-S2-MM5-2A Method MM5 Date of Analysis 10.31

Lab Technician(s) TR2, TCM Time of Analysis 05:00

Good Run? (check) ✓YES ___NO Cleanup/Analysis OK? (check) ✓YES ___NO

If "NO", explain* ___

Run No. II-2-S2-MM5-2B Method MM5 Date of Analysis 10.31

Lab Technician(s) TR2, TCM Time of Analysis 0:500

Good Run? (check) ✓YES ___NO Cleanup/Analysis OK? (check) ✓YES ___NO

If "NO", explain* ~~Filters darker (more gray) than usual~~

Run No. III-2-S2-MM5-2A Method MM5 Date of Analysis 10.31

Lab Technician(s) TR2, TCM Time of Analysis 11:00

Good Run? (check) ___YES ___NO Cleanup/Analysis OK? (check) ___YES ___NO

If "NO", explain* (as below)

Run No. III-2-S2-MM5-2B Method MM5 Date of Analysis 10.31

Lab Technician(s) TR2 TCM Time of Analysis 11:00

Good Run? (check) ✓YES ___NO Cleanup/Analysis OK? (check) ✓YES ___NO

If "NO", explain* Filters darker than usual (dark gray)

---

*If more space needed, use other side and check here ___.

F-0020 5-91

ENTROPY

FIELD LABORATORY LOG

(6)

Plant Name/Address JCC Job No. 36716

Test Location STACK 2 Project Mgr./Supvr. HY

Lab Location EPA Trailer Team Leader _____

Analysis Equipment OK? (check) ✓ YES ___ NO If "NO", explain under "PROBLEMS"

Problems (equipment, lab site, sampling, etc.)* _____

Run No. IV-2-S2-MM5-2A Method ~~[illegible]~~ MM5 Date of Analysis 10-31-91

Lab Technician(s) LAS, LGA Time of Analysis _____

Good Run? (check) ✓ YES ___ NO Cleanup/Analysis OK? (check) ✓ YES ___ NO

If "NO", explain* _____

Run No. IV-2-S2-MM5-2B Method MM5 Date of Analysis 10-31-91

Lab Technician(s) LAS, LGA Time of Analysis _____

Good Run? (check) ✓ YES ___ NO Cleanup/Analysis OK? (check) ✓ YES ___ NO

If "NO", explain* _____

Run No. _____ Method _____ Date of Analysis _____

Lab Technician(s) _____ Time of Analysis _____

Good Run? (check) ___ YES ___ NO Cleanup/Analysis OK? (check) ___ YES ___ NO

If "NO", explain* _____

Run No. _____ Method _____ Date of Analysis _____

Lab Technician(s) _____ Time of Analysis _____

Good Run? (check) ___ YES ___ NO Cleanup/Analysis OK? (check) ___ YES ___ NO

If "NO", explain* _____

---

*If more space needed, use other side and check here ___.

F-0020 5-91

ENTROPY

(7)

FIELD LABORATORY LOG

Plant Name/Address JCC Job No. 3694

Test Location Stack 2 Project Mgr./Supvr. H. Vorst

Lab Location EPA Trailer Team Leader TRZ

Analysis Equipment OK? (check) ___YES ___NO If "NO", explain under "PROBLEMS"

Problems (equipment, lab site, sampling, etc.)* ~~no custody sheet for DF #183~~ Found it

---

Run No. I-3-S2-MM5-3A Method MM5 Date of Analysis 10-31-91

Lab Technician(s) SIGPOLAS Time of Analysis

Good Run? (check) ✓ YES ___NO Cleanup/Analysis OK? (check) ✓ YES ___NO

~~If "NO"~~, explain* PADDLE BROKE AT TOP OF RUN - Thermometer dual trains

---

Run No. I-3-S2-MM5-3B Method MM5 Date of Analysis 10-31-91

Lab Technician(s) SIGPOLAS Time of Analysis

Good Run? (check) ✓ YES ___NO Cleanup/Analysis OK? (check) ✓ YES ___NO

~~If "NO"~~, explain* "

Run No. II-3-S2-MM5-3B Method MM5 Date of Analysis 10-11-1

Lab Technician(s) TCM, TRZ Time of Analysis 04:00

Good Run? (check) ✓ YES ___NO Cleanup/Analysis OK? (check) ✓ YES ___NO

If "NO", explain* train was not changed w/ 200 ml's DI H2O - Moisture (after analysis) was same as previous runs - XAD OK

Run No. III-3-S2-MM5-3A Method MM5 Date of Analysis 1-11-91

Lab Technician(s) TCM Time of Analysis 12:30 pm

Good Run? (check) ✓ YES ___NO Cleanup/Analysis OK? (check) ✓ YES ___NO

If "NO", explain*

---

*If more space needed, use other side and check here ___.

F-0020 5-91

ENTROPY

(8)

FIELD LABORATORY LOG

Plant Name/Address JCC Job No. 3694

Test Location Stack II Project Mgr./Supvr. H. Yoest

Lab Location EPA trailer Team Leader TRZ

Analysis Equipment OK? (check) ✓ YES ___ NO If "NO", explain under "PROBLEMS"

Problems (equipment, lab site, sampling, etc.)* _____

Run No. ~~IV~~ 3.52.MM5.3 Method MM5 Date of Analysis 11.1.91

Lab Technician(s) TRZ, TCM Time of Analysis 3:45 pm

Good Run? (check) ✓ YES ___ NO Cleanup/Analysis OK? (check) ✓ YES ___ NO

If "NO", explain* _____

Run No. MM5-F13 Method MM5 Date of Analysis 11.1.91

Lab Technician(s) TRZ, TCM Time of Analysis 1:30

Good Run? (check) ✓ YES ___ NO Cleanup/Analysis OK? (check) ✓ YES ___ NO

If "NO", explain* _____

Run No. _____ Method _____ Date of Analysis _____

Lab Technician(s) _____ Time of Analysis _____

Good Run? (check) ___ YES ___ NO Cleanup/Analysis OK? (check) ___ YES ___ NO

If "NO", explain* _____

Run No. _____ Method _____ Date of Analysis _____

Lab Technician(s) _____ Time of Analysis _____

Good Run? (check) ___ YES ___ NO Cleanup/Analysis OK? (check) ___ YES ___ NO

If "NO", explain* _____

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*If more space needed, use other side and check here ___.

F-0020 5-91

ENTROPY

JEWELL COAL & COKE - SAMPLE AND ANALYSES LOG

DATA HANDLERS INITIALS	CLEAN-UP PERSONNEL INITIALS	RUN NUMBER	RUN IDENTIFICATION	DESCRIPTION	ANALYSES	
CLT		I-1-S1-M5/TSO/202-1 RB 238	I-1-S1-M5/TSO/202-1-PRA ✓	FH RINSE/ACETONE	GRAV./EXT./GRAV.	
		I-1-S1-M5/TSO/202-1	I-1-S1-M5/TSO/202-1-PRT ✓	FH RINSE/TOLUENE	GRAV./EXT./GRAV.	
		I-1-S1-M5/TSO/202-1	I-1-S1-M5/TSO/202-1-GFF ✓	FILTER	GRAV./EXT./GRAV.	
		I-1-S1-M5/TSO/202-1	I-1-S1-M5/TSO/202-1-CON ✓	CONDENSATE	EXT./GRAV.	
		I-1-S1-M5/TSO/202-1 RB 1000	I-1-S1-M5-TSO/202-1-BRT ✓	BH RINSE/TOLUENE ✓	EXT./GRAV.	10/29
		I-1-S1-M5/TSO/202-1 RB 238	I-1-S1-M5/TSO/202-1-SiG ✓	SILICA GEL	GRAVIMETRIC	
CLT	JIP	I-2-S1-M5/TSO/202-2 RB 215	I-2-S1-M5/TSO/202-2-PRA	FH RINSE/ACETONE ✓	GRAV./EXT./GRAV.	
		I-2-S1-M5/TSO/202-2 RB 215	I-2-S1-M5/TSO/202-2-PRT	FH RINSE/TOLUENE ✓	GRAV./EXT./GRAV.	
		I-2-S1-M5/TSO/202-2 RB 202	I-2-S1-M5/TSO/202-2-GFF	FILTER ✓	GRAV./EXT./GRAV.	
		I-2-S1-M5/TSO/202-2 "	I-2-S1-M5/TSO/202-2-CON	CONDENSATE ✓	EXT./GRAV.	
		I-2-S1-M5/TSO/202-2 RB 215	I-2-S1-M5-TSO/202-2-BRT	BH RINSE/TOLUENE ✓	EXT./GRAV.	10/31
		I-2-S1-M5/TSO/202-2 RB 215	I-2-S1-M5/TSO/202-2-SiG	SILICA GEL ✓	GRAVIMETRIC	
CLT	JIP/RRS	I-3-S1-M5/TSO/202-3 RB501	I-3-S1-M5/TSO/202-3-PRA	FH RINSE/ACETONE ✓	GRAV./EXT./GRAV.	
		I-3-S1-M5/TSO/202-3	I-3-S1-M5/TSO/202-3-PRT	FH RINSE/TOLUENE ✓	GRAV./EXT./GRAV.	
		I-3-S1-M5/TSO/202-3	I-3-S1-M5/TSO/202-3-GFF	FILTER ✓	GRAV./EXT./GRAV.	
		I-3-S1-M5/TSO/202-3 RB501	I-3-S1-M5/TSO/202-3-CON	CONDENSATE ✓	EXT./GRAV.	10/31
		I-3-S1-M5/TSO/202-3	I-3-S1-M5-TSO/202-3-BRT	BH RINSE/TOLUENE ✓	EXT./GRAV.	
		I-3-S1-M5/TSO/202-3	I-3-S1-M5/TSO/202-3-SiG	SILICA GEL ✓	GRAVIMETRIC	
CLT	JIP/RSS	II-1-S1-M5/TSO/202-1 RB 238	II-1-S1-M5/TSO/202-1-PRA	FH RINSE/ACETONE ✓	GRAV./EXT./GRAV.	
		II-1-S1-M5/TSO/202-1 RB 1000	II-1-S1-M5/TSO/202-1-PRT	FH RINSE/TOLUENE ✓	GRAV./EXT./GRAV.	10/28
		II-1-S1-M5/TSO/202-1 RB 1000	II-1-S1-M5/TSO/202-1-GFF	FILTER ✓	GRAV./EXT./GRAV.	ONE ABORTED
		II-1-S1-M5/TSO/202-1 RB 238	II-1-S1-M5/TSO/202-1-CON	CONDENSATE ✓	EXT./GRAV.	
		II-1-S1-M5/TSO/202-1 RB 1000	II-1-S1-M5-TSO/202-1-BRT	BH RINSE/TOLUENE ✓	EXT./GRAV.	
		II-1-S1-M5/TSO/202-1 RB 238	II-1-S1-M5/TSO/202-1-SiG	SILICA GEL ✓	GRAVIMETRIC	
CLT	CEO/[illegible]	II-2-S1-M5/TSO/202-2 RB 237	II-2-S1-M5/TSO/202-2-PRA	FH RINSE/ACETONE ✓	GRAV./EXT./GRAV.	
		II-2-S1-M5/TSO/202-2	II-2-S1-M5/TSO/202-2-PRT	FH RINSE/TOLUENE ✓	GRAV./EXT./GRAV.	
		II-2-S1-M5/TSO/202-2	II-2-S1-M5/TSO/202-2-GFF	FILTER ✓	GRAV./EXT./GRAV.	
		II-2-S1-M5/TSO/202-2	II-2-S1-M5/TSO/202-2-CON	CONDENSATE ✓	EXT./GRAV.	10/30
		II-2-S1-M5/TSO/202-2 RB 1009	II-2-S1-M5-TSO/202-2-BRT	BH RINSE/TOLUENE ✓	EXT./GRAV.	
		II-2-S1-M5/TSO/202-2 RB 237	II-2-S1-M5/TSO/202-2-SiG	SILICA GEL ✓	GRAVIMETRIC	
CLT	CEO	II-3-S1-M5/TSO/202-3 RB	II-3-S1-M5/TSO/202-3-PRA	FH RINSE/ACETONE	GRAV./EXT./GRAV.	10/30

JEWELL COAL & COKE – SAMPLE AND ANALYSES LOG

CLT	CEO	II-3-S1-M5/TSO/202-3	II-3-S1-M5/TSO/202-3-PRT	FH RINSE/TOLUENE	GRAV./EXT./GRAV.	10/30
		II-3-S1-M5/TSO/202-3 RB 501	II-3-S1-M5/TSO/202-3-GFF	FILTER ✓	GRAV./EXT./GRAV.	
		II-3-S1-M5/TSO/202-3 "	II-3-S1-M5/TSO/202-3-CON	CONDENSATE ✓	EXT./GRAV.	
		II-3-S1-M5/TSO/202-3	II-3-S1-M5-TSO/202-3-BRT	BH RINSE/TOLUENE	EXT./GRAV.	
		II-3-S1-M5/TSO/202-3	II-3-S1-M5/TSO/202-3-SiG	SILICA GEL ✓	GRAVIMETRIC	

DATA HANDLERS INITIALS	CLEAN-UP PERSONNEL INITIALS	RUN NUMBER	RUN IDENTIFICATION	DESCRIPTION	ANALYSES	
CLT	CLT	III-1-S1-M5/TSO/202-1 RB 202	III-1-S1-M5/TSO/202-1-PRA ✓	FH RINSE/ACETONE ✓	GRAV./EXT./GRAV.	
		III-1-S1-M5/TSO/202-1 "	III-1-S1-M5/TSO/202-1-PRT ✓	FH RINSE/TOLUENE ✓	GRAV./EXT./GRAV.	
		III-1-S1-M5/TSO/202-1 "	III-1-S1-M5/TSO/202-1-GFF	FILTER ✓	GRAV./EXT./GRAV.	
		III-1-S1-M5/TSO/202-1 "	III-1-S1-M5/TSO/202-1-CON ✓	CONDENSATE ✓	EXT./GRAV.	
		III-1-S1-M5/TSO/202-1 "	III-1-S1-M5-TSO/202-1-BRT	BH RINSE/TOLUENE ✓	EXT./GRAV.	
		III-1-S1-M5/TSO/202-1 RB 215	III-1-S1-M5/TSO/202-1-SiG	SILICA GEL ✓	GRAVIMETRIC	
CLT	TRR	III-2-S1-M5/TSO/202-2 RB 1009	III-2-S1-M5/TSO/202-2-PRA	FH RINSE/ACETONE ✓	GRAV./EXT./GRAV.	10/31
		III-2-S1-M5/TSO/202-2 ↓	III-2-S1-M5/TSO/202-2-PRT	FH RINSE/TOLUENE ✓	GRAV./EXT./GRAV.	
		III-2-S1-M5/TSO/202-2 RB 237	III-2-S1-M5/TSO/202-2-GFF	FILTER ✓	GRAV./EXT./GRAV.	
		III-2-S1-M5/TSO/202-2 RB 237	III-2-S1-M5/TSO/202-2-CON	CONDENSATE ✓	EXT./GRAV.	
		III-2-S1-M5/TSO/202-2	III-2-S1-M5-TSO/202-2-BRT	BH RINSE/TOLUENE	EXT./GRAV.	
		III-2-S1-M5/TSO/202-2 RB 237	III-2-S1-M5/TSO/202-2-SiG	SILICA GEL ✓	GRAVIMETRIC	
CLT	T[redacted]R	III-3-S1-M5/TSO/202-3 RB 501	III-3-S1-M5/TSO/202-3-PRA	FH RINSE/ACETONE ✓	GRAV./EXT./GRAV.	11/1
		III-3-S1-M5/TSO/202-3 RB 1009	III-3-S1-M5/TSO/202-3-PRT	FH RINSE/TOLUENE ✓	GRAV./EXT./GRAV.	
		III-3-S1-M5/TSO/202-3 RB 501	III-3-S1-M5/TSO/202-3-GFF	FILTER ✓	GRAV./EXT./GRAV.	
		III-3-S1-M5/TSO/202-3	III-3-S1-M5/TSO/202-3-CON	CONDENSATE ✓	EXT./GRAV.	
		III-3-S1-M5/TSO/202-3	III-3-S1-M5-TSO/202-3-BRT	BH RINSE/TOLUENE ✓	EXT./GRAV.	
		III-3-S1-M5/TSO/202-3	III-3-S1-M5/TSO/202-3-SiG	SILICA GEL ✓	GRAVIMETRIC	
CLT	JIP	IV-1-S1-M5/TSO/202-1 RB 202	IV-1-S1-M5/TSO/202-1-PRA	FH RINSE/ACETONE ✓	GRAV./EXT./GRAV.	
		IV-1-S1-M5/TSO/202-1	IV-1-S1-M5/TSO/202-1-PRT	FH RINSE/TOLUENE ✓	GRAV./EXT./GRAV.	
		IV-1-S1-M5/TSO/202-1	IV-1-S1-M5/TSO/202-1-GFF	FILTER ✓	GRAV./EXT./GRAV.	
		IV-1-S1-M5/TSO/202-1	IV-1-S1-M5/TSO/202-1-CON	CONDENSATE ✓	EXT./GRAV.	
		IV-1-S1-M5/TSO/202-1	IV-1-S1-M5-TSO/202-1-BRT	BH RINSE/TOLUENE ✓	EXT./GRAV.	
		IV-1-S1-M5/TSO/202-1	IV-1-S1-M5/TSO/202-1-SiG	SILICA GEL ✓	GRAVIMETRIC	
		IV-2-S1-M5/TSO/202-2 RB 237	IV-2-S1-M5/TSO/202-2-PRA	FH RINSE/ACETONE ✓	GRAV./EXT./GRAV.	

JEWELL COAL & COKE - SAMPLE AND ANALYSES LOG

CLT	LAS	IV-2-S1-M5/TSO/202-2 RB 237	IV-2-S1-M5/TSO/202-2-PRT	FH RINSE/TOLUENE ✓	GRAV./EXT./GRAV.
		IV-2-S1-M5/TSO/202-2	IV-2-S1-M5/TSO/202-2-GFF	FILTER ✓	GRAV./EXT./GRAV.
		IV-2-S1-M5/TSO/202-2	IV-2-S1-M5/TSO/202-2-CON	CONDENSATE ✓	EXT./GRAV.
		IV-2-S1-M5/TSO/202-2 RB 215	IV-2-S1-M5-TSO/202-2-BRT	BH RINSE/TOLUENE ✓	EXT./GRAV.
		IV-2-S1-M5/TSO/202-2 RB 237	IV-2-S1-M5/TSO/202-2-SiG	SILICA GEL ✓	GRAVIMETRIC
CLT	TRR	IV-3-S1-M5/TSO/202-3	IV-3-S1-M5/TSO/202-3-PRA	FH RINSE/ACETONE	GRAV./EXT./GRAV.
		IV-3-S1-M5/TSO/202-3	IV-3-S1-M5/TSO/202-3-PRT	FH RINSE/TOLUENE	GRAV./EXT./GRAV.
		IV-3-S1-M5/TSO/202-3	IV-3-S1-M5/TSO/202-3-GFF	FILTER	GRAV./EXT./GRAV.
		IV-3-S1-M5/TSO/202-3	IV-3-S1-M5/TSO/202-3-CON	CONDENSATE	EXT./GRAV.
		IV-3-S1-M5/TSO/202-3	IV-3-S1-M5-TSO/202-3-BRT	BH RINSE/TOLUENE	EXT./GRAV.
		IV-3-S1-M5/TSO/202-3	IV-3-S1-M5/TSO/202-3-SiG	SILICA GEL	GRAVIMETRIC

10/31

JEWELL COAL & COKE - SAMPLE AND ANALYSES LOG

METHOD M5/TSO/202

FIELD BLANKS — DATE COLLECTED: 11/1/91

DATA HANDLERS INITIALS	CLEAN-UP PERSONNEL INITIALS	RUN NUMBER	RUN IDENTIFICATION	DESCRIPTION	ANALYSES
CLT	TR	IV-2-S1-M5/TSO/202-FB ~~507~~ 88	IV-2-M5/TSO/202-PRA-FB	FH RINSE/ACETONE ✓	GRAV./EXT./GRAV.
↓	↓	IV-2-S1-M5/TSO/202-FB	IV-2-M5/TSO/202-PRT-FB	FH RINSE/TOLUENE ✓	GRAV./EXT./GRAV.
		IV-2-S1-M5/TSO/202-FB	IV-2-M5/TSO/202-GFF-FB	FILTER ✓	GRAV./EXT./GRAV.
		IV-2-S1-M5/TSO/202-FB	IV-2-M5/TSO/202-CON-FB	CONDENSATE ✓	EXT./GRAV.

BH Rinse w/ Toluene ✓

REAGENT BLANKS — DATE COLLECTED: 10/31/91

DATA HANDLERS INITIALS	CLEAN-UP PERSONNEL INITIALS	VOLUME/NUMBER	DESCRIPTION
CLT	CED	~~300 ml~~ 200 ml	ACETONE ✓
↓	↓	– (1)	FILTER ✓
		300 ml	DI WATER REAGENT ✓
		200 ml	DI WATER RINSE ✓
		200 ml	TOLUENE RINSE ✓

reagent Box 215

JEWELL COAL & COKE - [illegible]PLE AND ANALYSES LOG

[illegible]TA HANDLERS INITIALS	CLEAN-UP PERSONNEL INITIALS	RUN NUMBER	RUN IDENTIFICATION	DESCRIPTION	ANALYSES	
CLT	CEN	I-1-S3-VOST-1A	I-1-S3-VOST-1A-TX	TENAX TUBE ✓	BENZENE/CAA & TIC LIST	ABORT
		I-1-S3-VOST-1A	I-1-S3-VOST-1A-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST	
		I-1-S3-VOST-1A	I-1-S3-VOST-1A-CON	CONDENSATE ✓	BENZENE/CAA & TIC LIST	
		I-1-S3-VOST-1B	I-1-S3-VOST-1B-TX	TENAX TUBE ✓	BENZENE/CAA & TIC LIST	
		I-1-S3-VOST-1B	I-1-S3-VOST-1B-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST	
		I-1-S3-VOST-1B	I-1-S3-VOST-1B-CON	CONDENSATE ✓	BENZENE/CAA & TIC LIST	
		I-1-S3-VOST-1C	I-1-S3-VOST-1B-TX	TENAX TUBE ✓	BENZENE/CAA & TIC LIST	10/28
		I-1-S3-VOST-1C	I-1-S3-VOST-1B-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST	
		I-1-S3-VOST-1C	I-1-S3-VOST-1B-CON	CONDENSATE ✓	BENZENE/CAA & TIC LIST	
		I-1-S3-VOST-1D	I-1-S3-VOST-1D-TX	TENAX TUBE ✓	BENZENE/CAA & TIC LIST	
		I-1-S3-VOST-1D	I-1-S3-VOST-1D-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST	
		I-1-S3-VOST-1D	I-1-S3-VOST-1D-CON	CONDENSATE ✓	BENZENE/CAA & TIC LIST	
CLT	CEN	I-2-S3-VOST-2A	I-2-S3-VOST-2A-TX	TENAX TUBE ✓	BENZENE/CAA & TIC LIST	
		I-2-S3-VOST-2A	I-2-S3-VOST-2A-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST	
		I-2-S3-VOST-2A	I-2-S3-VOST-2A-CON	CONDENSATE	BENZENE/CAA & TIC LIST	
		I-2-S3-VOST-2B	I-2-S3-VOST-2B-TX	TENAX TUBE ✓	BENZENE/CAA & TIC LIST	
		I-2-S3-VOST-2B	I-2-S3-VOST-2B-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST	
		I-2-S3-VOST-2B	I-2-S3-VOST-2B-CON	CONDENSATE ✓	BENZENE/CAA & TIC LIST	
		I-2-S3-VOST-2C	I-2-S3-VOST-2B-TX	TENAX TUBE ✓	BENZENE/CAA & TIC LIST	10/30
		I-2-S3-VOST-2C	I-2-S3-VOST-2B-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST	
		I-2-S3-VOST-2C	I-2-S3-VOST-2B-CON	CONDENSATE ✓	BENZENE/CAA & TIC LIST	
		I-2-S3-VOST-2D	I-2-S3-VOST-2D-TX	TENAX TUBE ✓	BENZENE/CAA & TIC LIST	
		I-2-S3-VOST-2D	I-2-S3-VOST-2D-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST	
		I-2-S3-VOST-2D	I-2-S3-VOST-2D-CON	CONDENSATE ✓	BENZENE/CAA & TIC LIST	
CLT	CEN	I-3-S3-VOST-3A	I-3-S3-VOST-3A-TX	TENAX TUBE ✓	BENZENE/CAA & TIC LIST	
		I-3-S3-VOST-3A	I-3-S3-VOST-3A-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST	
		I-3-S3-VOST-3A	I-3-S3-VOST-3A-CON	CONDENSATE ✓	BENZENE/CAA & TIC LIST	
		I-3-S3-VOST-3B	I-3-S3-VOST-3B-TX	TENAX TUBE	BENZENE/CAA & TIC LIST	
		I-3-S3-VOST-3B	I-3-S3-VOST-3B-TC	TENAX/CHARCOAL TUBE	BENZENE/CAA & TIC LIST	
		I-3-S3-VOST-3B	I-3-S3-VOST-3B-CON	CONDENSATE	BENZENE/CAA & TIC LIST	
		I-3-S3-VOST-3C	I-3-S3-VOST-3B-TX	TENAX TUBE	BENZENE/CAA & TIC LIST	10/31
		I-3-S3-VOST-3C	I-3-S3-VOST-3B-TC	TENAX/CHARCOAL TUBE	BENZENE/CAA & TIC LIST	
		I-3-S3-VOST-3C	I-3-S3-VOST-3B-CON	CONDENSATE	BENZENE/CAA & TIC LIST	
		I-3-S3-VOST-3D	I-3-S3-VOST-3D-TX	TENAX TUBE	BENZENE/CAA & TIC LIST	
		I-3-S3-VOST-3D	I-3-S3-VOST-3D-TC	TENAX/CHARCOAL TUBE	BENZENE/CAA & TIC LIST	
		I-3-S3-VOST-3D	I-3-S3-VOST-3D-CON	CONDENSATE	BENZENE/CAA & TIC LIST	

CLT	CEN	II-1-S3-VOST-1A	II-1-S3-VOST-1A-TX	TENAX TUBE ✓	BENZENE/CAA & TIC LIST	10/29
		II-1-S3-VOST-1A	II-1-S3-VOST-1A-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST	
		II-1-S3-VOST-1A	II-1-S3-VOST-1A-CON	CONDENSATE ✓	BENZENE/CAA & TIC LIST	
		II-1-S3-VOST-1B	II-1-S3-VOST-1B-TX	TENAX TUBE ✓	BENZENE/CAA & TIC LIST	
		II-1-S3-VOST-1B	II-1-S3-VOST-1B-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST	
		II-1-S3-VOST-1B	II-1-S3-VOST-1B-CON	CONDENSATE ✓	BENZENE/CAA & TIC LIST	
		II-1-S3-VOST-1C	II-1-S3-VOST-1B-TX	TENAX TUBE ✓	ARCHIVE	
		II-1-S3-VOST-1C	II-1-S3-VOST-1B-TC	TENAX/CHARCOAL TUBE ✓	ARCHIVE	
		II-1-S3-VOST-1C	II-1-S3-VOST-1B-CON	CONDENSATE ✓	BENZENE/CAA & TIC LIST	
CLT	CEN	II-2-S3-VOST-2A	II-2-S3-VOST-2A-TX	TENAX TUBE ✓	BENZENE/CAA & TIC LIST	10/30
		II-2-S3-VOST-2A	II-2-S3-VOST-2A-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST	
		II-2-S3-VOST-2A	II-2-S3-VOST-2A-CON	CONDENSATE	BENZENE/CAA & TIC LIST	
		II-2-S3-VOST-2B	II-2-S3-VOST-2B-TX	TENAX TUBE ✓	ARCHIVE	
		II-2-S3-VOST-2B	II-2-S3-VOST-2B-TC	TENAX/CHARCOAL TUBE ✓	ARCHIVE	
		II-2-S3-VOST-2B	II-2-S3-VOST-2B-CON	CONDENSATE	BENZENE/CAA & TIC LIST	
		II-3-S3-VOST-3A	II-3-S3-VOST-3A-TX	TENAX TUBE	BENZENE/CAA & TIC LIST	
		II-3-S3-VOST-3A	II-3-S3-VOST-3A-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST	
		II-3-S3-VOST-3A	II-3-S3-VOST-3A-CON	CONDENSATE	BENZENE/CAA & TIC LIST	
		II-3-S3-VOST-3B	II-3-S3-VOST-3B-TX	TENAX TUBE	ARCHIVE	
		II-3-S3-VOST-3B	II-3-S3-VOST-3B-TC	TENAX/CHARCOAL TUBE	ARCHIVE	
		II-3-S3-VOST-3B	II-3-S3-VOST-3B-CON	CONDENSATE	BENZENE/CAA & TIC LIST	
		III-1-S3-VOST-1A	III-1-S3-VOST-1A-TX	TENAX TUBE ✓	BENZENE/CAA & TIC LIST	
		III-1-S3-VOST-1A	III-1-S3-VOST-1A-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST	
		III-1-S3-VOST-1A	III-1-S3-VOST-1A-CON	CONDENSATE ✓	BENZENE/CAA & TIC LIST	
		III-1-S3-VOST-1B	III-1-S3-VOST-1B-TX	TENAX TUBE ✓	BENZENE/CAA & TIC LIST	
		III-1-S3-VOST-1B	III-1-S3-VOST-1B-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST	
		III-1-S3-VOST-1B	III-1-S3-VOST-1B-CON	CONDENSATE ✓	BENZENE/CAA & TIC LIST	
		III-1-S3-VOST-1C	III-1-S3-VOST-1B-TX	TENAX TUBE ✓	ARCHIVE	
		III-1-S3-VOST-1C	III-1-S3-VOST-1B-TC	TENAX/CHARCOAL TUBE ✓	ARCHIVE	
		III-1-S3-VOST-1C	III-1-S3-VOST-1B-CON	CONDENSATE ✓	BENZENE/CAA & TIC LIST	
CLT	SS	III-2-S3-VOST-2A	III-2-S3-VOST-2A-TX	TENAX TUBE ✓	BENZENE/CAA & TIC LIST	10/31
		III-2-S3-VOST-2A	III-2-S3-VOST-2A-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST	
		III-2-S3-VOST-2A	III-2-S3-VOST-2A-CON	CONDENSATE	BENZENE/CAA & TIC LIST	
		III-2-S3-VOST-2B	III-2-S3-VOST-2B-TX	TENAX TUBE ✓	ARCHIVE	
		III-2-S3-VOST-2B	III-2-S3-VOST-2B-TC	TENAX/CHARCOAL TUBE ✓	ARCHIVE	
		III-2-S3-VOST-2B	III-2-S3-VOST-2B-CON	CONDENSATE	BENZENE/CAA & TIC LIST	
		III-3-S3-VOST-3A	III-3-S3-VOST-3A-TX	TENAX TUBE	BENZENE/CAA & TIC LIST	
		III-3-S3-VOST-3A	III-3-S3-VOST-3A-TC	TENAX/CHARCOAL TUBE	BENZENE/CAA & TIC LIST	
		III-3-S3-VOST-3A	III-3-S3-VOST-3A-CON	CONDENSATE	BENZENE/CAA & TIC LIST	

		III-3-S3-VOST-3B	III-3-S3-[illegible]-3B-TX	TENAX TUBE	ARCHIVE
		III-3-S3-VOST-3B	III-3-S3-VOST-3B-TC	TENAX/CHARCOAL TUBE	ARCHIVE
		III-3-S3-VOST-3B	III-3-S3-VOST-3B-CON	CONDENSATE	BENZENE/CAA & TIC LIST
		IV-1-S3-VOST-1A	IV-1-S3-VOST-1A-TX ✓	TENAX TUBE	BENZENE/CAA & TIC LIST
		IV-1-S3-VOST-1A	IV-1-S3-VOST-1A-TC ✓	TENAX/CHARCOAL TUBE	BENZENE/CAA & TIC LIST
		IV-1-S3-VOST-1A	IV-1-S3-VOST-1A-CON ✓	CONDENSATE	BENZENE/CAA & TIC LIST
		IV-1-S3-VOST-1B	IV-1-S3-VOST-1B-TX ✓	TENAX TUBE	BENZENE/CAA & TIC LIST
		IV-1-S3-VOST-1B	IV-1-S3-VOST-1B-TC ✓	TENAX/CHARCOAL TUBE	BENZENE/CAA & TIC LIST
		IV-1-S3-VOST-1B	IV-1-S3-VOST-1B-CON ✓	CONDENSATE	BENZENE/CAA & TIC LIST
		IV-1-S3-VOST-1C	IV-1-S3-VOST-1C-TX ✓	TENAX TUBE	ARCHIVE
		IV-1-S3-VOST-1C	IV-1-S3-VOST-1C-TC ✓	TENAX/CHARCOAL TUBE	ARCHIVE
		IV-1-S3-VOST-1C	IV-1-S3-VOST-1C-CON ✓	CONDENSATE	BENZENE/CAA & TIC LIST
CLT	SPS	IV-2-S3-VOST-2A	IV-2-S3-VOST-2A-TX	TENAX TUBE ✓	BENZENE/CAA & TIC LIST
		IV-2-S3-VOST-2A	IV-2-S3-VOST-2A-TC	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LIST
		IV-2-S3-VOST-2A	IV-2-S3-VOST-2A-CON	CONDENSATE ✓	BENZENE/CAA & TIC LIST
		IV-2-S3-VOST-2B	IV-2-S3-VOST-2B-TX	TENAX TUBE ✓	ARCHIVE
		IV-2-S3-VOST-2B	IV-2-S3-VOST-2B-TC	TENAX/CHARCOAL TUBE ✓	ARCHIVE
		IV-2-S3-VOST-2B	IV-2-S3-VOST-2B-CON	CONDENSATE ✓	BENZENE/CAA & TIC LIST
		IV-3-S3-VOST-3A	IV-3-S3-VOST-3A-TX	TENAX TUBE	BENZENE/CAA & TIC LIST
		IV-3-S3-VOST-3A	IV-3-S3-VOST-3A-TC	TENAX/CHARCOAL TUBE	BENZENE/CAA & TIC LIST
		IV-3-S3-VOST-3A	IV-3-S3-VOST-3A-CON	CONDENSATE	BENZENE/CAA & TIC LIST
		IV-3-S3-VOST-3B	IV-3-S3-VOST-3B-TX	TENAX TUBE	ARCHIVE
		IV-3-S3-VOST-3B	IV-3-S3-VOST-3B-TC	TENAX/CHARCOAL TUBE	ARCHIVE
		IV-3-S3-VOST-3B	IV-3-S3-VOST-3B-CON	CONDENSATE	BENZENE/CAA & TIC LIST

JEWELL COAL & COKE - SAMPLE AND ANALYSES LOG

VOST METHOD					
FIELD BLANKS		DATE COLLECTED: / /			
DATA HANDLERS INITIALS	CLEAN-UP PERSONNEL INITIALS	RUN NUMBER	RUN IDENTIFICATION	DESCRIPTION	ANALYSES
	CEN	IV-1-S3-VOST-A-FB 10/29	IV-1-S3-VOST-A-TX-FB	TENAX TUBE ✓	BENZENE/CAA & TIC LI
		IV-1-S3-VOST-A-FB	IV-1-S3-VOST-A-TC-FB	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LI
		IV-1-S3-VOST-A-FB	IV-1-S3-VOST-A-CON-FB	CONDENSATE ✓	BENZENE/CAA & TIC LI
		IV-1-S3-VOST-B-FB	IV-1-S3-VOST-B-TX-FB	TENAX TUBE ✓	BENZENE/CAA & TIC LI
		IV-1-S3-VOST-B-FB	IV-1-S3-VOST-B-TC-FB	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LI
		IV-1-S3-VOST-B-FB	IV-1-S3-VOST-B-CON-FB	CONDENSATE ✓	BENZENE/CAA & TIC LI
		IV-1-S3-VOST-C-FB 10/30	IV-1-S3-VOST-C-TX-FB ✓	TENAX TUBE ✓	BENZENE/CAA & TIC LI
		IV-1-S3-VOST-C-FB	IV-1-S3-VOST-C-TC-FB ✓	TENAX/CHARCOAL TUBE	BENZENE/CAA & TIC LI
		IV-1-S3-VOST-C-FB	IV-1-S3-VOST-C-CON-FB	CONDENSATE	BENZENE/CAA & TIC LI
	CEN	IV-2-S3-VOST-A-FB 10/30	IV-2-S3-VOST-A-TX-FB	TENAX TUBE ✓	BENZENE/CAA & TIC LI
		IV-2-S3-VOST-A-FB	IV-2-S3-VOST-A-TC-FB	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LI
		IV-2-S3-VOST-A-FB	IV-2-S3-VOST-A-CON-FB	CONDENSATE ✓	BENZENE/CAA & TIC LI
		IV-2-S3-VOST-B-FB	IV-2-S3-VOST-B-TX-FB	TENAX TUBE ✓	BENZENE/CAA & TIC LI
	CEN	IV-2-S3-VOST-B-FB	IV-2-S3-VOST-B-TC-FB	TENAX/CHARCOAL TUBE ✓	BENZENE/CAA & TIC LI
		IV-2-S3-VOST-B-FB	IV-2-S3-VOST-B-CON-FB	CONDENSATE ✓	BENZENE/CAA & TIC LI
		IV-3-S3-VOST-A-FB	IV-3-S3-VOST-A-TX-FB	TENAX TUBE	BENZENE/CAA & TIC LI
		IV-3-S3-VOST-A-FB	IV-3-S3-VOST-A-TC-FB	TENAX/CHARCOAL TUBE	BENZENE/CAA & TIC LI
		IV-3-S3-VOST-A-FB	IV-3-S3-VOST-A-CON-FB	CONDENSATE	BENZENE/CAA & TIC LI
		IV-3-S3-VOST-B-FB	IV-3-S3-VOST-B-TX-FB	TENAX TUBE	BENZENE/CAA & TIC LI
		IV-3-S3-VOST-B-FB	IV-3-S3-VOST-B-TC-FB	TENAX/CHARCOAL TUBE	BENZENE/CAA & TIC LI
		IV-3-S3-VOST-B-FB	IV-3-S3-VOST-B-CON-FB	CONDENSATE	BENZENE/CAA & TIC LI

REAGENT BLANKS		DATE COLLECTED: / /	
DATA HANDLERS INITIALS	CLEAN-UP PERSONNEL INITIALS	VOLUME/NUMBER	DESCRIPTION
			TENAX TUBE
			TENAX/CHARCOAL TUBE
			DI WAT[illegible]ILTRAPURE)

JEWELL COAL & COKE AMPLE AND ANALYSES LOG

DATA HANDLERS INITIALS	CLEAN-UP PERSONNEL INITIALS	RUN NUMBER	RUN IDENTIFICATION	DESCRIPTION	ANALYSES	
CLT	LAS	I-1-S2-MM5-1A DF189	I-1-S2-MM5-1A-PRM	FH MeOH/MeCl2 RINSE ✓	EXTRACT/CGMS	10/29
		I-1-S2-MM5-1A	I-1-S2-MM5-1A-DFF	DF FILTER ✓	EXTRACT/GCMS	
		I-1-S2-MM5-1A	I-1-S2-MM5-1A-XAD	XAD SORBENT ✓	GRAV/EXT/GCMS	
		I-1-S2-MM5-1A	I-1-S2-MM5-1A-CON	DI REAGENT & CONDENSAT ✓	GRAV/EXT/GCMS	
		I-1-S2-MM5-1A	I-1-S2-MM5-1A-BRM	BH MeOH/MeCl2 RINSE ✓	GCMS	
		I-1-S2-MM5-1A	I-1-S2-MM5-1A-SiG	SILICA GEL ✓	GRAVIMETRIC/REUSE	
		I-1-S2-MM5-1B	I-1-S2-MM5-1B-PRM	FH MeOH/MeCl2 RINSE ✓	EXTRACT/ARCHIVE	10/29
		I-1-S2-MM5-1B	I-1-S2-MM5-1B-DFF	DF FILTER ✓	EXTRACT/ARCHIVE	
		I-1-S2-MM5-1B	I-1-S2-MM5-1B-XAD	XAD SORBENT MODULE ✓	EXTRACT/ARCHIVE	
		I-1-S2-MM5-1B	I-1-S2-MM5-1B-CON	DI REAGENT & CONDENSAT ✓	EXTRACT/ARCHIVE	
		I-1-S2-MM5-1B	I-1-S2-MM5-1B-BRM	BH MeOH/MeCl2 RINSE ✓	EXTRACT/ARCHIVE	
		I-1-S2-MM5-1B	I-1-S2-MM5-1B-SiG	SILICA GEL ✓	EXTRACT/ARCHIVE	
CLT	LAS	I-2-S2-MM5-2A DF102	I-2-S2-MM5-2A-PRM	FH MeOH/MeCl2 RINSE ✓	EXTRACT/CGMS	10/31
		I-2-S2-MM5-2A	I-2-S2-MM5-2A-DFF	DF FILTER ✓	EXTRACT/GCMS	
		I-2-S2-MM5-2A	I-2-S2-MM5-2A-XAD	XAD SORBENT ✓	GRAV/EXT/GCMS	
		I-2-S2-MM5-2A	I-2-S2-MM5-2A-CON	DI REAGENT & CONDENSAT ✓	GRAV/EXT/GCMS	
		I-2-S2-MM5-2A	I-2-S2-MM5-2A-BRM	BH MeOH/MeCl2 RINSE ✓	GCMS	
		I-2-S2-MM5-2A	I-2-S2-MM5-2A-SiG	SILICA GEL ✓	GRAVIMETRIC/REUSE	
This train not used due to bad heat sheath on probe		I-2-S2-MM5-2B	I-2-S2-MM5-2B-PRM	FH MeOH/MeCl2 RINSE	EXTRACT/ARCHIVE	
		I-2-S2-MM5-2B	I-2-S2-MM5-2B-DFF	DF FILTER	EXTRACT/ARCHIVE	
		I-2-S2-MM5-2B	I-2-S2-MM5-2B-XAD	XAD SORBENT MODULE	EXTRACT/ARCHIVE	
		I-2-S2-MM5-2B	I-2-S2-MM5-2B-CON	DI REAGENT & CONDENSAT	EXTRACT/ARCHIVE	
		I-2-S2-MM5-2B	I-2-S2-MM5-2B-BRM	BH MeOH/MeCl2 RINSE	EXTRACT/ARCHIVE	
		I-2-S2-MM5-2B	I-2-S2-MM5-2B-SiG	SILICA GEL	EXTRACT/ARCHIVE	
CLT	JIP	I-3-S2-MM5-3A DF183	I-3-S2-MM5-3A-PRM	FH MeOH/MeCl2 RINSE ✓	EXTRACT/CGMS	10/31
		I-3-S2-MM5-3A	I-3-S2-MM5-3A-DFF	DF FILTER ✓	EXTRACT/GCMS	
		I-3-S2-MM5-3A	I-3-S2-MM5-3A-XAD	XAD SORBENT ✓	GRAV/EXT/GCMS	
		I-3-S2-MM5-3A	I-3-S2-MM5-3A-CON	DI REAGENT & CONDENSAT ✓	GRAV/EXT/GCMS	
		I-3-S2-MM5-3A	I-3-S2-MM5-3A-BRM	BH MeOH/MeCl2 RINSE ✓	GCMS	
		I-3-S2-MM5-3A	I-3-S2-MM5-3A-SiG	SILICA GEL ✓	GRAVIMETRIC/REUSE	
		I-3-S2-MM5-3B	I-3-S2-MM5-3B-PRM	FH MeOH/MeCl2 RINSE ✓	EXTRACT/ARCHIVE	10/31
		I-3-S2-MM5-3B	I-3-S2-MM5-3B-DFF	DF FILTER ✓	EXTRACT/ARCHIVE	
		I-3-S2-MM5-3B	I-3-S2-MM5-3B-XAD	XAD SORBENT MODULE ✓	EXTRACT/ARCHIVE	
		I-3-S2-MM5-3B	I-3-S2-MM5-3B-CON	DI REAGENT & CONDENSAT ✓	EXTRACT/ARCHIVE	
		I-3-S2-MM5-3B	I-3-S2-MM5-3B-BRM	BH MeOH/MeCl2 RINSE ✓	EXTRACT/ARCHIVE	
		I-3-S2-MM5-3B	I-3-S2-MM5-3B-SiG	SILICA GEL ✓	EXTRACT/ARCHIVE	

(II-1 GOOD RUN DF103) (AFUR IN DF 214)

CLT	JIP	II-1-S2-MM5-1A	II-1-S2-MM5-1A-PRM ✓	FH MeOH/MeCl2 RINSE	EXTRACT/CGMS	10/28 (DF214)
		II-1-S2-MM5-1A	II-1-S2-MM5-1A-DFF ✓	DF FILTER	EXTRACT/GCMS	
		II-1-S2-MM5-1A	II-1-S2-MM5-1A-XAD	XAD SORBENT MODULE ✓	GRAV/EXT/GCMS	
		II-1-S2-MM5-1A	II-1-S2-MM5-1A-CON ✓	DI REAGENT & CONDENSAT	GRAV/EXT/GCMS	
		II-1-S2-MM5-1A	II-1-S2-MM5-1A-BRM ✓	BH MeOH/MeCl2 RINSE	GCMS	
		II-1-S2-MM5-1A	II-1-S2-MM5-1A-SiG ✓	SILICA GEL	GRAVIMETRIC/REUSE	
CLT	JIP	II-1-S2-MM5-1B	II-1-S2-MM5-1B-PRM ✓	FH MeOH/MeCl2 RINSE	EXTRACT/CGMS	10/28 (DF214)
		II-1-S2-MM5-1B	II-1-S2-MM5-1B-DFF ✓	DF FILTER	EXTRACT/GCMS	
		II-1-S2-MM5-1B	II-1-S2-MM5-1B-XAD	XAD SORBENT MODULE ✓	GRAV/EXT/GCMS	
		II-1-S2-MM5-1B	II-1-S2-MM5-1B-CON ✓	DI REAGENT & CONDENSAT	GRAV/EXT/GCMS	
		II-1-S2-MM5-1B	II-1-S2-MM5-1B-BRM ✓	BH MeOH/MeCl2 RINSE	GCMS	
		II-1-S2-MM5-1B	II-1-S2-MM5-1B-SiG ✓	SILICA GEL	GRAVIMETRIC/REUSE	
CLT	JIP	II-2-S2-MM5-2A DF210	II-2-S2-MM5-2A-PRM	FH MeOH/MeCl2 RINSE ✓	EXTRACT/CGMS	10/30
		II-2-S2-MM5-2A	II-2-S2-MM5-2A-DFF	DF FILTER ✓	EXTRACT/GCMS	
		II-2-S2-MM5-2A	II-2-S2-MM5-2A-XAD	XAD SORBENT ✓	GRAV/EXT/GCMS	
		II-2-S2-MM5-2A	II-2-S2-MM5-2A-CON	DI REAGENT & CONDENSAT ✓	GRAV/EXT/GCMS	
		II-2-S2-MM5-2A	II-2-S2-MM5-2A-BRM	BH MeOH/MeCl2 RINSE ✓	GCMS	
		II-2-S2-MM5-2A	II-2-S2-MM5-2A-SiG	SILICA GEL ✓	GRAVIMETRIC/REUSE	
		II-2-S2-MM5-2B	II-2-S2-MM5-2B-PRM	FH MeOH/MeCl2 RINSE ✓	EXTRACT/CGMS	10/30
		II-2-S2-MM5-2B	II-2-S2-MM5-2B-DFF	DF FILTER ✓	EXTRACT/GCMS	
		II-2-S2-MM5-2B	II-2-S2-MM5-2B-XAD	XAD SORBENT MODULE ✓	GRAV/EXT/GCMS	
		II-2-S2-MM5-2B	II-2-S2-MM5-2B-CON	DI REAGENT & CONDENSAT ✓	GRAV/EXT/GCMS	
		II-2-S2-MM5-2B	II-2-S2-MM5-2B-BRM	BH MeOH/MeCl2 RINSE ✓	GCMS	
		II-2-S2-MM5-2B	II-2-S2-MM5-2B-SiG	SILICA GEL ✓	GRAVIMETRIC/REUSE	
CLT	TRR	II-3-S2-MM5-3A	II-3-S2-MM5-3A-PRM	FH MeOH/MeCl2 RINSE ✓	EXTRACT/CGMS	
		II-3-S2-MM5-3A	II-3-S2-MM5-3A-DFF	DF FILTER ✓	EXTRACT/GCMS	
		II-3-S2-MM5-3A	II-3-S2-MM5-3A-XAD	XAD SORBENT ✓	GRAV/EXT/GCMS	
		II-3-S2-MM5-3A	II-3-S2-MM5-3A-CON	DI REAGENT & CONDENSAT ✓	GRAV/EXT/GCMS	
		II-3-S2-MM5-3A	II-3-S2-MM5-3A-BRM	BH MeOH/MeCl2 RINSE ✓	GCMS	
		II-3-S2-MM5-3A	II-3-S2-MM5-3A-SiG	SILICA GEL ✓	GRAVIMETRIC/REUSE	
		II-3-S2-MM5-3B	II-3-S2-MM5-3B-PRM	FH MeOH/MeCl2 RINSE	EXTRACT/CGMS	
		II-3-S2-MM5-3B	II-3-S2-MM5-3B-DFF	DF FILTER	EXTRACT/GCMS	
		II-3-S2-MM5-3B	II-3-S2-MM5-3B-XAD	XAD SORBENT MODULE	GRAV/EXT/GCMS	
		II-3-S2-MM5-3B	II-3-S2-MM5-3B-CON	DI REAGENT & CONDENSAT	GRAV/EXT/GCMS	
		II-3-S2-MM5-3B	II-3-S2-MM5-3B-BRM	BH MeOH/MeCl2 RINSE	GCMS	
		II-3-S2-MM5-3B	II-3-S2-MM5-3B-SiG	SILICA GEL	GRAVIMETRIC/REUSE	
CLT	TCM	III-1-S2-MM5-1A DF205	III-1-S2-MM5-1A-PRM	FH MeOH/MeCl2 RINSE ✓	EXTRACT/CGMS	10/30
		III-1-S2-MM5-1A "	III-1-S2-MM5-1A-DFF	DF FILTER ✓	EXTRACT/GCMS	
		III-1-S2-MM5-1A "	III-1-S2-MM5-1A-XAD	XAD SORBENT	GRAV/EXT/GCMS	

CLT	TCM	III-1-S2-MM5-1A DF205	III-1-S2-M[illegible]-1A-CON	DI REAGENT & CONDENSAT ✓	GRAV/EXT/G[illegible]S	
		III-1-S2-MM5-1A	III-1-S2-M[illegible]-1A-BRM	BH MeOH/MeCl2 RINSE ✓	GCMS	
		III-1-S2-MM5-1A	III-1-S2-MM5-1A-SiG	SILICA GEL ✓	GRAVIMETRIC/REUSE	
CLT	TRR	III-1-S2-MM5-1B DF205	III-1-S2-MM5-1B-PRM	FH MeOH/MeCl2 RINSE ✓	EXTRACT/CGMS	
		III-1-S2-MM5-1B	III-1-S2-MM5-1B-DFF	DF FILTER ✓	EXTRACT/GCMS	
		III-1-S2-MM5-1B	III-1-S2-MM5-1B-XAD	XAD SORBENT MODULE ✓	GRAV/EXT/GCMS	10/30
		III-1-S2-MM5-1B	III-1-S2-MM5-1B-CON	DI REAGENT & CONDENSAT ✓	GRAV/EXT/GCMS	
		III-1-S2-MM5-1B	III-1-S2-MM5-1B-BRM	BH MeOH/MeCl2 RINSE ✓	GCMS	
		III-1-S2-MM5-1B	III-1-S2-MM5-1B-SiG	SILICA GEL ✓	GRAVIMETRIC/REUSE	
CLT	TCM	III-2-S2-MM5-2A DF 130	III-2-S2-MM5-2A-PRM	FH MeOH/MeCl2 RINSE ✓	EXTRACT/CGMS	
		III-2-S2-MM5-2A	III-2-S2-MM5-2A-DFF	DF FILTER ✓	EXTRACT/GCMS	
		III-2-S2-MM5-2A	III-2-S2-MM5-2A-XAD	XAD SORBENT ✓	GRAV/EXT/GCMS	
		III-2-S2-MM5-2A	III-2-S2-MM5-2A-CON	DI REAGENT & CONDENSAT ✓	GRAV/EXT/GCMS	
		III-2-S2-MM5-2A	III-2-S2-MM5-2A-BRM	BH MeOH/MeCl2 RINSE ✓	GCMS	
		III-2-S2-MM5-2A	III-2-S2-MM5-2A-SiG	SILICA GEL ✓	GRAVIMETRIC/REUSE	
		III-2-S2-MM5-2B	III-2-S2-MM5-2B-PRM	FH MeOH/MeCl2 RINSE ✓	EXTRACT/CGMS	
		III-2-S2-MM5-2B	III-2-S2-MM5-2B-DFF	DF FILTER ✓	EXTRACT/GCMS	
		III-2-S2-MM5-2B	III-2-S2-MM5-2B-XAD	XAD SORBENT MODULE ✓	GRAV/EXT/GCMS	10/31
		III-2-S2-MM5-2B	III-2-S2-MM5-2B-CON	DI REAGENT & CONDENSAT ✓	GRAV/EXT/GCMS	
		III-2-S2-MM5-2B	III-2-S2-MM5-2B-BRM	BH MeOH/MeCl2 RINSE ✓	GCMS	
		III-2-S2-MM5-2B	III-2-S2-MM5-2B-SiG	SILICA GEL ✓	GRAVIMETRIC/REUSE	
CLT	TRR	III-3-S2-MM5-3A	III-3-S2-MM5-3A-PRM	FH MeOH/MeCl2 RINSE ✓	EXTRACT/CGMS	
		III-3-S2-MM5-3A	III-3-S2-MM5-3A-DFF	DF FILTER ✓	EXTRACT/GCMS	
		III-3-S2-MM5-3A	III-3-S2-MM5-3A-XAD	XAD SORBENT	GRAV/EXT/GCMS	
		III-3-S2-MM5-3A	III-3-S2-MM5-3A-CON	DI REAGENT & CONDENSAT ✓	GRAV/EXT/GCMS	
		III-3-S2-MM5-3A	III-3-S2-MM5-3A-BRM	BH MeOH/MeCl2 RINSE ✓	GCMS	
		III-3-S2-MM5-3A	III-3-S2-MM5-3A-SiG	SILICA GEL ✓	GRAVIMETRIC/REUSE	
		III-3-S2-MM5-3B	III-3-S2-MM5-3B-PRM	FH MeOH/MeCl2 RINSE	EXTRACT/CGMS	
		III-3-S2-MM5-3B	III-3-S2-MM5-3B-DFF	DF FILTER	EXTRACT/GCMS	
		III-3-S2-MM5-3B	III-3-S2-MM5-3B-XAD	XAD SORBENT MODULE	GRAV/EXT/GCMS	
		III-3-S2-MM5-3B	III-3-S2-MM5-3B-CON	DI REAGENT & CONDENSAT	GRAV/EXT/GCMS	
		III-3-S2-MM5-3B	III-3-S2-MM5-3B-BRM	BH MeOH/MeCl2 RINSE	GCMS	
		III-3-S2-MM5-3B	III-3-S2-MM5-3B-SiG	SILICA GEL	GRAVIMETRIC/REUSE	
CLT	JIP	IV-1-S2-MM5-1A DF 180	IV-1-S2-MM5-1A-PRM	FH MeOH/MeCl2 RINSE ✓	EXTRACT/ARCHIVE	
		IV-1-S2-MM5-1A	IV-1-S2-MM5-1A-DFF	DF FILTER ✓	EXTRACT/ARCHIVE	
		IV-1-S2-MM5-1A	IV-1-S2-MM5-1A-XAD	XAD SORBENT MODULE ✓	EXTRACT/ARCHIVE	10/30
		IV-1-S2-MM5-1A	IV-1-S2-MM5-1A-CON	DI REAGENT & CONDENSAT ✓	EXTRACT/ARCHIVE	
		IV-1-S2-MM5-1A	IV-1-S2-MM5-1A-BRM	BH MeOH/MeCl2 RINSE ✓	EXTRACT/ARCHIVE	
		IV-1-S2-MM5-1A	IV-1-S2-MM5-1A-SiG	SILICA GEL ✓	EXTRACT/ARCHIVE	

CLT	JIP	IV-1-S2-MM5-1B DF180	IV-1-S2-MM5-1B-PRM	FH MeOH/M[illegible] RINSE ✓	EXTRACT/ARCHIVE
		IV-1-S2-MM5-1B	IV-1-S2-MM5-1B-DFF	DF FILTER ✓	EXTRACT/ARCHIVE
		IV-1-S2-MM5-1B	IV-1-S2-MM5-1B-XAD	XAD SORBENT MODULE ✓	EXTRACT/ARCHIVE
		IV-1-S2-MM5-1B	IV-1-S2-MM5-1B-CON	DI REAGENT & CONDENSAT ✓	EXTRACT/ARCHIVE
		IV-1-S2-MM5-1B	IV-1-S2-MM5-1B-BRM	BH MeOH/MeCl2 RINSE ✓	EXTRACT/ARCHIVE
		IV-1-S2-MM5-1B	IV-1-S2-MM5-1B-SiG	SILICA GEL ✓	EXTRACT/ARCHIVE
CLT	TM/TRR	IV-2-S2-MM5-2A DF112	IV-2-S2-MM5-2A-PRM	FH MeOH/MeCl2 RINSE ✓	EXTRACT/CGMS
		IV-2-S2-MM5-2A	IV-2-S2-MM5-2A-DFF	DF FILTER ✓	EXTRACT/GCMS
		IV-2-S2-MM5-2A	IV-2-S2-MM5-2A-XAD	XAD SORBENT ✓	GRAV/EXT/GCMS
		IV-2-S2-MM5-2A	IV-2-S2-MM5-2A-CON	DI REAGENT & CONDENSAT ✓	GRAV/EXT/GCMS
		IV-2-S2-MM5-2A	IV-2-S2-MM5-2A-BRM	BH MeOH/MeCl2 RINSE ✓	GCMS
		IV-2-S2-MM5-2A	IV-2-S2-MM5-2A-SiG	SILICA GEL ✓	GRAVIMETRIC/REUSE
		IV-2-S2-MM5-2B	IV-2-S2-MM5-2B-PRM	FH MeOH/MeCl2 RINSE	EXTRACT/ARCHIVE
		IV-2-S2-MM5-2B	IV-2-S2-MM5-2B-DFF	DF FILTER ✓	EXTRACT/ARCHIVE
		IV-2-S2-MM5-2B	IV-2-S2-MM5-2B-XAD	XAD SORBENT MODULE ✓	EXTRACT/ARCHIVE
		IV-2-S2-MM5-2B	IV-2-S2-MM5-2B-CON	DI REAGENT & CONDENSAT ✓	EXTRACT/ARCHIVE
		IV-2-S2-MM5-2B	IV-2-S2-MM5-2B-BRM	BH MeOH/MeCl2 RINSE ✓	EXTRACT/ARCHIVE
		IV-2-S2-MM5-2B	IV-2-S2-MM5-2B-SiG	SILICA GEL ✓	EXTRACT/ARCHIVE
		IV-3-S2-MM5-3A	IV-3-S2-MM5-3A-PRM	FH MeOH/MeCl2 RINSE	EXTRACT/CGMS
		IV-3-S2-MM5-3A	IV-3-S2-MM5-3A-DFF	DF FILTER	EXTRACT/GCMS
		IV-3-S2-MM5-3A	IV-3-S2-MM5-3A-XAD	XAD SORBENT	GRAV/EXT/GCMS
		IV-3-S2-MM5-3A	IV-3-S2-MM5-3A-CON	DI REAGENT & CONDENSAT	GRAV/EXT/GCMS
		IV-3-S2-MM5-3A	IV-3-S2-MM5-3A-BRM	BH MeOH/MeCl2 RINSE	GCMS
		IV-3-S2-MM5-3A	IV-3-S2-MM5-3A-SiG	SILICA GEL	GRAVIMETRIC/REUSE
		IV-3-S2-MM5-3B	IV-3-S2-MM5-3B-PRM	FH MeOH/MeCl2 RINSE	EXTRACT/ARCHIVE
		IV-3-S2-MM5-3B	IV-3-S2-MM5-3B-DFF	DF FILTER	EXTRACT/ARCHIVE
		IV-3-S2-MM5-3B	IV-3-S2-MM5-3B-XAD	XAD SORBENT MODULE	EXTRACT/ARCHIVE
		IV-3-S2-MM5-3B	IV-3-S2-MM5-3B-CON	DI REAGENT & CONDENSAT	EXTRACT/ARCHIVE
		IV-3-S2-MM5-3B	IV-3-S2-MM5-3B-BRM	BH MeOH/MeCl2 RINSE	EXTRACT/ARCHIVE
		IV-3-S2-MM5-3B	IV-3-S2-MM5-3B-SiG	SILICA GEL	EXTRACT/ARCHIVE

JEWELL COAL & COKE - SAMPLE AND ANALYSES LOG

MODIFIED METHOD 5					
FIELD BLANKS		DATE COLLECTED: / /			
DATA HANDLERS INITIALS	CLEAN-UP PERSONNEL INITIALS	RUN NUMBER	RUN IDENTIFICATION	DESCRIPTION	ANALYSES
		IV-2-S2-MM5-FB	IV-2-S2-MM5-PRM-FB	FH MeOH/MeCl2 RINSE	EXTRACT/GCMS
		IV-2-S2-MM5-FB	IV-2-S2-MM5-DFF-FB	DIOXIN-FURAN FILTER	EXTRACT/GCMS
		IV-2-S2-MM5-FB	IV-2-S2-MM5-XAD-FB	XAD SORBENT MODULE ✓	GRAV/EXTRACT/GCMS
		IV-2-S2-MM5-FB	IV-2-S2-MM5-CON-FB	DI REAGENT	GRAV/EXTRACT/GCMS
		IV-2-S2-MM5-FB	IV-2-S2-MM5-BRM-FB	BH MeOH/MeCl2 RINSE	GCMS

REAGENT BLANKS		DATE COLLECTED: 10/31/91	
DATA HANDLERS INITIALS	CLEAN-UP PERSONNEL INITIALS	VOLUME/NUMBER	DESCRIPTION
CLT	JIP	1 jar ea	MeOH/MeCl2 RINSE ✓
↓	↓	1	DF FILTER
		1	XAD - TRIP BLANK (TB) ✓
		200.	DI WATER REAGENT

DF 102

NOTE: additional rinse of MeOH/MeCl for impingers.

Missing I-3-S2-MM5-3A Imp. rinse w/ MeOH-MeCl

JEWELL COAL & COKE - SAMPLE AND ANALYSES LOG

DATA HANDLERS INITIALS	CLEAN-UP PERSONNEL INITIALS	RUN NUMBER	RUN IDENTIFICATION	DESCRIPTION	ANALYSES
CLT	JTP/CEO	[redacted]			
		I-1-S1-MMTL-1 RB M138	I-1-S1-MMTL-1-PRN ✓	FH RINSE/NITRIC	GFAAS/CVAAS
		I-1-S1-MMTL-1 RB 1000	I-1-S1-MMTL-1-QFF ✓	QUARTZ FILTER	GRAV/GFAAS/CVAAS
		I-1-S1-MMTL-1 RB M138	I-1-S1-MMTL-1-CON1 ✓	IMP'S. 1-3 & RINSE	CVAAS/GFAAS
		I-1-S1-MMTL-1	I-1-S1-MMTL-1-CON2 ✓	IMP. 4 & RINSE	CVAAS
		I-1-S1-MMTL-1	I-1-S1-MMTL-1-CON3 ✓	KMnO4 IMP'S. & RINSE	CVAAS
		I-1-S1-MMTL-1 RB 1000	I-1-S1-MMTL-1-BHH ✓	8N HCl RINSE	CVAAS
		I-1-S1-MMTL-1 RB M138	I-1-S1-MMTL-1-SiG ✓	SILICA GEL	GRAV/REUSE
CLT		[redacted]			
	A	I-2-S1-MMTL-2	I-2-S1-MMTL-2-PRN	FH RINSE/NITRIC	GFAAS/CVAAS
	B. 3	I-2-S1-MMTL-2 RB 1000	I-2-S1-MMTL-2-QFF	QUARTZ FILTER	GRAV/GFAAS/CVAAS
	D	I-2-S1-MMTL-2	I-2-S1-MMTL-2-CON1	IMP'S. 1-3 & RINSE	CVAAS/GFAAS
	R	I-2-S1-MMTL-2	I-2-S1-MMTL-2-CON2	IMP. 4 & RINSE	CVAAS
	1	I-2-S1-MMTL-2	I-2-S1-MMTL-2-CON3	KMnO4 IMP'S. & RINSE	CVAAS
	Water rinse	I-2-S1-MMTL-2	I-2-S1-MMTL-2-BHH	8N HCl RINSE	CVAAS
		I-2-S1-MMTL-2	I-2-S1-MMTL-2-SiG	SILICA GEL	GRAV/REUSE
CLT	[redacted]/RRS[redacted]	[redacted]			
		I-3-S1-MMTL-3 RB M130	I-3-S1-MMTL-3-PRN	FH RINSE/NITRIC ✓	GFAAS/CVAAS
		I-3-S1-MMTL-3	I-3-S1-MMTL-3-QFF	QUARTZ FILTER ✓	GRAV/GFAAS/CVAAS
		I-3-S1-MMTL-3	I-3-S1-MMTL-3-CON1	IMP'S. 1-3 & RINSE ✓	CVAAS/GFAAS
		I-3-S1-MMTL-3	I-3-S1-MMTL-3-CON2	IMP. 4 & RINSE ✓	CVAAS
		I-3-S1-MMTL-3	I-3-S1-MMTL-3-CON3	KMnO4 IMP'S. & RINSE ✓	CVAAS
		I-3-S1-MMTL-3	I-3-S1-MMTL-3-BHH	8N HCl RINSE ✓	CVAAS
		I-3-S1-MMTL-3	I-3-S1-MMTL-3-SiG	SILICA GEL ✓	GRAV/REUSE

10/31

JEWELL COAL & COKE - SAMPLE AND ANALYSES LOG

DATA HANDLERS INITIALS	CLEAN-UP PERSONNEL INITIALS	RUN NUMBER	RUN IDENTIFICATION	DESCRIPTION	ANALYSES	
CLT	JIP/CEO	II-1-S1-MMTL-1 RB M138	II-1-S1-MMTL-1-PRN ✓	FH RINSE/NITRIC	GFAAS/CVAAS	10/28 - ABORTED did another, OK
		II-1-S1-MMTL-1 RB 1000	II-1-S1-MMTL-1-QFF ✓	QUARTZ FILTER	GRAV/GFAAS/CVAAS	
		II-1-S1-MMTL-1 RB M138	II-1-S1-MMTL-1-CON1 ✓	IMP'S. 1-3 & RINSE/NIT	CVAAS/GFAAS	
		II-1-S1-MMTL-1	II-1-S1-MMTL-1-CON2 ✓	IMP. 4 & RINSE/NITRIC	CVAAS	
		II-1-S1-MMTL-1	II-1-S1-MMTL-1-CON3 ✓	KMnO4 IMP'S. & RINSE	CVAAS	
		II-1-S1-MMTL-1 RB 1000	II-1-S1-MMTL-1-BHH ✓	8N HCl RINSE, 25mL	CVAAS	
		II-1-S1-MMTL-1 RB M138	II-1-S1-MMTL-1-SiG ✓	SILICA GEL	GRAV/REUSE	
CLT	CEO / RRS	II-2-S1-MMTL-2 RB M140	II-2-S1-MMTL-2-PRN	FH RINSE/NITRIC ✓	GFAAS/CVAAS	10/30
		II-2-S1-MMTL-2	II-2-S1-MMTL-2-QFF	QUARTZ FILTER ✓	GRAV/GFAAS/CVAAS	
		II-2-S1-MMTL-2	II-2-S1-MMTL-2-CON1	IMP'S. 1-3 & RINSE/NIT ✓	CVAAS/GFAAS	
		II-2-S1-MMTL-2	II-2-S1-MMTL-2-CON2	IMP. 4 & RINSE/NITRIC ✓	CVAAS	
		II-2-S1-MMTL-2	II-2-S1-MMTL-2-CON3	KMnO4 IMP'S. & RINSE ✓	CVAAS	
		II-2-S1-MMTL-2	II-2-S1-MMTL-2-BHH	8N HCl RINSE, 25mL ✓	CVAAS	
		II-2-S1-MMTL-2	II-2-S1-MMTL-2-SiG	SILICA GEL ✓	GRAV/REUSE	
CLT	CEO	II-3-S1-MMTL-3	II-3-S1-MMTL-3-PRN	FH RINSE/NITRIC	GFAAS/CVAAS	10/30
		II-3-S1-MMTL-3	II-3-S1-MMTL-3-QFF	QUARTZ FILTER	GRAV/GFAAS/CVAAS	
		II-3-S1-MMTL-3	II-3-S1-MMTL-3-CON1	IMP'S. 1-3 & RINSE/NIT	CVAAS/GFAAS	
		II-3-S1-MMTL-3	II-3-S1-MMTL-3-CON2	IMP. 4 & RINSE/NITRIC	CVAAS	
		II-3-S1-MMTL-3	II-3-S1-MMTL-3-CON3	KMnO4 IMP'S. & RINSE	CVAAS	
		II-3-S1-MMTL-3	II-3-S1-MMTL-3-BHH	8N HCl RINSE, 25mL	CVAAS	
		II-3-S1-MMTL-3	II-3-S1-MMTL-3-SiG	SILICA GEL	GRAV/REUSE	

JEWELL COAL & COKE - SAMPLE AND ANALYSES LOG

DATA HANDLERS INITIALS	CLEAN-UP PERSONNEL INITIALS	RUN NUMBER	RUN IDENTIFICATION	DESCRIPTION	ANALYSES
CLT	CEO / RSS				
	R	III-1-S1-MMTL-1 RB M114	III-1-S1-MMTL-1-PRN	FH RINSE/NITRIC ✓	GFAAS/CVAAS
		III-1-S1-MMTL-1 RB M114	III-1-S1-MMTL-1-QFF	QUARTZ FILTER ✓	GRAV/GFAAS/CVAAS
		III-1-S1-MMTL-1	III-1-S1-MMTL-1-CON1	IMP'S. 1-3 & RINSE ✓	CVAAS/GFAAS
		III-1-S1-MMTL-1	III-1-S1-MMTL-1-CON2	IMP. 4 & RINSE ✓	CVAAS
		III-1-S1-MMTL-1 RB 1000	III-1-S1-MMTL-1-CON3 ✓	KMnO4 IMP'S. & RINSE ✓	CVAAS
		III-1-S1-MMTL-1 RB 1000	III-1-S1-MMTL-1-BHH ✓	8N HCl RINSE ✓	CVAAS
		III-1-S1-MMTL-1 RB M114	III-1-S1-MMTL-1-SiG	SILICA GEL ✓	GRAV/REUSE
CLT	TRR				
		III-2-S1-MMTL-2 RB M140	III-2-S1-MMTL-2-PRN	FH RINSE/NITRIC ✓	GFAAS/CVAAS
		III-2-S1-MMTL-2	III-2-S1-MMTL-2-QFF	QUARTZ FILTER	GRAV/GFAAS/CVAAS
		III-2-S1-MMTL-2 RB 140	III-2-S1-MMTL-2-CON1	IMP'S. 1-3 & RINSE ✓	CVAAS/GFAAS
		III-2-S1-MMTL-2	III-2-S1-MMTL-2-CON2	IMP. 4 & RINSE ✓	CVAAS
		III-2-S1-MMTL-2	III-2-S1-MMTL-2-CON3	KMnO4 IMP'S. & RINSE ✓	CVAAS
		III-2-S1-MMTL-2	III-2-S1-MMTL-2-BHH	8N HCl RINSE ✓	CVAAS
		III-2-S1-MMTL-2	III-2-S1-MMTL-2-SiG	SILICA GEL ✓	GRAV/REUSE
CLT	TRR				
		III-3-S1-MMTL-3	III-3-S1-MMTL-3-PRN	FH RINSE/NITRIC	GFAAS/CVAAS
		III-3-S1-MMTL-3	III-3-S1-MMTL-3-QFF	QUARTZ FILTER	GRAV/GFAAS/CVAAS
		III-3-S1-MMTL-3	III-3-S1-MMTL-3-CON1	IMP'S. 1-3 & RINSE	CVAAS/GFAAS
		III-3-S1-MMTL-3	III-3-S1-MMTL-3-CON2	IMP. 4 & RINSE	CVAAS
		III-3-S1-MMTL-3	III-3-S1-MMTL-3-CON3	KMnO4 IMP'S. & RINSE	CVAAS
		III-3-S1-MMTL-3	III-3-S1-MMTL-3-BHH	8N HCl RINSE	CVAAS
		III-3-S1-MMTL-3	III-3-S1-MMTL-3-SiG	SILICA GEL	GRAV/REUSE

JEWELL COAL & COKE - SAMPLE AND ANALYSES LOG

DATA HANDLERS INITIALS	CLEAN-UP PERSONNEL INITIALS	RUN NUMBER	RUN IDENTIFICATION	DESCRIPTION	ANALYSES	
CLT	CEO / RSS	[redacted]				
		IV-1-S1-MMTL-1 RB M114	IV-1-S1-MMTL-1-PRN	FH RINSE/NITRIC ✓	GFAAS/CVAAS	
		IV-1-S1-MMTL-1	IV-1-S1-MMTL-1-QFF	QUARTZ FILTER ✓	GRAV/GFAAS/CVAAS	
		IV-1-S1-MMTL-1	IV-1-S1-MMTL-1-CON1	IMP'S. 1-3 & RINSE ✓	CVAAS/GFAAS	
		IV-1-S1-MMTL-1	IV-1-S1-MMTL-1-CON2	IMP. 4 & RINSE ✓	CVAAS	10/30
		IV-1-S1-MMTL-1	IV-1-S1-MMTL-1-CON3	KMnO4 IMP'S. & RINSE ✓	CVAAS	
		IV-1-S1-MMTL-1	IV-1-S1-MMTL-1-BHH	8N HCl RINSE ✓	CVAAS	
		IV-1-S1-MMTL-1	IV-1-S1-MMTL-1-SiG	SILICA GEL ✓	GRAV/REUSE	
CLT	RRS	[redacted]				
		IV-2-S1-MMTL-2 RB M130	IV-2-S1-MMTL-2-PRN	FH RINSE/NITRIC ✓	GFAAS/CVAAS	
		IV-2-S1-MMTL-2	IV-2-S1-MMTL-2-QFF	QUARTZ FILTER ✓	GRAV/GFAAS/CVAAS	
		IV-2-S1-MMTL-2	IV-2-S1-MMTL-2-CON1	IMP'S. 1-3 & RINSE ✓	CVAAS/GFAAS	
		IV-2-S1-MMTL-2	IV-2-S1-MMTL-2-CON2	IMP. 4 & RINSE ✓	CVAAS	10/31
		IV-2-S1-MMTL-2	IV-2-S1-MMTL-2-CON3	KMnO4 IMP'S. & RINSE ✓	CVAAS	
		IV-2-S1-MMTL-2	IV-2-S1-MMTL-2-BHH	8N HCl RINSE ✓	CVAAS	
		IV-2-S1-MMTL-2	IV-2-S1-MMTL-2-SiG	SILICA GEL ✓	GRAV/REUSE	
		[redacted]				
		IV-3-S1-MMTL-3	IV-3-S1-MMTL-3-PRN	FH RINSE/NITRIC	GFAAS/CVAAS	
		IV-3-S1-MMTL-3	IV-3-S1-MMTL-3-QFF	QUARTZ FILTER	GRAV/GFAAS/CVAAS	
		IV-3-S1-MMTL-3	IV-3-S1-MMTL-3-CON1	IMP'S. 1-3 & RINSE	CVAAS/GFAAS	
Not	done	IV-3-S1-MMTL-3	IV-3-S1-MMTL-3-CON2	IMP. 4 & RINSE	CVAAS	
		IV-3-S1-MMTL-3	IV-3-S1-MMTL-3-CON3	KMnO4 IMP'S. & RINSE	CVAAS	
		IV-3-S1-MMTL-3	IV-3-S1-MMTL-3-BHH	8N HCl RINSE	CVAAS	
		IV-3-S1-MMTL-3	IV-3-S1-MMTL-3-SiG	SILICA GEL	GRAV/REUSE	

JEWELL COAL & COKE - SAMPLE AND ANALYSES LOG

MULTIMETALS METHOD					
FIELD BLANKS		DATE COLLECTED: 10 / 1 /91			
DATA HANDLERS INITIALS	CLEAN-UP PERSONNEL INITIALS	RB M101 RUN NUMBER	RUN IDENTIFICATION	DESCRIPTION	ANALYSES
CLT	RSS	IV-2-S1-MMTL-FB	IV-2-SI-MMTL-PRN-FB	FH RINSE/NITRIC ✓	CVAAS/GFAAS
↓	↓	IV-2-S1-MMTL-FB	IV-2-S1-MMTL-QFF-FB	QUARTZ FILTER ✓	GRAV/GFAAS/CVAAS
		IV-2-S1-MMTL-FB	IV-2-S1-MMTL-CON1-FB	IMP'S 1-3 & RINSE/NITRIC ✓	CVAAS/GFAAS
		IV-2-S1-MMTL-FB	IV-2-S1-MMTL-CON2-FB	IMP. 4 & RINSE/NITRIC	CVAAS
		IV-2-S1-MMTL-FB	IV-2-S1-MMTL-CON3-FB	KMn04 IMP's & RINSE ✓	CVAAS
		IV-2-S1-MMTL-FB	IV-2-S1-MMTL-BHH-FB	8N HCI RINSE ✓	CVAAS

Not done

REAGENT BLANKS		DATE COLLECTED: 10 /30/91	
DATA HANDLERS INITIALS	CLEAN-UP PERSONNEL INITIALS	VOLUME/NUMBER	DESCRIPTION
CLT	R. Segal	(1) QFF	FILTER
↓	↓	100 ml	0.1N HNO3 RINSE
		200 ml	HNO3/H202 REAGENT
		200 ml / Lot A	KMnO4 REAGENT
		200 ml	DI WATER
		200 DI / 25 HCl	8N HCI & DI WATER

Reagent Box M120

M5/TSO/M202

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. 0238 Assembly Date 10/23 Assembled By mm

Plant Name/address Jewell Coal & Coke Job No. 3676

Sampling Loc. Stack #1 Method M5/202

Individual Tare Of Reagent 300 (Ml)(~~gm~~) Of DI H_2O

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel ~200 Gm _____ other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
I-1-S1-M5/202-1	10/29	~~[illegible]~~ 1291	0.5024	✓	RRS	10/29/91	60%	✓	RRS
Abort ~~II-1-S1-M5/202-1~~ AFUR	10/28	1292	.5032	✓	CEO	10/29/91	~~[illegible]~~	✓	CEO
~~III-1-S1-M5/202-1~~	10/								
III-1-S1-M5/202-1	10/30	1290	.5021	✓	CEO	10/30/91			

Filter Appearance*: Purplish Filter Cake

Reagents Appearance*: _____

Filter Appearance*: medium gray coverag

Reagents Appearance*: Cloudy

Filter Appearance*: _____

Reagents Appearance*: _____

Filter Appearance*: dark gray heavy loadin

Reagents Appearance*: Clear

field ou

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian DRR Date 11-6-91 Time 1030

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. D237 Assembly Date 10/23 Assembled By mm

Plant Name/address Jewell Coal + Coke, Vansant, Va. Job No. 3676/3694

Sampling Loc. Stack 1, Battery C Method M5/202

Individual Tare Of Reagent 300 (Ml)(~~gm~~) Of DI H_2O

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel ~~~200~~ 400 Gm _____ other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
II-2-51-M5/202-2	10/30/91	1251	.5048	✓	RKS	10/31/91	45%	✓	CEO
				Filter Appearance* extremely light beige coat					
				Reagents Appearance* OK					
III-2-51-M5/202-2	10.31.91	1259	.5050	✓	TR2	10.31	35%	✓	TR2
				Filter Appearance* very light tan					
				Reagents Appearance* clear					
IV-2-51-M5/202-2	10 31	1261	.5075	✓	TR2	10 31	53	2/3s	~~TR~~?
				Filter Appearance* dark gray					
				Reagents Appearance* clear					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS ★ III filter more dirty

Custodian DR RA Date 11-6-91 Time 10:40

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. 0501 Assembly Date 10-23-91 Assembled By MM

Plant Name/address Jewell Coal & Coke Job No. 3676

Sampling Loc. Stack #1 Method M5/202

Individual Tare Of Reagent 300 (Ml)(~~gm~~) Of DI H_2O

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent 400 (Ml)(gm) Of _____

Individual Tare Of Sil. Gel ~~App. 300~~ Gm Silgel

other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
I-3-SLHS/202-3	10/31/91	1262	0.5041			10/31	35%	✓	RRS
				Filter Appearance* Light gray					
				Reagents Appearance*					
II-3-SLHS/202-3	11/1/91	1252	0.5045	✓	CEO	11/1	50%	✓	CEO
				Filter Appearance* Off-white light cake					
				Reagents Appearance* OK					
III-3-SLHS/202-3		1155	0.5167	✓	CEO	11.1	30%	✓	TRS
				Filter Appearance* Very light gray					
				Reagents Appearance* clear					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian JRR Date 11-6-91 Time 0.30

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. 0507 Assembly Date 10/23 Assembled By MM

Plant Name/address Jewell Coal and Coke Job No. 3676

Sampling Loc. Stack #1 Method M5/202

Individual Tare Of Reagent 300 (Ml)(~~gm~~) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel ~~~200~~ 400 Gm _____ other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
W-3-B1-M5/202-3	Nov 1	1260	.5029	Y/N	TRZ	Nov 1	45%	✓	TRZ
				Filter Appearance* light gray					
				Reagents Appearance*					
M5/202-FB	11-1	1254	.5054	✓	TRZ	11.1	—	✓	TRZ
				Filter Appearance* n/a					
				Reagents Appearance* n/a					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian [signature] Date 11-6-91 Time 1035

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. 0202 Assembly Date 10/23 Assembled By mm

Plant Name/address Jewell Coal & Coke Job No. 3676

Sampling Loc. Stack #1 Method 5/202

Individual Tare Of Reagent 300 (Ml)(~~gm~~) Of DiH2O

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel ~ 200 Gm _____ other (specify)

Run Number	Run Date	Filter or XAD Number	Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
III-1-S1-M5/202-1	10/30/91	1294	.5008	✓	CEO	10/30	40	✓	CLT
				Filter Appearance* Heavy, grey cake.					
				Reagents Appearance* Clear					
IV-1-S1-M5/202	10-30	1295	.5029	✓	CEO	10 30	35	2/ts	JEG?
				Filter Appearance* LIGHT GREY/WHITE COAT					
				Reagents Appearance* CLEAR					
I-2-S1-M5/202-2	10-30	1156	.5088	2/ts	JEG?	10 30	35	2/ts	JEG?
				Filter Appearance* LIGHT GREY/WHITE COAT					
				Reagents Appearance* CLEAR					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian DR [illegible] Date 11-6-91 Time 10:40

Q-1002 rev. 10-91

ENTROPY

MMTL

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. M120 Assembly Date 10/24 Assembled By M.M.

Plant Name/address Jewell Coal & Coke Job No. 3694

Sampling Loc. Stack 1 Battery 3C Method MMtl

Individual Tare Of Reagent 200 (Ml)(~~gm~~) Of 5% HNO3 / 10% H2O2

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel 200 Gm _____ other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
Reagent Blanks									
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian DR Pat Date 11-7-91 Time 1120

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. M140 Assembly Date 10-24 Assembled By MM

Plant Name/address Quill Coal & Coke Job No. 3676

Sampling Loc. Stack 1 Method MMR

Individual Tare Of Reagent 200 (Ml)(gm) Of 5% HNO3 / 10% H2O2

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent [redacted] (Ml)(gm) Of _____

Individual Tare Of Sil. Gel ~200 Gm _____ other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
I-2-S1-MMH-2	10/20/91	—	—	✓	RRS	Aborted			
				Filter Appearance*					
				Reagents Appearance*					
II-2-S1-MMH-2	10/30/91	NA →		✓	RRS	10/31/91	35%	✓	CEO
				Filter Appearance* extremely light coat					
				Reagents Appearance* ok					
III-2-S1-MMH-2	10/31/91	n/a —		✓	TR2	10/31/91	30%	✓	TR2
				Filter Appearance* very light tan					
				Reagents Appearance* clear					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian [signature] Date 11-7-91 Time 1:40

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. M138 Assembly Date 10-24 Assembled By MM

Plant Name/address Jewell Coal and Coke, Vansant, VA Job No. 3694

Sampling Loc. Battery 3C - Stack 1 Method MMtl

Individual Tare Of Reagent 200 (Ml) (~~gm~~) Of 5% HNO3 / 10% H2O2

Individual Tare Of Reagent _____ (Ml) (gm) Of _____

Individual Tare Of Reagent _____ (Ml) (gm) Of _____

Individual Tare Of Sil. Gel ~~[illegible]~~ 200 Gm _____

other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
II-1-S1-MMTL-1	10/28			✓	CEO	10/29/91	30%	✓	CEO
ABORT — AFUR									
II-1-S1-MMTL-1	10/29	NA →		✓	CEO	10/30/91	55%	✓	CEO
II-1-S1-MMTL-1	10/30/91	NA →		✓	CEO	10/30/91	50 CLT	✓	CEO

Filter Appearance*: particulate present

Reagents Appearance*: KMnO4 left brown residue

Filter Appearance*: medium loading gray

Reagents Appearance*: OK

Filter Appearance*: Black heavy loading

Reagents Appearance*: OK

Filter Appearance*: _____

Reagents Appearance*: _____

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian DR [illegible] Date 11-7-91 Time 1:30

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. M114 Assembly Date 10-24 Assembled By MM

Plant Name/address Jewell Coal & Coke Job No. 3676

Sampling Loc. Stack #1 Method MMTL

Individual Tare Of Reagent 200 (Ml)(~~gm~~) Of 5% HNO_3 / 10% H_2O_2

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel ~200 Gm _____ other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
III-1-S1-MMTL-1	10/30/91	NA →		✓	CEO	10/30			TR
				Filter Appearance* Light/med gray					
				Reagents Appearance* Clear					
IV-1-S1-MMTL-1	10/30/91	NA →		✓	CEO	10/30	25%	✓	RRS
				Filter Appearance* Light beige gray					
				Reagents Appearance* Clear					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian DR Burton Date 11-7-91 Time 1:30

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. M130 Assembly Date 10-24 Assembled By MM

Plant Name/address Jewell Coal + Coke Job No. 3676/3694

Sampling Loc. Stack 1, C Battery Method MMTL

Individual Tare Of Reagent 200 (Ml)(~~gm~~) Of 5% HNO_3 / 10% H_2O_2

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel ~ 200 Gm _____ other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
IV-2-S1-MMTL-2	10-31	Na		✓	TR2	10-31	25%	✓	RRS
				Filter Appearance* Dark Gray - heavier than some others					
				Reagents Appearance* Clear, $KMnO_4$ OK					
I-3-S1-MMH-3	10/31	NA		✓	CEO	10/31	25%	✓	RRS
				Filter Appearance* Light gray					
				Reagents Appearance* Clear, $KMnO_4$ OK					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian DR Pat Date 1-7-91 Time 1:10

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. M101 Assembly Date 10-24 Assembled By mm

Plant Name/address Cyrill Coal & Coke Job No. 3676

Sampling Loc. Stack #1 Method MMTL

Individual Tare Of Reagent 200 (Ml)(~~gm~~) Of 5% HNO3 / 10% H_2O_2

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel ~200 Gm _____ other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
~~I-3-S1-MMTL-3~~	~~10/31/91~~	NA		✓	CEO				
				Filter Appearance*					
				Reagents Appearance*					
~~II-3-S1-MMTL-3~~	~~10/31/91~~	NA		✓	CEO				
				Filter Appearance*					
				Reagents Appearance*					
~~III-3-S1-MMTL~~ MMTL-3-FB	~~10/31/91~~	NA		✓	RRS	11.1	0	✓	TR2
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian D R Pinto Date 11-7-91 Time 1:30

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. 1000 Assembly Date 10/24 Assembled By _____

Plant Name/address Jewell Coal + Coke Job No. 3676/3694

Sampling Loc. Battery 3C (Stack 1) Method MMTLs

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel _____ Gm _____

other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian DRPeck Date 11-7-91 Time 1:30

Q-1002 rev. 10-91

ENTROPY

MM5

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. DF0214 Assembly Date [illegible] Assembled By ~~DF0214~~ VP

Plant Name/address LCC Job No. 3096

Sampling Loc. ~~SPACE~~ 2 Method MM5

Individual Tare Of Reagent 200 (Ml)(~~gm~~) Of DI H2O

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel 200 Gm _____ other (specify)

Run Number	Run Date	Filter or XAD Number	Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
~~III-1-SJ-MM5-1B~~ 10-28		~~3694-25~~	~~559.5~~	✓	JB	10 29	33	2/23	[illegible]
-AFUR		3694-13 ~~3694-5~~	559.5	Filter Appearance* Clean					
				Reagents Appearance* Clear					
III-1-MM6-1A	10-28	3694-25	559.5	✓	JB	10 29	35	2/23	[illegible]
-AFUR				Filter Appearance* Clean					
				Reagents Appearance* Clear					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian _____ Date _____ Time _____

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. DF179 Assembly Date _____ Assembled By _____

Plant Name/address VCC Job No. 36716

Sampling Loc. STACK 2 Method MM5

Individual Tare Of Reagent 200 (Ml)(gm) Of DI H_2O

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel 200 Gm Sil. 621
other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
1-32-MM5-1A	10-28	3654-19	334.5	✓	[illegible]	10-29	35	✓	[illegible]
				Filter Appearance*					
				Light tan ppt; CLT					
				Reagents Appearance*					
				Clear					
1-32-MM5-1B	10-28	3654-10	408.0	✓	[illegible]	10-29	35	✓	[illegible]
				Filter Appearance*					
				light tan ppt; CLT					
				Reagents Appearance*					
				Clear					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian [signature] Date 11-4-91 Time 2:30

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. DF 183 Assembly Date _____ Assembled By _____

Plant Name/address JCC Job No. 3694

Sampling Loc. stack 2 Method MM5

Individual Tare Of Reagent 200 (Ml)(gm) Of DI H2O

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel 400 Gm silgel other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
I-3-52-MM5-3A	10-31-91	3694.1	346.5	✓	TRZ	Oct 31	40	2/00	JSGP
				Filter Appearance* Light-grey coating					
				Reagents Appearance* Clear					
I-3-52-MM5-3B	10-31	3694.29	338.0	✓	TRZ	Oct 31	33	2/00	JSGP
				Filter Appearance* Light-grey coating					
				Reagents Appearance* Clear					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS ★ ~~no custody sheet in this cooler~~

Custodian DR RT Date 11-4-91 Time 2:30

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. DF103 Assembly Date 10/24 Assembled By VP

Plant Name/address SCC Job No. 3676

Sampling Loc. STACK 2 Method MM5

Individual Tare Of Reagent 200 (Ml)(~~gm~~) Of DI H_2O

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel 200 Gm _____ other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
II-1-S2MM5-1A	10/30	3676-4	410.0	✓	KR	10/30	33	2/03	[illegible]
				Filter Appearance* Light grey coat					
				Reagents Appearance* Clear					
II-1-S2-MM5-1B	10/30	3676-19	334.5	✓	KR	10/30	33	2/03	[illegible]
				Filter Appearance* Lt grey layer					
				Reagents Appearance* Clear					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian [signature] Date 11-4-91 Time 220

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. DF0205 Assembly Date 10/24 Assembled By VP

Plant Name/address Jewell Coke & Coke Job No. 3676

Sampling Loc. Stack # 2 Method M5

Individual Tare Of Reagent 200 (Ml) ~~(gm)~~ Of DI H_2O

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent 400 (Ml)(gm) Of sil gel

Individual Tare Of Sil. Gel ~~280~~ Gm _____

other (specify)

Run Number	Run Date	Filter or XAD Number	Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
III-1-S2-M5-1A	Oct 30	3694.20	335.0	2/ss	JTG	Oct 30	80%		
				Filter Appearance* very light gray					
				Reagents Appearance* clear					
III-1-S2-M5-1B	Oct 30	3694.5	359.5	2/ss	JTG	Oct 30	80%		
				Filter Appearance* very light gray too					
				Reagents Appearance* clear					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian DR Pat Date 11-4-91 Time 2100

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. DF112 Assembly Date 10/24 Assembled By VP

Plant Name/address JCC Job No. 3694

Sampling Loc. Stack 2 Method MM5

Individual Tare Of Reagent 200 (Ml) ~~(gm)~~ Of DI H_2O

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel 200 Gm _____ other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
III.2.52.MM5.2A	10.31	3694.15	367.0	✓	TR2	10-31	20%	✓	TCM
				Filter Appearance* Light Gray					
				Reagents Appearance*					
IV.2.52.MM5.2B	10.31	~~3694.14~~	~~402.5~~	✓	TR2	10-31	20%	✓	TCM
		3694.21	345.6	Filter Appearance* Light Gray					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian DRP Date 11-4-91 Time 12:50

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. DF0213 Assembly Date _____ Assembled By _____

Plant Name/address Jewett Coke & Chem Job No. 36736

Sampling Loc. STACK 2 Method MM5

Individual Tare Of Reagent 200 (Ml)(gm) Of DI H_2O

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel 400 Gm _____ other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
~~III-3-S2-MM5-3B~~	10-31	3694.23	357.0	✓	~~AS~~	11.1	25%	✓	TR2
				Filter Appearance* clear light ~~dark~~ grey					
				Reagents Appearance* * clear					
~~III-3-S2-MM5-3A~~	10-31	3694.22	337.0	✓	~~AS~~	11.1	25%	✓	TR
				Filter Appearance* light gray					
				Reagents Appearance* clear					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS * train was run w/out 200 Mls DI H_2O reagent - XAD OK

Custodian DR Peter Date 11-4-91 Time 1:50

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. DF 180 Assembly Date 10/24 Assembled By UP

Plant Name/address Jewell Coal & Coke Vansant, VA Job No. 3076

Sampling Loc. Stack #2 Method MM5

Individual Tare Of Reagent 200 (Ml)(gm) Of DI H_2O

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel 200 Gm _____ other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
IV-1-32-MM5-1A	10 20	n/a		y/n	[illegible]	10 20			
		3694.27	354.0	Filter Appearance*					
				Reagents Appearance*					
IV-1-32-MM5-1B	10 20	3694-18	350.0	y/n	[illegible]	10 20			
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian [signature] Date 11-4-91 Time 1:10

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. DF130 Assembly Date _____ Assembled By _____

Plant Name/address Dawson Coal Coke Job No. 3676

Sampling Loc. Stack 2 Method MM5

Individual Tare Of Reagent 200 (Ml)(gm) Of DI H_2O

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Sil. Gel 200 Gm _____

other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
III-2-S2-MM5-2A	10-31	3694-12	341.5	✓	AHS	10-31	20%	✓	TCM
				Filter Appearance* Dark grey					
				Reagents Appearance*					
III-2-S2-MM5-2B	10-31	3694-9	327.0	–	AHS	10-31	20%	✓	TCM
				Filter Appearance* Dark grey					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian DR Pitt Date 11-4-91 Time 1:90

Q-1002 rev. 10-91

ENTROPY

FIELD SAMPLE RECOVERY QUALITY CONTROL

Box No. DF0206 Assembly Date 10/24 Assembled By VP

Plant Name/address JCC Job No. 3694

Sampling Loc. Stack 2 Method MM5

Individual Tare Of Reagent 200 (Ml) ~~(gm)~~ Of DI H_2O

Individual Tare Of Reagent _____ (Ml)(gm) Of _____

Individual Tare Of Reagent 400 (Ml)(gm) Of _____

Individual Tare Of Sil. Gel 200 Gm _____ other (specify)

Run Number	Run Date	Filter or XAD Number	Filter or XAD Tare, grams	Liquid Tare at Mark? @	Init.	Sample Recov. Date	%Sil. Gel Spent	Liquid Level Marked?	Init.
IV.3.S2.MM5-3A	11.1.91	3694.22	337.0	✓	TR2	11.1	35%	✓	TR2
				Filter Appearance* light gray					
				Reagents Appearance* clear					
S2.MM5.FBA	11.1	3694.17	332.0	✓	TR2	11.1	–	✓	TCM
				Filter Appearance* N/a					
				Reagents Appearance* N/a					
				Filter Appearance*					
				Reagents Appearance*					
				Filter Appearance*					
				Reagents Appearance*					

* Use "REMARKS" section if needed.

@ All liquid levels at mark? (check) YES ___ NO ___ (estimate loss if not at mark; use "REMARKS" section).

REMARKS _____

Custodian [signature] Date 10-4-91 Time 1:00

Q-1002 rev. 10-91

ENTROPY

VOST

RECORD OF CUSTODY, CONTAINER NO. 1009

Container Type (check) ✓ Reagent Box ___ Cooler ___ Other ___

Plant Name/Address ___

Job No. ___ Sampling Method ___ (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
1083	10/24	2:55	S	Billy L. Bell Jr.	
			B		? (CLT)
0584	11/1	1420	S	Cathy L. Thompson	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

DR R[illegible] — Signature; 11-6-91 — Date; 10:30 — Time

**Seal Intact? ✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by ___ Date ___ Time ___

CONDENSATE SAMPLES put in refrige. by ___ Date ___ Time ___

REMARKS ___

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. 1016

Container Type (check) ✓ Reagent Box ___ Cooler ___ Other _____

Plant Name/Address Jewell Coal & Coke

Job No. 3676 Sampling Method _____ (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
1454	10/24	2:55	S	Bobby L. Bell	
			B		determine box contents box labeled incorrectly
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian **Seal Intact?

DR R[illegible] Signature 11-6-91 Date 10:20 Time ___Yes ___No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. 0215

Container Type (check) ✓ Reagent Box ___ Cooler ___ Other _____

Plant Name/Address Jewell Coal + Coke, Vansant, Va.

Job No. 3676/3694 Sampling Method _____ (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
	10/23	1:30	S		
0000693	10/31	2:00	B	Robin Segall	To use box
1155	10/31	1635 ~~1440~~	S	Cathy L. Thompson	–
	Oct 31	1715	B	[illegible]	Change field blank
1384	10/31	1800	S	Cathy L. Thompson	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

**Seal Intact?

[illegible] Signature 11-6-91 Date 10:20 Time ✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. DF 183

Container Type (check) ___ Reagent Box X Cooler ___ Other _____

Plant Name/Address Coke Ovens

Job No. _____ Sampling Method _____ (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
859	10/24	10:00	S	Vera Pressley	
	10/31	1200	B	Todd Meisner	Change train
776	11/01/91	1350	S	[illegible]	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian **Seal Intact?

DR [illegible] Signature | 11-4-91 Date | 2:40 Time | X Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS ~~#[illegible] DF Coke had no Custody seals~~
~~[illegible] DR [illegible] 11-4-91~~

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. DF 0206

Container Type (check) ___Reagent Box X Cooler ___Other _____

Plant Name/Address JCC

Job No. 3694 Sampling Method _____ (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
1152	10/24	11:50	S	Vera Pressley	
	10/27	1725	B	Cathy Thompson	Check contents
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

DR [illegible] Signature 11-4-91 Date 12:30 Time

**Seal Intact? X Yes ___No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

M5/TSO/M202

RECORD OF CUSTODY, CONTAINER NO. 0501

Container Type (check) ✓ Reagent Box ___ Cooler ___ Other _____

Plant Name/Address Jewell Pole Clare

Job No. 3676 Sampling Method M5/202 (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
	10/23	1:20	S		
0000649	10/30	2230	B	Cathy L. Thompson	to change trains
0719	11/1	1417	S	Cathy L. Thompson	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

DP Rat — Signature; 11-6-91 — Date; 10:30 — Time

**Seal Intact? ___ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. 0237

Container Type (check) ✓ Reagent Box ___ Cooler ___ Other ___

Plant Name/Address Jewell Coal + Coke, Vansant, Va.

Job No. 3676/3694 Sampling Method M5/202 (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
	10/23	1:34	S		
0000409	10/30	2000	B	Cathy L. Thompson	Change trains
1471 ~~1478~~ CLT	10/31	1835	S	Cathy L. Thompson	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian **Seal Intact?

[signature] 11-6-91 10:30 ___ Yes ___ No

Signature Date Time

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by ___ Date ___ Time ___

CONDENSATE SAMPLES put in refrige. by ___ Date ___ Time ___

REMARKS ___

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. 0507

Container Type (check) ✓ Reagent Box ___ Cooler ___ Other _____

Plant Name/Address Jewell Coal + Coke

Job No. 3694 Sampling Method MS/TSO/202 (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
	10/23	1:25	S		
0000696	10/27	1650	B	Cathy Thompson	Check contents
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

DRR
Signature

~~10-27~~ 11-8-91
Date

10:30
Time

**Seal Intact?

✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. 0202

Container Type (check) ✓ Reagent Box ___ Cooler ___ Other ___

Plant Name/Address Jewell Coal & Coke

Job No. 3676 Sampling Method M5/202 (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
	10/23	1:27	S		
0000640	10/30	2:25am	B	Caroline Lehman	Start new box
1089	10/31	1515	S	Cathy L. Thompson	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

Signature: DRB Date: 11-6-91 Time: 10:30

**Seal Intact? ✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by ___ Date ___ Time ___

CONDENSATE SAMPLES put in refrige. by ___ Date ___ Time ___

REMARKS ___

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. 0238

Container Type (check) ✓ Reagent Box ___ Cooler ___ Other ___

Plant Name/Address Jewell Coke and Coke

Job No. 3676/3694 Sampling Method M5/202 (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
	10/23	1:30	S		
0001196	10/28	15:00	B	Robin Segall	To change trains
1388	10/30	1720	S	Cathy Thompson	
	10/31	1730	B	Cathy L. Thompson	Check inventory
0250	10/31	1735	S	Cathy L. Thompson	to get filter tare weight
	10/31	2030	B	Cathy L. Thompson	↓ ↓
0850 ~~0397~~	10/31	2035	S	Cathy L. Thompson	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

Signature: DR R A Date: 11-6-91 Time: 10:20

**Seal Intact? ✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by ___ Date ___ Time ___

CONDENSATE SAMPLES put in refrige. by ___ Date ___ Time ___

REMARKS ___

L-0023 rev. 10-91

ENTROPY

MMTL

RECORD OF CUSTODY, CONTAINER NO. M 101

Container Type (check) ✓ Reagent Box ___ Cooler ___ Other _____

Plant Name/Address JCC

Job No. 3694 Sampling Method MMTL (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
692	10/24	12:00	S	Mary Mullins	
	10-30	2345	B	[illegible]	[illegible]
1198	11/1	1355	S	Cathy L. Thompson	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

DRP [illegible] Signature 11-6-91 Date 10:20 Time

**Seal Intact? ✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. 1000

Container Type (check) ✓ Reagent Box ___ Cooler ___ Other _____

Plant Name/Address Jewell Coal & Coke

Job No. 3694 Sampling Method MMTLs + M5/202 (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
1373	10/29	2:55	S	Bobby L. Bell	-
[redacted]	10/28	1535	B	Cathy L. Thompson	Extra rinse jars
1480	10/31	1555	S	Cathy L. Thompson	
	10/31	2040	B	Cathy L. Thompson	to check run #'s
0437	10/31	2040	S	Cathy L. Thompson	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

Signature _____ Date 11-7-91 Time 1:30

**Seal Intact? ✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. M114

Container Type (check) ✓ Reagent Box ___ Cooler ___ Other _____

Plant Name/Address Jewell Coal & Coke DRAFT

Job No. 3676 Sampling Method MMTL (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
	10/24	11:55	S	Mary Mullins	
1026	10/30	1:20am	B	Caroline Splender	start new box
1387	10/31	1745	S	Cathy L. Thompson	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

DR Pc — Signature; 11-7-91 — Date; 1:40 — Time

**Seal Intact? ✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. M130

Container Type (check) ✓ Reagent Box ___ Cooler ___ Other ___

Plant Name/Address Jewell Coal + Coke

Job No. 3676/3694 Sampling Method MMTL (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
	10/24	11:55	S	Mary Mullins	
1027	10/30	2230	B	Cathy L. Thompson	to change trains
0450	10/1	1435	S	Cathy L. Thompson	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

Signature: [illegible] Date: 10-7-91 Time: 1:30

**Seal Intact? ✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by ___ Date ___ Time ___

CONDENSATE SAMPLES put in refrige. by ___ Date ___ Time ___

REMARKS ___

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. M140

Container Type (check) ✓ Reagent Box ___ Cooler ___ Other _____

Plant Name/Address Jewell Coal & Coke

Job No. 3676 Sampling Method MMT (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
430	10/24	12:05	S	Mary Mullins	
	10/30	640am	B	Carolyne Spurlock	Box contents verification Box labeled incorrectly
1479	10/30	1525	S	Cathy Thompson	
	10/31	2130	B	Cathy L. Thompson	to inventory samples
1009	10/31	2145	S	Cathy L. Thompson	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

DR Pat — Signature; 11-7-91 — Date; 1:48 — Time

**Seal Intact? ✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. M138

Container Type (check) ✓ Reagent Box ___ Cooler ___ Other ___

Plant Name/Address Jewell Coke Vansant, VA

Job No. 3694 Sampling Method MMtl (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
1028	10-24	12:00	S	Mary Mullins	
	10-28	12:52	B	Robin Segall	use reagents
1157	10/30	1730	S	Cathy L. Thompson	
	10/31	1605	B	Cathy L. Thompson	inventory contents
1596	10/31	1610	S	Cathy L. Thompson	
	10/31	2200	B	Cathy L. Thompson	add to run # (aborted)
0649	10/31	2205	S	Cathy L. Thompson	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

DR [illegible] Signature 11-7-91 Date 1130 Time

**Seal Intact? ✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by ___ Date ___ Time ___

CONDENSATE SAMPLES put in refrige. by ___ Date ___ Time ___

REMARKS ___

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. M120

Container Type (check) ✓ Reagent Box ___ Cooler ___ Other _____

Plant Name/Address Jewell Coal and Coke

Job No. 3694 Sampling Method MM5 (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
700	10/24	12:05	S	Mary Mullins	
	10/31	1:42	B	Robin Segall	To use reagents
1386	10/31	1605	S	Cathy L. Thompson	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

DR [signature] — Signature; 11-7-91 — Date; 1:30 — Time

**Seal Intact? ✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

MM5

CUSTODY SHEET FOR MM5 COOLER # DF 0210

Date of Makeup 10-9-91 Initials MM Sealed? ✓

Individual Tare of Reagent: 200 mls. of DI H_2O

Individual Silica Gel Tare Weight _____ gms.

Filter used? ✓ Knockout Impinger Catch? ✓ (✓ or X)

XAD Trap? ✓ Trap # and Tare wt., gms. _____

Rinse reagent identification MeOH & MeCl

PLANT NAME JCC

SAMPLING LOCATION Stack 2

Run I.D.	Date Used	Initials	Sealed?	Date Cleaned	% SilGel Spent	Initials	Sealed?
II-2-S2-MM5-2A	10.31	TRZ	✓	10.31	30%	TRZ	✓
II-2-S2-MM5-2B	10.31	TRZ	✓	10.31	30%	TRZ	✓

Received in ~~Lab~~ Custody Date 11-4-91 Initials [illegible] Sealed? /

Sampling Method _____

Remarks:

CUSTODY SHEET FOR MM5 COOLER # DF- 0213

Date of Makeup 10/9/91 Initials dlk Sealed? _____

Individual Tare of Reagent: 200 mls. of DI H_2O

Individual Silica Gel Tare Weight 400 gms.

Filter used? ✓ Knockout Impinger Catch? X (✓ or X)

XAD Trap? ✓ Trap # and Tare wt.,gms. 3694.23 tare 357.0

Rinse reagent identification MeCl • MeOH

3694.22 tare 337.0

PLANT NAME JCC

SAMPLING LOCATION stack 2

Run I.D.	Date Used	Initials	Sealed?	Date Cleaned	% SilGel Spent	Initials	Sealed?
2.3.92. MM5.3B	11.1	TR2	✓	11.1.91	25%	TR2	✓
III.3.92. ~~MM5.3B~~	11.1	TR2	✓	11.1.	25%	TR2	✓

Received in ~~Lab~~ Custody Date 11-4-91 Initials DJ Sealed? ✓

Sampling Method _____

Remarks:

RECORD OF CUSTODY, CONTAINER NO. DF 179

Container Type (check) ___Reagent Box X Cooler ___Other _____

Plant Name/Address SCC

Job No. 36716 Sampling Method MM5 (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
849	10/24	9:00am	S	Vera Pressley	
	10:20		B	[illegible]	Charge Trans
1192	11/01/91	1337	S	[illegible]	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

Signature	Date	Time	**Seal Intact?
DR [illegible]	11-4-91	2:30	✓ Yes ___No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. DF 102

Container Type (check) ___ Reagent Box X Cooler ___ Other _____

Plant Name/Address Sewell Coal Co

Job No. ~~36~~ 36026 Sampling Method MM5 (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
1086	10/24	10:25	S	Vera Pressley	
	10-30		B	[illegible]	Change Foam
1199	11/01/91	1325	S	William Morgan	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

[illegible] Signature 11-4-91 Date 2:45 Time

**Seal Intact? ___ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. DF103

Container Type (check) ___Reagent Box ✓Cooler ___Other _____

Plant Name/Address Jewell Coal & Coke

Job No. 3676 Sampling Method M5 (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
1542	10/24	11:10	S	Vera Pressley	
	10-25	810	B	[illegible]	Charge Train
1194	11/01/91	1331	S	William Morgan	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

[illegible] Signature 11-4-91 Date 2:30 Time

**Seal Intact? ✓Yes ___No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. 0210

Container Type (check) ___ Reagent Box X Cooler ___ Other _____

Plant Name/Address JCC

Job No. 3694 Sampling Method MM5 (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
1372	10/24	12:15	S	Vera Pressley	
	10.30	24:00	B	[illegible]	
0248	11/1/91	1341	S	William Morgan	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian **Seal Intact?

[illegible] Signature 11-4-91 Date 2:30 Time ✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. DF 0213

Container Type (check) ___ Reagent Box X Cooler ___ Other _____

Plant Name/Address Jewell Coal & Coke

Job No. 36076 Sampling Method MM5 (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
1701	10/24	12:08	S	Vera Pressley	
	10-31	1746	B	[illegible]	Charge Train
1193	11/01	1401	S	[illegible]	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

**Seal Intact?

[illegible] Signature 11-4-91 Date 2:20 Time ✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

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ENTROPY

RECORD OF CUSTODY, CONTAINER NO. 110205

Container Type (check) ___ Reagent Box X Cooler ___ Other _____

Plant Name/Address Jewell Coke and Coal

Job No. 5676 Sampling Method M5 (EPA) NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
695	10/24	11:30	S	Vera Pressley	
	10 30	2540	B	[illegible]	Change Trains
0296	11/01/91	1311	S	William E Magan	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian **Seal Intact?

DR [illegible] Signature 11-4-91 Date 2:10 Time X Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. DF 130

Container Type (check) ___ Reagent Box X Cooler ___ Other ___

Plant Name/Address Jewett Coal & Coke

Job No. 8676 Sampling Method M5 (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
1006	10/24	9:10	S	Vera Pressley	
	10-30	2327	B	[illegible]	Charge Train
188	10/01/91	1345	S	William Morgan	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

[illegible] Signature 11-4-91 Date 1810 Time

**Seal Intact? ___ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by ___ Date ___ Time ___

CONDENSATE SAMPLES put in refrige. by ___ Date ___ Time ___

REMARKS ___

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. 180

Container Type (check) ___ Reagent Box X Cooler ___ Other _____

Plant Name/Address Tower Coal & Coke

Job No. 3676 Sampling Method M5 (EPA) NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
1030	10/24	9:40am	S	Vera Pressley	
	10 30	0745	B	[illegible]	Change Trains
185	11/01/91	1355	S	[illegible]	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian **Seal Intact?

DRPA (Signature) 11-4-91 (Date) 1120 (Time) ✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. DF 112

Container Type (check) ___Reagent Box X Cooler ___Other _____

Plant Name/Address JCC

Job No. 3694 Sampling Method MM5 (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
697	10/24	2:50	S	Vera Pressley	
	10/31	0600	B	Todd C. Mussmil	Change Trains
00447	11/1/91	1316	S	Cathy L. Thompson	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

Signature _____ Date 11-4-91 Time 1:00

**Seal Intact? ___Yes ___No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. DF0214

Container Type (check) ___ Reagent Box X Cooler ___ Other _____

Plant Name/Address SCeC, Yorktown VA

Job No. 31676 Sampling Method MM5 (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
1541	10/24	10:50	S	Vera Pressley	
	10/27	6:30	B	[illegible]	Charge Trans
1087	10/29	1620	S	Cathy L. Thompson	—
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

DR [illegible] — Signature; 11-4-91 — Date; 2:10 — Time

**Seal Intact? ✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS * There's an extra jar - Impinger rinse w/ MeOH/MeCl, not on sample inventory.

L-0023 rev. 10-91

ENTROPY

VOST

RECORD OF CUSTODY, CONTAINER NO. VOST 6

Container Type (check) ___Reagent Box ✓Cooler ___Other _____

Plant Name/Address Jewell Coal + Coke, Vansant, Va.

Job No. 3676/3694 Sampling Method VOST (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
1545	10/30	2030	S	Cathy L. Thompson	—
	10/30	2145	B	Cathy L. Thompson	To add samples
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

DRR
Signature

11-6-91
Date

10:30
Time

**Seal Intact? ✓Yes ___No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

RECORD OF CUSTODY, CONTAINER NO. 200

Container Type (check) ___ Reagent Box ✓ Cooler ___ Other _____

Plant Name/Address Jewell Coal + Coke

Job No. 3676/3694 Sampling Method VOST (EPA, NIOSH, etc.)

Seal ID	Date	Time	*	Full Signature	Reason for Breaking Seal**
410	10/31	1330	S	Cathy L. Thompson	
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		
			S		
			B		

* S = Sealed By; B = Broken By ** Use "REMARKS" Section if more space needed.

Received by Sample Custodian

DR Pit — Signature; 11/1-91 — Date; 10:40 — Time

**Seal Intact? ✓ Yes ___ No

As Applicable:
All liquid levels at mark (check)? ___ YES ___ NO (Estimate loss if not at mark; describe in "REMARKS")

As Applicable:
TUBE SAMPLES put in freezer by _____ Date _____ Time _____

CONDENSATE SAMPLES put in refrige. by _____ Date _____ Time _____

REMARKS _____

L-0023 rev. 10-91

ENTROPY

VOST SAMPLES USAGE INVENTORY, CONTAINER NO. _____

Plant Name Jewell Coal & Coke Job No. 3676/3694

City/State Vansant, Va. Packed By CLT

Total No. Tenax Tubes 38 Tenax/Charcoal Tubes 38 (SHOW TOTALS ON PAGE 1 ONLY)

PAGE 1 OF 3 Analyze 25

Date	Sampling Location	Run Number	Sample I.D.	(TX) Tenax Tube No.	(TC) Tenax/ Charcoal Tube No.	(CON) Conden-sate Vial No.
10/28/91	Stack #3	I-1-S3-VOST-	1A	17	32	I-1-S3-VOST-1A
10/29	Stack #3	I-1-S3-VOST-	1A	49	50	I-1-S3-VOST-1A
			1B	5	6	" -1B
			1C	25	26	" -1C
			1D	19	20	" -1D
			1FB	51	52	" -1FB
10/28	Stack #3	II-1-S3-VOST-	1A	53	54	II-1-S3-VOST-1A
			1B	61	62	" -1B
			1C	57	58	" -1C
			1FB	15	16	" -FB
10/29	Stack #3	II-1-S3-VOST-	1A	1	2	II-1-S3-VOST-1A
			1B	37	38	" -1B
			✓1C	59	60	" -1C
10/30	Stack #3	III-1-S3-VOST-	✓1A	55	56	III-1-S3-VOST-1A
			1B	29	30	" -1B
			1C	63	64	" -1C

Personnel CEN

Remarks* "AFUR" on label (No good) (ABORT)

Personnel CEN

Remarks* Good run

Personnel CEN

Remarks* "AFUR" (No good) on label (ABORT)

Personnel CEN

Remarks* Good run

Personnel SPS

Remarks*

*INCLUDE LISTING OF TUBES NOT USED DUE TO BREAKAGE AND ABORTED RUNS.

L-0013 rev 10-91

ENTROPY

VOST SAMPLES USAGE INVENTORY, CONTAINER NO. _____

Plant Name Jewell Coal & Coke Job No. 3676/3694

City/State Vansant, Va. Packed By CLT

Total No. Tenax Tubes _____ Tenax/Charcoal Tubes _____ (SHOW TOTALS ON PAGE 1 ONLY)

PAGE 2 OF 3

Date	Sampling Location	Run Number	Sample I.D.	(Tx) Tenax Tube No.	(TC) Tenax/ Charcoal Tube No.	(CON) Condensate Vial No.
10/30	Stack # 3	IV-1-S3-VOST-	1A	23	24	IV-1-S3-VOST-1A
			* 1B	67	68	" -1B
			1C	39	40	" -1C
			FB	3	4	" -FB

Personnel Ed Potts

Remarks* * Teflon line burned: No good. Tube # 74 broken

Date	Sampling Location	Run Number	Sample I.D.	(Tx) Tenax Tube No.	(TC) Tenax/ Charcoal Tube No.	(CON) Condensate Vial No.
10/30	Stack #3	I-2-S3-VOST-	2A	77	78	I-2-S3-VOST-2A
			2B	85	86	" -2B
			2C	9	10	" -2C
			2D	81	82	" -2D
			2FB	35	36	" -2FB

Personnel CEN

Remarks* ~~* Teflon line burned~~

Date	Sampling Location	Run Number	Sample I.D.	(Tx) Tenax Tube No.	(TC) Tenax/ Charcoal Tube No.	(CON) Condensate Vial No.
10/30	Stack #3	II-2-S3-VOST-	2A	27	28	II-2-S3-VOST-2A
			2B	75	76	" -2B

Personnel CEN

Remarks*

Date	Sampling Location	Run Number	Sample I.D.	(Tx) Tenax Tube No.	(TC) Tenax/ Charcoal Tube No.	(CON) Condensate Vial No.
10/31	Stack # 3	III-2-S3-VOST-	2A	83	84	III-2-S3-VOST-2A
			2B	41	42	" -2B

Personnel SPS

Remarks*

Date	Sampling Location	Run Number	Sample I.D.	(Tx) Tenax Tube No.	(TC) Tenax/ Charcoal Tube No.	(CON) Condensate Vial No.
10/31	Stack #3	IV-2-S3-VOST-	2A	11	12	IV-2-S3-VOST-2A
			2B	21	22	" -2B
			FB	69	70	" -FB

Personnel SPS

Remarks*

*INCLUDE LISTING OF TUBES NOT USED DUE TO BREAKAGE AND ABORTED RUNS.

L-0013 rev 10-91

ENTROPY

VOST SAMPLES USAGE INVENTORY, CONTAINER NO. _____

Plant Name Jewell Coal & Coke Job No. 3676/3694

City/State Vansant, Va. Packed By CLT

Total No. Tenax Tubes 38 Tenax/Charcoal Tubes 38 (SHOW TOTALS ON PAGE 1 ONLY)

PAGE 3 OF 3

Date	Sampling Location	Run Number	Sample I.D.	(TX) Tenax Tube No.	(TC) Tenax/ Charcoal Tube No.	(CON) Condensate Vial No.
10/31	Stack #3	I-3-S3-VOST-	3A	43	44	I-3-S3-VOST-3A
Personnel CEN						
Remarks*						
10/31	Stack #3	II-3-S3-VOST-	3A	33	34	II-3-S3-VOST-3A
11/1			~~3B~~	79	80	" -3B
Personnel CEN			~~3C~~	45	46	" -3C
Remarks*						
11/1	Stack #3	III-3-S3-VOST	3A	65	66	III-3-S3-VOST-3A
			~~3B~~	13	14	" -3B
Personnel SPS						
Remarks*						
11/1	Stack #3	IV-3-S3-VOST-	3A	71	72	IV-3-S3-VOST-3A
Personnel SPS						
Remarks*						
Personnel						
Remarks*						

*INCLUDE LISTING OF TUBES NOT USED DUE TO BREAKAGE AND ABORTED RUNS.

L-0013 rev 10-91

ENTROPY

VOST SAMPLES USAGE INVENTORY, CONTAINER NO. _____

Plant Name JEWEL COKE + COAL Job No. 3676

City/State VANSANT VA Personnel CRW

Page 1 of ____

Date	Sampling Location	Run Number	Sample I.D.	Tenax Tube No.	Tenax/ Charcoal Tube No.	Conden-sate Vial No.
10-28	#3 STACK	I-1-S3-V-	1A	17	32	I-1-S3-V1A
			1B			I-1-S3-V-1B
			1C			I-1-S3-V1C
			1D			I-1-S3-V-1D
			1FB			I-1-S3-V-FB
			PT		8/48	
10-28	* 3 STACK	I-2-S3-V	2A	53	54	I-1-S3-V-2A
			2B	61	62	I-1-S3-V-2B
			2C	57	58	I-1-S3-V-2C
		run cancelled –	2D			
			2FB	15	16	I-1-S3-V-FB

Comments _____

L-0013 rev. 9-91

ENTROPY

VOST SAMPLES USAGE INVENTORY, CONTAINER NO. _____

Plant Name JEWEL COAL + COK Job No. 3692

City/State VANSANT VA. Personnel CEO

Page _____ of _____

Date	Sampling Location	Run Number	Sample I.D.	Tenax Tube No.	Tenax/ Charcoal Tube No.	Conden-sate Vial No.
10-29-91	#3 STACK	I-1-S3-V-	1A	49	50	I-1-S3-V 1A
			1B	5	6	" 1B
			1C	25	26	" 1C
			1D	19	20	" 1D
			1FB	51	52	" 1FB
			RE		8/48	
10-29-91	#3 STACK	II-1-S3-V-	1A	1	2	II 1-S3-V 1A
			1B	37	38	" 1B
			1C	59	60	" 1C
			[illegible]	[illegible]	[illegible]	
			[illegible]	[illegible]	[illegible]	
10-30-91	#3 STACK	III-1-S3V	1A	55	56	AS # AS RE
			1B	29	30	
			1C	63	64	?
10-30-91	STACK 3	IV-1-S3-V	1A	23	24	?
			1B	67	68	* No Good Teflo Burned
			1C	39	40	
			FB	3	4	
10-30-91	STACK 3	I-2-S3-V	2A	77	78	
			2B	85	86	
			2C	9	10	
			2D	81	82	
			2FB	35	36	

Comments _____

L-0013 rev. 9-91

ENTROPY

VOST SAMPLES USAGE INVENTORY, CONTAINER NO. __________

Plant Name JEWEL COAL + COKE Job No. 3694

City/State VANSANT VA Personnel CBW, SPS, BP

Page 3 of 3

Date	Sampling Location	Run Number	Sample I.D.	Tenax Tube No.	Tenax/ Charcoal Tube No.	Condensate Vial No.
11-1-91	#3 STACK	III-3-S3-	~~3A~~	~~45~~	~~46~~	same as run #
			3A	65	66	✓
			3B	13	14	

Date	Sampling Location	Run Number	Sample I.D.	Tenax Tube No.	Tenax/ Charcoal Tube No.	Condensate Vial No.
11-1-91	# 3 Stack	IV-3-S3	~~3A~~	~~[illegible]~~	~~14~~	same as run #
			3A	71	72	✓

Comments ______________________________

L-0013 rev. 9-91

ENTROPY

M5/TSO/M202

ENTROPY
Environmentalists, Inc.

P.O. Box 12291
Research Triangle Park
North Carolina 27709-2291
919-781-3550 FAX 919-787-8442

REQUEST FOR ANALYSIS

PO#: 1887- 3694

Customer Name: Coke Ovens
Vansant, VA

Laboratory: TLI

Date Transmitted: 12/10/91

Results Due By: 1/10/91

Sample Matrix: M5/202

Analysis: THIS IS NOT A PURCHASE ORDER. Analyze for toluene soluble organics. See Gene Riley for details.

Sample #	Sample ID	Components/Comments
1	I-1-SI-M5/202-1	Filter, acetone rinse, toluene rinse
2	I-2-SI-M5/202-2	Filter, acetone rinse, toluene rinse
3	I-3-SI-M5/202-3	Filter, acetone rinse, toluene rinse
4	II-1-SI-M5202-1	Filter, acetone rinse, toluene rinse
5	II-2-SI-M5202-2	Filter, acetone rinse, toluene rinse
6	II-3-SI-M5202-3	Filter, acetone rinse, toluene rinse
7	III-1SI-M5202-1	Filter, acetone rinse, toluene rinse
8	III-2SI-M5202-2	Filter, acetone rinse, toluene rinse
9	III-3SI-M5202-3	Filter, acetone rinse, toluene rinse
10	IV-1-SI-M5202-1	Filter, acetone rinse, toluene rinse
11	IV-2-SI-M5202-2	Filter, acetone rinse, toluene rinse
12	IV-3-SI-M5202-3	Filter, acetone rinse, toluene rinse
13	II-1SI-M5/202-1	Filter, acetone, toluene (ABORTED RUN)
14	Field	Filter, acetone rinse, toluene rinse
15	Blanks	toluene, filters
	NOTE:	All above samples are dry

Submitted By: John V. Shuler

ENTROPY
Environmentalists, Inc.

P.O. Box 12291
Research Triangle Park
North Carolina 27709-2291
919-781-3550 FAX 919-787-8442

REQUEST FOR ANALYSIS

PO#: 1812- 3694

Customer Name: Coke Ovens
Vansant, VA

Laboratory: EEI

Date Transmitted: 11/07/91

Results Due By: 11/15/91

Sample Matrix: M5/202

Analysis: THIS IS NOT A PURCHASE ORDER! Dry and condensible particulates. See STI's for procedure.

Sample #	Sample ID	Components/Comments
1	I-1-SI-M5/202-1	-TR,-BH,-F,-R,-AR (1 and 2 of 2)
2	I-2-SI-M5/202-2	-TR,-BH,-F,-R,-AR
3	I-3-SI-M5/202-3	-TR,-BH,-F,-R,-AR
4	II-1-SI-M5202-1	-TR,-BH,-F,-R,-AR,-DI (ABORTED RUN)
5	II-1-SI-M5202-1	-TR,-BH,-F,-R,-AR
6	II-2-SI-M5202-2	-TR,-BH,-F,-R,-AR,-DI
7	II-3-SI-M5202-3	-TR,-BH,-F,-R,-AR,-DI
8	III-1SI-M5202-1	-TR,-BH,-F,-R,-AR
9	III-2SI-M5202-2	-TR,-F,-R,-AR
10	III-3SI-M5202-3	-TR,-BH,-F,-R,-AR
11	IV-1-SI-M5202-1	-TR,-BH,-F,-R,-AR
12	IV-2-SI-M5202-2	-TR,-BH,-F,-R,-AR
13	IV-3-SI-M5202-3	-TR,-BH,-F,-R,-AR
14	Field	-TR,-BH,-F,-R,-AR
15	Blanks	Acetone, Toluene

Submitted By:

MMTL

ENTROPY
Environmentalists, Inc.

P.O. Box 12291
Research Triangle Park
North Carolina 27709-2291
919-781-3550 FAX 919-787-8442

REQUEST FOR ANALYSIS

#: 1813- 3694

Customer Name: Coke Ovens
Vansant, VA

Laboratory: TLI

Date Transmitted: 11/07/91

Results Due By: 11/25/91

Sample Matrix: MMTL

Analysis: THIS IS NOT A PURCHASE ORDER! Analyze for Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, P, Se, Ag, Tl, & Zn.

Sample #	Sample ID	Components/Comments
1	I-1-SI-MMTL-1	-FH,-F,-IR
2	I-3-SI-MMTL-3	-FH,-F,-IR
3	II-1-SI-MMTL-1	-FH,-F,-IR (ABORTED RUN)
4	II-1-SI-MMTL-1	-FH,-F,-IR
5	II-2-SI-MMTL-2	-FH,-F,-IR
6	III-1-SI-MMTL-1	-FH,-F,-IR
7	III-2-SI-MMTL-2	-FH,-F,-IR
8	IV-1-SI-MMTL-1	-FH,-F,-IR
9	IV-2-SI-MMTL-2	-FH,-F,-IR
10	Field Blank	-FH,-F,-IR
11	Blanks	Filter, F½ 0.1 N HNO3, HNO3/H2O2

6) Detection limits: As = 1 μg, Be = 0.1 μg, Cd = 10 μg, Cr = 20 μg, Ni = 20 μg Pb = 20 μg, and Hg = 1 μg. (see table 3-15)

Submitted By:

ENTROPY
Environmentalists, Inc.

P.O. Box 12291
Research Triangle Park
North Carolina 27709-2291
919-781-3550 FAX 919-787-8442

REQUEST FOR ANALYSIS

#: 1814- 3694

Customer Name: Coke Ovens
Vansant, VA

Laboratory: TLI

Date Transmitted: 11/07/91

Results Due By: 11/25/91

Sample Matrix: MMTL

Analysis: THIS IS NOT A PURCHASE ORDER! Analyze each component SEPARATELY for Hg by CVAA. See enclosed diagram. DL = 1μg.
Duplicate all Hg analysis. Report as total μg

Sample #	Sample ID	Components/Comments
1	I-1-SI-MMTL-1	-IR4,-KMnO4,-HCl,-FH + F, -IR
2	I-3-SI-MMTL-3	-IR4,-KMnO4,-HCl,-FH + F, -IR
3	II-1-SI-MMTL-1	-IR4,-KMnO4,-HCl,-FH + F, -IR (ABORTED)
4	II-1-SI-MMTL-1	-IR4,-KMnO4,-HCl,-FH + F, -IR
5	II-2-SI-MMTL-2	-IR4,-KMnO4,-HCl,-FH + F, -IR
6	III-1-SI-MMTL-1	-IR4,-KMnO4,-HCl,-FH + F, -IR
7	III-2-SI-MMTL-2	-IR4,-KMnO4,-HCl,-FH + F, -IR
8	IV-1-SI-MMTL-1	-IR4,-KMnO4,-HCl,-FH + F, -IR
9	IV-2-SI-MMTL-2	-IR4,-KMnO4,-HCl,-FH + F, -IR
10	Field Blank	-KMnO4,-HCl,-FH + F, -IR
11	Blank	KMnO4
12	Blank	8N HCl
13	Blank	Filter + F½ HNO3
14	Blank	B½ HNO3

Submitted By: _____

ENTROPY
Environmentalists, Inc.

P.O. Box 12291
Research Triangle Park
North Carolina 27709-2291
919-781-3550 FAX 919-787-8442

REQUEST FOR ANALYSIS

#: 1813- 3694

Customer Name: Coke Ovens
Vansant, VA

Laboratory: TLI

Date Transmitted: 11/07/91

Results Due By: 11/25/91

Sample Matrix: MMTL

Analysis: THIS IS NOT A PURCHASE ORDER! Analyze for Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, P, Se, Ag, Tl, & Zn.

Sample #	Sample ID	Components/Comments
1	I-1-SI-MMTL-1	-FH,-F,-IR
2	I-3-SI-MMTL-3	-FH,-F,-IR
3	II-1-SI-MMTL-1	-FH,-F,-IR (ABORTED RUN)
4	II-1-SI-MMTL-1	-FH,-F,-IR
5	II-2-SI-MMTL-2	-FH,-F,-IR
6	III-1-SI-MMTL-1	-FH,-F,-IR
7	III-2-SI-MMTL-2	-FH,-F,-IR
8	IV-1-SI-MMTL-1	-FH,-F,-IR
9	IV-2-SI-MMTL-2	-FH,-F,-IR
10	Field Blank	-FH,-F,-IR
11	Blanks	Filter, F½ 0.1 N HNO_3, HNO_3/H_2O_2

6) Detection limits: As = 1 μg, Be = 0.1 μg, Cd = 10 μg, Cr = 20 μg, Ni = 20 μg, Pb = 20 μg, and Hg = 1 μg. (see table 3-15)

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Submitted By:

ENTROPY
Environmentalists, Inc.

P.O. Box 12291
Research Triangle Park
North Carolina 27709-2291
919-781-3550 FAX 919-787-8

REQUEST FOR ANALYSIS

E #: 1814- 3694

Customer Name: Coke Ovens
Vansant, VA

Laboratory: TLI

Date Transmitted: 11/07/91

Results Due By: 11/25/91

Sample Matrix: MMTL

Analysis: THIS IS NOT A PURCHASE ORDER! Analyze each component SEPARATELY for Hg by CVAA. See enclosed diagram. DL = 1µg. Duplicate all Hg analysis. Report as total µg

Sample #	Sample ID	Components/Comments
1	I-1-SI-MMTL-1	-IR4,-KMnO4,-HCl,-FH + F, -IR
2	I-3-SI-MMTL-3	-IR4,-KMnO4,-HCl,-FH + F, -IR
3	II-1-SI-MMTL-1	-IR4,-KMnO4,-HCl,-FH + F, -IR (ABORTED)
4	II-1-SI-MMTL-1	-IR4,-KMnO4,-HCl,-FH + F, -IR
5	II-2-SI-MMTL-2	-IR4,-KMnO4,-HCl,-FH + F, -IR
6	III-1-SI-MMTL-1	-IR4,-KMnO4,-HCl,-FH + F, -IR
7	III-2-SI-MMTL-2	-IR4,-KMnO4,-HCl,-FH + F, -IR
8	IV-1-SI-MMTL-1	-IR4,-KMnO4,-HCl,-FH + F, -IR
9	IV-2-SI-MMTL-2	-IR4,-KMnO4,-HCl,-FH + F, -IR
10	Field Blank	-KMnO4,-HCl,-FH + F, -IR
11	Blank	KMnO4
12	Blank	8N HCl
13	Blank	Filter + F½ HNO3
14	Blank	B½ HNO3

28

Submitted By: [signature]

MM5

ENTROPY
Environmentalists, Inc.

P.O. Box 12291
Research Triangle Park
North Carolina 27709-2291
919-781-3550 FAX 919-787-8442

REQUEST FOR ANALYSIS

#: 1804- 3694

Customer Name: Coke Ovens
Vansant, VA

Laboratory: TLI

Date Transmitted: 11/04/91

Results Due By: 12/04/91

Sample Matrix: MM5

Analysis: THIS IS NOT A PURCHASE ORDER! BaP, toluene, napthalene, xylene (OMP), phenol, cresol, NBS & CAA lists. See Gene Riley for details.

Sample #	Sample ID	Components/Comments
1	I-1-S2-MM5-1A	-FH,-BH,-IR,-R,-F, XAD
2	I-1-S2-MM5-1B	-FH,-BH,-IR,-R,-F, XAD
3	I-2-S2-MM5-2A	-FH,-BH,-IR,-R,-F, XAD
4	I-3-S2-MM5-3A	-FH,-BH,-R,-F, XAD
5	I-3-S2-MM5-3B	-FH,-BH,-IR,-R,-F, XAD
6	II-1-S2-MM5-1A	-FH,-BH,-IR,-R,-F, XAD
7	II-1-S2-MM5-1B	-FH,-BH,-IR,-R,-F, XAD
8	II-1-S2-MM5-1A ABORT	-FH,-BH,-IR,-R,-F, XAD (ABORTED)
9	II-1-S2-MM5-1B ABORT	-FH,-BH,-IR,-R,-F, XAD (ABORTED)
10	II-2-S2-MM5-2A	-FH,-BH,-IR,-R,-F, XAD
11	II-2-S2-MM5-2B	-FH,-BH,-IR,-R,-F, XAD
12	II-3-S2-MM5-3B	-FH,-BH,-IR,-R,-F, XAD
13	III-1-S2-MM5-1A	-FH,-BH,-IR,-R,-F, XAD
14	III-1-S2-MM5-1B	-FH,-BH,-IR,-R,-F, XAD
15	III-2-S2-MM5-2A	-FH,-BH,-IR,-R,-F, XAD
16	III-2-S2-MM5-2B	-FH,-BH,-IR,-R,-F, XAD
17	III-3-S2-MM5-3A	-FH,-BH,-IR,-R,-F, XAD
18	IV-1-S2-MM5-1A	-FH,-BH,-IR,-R,-F, XAD
19	IV-1-S2-MM5-1B	-FH,-BH,-IR,-R,-F, XAD
20	IV-2-S2-MM5-2A	-FH,-BH,-IR,-R,-F, XAD
21	IV-2-S2-MM5-2B	-FH,-BH,-IR,-R,-F, XAD
22	IV-3-S2-MM5-3A	-FH,-BH,-IR,-R,-F, XAD
23	S2-MM5-FBA	-FH,-BH,-IR,-R,-F, XAD
24	Trip Blank	XAD

Submitted By: John V. Shanks

VOST

ENTROPY
Environmentalists, Inc.

P.O. Box 12291
Research Triangle Park
North Carolina 27709-2291
919-781-3550 FAX 919-787-8442

REQUEST FOR ANALYSIS

#: 1807- 3694

Customer Name: Coke Ovens
Vansant, VA

Laboratory: TLI

Date Transmitted: 11/05/91

Results Due By: 12/05/91

Sample Matrix: VOST

Analysis: THIS IS NOT A PURCHASE ORDER! Analyze for POHCs and Benzene. See Gene Riley for details.

Sample #	Sample ID	Components/Comments	
1	I-1-S3-V-1A	Tenax tube	
2	I-1-S3-V-1A	Tenax/charcoal tube	
3	I-1-S3-V-1A	Tenax tube	(ABORTED RUN)
4	I-1-S3-V-1A	Tenax/charcoal tube	(ABORTED RUN)
5	I-1-S3-V-1B	Tenax tube	
6	I-1-S3-V-1B	Tenax/charcoal tube	
7	I-1-S3-V-1C	Tenax tube	
8	I-1-S3-V-1C	Tenax/charcoal tube	
9	I-1-S3-V-1D	Tenax tube	
10	I-1-S3-V-1D	Tenax/charcoal tube	
11	I-1-S3-V-1FB	Tenax tube	
12	I-1-S3-V-1FB	Tenax/charcoal tube	
13	I-2-S3-V-2A	Tenax tube	
14	I-2-S3-V-2A	Tenax/charcoal tube	
15	I-2-S3-V-2B	Tenax tube	
16	I-2-S3-V-2B	Tenax/charcoal tube	
17	I-2-S3-V-2C	Tenax tube	
18	I-2-S3-V-2C	Tenax/charcoal tube	
19	I-2-S3-V-2D	Tenax tube	
20	I-2-S3-V-2D	Tenax/charcoal tube	
21	I-2-S3-V-2FB	Tenax tube	
22	I-2-S3-V-2FB	Tenax/charcoal tube	
23	I-3-S3-V-3A	Tenax tube	
24	I-3-S3-V-3A	Tenax/charcoal tube	
25	II-1-S3-V-1A	Tenax tube	
26	II-1-S3-V-1A	Tenax/charcoal tube	
27	II-1-S3-V-1B	Tenax tube	
28	II-1-S3-V-1B	Tenax/charcoal tube	
29	II-1-S3-V-1C	Tenax tube	
30	II-1-S3-V-1C	Tenax/charcoal tube	
31	II-1-S3-V-1A	Tenax tube	(ABORTED RUN)

Submitted By: John V. Shuler

ENTROPY
Environmentalists, Inc.

P.O. Box 12291
Research Triangle Park
North Carolina 27709-2291
919-781-3550 FAX 919-787-8442

REQUEST FOR ANALYSIS

#: 1807- 3694

Customer Name: Coke Ovens
Vansant, VA

Laboratory: TLI

Date Transmitted: 11/05/91

Results Due By: 12/05/91

Sample Matrix: VOST

Analysis: THIS IS NOT A PURCHASE ORDER! Analyze for POHCs and Benzene. See Gene Riley for details.

Sample #	Sample ID	Components/Comments	
32	II-1-S3-V-1A	Tenax/charcoal tube	(ABORTED RUN)
33	II-1-S3-V-1B	Tenax tube	(ABORTED RUN)
34	II-1-S3-V-1B	Tenax/charcoal tube	(ABORTED RUN)
35	II-1-S3-V-1C	Tenax tube	(ABORTED RUN)
36	II-1-S3-V-1C	Tenax/charcoal tube	(ABORTED RUN)
37	II-1-S3-V-1FB	Tenax tube	(ABORTED RUN)
38	II-1-S3-V-1FB	Tenax/charcoal tube	(ABORTED RUN)
39	II-2-S3-V-2A	Tenax tube	
40	II-2-S3-V-2A	Tenax/charcoal tube	
41	II-2-S3-V-2B	Tenax tube	
42	II-2-S3-V-2B	Tenax/charcoal tube	
43	II-3-S3-V-3A	Tenax tube	
44	II-3-S3-V-3A	Tenax/charcoal tube	
45	II-3-S3-V-3B	Tenax tube	
46	II-3-S3-V-3B	Tenax/charcoal tube	
47	II-3-S3-V-3C	Tenax tube	
48	II-3-S3-V-3C	Tenax/charcoal tube	
49	III-1-S3-V-1A	Tenax tube	
50	III-1-S3-V-1A	Tenax/charcoal tube	
51	III-1-S3-V-1B	Tenax tube	
52	III-1-S3-V-1B	Tenax/charcoal tube	
53	III-1-S3-V-1C	Tenax tube	
54	III-1-S3-V-1C	Tenax/charcoal tube	
55	III-2-S3-V-2A	Tenax tube	
56	III-2-S3-V-2A	Tenax/charcoal tube	
57	III-2-S3-V-2B	Tenax tube	
58	III-2-S3-V-2B	Tenax/charcoal tube	
59	III-3-S3-V-3A	Tenax tube	
60	III-3-S3-V-3A	Tenax/charcoal tube	
61	III-3-S3-V-3B	Tenax tube	
62	III-3-S3-V-3B	Tenax/charcoal tube	

Submitted By: Art V. Stanko

ENTROPY
Environmentalists, Inc.

P.O. Box 12291
Research Triangle Park
North Carolina 27709-2291
919-781-3550 FAX 919-787-8442

REQUEST FOR ANALYSIS

#: 1807- 3694

Customer Name: Coke Ovens
Vansant, VA

Laboratory: TLI

Date Transmitted: 11/05/91

Results Due By: 12/05/91

Sample Matrix: VOST

Analysis: THIS IS NOT A PURCHASE ORDER! Analyze for POHCs and Benzene. See Gene Riley for details.

Sample #	Sample ID	Components/Comments
63	IV-1-S3-V-1A	Tenax tube
64	IV-1-S3-V-1A	Tenax/charcoal tube
65	IV-1-S3-V-1C	Tenax tube
66	IV-1-S3-V-1C	Tenax/charcoal tube
67	IV-1-S3-V-1FB	Tenax tube
68	IV-1-S3-V-1FB	Tenax/charcoal tube
69	IV-2-S3-V-2A	Tenax tube
70	IV-2-S3-V-2A	Tenax/charcoal tube
71	IV-2-S3-V-2B	Tenax tube
72	IV-2-S3-V-2B	Tenax/charcoal tube
73	IV-2-S3-V-2FB	Tenax tube
74	IV-2-S3-V-2FB	Tenax/charcoal tube
75	IV-3-S3-V-3A	Tenax tube
76	IV-3-S3-V-3A	Tenax/charcoal tube

① EPA Roy F. Weston Contract
② 68D 10104
③ Work assignment 5

Submitted By: John V. Santo

ENTROPY
Environmentalists, Inc.

P.O. Box 12291
Research Triangle Park
North Carolina 27709-2291
919-781-3550 FAX 919-787-8442

REQUEST FOR ANALYSIS

#: 1808- 3694

Customer Name: Coke Ovens
Vansant, VA

Laboratory: TLI

Date Transmitted: 11/05/91

Results Due By: 12/05/91

Sample Matrix: VOST Condensate

Analysis: THIS IS NOT A PURCHASE ORDER! Analyze for POHCs and Benzene. See Gene Riley for details.

Sample #	Sample ID	Components/Comments	
1	I-1-S3-V-1A	40 ml VOA vial	(ABORTED RUN)
2	I-1-S3-V-1A	40 ml VOA vial	
3	I-1-S3-V-1B	40 ml VOA vial	
4	I-1-S3-V-1C	40 ml VOA vial	
5	I-1-S3-V-1D	40 ml VOA vial	
6	I-1-S3-V-1FB	40 ml VOA vial	
7	I-2-S3-V-2A	40 ml VOA vial	
8	I-2-S3-V-2B	40 ml VOA vial	
9	I-2-S3-V-2C	40 ml VOA vial	
10	I-2-S3-V-2D	40 ml VOA vial	
11	I-2-S3-V-2FB	40 ml VOA vial	
12	I-3-S3-V-3A	40 ml VOA vial	
13	II-1-S3-V-1A	40 ml VOA vial	
14	II-1-S3-V-1B	40 ml VOA vial	
15	II-1-S3-V-1C	40 ml VOA vial	
16	II-1-S3-V-1A	40 ml VOA vial	(ABORTED RUN)
17	II-1-S3-V-1B	40 ml VOA vial	(ABORTED RUN)
18	II-1-S3-V-1C	40 ml VOA vial	(ABORTED RUN)
19	II-1-S3-V-1FB	40 ml VOA vial	(ABORTED RUN)
20	II-2-S3-V-2A	40 ml VOA vial	
21	II-2-S3-V-2B	40 ml VOA vial	
22	II-3-S3-V-3A	40 ml VOA vial	
23	II-3-S3-V-3B	40 ml VOA vial	
24	II-3-S3-V-3C	40 ml VOA vial	
25	III-1-S3-V-1A	40 ml VOA vial	
26	III-1-S3-V-1B	40 ml VOA vial	
27	III-1-S3-V-1C	40 ml VOA vial	
28	III-2-S3-V-2A	40 ml VOA vial	
29	III-2-S3-V-2B	40 ml VOA vial	
30	III-3-S3-V-3A	40 ml VOA vial	
31	III-3-S3-V-3B	40 ml VOA vial	

Submitted By: John H. Stanley

ENTROPY
Environmentalists, Inc.

P.O. Box 12291
Research Triangle Park
North Carolina 27709-2291
919-781-3550 FAX 919-787-8442

REQUEST FOR ANALYSIS

#: 1808- 3694

Customer Name: Coke Ovens
Vansant, VA

Laboratory: TLI

Date Transmitted: 11/05/91

Results Due By: 12/05/91

Sample Matrix: VOST Condensate

Analysis: THIS IS NOT A PURCHASE ORDER! Analyze for POHCs and Benzene. See Gene Riley for details.

Sample #	Sample ID	Components/Comments
32	IV-1-S3-V-1A	40 ml VOA vial
33	IV-1-S3-V-1C	40 ml VOA vial
34	IV-1-S3-V-1FB	40 ml VOA vial
35	IV-2-S3-V-2A	40 ml VOA vial
36	IV-2-S3-V-2B	40 ml VOA vial
37	IV-2-S3-V-2FB	40 ml VOA vial
38	IV-3-S3-V-3A	40 ml VOA vial

① EPA Roy F. Weston Contract

② 68D 10104

③ Work assignment 5

Submitted By: [signature]

VOLATILE COMPOUNDS ANALYSIS

November 6, 1991

REQUESTED ANALYTICAL SEQUENCE

Analysis No.	Day	Condition No.	Sample No.	Component
Lab control spike				Tenax tube
Lab control spike				Tenax-tenax/charcoal
Lab control spike				Condensate
1	1	I	1A	Tenax tube
2	1	I	1A	Tenax/charcoal(TC)
	1	I	1A	*Condensate
3	1	I	1B	Tenax tube
4	1	I	1B	TC
	1	I	1B	*Condensate
5	1	I	1C	Tenax tube
6	1	I	1C	TC
	1	I	1C	*Condensate
7	1	I	1D	Tenax tube
8	1	I	1D	TC
9	1	I	1D	*Condensate

*Note: Combine the above condensates (1A,1B,1C, 1D) for one Day 1/Condition I condensate analysis.

10	1	I	FB	Tenax-tenax/charcoal (Tandem analysis)
11	1	I	FB	Condensate
12	1	III	1A	Tenax tube
13	1	III	1A	TC
	1	III	1A	**Condensate
14	1	III	1B	Tenax tube
15	1	III	1B	TC
	1	III	1B	**Condensate
16	1	III	1C	Tenax tube
17	1	III	1C	TC
18	1	III	1C	**Condensate

**Note: Combine the above condensates (1A,1B, 1C) for one Day 1/Condition III condensate analysis.

19	1	IV	1A	Tenax tube
20	1	IV	1A	TC
	1	IV	1A	***Condensate

REQUESTED ANALYTICAL SEQUENCE CON'T

Analysis No.	Day	Condition No.	Sample No.	Component
21	1	IV	1C	Tenax tube
22	1	IV	1C	TC
23	1	IV	1C	***Condensate

***Note: Combine the above condensates (1A,1C) for one Day 1/Condition IV condensate analysis.

24	1	IV	FB	Tenax-tenax/charcoal (Tandem analysis)
25	1	IV	FB	Condensate
26	2	I	2A	Tenax tube
27	2	I	2A	TC
	2	I	2A	****Condensate
28	2	I	2B	Tenax tube
29	2	I	2B	TC
	2	I	2B	****Condensate
30	2	I	2C	Tenax tube
31	2	I	2C	TC
	2	I	2C	****Condensate
32	2	I	2D	Tenax tube
33	2	I	2D	TC
34	2	I	2D	****Condensate

****Note: Combine the above condensates (2A,2B,2C, 2D) for one Day 2/Condition I condensate analysis.

35	2	I	FB	Tenax-tenax/charcoal (Tandem analysis)
36	2	I	FB	Condensate
37	2	II	2A	Tenax tube
38	2	II	2A	TC
39	2	II	2A	Condensate
40	2	III	2B	Tenax tube
41	2	III	2B	TC
42	2	III	2B	Condensate
43	2	IV	2A	Tenax tube
44	2	IV	2A	TC
45	2	IV	2A	Condensate
46	2	IV	FB	Tenax-Tenax/charcoal (Tandem analysis)
47	2	IV	FB	Condensate

REQUESTED ANALYTICAL SEQUENCE CON'T

Analysis No.	Day	Condition No.	Sample No.	Component
48	3	I	3A	Tenax tube
49	3	I	3A	TC
50	3	I	3A	Condensate
51	3	II	3A	Tenax tube
52	3	II	3A	TC
53	3	II	3A	Condensate
54	3	III	3A	Tenax tube
55	3	III	3A	TC
56	3	III	3A	Condensate
57	3	IV	3A	Tenax tube
58	3	IV	3A	TC
59	3	IV	3A	Condensate
69	??	??	TB	Tenax-tenax/charcoal (Tandem analysis)

FB- Field Blank TB- Trip Blank

Note- No Trip Blank sample submitted with field samples.

Project # 90005
Client ENTROPY
Date 11/18/91

[PINK]

Multi Metals Train Worksheet

Run # I-1-51

Analytes Hg, Sb, As, Ba, Be, Cd, Cr, Cu, Pb, Mn, Ni, P, Se, Ag, Tl, Zn

F ①

Filter
label 51.203.5

MICROWAVE DIG WITH conc. HF and conc. HNO_3

② Acetone Rinse

label ~~X~~
Volume ~~X~~

Dessicate to dryness and redissolve with 10ml conc. HNO_3

MICROWAVE DIG WITH conc. HF and conc. HNO_3

label 51.203.4

FH ③ HNO_3 Rinse

Label 51.203.4
Volume 118ml.

Reduce volume to 20 ml by heating on a hotplate

FRONT HALF DIGESTATE

DILUTE TO 100 MLS

label ~~I-1-FH~~ 51.203.5 FH
Volume 100 mls

FOR METALS 51.203.5
Label ~~I-1-FH~~
Volume 25ml
(one analyte spike on FH)

FOR Hg 51.203.5 Hg
label ~~I-1-FH Hg~~
Volume 25ml
alq. taken 25ml
(no spike required)

IR ④

BACK HALF IMPINGERS
label 51.203.6
volume 512 ml

FOR METALS
51.203.6 ~~IR~~
label ~~I-1-IR~~
volume

Reduce volume to 20 ml by heating on a hotplate

DIGEST ON A HOTPLATE WITH HNO_3 and H_2O_2

DILUTE TO 100 MLS

label ~~I-1-IR~~ IR 51.203.6
volume 100ml

FOR Hg
51.203.6 Hg
label ~~I-1-IR Hg~~
volume 200mls

SAMPLE
51.203.6 Hg
label ~~I-1-IR Hg~~
vol. 100mls
alq. 100mls

SPIKE
(ONE BILL. Hg spk) 51.203.6 Hg MS
label ~~I-1-IR Hg MS~~
vol. 100mls
alq. 100mls
spk 5 ml of 100ppb
dil. to 100 ml
final spk conc. 0.5ml 5ppb

IR4 (5A)

label 51.203.1
volume 100mls
alq A 50mls
alq B HS-50mls

KMNO4 (5B)

Hg Impinger
51.203.2
300mls
50mls

HCl (5C)

203.3
225ml
5.0mls

(Duplicate Analysis of Sample)

Multi Metals Train Worksheet

DK GRN

Project # 90005
Client ENTROPY
Date 11/18/91

Run # I-3-S1

Analytes _____

F ①

Filter
label 51.203.11

MICROWAVE DIG WITH conc. HF and conc. HNO_3

FH ②

Acetone Rinse
label ~~X~~
Volume ~~X~~

Dessicate to dryness and redissolve with 10ml conc. HNO_3

FH ③

HNO_3 Rinse
Label 51.203.10
Volume 60ml

Reduce volume to 20ml by heating on a hotplate

MICROWAVE DIG WITH conc. HF and conc. HNO_3

Label 51.203.10

FRONT HALF DIGESTATE

DILUTE TO 100 MLS

Label 51.203.11FH
Volume 100mls

FOR METALS
Label 51.203.11FH
Volume 75ml
(one analyte spike on FH)

FOR Hg
label 51.203.11FHHg
Volume 25ml
alq. taken 25ml
(no spike required)

IR ④

BACK HALF IMPINGERS
label 51.203.12
volume 562 mls

FOR METALS
label 51.203.12
volume ~~362mls~~ 462 mls

Reduce volume to 20ml by heating on a hotplate

DIGEST ON A HOTPLATE WITH HNO_3 and H_2O_2

DILUTE TO 100 MLS

label 51.203.12
volume 100ml

FOR Hg
label 51.203.12Hg
volume 100mls

SAMPLE
~~label~~
~~vol.~~
~~alq.~~

SPIKE (ONE B.H. Hg spk)
~~label~~
~~vol.~~
~~alq.~~
~~spk ml of~~
~~dil. to ml~~
~~final spk conc. added~~

IR4 (5A)

Hg Impinger
label 51.203.7
volume 135ml
alq. A 50 mls
alq B

KMNO4 (5B)

Hg Impinger
51.203.8
425ml
5.0mls

HCl (5C)

51.203.9
240ml
5.0mls

(Duplicate Analysis of Each)

Project # 90005
Client EUTRAPX
Date 11/18/91

RED

Multi Metals Train Worksheet

Run # II-1-S1-AFUR

Analytes

① Filter
label 51.203.17

② Acetone Rinse
label
Volume

③ HNO_3 Rinse
Label 51.203.16
Volume 100ml

④ BACK HALF IMPINGERS
label 51.203.18.
volume 820mls

5A
label 51.203.13
volume 105ml
alq. A 50 mls
alq B

5B Hg Impinger
51.203.14
375ml
5.0mls

5C
51.203.15
225ml
5.0mls

(Duplicate Analysis of Partial)

MICROWAVE DIG WITH conc. HF and conc. HNO_3

Dessicate to dryness and reflux solve with 10ml conc. HNO_3

Reduce volume to 20ml by heating on hotplate

MICROWAVE DIG WITH CONC. HF and CONC. HNO_3

label 51.203.16

FRONT HALF DIGESTATE

DILUTE TO 100 MLS

label 51.203.17
Volume 100 mls

FOR METALS
label 51.203.17
Volume 75ml
(one analyte spike on F.H.)

FOR Hg
label 51.203.17 Hg
Volume 25ml
alq. taken 25ml
(no spike required)

FOR METALS
label 51.203.18
Volume 720mls

Reduce volume to 20ml by heating on hotplate

DIGEST ON A HOTPLATE WITH HNO_3 and H_2O_2

DILUTE TO 100 MLS

label 51.203.18
volume 100ml

FOR Hg
label 51.203.18 Hg
volume 100mls

SAMPLE
label
vol.
alq.

SPIKE
(ONE B.H. Hg spk)
label
vol.
alq.
spk ml. of
dil. to ml
Final spk conc. added

Multi Metals Train Worksheet

Project #: _____
Client: _____
Date: _____

Run # ~~II-II~~ II-1 (BW)

Analytes _____

① Filter

label 51.203.23

MICROWAVE DIG WITH conc. HF and conc. HNO_3

② Acetone Rinse

label _____
Volume _____

Dessicate to dryness and redissolve with 10ml conc. HNO_3

③ HNO_3 Rinse

Label 51.203.22
Volume 98 ml

Reduce volume to 20 ml by heating on a hotplate

MICROWAVE DIG WITH conc. HF and conc. HNO_3

Label 51.203.22

FRONT HALF DIGESTATE

DILUTE TO 100 MLS

Label 51.203.23
Volume 100 mls

FOR METALS
Label 51.203.23
Volume 75ml
(one analyte spike on Fil.)

FOR Hg
label 51.203.23 Hg
Volume 25ml
alq. taken 25ml

④ BACK HALF IMPINGERS

label 51.203.24
volume 670 mls

FOR METALS
label 51.203.24
volume 570 mls

Reduce volume to 20 ml by heating on hotplate

DIGEST ON A HOTPLATE WITH HNO_3 and H_2O_2

DILUTE TO 100 MLS

label 51.203.24
volume 100 ml

FOR Hg
label 51.203.24 Hg
volume 100 mls

SAMPLE
label _____
vol. _____
alq. _____

SPIKE (ONE BIL. Hg Spk)
label _____
vol. _____
alq. _____
spk _____ ml of _____
dil. to _____ ml
final spk conc. added _____

(5A) (5B) (5C) Hg Impinger

	(5A)	(5B)	(5C)
label	51.203.19	51.203.20	51.203.21
volume	105 ml	295 ml	230 ml
alq. 1	50 mls	5.0 mls	5.0 mls
alq. 3			

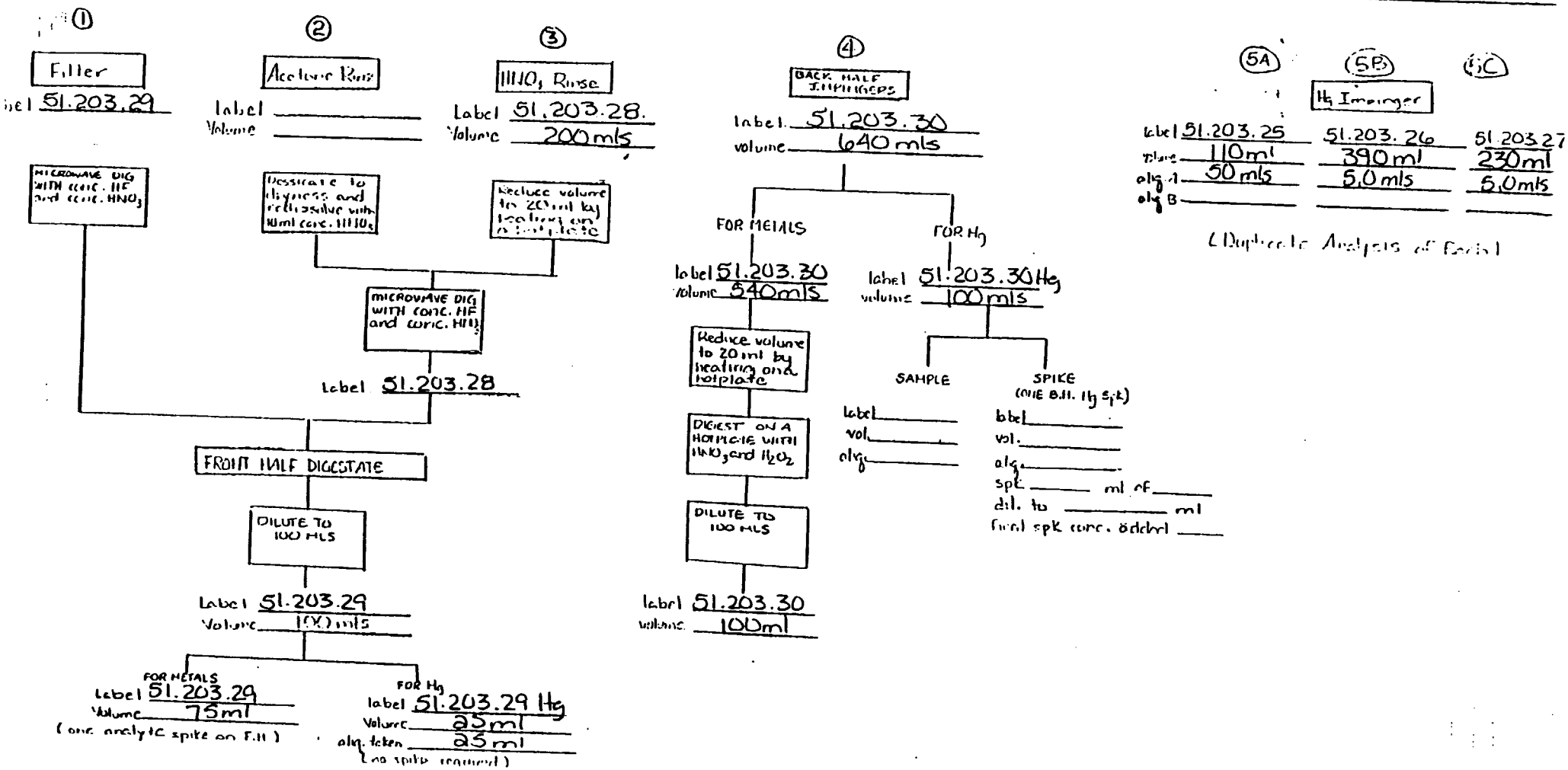
(Duplicate Analysis of Fr. 1)

Multi Metals Train Worksheet

Project # _____
Client _____
Date _____

Run # B-2

Analytes _____



Multi Metals Train Worksheet

Project #: _____
Client: _____
Date: _____

Run # III - 1

Analytes _____

①

Filter

label 51.203.35

MICROWAVE DIG WITH conc. HF and conc. HNO_3

②

Acetone Rinse

label _____
Volume _____

Dessicate to dryness and redissolve with 10ml conc. HNO_3

③

HNO_3 Rinse

Label 51.203.34
Volume 70ml

Reduce volume to 20ml by heating on hotplate

MICROWAVE DIG WITH conc. HF and conc. HNO_3

Label 51.203.34

FROM HALF DIGESTATE

DILUTE TO 100 MLS

Label 51.203.35
Volume 100 mls

FOR METALS
Label 51.203.35
Volume 25 ml
(one analytic spike on Fil.)

FOR Hg
label 51.203.35Hg
Volume 25 ml
alq. taken 25 ml
(no spike required)

④

BACK HALF IMPINGERS

label 51.203.36
volume 570 mls

FOR METALS
label 51.203.36
volume 470 mls

Reduce volume to 20 ml by heating on hotplate

DIGEST ON A HOTPLATE WITH HNO_3 and H_2O_2

DILUTE TO 100 MLS

label 51.203.36
volume 100 ml

FOR Hg
label 51.203.36Hg
volume 100 mls

SAMPLE
label _____
vol. _____
alq. _____

SPIKE
(ONE BATCH Hg Spk)
label _____
vol. _____
alq. _____
spk _____ ml of _____
dil. to _____ ml
final spk conc. added _____

⑤A ⑤B ⑤C

Hg Impinger

	⑤A	⑤B	⑤C
label	51.203.31	51.203.32	51.203.3
volume	100 mls	360 ml	315 ml
alq. A	50 mls	5.0 mls	5.0 mls
alq. B			

(Duplicate Analysis of Partial)

Multi Metals Train Worksheet

Project # _____
Client _____
Date _____

Run # III-2

Analytes _____

① Filter
label 51.203.41

② Acetone Rinse
label _____
Volume _____

③ HNO3 Rinse
Label 51.203.40
Volume 78ml

④ BACK HALF IMPINGERS
label 51.203.42
volume 660mls

MICROWAVE DIG WITH CONC. HF and CONC. HNO3

Dessicate to dryness and reflux with 10ml conc. HNO3

Reduce volume to 20ml by heating on hotplate

MICROWAVE DIG WITH CONC. HF and CONC. HNO3
Label 51.203.40

FRONT HALF DIGESTATE

DILUTE TO 100 MLS

Label 51.203.41
Volume 100mls

FOR METALS
Label 51.203.41
Volume 75ml
(one analyte spike on Fil.)

FOR Hg
label 51.203.41Hg
Volume 25ml
alq. taken 25ml
(no spike required)

FOR METALS
label 51.203.42
volume 560mls

Reduce volume to 20ml by heating on hotplate

DIGEST ON A HOTPLATE WITH HNO3 and H2O2

DILUTE TO 100 MLS

label 51.203.42
volume 100ml

FOR Hg
label 51.203.42Hg
volume 100mls

SAMPLE
label _____
vol. _____
alq. _____

SPIKE
(ONE BILL. Hg spk)
label _____
vol. _____
alq. _____
spk _____ ml of _____
dil. to _____ ml
final spk conc. added _____

⑤A ⑤B ⑤C

Hg Impinger

	⑤A	⑤B	⑤C
label	51.203.31	51.203.38	51.203.[illegible]
volume	100mls	385ml	425ml
alq. A	50 mls	5.0 mls	5.0mls
alq. B			

(Duplicate Analysis of Control)

Multi Metals Train Worksheet

Run # IV-1

Analytes _____

oject # _____
ent _____
ate _____

---

①

Filter

el 51.203.47

MICROWAVE DIG WITH conc. HF and conc. HNO_3

②

Acetone Rinse

label _____
Volume _____

Dessicate to dryness and redissolve with 10ml conc. HNO_3

③

HNO_3 Rinse

Label 51.203.46
Volume 66ml

Reduce volume to 20ml by heating on a hotplate

MICROWAVE DIG WITH conc. HF and conc. HNO_3

Label 51.203.46

FRONT HALF DIGESTATE

DILUTE TO 100 MLS

Label 51.203.47
Volume 100mls

FOR METALS
Label 51.203.47
Volume 75ml
(one analytic spike on Fil.)

FOR Hg
label 51.203.47Hg
Volume 25ml
alq. taken 25ml
(no spike required)

④

BACK HALF IMPINGERS

label 51.203.48
volume 500mls

FOR METALS
label 51.203.48
volume 400mls

Reduce volume to 20ml by heating on hotplate

DIGEST ON A HOTPLATE WITH HNO_3 and H_2O_2

DILUTE TO 100 MLS

label 51.203.48
volume 100ml

FOR Hg
label 51.203.48Hg
volume 100mls

SAMPLE
label _____
vol. _____
alq. _____

SPIKE
(ONE B.H. Hg spk)
label _____
vol. _____
alq. _____
spk _____ ml of _____
dil. to _____ ml
final spk conc. added _____

5A **5B** **5C**

Hg Impinger

	5A	5B	5C
label	51.203.43	51.203.44	51.203.45
volume	250 mls	420 ml	370ml
alq. A	50 mls	5.0 mls	5.0 mls
alq. B			

(Duplicate Analysis of Fecal)

ject # _____

ent _____

le _____

Run # IV-2

Analytes _____

---

① Filter

151.203.53

MICROWAVE DIG WITH CONC. HF and CONC. HNO_3

② Acetone Rinse

label _____

Volume _____

Dessicate to dryness and redissolve with 10ml conc. HNO_3

③ HNO_3 Rinse

Label 51.203.52

Volume 195ml

Reduce volume to 20ml by heating on a hotplate

MICROWAVE DIG WITH CONC. HF and CONC. HNO_3

Label 51.203.52

FRONT HALF DIGESTATE

DILUTE TO 100 MLS

Label 51.203.53

Volume 100 mls

FOR METALS

Label 51.203.53

Volume 75ml

(use analyte spike on F.H.)

FOR Hg

label 51.203.53 Hg

Volume 25ml

alq. taken 25m

(no spike required)

④ BACK HALF IMPINGERS

label 51.203.54

volume 580 mls

FOR METALS

label 51.203.54

volume 480 mls

Reduce volume to 20 ml by heating on a hotplate

DIGEST ON A HOTPLATE WITH HNO_3 and H_2O_2

DILUTE TO 100 MLS

label 51.203.54

volume 100ml

FOR Hg

label 51.203.54 Hg

volume 100 mls

SAMPLE

label _____

vol. _____

alq _____

SPIKE (USE B.H. Hg Spk)

label _____

vol. _____

alq. _____

spk _____ ml. of _____

dil. to _____ ml

final spk conc. added _____

⑤A ⑤B ⑤C

Hg Impinger

	⑤A	⑤B	⑤C
label	51.203.49	51.203.50	51.203.51
volume	130 mls	435ml	270ml
alq. A	50 mls	5.0 mls	5.0 mls
alq B			

(Duplicate Analysis of Each)

Run # FIELD BLANKS

Analytes _____

Project # _____
Client _____
Date _____

---

① Filter
Label 51.203.58

② Acetone Rinse
Label _____
Volume _____

③ HNO3 Rinse
Label 51.203.57
Volume 114 mls

④ BACK HALF IMPINGERS
Label 51.203.59
Volume 290 mls

⑤A ⑤B ⑤C Hg Impinger

	⑤A	⑤B	⑤C
Label	51.203.55	51.203.56	
Volume	360 ml	250 ml	
alq. A	50 mls	5.0 mls	
alq. B			

(Duplicate Analysis of Each)

MICROWAVE DIG WITH CONC. HF and CONC. HNO_3

Evaporate to dryness and redissolve with 10 ml conc. HNO_3

Reduce volume to 20 ml by heating on a hotplate

MICROWAVE DIG WITH CONC. HF and CONC. HNO_3

Label 51.203.58

FRONT HALF DIGESTATE

DILUTE TO 100 MLS

Label 51.203.58
Volume 100 mls

FOR METALS
Label 51.203.58
Volume 75 ml
(one analyte spike on F.H.)

FOR Hg
Label 51.203.58 Hg
Volume 25 ml
alq. taken 25 ml
(no spike required)

FOR METALS
Label 51.203.59
Volume 190 mls

Reduce volume to 20 ml by heating on a hotplate

DIGEST ON A HOTPLATE WITH HNO_3 and H_2O_2

DILUTE TO 100 MLS

Label 51.203.59
Volume 100 ml

FOR Hg
Label 51.203.59 Hg
Volume 100 mls

SAMPLE
Label _____
Vol. _____
alq. _____

SPIKE
(ONE B.H. Hg Spk)
Label _____
Vol. _____
alq. _____
spk. _____ ml. of _____
dil. to _____ ml
Final spk conc. added _____

Run # Reagent Blanks

Analytes

①

Filter

Label 51.203.63

MICROWAVE DIG WITH CONC. HF and CONC. HNO_3

②

Acetone Rinse

Label

Volume

Dessicate to dryness and redissolve with 10ml conc. HNO_3

③

HNO_3 Rinse

Label 51.203.64

Volume 114ml

Reduce volume to 20ml by heating on a hotplate

MICROWAVE DIG WITH conc. HF and conc. HNO_3

Label 51.203.64

FRONT HALF DIGESTATE

DILUTE TO 100 MLS

Label 51.203.63

Volume 100mls

FOR METALS

Label 51.203.63

Volume 75 ml

(one analyte spike on F.H.)

FOR Hg

label 51.203.63 Hg

Volume 25ml

alq. taken 25ml

(no spike required)

④

BACK HALF IMPINGERS

Label 51.203.65

volume 210 mls

FOR METALS

label 51.203.65

volume 110 mls

Reduce volume to 20 ml by heating on hotplate

DIGEST ON A HOTPLATE WITH HNO_3 and H_2O_2

DILUTE TO 100 MLS

label 51.203.65

volume 100ml

FOR Hg

label 51.203.65 Hg

volume 100mls

SAMPLE

label

vol.

alq.

SPIKE (ONE B.H. Hg Spk)

label

vol.

alq.

spk ml. of

dil. to ml

Final spk conc. added

(5A) (5B) (5C)

Hg Impinger

	(5A)	(5B)	(5C)
label	51.203.60	51.203.61	51.203.6
volume	200ml	295ml	225ml
alq. A	50 mls	5.0 mls	5.0 ml
alq. B			

(Duplicate Analysis of Each)

APPENDIX D. REPORTS AND METHODS

- Reports

  TLI Report: TSO
  ~~TLI Report: M202~~
  TLI Report: MMTL
  TLI Report: VOST

  Product Description: Pressure Transducer

- Methods

  Method 5
  Toluene Soluble Organics Analysis Method
  Method 202
  Draft Method for Multiple Metals
  Method 0010: Modified Method Five
  Method 0030: VOST Sampling
  Method 8240: VOST Analysis
  Method 5040A: VOST Analysis

TLI Report: TSO

TSO-500

Revised 12-2-91

TRIANGLE LABORATORIES, INC.

TOLUENE SOLUBLE ORGANICS

SCOPE AND APPLICATION: This is an analytical procedure for the determination of Toluene Soluble Organics collected in a M-5 stack sampling train (front half fractions).

SAFETY CONSIDERATIONS: This method involves the use of volatile organic solvents as well as the handling of organic compounds of unknown toxicity. The work should be conducted in a well ventilated area, free from sources of potential combustion. Personnel conducting these tests should protect themselves from contact with the materials, and breathing the vapors.

PROCEDURE:

1. Label sufficient No. of 250 ml beakers as follows:

   Container No. 1 through N (where N = No. of samples)*
   Field Acetone Blank (usually one)
   Field Toluene Blank (usually one)
   Field Filter Blank (usually one)
   Lab Toluene Blank (usually one)
   Lab Weighing Blanks (usually two; A and B)

***Note: "Container No. 1 through N beakers- a beaker will be required for each set of combined toluene solutions for the fractions listed in the following references 2., 3. and 4..**

Place beakers in a desiccator containing 6/16 mesh silica gel indicating type desiccant for at least 12 hours.

Perform analytical balance calibrations per TLI Standard Operating Procedures and record date, time and analyst name. Analytical calibrations shall be performed and documented prior to each daily weighing sequence.

Prior to use in subsequent steps, determine and record the tare weights of the beakers to the nearest 0.1 mg.

Measure and record the temperature and humidity in the balance room at least once during each weighing sequence.

Measure and record separately the weights for the two beakers designated "Lab Weighing Blanks (A & B)" at least once during each weighing sequence.

Note: The balance room temperature and humidity data along with the Lab Weighing Blanks (A & B) data are quality control requirements.

These data will be used for monitoring the blank beaker weight differences/changes resulting from the varying balance room environment. Record the room temperature to the nearest 1.0 °C. Record the room humidity to the nearest percent absolute. Record the Lab Weighing Blank beaker weights to the nearest 0.1 mg.

2. Sample Fraction No. 1 (Front half acetone residue)

Note the condition of the sample beaker and dried residue. Add 50 ml of toluene to the residue in the sample beaker and agitate for 1 hour in an ultrasonic bath.

Quantitatively transfer the residue/toluene to a filtering apparatus. Afterward, rinse the sample beaker using three 10 ml portions of toluene and transfer these to the filtering apparatus.

Filter, using the gravity feed procedure, the beaker toluene contents through a Whatman No. 40 filter into a numbered rotovap 250 ml round-bottomed flask and combine with the following filtered Sample Fractions.

Following completion of the filtering (Sample Fractions 1, 2 & 3), rinse the Whatman No. 40 filter with three 10 ml portions of toluene and place in the numbered rotovap flask.

3. Sample Fraction No. 2 (Front half toluene residue)

Note the condition of the sample beaker and dried residue. Add 50 ml of toluene to the residue in the sample beaker and agitate for 1 hour in an ultrasonic bath.

Quantitatively transfer the residue/toluene to a filtering apparatus. Afterward, rinse the sample beaker using three 10 ml portions of toluene and transfer these to the filtering apparatus.

Filter, using the gravity feed procedure, the beaker toluene contents through a Whatman No. 40 filter into a numbered rotovap 250 ml round-bottomed flask and combine with the other filtered Sample Fractions.

Following completion of the filtering (Sample Fractions 1, 2 & 3), rinse the Whatman No. 40 filter with three 10 ml portions of toluene and place in the numbered rotovap flask.

4. Sample Fraction No. 3 (Filter)

Charge a distillation flask containing glass chips (1-5) with 350 ml of toluene and assemble to the Soxhlet extractor.

Quantitatively transfer the Sample Fraction No. 3 filter to the Soxhlet extractor and assemble to the condenser. Pass cold water through the condenser and bring the toluene to reflux using a hot plate or heating mantle. Adjust the heat so that the Soxhlet cycles 5 or 6 times per hour and extract the sample for 16 hours.

After the extraction is completed, filter the contents of the distillation flask through the Whatman No. 40 filter into the numbered rotovap flask used to contain the Sample Fractions Nos. 1 & 2 filtrate. Rinse the distillation flask with three 10 ml portions of toluene and pour through the filter into the rotovap flask.

Using the rotovap unit, evaporate the combined Fractions Nos. 1 & 2 residue/toluene and Fraction No. 3 extract to approximately 1 ml. Transfer the concentrated 1 ml fraction to a numbered tared 250 ml beaker. Afterward, rinse the rotovap flask with three 3 ml portions of toluene and combined into the tared beaker.

Place a ribbed watch glass overtop the beaker. Place the tared beaker with protective watch glass at the front of a vented hood that will provide overnight air sweeping.

Evaporate the contents of the tared beaker to dryness at ambient temperature and pressure. Place in the desiccator for 24 hours, then weigh to constant weight.

Desiccate the tared beaker at 20±5.6°C (68±10°F) and ambient pressure for at least 24 hours and weigh at intervals of at least 6 hours apart to a constant weight, i.e., 0.5 mg change from the previous weighing. Report results to the nearest 0.1 mg.

During each weighing, the tared beaker must not be exposed to the laboratory atmosphere for a period greater than 2 minutes and a relative humidity above 50 percent.

5. Field Acetone Blank

If a liquid acetone sample is received, measure the acetone either volumetrically or gravimetrically. Transfer the acetone to a 250 ml beaker (not the tared one), and evaporate to dryness at ambient temperature and pressure; then follow the dried residue directions.

If a beaker with dried residue is received, add 50 ml of toluene to the residue in the beaker and agitate for 1 hour in an ultrasonic bath. Filter the contents through a Whatman No. 40 filter into the flask prepared for the Acetone Blank.

Place the combined fractions on the rotovap unit and then transfer the 1 ml concentrate to a tared beaker and evaporate to dryness at ambient temperature and pressure. Desiccate for 24 hours and weigh to a constant weight. Report the results to the nearest 0.1 mg.

6. Field Toluene Blank

If a liquid toluene sample is received, measure the toluene either volumetrically or gravimetrically. Transfer the toluene to a 250 ml beaker (not the tared one), and evaporate to dryness at ambient temperature and pressure; then follow the dried residue directions.

If a beaker with dried residue is received, add 50 ml of toluene to the residue in the beaker and agitate for 1 hour in an ultrasonic bath. Filter the contents through a Whatman No. 40 filter into the flask prepared for the Acetone Blank.

Place the combined fractions on the rotovap unit and then transfer the 1 ml concentrate to a tared beaker and evaporate to dryness at ambient temperature and pressure. Desiccate for 24 hours and weigh to a constant weight. Report the results to the nearest 0.1 mg.

7. Field Filter Blank

Filter Blank: Treat the blank filter according to the instructions for the field filter (Sample Fraction No.3), given in section 3 above.

6. Lab Toluene Blank

Measure 600 ml of the blank toluene reagent either volumetrically or gravimetrically and transfer the toluene to a 250 ml rotovap round-bottomed flask and evaporate to approximately 1 ml. Transfer the 1 ml concentrate to a numbered tared 250 ml beaker and evaporate to dryness at ambient temperature and pressure. Desiccate for 24 hours and weigh to a constant weight. Report the results to the nearest 0.1 mg.

APPARATUS AND MATERIALS

A. Analysis: For analysis the following equipment is required

1. Desiccator.
2. Analytical balance; capacity 200 g minimum; sensitivity 0.1 mg minimum.
3. Beakers; 250 ml.
4. Hygrometer; to measure relative humidity of balance room.
5. Thermometer; to measure temperature of the balance room.
6. Filtering apparatus (gravity feed).
7. Soxhlet extraction apparatus (soxhlet extractor, condenser and distillation flask).
8. Ultrasonic Bath.
9. Rotovap apparatus with 250 ml round-bottomed flask.
10. Hand Tongs for weighing 250 ml beakers.
11. Glass or teflon ribbed watch glasses for 250 ml beakers.
12. Ventilation hood.

B. Reagents

1. Toluene, ACS reagent grade
2. Whatman No. 40 filter papers
3. Desiccant, anhydrous calcium sulfate, indicating type

Coke Oven Project

Jewell Company—Vansant, Virginia

TOLUENE SOLUBLE ORGANIC ANALYTICAL RESULTS SUMMARY AND INTERPRETATION REPORT

Prepared by:

TRIANGLE LABORATORIES R & D DIVISION

Research Triangle Park, North Carolina

Prepared for:

ENTROPY ENVIRONMENTALISTS

Research Triangle Park, North Carolina

EPA Contract No. 68D10104

January 16, 1992

January 16, 1992 TLI #90006

TOLUENE SOLUBLE ORGANICS

1. Introduction

1.1 Project Objectives

The project objective was to gravimetrically determine the amount of toluene soluble organic material being generated from a coke oven facility. The test program was designed to collect particulate samples during different coke oven operating conditions for determination of these toluene soluble organics (TSO).

1.1.1 Analytical Objectives

The major analytical objective was to determine the amount of toluene soluble organics collected in a M-5 sampling train from a coke oven plant. The analytical method was designed to measure extractable materials at levels of greater than 1 to 5 mg per sample train.

1.2 Project Description

The samples collected represented four conditions for three different days of sampling. The samples consisted of the glass fiber filter, a train acetone rinse and a train toluene rinse. The labeling identification of the samples is documented on the accompanying work plan located in Appendix A.

1.3 Method Description

The SOP presented in Appendix B was used for the extraction and weighing of the samples. The general procedure was as follows.

a) Extract filter with toluene for 16 hours in a Soxhlet extractor.

b) Dissolve the residue of the acetone rinse in toluene using a sonicator to add solution.

c) Dissolve the residue of the toluene rinse in toluene using a sonicator to add solution.

d) Combine the filtered extracts of all of the above and concentrate in a rotary evaporator to a volume of approximately 1 mL.

e) Place the final extract into a tared beaker and weigh to a "constant" (±0.5 mg) weight.

f) During the weighing process, record the temperature, humidity and the weights of two empty lab blank beakers as quality control indicators of problems with the balance or the lab handling operations.

2. Summary and Interpretation of Results

2.1 Field Sample Results

2.1.1 Visible Observations

A summary of the laboratory extraction observations, comments and the appearance of the filter and acetone and toluene rinse samples is summarized in Table 1. The filters were all observed to contain a brown, gray or black powdery residue. Sample Condition II Run 1 (aborted run) (TLI # 52-144-13A) was observed to contain some ash, also. The acetone residues all were observed to be a dark or black color, occasionally with small dark liquid droplets. The toluene residues were observed as containing only a small amount of dust-like particles. There was some concern regarding the dried residues contained within the small Teflon baggies. The baggies were stretched to conform to the inside of the beakers and toluene was placed in the baggies to dissolve the residue. No problems were observed with any of the field blank samples.

2.1.2 Sample Analysis Summary

The analytical results are presented in two sections. Table 2 contains the initial weighings of the empty beakers to establish the tared beaker weight and also gives an estimate of weighing precision. These were conducted in triplicate and the individual weights, the average, standard deviation and percent relative standard deviation (%RSD) are also presented. The precision of the lab weighing blanks ranged from 0.0014% to 0.0025% relative standard deviation, which is within the range of the balance specifications for accuracy.

Table 3 contains the final weighings. The beakers were weighed until two consecutive weighings were within 0.5 mg of each other in a greater than six hour interval. In all cases, the final weighing was slightly higher (approximately 1 mg) than the initial weighing. The effect of slight

changes in room humidity were believed to produce this phenomenon. Because the changes were relatively small for all five weighings, the average value was used in the final calculations. The standard deviation and relative standard deviation of the average weight are also tabulated in Table 3. The precision of the lab weighing blanks ranged from 0.0006% to 0.0009% relative standard deviation, which is within the range of the balance specifications for accuracy. Although the room humidity varied more across this set of weighings, the %RSD was lower than the initial weighings. This is probably the result of two additional measurements being used in the calculations.

The toluene soluble organics have been determined by the difference between the average final weight and the average initial weight. These results are tabulated in Table 3. The TLI method blank, the reagent blanks and the filter blank all had slightly negative numbers (0.1 mg to 0.55 mg), which probably represents the slight variation due to room humidity changes. These values are also within the balance specifications of 0.001% accuracy (0.0002 g for a 20 g weight).

The field blank had a slightly positive value of 0.94 mg. This value again could represent some variation caused by room humidity and balance accuracy (0.00094 g in 100 g is 0.0009%). Condition I and II samples all had slightly positive results, but also in the range of measurement error and not different from the field blank. Condition III, Run 1 had a 2.05 mg value and Condition III, Run 3 had a 3.33 mg value. Condition IV produced values at 2.61, 3.84 and 1.87 mg, for days 1 through 3, respectively. Both of these sets of conditions appear to be consistently higher than those of Conditions I and II. The aborted run from Condition II, Run 1 had the highest value at 5.72 mg. This may be a result of the ash that was observed on the filter in this sample. The laboratory data sheets can be found in Appendix C.

3. Conclusions

The TSO method appears capable of determining the amount of toluene soluble organics using the M-5 sampling train to levels of approximately 2 mg. The variation in the measurements at this level require good quality control procedure, i.e. blank beaker monitoring and good control of room temperature and humidity. With appropriate care, measurements of standard deviations of ± 0.0007 mg can be achieved. This allows the determination of TSO material approximately three times this value (2 mg) to be measured at the 95% confidence levels.

Some problems were encountered during the filtration steps using the SOP as originally written. Some particles escaped into the filtrate, causing the need for several additional filtrations. Future analyses will require some modifications of the SOP to correct for this deficiency.

Don Harvan
Vice President, Technical Operations

Table 1
Toluene Soluble Organic—Coke Oven
Lab Extraction Observations

		Filter	Acetone Rinses	Toluene Rinses
1	I-1	dark powdery mauve residue, filter broken in 1/2's	dark brown residue, dry	small amount of dust
2	I-2	slight tan residue, filter broken into 4 pieces	small amount of blackish residue, moist	small amount of dust
3	I-3	dark grey residue, small pieces & cut along fold	small amount of blackish residue, moist	small amount of dust
4	II-1	dark charcoal grey residue covering filter	blackish-brown residue, moist	small amount of dust
5	II-2	beige residue, broken into 4 pieces, some smaller ones	small amount of blackish residue, drops of dirty liquid	small amount of dust, 8/10" filament and gnat in bag
6	II-3	small amount of tan residue, filter ripped	small amount of blackish residue, drops of dirty liquid	small amount of dust
7	III-1	medium grey residue, 2 pieces with some smaller pieces	small amount of dry black residue	small amount of oily dust
8	III-2	small amount of beige residue, ripped, some smaller pieces	small amount of blackish residue, drops of dirty liquid	stripe of dry residue
9	III-3	1/2 light, 1/2 dark grey, tinge of pink on filter edge	small amount of blackish residue, drops of dirty liquid	small amount of dust
10	IV-1	light grey residue, torn, some smaller pieces	small amount of blackish residue, drops of dirty liquid	small amount of dust
11	IV-2	black residue, 2 pieces with some smaller pieces	small amount of blackish residue, drops of dirty liquid	three spots of dark brown residue
12	IV-3	medium grey residue, some smaller pieces	small amount of blackish residue, drops of dirty liquid	small amount of dust
13*	II-1	mauve residue,some smaller pieces and ash	dry brown residue	brownish dust particles covering bottom of bag

* Aborted run

Table 1 (continued) **Toluene Soluble Organic—Coke Oven Lab Extraction Observations**

		Filter	Acetone Rinse	Toluene Rinse
14	FBlank	clean, broken into 3 pieces		one stripe of dried dust
15	Filter	clean		trace of dust particles
15	TOL.			
15	ACET.		229 ml acetone arrived in plastic container. Transferred to 250 ml beaker and evaporated to dryness under hood.	
16	TLI Blank			

Table 2
Toluene Soluble Organic—Coke Oven
Empty Beaker Initial Weighings

Balance Calibration

Date	12/27	12/27	12/30
Time	8:09	17:52	8:28
Analyst	WK	WK	WK
Temp (°C)	25.1	25.2	25.6
Humidity	4.5%	1.5%	3.0%

Lab Weighing Blanks

				AVG	STD. DEV.	%RSD
A	101.1283	101.1233	101.1256	101.12573	0.00250	0.0025%
	101.1262	101.1233	101.1249	101.12480	0.00145	0.0014%
				101.12527	0.00190	0.0019%
B	105.652	105.6471	105.6495	105.64953	0.00245	0.0023%
	105.65	105.6473	105.6491	105.64880	0.00137	0.0013%
				105.64917	0.00182	0.0017%

Blank Beakers

	ID	WT1	WT2	WT3	AVG	STD. DEV.	%RSD
1	I-1	97.4462	97.4411	97.4428	97.44337	0.00260	0.0027%
2	I-2	101.7016	101.6971	101.6987	101.69913	0.00228	0.0022%
3	I-3	108.9715	108.9668	108.9686	108.96897	0.00237	0.0022%
4	II-1	107.0168	107.0121	107.0138	107.01423	0.00238	0.0022%
5	II-2	105.9852	105.9802	105.9825	105.98263	0.00250	0.0024%
6	II-3	107.5819	107.5799	107.5845	107.58210	0.00231	0.0021%
7	III-1	99.1536	99.1495	99.1507	99.15127	0.00211	0.0021%
8	III-2	101.1133	101.1099	101.1114	101.11153	0.00170	0.0017%
9	III-3	98.9299	98.9259	98.9274	98.92773	0.00202	0.0020%
10	IV-1	99.5609	99.5575	99.5593	99.55923	0.00170	0.0017%
11	IV-2	106.1474	106.144	106.1463	106.14590	0.00173	0.0016%
12	IV-3	108.6702	108.667	108.6693	108.66883	0.00165	0.0015%
13 *	II-1	99.6731	99.6691	99.6714	99.67120	0.00201	0.0020%
14	F BLK	102.9301	102.9273	102.929	102.92880	0.00141	0.0014%
15	FILTER	98.9364	98.9318	98.9344	98.93420	0.00231	0.0023%
15	TOL.	99.0572	99.0525	99.0554	99.05503	0.00237	0.0024%
15	ACET.	100.8583	100.8549	100.8566	100.85660	0.00170	0.0017%
16	TLI BL	100.0525	100.0494	100.0504	100.05077	0.00158	0.0016%

* Aborted Run

Table 3
Toluene Soluble Organic—Coke Oven
Final Analytical Weighings

Balance Calibration

Date	1/2/92	1/2	1/3	1/6	1/6
Time	8:49	16:28	9:03	8:19	14:38
Analyst	MVL	MVL	MVL	MVL	MVL
Temp (°C)	25.4	25.6	24.9	25.3	26.0
Humidity	1%	5%	15%	6%	5%

Lab Weighing Blanks

						AVG	STD. DEV.	%RSD
A	101.1238	101.1239	101.1251	101.1243	101.1254	101.12450	0.00072	0.0007%
	101.1238	101.1248	101.1254	101.1249	101.1254	101.12486	0.00065	0.0006%
						101.12447	0.00072	
B	105.6477	105.6482	105.6491	105.6488	105.6491	105.64858	0.00061	0.0006%
	105.6476	105.6492	105.6499	105.6492	105.6493	105.64904	0.00086	0.0008%
						105.64862	0.00092	

Sample Weighings

	ID	WT1	WT2	WT3	WT4	WT5	AVG	STD. DEV.	%RSD	TSO WT. in Grams
1	I-1	97.4433	97.4446	97.4453	97.4445	97.4446	97.44446	0.00072	0.0007%	0.00109
2	I-2	101.6994	101.6997	101.7000	101.6999	101.7000	101.69980	0.00025	0.0003%	0.00067
3	I-3	108.9694	108.9698	108.9700	108.9700	108.9700	108.96984	0.00026	0.0002%	0.00087
4	II-1	107.0142	107.0148	107.0156	107.0156	107.0159	107.01522	0.00070	0.0007%	0.00099
5	II-2	105.9819	105.9823	105.9833	105.9832	105.9832	105.98278	0.00064	0.0006%	0.00015
6	II-3	107.5818	107.5821	107.5830	107.5826	107.5830	107.58250	0.00054	0.0005%	0.00040
7	III-1	99.1523	99.1531	99.1543	99.1534	99.1535	99.15332	0.00072	0.0007%	0.00205
8	III-2	101.1117	101.1122	101.1130	101.1124	101.1126	101.11238	0.00048	0.0005%	0.00085
9	III-3	98.9301	98.9313	98.9320	98.9307	98.9312	98.93106	0.00071	0.0007%	0.00333
10	IV-1	99.5609	99.5616	99.5627	99.5617	99.5623	99.56184	0.00069	0.0007%	0.00261
11	IV-2	106.1491	106.1497	106.1500	106.1500	106.1499	106.14974	0.00038	0.0004%	0.00384
12	IV-3	108.6700	108.6705	108.6711	108.6710	108.6709	108.67070	0.00045	0.0004%	0.00187
13	* II-1	99.6764	99.6770	99.6775	99.6767	99.6770	99.67692	0.00041	0.0004%	0.00572
14	F BLK	102.9291	102.9298	102.9299	102.9300	102.9299	102.92974	0.00036	0.0004%	0.00094
15	FILTER	98.9335	98.9342	98.9345	98.9341	98.9342	98.93410	0.00037	0.0004%	-0.00010
15	TOL.	99.0540	99.0545	99.0552	99.0552	99.0551	99.05480	0.00053	0.0005%	-0.00023
15	ACET.	100.8555	100.8565	100.8568	100.8568	100.8568	100.85648	0.00056	0.0006%	-0.00012
16	TLI BL	100.0498	100.0501	100.0504	100.0504	100.0504	100.05022	0.00027	0.0003%	-0.00055

* Aborted Run

Appendix A

Triangle Laboratories TSO Analytical Work Plan

December 12, 1991

TRIANGLE LABORATORIES ANALYTICAL WORK PLAN

ENTROPY/WESTON COKE OVEN PROJECT

TOLUENE SOLUBLE ORGANIC ANALYSIS JEWELL COMPANY; VANSANT, VA

TLI No.
Administrative- 90001
Toluene Soluble Organic analysis- 90006

Weston Contract No. 68D10104
EPA Work Assignment No. 5

Date Samples Recd: 12-10-91

Samples Collected 10-29-91 to 10-31-91

Analysis Deadline Completion Date: 01-10-91

Type of Samples:

Test Day 1 Stack 1
(M5/202 train)

Condition I	Run 1	analyze
Condition II	Run 1	analyze
Condition II	Run 1 (aborted run)	analyze
Condition III	Run 1	analyze
Condition IV	Run 1	analyze

Test Day 2 Stack 1
(M5/202 train)

Condition I	Run 2	analyze
Condition II	Run 2	analyze
Condition III	Run 2	analyze
Condition IV	Run 2	analyze

Test Day 3 Stack 1
(M5/202 train)

Condition I	Run 3	analyze
Condition II	Run 3	analyze
Condition III	Run 3	analyze
Condition IV	Run 3	analyze

Each run contains the following sample fractions:

Fraction 1	F-	Glass fiber filter
Fraction 2	AR-	Front half acetone rinse
Fraction 3	TR-	Front half toluene rinse

Total field fractions to be analyzed:

Day 1	-	15 train fractions
Day 2	-	12 train fractions
Day 3	-	12 train fractions
Field Blanks	-	3 train fractions
Reagent Blanks	-	3 fractions
Total fractions	-	45

Analyst is to observe the different train fractions and document any abnormal appearance (color, broken watch glasses, etc.)

SCOPE AND APPLICATION: This is an analytical procedure for the determination of Toluene Soluble Organics collected in a M-5 stack sampling train (front half fractions).

Analyze samples per instructions presented in TLI SOP No. OWL181-91. If you have questions regarding these instructions, please contact Gene Riley.

When project is completed, Gene Riley will determine cost of analysis. When package is complete, please submit to Gene Riley for delivery.

Analyst should perform filter extracts prior to disolving and filtering the acetone and toluene rinse fractions.

The following list of samples shall be prepared and weighed per the SOP instructions.

SAMPLE FRACTION PREPARATION LIST

Fraction No.	Day	Condition No.	Fraction	TLI No.
1	1	I	F	1A
2	1	I	AR	1B
3	1	I	TR	1C
4	1	II	F	4A
5	1	II	AR	4B
6	1	II	TR	4C
7	1	II	F (abort)	13A
8	1	II	AR (abort)	13B
9	1	II	TR (abort)	13C
10	1	III	F	7A
11	1	III	AR	7B
12	1	III	TR	7C
13	1	IV	F	10A
14	1	IV	AR	10B
15	1	IV	TR	10C
16	2	I	F	2A
17	2	I	AR	2B
18	2	I	TR	2C
19	2	II	F	5A
20	2	II	AR	5B
21	2	II	TR	5C
22	2	III	F	8A
23	2	III	AR	8B
24	2	III	TR	8C
25	2	IV	F	11A
26	2	IV	AR	11B
27	2	IV	TR	11C
28	3	I	F	3A
29	3	I	AR	3B
30	3	I	TR	3C
31	3	II	F	6A
32	3	II	AR	6B
33	3	II	TR	6C

SAMPLE FRACTION PREPARATION LIST (CON'T)

Fraction No.	Day	Condition No.	Fraction	TLI No.
34	3	III	F	9A
35	3	III	AR	9B
36	3	III	TR	9C
37	3	IV	F	12A
38	3	IV	AR	12B
39	3	IV	TR	12C
40	Field Blank	combine	F	14A
41	Field Blank		AR	14B
42	Field Blank		TR	14C
43	Reagent Blank	separate	Toluene	15A
44	Reagent Blank	separate	Acetone	15B
45	Reagent Blank	separate analyses	Filter (4)	15C

Appendix B

Triangle Laboratories TSO Analysis Standard Operating Procedures

Revised 12-2-91

TRIANGLE LABORATORIES, INC.

TOLUENE SOLUBLE ORGANICS

SCOPE AND APPLICATION: This is an analytical procedure for the determination of Toluene Soluble Organics collected in a M-5 stack sampling train (front half fractions).

SAFETY CONSIDERATIONS: This method involves the use of volatile organic solvents as well as the handling of organic compounds of unknown toxicity. The work should be conducted in a well ventilated area, free from sources of potential combustion. Personnel conducting these tests should protect themselves from contact with the materials, and breathing the vapors.

PROCEDURE:

1. Label sufficient No. of 250 ml beakers as follows:

   Container No. 1 through N (where N = No. of samples)*
   Field Acetone Blank (usually one)
   Field Toluene Blank (usually one)
   Field Filter Blank (usually one)
   Lab Toluene Blank (usually one)
   Lab Weighing Blanks (usually two; A and B)

***Note: "Container No. 1 through N beakers- a beaker will be required for each set of combined toluene solutions for the fractions listed in the following references 2., 3. and 4..**

Place beakers in a desiccator containing 6/16 mesh silica gel indicating type desiccant for at least 12 hours.

Perform analytical balance calibrations per TLI Standard Operating Procedures and record date, time and analyst name. Analytical calibrations shall be performed and documented prior to each daily weighing sequence.

Prior to use in subsequent steps, determine and record the tare weights of the beakers to the nearest 0.1 mg.

Measure and record the temperature and humidity in the balance room at least once during each weighing sequence.

Measure and record separately the weights for the two beakers designated "Lab Weighing Blanks (A & B)" at least once during each weighing sequence.

Note: The balance room temperature and humidity data along with the Lab Weighing Blanks (A & B) data are quality control requirements.

These data will be used for monitoring the blank beaker weight differences/changes resulting from the varying balance room environment. Record the room temperature to the nearest 1.0 °C. Record the room humidity to the nearest percent absolute. Record the Lab Weighing Blank beaker weights to the nearest 0.1 mg.

2. Sample Fraction No. 1 (Front half acetone residue)

Note the condition of the sample beaker and dried residue. Add 50 ml of toluene to the residue in the sample beaker and agitate for 1 hour in an ultrasonic bath.

Quantitatively transfer the residue/toluene to a filtering apparatus. Afterward, rinse the sample beaker using three 10 ml portions of toluene and transfer these to the filtering apparatus.

Filter, using the gravity feed procedure, the beaker toluene contents through a Whatman No. 40 filter into a numbered rotovap 250 ml round-bottomed flask and combine with the following filtered Sample Fractions.

Following completion of the filtering (Sample Fractions 1, 2 & 3), rinse the Whatman No. 40 filter with three 10 ml portions of toluene and place in the numbered rotovap flask.

3. Sample Fraction No. 2 (Front half toluene residue)

Note the condition of the sample beaker and dried residue. Add 50 ml of toluene to the residue in the sample beaker and agitate for 1 hour in an ultrasonic bath.

Quantitatively transfer the residue/toluene to a filtering apparatus. Afterward, rinse the sample beaker using three 10 ml portions of toluene and transfer these to the filtering apparatus.

Filter, using the gravity feed procedure, the beaker toluene contents through a Whatman No. 40 filter into a numbered rotovap 250 ml round-bottomed flask and combine with the other filtered Sample Fractions.

Following completion of the filtering (Sample Fractions 1, 2 & 3), rinse the Whatman No. 40 filter with three 10 ml portions of toluene and place in the numbered rotovap flask.

4. Sample Fraction No. 3 (Filter)

Charge a distillation flask containing glass chips (1-5) with 350 ml of toluene and assemble to the Soxhlet extractor.

Quantitatively transfer the Sample Fraction No. 3 filter to the Soxhlet extractor and assemble to the condenser. Pass cold water through the condenser and bring the toluene to reflux using a hot plate or heating mantle. Adjust the heat so that the Soxhlet cycles 5 or 6 times per hour and extract the sample for 16 hours.

After the extraction is completed, filter the contents of the distillation flask through the Whatman No. 40 filter into the numbered rotovap flask used to contain the Sample Fractions Nos. 1 & 2 filtrate. Rinse the distillation flask with three 10 ml portions of toluene and pour through the filter into the rotovap flask.

Using the rotovap unit, evaporate the combined Fractions Nos. 1 & 2 residue/toluene and Fraction No. 3 extract to approximately 1 ml. Transfer the concentrated 1 ml fraction to a numbered tared 250 ml beaker. Afterward, rinse the rotovap flask with three 3 ml portions of toluene and combined into the tared beaker.

Place a ribbed watch glass overtop the beaker. Place the tared beaker with protective watch glass at the front of a vented hood that will provide overnight air sweeping.

Evaporate the contents of the tared beaker to dryness at ambient temperature and pressure. Place in the desiccator for 24 hours, then weigh to constant weight.

Desiccate the tared beaker at 20±5.6°C (68±10°F) and ambient pressure for at least 24 hours and weigh at intervals of at least 6 hours apart to a constant weight, i.e., 0.5 mg change from the previous weighing. Report results to the nearest 0.1 mg.

During each weighing, the tared beaker must not be exposed to the laboratory atmosphere for a period greater than 2 minutes and a relative humidity above 50 percent.

5. Field Acetone Blank

If a liquid acetone sample is received, measure the acetone either volumetrically or gravimetrically. Transfer the acetone to a 250 ml beaker (not the tared one), and evaporate to dryness at ambient temperature and pressure; then follow the dried residue directions.

If a beaker with dried residue is received, add 50 ml of toluene to the residue in the beaker and agitate for 1 hour in an ultrasonic bath. Filter the contents through a Whatman No. 40 filter into the flask prepared for the Acetone Blank.

Place the combined fractions on the rotovap unit and then transfer the 1 ml concentrate to a tared beaker and evaporate to dryness at ambient temperature and pressure. Desiccate for 24 hours and weigh to a constant weight. Report the results to the nearest 0.1 mg.

6. Field Toluene Blank

If a liquid toluene sample is received, measure the toluene either volumetrically or gravimetrically. Transfer the toluene to a 250 ml beaker (not the tared one), and evaporate to dryness at ambient temperature and pressure; then follow the dried residue directions.

If a beaker with dried residue is received, add 50 ml of toluene to the residue in the beaker and agitate for 1 hour in an ultrasonic bath. Filter the contents through a Whatman No. 40 filter into the flask prepared for the Acetone Blank.

Place the combined fractions on the rotovap unit and then transfer the 1 ml concentrate to a tared beaker and evaporate to dryness at ambient temperature and pressure. Desiccate for 24 hours and weigh to a constant weight. Report the results to the nearest 0.1 mg.

7. Field Filter Blank

Filter Blank: Treat the blank filter according to the instructions for the field filter (Sample Fraction No.3), given in section 3 above.

6. Lab Toluene Blank

Measure 600 ml of the blank toluene reagent either volumetrically or gravimetrically and transfer the toluene to a 250 ml rotovap round-bottomed flask and evaporate to approximately 1 ml. Transfer the 1 ml concentrate to a numbered tared 250 ml beaker and evaporate to dryness at ambient temperature and pressure. Desiccate for 24 hours and weigh to a constant weight. Report the results to the nearest 0.1 mg.

APPARATUS AND MATERIALS

A. Analysis: For analysis the following equipment is required

1. Desiccator.
2. Analytical balance; capacity 200 g minimum; sensitivity 0.1 mg minimum.
3. Beakers; 250 ml.
4. Hygrometer; to measure relative humidity of balance room.
5. Thermometer; to measure temperature of the balance room.
6. Filtering apparatus (gravity feed).
7. Soxhlet extraction apparatus (soxhlet extractor, condenser and distillation flask).
8. Ultrasonic Bath.
9. Rotovap apparatus with 250 ml round-bottomed flask.
10. Hand Tongs for weighing 250 ml beakers.
11. Glass or teflon ribbed watch glasses for 250 ml beakers.
12. Ventilation hood.

B. Reagents

1. Toluene, ACS reagent grade
2. Whatman No. 40 filter papers
3. Desiccant, anhydrous calcium sulfate, indicating type

Appendix C

Triangle Laboratories TSO Analysis
Laboratory Data Sheets

ENTROPY
Environmentalists, Inc.

P.O. Box 12291
Research Triangle Park
North Carolina 27709-2291
919-781-3550 FAX 919-787-8442

REQUEST FOR ANALYSIS

PO#: 1887- 3694

Customer Name: Coke Ovens
Vansant, VA

Laboratory: TLI

Date Transmitted: 12/10/91

Results Due By: 1/10/91

Sample Matrix: M5/202

Analysis: THIS IS NOT A PURCHASE ORDER. Analyze for toluene soluble organics. See Gene Riley for details.

Sample #	Sample ID	Components/Comments
1	I-1-SI-M5/202-1	Filter, acetone rinse, toluene rinse
2	I-2-SI-M5/202-2	Filter, acetone rinse, toluene rinse
3	I-3-SI-M5/202-3	Filter, acetone rinse, toluene rinse
4	II-1-SI-M5202-1	Filter, acetone rinse, toluene rinse
5	II-2-SI-M5202-2	Filter, acetone rinse, toluene rinse
6	II-3-SI-M5202-3	Filter, acetone rinse, toluene rinse
7	III-1SI-M5202-1	Filter, acetone rinse, toluene rinse
8	III-2SI-M5202-2	Filter, acetone rinse, toluene rinse
9	III-3SI-M5202-3	Filter, acetone rinse, toluene rinse
10	IV-1-SI-M5202-1	Filter, acetone rinse, toluene rinse
11	IV-2-SI-M5202-2	Filter, acetone rinse, toluene rinse
12	IV-3-SI-M5202-3	Filter, acetone rinse, toluene rinse
13	II-1SI-M5/202-1	Filter, acetone, toluene (ABORTED RUN)
14	Field	Filter, acetone rinse, toluene rinse
15	Blanks	toluene, filters
	NOTE:	All above samples are dry

Submitted By: John V. Stanfu

TLI PROJECT SCHEDULE

TLI Project Number: 90006 Number of Samples: 44

Date: 10-Dec-91

Dioxin Product (21 day turnaround)	DATE IN	DATE OUT
Receipt/Initiation (0 days)	10-Dec-91	10-Dec-91
Sample Prep Lab (6 days)	10-Dec-91	16-Dec-91
HRGC/HRMS (6 days)	16-Dec-91	22-Dec-91
Report Gen./Data Review (8 days)	22-Dec-91	30-Dec-91
QA/Data Package Assembly (1 day)	30-Dec-91	31-Dec-91

Dioxin Product (14 day turnaround)	DATE IN	DATE OUT
Receipt/Initiation (0 days)	10-Dec-91	10-Dec-91
Sample Prep Lab (4 days)	10-Dec-91	14-Dec-91
HRGC/HRMS (4 days)	14-Dec-91	18-Dec-91
Report Gen./Data Review (4 days)	18-Dec-91	22-Dec-91
QA/Data Package Assembly (2 days)	22-Dec-91	24-Dec-91

Dioxin Product (7 day turnaround)	DATE IN	DATE OUT
Receipt/Initiation (0 days)	10-Dec-91	10-Dec-91
Sample Prep Lab (2 days)	10-Dec-91	12-Dec-91
HRGC/HRMS (2 days)	12-Dec-91	14-Dec-91
Report Gen./Data Review (2 days)	14-Dec-91	16-Dec-91
QA/Data Package Assembly (1 day) 30 day*	16-Dec-91	17-Dec-91

Semi-Volatile Product (~~14~~ day turnaround) Organic Wet Lab	DATE IN	DATE OUT
Receipt/Initiation (0 day)	10-Dec-91	10-Dec-91
Sample Prep Lab (4 days)	10-Dec-91	14-Dec-91
LRGC/LRMS (4 days)	14-Dec-91	18-Dec-91
Report Generation (4 days)	18-Dec-91	22-Dec-91
QA/Data Package Assembly (2 days)	22-Dec-91	24-Dec-91

Volatile Product (14 day turnaround)	DATE IN	DATE OUT
Receipt/Initiation (0 days)	10-Dec-91	10-Dec-91
LRGC/LRMS (7 days)	10-Dec-91	17-Dec-91
Report Gen./Data Review (4 days)	17-Dec-91	21-Dec-91
QA/Data Package Assembly (3 days)	21-Dec-91	24-Dec-91

* 30 day TAT necessary to obtain constant weights. CEB 12-12-91

INTERLABORATORY SAMPLE TRANSFER

RECORD OF CUSTODY

Please include this form with the final (typed) results, and whenever the final results are faxed.

The samples referenced in Entropy Environmentalists Inc. purchase order No. 1887-3694 were ~~shipped via~~ hand delivered on 12-10 to TLI by JVS.

The samples were received at TRIANGLE LABS on DEC 1 0 1991 by [illegible].

Note any broken seals, leakage, spillage, or damage to samples *(if discrepancy, indicate seal No., jar No., sample No., etc.)*.

L-0012 rev. 8-91

ENTROPY

(153)

Custody Seal	Present / Absent / Not Intact	TLI Project Number	90606
Chain of Custody	Present / Absent		
Sample Tags	Present / Absent	Client	ROY F. WESTON, INC.
Sample Tag Numbers	Listed / Not Listed on Chain of Custody		
SMO Forms	Present / Absent	Date Received	12/10/91 By [illegible]
Ice Chest/Styro Cooler/Cardboard Box	Dry Ice Ice Absent	Carrier and Number	HAND CARRIED

Sample ID TLI	Sample ID Client	Matrix	Storage Location	To Lab Date/Initial	To Storage Date/Initial	To Lab Date/Initial	To Storage Date/Initial
52-144-1A	I-1-SI-M5/202-1	F	COOLER#2	12/12/91 CMR		12/20 VU	12/20 WL
52-144-1B		ACE/R	COOLER#2		12/12/91 CMR		
52-144-1C		TOL/R	COOLER#2		CMR		
52-144-2A	I-2-SI-M5/202-2	F	COOLER#2				
52-144-2B		ACE/R	COOLER#2		CMR		
52-144-2C		TOL/R	COOLER#2		CMR		
52-144-3A	I-3-SI-M5/202-3	F	COOLER#2				
52-144-3B		ACE/R	COOLER#2		CMR		
52-144-3C		TOL/R	COOLER#2		CMR		
52-144-4A	II-1-SI-M5202-1	F	COOLER#2				
52-144-4B		ACE/R	COOLER#2		CMR		
52-144-4C		TOL/R	COOLER#2		CMR		
52-144-5A	II-2-SI-M5202-2	F	COOLER#2				
52-144-5B		ACE/R	COOLER#2		CMR		
52-144-5C		TOL/R	COOLER#2		CMR		
52-144-6A	II-3-SI-M5202-3	F	COOLER#2				
52-144-6B		ACE/R	COOLER#2		CMR		
52-144-6C		TOL/R	COOLER#2		CMR		

Receiving Remarks:

Archive Remarks:

Custody Seal	Present / Absent // Intact / Not Intact	TLI Project Number : 90006	Bo
Chain of Custody	Present / Absent		
Sample Tags	Attached / Not Attached	Client : ROY F. WESTON, INC.	5
Sample Tag Numbers	Listed / Not Listed on Chain of Custody		
SMO Forms	Present / Absent	Date Received : 12/10/91 : By	PA
Ice Chest/Styro Cooler/Cardboard Box	Dry Ice Ice Ambient	Carrier and Number : HAND CARRIED	14

Sample ID TLI	Sample ID Client	Matrix	Storage Location	To Lab Date/Initial	To Storage Date/Initial	To Lab Date/Initial	To Storage Date/Initial
52-144-7A	III-1SI-M5202-1	F	COOLER#2	12/12/91 CMR		12/20 WK	12/20 W
52-144-7B		ACE/R	COOLER#2		CMR		
52-144-7C		TOL/R	COOLER#2		CMR		
52-144-8A	III-2SI-M5202-2	F	COOLER#2				
52-144-8B		ACE/R	COOLER#2		CMR		
52-144-8C		TOL/R	COOLER#2		CMR		
52-144-9A	III-3SI-M5202-3	F	COOLER#2				
52-144-9B		ACE/R	COOLER#2		CMR		
52-144-9C		TOL/R	COOLER#2		CMR		
52-144-10A	IV-1-SI-M5202-1	F	COOLER#2				
52-144-10B		ACE/R	COOLER#2		CMR		
52-144-10C		TOL/R	COOLER#2		CMR		
52-144-11A	IV-2-SI-M5202-2	F	COOLER#2				
52-144-11B		ACE/R	COOLER#2		CMR		
52-144-11C		TOL/R	COOLER#2		CMR		
52-144-12A	IV-3-SI-M5202-3	F	COOLER#2				
52-144-12B		ACE/R	COOLER#2		CMR		
52-144-12C		TOL/R	COOLER#2		CMR		

Receiving Remarks:

Archive Remarks:

(373)

Custody Seal	Present / Absent // Intact / Not Intact	TLI Project Number	90006
Chain of Custody	Present / Absent		
Sample Tags	Present / Absent	Client	ROY F. WESTON, INC.
Sample Tag Numbers	Listed / Not Listed on Chain of Custody		
SMO Forms	Present / Absent	Date Received	12/10/91 By [illegible]
Ice Chest/Styro Cooler/Cardboard Box	Dry Ice Ice Ambient	Carrier and Number	HAND CARRIED

Summary Page 153

Sample ID TLI	Sample ID Client	Matrix	Storage Location	To Lab Date/Initial		To Storage Date/Initial		To Lab Date/Initial		To Storage Date/Initial	
52-144-13A	II-1SI-M5/202-1	F	COOLER#2	12/12	CMR			12/20	WH	12/20	W
52-144-13B		ACE/R	COOLER#2				CMR				
52-144-13C		TOL/R	COOLER#2				CMR				
52-144-14A	M5202 FIELD B.	F	COOLER#2								
52-144-14B		ACE/R	COOLER#2				CMR				
52-144-14C		TOL/R	COOLER#2				CMR				
52-144-15A	M5202 BLANKS	TOLUE	COOLER#2				CMR				
52-144-15C		FILTE	COOLER#2								
52-144-15B		Acetone	Cooler #2				CMR				

Receiving Remarks:

Archive Remarks:

Preliminary

ANALYTICAL WEIGHING

BALANCE CALIBRATION

DATE	1/2/92	1/2	1/3	1/6	1/6
TIME	8:49	16:28	9:03	8:19	14:38
ANALYST	MVL	MVL	MVL	MVL	MVL
TEMP	25.4	25.6	24.9	25.3	26.0
HUMIDITY	1%	5%	15%	6%	5%

LAB WEIGHING BLANKS

	1	2	3	4	5	AVG	STD. DEV.	%RSD	
A	101.1238	101.1239	101.1251	101.1243	101.1254	101.12450	.00072	.0007%	
	101.1238	101.1248	101.1254	101.1249	101.1254	101.12486	.00065	.0006%	
						101.12447	.00072		-.00080
B	105.6477	105.6482	105.6491	105.6488	105.6491	105.64858	.00061	.0006%	
	105.6476	105.6492	105.6499	105.6492	105.6493	105.64904	.00086	.0008%	
						105.64862	**.00092**		**-.00055**

	WT1	WT2	WT3	WT4	WT5	AVG	STD. DEV.	%RSD	1st-last avg	fin-avg	blank cor ini
1	97.4433	97.4446	97.4453	97.4445	97.4446	97.44446	.00072	.0007%	-.0012	.00109	.00164
2	101.6994	101.6997	101.7000	101.6999	101.7000	101.69980	.00025	.0003%	-.0005	.00067	.00121
3	108.9694	108.9698	108.9700	108.9700	108.9700	108.96984	.00026	.0002%	-.0006	.00087	.00142
4	107.0142	107.0148	107.0156	107.0156	107.0159	107.01522	.00070	.0007%	-.0014	.00099	.00153
5	105.9819	105.9823	105.9833	105.9832	105.9832	105.98278	.00064	.0006%	-.0013	.00015	.00069
	107.5818	107.5821	107.5830	107.5826	107.5830	107.58250	.00054	.0005%	-.0008	.00040	.00095
	99.1523	99.1531	99.1543	99.1534	99.1535	99.15332	.00072	.0007%	-.0011	.00205	.00260
8	101.1117	101.1122	101.1130	101.1124	101.1126	101.11238	.00048	.0005%	-.0007	.00085	.00139
9	98.9301	98.9313	98.9320	98.9307	98.9312	98.93106	.00071	.0007%	-.0006	.00333	.00387
10	99.5609	99.5616	99.5627	99.5617	99.5623	99.56184	.00069	.0007%	-.0008	.00261	.00315
11	106.1491	106.1497	106.1500	106.1500	106.1499	106.14974	.00038	.0004%	-.0008	.00384	.00439
12	108.6700	108.6705	108.6711	108.6710	108.6709	108.67070	.00045	.0004%	-.0009	.00187	.00241
13	99.6764	99.6770	99.6775	99.6767	99.6770	99.67692	.00041	.0004%	-.0003	.00572	.00627
14	102.9291	102.9298	102.9299	102.9300	102.9299	102.92974	.00036	.0004%	-.0008	.00094	.00149
15 F	98.9335	98.9342	98.9345	98.9341	98.9342	98.93410	.00037	.0004%	-.0006	-.00010	.00045
16	100.0498	100.0501	100.0504	100.0504	100.0504	100.05022	.00027	.0003%	-.0006	-.00055	.00000
15 T	99.0540	99.0545	99.0552	99.0552	99.0551	99.05480	.00053	.0005%	-.0011	-.00023	.00031
15 A	100.8555	100.8565	100.8568	100.8568	100.8568	100.85648	.00056	.0006%	-.0013	-.00012	.00043

ANALYTICAL WEIGHING

BALANCE CALIBRATION

DATE	1/2/92	1/2	1/3	1/6	1/6
TIME	8:49	16:28	9:03	8:19	14:38
ANALYST	MVL	MVL	MVL	MVL	MVL
TEMP	25.4	25.6	24.9	25.3	26.0
HUMIDITY	1%	5%	15%	6%	5%

LAB WEIGHING BLANKS

	1	2	3	4	5	AVG	STD. DEV.	%RSD	
A	101.1238	101.1239	101.1251	101.1243	101.1254	101.12450	.00072	.0007%	
	101.1238	101.1248	101.1254	101.1249	101.1254	101.12486	.00065	.0006%	
						101.12447	.00072		-.00080

Page: 2

B	105.6477	105.6482	105.6491	105.6488	105.6491	105.64858	.00061	.0006%	
	105.6476	105.6492	105.6499	105.6492	105.6493	105.64904	.00086	.0008%	
						105.64862	.00092		-.00055

	WT1	WT2	WT3	WT4	WT5	AVG	STD. DEV.	%RSD	1st-last	4th-5th	final-initial
1	97.4433	97.4446	97.4453	97.4445	97.4446	97.44446	.00072	.0007%	-.0012	-.00014	.00109
2	101.6994	101.6997	101.7000	101.6999	101.7000	101.69980	.00025	.0003%	-.0005	-.0002	.00067
3	108.9694	108.9698	108.9700	108.9700	108.9700	108.96984	.00026	.0002%	-.0006	-.00016	[illegible]
4	107.0142	107.0148	107.0156	107.0156	107.0159	107.01522	.00070	.0007%	-.0014	-.00068	[illegible]
5	105.9819	105.9823	105.9833	105.9832	105.9832	105.98278	.00064	.0006%	-.0013	-.00042	.00015
6	107.5818	107.5821	107.5830	107.5826	107.5830	107.58250	.00054	.0005%	-.0008	-.0005	.00040
7	99.1523	99.1531	99.1543	99.1534	99.1535	99.15332	.00072	.0007%	-.0011	-.00018	.00205
8	101.1117	101.1122	101.1130	101.1124	101.1126	101.11238	.00048	.0005%	-.0007	-.00022	.00085
9	98.9301	98.9313	98.9320	98.9307	98.9312	98.93106	.00071	.0007%	-.0006	-.00014	.00333
10	99.5609	99.5616	99.5627	99.5617	99.5623	99.56184	.00069	.0007%	-.0008	-.00046	.00261
11	106.1491	106.1497	106.1500	106.1500	106.1499	106.14974	.00038	.0004%	-.0008	-.00016	.00384
12	108.6700	108.6705	108.6711	108.6710	108.6709	108.67070	.00045	.0004%	-.0009	-.0002	.00187
13	99.6764	99.6770	99.6775	99.6767	99.6770	99.67692	.00041	.0004%	-.0003	-.00008	.00572
14	102.9291	102.9298	102.9299	102.9300	102.9299	102.92974	.00036	.0004%	-.0008	-.00016	.00094
15 F	98.9335	98.9342	98.9345	98.9341	98.9342	98.93410	.00037	.0004%	-.0006	-.0001	-.00010
16	100.0498	100.0501	100.0504	100.0504	100.0504	100.05022	.00027	.0003%	-.0006	-.00018	-.00055
15 T	99.0540	99.0545	99.0552	99.0552	99.0551	99.05480	.00053	.0005%	-.0011	-.0003	-.00023
15 A	100.8555	100.8565	100.8568	100.8568	100.8568	100.85648	.00056	.0006%	-.0013	-.00032	-.00012

AVG = ~~[illegible]~~

AVG

15%

exclude

INITIAL WEIGHING

BALANCE CALIBRATION

DATE	12/27	12/27	12/27
TIME	8:09	17:52	8:28
ANALYST	WK	WK	WK
TEMP	25.1	25.2	25.6
HUMIDITY	4.5%	1.5%	3.0%

LAB WEIGHING BLANKS

				AVG	STD. DEV.	%RSD
A	101.1283	101.1233	101.1256	101.12573	.00250	.0025%
	101.1262	101.1233	101.1249	101.12480	.00145	.0014%
	101.12725	101.1233	101.12525	101.12527	.00190	.0019%
B	105.652	105.6471	105.6495	105.64953	.00245	.0023%
	105.65	105.6473	105.6491	105.64880	.00137	.0013%
	105.651	105.6472	105.6493	105.64917	.00182	.0017%

	WT1	WT2	WT3	AVG	STD. DEV.	%RSD
1	97.4462	97.4411	97.4428	97.44337	.00260	.0027%
2	101.7016	101.6971	101.6987	101.69913	.00228	.0022%
3	108.9715	108.9668	108.9686	108.96897	.00237	.0022%
4	107.0168	107.0121	107.0138	107.01423	.00238	.0022%
5	105.9852	105.9802	105.9825	105.98263	.00250	.0024%
6	107.5819	107.5799	107.5845	107.58210	.00231	.0021%
7	99.1536	99.1495	99.1507	99.15127	.00211	.0021%
8	101.1133	101.1099	101.1114	101.11153	.00170	.0017%
9	98.9299	98.9259	98.9274	98.92773	.00202	.0020%
10	99.5609	99.5575	99.5593	99.55923	.00170	.0017%
11	106.1474	106.144	106.1463	106.14590	.00173	.0016%
12	108.6702	108.667	108.6693	108.66883	.00165	.0015%
13	99.6731	99.6691	99.6714	99.67120	.00201	.0020%
14	102.9301	102.9273	102.929	102.92880	.00141	.0014%
15 F	98.9364	98.9318	98.9344	98.93420	.00231	.0023%
16	100.0525	100.0494	100.0504	100.05077	.00158	.0016%
15 T	99.0572	99.0525	99.0554	99.05503	.00237	.0024%
15 A	100.8583	100.8549	100.8566	100.85660	.00170	.0017%

ANALYTICAL WEIGHING

BALANCE CALIBRATION

DATE	1/2/92	1/2	1/3	1/6	1/6
TIME	8:49	16:28	9:03	8:19	14:38
ANALYST	MVL	MVL	MVL	MVL	MVL
TEMP	25.4	25.6	24.9	25.3	26.0
HUMIDITY	1%	5%	15%	6%	5%

LAB WEIGHING BLANKS

	1	2	3	4	5	AVG	STD. DEV.	%RSD	
A	101.1238	101.1239	101.1251	101.1243	101.1254	101.12450	.00072	.0007%	
	101.1238	101.1248	101.1254	101.1249	101.1254	101.12486	.00065	.0006%	
						101.12447	.00072		-.00080
B	105.6477	105.6482	105.6491	105.6488	105.6491	105.64858	.00061	.0006%	
	105.6476	105.6492	105.6499	105.6492	105.6493	105.64904	.00086	.0008%	
						105.64862	**.00092**		**-.00055**

	WT1	WT2	WT3	WT4	WT5	AVG	STD. DEV.	%RSD	1st-last	avg fin-av
1	97.4433	97.4446		97.4445	97.4446	97.44425	.00064	.0007%	-.0012	.00088
2	101.6994	101.6997		101.6999	101.7000	101.69975	.00026	.0003%	-.0005	.00062
3	108.9694	108.9698		108.9700	108.9700	108.96980	.00028	.0003%	-.0006	.00083
4	107.0142	107.0148		107.0156	107.0159	107.01513	.00077	.0007%	-.0014	.00089
5	105.9819	105.9823		105.9832	105.9832	105.98265	.00066	.0006%	-.0013	.00002
6	107.5818	107.5821		107.5826	107.5830	107.58238	.00053	.0005%	-.0008	.00028
7	99.1523	99.1531		99.1534	99.1535	99.15308	.00054	.0005%	-.0011	.00181
8	101.1117	101.1122		101.1124	101.1126	101.11223	.00039	.0004%	-.0007	.00069
9	98.9301	98.9313		98.9307	98.9312	98.93083	.00055	.0006%	-.0006	.00309
10	99.5609	99.5616		99.5617	99.5623	99.56163	.00057	.0006%	-.0008	.00239
11	106.1491	106.1497		106.1500	106.1499	106.14968	.00040	.0004%	-.0008	.00378
12	108.6700	108.6705		108.6710	108.6709	108.67060	.00045	.0004%	-.0009	.00177
13	99.6764	99.6770		99.6767	99.6770	99.67678	.00029	.0003%	-.0003	.00558
14	102.9291	102.9298		102.9300	102.9299	102.92970	.00041	.0004%	-.0008	.00090
15 F	98.9335	98.9342		98.9341	98.9342	98.93400	.00034	.0003%	-.0006	-.00020
16	100.0498	100.0501		100.0504	100.0504	100.05018	.00029	.0003%	-.0006	-.00059
15 T	99.0540	99.0545		99.0552	99.0551	99.05470	.00056	.0006%	-.0011	-.00033
15 A	100.8555	100.8565		100.8568	100.8566	100.85640	.00062	.0006%	-.0013	-.00020

ANALYTICAL WEIGHING

BALANCE CALIBRATION

DATE	1/2/92	1/2	1/3	1/6	1/6
TIME	8:49	16:28	9:03	8:19	14:38
ANALYST	MVL	MVL	MVL	MVL	MVL
TEMP	25.4	25.6	24.9	25.3	26.0
HUMIDITY	1%	5%	15%	6%	5%

LAB WEIGHING BLANKS

	1	2	3	4	5	AVG	STD. DEV.	%RSD	
A	101.1238	101.1239	101.1251	101.1243	101.1254	101.12450	.00072	.0007%	
	101.1238	101.1248	101.1254	101.1249	101.1254	101.12486	.00065	.0006%	
						101.12447	.00072		-.00080
B	105.6477	105.6482	105.6491	105.6488	105.6491	105.64858	.00061	.0006%	
	105.6476	105.6492	105.6499	105.6492	105.6493	105.64904	.00086	.0008%	
						105.64862	**.00092**		**-.00055**

	WT1	WT2	WT3	WT4	WT5	AVG	STD. DEV.	%RSD	1st-last	avg fin-avg	blank cor ini
1	97.4433	97.4446		97.4445	97.4446	97.44425	.00064	.0007%	-.0012	.00088	.00147
2	101.6994	101.6997		101.6999	101.7000	101.69975	.00026	.0003%	-.0005	.00062	.00121
3	108.9694	108.9698		108.9700	108.9700	108.96980	.00028	.0003%	-.0006	.00083	.00142
4	107.0142	107.0148		107.0156	107.0159	107.01513	.00077	.0007%	-.0014	.00089	.00148
5	105.9819	105.9823		105.9832	105.9832	105.98265	.00066	.0006%	-.0013	.00002	.00061
	107.5818	107.5821		107.5826	107.5830	107.58238	.00053	.0005%	-.0008	.00028	.00087
	99.1523	99.1531		99.1534	99.1535	99.15308	.00054	.0005%	-.0011	.00181	.00240
8	101.1117	101.1122		101.1124	101.1126	101.11223	.00039	.0004%	-.0007	.00069	.00128
9	98.9301	98.9313		98.9307	98.9312	98.93083	.00055	.0006%	-.0006	.00309	.00368
10	99.5609	99.5616		99.5617	99.5623	99.56163	.00057	.0006%	-.0008	.00239	.00298
11	106.1491	106.1497		106.1500	106.1499	106.14968	.00040	.0004%	-.0008	.00378	.00437
12	108.6700	108.6705		108.6710	108.6709	108.67060	.00045	.0004%	-.0009	.00177	.00236
13	99.6764	99.6770		99.6767	99.6770	99.67678	.00029	.0003%	-.0003	.00558	.00617
14	102.9291	102.9298		102.9300	102.9299	102.92970	.00041	.0004%	-.0008	.00090	.00149
15 F	98.9335	98.9342		98.9341	98.9342	98.93400	.00034	.0003%	-.0006	-.00020	.00039
16	100.0498	100.0501		100.0504	100.0504	100.05018	.00029	.0003%	-.0006	-.00059	.00000
15 T	99.0540	99.0545		99.0552	99.0551	99.05470	.00056	.0006%	-.0011	-.00033	.00026
15 A	100.8555	100.8565		100.8568	100.8568	100.85640	.00062	.0006%	-.0013	-.00020	.00039

ANALYTICAL WEIGHING

BALANCE CALIBRATION

DATE	1/2/92	1/2	1/3	1/6	1/6
TIME	8:49	16:28	9:03	8:19	14:38
ANALYST	MVL	MVL	MVL	MVL	MVL
TEMP	25.4	25.6	24.9	25.3	26.0
HUMIDITY	1%	5%	15%	6%	5%

LAB WEIGHING BLANKS

	1	2	3	4	5	AVG	STD. DEV.	%RSD	
A	101.1238	101.1239	101.1251	101.1243	101.1254	101.12450	.00072	.0007%	
	101.1238	101.1248	101.1254	101.1249	101.1254	101.12486	.00065	.0006%	
						101.12447	.00072		-.00080
B	105.6477	105.6482	105.6491	105.6488	105.6491	105.64858	.00061	.0006%	
	105.6476	105.6492	105.6499	105.6492	105.6493	105.64904	.00086	.0008%	
						105.64862	**.00092**		**-.00055**

	WT1	WT2	WT3	WT4	WT5	AVG	STD. DEV.	%RSD	1st-last	avg fin-av
1	97.4433	97.4446	97.4453	97.4445	97.4446	97.44446	.00072	.0007%	-.0012	.00109
2	101.6994	101.6997	101.7000	101.6999	101.7000	101.69980	.00025	.0003%	-.0005	.00067
3	108.9694	108.9698	108.9700	108.9700	108.9700	108.96984	.00026	.0002%	-.0006	.00087
4	107.0142	107.0148	107.0156	107.0156	107.0159	107.01522	.00070	.0007%	-.0014	.00099
5	105.9819	105.9823	105.9833	105.9832	105.9832	105.98278	.00064	.0006%	-.0013	.00015
6	107.5818	107.5821	107.5830	107.5826	107.5830	107.58250	.00054	.0005%	-.0008	.00040
7	99.1523	99.1531	99.1543	99.1534	99.1535	99.15332	.00072	.0007%	-.0011	.00205
8	101.1117	101.1122	101.1130	101.1124	101.1126	101.11238	.00048	.0005%	-.0007	.00085
9	98.9301	98.9313	98.9320	98.9307	98.9312	98.93106	.00071	.0007%	-.0006	.00333
10	99.5609	99.5616	99.5627	99.5617	99.5623	99.56184	.00069	.0007%	-.0008	.00261
11	106.1491	106.1497	106.1500	106.1500	106.1499	106.14974	.00038	.0004%	-.0008	.00384
12	108.6700	108.6705	108.6711	108.6710	108.6709	108.67070	.00045	.0004%	-.0009	.00187
13	99.6764	99.6770	99.6775	99.6767	99.6770	99.67692	.00041	.0004%	-.0003	.00572
14	102.9291	102.9298	102.9299	102.9300	102.9299	102.92974	.00036	.0004%	-.0006	.00094
15 F	98.9335	98.9342	98.9345	98.9341	98.9342	98.93410	.00037	.0004%	-.0006	-.00010
16	100.0498	100.0501	100.0504	100.0504	100.0504	100.05022	.00027	.0003%	-.0006	-.00055
15 T	99.0540	99.0545	99.0552	99.0552	99.0551	99.05480	.00053	.0005%	-.0011	-.00023
15 A	100.8555	100.8565	100.8568	100.8568	100.8568	100.85648	.00056	.0006%	-.0013	-.00012

TABLE 1

LAB EXTRACTION OBSERVATIONS

	FILTER	ACETONE RINSES	TOLUENE RINSES
1	dark powdery mauve residue, filter broken in 1/2's	dark brown residue, dry	small amount of dust
2	slight tan residue, filter broken into 4 pieces	small amount of blackish residue, moist	small amount of dust
3	dark grey residue, small pieces & cut along fold	small amount of blackish residue, moist	small amount of dust
4	dark charcoal grey residue covering filter	blackish-brown residue, moist	small amount of dust
5	slight beige residue, broken into 4 peices, some s	small amount of blackish residue, drops	small amount of dust, 8/10" filament and gnat in ba
6	small amount of tan residue, filter ripped	small amount of blackish residue, drops	small amont of dust
7	medium grey residue, 2 pieces with some smaller pi	small amount of dry black residue	samll amount of oily dust
8	small amount of beige residue, ripped, some smalles	small amount of blackish residue, drops	stripe of dry residue
9	1/2 light grey, 1/2 dark grey, tinge of pink on fi	small amount of blackish residue, drops	small amount of dust
10	light grey residue, torn, some smaller pieces	small amount of blackish residue, drops	small amount of dust
11	black residue, 2 pieces with some smaller pieces	small amount of blackish residue, drops	three spots of dark brown residue
12	medium grey residue, some smaller pieces	small amount of blackish residue, drops	small amount of dust
13	mauve residue, some smaller pieces and ash	dry brown residue	brownish dust particles covering bottom of bag
14	clean, broken into 3 pieces		one stripe of dried dust
15 F	clean		trace of dust particles
16			
15 T			
15 A		229 ml acetone arrived in plastic container. Transferred to 250 ml beaker and evaporated to dryness under hood.	

4 A

[PSTMF 2]

TRIANGLE LABORATORIES, INC.

90006

PROJECT COMMUNICATION TRACKING SHEET

Use this form to record all exchanges of information between production units as well as personnel handling this project. Decisions, corrective actions and recommendations must also appear on this tracking document.

Date	Name	Comment / Decision / Resolution / Action / Observation
12/18/91	[illegible]	Acetone (all but Blank) and
		Toluene rinses combined
		dried in plastic liners
		folded over. The liners
		were unfolded, placed in
		250 ml beakers, 50 ml of
		toluene was added to
		each liner, and samples
		were sonicated for 1 hour
		Acetone rinses:
		(1) dark brown residue, dry
		(2) small amount of blackish
		residue, moist, several drops of liquid
		(3) as #(2)
		(4) blackish-brown residue, moist
		(5) small amount of blackish
		residue + several drops of dirty
		liquid.
		(6) - as #5
		(7) - small amount of dry black
		residue
		(8) - as #(5)
		(9) - as #(5)
		(10) as #(5)

REV 103 10/16/90

[PSTMF 2]

TRIANGLE LABORATORIES, INC.

90006

PROJECT COMMUNICATION TRACKING SHEET

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Date	Name	Comment / Decision / Resolution / Action / Observation
12/18/91	W. Karl	(11) as #(5)
		(12) as #(5)
		(13) - brown dry residue
		(14) - two small drops of dirty liquid.
		(15A) 229 ml of acetone arrived in plastic container, it was transferred to 250 ml beaker and evaporated to dryness under hood (gross wt of container - 210.7 g, empty - 30.9 g)
12/20/91	MVL	Toluene rinses (all arrived dried):
		(1) small amount of dust.
		(2) as #(1)
		(3) as #1(1)
		(4) as #1(1)
		(5) as #(1) also there is a knot in the bag & a filament about 3/16 of an inch long
		(6) as #(1)
		(7) small amount of oily dust.
		(8) a strip of dry residue
		(9) as #(1)

[PSTMF 2]

TRIANGLE LABORATORIES, INC.

190086

PROJECT COMMUNICATION TRACKING SHEET

Use this form to record all exchanges of information between production units as well as personnel handling this project. Decisions, corrective actions and recommendations must also appear on this tracking document.

Date	Name	Comment / Decision / Resolution / Action / Observation
12/20/91	MVL	(10) same as #(1)
		(11) three spots of dark-black
		residue
		(12) - same as #(1)
		(13) brownish dust particles
		covering the bottom of the
		bag.
		(14) one stripe of dried dust
		(15T) trace of dust particles.
12/23/91	W. Kent	All fractions of samples (1)-(1)
		were filtered and combined
		for each sample, then
		concentrated to about 1 ml
		using Brinkman rotovap
		Each fraction of sample # (15)
		(Blank) was filtered and
		concentrated separately.
		For # (16) (toluene lab blank)
		- 600 ml of toluene was
		filtered and concentrated.
		Buchner funnels and Whatman
		40 filters (size 7.0 cm) were use
		to filter samples # (1) → (6).

REV 103 10/16/90

[PSTMF 2]

TRIANGLE LABORATORIES, INC.

, 9000 G

PROJECT COMMUNICATION TRACKING SHEET

Use this form to record all exchanges of information between production units as well as personnel handling this project. Decisions, corrective actions and recommendations must also appear on this tracking document.

Date	Name	Comment / Decision / Resolution / Action / Observation
12/23/91	[illegible]	This method appeared to
		be insufficient - lots of
		small particles went
		over the filter ~~at~~ and to
		the filtrate, as the filter
		did not seal properly. Regular
		60° funnels and Whatman 40
		filters size 15.0cm were used
		to filter other samples
		and to re-filter samples
		(1) → (6). Most filtrates however,
		contained small particl
		and had to be filtered
		~~to~~ 2 or 3 times. In total
		samples # (1) → (6) and (13) were
		filtered 3 times, # (16) once
		and all others twice.
		In spite of this samples #
		(7) → (13) contained traces
		of dark brown liquid (oil?)
		which went through the
		filter every time.

REV 103 10/16/90

8 of

[PSTMF 2]

TRIANGLE LABORATORIES, INC.

190006

PROJECT COMMUNICATION TRACKING SHEET

Use this form to record all exchanges of information between production units as well as personnel handling this project. Decisions, corrective actions and recommendations must also appear on this tracking document.

Date	Name	Comment / Decision / Resolution / Action / Observation
12/24/91	and 12/30/91	Weighed empty beakers
	W. Kral	- could not get constant
		weight. Difference between
		weights - up to 5 mg
		Humidity of the balance room
		was measured with humidity
		indicator AIRGUIDE, Model 605;
		temperature with Fisher Digital
		Thermometer.
12/30/91	W. Kral	Samples # 1 -> 14, 15A, 15F, 15T and 16
		were transferred to tared
		beakers. The beakers were
		covered with watch glasses
		and placed under fume
		hood at 19:00
12/31/91	W. Kral	Beakers placed again in
		desiccator (10:42 AM)
1/2/92	W. Kral	Weighing sessions began.
		- final weight determination
		Note: Blank beakers 04 and
		0B were weighed twice
		during each weighing
		session

REV 103 10/16/90

ORGANIC PROJECT INFORMATION FORM

TLI #: 90006
CLIENT: Entropy
P.O. Number: 68D10104

Receipt Date: 12/10/91
Due Date: 12/24/91
Holding Time Expiration Date:
Product Manager: Gene Riley

Extraction/Analysis:

ms/msd? yes no	matrix 1: WATER		
	VOA	SVOA	GC

ms/msd? yes no	matrix 2: SOIL/ASH/SLUDGE		
	VOA	SVOA	GC

ms/msd? yes no	matrix 3: AIR		
	VOST	MM5	PUF

pre-spike/prep TLI#

ms/msd? yes no	matrix 4: AOX/TOX		
	WATER	PULP	OTHER

ms/msd? yes no	matrix 5: OTHER (Filter/Rinse Samples)		
	44		

Deliverables:

matrix 1: WATER
TICs: yes no
target compounds/comments:

matrix 2: SOIL/ETC
TICs: yes no
target compounds/comments:

matrix 3: AIR
TICs: yes no
target compounds/comments:

matrix 4: AOX/TOX
target compounds/comments:

matrix 5: OTHER
TICs: yes no
target compounds/comments: 44 Filter/Rinse Samples - SEE SPECIAL INSTRUCTIONS

rev 4 05/23/91

SEMIVOLATILE EXTRACTION FORM

TLI #= 90006 CLIENT ID= Weston

SDG #:

SAMPLE #: 1-15
EXT DATE: 12/12/91
METHOD:
EXTRACTION: SEP SOX SON

SOLVENT: CH2CL2 (TOLUENE) 10%ETHER/HEXANE
CH2CL2:ACETONE 1:1

SOLVENT LOT NUMBER(S):

LEVEL: LOW MED
JOINT PROJECT: Y N
ASSOC TLI #:
REEXTRACTION: Y N

MS/MSD: Y (N)
MS/MSD ID:
MS/MSD VOL:
SURR ID:
SURR VOL:
SPIKER INIT:

WATER ___
SOIL ___
MM5 ___
PUF ___
ASH ___
FISH ___
OTHER ___

NUM	TLI ID	CLIENT ID	WT/VOL	FINAL VOL	SOLV	PH	WTNSS	WTNSS	WTNSS	WTNSS	WTNS
~~0~~	~~TLI BLK~~	~~SBLK~~									
1	52-144-1 A,B,C	I-1-SI-ms/202-1									
2	52-144-2 A,B,C	I-2-SI-ms/202-2									
3	52-144-3 A,B,C	I-3-SI-ms/202-3									
4	52-144-4 A,B,C	II-1-SI-ms/202-1									
5	52-144-5 A,B,C	II-2-SI-ms/202-2									
6	52-144-6 A,B,C	II-3-SI-ms/202-3									
7	52-144-7 A,B,C	III-1-SI-ms/202-1									
8	52-144-8 A,B,C	III-2-SI-ms/202-2									
9	52-144-9 A,B,C	III-3-SI-ms/202-3									
10	52-144-10 A,B,C	IV-1-SI-ms/202-1									
11	52-144-11 A,B,C	IV-2-SI-ms/202-2									
12	52-144-12 A,B,C	IV-3-SI-ms/202-3									
13	52-144-13 A,B,C	II-1SI-ms/202-1									
14	52-144-14 A,B,C	M5202 FB									
15	52-144-15 A,B,C	m5202 Blanks									

COMMENTS:
16 TOL BLANK

Chain of Custody

1. Relinquished by _____ date _____ Received by _____ date ____
number of samples _____ of _____

2. Relinquished by _____ date _____ Received by _____ date ____
number of samples _____ of _____

3. Relinquished by _____ date _____ Received by _____ date
number of samples _____ of _____

rev 11 02/12/91

TRIANGLE LABORATORIES, INC

[PSTMF 2]

Special Instructions For NON-ROUTINE Projects

TLI Project Number: 90006

READ CAREFULLY AND SIGN AT THE BOTTOM OF THE PAGE IF YOU ARE RESPONSIBLE FOR THE PROCESSSING OF THIS NON-ROUTINE PROJECT

SPECIAL INSTRUCTIONS

See enclosed SOP (OWL 181-91) for further instructions
See Gene Riley for question, additional instructions if needed

PRIOR TO INITIATION OF WORK:

Sample Preparation Laboratories: CMR Wojciech Kne Date: 12/12/91

GC & GC/MS Laboratories: _____ Date: _____

Report Generation: _____ Date: _____

Data Review: _____ Date: _____

QA (Required): _____ Date: _____

Product Manager (Required): _____ Date: _____

REQUIRED UPON COMPETION:

Process control: M. Collins Date: 12/16/91

SAMPLE PREPARATION LABORATORY
EXTRACTION OBSERVATIONS
ORGANIC DETAIL

LOT 90006
METHOD

OBSERVER CMR
DATE 12/12/91

52·144·1A
SAMPLE NO. 1 MATRIX WT./VOL. COLOR
CLARITY DOOR PH TEXTURE
MULTILAYERS VISIBLE MOISTURE OTHER
/filter - dark mauve colored residue covering filter, powdery - filter broken

52·144·2A
SAMPLE NO. 2 MATRIX WT./VOL. COLOR
CLARITY DOOR PH TEXTURE
MULTILAYERS VISIBLE MOISTURE OTHER
/filter - slight amount of tan residue, filter broken into 4 large pieces, a
some little pieces

52·144·3A
SAMPLE NO. 3 MATRIX WT./VOL. COLOR
CLARITY DOOR PH TEXTURE
MULTILAYERS VISIBLE MOISTURE OTHER
/filter - dark gray residue, small pieces + cut along fold

52·144·4A
SAMPLE NO. 4 MATRIX WT./VOL. COLOR
CLARITY DOOR PH TEXTURE
MULTILAYERS VISIBLE MOISTURE OTHER
/filter - dark charcoal gray residue covering filter

52·144·5A
SAMPLE NO. 5 MATRIX WT./VOL. COLOR
CLARITY DOOR PH TEXTURE
MULTILAYERS VISIBLE MOISTURE OTHER
/filter - slight amt of beige residue, broken in 4 pieces w/ some small
pieces

52·144·6A
SAMPLE NO. 6 MATRIX WT./VOL. COLOR
CLARITY DOOR PH TEXTURE
MULTILAYERS VISIBLE MOISTURE OTHER
/filter - small amt of tan residue covering filter - ripped

52·144·7A
SAMPLE NO. 7 MATRIX WT./VOL. COLOR
CLARITY DOOR PH TEXTURE
MULTILAYERS VISIBLE MOISTURE OTHER
/filter - med gray residue covering filter - 2 pieces w/ small pi

Page ____ of ____

LEGEND ON REVERSE SIDE

2 of

SAMPLE PREPARATION LABORATORY
EXTRACTION OBSERVATIONS
ORGANIC METHODS

LOT 90006
METHOD

OBSERVER CMR
DATE 12/12/91

52-144-8A
SAMPLE NO. 8 MATRIX WT./VOL. COLOR
CLARITY ODOR PH TEXTURE
MULTILAYERS VISIBLE MOISTURE OTHER
1 filter - small amt of beige residue, ripped, some small pieces

52-144-9A
SAMPLE NO. 9 MATRIX WT./VOL. COLOR
CLARITY ODOR PH TEXTURE
MULTILAYERS VISIBLE MOISTURE OTHER
1 filter - ≈ 1/2 light grey, 1/2 dark grey w/ tinge of pink on edge of filter
few small pieces

52-144-10A
SAMPLE NO. 10 MATRIX WT./VOL. COLOR
CLARITY ODOR PH TEXTURE
MULTILAYERS VISIBLE MOISTURE OTHER
1 filter - light grey residue covering filter, small pieces, torn

52-144-11A
SAMPLE NO. 11 MATRIX WT./VOL. COLOR
CLARITY ODOR PH TEXTURE
MULTILAYERS VISIBLE MOISTURE OTHER
1 filter - black residue covering filter, 2 pieces w/ some small pieces

52-144-12A
SAMPLE NO. 12 MATRIX WT./VOL. COLOR
CLARITY ODOR PH TEXTURE
MULTILAYERS VISIBLE MOISTURE OTHER
1 filter - med grey residue covering filter, some small pieces

52-144-13A
SAMPLE NO. 13 MATRIX WT./VOL. COLOR
CLARITY ODOR PH TEXTURE
MULTILAYERS VISIBLE MOISTURE OTHER
1 filter - mauve colored residue covering filter, small pieces
w/ ash

52-144-14
SAMPLE NO. 14 MATRIX WT./VOL. COLOR
CLARITY ODOR PH TEXTURE
MULTILAYERS VISIBLE MOISTURE OTHER
1 filter - clean, broken in 3 pieces

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LEGEND ON REVERSE SIDE

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SAMPLE PREPARATION LABORATORY
EXTRACTION OBSERVATIONS
ORGANIC METHODS

LOT 90006
METHOD _____

OBSERVER Cmr
DATE 12/12/91

SAMPLE NO. 15R MATRIX _____ WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____
filter - clear

SAMPLE NO. _____ MATRIX _____ WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. _____ MATRIX _____ WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. _____ MATRIX _____ WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. _____ MATRIX _____ WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. _____ MATRIX _____ WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. _____ MATRIX _____ WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

Page _____ of _____

LEGEND ON REVERSE SIDE

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TOLUENE SOLUBLE ORGANICS

ANALYTICAL WEIGHING DATA – INITIAL WT.

Analytical Balance Calibration:

Sequence	1	2	3	4	5
Date	12/27/91	12/27/91	12/30/91		
Time	8:09	17:52	8:28		
Analyst	WK	WK	WK		

Environmental Conditions:

Sequence	1	2	3	4	5
Date	12/27/91	12/27/91	12/30/91		
Temperature oC	25.1	25.2	25.6		
Humidity %	4.5%	1.5%	9.0%		

Lab Weighing Blanks:

Sequence	1	~~2~~ 1	~~3~~	~~4~~ 2	~~5~~ 2
Beaker A gms	101.1283	101.1262	101.1233	101.1233	
A Weighing Time	8:09	8:32	17:56	19:51	
Beaker B gms	105.6520	105.6500	105.6471	105.6473	
B Weighing Time	8:10	8:33	17:59	19:52	

A) 101.1256 8:33 B) 105.6495 8:34 A) 101.1249 9:09 B) 105.6491 9:10

Beaker Containers:

	Initial Weight gms	Final Weight gms	Difference gms
Container No. 1			
Sequence 1 wts	97.4462		
Sequence 2 wts	97.4411		
Sequence 3 wts	EF 97.4428 WK		
Sequence 4 wts			
Sequence 5 wts			
Container No. 2			
Sequence 1 wts	101.7016		
Sequence 2 wts	101.6971		
Sequence 3 wts	101.6987		
Sequence 4 wts			
Sequence 5 wts			

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Continued Page 2 TOLUENE SOLUBLE ORGANICS
Beaker Containers:

	Initial Weight gms	Final Weight gms	Difference gms
Container No. 3			
Sequence 1 wts	108.9715		
Sequence 2 wts	108.9668		
Sequence 3 wts	108.9686		
Sequence 4 wts			
Sequence 5 wts			
Container No. 4			
Sequence 1 wts	107.0168		
Sequence 2 wts	107.0171		
Sequence 3 wts	107.0138		
Sequence 4 wts			
Sequence 5 wts			
Container No. 5			
Sequence 1 wts	105.9852		
Sequence 2 wts	105.9802		
Sequence 3 wts	105.9825		
Sequence 4 wts			
Sequence 5 wts			
Container No. 6			
Sequence 1 wts	107.5845		
Sequence 2 wts	107.5799		
Sequence 3 wts	107.5819		
Sequence 4 wts			
Sequence 5 wts			
Container No. 7			
Sequence 1 wts	99.1536		
Sequence 2 wts	99.1495		
Sequence 3 wts	99.1507		
Sequence 4 wts			
Sequence 5 wts			
Container No. 8			
Sequence 1 wts	101.1133		
Sequence 2 wts	101.1099		
Sequence 3 wts	101.1114		
Sequence 4 wts			
Sequence 5 wts			
Container No. 9			
Sequence 1 wts	98.9299		
Sequence 2 wts	98.9259		
Sequence 3 wts	98.9274		
Sequence 4 wts			
Sequence 5 wts			

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Continued Page 3 TOLUENE SOLUBLE ORGANICS
Beaker Containers:

	Initial Weight gms	Final Weight gms	Difference gms
Container No. 10			
Sequence 1 wts	99.5609		
Sequence 2 wts	99.5515		
Sequence 3 wts	99.5593		
Sequence 4 wts			
Sequence 5 wts			
Container No. 11			
Sequence 1 wts	106.1474		
Sequence 2 wts	106.1440		
Sequence 3 wts	106.1463		
Sequence 4 wts			
Sequence 5 wts			
Container No. 12			
Sequence 1 wts	108.6702		
Sequence 2 wts	108.6670		
Sequence 3 wts	108.6693		
Sequence 4 wts			
Sequence 5 wts			
Container No. 13			
Sequence 1 wts	99.6731		
Sequence 2 wts	99.6691		
Sequence 3 wts	99.6714		
Sequence 4 wts			
Sequence 5 wts			
Container No. 14			
Sequence 1 wts	102.9301		
Sequence 2 wts	102.9273		
Sequence 3 wts	102.9290		
Sequence 4 wts			
Sequence 5 wts			
Container No. 15			
Sequence 1 wts	98.9364		
Sequence 2 wts	98.9318		
Sequence 3 wts	98.9344		
Sequence 4 wts			
Sequence 5 wts			
Container No. 16			
Sequence 1 wts	100.0525		
Sequence 2 wts	100.0494		
Sequence 3 wts	100.0504		
Sequence 4 wts			
Sequence 5 wts			

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Continued Page 3 TOLUENE SOLUBLE ORGANICS
Beaker Containers:

	Initial Weight gms	Final Weight gms	Difference gms
Container No. ~~10~~ 15T			
Sequence 1 wts	99.0572		
Sequence 2 wts	99.0525		
Sequence 3 wts	99.0554		
Sequence 4 wts			
Sequence 5 wts			
Container No. ~~11~~ 15A			
Sequence 1 wts	100.8583		
Sequence 2 wts	100.8549		
Sequence 3 wts	100.8566		
Sequence 4 wts			
Sequence 5 wts			
Container No. 12			
Sequence 1 wts			
Sequence 2 wts			
Sequence 3 wts			
Sequence 4 wts			
Sequence 5 wts			
Container No. 13			
Sequence 1 wts			
Sequence 2 wts			
Sequence 3 wts			
Sequence 4 wts			
Sequence 5 wts			
Container No. 14			
Sequence 1 wts			
Sequence 2 wts			
Sequence 3 wts			
Sequence 4 wts			
Sequence 5 wts			
Container No. 15			
Sequence 1 wts			
Sequence 2 wts			
Sequence 3 wts			
Sequence 4 wts			
Sequence 5 wts			
Container No. 16			
Sequence 1 wts			
Sequence 2 wts			
Sequence 3 wts			
Sequence 4 wts			
Sequence 5 wts			

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TOLUENE SOLUBLE ORGANICS

ANALYTICAL WEIGHING DATA

Analytical Balance Calibration:

Sequence	1	2	3	4	5
Date	1/2/92	1/2/92	1/3/92	1/6/92	1/6/92
Time	8:49	16:28	9:03	8:19	14:38
Analyst	MVL	MVL	MVL	MVL	MVL

Environmental Conditions:

Sequence	1	2	3	4	5
Date	1/2/92	1/2/92	1/3/92	1/6/92	1/6/92
Temperature oC	25.4	25.6	24.9	25.3	26.0
Humidity %	1%	5%	15%	6%	5%

Lab Weighing Blanks:

Sequence	1	1	2	2	3
Beaker A gms	101.1238	101.1238	101.1239	101.1248	101.1251
A Weighing Time	9:01	9:33	16:30	16:59	9:05
Beaker B gms	105.6477	105.6476	105.6482	105.6492	105.6491
B Weighing Time	9:03	9:35	16:31	17:00	9:06
					101.1254
					9:39
					105.6499
					9:41

Beaker Containers:

	Initial Weight gms	Final Weight gms	Difference gms
Container No. 1			
Sequence 1 wts		97.4433	
Sequence 2 wts		97.4446	
Sequence 3 wts		97.4453	
Sequence 4 wts		97.4445	
Sequence 5 wts		97.4446	
Container No. 2			
Sequence 1 wts		101.6994	
Sequence 2 wts		101.6997	
Sequence 3 wts		101.7000	
Sequence 4 wts		101.6999	
Sequence 5 wts		101.7000	

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TOLUENE SOLUBLE ORGANICS

ANALYTICAL WEIGHING DATA

Analytical Balance Calibration:

Sequence	1	2	3	4	5
Date					
Time					
Analyst					

Environmental Conditions:

Sequence	1	2	3	4	5
Date					
Temperature oC					
Humidity %					

Lab Weighing Blanks:

Sequence	4 ~~2~~	4 ~~2~~	5 ~~3~~	5 ~~4~~	5
Beaker A gms	101.1243	101.1249	101.1254	101.1254	
A Weighing Time	8:20	8:43	14:40	15.07	
Beaker B gms	105.6488	105.6492	105.6491	105.6493	
B Weighing Time	8:21	8:44	14:41	15.08	

Beaker Containers:

	Initial Weight gms	Final Weight gms	Difference gms
Container No. 1			
Sequence 1 wts			
Sequence 2 wts			
Sequence 3 wts			
Sequence 4 wts			
Sequence 5 wts			
Container No. 2			
Sequence 1 wts			
Sequence 2 wts			
Sequence 3 wts			
Sequence 4 wts			
Sequence 5 wts			

Continued Page 2
Beaker Containers:

TOLUENE SOLUBLE ORGANICS

	Initial Weight gms	Final Weight gms	Difference gms
Container No. 3			
Sequence 1 wts		108.9694	
Sequence 2 wts		108.9698	
Sequence 3 wts		108.9700	
Sequence 4 wts		108.9700	
Sequence 5 wts		108.9700	
Container No. 4			
Sequence 1 wts		107.0142	
Sequence 2 wts		107.0148	
Sequence 3 wts		107.0156	
Sequence 4 wts		107.0156	
Sequence 5 wts		107.0159	
Container No. 5			
Sequence 1 wts		105.9819	
Sequence 2 wts		105.9823	
Sequence 3 wts		105.9833	
Sequence 4 wts		105.9832	
Sequence 5 wts		105.9832	
Container No. 6			
Sequence 1 wts		107.5818	
Sequence 2 wts		107.5821	
Sequence 3 wts		107.5830	
Sequence 4 wts		107.5826	
Sequence 5 wts		107.5830	
Container No. 7			
Sequence 1 wts		99.1523	
Sequence 2 wts		99.1531	
Sequence 3 wts		99.1543	
Sequence 4 wts		99.1534	
Sequence 5 wts		99.1535	
Container No. 8			
Sequence 1 wts		101.1117	
Sequence 2 wts		101.1122	
Sequence 3 wts		101.1130	
Sequence 4 wts		101.1124	
Sequence 5 wts		101.1126	
Container No. 9			
Sequence 1 wts		98.9301	
Sequence 2 wts		98.9313	
Sequence 3 wts		98.9320	
Sequence 4 wts		98.9307	
Sequence 5 wts		98.9312	

Continued Page 3
Beaker Containers:

TOLUENE SOLUBLE ORGANICS

	Initial Weight gms	Final Weight gms	Difference gms
Container No. 10			
Sequence 1 wts		99.5609	
Sequence 2 wts		99.5616	
Sequence 3 wts		99.5627	
Sequence 4 wts		99.5617	
Sequence 5 wts		99.5623	
Container No. 11			
Sequence 1 wts		106.1491	
Sequence 2 wts		106.1497	
Sequence 3 wts		106.1500	
Sequence 4 wts		106.1500	
Sequence 5 wts		106.1499	
Container No. 12			
Sequence 1 wts		108.6700	
Sequence 2 wts		108.6705	
Sequence 3 wts		108.6711	
Sequence 4 wts		108.6710	
Sequence 5 wts		108.6709	
Container No. 13			
Sequence 1 wts		99.6764	
Sequence 2 wts		99.6770	
Sequence 3 wts		99.6775	
Sequence 4 wts		99.6767	
Sequence 5 wts		99.6770	
Container No. 14			
Sequence 1 wts		102.9291	
Sequence 2 wts		102.9298	
Sequence 3 wts		102.9299	
Sequence 4 wts		102.9300	
Sequence 5 wts		102.9299	
Container No. 15 F			
Sequence 1 wts		98.9335	
Sequence 2 wts		98.9342	
Sequence 3 wts		98.9345	
Sequence 4 wts		98.9341	
Sequence 5 wts		98.9342	
Container No. 16			
Sequence 1 wts		100.0498	
Sequence 2 wts		100.0501	
Sequence 3 wts		100.0504	
Sequence 4 wts		100.0504	
Sequence 5 wts		100.0504	

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Continued Page 3
Beaker Containers:

TOLUENE SOLUBLE ORGANICS

	Initial Weight gms	Final Weight gms	Difference gms
Container No. ~~10~~			
Sequence 6 wts			
Sequence 7 wts			
Sequence 8 wts			
Sequence 9 wts			
Sequence 10wts			
Container No. 11			
Sequence 6 wts			
Sequence 7 wts			
Sequence 8 wts			
Sequence 9 wts			
Sequence 10wts			
Container No. 12			
Sequence 6 wts			
Sequence 7 wts			
Sequence 8 wts			
Sequence 9 wts			
Sequence 10wts			
Container No. 13			
Sequence 6 wts			
Sequence 7 wts			
Sequence 8 wts			
Sequence 9 wts			
Sequence 10wts			
Container No. 14			
Sequence 6 wts			
Sequence 7 wts			
Sequence 8 wts			
Sequence 9 wts			
Sequence 10wts			
Container No. 15 A			
Sequence 6 wts		100.8555	
Sequence 7 wts		100.8565	
Sequence 8 wts		100.8568	
Sequence 9 wts		100.8568	
Sequence 10wts		100.8568	
Container No. ~~16~~ 15T			
Sequence 6 wts		99.0540	
Sequence 7 wts		99.0545	
Sequence 8 wts		99.0552	
Sequence 9 wts		99.0552	
Sequence 10wts		99.0551	

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TOLUENE SOLUBLE ORGANICS

ANALYTICAL WEIGHING DATA

Analytical Balance Calibration: EE WK 1/7/92

Sequence	6	7	8	9	10
Date	1/7/92	1/7/92			
Time	8:40	14:13			
Analyst	MVL	MVL			

Environmental Conditions: EE WK 1/7/92

Sequence	6	7	8	9	10
Date	1/7/92	1/7/92			
Temperature °C	24.3	25.1			
Humidity %	0%	0%			

Lab Weighing Blanks:

Sequence	6	6 EE WK	7	7 EE WK 1/7/92	10
Beaker A gms	101.1234	101.1237	101.1237	101.1237	
A Weighing Time	8:41	8:49	14:14	14:24	
Beaker B gms	105.6481	105.6481	105.6485	105.6484	
B Weighing Time	8:42	8:50	14:15	14:25	

Beaker Containers:

	Initial Weight gms	Final Weight gms	Difference gms
Container No. 1			
Sequence 6 wts			
Sequence 7 wts			
Sequence 8 wts			
Sequence 9 wts			
Sequence 10wts			
Container No. 2			
Sequence 6 wts			
Sequence 7 wts			
Sequence 8 wts			
Sequence 9 wts			
Sequence 10wts			

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Continued Page 2 TOLUENE SOLUBLE ORGANICS
Beaker Containers:

	Initial Weight gms	Final Weight gms	Difference gms
Container No. 3			
Sequence 6 wts			
Sequence 7 wts			
Sequence 8 wts			
Sequence 9 wts			
Sequence 10wts			
Container No. 4			
Sequence 6 wts			
Sequence 7 wts			
Sequence 8 wts			
Sequence 9 wts			
Sequence 10wts			
Container No. 5			
Sequence 6 wts			
Sequence 7 wts			
Sequence 8 wts			
Sequence 9 wts			
Sequence 10wts			
Container No. 6			
Sequence 6 wts			
Sequence 7 wts			
Sequence 8 wts			
Sequence 9 wts			
Sequence 10wts			
Container No. 7			
Sequence 6 wts			
Sequence 7 wts			
Sequence 8 wts			
Sequence 9 wts			
Sequence 10wts			
Container No. 8			
Sequence 6 wts			
Sequence 7 wts			
Sequence 8 wts			
Sequence 9 wts			
Sequence 10wts			
Container No. 9			
Sequence 6 wts		98.9301	
Sequence 7 wts		98.9306	
Sequence 8 wts			
Sequence 9 wts			
Sequence 10wts			

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Continued Page 3
Beaker Containers:

TOLUENE SOLUBLE ORGANICS

	Initial Weight gms	Final Weight gms	Difference gms
Container No. 10			
Sequence 1 wts		99.5611	
Sequence 2 wts		99.5611	
Sequence 3 wts			
Sequence 4 wts			
Sequence 5 wts			
Container No. 11			
Sequence 1 wts			
Sequence 2 wts			
Sequence 3 wts			
Sequence 4 wts			
Sequence 5 wts			
Container No. 12			
Sequence 1 wts			
Sequence 2 wts			
Sequence 3 wts			
Sequence 4 wts			
Sequence 5 wts			
Container No. 13			
Sequence 1 wts			
Sequence 2 wts			
Sequence 3 wts			
Sequence 4 wts			
Sequence 5 wts			
Container No. 14			
Sequence 1 wts			
Sequence 2 wts			
Sequence 3 wts			
Sequence 4 wts			
Sequence 5 wts			
Container No. 15			
Sequence 1 wts			
Sequence 2 wts			
Sequence 3 wts			
Sequence 4 wts			
Sequence 5 wts			
Container No. 16			
Sequence 1 wts			
Sequence 2 wts			
Sequence 3 wts			
Sequence 4 wts			
Sequence 5 wts			

CATCH WEIGHTS, CONVERSION OF GRAMS TO MILLIGRAMS

Run No.	TSO, grams	TSO, mg
I-1	0.00109	1.09
I-2	0.00067	0.67
I-3	0.00087	0.87
II-1	0.00099	0.99
II-2	0.00015	0.15
II-3	0.00040	0.4
III-1	0.00205	2.05
III-2	0.00085	0.85
III-3	0.00333	3.33
IV-1	0.00261	2.61
IV-2	0.00384	3.84
IV-3	0.00187	1.87
II-0	0.00572	5.72
F BLK	0.00094	0.94
FILTER	-0.0001	-0.1
TOL.	-0.00023	-0.23
ACET.	-0.00012	-0.12
TLI BLK	-0.00055	-0.55

Coke Oven Project

Jewell Company—Vansant, Virginia

SEMI-VOLATILE ANALYTICAL RESULTS SUMMARY AND INTERPRETATION REPORT

Prepared by:

TRIANGLE LABORATORIES R & D DIVISION

Research Triangle Park, North Carolina

Prepared for:

ENTROPY ENVIRONMENTALISTS

Research Triangle Park, North Carolina

EPA Contract No. 68D10104

January 23, 1992

Semi-Volatiles

1. Introduction

1.1 Project Objectives

1.1.1 Analytical Objectives

The major objective was to analyze air samples taken from a coke oven for the analytes toluene, xylene, phenol, cresol, naphthalene and benzo-a-pyrene. An analytical method was designed that would meet the requirements of Test Method 301, "Protocol for the Field Validation of Emission Concentrations from Stationary Sources." The list of analytes corresponding internal standards and surrogate compounds for the corresponding analytes are listed in Table 1.

A secondary objective was to perform screening for 53 target semi-volatile organic compounds selected from the Clean Air Act (CAA) list, and 14 additional compounds of interest for Triangle Laboratories using the general guidelines of Method 8270, but with limited QC guidelines. The target analytes are listed in Table 2. The air samples were extracted as separate front half (methanol/methylene chloride probe rinse and filter), back half (XAD and BH rinse) and impinger (aqueous) samples.

1.2 Project Description

1.2.1 Background

The Environmental Protection Agency (EPA) is currently developing a comprehensive source category document for the coke oven industry. The Office of Air Quality Planning and Standards (OAQPS) is participating in an effort to assess the potential environmental impact of non-recovery coke oven technology as directed by the Clean Air Act (CAA) of 1990.

The Emissions Standards and Engineering Division (ESED) of OAQPS, through its Industrial Studies Branch (ISB) and the Technical Support Division of OAQPS, through its Emissions Measurement Branch (EMB), are responsible for reviewing the existing air emissions data and gathering additional data where necessary. The database may be used to estimate emission factors and to evaluate the various emissions reduction alternatives that are available for the coke oven facilities. The semivolatile emissions are one of the pollutants being studied in this assessment.

1.2.2 Test Facility

The Jewell Company coke oven facility located at Vansant, Virginia was selected for the emissions testing because it is typical of existing plants and is in close proximity to Research Triangle Park, North Carolina. The process site selected for emission testing was sampled for four separate test conditions.

1.2.3 Sample Matrix

Air emission samples were collected at the various conditions over a three day period for a total of 57 sample fractions (19 sample runs), 3 field blank fractions (1 field blank), and 5 laboratory blank fractions. Because there was a test run on November 5, 1991 for samples I-2-S2-MM5-2A FH and I-2-S2-MM5-2A BH, there was no need to analyze an impinger blank at that time; therefore, only one impinger blank was analyzed along with the field sample impinger analyses. The samples (runs) consisted of Front Half, Back Half and Impinger fractions. Each sample fraction was analyzed separately.

1.2.4 Analytical Method

Analysis for the semi-volatile organics was performed following the isotope dilution method, using the compound list as seen in Table 1. Screening analyses were performed for the analytes listed in Table 2. Other non-target compounds were matched against two separate libraries, the National Bureau of Standards (NBS) and the Clean Air Act (CAA) library constructed by Triangle Labs from the mass spectra of the CAA compounds. Tentatively Identified Compounds (TICs) were also identified and quantified against adjacent internal standards.

1.3 Prespiking of Surrogates

The XAD resin for all samples was prespiked prior to field sampling with 50 micrograms (μg) of the surrogates ethyl benzene-d_{10}, 2-Cl phenol-d_4, acenaphthene-d_{10}, and benz-e-pyrene-d_{12} (solution C2, Table 1) and also the PRESPIKE compound terphenyld_{14}. These labeled compounds were chosen because they represent compounds chemically similar to the analytes of interest. The recovery of these analytes is used to give an indication of the overall sampling and recovery efficiency. The recoveries of these compounds are intended to demonstrate the ability of the analytical methodology to achieve the Method 301 requirements of bias within the range of 70-130%. The surrogates were directly introduced

(methylene chloride solution) into the inlet end of the XAD trap via syringe immediately before sealing and packing the traps for shipping to the field.

1.4 Sample Lab Preparation

1.4.1 Internal Standards Spiking

Prior to extraction, each fraction was spiked with 50 micrograms (µg) of the internal standards phenol-d_5, o-Cresol-d_7H, naphthalene-d_8, toluene-d_8, benz-a-pyrene-d_{12}, and o-xylene-d_{10} (solution C1, Table 1). The analytes are measured relative to these internal standards, which behave in a chemically identical manner. Therefore, any loss of the analyte during laboratory handling is corrected during the analytical calculations, since the corresponding labeled standard has the same loss. The recovery of the internal standards is also measured to give an indication of the laboratory and method efficiency for extraction and recovery of these compounds.

1.4.2 Extraction Description

All samples were extracted in fractions. These fractions, called Front Half, Back Half, and Impinger, contained the following train components:

Fraction Identification	Sample Components
FH	FH methanol/methylene chloride rinses FH filter(s)
BH	XAD BH methanol/methylene chloride rinses
IMP	impinger water impinger rinses

The FH and BH fractions were Soxhlet extracted with methylene chloride for 16 hours. Prior to extraction, the rinses were concentrated with a Kuderna-Danish evaporator and the concentrate added to the Soxhlet. After extraction, the concentrated extracts were then split 50:50, with one

half being used for the analysis and the other half archived for future use if required. The IMPG fractions were extracted with methylene chloride using a separatory funnel. These extractions were performed in two stages, one at a pH of 12 and the other at a pH of 2. These combined extracts were split 50:50; with one being archived similar to the FH and BH fractions. All extracts for analysis were brought to a final volume of 2.5 milliliters (mL) prior to analysis. Since this is half the extract, this is the equivalent of a final extract volume of 5 mL, for the purposes of concentration calculations.

1.5 Analytical Methodology

The analysis is based on isotope dilution methodology. This involves adding a deuterium-labeled analog for the analytes of interest to the sample during extraction. The analyte is then measured relative to its labeled analog, which behaves in a chemically identical manner. Therefore, any loss of the analyte during laboratory handling is corrected during the analytical calculations.

Also, the surrogate compounds ethyl benzene-d_{10}, 2-chlorophenol-d_4, acenaphthene-d_{10}, and benz-e-pyrene-d_{12} in the XAD resin are measured relative to the internal standards phenol-d_5, o-Cresol-d_7H, naphthalene-d_8, toluene-d_8, benz-a-pyrene-d_{12}, and o-xylene-d_{10}. Because these surrogates are measured against the internal standards, any laboratory handling losses are corrected for, and thus their recovery should be close to 100% if there were no sampling losses. The prespike terphenyl-d_{14} is measured versus one of the recovery standards. Therefore, its recovery is a measure of the absolute recovery, rather than one corrected for laboratory losses. This information is used to demonstrate the efficiency of the isotope dilution recovery corrected procedures.

Prior to laboratory extraction, the separate front half (filter and probe rinse), back half (XAD and condenser rinse) and aqueous impinger fractions were fortified with deuterium-labeled compounds that are identical to the analytes of interest, except for the isotopic label (Table 1, SOLN C1). Prior to GC/MS analysis, the separate front half, back half and impinger extracts were fortified with deuterium-labeled compounds as recovery internal standards (Table 1, SOLN C3).

Table 1 shows the relationship between the analytes, internal standards and surrogates. Quantitation Mass (QM) is the mass from the mass spectrum of the compound that will be used to generated selected ion current profiles (SICP) for quantitation. The Internal standard Identification (INTID) defines the corresponding standard that the compound will be measured against. By means of this analytical relationship, losses of analytes or the surrogates ethyl benzene-d_{10}, 2-chlorophenol-d_4, acenaphthene-d_{10}, and benz-e-pyrene-d_{12}, due to laboratory

handling are corrected for by measuring these analytes versus a chemically identical labeled compound that is added at the extraction stage. The actual recovery of the prespiked terphenyl-d_{14}, as well as the laboratory spiked standards phenol-d_5, o-cresol-d_7H, naphthalene-d_8, toluene-d_8, benz-a-pyrene-d_{12}, and o-xylene-d_{10}, are measured versus the recovery internal standards dichlorobenzene-d_4, phenanthrene-d_{10}, chrysene-d_{12}, and perylene-d_{12}.

The secondary analysis for the compounds in Table 2 was a screening method using general guidelines from OSW method 8270. A single calibration point was analyzed **after** each 12 hour set of analyses. The retention times from this point were used to search for the analytes and to generate a response factor for the concentration calculations. The internal standards (1,4-dichlorobenzene-d_4, phenanthrene-d_{10}, chrysene-d_{12} and perylene-d_{12}) were used as markers to calculate relative retention times for sample identification. After GC/MS calibration, an aliquot of the sample extract is fortified with the above internal standards such that the final concentration of internal standards is 50 µg/mL immediately prior to analysis by GC/MS. After the GC/MS analysis the sample concentrations are calculated using the following equation:

Amount in samples, µg:

$$\textit{Amount, } \mu g = \frac{\textit{Area X} \times \textit{Amt Int Std} \times \textit{Dilution Factor}}{\textit{Area Int Std} \times \textit{RF X}}$$

where:

X = Analyte
Int Std = Internal Standard
Amt Int Std = Amount of Internal Standard = 50 µg
RF X = Response Factor of Analyte X from following Calibration Point

The GC/MS analysis conditions are listed below:

GC CONDITIONS:
Column: DB-625, 30m x .32mm x 1 micron film
Program: 40° C hold 3 min to 300° C at 8° C/min hold 4.5 mins.

MS CONDITIONS:
Instrument: TRIO-1 quadrupole MS, LAB-BASE Data System
Scan: 35-510 amu at 1sec/scan
Ion Source: 180° C
Interface: Capillary 275° C

1.6 Data Processing

1.6.1 Targets and Find Databases

Prior to analysis, a library of reference mass spectra and retention time information is assembled into a database, referred to as a Find database in LAB-BASE terminology. A quantitation mass, either the molecular ion or the most intense peak in its mass spectrum, is chosen. After the GC/MS analysis, the data file for each of the analytes in the Find database retention time window is searched for the occurrence of any mass spectra containing the quantitation mass for a given analyte. The plot of the intensity of this quantitation mass versus time is the selected ion current profile (SICP) for that mass. The area under that particular peak is used to quantitatively measure the amount of the compound present. If a peak occurs at the proper time and mass for a target analyte, then the compound's mass spectrum is compared to the library spectrum stored in the database. The compound is considered detected if its match is above the selected match tolerance. This occurs in the preliminary report generation stage, the output of which is an interim report. The resulting mass spectra of detected targets are plotted versus their corresponding library spectra. A trained chemist then evaluates whether the match is correct or not. If not, the compound is removed from the list of detected target compounds. For those detected target compounds, the concentration is calculated as described in Section 1.5.

In order to process the GC/MS analyses for both sets of analytes, the data file was analyzed against two separate Find databases, first for the analytes in Table 1, then again for the analytes in Table 2.

1.6.2 NBS and CAA Library Searches for TICs

Besides the target compounds, there are generally a number of non-target components that are observed in the chromatogram. The mass spectrum of these compounds is searched against two separate libraries. The National Bureau of Standard's (NBS) library contains the mass spectra of 49,469 compounds and is typically used to try and identify an unknown mass spectrum. The CAA library has been constructed by Triangle Labs from the mass spectra of the Clean Air Act compounds from the NBS library as well as some spectra generated at TLI. By searching an unknown spectrum against both libraries, one maximizes the possibility of finding CAA compounds, while also comparing to the mass spectra of the NBS library. Any compounds that are observed and identified are referred to as

tentatively identified compounds (TICS), since there is no reference standard analyzed at the same time as the unknown analyte. The quantitation that is given to these TICS is based on the area of the peak compared directly to the area of the nearest internal standard and assumes a response factor of one. The error caused by this approximation is unknown.

1.7 Calibration

1.7.1 Range of Calibration

The analytes of Table 1 were prepared in solutions ranging from 5 µg/mL to 200 µg/mL, with the internal standards injected at a constant concentration of 50 µg/mL. After analyzing the calibration solution, selected ion current plots (SICPs) are generated for the quantitation mass for each analyte. The area for the SICP mass is used to calculate a response factor (RF) at a given concentration using the following equation:

$$RF = \frac{Area\ X \times Amount\ Int\ Std}{Area\ Int\ Std \times Amount\ X}$$

where:

X = Analyte Quantitation Mass
Int Std = Internal Standard Quantitation Mass
Amt Int Std = Amount of Internal Standard = 50 µg
Amount X = Amount of Analyte in the Calibration Solution; varies from 5 to 200.

The five individual response factors, at concentrations of 5, 20, 50, 100 and 200 µg/mL, are averaged to calculate a mean RF. If the relative standard deviation of these RFs is less than 30%, the calibration is considered acceptable.

For the analytes from Table 2, a single calibration point with the analytes at 50 µg/mL and the internal standards at 40 µg/mL was used to calculate response factors.

1.7.2 Initial Calibrations

Two initial calibrations for Table 1 analytes were generated for this work, on November 8, 1991 and November 23, 1991. These calibrations were performed on two separate GC/MS instruments, F and G. The mean RFs

and %RSD of these RFs are summarized in Table 3. All of the analytes were within QC criteria with a %RSD less than 30%. The percent relative difference between the means for the two initial calibrations were calculated to show the stability of these response factors. The major difference between the two sets of initial calibrations was in the response factor for toluene-d_8. Because this is a very early eluting component, its response is expected to be more dependent on the GC conditions and column. Any changes to the response of toluene-d_8 result in corresponding changes in the ethylbenzene-d_{10} response factor, because ethylbenzene-d_{10} is measured relative to toluene-d_8.

1.7.3 Continuing Calibrations

Six continuing calibrations for Table 1 analytes were generated for this work. All response factors for the analytes were within QC criteria (+/- 30% difference from the initial calibration RF values) for these calibrations. A summary of these RFs and the %RSD calculated for their mean is presented in Table 4. The mean of these RFs was calculated for all the calibrations and good precision was demonstrated in the RF values, except the variability for toluene-d_8. The mean and %RSD for just the five calibrations on Instrument "F" was also calculated, since they were performed about two weeks after the first set. With %RSDs ranging from 1 to 5%, these analyses demonstrated excellent reproducibility of the responses for this set of analyses. Initial and continuing laboratory calibration summary sheets are available in Appendix A.

Six continuing calibrations for Table 2 analytes were generated for this work. There were no specific QC criteria for these calibrations since these were intended to screen only for the CAA compounds. A summary of these RFs and the %RSD calculated for their mean is presented in Table 5. Again the RFs are tabulated for all the calibrations as well as those only for Instrument "F". The precision for the calibrations on Instrument "F" were generally acceptable. Since only a single calibration point was generated on Instrument "G," there are insufficient data to explain the variance in response factors from the two instruments.

Catechol and phthalic anhydride are outside the scope of this screening method based upon their poor responses. The precision for many of the response factors for the basic amines and benzidines was not acceptable for good quality control on the calculated amounts. These analytes could still be screened for, but their quantitations are suspect. The majority of the other analytes gave fairly consistent response factors and the quantitative

results should be expected to be usable; however, all results are calculated from a single point calibration which is inherently of undefined precision.

2. Summary and Interpretation of Results

2.1 Field Sample Results

2.1.1 Visible Observations

A summary of the laboratory extraction observations, with comments for the appearance of the final extracts are tabulated in Tables 6 A, B and C. Two of the samples, I-2A and IV-3A were chosen for a preliminary rapid extraction and analysis to determine whether any of the sample extractions could be combined to lessen the amount of analytical work and cost. The results indicated that erratic recoveries might be expected and the decision was made to extract all fractions separately to monitor for any analytical anomalies.

For the front half samples, the filters for all the field samples had a generally light gray color with brown spots on some of the filters. The rinse color was only recorded for samples I-2A and IV-3A, and were both yellow. The extract colors ranged from clear to brown. These were not necessarily consistent among dual trains, I-1A was brown and I-1B was yellow; III-1A was clear and III-1B was light yellow; III-2A was brown and III-2B was light yellow; IV-1A was yellow and IV-1B was brown.

The XAD resins were generally observed as white, off-white and yellow. Visible moisture was recorded as being present in most of the XAD traps. The rinse color was only recorded for samples I-2A and IV-3A; both clear. The field samples had yellow or cloudy yellow extracts.

The impinger field samples were clear with a pH of approximately 0 or 1. The impinger samples had approximately 0.5 to 0.8 L of water total volume. Since the final reports are reported in total micrograms in the impinger, this volume value is not used in the sample calculations. All sample extracts were clear.

2.1.2 Sample Extraction Summary

No outstanding problems were noted for any of the extractions. A description of the extract colors is summarized in Table 6A, B and C. The

filter extracts were very non-uniform in color, even for samples that should have been duplicates.

2.1.3 Sample Dilution Summary

The final extract was divided in half in the extraction laboratory. One half was archived and the other half concentrated to 2.5 mL. This was analyzed with no further dilution and is the equivalent of a final extract volume of 5 mL.

2.1.4 Sample Analysis Summary

The results for Table 1 analytes are summarized in Tables 7 through 9, for the front half, back half and impinger fractions. The results are organized by condition with samples from dual trains beside each other as A and B samples. The results for the analytes are reported in micrograms per fraction. For those analyses where there was no recovery of a spiked internal standard, the corresponding analyte is labeled with an INVALID flag since no results can be reported for that analyte. The detection limits have not been reported, but they range from 1 to 5 µg, depending on the recovery of the corresponding internal standard. The C1 internal standards and XAD field prespikes are reported as their calculated percent recovery. For the C3 recovery standards, the area count measured for that GC/MS run is reported as a relative measure of overall instrument sensitivity and stability.

The results for the Table 2 CAA analytes are summarized in Tables 10 through 12, for the front half, back half and impinger fractions. The results are organized by condition with samples from dual trains presented beside each other as A and B samples. The results for the analytes are reported in micrograms per fraction.

The results for any Tentatively Identified Compounds (TICs) are summarized in Tables 13 through 16 for the blanks, front half, back half and impinger fractions, respectively. The results are organized by condition with samples from dual trains presented beside each other as A and B samples. The results for the analytes are reported in micrograms per fraction.

2.1.5 Front Half Results

Table 7, the analytical results for the Table 1 analytes, demonstrated very erratic recoveries for the internal standards that were spiked into the filter

during the extraction phase. For example, for Condition III-2, Sample A had no recovery for phenol-d_5, cresol-d_7 or benzo-a-pyrene-d_{12}, whereas Sample B had approximately 40% recoveries for all of these spiked compounds. The difference between these samples is further demonstrated by the fact that the sample extracts for these two samples were observed to be brown versus light yellow. Apparently there is some difference in the type or composition of the particulate matter that was sampled on these filters, even though they were from a dual sampling probe. The origin of these differences is not known.

Similar differences were observed for Condition I-1 A and B; phenol-d_5 was not recovered in Sample A, but showed a 62% recovery in Sample B. Neither of these samples showed recovery of the benzo-a-pyrene-d_{12} spike. All of the other spiked compounds showed similar recoveries for these two samples. Since all of these spike compounds are prepared in a single spiking solution and added at the same time, these differences in recoveries must relate to a very selective chemical loss, presumably in the extraction process. No selective losses were observed for either the laboratory extraction blanks or the field blank, thus pointing to something associated with the field sampled filters only and implicating the particulates on these filters.

Three of the four samples taken under Condition I showed no recovery of benzo-a-pyrene-d_{12}, and two of those three had no recovery of phenol-d_5. Condition II had generally good recoveries with one sample out of five (II-1B) having a low (14%) recovery of o-cresol-d_7. Condition IV had one sample out of six with no recovery of phenol-d_5, o-cresol-d_7 or benzo-a-pyrene-d_{12}. The other samples for Condition III were acceptable. Condition IV had one sample out of five with no recovery of benzo-a-pyrene-d_{12}, and two others (IV-1A and IV-1B) with low recoveries of phenol-d_5 or o-cresol-d_7 and benzo-a-pyrene-d_{12}.

The only consistently detected analyte on the front half filters was toluene. Since this is a common solvent in the extraction laboratory and was observed at comparable levels in the laboratory blanks, this must be attributed to the laboratory environment and not the field samples. Phenol was observed in one sample (III-1-B) and naphthalene in another (III-2-B). These were not consistently observed and could not be considered as a constant emission from this source.

Table 10, depicting the screening results for Table 2 CAA analytes, demonstrated the presence of di-n-butyl phthalate in several of the samples and bis (2-ethylhexyl) phthalate in two samples. All of the observations

were at low levels and may well occur from some coincidental contact with plastic tubing in the lab or the field. The occurrence is not consistent or high enough to represent a true presence in the field samples.

Phenol was observed in sample III-1B, as was seen in the results in Table 7. Biphenyl was observed in one sample at approximately 8 μg, which is near the detection limit.

The Tentatively Identified Compounds (TICs) observed (Table 13) were acid esters, phthalates, siloxanes, an oxygenated butane and some hydrocarbons. No consistent pattern differences were noted between conditions, although Condition II had the most consistent appearance of the oxygenated butane compound.

The total mass observed as TICs for Condition I ranged from 51 to 257 μg, for Condition II from 14 to 1712 μg, for Condition III from 153 to 635 μg and for Condition IV from 41 to 565 μg.

2.1.6 Back Half Results

The Table 8 analytical results for the back half fractions gave more consistent recoveries of the internal standard spikes, compared with the front half extractions. Sample I-1A showed no recovery for o-cresol-d_7H. No recovery of phenol-d_5 was observed for samples III-1B and IV-3A. Sample IV-3A not only gave no recovery of phenol-d_5, cresol-d_7 and benzo-a-pyrene-d_{12}, but also no peak was observed for perylene-d_{12}, which is added immediately before GC/MS analysis. To confirm this result, the extract was reanalyzed immediately after a successful analysis of the calibration solution and the same failure was observed for perylene-d_{12}. The cause of this loss of perylene-d_{12} is unknown.

The extract color shows some correlation with the recovery problems. All three samples that exhibited poor recoveries had extracts identified as yellow or dark yellow. However, sample IV-2B had a yellow extract and exhibited acceptable standard recoveries.

For the other field samples, the internal standard recoveries were generally in the 50% range. The average recoveries for the internal standards ranged from 47% for cresol-d_7 to 67% for xylene-d_{10}.

Toluene was again observed at comparable levels in the laboratory blanks and field samples. This must be attributed to the laboratory environment and not the field samples.

Phenol was observed in five of the nineteen field samples, ranging from 6 to 108 µg. Because phenol was not consistently observed, it is difficult to consider it as a constant emission from this source for the back half fractions. Its corresponding prespiked surrogate compound, chlorophenol-d_4, was recovered in 17 of the 19 field samples with an average 96% recovery.

Naphthalene was observed in nine of the nineteen field samples, ranging from 2 to 33 µg. Inexplicably, the dual trains showed no consistency in the naphthalene results: I-1A had no detect, but I-1B showed 27 µg; II-1A had no detect, but II-1B showed 33 µg; II-2A showed 5 µg, but II-2B showed no detect; III-1A had no detect, but III-1B showed 26 µg; III-2A had no detect, but III-1B showed 17 µg; and IV-2A had no detect, but IV-2B showed 10 µg. Ignoring the results from II-2A which was near the detection limits, the average amount from I-1B, II-1B, III-1B, III-2B and IV-2B was 22.6 µg with a 40% RSD.

Because naphthalene was not consistently observed, it is difficult to consider it as a constant emission from this source for the back half fraction. However, under certain conditions, it was observed in the XAD fractions.

The XAD prespiked surrogates that are measured versus the internal standards all demonstrated recoveries near 100%. The average recovery for ethylbenzene-d_{10} was 118% with a 23% RSD. The average recovery for 2-chlorophenol-d_4 was 96% with a 42% RSD. The average recovery for acenaphthene-d_{10} was 103% with a 36% RSD. The average recovery for benzo-e-pyrene-d_{12} was 107% with a 46% RSD. Terphenyl-d_{14}, which is measured versus a recovery standard and is thus not corrected for lab losses, had an average recovery of 74% with a 32% RSD.

The CAA analytical results (Table 11) demonstrated the presence of di-n-butyl phthalate in six of the field samples and bis (2-ethylhexyl) phthalate in five field samples. Most of the observations were at low levels and may well occur from some coincidental contact with plastic tubing in the lab or the field. Several occurrences were in the range of 50 to 100 µg, and represent a more serious contamination problem. The occurrence is not consistent or high enough to represent a true presence in the field samples.

Phenol and naphthalene were observed as reported in the Table 8 results. The calculated values should be taken from Table 8. Acetophenone was observed in three samples. Chloroacetophenone was reported in both lab blanks, as well as the field blank, but not in the field samples. Inspection of the mass spectrum of this contaminant showed a compound whose mass spectrum was very similar, but not identical to that of chloroacetophenone. The origin of this contaminant is unknown. Biphenyl was observed in a single sample, a different sample than the front half observation.

The tentatively identified compounds observed were benzoic acid, benzoic acid esters, other acid esters, phthalates and an aromatic hydrocarbon. The benzoic acid was the dominant species observed, accounting for approximately 75% of the total mass associated with these TICs. No consistent pattern differences were noted between conditions.

The total mass observed as TICs for Condition I ranged from 764 to 1532 μg, for Condition II from 494 to 2351 μg, for Condition III from 1199 to 2240 μg, and for Condition IV from 212 to 1471 μg.

2.1.7 Impinger Results

For the Table 9 analytical results, there were no examples of complete loss of internal standards in the impinger extractions, although II-2A and III-3A had relatively low recoveries. This implies that the losses observed in the other fractions were associated with particulate matter. The front half fractions, containing the majority of these particulates, demonstrated the most loss of standards during extraction. This was observed less frequently in the back half fractions and no example of complete loss of internal standards was seen in the impingers.

Toluene was again observed at comparable levels in the laboratory blanks and field samples. This must be attributed to the laboratory environment and not the field conditions.

Phenol was observed in two of the nineteen field samples, at 177 μg (Sample III-1-B) and 196 μg (Sample II-1B). Because these were not consistently observed, they could not be considered as a constant emission from this source for these fractions. However, the relatively large amount observed may indicate that this analyte occurs sporadically from this source. Sample II-1B back half contained 108 μg of phenol. Unfortunately, sample III-1B back half, had no recovery of the phenol-d_5 internal standard, and

comparable results are not available. Sample II-1-B also contained approximately 70 μg of aniline.

The CAA analytical results (Table 12) demonstrated the presence of butyl benzyl phthalate in one field sample. The observation was at low levels and may well occur from some coincidental contact with plastic tubing in the lab or the field. The lab extraction blank had a large contamination with bis (2-ethylhexyl) phthalate, but no field samples showed any of this analyte. The presence of phenol was confirmed in samples II-1B and III-1B. Aniline was observed at approximately 70 μg in sample II-1B.

Very few tentatively identified compounds (Table 13) were observed in the impinger fractions. These were primarily phthalates and some hydrocarbons. For sample II-1-B, three TICs were observed whose mass spectra were consistent with pyrazine and methyl pyrazines. This was the same sample found to contain aniline. No consistent pattern differences were noted between conditions.

The total mass observed as TICs for Condition I and Condition III was 0 μg. For Condition II the mass ranged from 0 to 782 μg and for Condition IV the mass ranged from 41 to 78 μg.

2.2 QA/QC Results

2.2.1 Field Blanks and Laboratory Blanks

The analytical results for the laboratory blank, field blanks and reagent blanks for Table 1 analytes are displayed in Tables 7 through 9. Results for these blanks indicate no consistent contamination except for toluene, which is a common lab solvent. Because of this, toluene cannot be analyzed for by this method in this laboratory environment. Naphthalene was not observed in the laboratory blanks for this set of extractions. However, it is known to be a common contaminant of XAD resin, and can occasionally arise as a blank problem from XAD extractions. Benzo-a-pyrene was observed at the detection limit in the impinger lab blank. However, since no sample showed the presence of benzo-a-pyrene, this does not compromise the data set.

2.2.2 Surrogate Recovery Results

Results of the prespiked surrogate recoveries are presented in Table 8. The average recoveries are within the guidelines of Method 301, which has a specified bias range of 70 to 130%. The only problems encountered were

with the loss of the corresponding internal standards, which was discussed earlier in Section 2.1.6.

The XAD prespiked surrogates that were measured versus the internal standards all demonstrated recoveries near 100%. The average recovery for ethylbenzene-d_{10} was 118% with a 23% RSD. The average recovery for 2-chlorophenol-d_4 was 96% with a 42% RSD. The average recovery for acenaphthene-d_{10} was 103% with a 36% RSD. The average recovery for benzo-e-pyrene-d_{12} was 107% with a 46% RSD. Terphenyl-d_{14}, which is measured versus a recovery standard and is thus not corrected for lab losses, had an average recovery of 74% with a 32% RSD.

3.0 Conclusions

The results from the front half extractions were surprising in exhibiting the extreme variability among duplicate samples from dual trains. The extreme recovery variability demonstrates the need for performing separate extractions and analyses on the individual fractions of the train, if one is interested in monitoring specific problem areas in the analysis.

The use of isotopic labeled standards, prior to lab extraction, successfully allowed for correction for laboratory losses in the analytical process. This, in turn, enabled the achievement of surrogate recoveries within the 70 to 130% guidelines called for in Method 301. Without this correction for laboratory handling, the recoveries would have been in the 30 to 60% range.

Also, the use of isotopically labeled standards demonstrated that a recovery problem existed is the laboratory extraction stages. These problems may not be identified without the use of such standards.

The analytical complexity will be compounded by the addition of more analytes. The limits to which this type of methodology can be extended remains to be determined. Achieving Method 301 test criteria via dynamic spiking of the sampling train will require further discussion and evaluation. Triangle Laboratory personnel would like to discuss the project data with Entropy and EPA personnel at their earliest convenience.

Don Harvan

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Table 1
Semi-Volatiles—Coke Oven
Analytes Corresponding Internal Standards and Surrogate Compounds

	Quantitation Mass	Identification	Internal Standard Identification
Unlabeled Analytes			
Toluene	91	AN	IS5
Xylene	91	AN	IS6
Phenol	94	AN	IS7
Cresol	108	AN	IS8
Naphthalene	128	AN	IS9
Benz-a-pyrene	252	AN	IS10
Labeled Standards			
Prespike			
Terphenyl-d_{14}	244	SUR1	IS3
Prespike Solution C2			
Ethyl benzene-d_{10}	116	SUR2	IS5
2-Chlorophenol-d_4	132	SUR3	IS7
Acenaphthene-d_{10}	164	SUR4	IS9
Benz-e-pyrene-d_{12}	264	SUR5	IS10
Internal Standards Solution C1			
Toluene-d_8	98	IS5	IS1
o-Xylene-d_{10}	116	IS6	IS1
Phenol-d_5	99	IS7	IS1
o-Cresol-d_7H	115	IS8	IS1
Naphthalene-d_8	136	IS9	IS2
Benz-a-pyrene-d_{12}	264	IS10	IS4
Recovery Standards Solution C3			
Di-chlorobenzene-d_4	152	IS1	
Phenanthrene-d_{10}	188	IS2	
Chrysene-d_{12}	240	IS3	
Perylene-d_{12}	264	IS4	

AN = Analyte
IS = Internal Standard
SUR = Surrogate

Table 2
Semi-Volatiles—Coke Oven
CAA Target Compounds

	TLI Name	CAA Name
1.	Acetophenone	Acetophenone
2.	4-Aminobiphenyl	4-Aminobiphenyl
3.	Aniline	Aniline
4.	o-Anisidine	o-Anisidine
5.	Benzidine	Benzidine
6.	α,α,α-Trichlorotoluene	Benzotrichloride
7.	Benzyl chloride	Benzyl chloride
8.	Biphenyl	Biphenyl
9.	bis(2-Ethylhexyl)phthalate	bis(2-Ethylhexyl)phthalate (DEHP)
10.	Catechol	Catechol
11.	2-Chloroacetophenone	2-Chloroacetophenone
12.	2-Methylphenol	o-Cresol
13.	3/4-Methylphenol	m/p-Cresol
14.	Cumene	Cumene
15.	Dibenzofuran	Dibenzofuran
16.	1,2-Dibromo-3-chloropropane	1,2-Dibromo-3-chloropropane
17.	Di-n-butylphthalate	Di-n-butylphthalate
18.	1,4-Dichlorobenzene	1,4-Dichlorobenzene
19.	3,3'-Dichlorobenzidine	3,3'-Dichlorobenzidine
20.	bis-(2-Chloroethyl)ether	Dichloroethyl ether
21.	N,N-Diethylaniline	N,N-Diethylaniline
22.	N,N-Dimethylaniline	N,N-Dimethylaniline
23.	3,3'-Dimethoxybenzidine	3,3'-Dimethoxybenzidine
24.	Dimethylaminoazobenzene	Dimethylaminoazobenzene
25.	Dimethylphthalate	Dimethylphthalate
26.	4,6-Dinitro-2-methylphenol	4,6-Dinitro-o-cresol
27.	2,4-Dinitrophenol	2,4-Dinitrophenol
28.	2,4-Dinitrotoluene	2,4-Dinitrotoluene
29.	3,3'-Dimethylbenzidine	3,3'-Dimethylbenzidine
30.	Hexachlorobenzene	Hexachlorobenzene
31.	Hexachlorocyclopentadiene	Hexachlorocyclopentadiene
32.	Hexachlorobutadiene	Hexachlorobutadiene
33.	Hexachloroethane	Hexachloroethane
34.	Hydroquinone	Hydroquinone
35.	Isophorone	Isophorone
36.	Methylene bis-chloroaniline	4,4'-Methylene bis(2-chloroaniline)

Table 2 (continued) **Semi-Volatiles—Coke Oven**

CAA Target Compounds

37.	4,4'-Methylenedianiline	4,4'-Methylenedianiline
38.	Nitrobenzene	Nitrobenzene
39.	4-Nitrobiphenyl	4-Nitrobiphenyl
40.	4-Nitrophenol	4-Nitrophenol
41.	n-Nitrosodimethylamine	n-Nitrosodimethylamine
42.	n-Nitrosomorpholine	n-Nitrosomorpholine
43.	Pentachloronitrobenzene	Pentachloronitrobenzene
44.	Pentachlorophenol	Pentachlorophenol
45.	Phenol	Phenol
46.	1,4-Phenylenediamine	p-Phenylenediamine
47.	Phthalic anhydride	Phthalic Anhydride
48.	2,4-Toluenediamine	2,4-Toluenediamine
49.	o-Toluidine	o-Toluidine
50.	1,2,4-Trichlorobenzene	1,2,4-Trichlorobenzene
51.	2,4,5-Trichlorophenol	2,4,5-Trichlorophenol
52.	2,4,6-Trichlorophenol	2,4,6-Trichlorophenol
53.	Trifluralin	Trifluralin
Other Compounds of Interest		
54.	Butylbenzylphthalate	
55.	Chrysene	
56.	P-Cymene	
57.	2,4-Dichlorophenol	
58.	2,3-Dichlorophenol	
59.	2,6-Dichlorophenol	
60.	3,5-Dichlorophenol	
61.	3,4-Dichlorophenol	
62.	Pentamethylbenzene	
63.	α-Pinene	
64.	β-Pinene	
65.	Pyrene	
66.	α-Terpineol	
67.	1,2,4-Trimethylbenzene	

Table 3
Semi-Volatiles—Coke Oven
Initial Calibrations and Response Factors for Isotope Dilution Analyses

	11/08/91 GF069-073		11/23/91 FF592-596		%RPD of
	Mean RF	%RSD	Mean RF	%RSD	Means
Analytes					
Toluene	1.050	11.1%	1.035	10.8%	-1.4%
Xylene, Total	2.221	12.6%	1.914	13.2%	-14.8%
Phenol	1.072	9.7%	1.061	10.2%	-1.0%
Cresol, Total	0.916	20.8%	0.936	12.1%	2.2%
Naphthalene	0.902	10.4%	0.862	10.7%	-14.4%
Benzo-a-pyrene	0.930	13.9%	0.970	11.4%	6.3%
C2 XAD Field Prespikes					
Ethylbenzene-d_{10}	0.092	16.1%	0.359	8.8%	118.4%
2-Chlorophenol-d_4	0.522	11.8%	0.678	9.8%	26.0%
Acenaphthene-d_{10}	0.513	14.2%	0.448	7.4%	-13.5%
Terphenyl-d_{14}	0.613	13.5%	0.711	7.5%	14.8%
Benzo-e-pyrene-d_{12}	0.361	25.2%	0.399	19.5%	10.0%
C1 Lab Extraction Spikes					
Toluene-d_8	9.649	10.2%	2.609	5.2%	-114.9%
o-Xylene-d_{10}	1.345	9.7%	1.382	5.4%	2.7%
Phenol-d_5	2.647	12.1%	2.011	5.1%	-27.3%
o-Cresol-d_7H	1.809	11.2%	1.553	4.8%	-15.2%
Naphthalene-d_8	0.981	9.9%	1.307	6.8%	28.5%
Benzo-a-pyrene-d_{12}	1.409	11.8%	1.213	5.1%	-15.0%

Table 4
Semi-Volatiles—Coke Oven
Continuing Calibrations and Response Factors for Isotope Dilution Analyses

	11/08 GF069	11/23 FF598	11/24 FF615	11/25 FF633	11/26 FF650	11/26 FF668	All Calibrations Mean	All Calibrations % RSD	Instrument "F" Only Mean	Instrument "F" Only % RSD
Analytes										
Toluene	1.144	1.179	1.210	1.170	1.185	1.174	1.18	2%	1.18	1%
Xylene, Total	2.593	2.280	2.250	2.266	2.257	2.217	2.31	6%	2.25	1%
Phenol	1.240	1.236	1.267	1.242	1.228	1.207	1.24	2%	1.24	2%
Cresol, Total	1.075	1.113	1.142	1.164	1.149	1.141	1.13	3%	1.14	2%
Naphthalene	1.007	1.031	1.028	1.029	1.048	1.052	1.03	2%	1.04	1%
Benzo-a-pyrene	1.126	1.115	1.152	1.177	1.188	1.173	1.16	3%	1.16	2%
C2 XAD Field Prespikes										
Ethylbenzene-d_{10}	0.095	0.399	0.418	0.411	0.412	0.408	0.36	36%	0.41	2%
2-Chlorophenol-d_4	0.608	0.755	0.753	0.730	0.710	0.711	0.71	8%	0.73	3%
Acenaphthene-d_{10}	0.625	0.535	0.543	0.541	0.538	0.540	0.55	6%	0.54	1%
Terphenyl-d_{14}	0.706	0.826	0.795	0.734	0.798	0.758	0.77	6%	0.78	5%
Benzo-e-pyrene-d_{12}	0.464	0.481	0.502	0.498	0.503	0.508	0.49	3%	0.50	2%
C1 Lab Extraction Spikes										
Toluene-d_8	9.835	2.575	2.515	2.499	2.585	2.548	3.76	79%	2.54	1%
o-Xylene-d_{10}	1.247	1.370	1.362	1.339	1.392	1.355	1.34	4%	1.36	1%
Phenol-d_5	2.433	2.026	2.020	2.019	2.139	2.098	2.12	8%	2.06	3%
o-Cresol-d_7H	1.666	1.565	1.570	1.521	1.618	1.576	1.59	3%	1.57	2%
Naphthalene-d_8	0.930	1.204	1.172	1.126	1.132	1.075	1.11	9%	1.14	4%
Benzo-a-pyrene-d_{12}	1.329	1.214	1.151	1.175	1.198	1.219	1.21	5%	1.19	2%

For additional information see laboratory calibration sheets located in Appendix A.

Table 5
Semi-Volatiles—Coke Oven
Calibration Data and Response Factors for CAA Screening Analyses

	11/08 GF085	11/24 FF613	11/25 FF630	11/25 FF648	11/26 FF665	11/27 FF682	All Calibrations Mean	All Calibrations % RSD	Instrument "F" Only Mean	Instrument "F" Only % RSD
Acetophenone	2.841	1.371	1.365	1.363	1.341	1.314	1.599	38%	1.351	2%
4-Aminobiphenyl	0.529	0.270	0.243	0.321	0.443	0.419	0.371	30%	0.339	26%
Aniline	4.942	0.586	0.714	1.122	1.674	1.572	1.768	91%	1.134	43%
o-Anisidine	1.188	0.272	0.615	0.590	0.593	0.573	0.639	47%	0.529	27%
Benzidine	0.068	0.020	0.011	0.050	0.119	0.114	0.064	72%	0.063	81%
α,α,α-Trichlorotoluene	0.986	0.780	0.814	0.794	0.802	0.802	0.830	9%	0.798	2%
Benzyl Chloride	4.057	2.067	2.073	2.038	1.997	1.926	2.360	35%	2.020	3%
Biphenyl	0.440	0.451	0.386	0.388	0.382	0.359	0.401	9%	0.393	9%
bis(2-Ethylhexyl)phthalate	0.411	0.697	0.625	0.634	0.655	0.636	0.610	17%	0.649	4%
Catechol	0.169	0.000	0.000	0.000	0.000	0.000	0.028	245%	0.000	ERR
2-Chloroacetophenone	4.413	1.926	1.954	1.908	1.875	1.793	2.312	45%	1.891	3%
2-Methylphenol	2.150	1.076	1.060	1.064	1.066	1.043	1.243	36%	1.062	1%
3/4-Methylphenol	2.211	1.160	1.160	1.153	1.164	1.159	1.334	32%	1.159	0%
Cumene	3.205	2.077	2.031	2.004	2.000	1.936	2.209	22%	2.010	3%
Dibenzofuran	0.602	0.089	0.083	0.095	0.102	0.100	0.179	116%	0.094	8%
1,2-Dibromo-3-chloropropane	0.448	0.358	0.371	0.361	0.360	0.354	0.375	10%	0.361	2%
Di-n-butylphthalate	1.057	0.993	0.902	0.972	0.994	0.994	0.985	5%	0.971	4%
1,4-Dichlorobenzene	1.756	1.155	1.192	1.163	1.149	1.149	1.261	19%	1.162	2%
3,3'-Dichlorobenzidine	0.348	0.169	0.152	0.224	0.256	0.255	0.234	30%	0.211	23%
bis-(2-Chloroethyl)ether	2.624	1.334	1.369	1.361	1.332	1.287	1.551	34%	1.337	2%
N,N-Diethylaniline	1.325	0.935	0.646	1.005	1.180	1.216	1.051	23%	0.996	23%
N,N-Dimethylaniline	2.039	0.892	0.918	0.951	1.151	1.191	1.190	36%	1.021	14%
3,3'-Dimethoxybenzidine	0.083	0.016	0.009	0.061	0.108	0.111	0.065	68%	0.061	79%
Dimethylaminoazobenzene	0.168	0.174	0.168	0.188	0.226	0.210	0.189	13%	0.193	13%
Dimethylphthalate	0.504	0.490	0.447	0.456	0.442	0.416	0.459	7%	0.450	6%
4,6-Dinitro-2-methylphenol	0.054	0.065	0.077	0.085	0.092	0.095	0.078	21%	0.083	15%
2,4-Dinitrophenol	0.031	0.045	0.055	0.060	0.066	0.070	0.054	27%	0.059	17%
2,4-Dinitrotoluene	0.185	0.153	0.145	0.137	0.139	0.134	0.149	13%	0.142	5%
3,3'-Dimethylbenzidine	0.234	0.048	0.019	0.128	0.260	0.273	0.160	69%	0.145	81%
Hexachlorobenzene	0.269	0.117	0.103	0.111	0.109	0.112	0.137	48%	0.110	4%
Hexachlorocyclopentadiene	0.163	0.093	0.074	0.067	0.061	0.051	0.085	48%	0.069	23%
Hexachlorobutadiene	0.879	0.369	0.369	0.379	0.377	0.399	0.462	44%	0.379	3%
Hexachloroethane	0.934	0.472	0.475	0.466	0.460	0.456	0.544	35%	0.466	2%
Hydroquinone	1.723	0.525	0.331	0.294	0.285	0.203	0.560	104%	0.327	37%
Isophorone	5.748	2.505	2.511	2.451	2.434	2.305	2.992	45%	2.441	3%
Methylene bis-chloroaniline	0.178	0.087	0.081	0.130	0.148	0.147	0.128	30%	0.118	27%
4,4'-Methylenedianiline	0.054	0.026	0.022	0.066	0.106	0.115	0.065	60%	0.067	65%
Naphthalene	5.563	3.015	3.038	3.027	3.007	2.925	3.429	30%	3.003	1%
Nitrobenzene	5.237	1.706	1.727	1.707	1.776	1.729	2.314	62%	1.729	2%
4-Nitrobiphenyl	0.212	0.212	0.198	0.217	0.231	0.237	0.218	6%	0.219	7%
4-Nitrophenol	0.078	0.099	0.269	0.284	0.288	0.273	0.215	46%	0.243	33%
n-Nitrosodimethylamine	0.109	0.657	0.665	0.653	0.684	0.657	0.571	40%	0.663	2%
n-Nitrosomorpholine	1.379	0.639	0.630	0.632	0.629	0.587	0.749	41%	0.623	3%

Table 5 (continued) **Semi-Volatiles—Coke Oven**

Calibration Data and Response Factors for CAA Screening Analyses

	11/08 GF085	11/24 FF613	11/25 FF630	11/25 FF648	11/26 FF665	11/27 FF682	All Calibrations Mean	All Calibrations % RSD	Instrument "F" Only Mean	Instrument "F" Only % RSD
Pentachloronitrobenzene	0.058	0.044	0.040	0.046	0.049	0.049	0.048	13%	0.045	8%
Pentachlorophenol	0.107	0.072	0.060	0.075	0.079	0.082	0.079	20%	0.074	11%
Phenol	3.352	1.810	1.796	1.766	1.739	1.710	2.029	32%	1.764	2%
1,4-Phenylenediamine	1.815	0.323	0.207	0.505	0.696	0.718	0.711	81%	0.490	46%
Phthalic Anhydride	0.049	0.025	0.015	0.000	0.000	0.000	0.015	133%	0.008	144%
2,4-Toluenediamine	0.066	0.020	0.000	0.025	0.047	0.034	0.032	71%	0.025	69%
o-Toluidine	2.949	0.861	0.890	1.115	1.381	1.388	1.431	54%	1.127	23%
1,2,4-Trichlorobenzene	1.243	0.914	0.925	0.935	0.932	0.923	0.979	13%	0.926	1%
2,4,5-Trichlorophenol	0.186	0.140	0.119	0.125	0.130	0.126	0.138	18%	0.128	6%
2,4,6-Trichlorophenol	0.196	0.133	0.119	0.125	0.116	0.113	0.134	24%	0.121	7%
Trifluralin	0.071	0.064	0.058	0.058	0.056	0.059	0.061	9%	0.059	5%
Other Compounds of Interest										
Butylbenzylphthalate	0.274	0.456	0.448	0.450	0.478	0.440	0.424	18%	0.454	3%
Chrysene	1.083	0.726	0.704	0.705	0.774	0.784	0.796	18%	0.739	5%
p-Cymene	2.883	1.883	1.834	1.784	1.764	1.741	1.982	22%	1.801	3%
2,4-Dichlorophenol	0.170	0.202	0.123	0.117	0.170	0.113	0.149	24%	0.145	27%
2,3-Dichlorophenol	0.203	0.101	0.089	0.085	0.094	0.086	0.110	42%	0.091	7%
2,6-Dichlorophenol	0.134	0.161	0.136	0.138	0.134	0.123	0.138	9%	0.139	10%
3,5-Dichlorophenol	0.185	0.170	0.145	0.149	0.144	0.139	0.155	12%	0.149	8%
3,4-Dichlorophenol	0.158	0.410	0.367	0.365	0.355	0.332	0.331	27%	0.366	8%
Pentamethylbenzene	2.819	1.745	1.765	1.723	1.692	1.691	1.906	24%	1.724	2%
α-Pinene	1.763	1.005	1.029	1.030	1.015	0.990	1.138	27%	1.014	2%
β-Pinene	4.942	1.368	1.272	1.265	1.182	1.288	1.886	79%	1.275	5%
Pyrene	0.934	0.688	0.685	0.713	0.799	0.769	0.765	12%	0.731	7%
α-Terpineol	1.451	0.619	0.610	0.588	0.592	0.582	0.740	47%	0.598	3%
1,2,4-Trimethylbenzene	2.745	1.690	1.630	1.589	1.604	1.541	1.800	26%	1.611	3%

Table 6A
Semi-Volatiles—Coke Oven
Lab Extraction Observations—Front Half

Sample ID	Appearance XAD	Rinse	Comments	Extract Color
* SBLK 110591 FH	Clean	NR	--	Clear
SBLK 111291 FH	White	NR	--	Clear
S2-MM5-FBA FH	White	NR	--	Clear
I-1-S2-MM5-1A FH	Gray	NR	--	Brown
I-1-S2-MM5-1B FH	Gray	NR	--	Yellow
* I-2-S2-MM5-2A FH	Light gray	Yellow	--	Brown
I-3-S2-MM5-3A FH	Gray	NR	--	Light yellow
II-1-S2-MM5-1A FH	Gray	NR	--	Light yellow
II-1-S2-MM5-1B FH	Gray; brown spots on other side	NR	--	Light yellow
II-2-S2-MM5-2A FH	Gray	NR	--	Light yellow +
II-2-S2-MM5-2B FH	Gray	NR	--	Light yellow +
II-3-S2-MM5-3B FH	Gray	NR	--	Light yellow +
III-1-S2-MM5-1A FH	Gray	NR	Broken Petri dish	Clear
III-1-S2-MM5-1B FH	Beige; brown spots on other side	NR	Broken Petri dish	Light yellow
III-2-S2-MM5-2A FH	Black and gray	NR	--	Brown
III-2-S2-MM5-2B FH	Black and gray	NR	--	Light yellow +
III-3-S2-MM5-3A FH	Gray	NR	--	Light yellow
IV-1-S2-MM5-1A FH	Beige	NR	--	Yellow
IV-1-S2-MM5-1B FH	Gray and beige	NR	--	Brown
IV-2-S2-MM5-2A FH	Gray	NR	--	Light yellow +
IV-2-S2-MM5-2B FH	Gray-beige; brown spots on one side	NR	--	Yellow
* IV-3-S2-MM5-3A FH	Gray	Yellow	Filter broken at edges	Clear

* Extracted in first set 11/05/91
NR = not recorded
Light yellow+ is darker than light yellow

Table 6B
Semi-Volatiles—Coke Oven
Lab Extraction Observations—Back Half

Sample ID	Appearance XAD	Rinse	Comments	Extract Color
* SBLK 110591 BH	Clean	NR		Clear
SBLK 111491 BH	Clean	NR		Clear
S2-MM5-FBA BH	White	NR		Clear
I-1-S2-MM5-1A BH	Light Yellow; moist; large trap	NR		Yellow
I-1-S2-MM5-1B BH	Clean; moist	NR		Light Yellow
* I-2-S2-MM5-2A BH	Clean	Clear		Light Yellow
I-3-S2-MM5-3A BH	Clean; moist; large trap	NR		Light Cloudy Yellow
II-1-S2-MM5-1A BH	Clean; large trap	NR	XAD difficult to remove from trap	Cloudy Yellow
II-1-S2-MM5-1B BH	Light pink on top; rest clean	NR	XAD difficult to remove from trap	Cloudy Yellow
II-2-S2-MM5-2A BH	Broken end on trap	NR	XAD difficult to remove from trap	Light Cloudy Yellow
II-2-S2-MM5-2B BH	Clean XAD	NR	Dirty Teflon covering end	Light Cloudy Yellow
II-3-S2-MM5-3B BH	Clean XAD	NR		Light Cloudy Yellow
III-1-S2-MMF-1A BH	Yellow XAD; moist; large trap	NR	XAD difficult to remove from trap	Light Peach-Orange
III-1-S2-MM5-1B BH	Off-white; moist	NR	Broken end on trap	Dark Yellow
III-2-S2-MM5-2A BH	Moist	NR		Cloudy Yellow
III-2-S2-MM5-2B BH	Off-white; moist	NR		Cloudy Yellow
III-3-S2-MM5-3A BH	Off-white; moist	NR		Light Cloudy Yellow
IV-1-S2-MM5-1A BH	Moist	NR	No cap on trap	Light Cloudy Yellow
IV-1-S2-MM5-1B BH	Off-white	NR		Light Yellow
IV-2-S2-MM5-2A BH	White; moist	NR		Cloudy Yellow
IV-2-S2-MM5-2B BH	White-yellow; moist	NR		Yellow
* IV-3-S2-MM5-3A BH	Clean	Clear		Yellow

* Extracted in first set 11/05/91
NR = Not Recorded

Table 6C
Semi-Volatiles—Coke Oven
Lab Extraction Observations—Impinger

Sample ID	Appearance	pH	Volume (L)	Extract Color
SBLK 111391 IMP	Clear	7	1.00	Clear
S2-MM5-FBA IMP	Clear	7	0.20	Clear
I-1-S2-MM5-1A IMP	Clear	0	0.49	Clear
I-1-S2-MM5-1B IMP	Clear	0	0.46	Clear
I-2-S2-MM5-2A IMP	Clear	0	0.60	Clear
I-3-S2-MM5-3A IMP	Clear	0	0.53	Clear
II-1-S2-MM5-1A IMP	Clear	0	0.81	Clear
II-1-S2-MM5-1B IMP	Clear	0	0.72	Clear
II-2-S2-MM5-2A IMP	Clear	0	0.68	Clear
II-2-S2-MM5-2B IMP	Clear	0	0.70	Clear
II-3-S2-MM5-3B IMP	Clear	0	0.65	Clear
III-1-S2-MM5-1A IMP	Clear	0	0.46	Clear
III-1-S2-MM5-1B IMP	Clear	0	0.47	Clear
III-2-S2-MM5-2A IMP	Clear	0	0.60	Clear
III-2-S2-MM5-2B IMP	Clear	0	0.61	Clear
III-3-S2-MM5-3A IMP	Clear	0	0.60	Clear
IV-1-S2-MM5-1A IMP	Clear	0	0.43	Clear
IV-1-S2-MM5-1B IMP	Clear	0	0.44	Clear
IV-2-S2-MM5-2A IMP	Clear	1	0.50	Clear
IV-2-S2-MM5-2B IMP	Clear	1	0.50	Clear
IV-3-S2-MM5-3A IMP	Clear	1	0.61	Clear

Blank impinger fractions not analyzed during initial fast turn around analysis.

Table 7
Semi-Volatiles—Coke Oven
Analyte Recoveries—Front Half

				Condition I			
	SBLK 110591 GF076	SBLK 111291 FF600	S2-FBA FF624	1-S2 1A FH FF601	1-S2 1B FH FF602	2-S2 2A FH GF077	3-S2 3A FH FF603
Analytes						Expressed in Micrograms (µg)	
Toluene	32.59	156.26	251.03	139.53	187.59	46.07	189.55
Xylene, Total							
Phenol				Invalid		Invalid	
Cresol, Total						Invalid	
Naphthalene							
Benzo-a-pyrene				Invalid	Invalid	Invalid	
C2 XAD Field Prespikes							
Ethylbenzene-d_{10}							
2-Chlorophenol-d_4				Invalid		Invalid	
Acenaphthene-d_{10}							
Terphenyl-d_{14}							
Benzo-e-pyrene-d_{12}				Invalid	Invalid	Invalid	
C1 Lab Extraction Spikes						Expressed in Percent Recovery	
Toluene-d_8	62%	40%	29%	48%	43%	63%	49%
o-Xylene-d_{10}	76%	55%	38%	55%	61%	70%	65%
Phenol-d_5	65%	56%	36%	0%	62%	0%	64%
o-Cresol-d_7H	62%	52%	32%	28%	49%	0%	57%
Naphthalene-d_8	71%	61%	41%	51%	65%	57%	65%
Benzo-a-pyrene-d_{12}	38%	42%	26%	0%	0%	0%	52%
C3 GC/MS Recovery Spike						Measured Area, Expressed in Arbitrary Units	
1,4-Dichlorobenzene-d_4	117920	191072	275852	184396	220192	139952	211024
Phenanthrene-d_{10}	750400	757056	1192048	840924	931812	978400	895584
Chrysene-d_{12}	1605212	870516	1461004	1125720	1329932	1664404	1230348
Perylene-d_{12}	1034680	772720	1249632	811392	917908	489000	929196

Table 7 (continued) **Semi-Volatiles—Coke Oven**

Analyte Recoveries—Front Half

Page 2

	Condition II					Condition III				
	1-S2 1A FH FF604	1-S2 1B FH FF605	2-S2 2A FH FF606	2-S2 2B FH FF607	3-S2 3B FH FF608	1-S2 1A FH FF609	1-S2 1B FH FF610	2-S2 2A FH FF611	2-S2 2B FH FF618	3-S2 3A FH FF619
Analytes										**Expressed in Microgram (µg)**
Toluene	95.09	74.38	86.32	98.42	195.92	160.25	115.60	94.39	74.31	238.60
Xylene, Total										
Phenol							44.90	Invalid		
Cresol, Total								Invalid		
Naphthalene										
Benzo-a-pyrene									7.50	
C2 XAD Field Prespikes										
Ethylbenzene-d_{10}										
2-Chlorophenol-d_4								Invalid		
Acenaphthene-d_{10}										
Terphenyl-d_{14}										
Benzo-e-pyrene-d_{12}										
C1 Lab Extraction Spikes										**Expressed in Percent Recovery**
Toluene-d_8	39%	41%	57%	61%	39%	50%	30%	42%	37%	36%
o-Xylene-d_{10}	53%	56%	79%	80%	52%	64%	42%	55%	48%	48%
Phenol-d_5	55%	53%	75%	67%	45%	67%	44%	0%	44%	50%
o-Cresol-d_7H	49%	14%	61%	50%	36%	59%	33%	0%	34%	44%
Naphthalene-d_8	55%	57%	78%	80%	51%	64%	42%	51%	48%	50%
Benzo-a-pyrene-d_{12}	48%	42%	52%	48%	31%	54%	36%	1%	37%	47%
C3 GC/MS Recovery Spike										**Measured Area, Expressed in Arbitrary Units**
1,4-Dichlorobenzene-d_4	314528	241012	190840	238208	403340	239168	255936	263936	223680	206288
Phenanthrene-d_{10}	1317224	1055572	829108	1000964	1706996	1021956	1143444	11979881	108408	901792
Chrysene-d_{12}	1876888	1390208	1108260	1420408	2485684	1356068	1516328	15603921	373340	1234796
Perylene-d_{12}	1335948	1018712	836608	866988	1742629	1030608	1232736	13260511	106676	1019684

Table 7 (continued) **Semi-Volatiles—Coke Oven**

Analyte Recoveries—Front Half

	Condition IV						
	1-S2 1A FH FF620	1-S2 1B FH FF621	2-S2 2A FH FF622	2-S2 2B FH FF623	3-S2 3A FH GF078	AVG	%RSD
Analytes						**Expressed in Micrograms (µg)**	
Toluene	106.59	206.48	145.47	149.26	76.34		
Xylene, Total							
Phenol							
Cresol, Total							
Naphthalene							
Benzo-a-pyrene				Invalid			
C2 XAD Field Prespikes							
Ethylbenzene-d_{10}							
2-Chlorophenol-d_4							
Acenaphthene-d_{10}							
Terphenyl-d_{14}							
Benzo-e-pyrene-d_{12}				Invalid			
C1 Lab Extraction Spikes						**Expressed in Pecent Recovery**	
Toluene-d_8	44%	45%	38%	28%	59%	44%	24%
o-Xylene-d_{10}	56%	52%	49%	36%	73%	57%	22%
Phenol-d_5	26%	10%	33%	4%	60%	42%	59%
o-Cresol-d_7H	7%	15%	20%	8%	59%	35%	60%
Naphthalene-d_8	49%	45%	50%	36%	69%	56%	21%
Benzo-a-pyrene-d_{12}	4%	2%	25%	0%	45%	29%	73%
C3 GC/MS Recovery Spike						**Measured Area, Expressed in Arbitrary Units**	
1,4-Dichlorobenzene-d_4	238072	235168	251892	271168	115200	228584	28%
Phenanthrene-d_{10}	1184168	1042924	1103604	1132108	729648	1037369	21%
Chrysene-d_{12}	1466824	1369596	1482672	1557556	1504208	1454107	21%
Perylene-d_{12}	1138180	1128128	1208704	1223396	1131384	1070498	24%

Table 8
Semi-Volatiles—Coke Oven
Analyte Recoveries—Back Half

				Condition I			
	SBLK 110591 GF075	SBLK 111491 FF652	S2-FBA FF680	1-S2 1A BH FF657	1-S2 1B BH FF658	2-S2 2A BH GF079	3-S2 3A BH FF659
Analytes							**Expressed in Micrograms (μg)**
Toluene	66.69	1439.72	224.49	113.44	168.28	118.03	84.80
Xylene, Total							
Phenol				5.83			8.50
Cresol, Total				Invalid			
Naphthalene					26.73		5.27
Benzo-a-pyrene							
C2 XAD Field Prespikes							
Ethylbenzene-d_{10}		126%	132%	118%	126%	111%	120%
2-Chlorophenol-d_4		104%	121%	112%	106%	86%	110%
Acenaphthene-d_{10}		121%	123%	105%	115%	77%	122%
Terphenyl-d_{14}		71%	64%	69%	65%	76%	68%
Benzo-e-pyrene-d_{12}		111%	111%	192%	116%	97%	112%
C1 Lab Extraction Spikes							**Expressed in Percent Recovery**
Toluene-d_8	60%	50%	43%	57%	44%	70%	53%
o-Xylene-d_{10}	76%	63%	56%	66%	56%	88%	60%
Phenol-d_5	67%	63%	43%	51%	56%	87%	57%
o-Cresol-d_7H	67%	58%	36%	0%	50%	88%	51%
Naphthalene-d_8	78%	59%	54%	70%	60%	89%	60%
Benzo-a-pyrene-d_{12}	52%	70%	52%	24%	51%	72%	63%
C3 GC/MS Recovery Spike							**Measured Area, Expressed in Arbitrary Units**
1,4-Dichlorobenzene-d_4	121248	128512	142960	60444	109508	98024	134448
Phenanthrene-d_{10}	728352	614312	684688	257000	482904	604268	606624
Chrysene-d_{12}	1526008	661600	809420	250508	538484	1326660	673344
Perylene-d_{12}	996716	530268	635044	138296	304004	1027628	471488

Table 8 (continued) **Semi-Volatiles—Coke Oven**

Analyte Recoveries—Back Half

Page 2

	Condition II					Condition III				
	1-S2 1A BH FF660	1-S2 1B BH FF661	2-S2 2A BH FF662	2-S2 2B BH FF663	3-S2 3B BH FF670	1-S2 1A BH FF671	1-S2 1B BH FF672	2-S2 2A BH FF673	2-S2 2B BH FF674	3-S2 3A BH FF675
Analytes										**Expressed in Micrograms (µg)**
Toluene	130.70	146.23	281.28	107.88	129.20	109.92	150.87	99.38	196.85	169.19
Xylene, Total										
Phenol		108.05	5.85				Invalid		11.58	
Cresol, Total										
Naphthalene		33.37	4.91		10.93		25.77		16.98	
Benzo-a-pyrene										
C2 XAD Field Prespikes										
Ethylbenzene-d_{10}	118%	128%	125%	119%	118%	123%	120%	117%	132%	122%
2-Chlorophenol-d_4	109%	113%	107%	109%	111%	111%	Invalid	103%	123%	109%
Acenaphthene-d_{10}	121%	123%	120%	114%	118%	120%	0%	111%	124%	115%
Terphenyl-d_{14}	70%	61%	123%	61%	116%	100%	82%	74%	104%	71%
Benzo-e-pyrene-d_{12}	116%	124%	116%	109%	114%	114%	0%	105%	191%	117%
C1 Lab Extraction Spikes										**Expressed in Percent Recovery**
Toluene-d_8	49%	38%	84%	48%	75%	66%	60%	53%	64%	49%
o-Xylene-d_{10}	54%	42%	99%	54%	88%	76%	68%	66%	78%	61%
Phenol-d_5	51%	43%	95%	49%	81%	73%	0%	59%	64%	55%
o-Cresol-d_7H	44%	37%	90%	46%	75%	65%	31%	56%	19%	51%
Naphthalene-d_8	53%	42%	92%	57%	87%	73%	68%	64%	73%	59%
Benzo-a-pyrene-d_{12}	51%	47%	106%	59%	107%	91%	2%	68%	53%	63%
C3 GC/MS Recovery Spike										**Measured Area, Expressed in Arbitrary Units**
1,4-Dichlorobenzene-d_4	126524	131960	131712	156844	95312	116096	131648	129232	108672	113392
Phenanthrene-d_{10}	564260	630240	639796	682932	444832	564096	640144	602484	537920	556556
Chrysene-d_{12}	566020	647480	712936	805200	560060	723832	797168	762844	668500	700380
Perylene-d_{12}	344496	423600	420048	575160	392664	442512	538308	596300	416904	455308

Table 8 (continued)

Semi-Volatiles—Coke Oven

Analyte Recoveries—Back Half

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	Condition IV						
	1-S2 1A BH FF676	1-S2 1B BH FF677	2-S2 2A BH FF678	2-S2 2B BH FF679	3-S2 3A BH GF082	AVG	%RSD
Analytes						**Expressed in Micrograms (µg)**	
Toluene	236.53	185.16	196.18	234.40	145.72		
Xylene, Total							
Phenol					Invalid		
Cresol, Total					Invalid		
Naphthalene				9.69	1.96		
Benzo-a-pyrene					Invalid		
C2 XAD Field Prespikes							
Ethylbenzene-d_{10}	134%	126%	128%	141%	104%	118%	23%
2-Chlorophenol-d_4	115%	111%	116%	126%	Invalid	96%	42%
Acenaphthene-d_{10}	126%	112%	117%	125%	57%	103%	36%
Terphenyl-d_{14}	65%	71%	72%	71%	69%	74%	32%
Benzo-e-pyrene-d_{12}	121%	114%	128%	144%	Invalid	107%	46%
C1 Lab Extraction Spikes						**Expressed in Percent Recovery**	
Toluene-d_8	42%	46%	46%	43%	67%	55%	22%
o-Xylene-d_{10}	52%	61%	59%	56%	85%	67%	22%
Phenol-d_5	45%	51%	50%	45%	0%	54%	42%
o-Cresol-d_7H	41%	46%	44%	42%	0%	47%	49%
Naphthalene-d_8	51%	63%	57%	56%	63%	65%	20%
Benzo-a-pyrene-d_{12}	52%	62%	56%	54%	Invalid	57%	46%
C3 GC/MS Recovery Spike						**Measured Area, Expressed in Arbitrary Units**	
1,4-Dichlorobenzene-d_4	129552	124992	123760	135392	29800	117274	24%
Phenanthrene-d_{10}	625872	588400	590732	645388	259856	570530	21%
Chrysene-d_{12}	801100	769876	772968	848460	464516	744880	35%
Perylene-d_{12}	576720	522208	457724	573756	0	492689	45%

Table 9
Semi-Volatiles—Coke Oven
Analyte Recoveries—Impinger

	SBLK 111391 FF617	S2-FBA FF656	Condition I 1-S2 1A IMP FF625	1-S2 1B IMP FF626	2-S2 2A IMP FF627	3-S2 3A IMP FF628
Analytes						**Expressed in Micrograms (µg)**
Toluene	97.70	138.45	156.48	101.46	94.23	64.74
Xylene, Total						
Phenol						
Cresol, Total						
Naphthalene						
Benzo-a-pyrene	9.34					
C2 XAD Field Prespikes						
Ethylbenzene-d_{10}						
2-Chlorophenol-d_4						
Acenaphthene-d_{10}	13%					
Terphenyl-d_{14}	10%					
Benzo-e-pyrene-d_{12}						
C1 Lab Extraction Spikes						**Expressed in Percent Recovery**
Toluene-d_8	50%	51%	40%	32%	29%	33%
o-Xylene-d_{10}	58%	60%	46%	37%	35%	38%
Phenol-d_5	33%	55%	34%	28%	29%	28%
o-Cresol-d_7H	57%	49%	46%	40%	42%	39%
Naphthalene-d_8	63%	59%	49%	41%	46%	43%
Benzo-a-pyrene-d_{12}	77%	62%	37%	21%	32%	26%
C3 GC/MS Recovery Spike						**Measured Area, Expressed in Arbitrary Units**
1,4-Dichlorobenzene-d_4	164368	147648	323440	211768	314400	315264
Phenanthrene-d_{10}	748260	682792	1507648	1065444	1419552	1454144
Chrysene-d_{12}	914596	691372	1710228	1070676	1589128	1769220
Perylene-d_{12}	764364	595024	1525640	940572	1469264	1372772

Table 9 (continued) **Semi-Volatiles—Coke Oven**

Analyte Recoveries—Impinger

Page 2

	Condition II					Condition III				
	1-S2 1A IMP FF635	1-S2 1B IMP FF636	2-S2 2A IMP FF637	2-S2 2B IMP FF638	3-S2 3B IMP FF639	1-S2 1A IMP FF640	1-S2 1B IMP FF641	2-S2 2A IMP FF642	2-S2 2B IMP FF643	3-S2 3A IMP FF644
Analytes										**Expressed in Micrograms (μg)**
Toluene	135.82	141.90	961.58	252.00	105.76	156.65	371.33	219.88	286.82	251.14
Xylene, Total										
Phenol		196.07					177.32			
Cresol, Total										
Naphthalene										
Benzo-a-pyrene										
C2 XAD Field Prespikes										
Ethylbenzene-d_{10}										
2-Chlorophenol-d_4										
Acenaphthene-d_{10}										
Terphenyl-d_{14}										
Benzo-e-pyrene-d_{12}										
C1 Lab Extraction Spikes										**Expressed in Percent Recovery**
Toluene-d_8	24%	39%	11%	28%	39%	50%	44%	50%	27%	19%
o-Xylene-d_{10}	29%	44%	13%	36%	47%	63%	51%	60%	33%	22%
Phenol-d_5	22%	35%	14%	25%	28%	50%	43%	40%	27%	13%
o-Cresol-d_7H	36%	53%	19%	38%	44%	66%	53%	60%	36%	20%
Naphthalene-d_8	40%	61%	21%	47%	55%	75%	63%	68%	41%	27%
Benzo-a-pyrene-d_{12}	49%	52%	13%	27%	32%	56%	32%	52%	25%	7%
C3 GC/MS Recovery Spike										**Measured Area, Expressed in Arbitrary Units**
1,4-Dichlorobenzene-d_4	151160	132704	133388	140732	129328	186528	127596	210928	151260	139152
Phenanthrene-d_{10}	666824	584836	585940	587100	563972	822008	550552	940172	648772	587572
Chrysene-d_{12}	754172	656044	647308	639172	665236	936924	591784	1051776	725704	614256
Perylene-d_{12}	694960	602016	587008	592896	581148	886572	550944	983756	680176	546020

Table 9 (continued) **Semi-Volatiles—Coke Oven**

Analyte Recoveries—Impinger

	Condition IV						
	1-S2 1A BH FF645	1-S2 1B BH FF646	2-S2 2A BH FF653	2-S2 2B BH FF654	3-S2 3A BH FF655	AVG	%RSD
Analytes						**Expressed in Micrograms (µg)**	
Toluene	104.35	263.81	111.03	312.25	363.61		
Xylene, Total							
Phenol							
Cresol, Total							
Naphthalene							
Benzo-a-pyrene							
C2 XAD Field Prespikes							
Ethylbenzene-d_{10}							
2-Chlorophenol-d_4							
Acenaphthene-d_{10}							
Terphenyl-d_{14}							
Benzo-e-pyrene-d_{12}							
C1 Lab Extraction Spikes						**Expressed in Percent Recovery**	
Toluene-d_8	46%	40%	58%	31%	34%	37%	32%
o-Xylene-d_{10}	55%	49%	67%	37%	36%	43%	32%
Phenol-d_5	44%	37%	48%	47%	25%	34%	34%
o-Cresol-d_7H	56%	50%	65%	50%	39%	46%	27%
Naphthalene-d_8	64%	56%	71%	42%	46%	51%	27%
Benzo-a-pyrene-d_{12}	39%	35%	71%	56%	32%	40%	46%
C3 GC/MS Recovery Spike						**Measured Area, Expressed in Arbitrary Units**	
1,4-Dichlorobenzene-d_4	208160	195024	133728	134832	137776	180437	35%
Phenanthrene-d_{10}	895036	840948	603744	598392	604044	807512	38%
Chrysene-d_{12}	1011964	958588	663232	640664	593408	899783	41%
Perylene-d_{12}	957760	865796	526320	504616	478736	795541	40%

Table 10
Semi-Volatiles—Coke Oven
MM5 Screening Results—Front Half Expressed in Micrograms (μg)

	Blanks			Condition I				Condition II				
	SBLK 110591	SBLK 111291	S2-FBA	1-S2 1A FH	1-S2 1B FH	2-S2 2A FH	3-S2 3A FH	1-S2 1A FH	1-S2 1B FH	2-S2 2A FH	2-S2 2B FH	3-S3 3B FH
CAA Compounds	GF076	FF600	FF624	FF601	FF602	GF077	FF603	FF604	FF605	FF606	FF607	FF608
Acetophenone	–	–	–	–	–	–	–	–	–	–	–	–
4-Aminobiphenyl	–	–	–	–	–	–	–	–	–	–	–	–
Aniline	–	–	–	–	–	–	–	–	–	–	–	–
o-Anisidine	–	–	–	–	–	–	–	–	–	–	–	–
Benzidine	–	–	–	–	–	–	–	–	–	–	–	–
α,α,α-Trichlorotoluene	–	–	–	–	–	–	–	–	–	–	–	–
Benzyl Chloride	–	–	–	–	–	–	–	–	–	–	–	–
Biphenyl	–	–	–	–	–	–	–	–	–	–	–	–
bis(2-Ethylhexyl)phthalate	–	–	–	14.4	–	–	–	–	–	–	–	4.4
Catechol	–	–	–	–	–	–	–	–	–	–	–	–
2-Chloroacetophenone	–	–	–	–	–	–	–	–	–	–	–	–
2-Methylphenol	–	–	–	–	–	–	–	–	–	–	–	–
3/4-Methylphenol	–	–	–	–	–	–	–	–	–	–	–	–
Cumene	–	–	–	–	–	–	–	–	–	–	–	–
Dibenzofuran	–	–	–	–	–	–	–	–	–	–	–	–
1,2-Dibromo-3-chloropropane	–	–	–	–	–	–	–	–	–	–	–	–
Di-n-butylphthalate	–	–	–	–	9.7	–	18.4	–	–	10.9	–	–
1,4-Dichlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–
3,3'-Dichlorobenzidine	–	–	–	–	–	–	–	–	–	–	–	
bis-(2-Chloroethyl)ether	–	–	–	–	–	–	–	–	–	–	–	–
N,N-Diethylaniline	–	–	–	–	–	–	–	–	–	–	–	–
N,N-Dimethylaniline	–	–	–	–	–	–	–	–	–	–	–	–
3,3'-Dimethoxybenzidine	–	–	–	–	–	–	–	–	–	–	–	–
Dimethylaminoazobenzene	–	–	–	–	–	–	–	–	–	–	–	–
Dimethylphthalate	–	–	–	–	–	–	–	–	–	–	–	–
4,6-Dinitro-2-methylphenol	–	–	–	–	–	–	–	–	–	–	–	–
2,4-Dinitrophenol	–	–	–	–	–	–	–	–	–	–	–	–
2,4-Dinitrotoluene	–	–	–	–	–	–	–	–	–	–	–	–
3,3'-Dimethylbenzidine	–	–	–	–	–	–	–	–	–	–	–	–
Hexachlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–
Hexachlorocyclopentadiene	–	–	–	–	–	–	–	–	–	–	–	–
Hexachlorobutadiene	–	–	–	–	–	–	–	–	–	–	–	–
Hexachloroethane	–	–	–	–	–	–	–	–	–	–	–	–
Hydroquinone	–	–	–	–	–	–	–	–	–	–	–	–
Isophorone	–	–	–	–	–	–	–	–	–	–	–	–
Methylene bis-chloroaniline	–	–	–	–	–	–	–	–	–	–	–	–
4,4'-Methylenedianiline	–	–	–	–	–	–	–	–	–	–	–	–
Naphthalene	–	–	–	–	–	–	–	–	–	–	–	–
Nitrobenzene	–	–	–	–	–	–	–	–	–	–	–	–
4-Nitrobiphenyl	–	–	–	–	–	–	–	–	–	–	–	–
4-Nitrophenol	–	–	–	–	–	–	–	–	–	–	–	–
n-Nitrosodimethylamine	–	–	–	–	–	–	–	–	–	–	–	–
n-Nitrosomorpholine	–	–	–	–	–	–	–	–	–	–	–	–
Pentachloronitrobenzene	–	–	–	–	–	–	–	–	–	–	–	–
Pentachlorophenol	–	–	–	–	–	–	–	–	–	–	–	–
Phenol	–	–	–	–	–	–	–	–	–	–	–	–
1,4-Phenylenediamine	–	–	–	–	–	–	–	–	–	–	–	–
Phthalic anhydride	–	–	–	–	–	176.9	–	–	–	–	–	–

Table 10 (continued) **Semi-Volatiles—Coke Oven**

MM5 Screening Results—Front Half Expressed in Micrograms (μg)

Page 2

	Blanks			Condition I				Condition II				
	SBLK 110591 GF076	SBLK 111291 FF600	S2-FBA FF624	1-S2 1A FH FF601	1-S2 1B FH FF602	2-S2 2A FH GF077	3-S2 3A FH FF603	1-S2 1A FH FF604	1-S2 1B FH FF605	2-S2 2A FH FF606	2-S2 2B FH FF607	3-S3 3B FH FF608
CAA Compounds												
2,4-Toluenediamine	–	–	–	–	–	–	–	–	–	–	–	–
o-Toluidine	–	–	–	–	–	–	–	–	–	–	–	–
1,2,4-Trichlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–
2,4,5-Trichlorophenol	–	–	–	–	–	–	–	–	–	–	–	–
2,4,6-Trichlorophenol	–	–	–	–	–	–	–	–	–	–	–	–
Trifluralin	–	–	–	–	–	–	–	–	–	–	–	–
Other Compounds of Interest												
Butylbenzylphthalate	–	–	–	–	–	–	–	–	–	–	–	–
Chrysene	–	–	–	–	–	–	–	–	–	–	–	–
p-Cymene	–	–	–	–	–	–	–	–	–	–	–	–
2,4-Dichlorophenol	–	–	–	–	–	–	–	–	–	–	–	–
2,3-Dichlorophenol	–	–	–	–	–	–	–	–	–	–	–	–
2,6-Dichlorophenol	–	–	–	–	–	–	–	–	–	–	–	–
3,5-Dichlorophenol	–	–	–	–	–	–	–	–	–	–	–	–
3,4-Dichlorophenol	–	–	–	–	–	–	–	–	–	–	–	–
Pentamethylbenzene	–	–	–	–	–	–	–	–	–	–	–	–
α-Pinene	–	–	–	–	–	–	–	–	–	–	–	–
β-Pinene	–	–	–	–	–	–	–	–	–	–	–	–
Pyrene	–	–	–	–	–	–	–	–	–	–	–	–
α-Terpineol	–	–	–	–	–	–	–	–	–	–	–	–
1,2,4-Trimethylbenzene	–	–	–	–	–	–	–	–	–	–	–	–

Table 10 (continued) **Semi-Volatiles—Coke Oven**

MM5 Screening Results—Front Half Expressed in Micrograms (µg)

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	Condition III					Condition IV				
	1-S2	1-S2	2-S2	2-S2	3-S2	1-S2	1-S2	2-S2	2-S2	3-S2
	1A FH	1B FH	2A FH	2B FH	3A FH	1A FH	1B FH	2A FH	2B FH	3A FH
CAA Compounds	FF609	FF610	FF611	FF618	FF619	FF620	FF621	FF622	FF623	GP078
Acetophenone	–	–	–	–	–	–	–	–	–	–
4-Aminobiphenyl	–	–	–	–	–	–	–	–	–	–
Aniline	–	–	–	–	–	–	–	–	–	–
o-Anisidine	–	–	–	–	–	–	–	–	–	–
Benzidine	–	–	–	–	–	–	–	–	–	–
α,α,α-Trichlorotoluene	–	–	–	–	–	–	–	–	–	–
Benzyl chloride	–	–	–	–	–	–	–	–	–	–
Biphenyl	–	7.7	–	–	–	–	–	–	–	–
bis(2-Ethylhexyl)phthalate	–	–	–	–	–	–	–	–	–	40.9
Catechol	–	–	–	–	–	–	–	–	–	–
2-Chloroacetophenone	–	–	–	–	–	–	–	–	–	–
2-Methylphenol	–	–	–	–	–	–	–	–	–	–
3/4-Methylphenol	–	–	–	–	–	–	–	–	–	–
Cumene	–	–	–	–	–	–	–	–	–	–
Dibenzofuran	–	–	–	–	–	–	–	–	–	–
1,2-Dibromo-3-chloropropane	–	–	–	–	–	–	–	–	–	–
Di-n-butylphthalate	–	8.6	6.5	–	–	–	–	–	–	–
1,4-Dichlorobenzene	–	–	–	–	–	–	–	–	–	–
3,3'-Dichlorobenzidine	–	–	–	–	–	–	–	–	–	–
bis-(2-Chloroethyl)ether	–	–	–	–	–	–	–	–	–	–
N,N-Diethylaniline	–	–	–	–	–	–	–	–	–	–
N,N-Dimethylaniline	–	–	–	–	–	–	–	–	–	–
3,3'-Dimethoxybenzidine	–	–	–	–	–	–	–	–	–	–
Dimethylaminoazobenzene	–	–	–	–	–	–	–	–	–	–
Dimethylphthalate	–	–	–	–	–	–	–	–	–	–
4,6-Dinitro-2-methylphenol	–	–	–	–	–	–	–	–	–	–
2,4-Dinitrophenol	–	–	–	–	–	–	–	–	–	–
2,4-Dinitrotoluene	–	–	–	–	–	–	–	–	–	–
3,3'-Dimethylbenzidine	–	–	–	–	–	–	–	–	–	–
Hexachlorobenzene	–	–	–	–	–	–	–	–	–	–
Hexachlorocyclopentadiene	–	–	–	–	–	–	–	–	–	–
Hexachlorobutadiene	–	–	–	–	–	–	–	–	–	–
Hexachloroethane	–	–	–	–	–	–	–	–	–	–
Hydroquinone	–	–	–	–	–	–	–	–	–	–
Isophorone	–	–	–	–	–	–	–	–	–	–
Methylene bis-chloroaniline	–	–	–	–	–	–	–	–	–	–
4,4'-Methylenedianiline	–	–	–	–	–	–	–	–	–	–
Naphthalene	–	–	–	–	–	–	–	–	–	–
Nitrobenzene	–	–	–	–	–	–	–	–	–	–
4-Nitrobiphenyl	–	–	–	–	–	–	–	–	–	–
4-Nitrophenol	–	–	–	–	–	–	–	–	–	–
n-Nitrosodimethylamine	–	–	–	–	–	–	–	–	–	–
n-Nitrosomorpholine	–	–	–	–	–	–	–	–	–	–
Pentachloronitrobenzene	–	–	–	–	–	–	–	–	–	–
Pentachlorophenol	–	–	–	–	–	–	–	–	–	–
Phenol	–	21.8	–	–	–	–	–	–	–	–
1,4-Phenylenediamine	–	–	–	–	–	–	–	–	–	–
Phthalic anhydride	–	–	–	–	–	–	–	–	–	–

Table 10 (continued) **Semi-Volatiles—Coke Oven**

MM5 Screening Results—Front Half Expressed in Micrograms (µg)

Page 4

	Condition III					Condition IV				
	1-S2 1A FH FF609	1-S2 1B FH FF610	2-S2 2A FH FF611	2-S2 2B FH FF618	3-S2 3A FH FF619	1-S2 1A FH FF620	1-S2 1B FH FF621	2-S2 2A FH FF622	2-S2 2B FH FF623	3-S2 3A FH GF078
CAA Compounds										
2,4-Toluenediamine	–	–	–	–	–	–	–	–	–	–
o-Toluidine	–	–	–	–	–	–	–	–	–	–
1,2,4-Trichlorobenzene	–	–	–	–	–	–	–	–	–	–
2,4,5-Trichlorophenol	–	–	–	–	–	–	–	–	–	–
2,4,6-Trichlorophenol	–	–	–	–	–	–	–	–	–	–
Trifluralin	–	–	–	–	–	–	–	–	–	–
Other Compounds of Interest										
Butylbenzylphthalate	–	–	–	–	14.9	–	–	–	–	–
Chrysene	–	–	–	–	–	–	–	–	–	–
p-Cymene	–	–	–	–	–	–	–	–	–	–
2,4-Dichlorophenol	–	–	–	–	–	–	–	–	–	–
2,3-Dichlorophenol	–	–	–	–	–	–	–	–	–	–
2,6-Dichlorophenol	–	–	–	–	–	–	–	–	–	–
3,5-Dichlorophenol	–	–	–	–	–	–	–	–	–	–
3,4-Dichlorophenol	–	–	–	–	–	–	–	–	–	–
Pentamethylbenzene	–	–	–	–	–	–	–	–	–	–
α-Pinene	–	–	–	–	–	–	–	–	–	–
β-Pinene	–	–	–	–	–	–	–	–	–	–
Pyrene	–	–	–	–	–	–	–	–	–	–
α-Terpineol	–	–	–	–	–	–	–	–	–	–
1,2,4-Trimethylbenzene	–	–	–	–	–	–	–	–	–	–

Table 11
Semi-Volatiles—Coke Oven
MM5 Screening Results—Back Half Expressed in Micrograms (μg)

	Blanks			Condition I				Condition II				
	SBLK 110591	SBLK 111291	S2-FBA	1-S2 1A BH	1-S2 1B BH	2-S2 2A BH	3-S2 3A BH	1-S2 1A BH	1-S2 1B BH	2-S2 2A BH	2-S2 2B BH	3-S3 3B BH
CAA Compounds	GF075	FF652	FF680	FF657	FF658	GF079	FF659	FF660	FF661	FF662	FF663	FF670
Acetophenone	–	–	–	–	–	–	–	–	15.4	12.7	–	–
4-Aminobiphenyl	–	–	–	–	–	–	–	–	–	–	–	–
Aniline	–	–	–	–	–	–	–	–	–	–	–	–
o-Anisidine	–	–	–	–	–	–	–	–	–	–	–	–
Benzidine	–	–	–	–	–	–	–	–	–	–	–	–
α,α,α-Trichlorotoluene	–	–	–	–	–	–	–	–	–	–	–	–
Benzyl chloride	–	–	–	–	–	–	–	–	–	–	–	–
Biphenyl	–	–	–	–	–	–	16.3	–	–	–	–	–
bis(2-Ethylhexyl)phthalate	3.4	–	–	–	–	–	49.0	–	97.3	13.7	–	–
Catechol	–	–	–	–	–	–	–	–	–	–	–	–
2-Chloroacetophenone	30.1	66.5	67.9	–	–	–	–	–	–	–	–	–
2-Methylphenol	–	–	–	–	–	–	–	–	–	–	–	–
3/4-Methylphenol	–	–	–	–	–	–	–	–	–	–	–	–
Cumene	–	–	–	–	–	–	–	–	–	–	–	–
Dibenzofuran	–	–	–	–	–	–	–	–	–	–	–	–
1,2-Dibromo-3-chloropropane	–	–	–	–	–	–	–	–	–	–	–	–
Di-n-butylphthalate	6.0	–	–	–	–	21.9	–	22.9	–	37.8	–	–
1,4-Dichlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–
3,3'-Dichlorobenzidine	–	–	–	–	–	–	–	–	–	–	–	–
bis-(2-Chloroethyl)ether	–	–	–	–	–	–	–	–	–	–	–	–
N,N-Diethylaniline	–	–	–	–	–	–	–	–	–	–	–	–
N,N-Dimethylaniline	–	–	–	–	–	–	–	–	–	–	–	–
3,3'-Dimethoxybenzidine	–	–	–	–	–	–	–	–	–	–	–	–
Dimethylaminoazobenzene	–	–	–	–	–	–	–	–	–	–	–	–
Dimethylphthalate	–	–	–	–	–	–	–	–	–	–	–	–
4,6-Dinitro-2-methylphenol	–	–	–	–	–	–	–	–	–	–	–	–
2,4-Dinitrophenol	–	–	–	–	–	–	–	–	–	–	–	–
2,4-Dinitrotoluene	–	–	–	–	–	–	–	–	–	–	–	–
3,3'-Dimethylbenzidine	–	–	–	–	–	–	–	–	–	–	–	–
Hexachlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–
Hexachlorocyclopentadiene	–	–	–	–	–	–	–	–	–	–	–	–
Hexachlorobutadiene	–	–	–	–	–	–	–	–	–	–	–	–
Hexachloroethane	–	–	–	–	–	–	–	–	–	–	–	–
Hydroquinone	–	–	–	–	–	–	–	–	–	–	–	–
Isophorone	–	–	–	–	–	–	–	–	–	–	–	–
Methylene bis-chloroaniline	–	–	–	–	–	–	–	–	–	–	–	–
4,4'-Methylenedianiline	–	–	–	–	–	–	–	–	–	–	–	–
Naphthalene	–	–	–	–	22.4	–	4.5	–	21.2	6.9	–	–
Nitrobenzene	–	–	–	–	–	–	–	–	–	–	–	–
4-Nitrobiphenyl	–	–	–	–	–	–	–	–	–	–	–	–
4-Nitrophenol	–	–	–	–	–	–	–	–	–	–	–	–
n-Nitrosodimethylamine	–	–	–	–	–	–	–	–	–	–	–	–
n-Nitrosomorpholine	–	–	–	–	–	–	–	–	–	–	–	–
Pentachloronitrobenzene	–	–	–	–	–	–	–	–	–	–	–	–
Pentachlorophenol	–	–	–	–	–	–	–	–	–	–	–	–
Phenol	–	–	–	–	–	–	5.9	–	55.9	6.7	–	–
1,4-Phenylenediamine	–	–	–	–	–	–	–	–	–	–	–	–
Phthalic anhydride	–	–	–	–	–	–	–	–	–	–	–	–

Table 11 (continued) **Semi-Volatiles—Coke Oven**

MM5 Screening Results—Back Half Expressed in Micrograms (μg)

Page 2

	Blanks			Condition I				Condition II				
	SBLK 110591	SBLK 111291	S2-FBA	1-S2 1A FH	1-S2 1B FH	2-S2 2A FH	3-S2 3A FH	1-S2 1A BH	1-S2 1B BH	2-S2 2A BH	2-S2 2B BH	3-S3 3B BH
CAA Compounds	GF075	FF652	FF680	FF657	FF658	GF079	FF659	FF660	FF661	FF662	FF663	FF670
2,4-Toluenediamine	–	–	–	–	–	–	–	–	–	–	–	–
o-Toluidine	–	–	–	–	–	–	–	–	–	–	–	–
1,2,4-Trichlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–
2,4,5-Trichlorophenol	–	–	–	–	–	–	–	–	–	–	–	–
2,4,6-Trichlorophenol	–	–	–	–	–	–	–	–	–	–	–	–
Trifluralin	–	–	–	–	–	–	–	–	–	–	–	–
Other Compounds of Interest												
Butylbenzylphthalate	–	–	–	–	–	–	–	–	–	–	–	–
Chrysene	–	–	–	–	–	–	–	–	–	–	–	–
p-Cymene	–	–	–	–	–	–	–	–	–	–	–	–
2,4-Dichlorophenol	–	–	–	–	–	–	–	–	–	–	–	–
2,3-Dichlorophenol	–	–	–	–	–	–	–	–	–	–	–	–
2,6-Dichlorophenol	–	–	–	–	–	–	–	–	–	–	–	–
3,5-Dichlorophenol	–	–	–	–	–	–	–	–	–	–	–	–
3,4-Dichlorophenol	–	–	–	–	–	–	–	–	–	–	–	–
Pentamethylbenzene	–	–	–	–	–	–	–	–	–	–	–	–
α-Pinene	–	–	–	–	–	–	–	–	–	–	–	–
β-Pinene	–	–	–	–	–	–	–	–	–	–	–	–
Pyrene	–	–	–	–	–	–	–	–	–	–	–	–
α-Terpineol	–	–	–	–	–	–	–	–	–	–	–	–
1,2,4-Trimethylbenzene	–	–	–	–	–	–	–	–	–	–	–	–

Table 11 (continued) **Semi-Volatiles—Coke Oven**

MM5 Screening Results—Back Half Expressed in Micrograms (µg)

Page 3

	Condition III					Condition IV				
	1-S2 1A BH	1-S2 1B BH	2-S2 2A BH	2-S2 2B BH	3-S2 3A BH	1-S2 1A BH	1-S2 1B BH	2-S2 2A BH	2-S2 2B BH	3-S2 3A BH
CAA Compounds	FF671	FF672	FF673	FF674	FF675	FF676	FF677	FF678	FF679	GF082
Acetophenone	–	11.2	–	–	–	–	–	–	–	–
4-Aminobiphenyl	–	–	–	–	–	–	–	–	–	–
Aniline	–	–	–	–	–	–	–	–	–	–
o-Anisidine	–	–	–	–	–	–	–	–	–	–
Benzidine	–	–	–	–	–	–	–	–	–	–
α,α,α-Trichlorotoluene	–	–	–	–	–	–	–	–	–	–
Benzyl chloride	–	–	–	–	–	–	–	–	–	–
Biphenyl	–	–	–	–	–	–	–	–	–	–
bis(2-Ethylhexyl)phthalate	71.3	52.9	–	14.8	–	–	–	–	–	–
Catechol	–	–	–	–	–	–	–	–	–	–
2-Chloroacetophenone	–	–	–	–	–	–	–	–	–	–
2-Methylphenol	–	–	–	–	–	–	–	–	–	–
3/4-Methylphenol	–	–	–	–	–	–	–	–	–	–
Cumene	–	–	–	–	–	–	–	–	–	–
Dibenzofuran	–	–	–	–	–	–	–	–	–	–
1,2-Dibromo-3-chloropropane	–	–	–	–	–	–	–	–	–	–
Di-n-butylphthalate	–	41.0	15.1	–	–	–	–	–	–	8.3
1,4-Dichlorobenzene	–	–	–	–	–	–	–	–	–	–
3,3'-Dichlorobenzidine	–	–	–	–	–	–	–	–	–	–
bis-(2-Chloroethyl)ether	–	–	–	–	–	–	–	–	–	–
N,N-Diethylaniline	–	–	–	–	–	–	–	–	–	–
N,N-Dimethylaniline	–	–	–	–	–	–	–	–	–	–
3,3'-Dimethoxybenzidine	–	–	–	–	–	–	–	–	–	–
Dimethylaminoazobenzene	–	–	–	–	–	–	–	–	–	–
Dimethylphthalate	–	–	–	–	–	–	–	–	–	–
4,6-Dinitro-2-methylphenol	–	–	–	–	–	–	–	–	–	–
2,4-Dinitrophenol	–	–	–	–	–	–	–	–	–	–
2,4-Dinitrotoluene	–	–	–	–	–	–	–	–	–	–
3,3'-Dimethylbenzidine	–	–	–	–	–	–	–	–	–	–
Hexachlorobenzene	–	–	–	–	–	–	–	–	–	–
Hexachlorocyclopentadiene	–	–	–	–	–	–	–	–	–	–
Hexachlorobutadiene	–	–	–	–	–	–	–	–	–	–
Hexachloroethane	–	–	–	–	–	–	–	–	–	–
Hydroquinone	–	–	–	–	–	–	–	–	–	–
Isophorone	–	–	–	–	–	–	–	–	–	–
Methylene bis-chloroaniline	–	–	–	–	–	–	–	–	–	–
4,4'-Methylenedianiline	–	–	–	–	–	–	–	–	–	–
Naphthalene	–	26.4	–	–	–	–	–	–	–	–
Nitrobenzene	–	–	–	–	–	–	–	–	–	–
4-Nitrobiphenyl	–	–	–	–	–	–	–	–	–	–
4-Nitrophenol	–	–	–	–	–	–	–	–	–	–
n-Nitrosodimethylamine	–	–	–	–	–	–	–	–	–	–
n-Nitrosomorpholine	–	–	–	–	–	–	–	–	–	–
Pentachloronitrobenzene	–	–	–	–	–	–	–	–	–	–
Pentachlorophenol	–	–	–	–	–	–	–	–	–	–
Phenol	–	–	–	–	–	–	–	–	–	–
1,4-Phenylenediamine	–	–	–	–	–	–	–	–	–	–
Phthalic anhydride	–	–	–	–	–	–	–	–	–	–

Table 11 (continued) **Semi-Volatiles—Coke Oven**

MM5 Screening Results—Back Half Expressed in Micrograms (µg)

Page 4

	Condition III					Condition IV				
	1-S2 1A BH FF671	1-S2 1B BH FF672	2-S2 2A BH FF673	2-S2 2B BH FF674	3-S2 3A BH FF675	1-S2 1A BH FF676	1-S2 1B BH FF677	2-S2 2A BH FF678	2-S2 2B BH FF679	3-S2 3A BH GP082
CAA Compounds										
2,4-Toluenediamine	–	–	–	–	–	–	–	–	–	–
o-Toluidine	–	–	–	–	–	–	–	–	–	–
1,2,4-Trichlorobenzene	–	–	–	–	–	–	–	–	–	–
2,4,5-Trichlorophenol	–	–	–	–	–	–	–	–	–	–
2,4,6-Trichlorophenol	–	–	–	–	–	–	–	–	–	–
Trifluralin	–	–	–	–	–	–	–	–	–	–
Other Compounds of Interest										
Butylbenzylphthalate	–	–	–	–	–	–	–	–	–	–
Chrysene	–	–	–	–	–	–	–	–	–	–
p-Cymene	–	–	–	–	–	–	–	–	–	–
2,4-Dichlorophenol	–	–	–	–	–	–	–	–	–	–
2,3-Dichlorophenol	–	–	–	–	–	–	–	–	–	–
2,6-Dichlorophenol	–	–	–	–	–	–	–	–	–	–
3,5-Dichlorophenol	–	–	–	–	–	–	–	–	–	–
3,4-Dichlorophenol	–	–	–	–	–	–	–	–	–	–
Pentamethylbenzene	–	–	–	–	–	–	–	–	–	–
α-Pinene	–	–	–	–	–	–	–	–	–	–
β-Pinene	–	–	–	–	–	–	–	–	–	–
Pyrene	–	–	–	–	–	–	–	–	–	–
α-Terpineol	–	–	–	–	–	–	–	–	–	–
1,2,4-Trimethylbenzene	–	–	–	–	–	–	–	–	–	–

Table 12
Semi-Volatiles—Coke Oven
MM5 Screening Results—Impinger Expressed in Micrograms (μg)

	Blanks		Condition I				Condition II				
	SBLK 111391	S2-FBA	1-S2 1A IMP	1-S2 1B IMP	2-S2 2A IMP	3-S2 3A IMP	1-S2 1A IMP	1-S2 1B IMP	2-S2 2A IMP	2-S2 2B IMP	3-S3 3B IMP
CAA Compounds	FF617	FF656	FF625	FF626	FF627	FF628	FF635	FF636	FF637	FF638	FF639
Acetophenone	–	–	–	–	–	–	–	–	–	–	–
4-Aminobiphenyl	–	–	–	–	–	–	–	–	–	–	–
Aniline	–	–	–	–	–	–	–	71.4	–	–	–
o-Anisidine	–	–	–	–	–	–	–	–	–	–	–
Benzidine	–	–	–	–	–	–	–	–	–	–	–
α,α,α-Trichlorotoluene	–	–	–	–	–	–	–	–	–	–	–
Benzyl chloride	–	–	–	–	–	–	–	–	–	–	–
Biphenyl	–	–	–	–	–	–	–	–	–	–	–
bis(2-Ethylhexyl)phthalate	–	1260.2	–	–	–	–	–	–	–	–	–
Catechol	–	–	–	–	–	–	–	–	–	–	–
2-Chloroacetophenone	–	–	–	–	–	–	–	–	–	–	–
2-Methylphenol	–	–	–	–	–	–	–	–	–	–	–
3/4-Methylphenol	–	–	–	–	–	–	–	–	–	–	–
Cumene	–	–	–	–	–	–	–	–	–	–	–
Dibenzofuran	–	–	–	–	–	–	–	–	–	–	–
1,2-Dibromo-3-chloropropane	–	–	–	–	–	–	–	–	–	–	–
Di-n-butylphthalate	–	–	–	–	–	–	–	–	–	–	–
1,4-Dichlorobenzene	–	–	–	–	–	–	–	–	–	–	–
3,3'-Dichlorobenzidine	–	–	–	–	–	–	–	–	–	–	–
bis-(2-Chloroethyl)ether	–	–	–	–	–	–	–	–	–	–	–
N,N-Diethylaniline	–	–	–	–	–	–	–	–	–	–	–
N,N-Dimethylaniline	–	–	–	–	–	–	–	–	–	–	–
3,3'-Dimethoxybenzidine	–	–	–	–	–	–	–	–	–	–	–
Dimethylaminoazobenzene	–	–	–	–	–	–	–	–	–	–	–
Dimethylphthalate	–	–	–	–	–	–	–	–	–	–	–
4,6-Dinitro-2-methylphenol	–	–	–	–	–	–	–	–	–	–	–
2,4-Dinitrophenol	–	–	–	–	–	–	–	–	–	–	–
2,4-Dinitrotoluene	–	–	–	–	–	–	–	–	–	–	–
3,3'-Dimethylbenzidine	–	–	–	–	–	–	–	–	–	–	–
Hexachlorobenzene	–	–	–	–	–	–	–	–	–	–	–
Hexachlorocyclopentadiene	–	–	–	–	–	–	–	–	–	–	–
Hexachlorobutadiene	–	–	–	–	–	–	–	–	–	–	–
Hexachloroethane	–	–	–	–	–	–	–	–	–	–	–
Hydroquinone	–	–	–	–	–	–	–	–	–	–	–
Isophorone	–	–	–	–	–	–	–	–	–	–	–
Methylene bis-chloroaniline	–	–	–	–	–	–	–	–	–	–	–
4,4'-Methylenedianiline	–	–	–	–	–	–	–	–	–	–	–
Naphthalene	–	–	–	–	–	–	–	–	–	–	–
Nitrobenzene	–	–	–	–	–	–	–	–	–	–	–
4-Nitrobiphenyl	–	–	–	–	–	–	–	–	–	–	–
4-Nitrophenol	–	–	–	–	–	–	–	–	–	–	–
n-Nitrosodimethylamine	–	–	–	–	–	–	–	–	–	–	–
n-Nitrosomorpholine	–	–	–	–	–	–	–	–	–	–	–
Pentachloronitrobenzene	–	–	–	–	–	–	–	–	–	–	–
Pentachlorophenol	–	–	–	–	–	–	–	–	–	–	–
Phenol	–	–	–	–	–	–	–	80.6	–	–	–
1,4-Phenylenediamine	–	–	–	–	–	–	–	–	–	–	–
Phthalic anhydride	–	–	–	–	–	–	–	–	–	–	–

Table 12 **Semi-Volatiles—Coke Oven**

MM5 Screening Results—Impinger Expressed in Micrograms (μg)

Page 2

	Blanks		Condition I				Condition II				
	SBLK		1-S2	1-S2	2-S2	3-S2	1-S2	1-S2	2-S2	2-S2	3-S3
	111391	S2-FBA	1A IMP	1B IMP	2A IMP	3A IMP	1A IMP	1B IMP	2A IMP	2B IMP	3B IMP
CAA Compounds	FF617	FF656	FF625	FF626	FF627	FF628	FF635	FF636	FF637	FF638	FF639
2,4-Toluenediamine	–	–	–	–	–	–	–	–	–	–	–
o-Toluidine	–	–	–	–	–	–	–	–	–	–	–
1,2,4-Trichlorobenzene	–	–	–	–	–	–	–	–	–	–	–
2,4,5-Trichlorophenol	–	–	–	–	–	–	–	–	–	–	–
2,4,6-Trichlorophenol	–	–	–	–	–	–	–	–	–	–	–
Trifluralin	–	–	–	–	–	–	–	–	–	–	–
Other Compounds of Interest											
Butylbenzylphthalate	–	–	–	–	–	–	–	–	63.1	–	–
Chrysene	–	–	–	–	–	–	–	–	–	–	–
p-Cymene	–	–	–	–	–	–	–	–	–	–	–
2,4-Dichlorophenol	–	–	–	–	–	–	–	–	–	–	–
2,3-Dichlorophenol	–	–	–	–	–	–	–	–	–	–	–
2,6-Dichlorophenol	–	–	–	–	–	–	–	–	–	–	–
3,5-Dichlorophenol	–	–	–	–	–	–	–	–	–	–	–
3,4-Dichlorophenol	–	–	–	–	–	–	–	–	–	–	–
Pentamethylbenzene	–	–	–	–	–	–	–	–	–	–	–
α-Pinene	–	–	–	–	–	–	–	–	–	–	–
β-Pinene	–	–	–	–	–	–	–	–	–	–	–
Pyrene	–	–	–	–	–	–	–	–	–	–	–
α-Terpineol	–	–	–	–	–	–	–	–	–	–	–
1,2,4-Trimethylbenzene	–	–	–	–	–	–	–	–	–	–	–

Table 12 (continued) **Semi-Volatiles—Coke Oven**

MM5 Screening Results—Impinger Expressed in Micrograms (μg)

Page 3

	Condition III					Condition IV				
	1-S2 1A IMP	1-S2 1B IMP	2-S2 2A IMP	2-S2 2B IMP	3-S2 3A IMP	1-S2 1A IMP	1-S2 1B IMP	2-S2 2A IMP	2-S2 2B IMP	3-S2 3A IMP
CAA Compounds	FF640	FF641	FF642	FF643	FF644	FF645	FF646	F653	FF654	FF655
Acetophenone	–	–	–	–	–	–	–	–	–	–
4-Aminobiphenyl	–	–	–	–	–	–	–	–	–	–
Aniline	–	–	–	–	–	–	–	–	–	–
o-Anisidine	–	–	–	–	–	–	–	–	–	–
Benzidine	–	–	–	–	–	–	–	–	–	–
α,α,α-Trichlorotoluene	–	–	–	–	–	–	–	–	–	–
Benzyl chloride	–	–	–	–	–	–	–	–	–	–
Biphenyl	–	–	–	–	–	–	–	–	–	–
bis(2-Ethylhexyl)phthalate	–	–	–	–	–	–	–	–	–	–
Catechol	–	–	–	–	–	–	–	–	–	–
2-Chloroacetophenone	–	–	–	–	–	–	–	–	–	–
2-Methylphenol	–	–	–	–	–	–	–	–	–	–
3/4-Methylphenol	–	–	–	–	–	–	–	–	–	–
Cumene	–	–	–	–	–	–	–	–	–	–
Dibenzofuran	–	–	–	–	–	–	–	–	–	–
1,2-Dibromo-3-chloropropane	–	–	–	–	–	–	–	–	–	–
Di-n-butylphthalate	–	–	–	–	–	–	–	–	–	–
1,4-Dichlorobenzene	–	–	–	–	–	–	–	–	–	–
3,3'-Dichlorobenzidine	–	–	–	–	–	–	–	–	–	–
bis-(2-Chloroethyl)ether	–	–	–	–	–	–	–	–	–	–
N,N-Diethylaniline	–	–	–	–	–	–	–	–	–	–
N,N-Dimethylaniline	–	–	–	–	–	–	–	–	–	–
3,3'-Dimethoxybenzidine	–	–	–	–	–	–	–	–	–	–
Dimethylaminoazobenzene	–	–	–	–	–	–	–	–	–	–
Dimethylphthalate	–	–	–	–	–	–	–	–	–	–
4,6-Dinitro-2-methylphenol	–	–	–	–	–	–	–	–	–	–
2,4-Dinitrophenol	–	–	–	–	–	–	–	–	–	–
2,4-Dinitrotoluene	–	–	–	–	–	–	–	–	–	–
3,3'-Dimethylbenzidine	–	–	–	–	–	–	–	–	–	–
Hexachlorobenzene	–	–	–	–	–	–	–	–	–	–
Hexachlorocyclopentadiene	–	–	–	–	–	–	–	–	–	–
Hexachlorobutadiene	–	–	–	–	–	–	–	–	–	–
Hexachloroethane	–	–	–	–	–	–	–	–	–	–
Hydroquinone	–	–	–	–	–	–	–	–	–	–
Isophorone	–	–	–	–	–	–	–	–	–	–
Methylene bis-chloroaniline	–	–	–	–	–	–	–	–	–	–
4,4'-Methylenedianiline	–	–	–	–	–	–	–	–	–	–
Naphthalene	–	–	–	–	–	–	–	–	–	–
Nitrobenzene	–	–	–	–	–	–	–	–	–	–
4-Nitrobiphenyl	–	–	–	–	–	–	–	–	–	–
4-Nitrophenol	–	–	–	–	–	–	–	–	–	–
n-Nitrosodimethylamine	–	–	–	–	–	–	–	–	–	–
n-Nitrosomorpholine	–	–	–	–	–	–	–	–	–	–
Pentachloronitrobenzene	–	–	–	–	–	–	–	–	–	–
Pentachlorophenol	–	–	–	–	–	–	–	–	–	–
Phenol	–	86.2	–	–	–	–	–	–	–	–
1,4-Phenylenediamine	–	–	–	–	–	–	–	–	–	–
Phthalic anhydride	–	–	–	–	–	–	–	–	–	–

Table 12 (continued) **Semi-Volatiles—Coke Oven**

MM5 Screening Results—Impinger Expressed in Micrograms (µg)

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	Condition III					Condition IV				
	1-S2 1A IMP	1-S2 1B IMP	2-S2 2A IMP	2-S2 2B IMP	3-S2 3A IMP	1-S2 1A IMP	1-S2 1B IMP	2-S2 2A IMP	2-S2 2B IMP	3-S2 3A IMP
CAA Compounds	FF640	FF641	FF642	FF643	FF644	FF645	FF646	F653	FF654	FF655
2,4-Toluenediamine	–	–	–	–	–	–	–	–	–	–
o-Toluidine	–	–	–	–	–	–	–	–	–	–
1,2,4-Trichlorobenzene	–	–	–	–	–	–	–	–	–	–
2,4,5-Trichlorophenol	–	–	–	–	–	–	–	–	–	–
2,4,6-Trichlorophenol	–	–	–	–	–	–	–	–	–	–
Trifluralin	–	–	–	–	–	–	–	–	–	–
Other Compounds of Interest										
Butylbenzylphthalate	–	–	–	–	–	–	–	–	–	–
Chrysene	–	–	–	–	–	–	–	–	–	–
p-Cymene	–	–	–	–	–	–	–	–	–	–
2,4-Dichlorophenol	–	–	–	–	–	–	–	–	–	–
2,3-Dichlorophenol	–	–	–	–	–	–	–	–	–	–
2,6-Dichlorophenol	–	–	–	–	–	–	–	–	–	–
3,5-Dichlorophenol	–	–	–	–	–	–	–	–	–	–
3,4-Dichlorophenol	–	–	–	–	–	–	–	–	–	–
Pentamethylbenzene	–	–	–	–	–	–	–	–	–	–
α-Pinene	–	–	–	–	–	–	–	–	–	–
β-Pinene	–	–	–	–	–	–	–	–	–	–
Pyrene	–	–	–	–	–	–	–	–	–	–
α-Terpineol	–	–	–	–	–	–	–	–	–	–
1,2,4-Trimethylbenzene	–	–	–	–	–	–	–	–	–	–

Table 13
Semi-Volatiles—Coke Oven
Tentatively Identified Compounds for Blanks Expressed in Micrograms (µg)

Front Half

SBLK 110591 FH		SBLK 111291 FH		S2-FBA FH
		FF600		
No TICs		Phthalate	176.2	No TICs
		TOTAL	176.2	

Back Half

SBLK 110591 BH		SBLK 111491 BH		S2-FBA BH
GF075		FF652		
Benzoic Acid Ester	65.9	Phthalate	97.6	No TICs
		Phthalate	78.2	
		Acid Ester	22.1	
TOTAL	65.9	TOTAL	197.9	

Impinger

SBLK 111391		S2-MM5-FBA IMP	
FF617		FF656	
Satrtd Hydrocarbon	52.6	Phthalate	56.8
Satrtd Hydrocarbon	49.2	Phthalate	53.1
Satrtd Hydrocarbon	40.2		
Satrtd Hydrocarbon	27.8		
Satrtd Hydrocarbon	21.0		
TOTAL	190.8	TOTAL	109.9

Table 13 (continued) Semi-Volatiles—Coke Oven

Tentatively Identified Compounds for Condition I Expressed in Micrograms (µg)

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Front Half

1-S2-1A FH		1-S2-1B FH		2-S2-2A FH		3-S2-3A FH	
FF601				GF077		FF603	
Acid Ester	94.1	No TICs		Acid Ester	36.0	Acid Ester	101.3
Acid Ester	92.2			Acid Ester	14.8	Phthalate	40.2
Acid Ester	38.3						
Phthalate	32.7						
TOTAL	257.3			TOTAL	50.8	TOTAL	141.5

Back Half

1-S2-1A BH		1-S2-1B BH		2-S2-2A BH	3-S2-3A BH	
FF657		FF658			FF659	
Benzoic Acid	679.2	Phthalate	179.0	No TICs	Benzoic Acid	1086.8
Phthalate	64.9	Benzoic Acid	602.0		Phthalate	219.0
Benzoic Acid Ester	19.9				Benzene	88.4
					Acid Ester	56.8
					Benzoic Acid Ester	54.1
					Phthalate	27.2
TOTAL	764.0	TOTAL	781.0		TOTAL	1532.2

Impinger

1-S2-1A IMP	1-S2-1B IMP	2-S2-2A IMP	3-S2-3A IMP
No TICs	No TICs	No TICs	No TICs

Table 13 (continued) **Semi-Volatiles—Coke Oven**

Tentatively Identified Compounds for Condition II Expressed in Micrograms (μg)

Front Half

1-S2-1A FH FF604		1-S2-1B FH FF605		2-S2-2A FH FF606		2-S2-2B FH FF607		3-S2-3B FH FF608	
Subst Butane $C_6H_{14}O$	205.6	Phthalate	271.5	Subst Butane $C_6H_{14}O$	1507.7	Subst Butane $C_6H_{14}O$	112.5	Acid Ester	13.9
Alcohol $C_5H_{10}O$	32.5	Acid Ester	42.8	Acid Ester	85.4				
Unknown	21.9			Acid Ester	51.0				
				Phthalate	45.4				
				Acid Ester	22.6				
TOTAL	**259.0**	**TOTAL**	**314.3**	**TOTAL**	**1712.1**	**TOTAL**	**112.5**	**TOTAL**	**13.9**

Back Half

1-S2-1A BH FF660		1-S2-1B BH FF661		2-S2-2A BH FF662		2-S2-2B BH FF663		3-S2-3B BH FF670	
Acid Ester	124.5	Benzoic Acid	380.5	Benzoic Acid	1895.8	Benzoic Acid	798.9	Benzoic Acid	1524.4
Phthalate	91.0	Hydrocarbon $C_5H_6N_2$	41.1	Phthalate	248.6	Phthalate	44.2	Phthalate	87.8
Benzoic Acid	1026.8	Acid Ester	28.4	Acid Ester	175.0	Benzoic Acid Ester	41.7	Benzoic Acid Ester	76.2
Phthalate	15.8	Phthalate	26.2	Benzoic Acid Ester	30.8	Acid Ester	24.7	Acid Ester	65.2
Benzoic Acid Ester	45.5	Benzoic Acid Ester	18.3					Phthalate	56.6
TOTAL	**1303.6**	**TOTAL**	**494.3**	**TOTAL**	**2350.2**	**TOTAL**	**909.5**	**TOTAL**	**1810.2**

Impinger

1-S2-1A IMP		1-S2-1B IMP FF636		2-S2-2A IMP		2-S2-2B IMP		3-S2-3B IMP	
No TICs		Hydrocarbon $C_5H_6N_2$	475.3	No TICs		No TICs		No TICs	
		Hydrocarbon $C_4H_4N_2$	203.0						
		Hydrocarbon $C_6H_8N_2$	103.9						
		TOTAL	**782.2**						

Front Half

1-S2-1A FH		1-S2-1B FH		2-S2-2A FH		2-S2-2B FH		3-S2-3A FH	
FF609		FF610		FF611		FF618		FF619	
Subst Butane $C_8H_{14}O$	532.2	Benzoic Acid	208.4	Phthalate	168.8	Phthalate	153.3	Phthalate	227.8
		Unknown	112.3	Acid Ester	39.4				
		Unknown	98.7	Acid Ester	31.2				
		Unknown	69.6	Acid Ester	17.0				
		Unknown	64.9	Acid Ester	11.5				
		Acid Ester	25.4	Acid Ester	11.4				
		Siloxane	22.5						
		Siloxane	17.9						
		Acid Ester	16.4						
TOTAL	532.2	TOTAL	636.1	TOTAL	279.3	TOTAL	153.3	TOTAL	227.8

Back Half

1-S2-1A BH		1-S2-1B BH		2-S2-2A BH		2-S2-2B BH		3-S2-3A BH	
FF671		FF672		FF673		FF674		FF675	
Benzoic Acid	1550.5	Benzoic Acid	1030.8	Benzoic Acid	1196.8	Benzoic Acid	1372.8	Phthalate	154.8
Benzoic Acid Ester	87.9	Phthalate	755.5	Phthalate	313.9	Benzoic Acid Ester	67.3	Acid Ester	41.4
Acid Ester	86.9	Acid Ester	96.7	Acid Ester	41.9	Phthalate	37.4	Benzoic Acid	982.9
Phthalate	67.2	Acid Ester	91.8	Benzoic Acid Ester	28.0			Benzoic Acid Ester	20.0
Phthalate	44.0	Acid Ester	71.9	Phthalate	21.8				
Substd Hydrocarbon	28.2	Siloxane	70.9						
Benzoic Acid Ester	25.6	Substd Hydrocarbon	45.9						
		Unknown	42.1						
		Phthalate	34.3						
TOTAL	1890.3	TOTAL	2239.9	TOTAL	1602.4	TOTAL	1477.5	TOTAL	1199.1

Impinger

1-S2-1A IMP	1-S2-1B IMP	2-S2-2A IMP	2-S2-2B IMP	3-S2-3A IMP
No TICs	No TICs	No TICs	No TICs	No TICs

Table 13 (continued) **Semi-Volatiles—Coke Oven**

Tentatively Identified Compounds for Condition IV Expressed in Micrograms (µg)

Front Half

1-S2-1A FH		1-S2-1B FH		2-S2-2A FH		2-S2-2B FH		3-S2-3A FH	
FF620		FF621							
Phthalate	326.3	Acid Ester	58.8	No TICs		No TICs		Subst Hydrocarbon	41.3
Substd Hydrocarbon	91.1	Acid Ester	28.4						
Acid Ester	68.0	Acid Ester	27.6						
Acid Ester	33.8	Substd Hydrocarbon	24.3						
Acid Ester	26.4								
Acid Ester	20.6								
TOTAL	**566.2**	**TOTAL**	**139.1**					**TOTAL**	**41.3**

Back Half

1-S2-1A BH		1-S2-1B BH		2-S2-2A BH		2-S2-2B BH		3-S2-3A BH
FF676		FF677		FF678		FF679		
Benzoic Acid	1360.3	Benzoic Acid	949.8	Phthalate	66.7	Siloxane	84.7	No TICs
Phthalate	56.3			Benzoic Acid	1196.2	Phthalate	53.2	
Benzoic Acid Ester	54.4			Benzoic Acid Ester	47.2	Benzoic Acid Ester	45.4	
				Benzoic Acid Ester	27.7	Benzoic Acid Ester	28.5	
TOTAL	**1471**	**TOTAL**	**949.8**	**TOTAL**	**1337.8**	**TOTAL**	**211.8**	

Impinger

1-S2-1A IMP	1-S2-1B IMP	2-S2-2A IMP		2-S2-2B IMP		3-S2-3A IMP	
		FF653		FF654		FF655	
No TICs	No TICs	Phthalate	78.2	Phthalate	57.4	Phthalate	41.2
		TOTAL	**78.2**	**TOTAL**	**57.4**	**TOTAL**	**41.2**

Appendix A

Initial and Continuing

Laboratory Calibration Sheets

for F and G GC/MS Instruments

12-12-91

TRIANGLE LABORATORIES,INC.

11-08-91

COKE ANALYTES

GF070 GF071 GF069 GF072 GF073
INITIAL CALIBRATION 5 POINT

	NAME	REF ID	RF5	RF20	RF50	RF100	RF200	AVG.	%RSD
1	1,4-Dichlorobenzene-d4	1	1.000	1.000	1.000	1.000	1.000		
2	Phenanthrene-d10	2	1.000	1.000	1.000	1.000	1.000		
3	Chrysene-d12	3	1.000	1.000	1.000	1.000	1.000		
4	Perylene-d12	4	1.000	1.000	1.000	1.000	1.000		
5	Toluene-d8	1	8.330	10.032	9.835	10.936	9.113	9.649	10.2%
6	o-Xylene-d10	1	1.186	1.410	1.247	1.513	1.365	1.345	9.7%
7	Phenol-d5	1	2.211	2.711	2.433	2.954	2.928	2.647	12.1%
8	m-Cresol-d7H	1	1.531	1.878	1.666	2.010	1.957	1.809	11.2%
9	Naphthalene-d8	2	.920	1.147	.930	.990	.919	.981	9.9%
10	Benzo(a)pyrene-d12	4	1.168	1.430	1.329	1.560	1.559	1.409	11.8%
11	Ethylbenzene-d10	5	.077	.086	.095	.085	.116	.092	16.1%
12	2-Chlorophenol-d4	7	.459	.494	.608	.485	.562	.522	11.8%
13	Acenaphthene-d10	9	.491	.446	.625	.460	.543	.513	14.2%
14	Terphenyl-d14	3	.505	.575	.706	.595	.686	.613	13.5%
15	Benzo(e)pyrene-d12	10	.240	.303	.464	.372	.428	.361	25.2%
16	Toluene	5	.938	1.018	1.144	.953	1.199	1.050	11.1%
17	Xylene	6	1.950	2.202	2.593	1.960	2.399	2.221	12.6%
18	Phenol	7	1.041	1.034	1.240	.962	1.086	1.072	9.7%
19	Cresol	8	.651	.826	1.075	.907	1.118	.916	20.8%
20	Naphthalene	9	.813	.874	1.007	.821	.996	.902	10.4%
21	Benzo(a)pyrene	10	.978	.827	1.126	.808	.911	.930	13.9%

12-16-91

TRIANGLE LABORATORIES,INC.
FF598
CONTINUING CALIBRATION

11-23-91
COKE ANALYTES

	NAME	REF ID	RF50	RF MEAN	% D	SCAN
1	1,4-Dichlorobenzene-d4	1				549
2	Phenanthrene-d10	2				1201
3	Chrysene-d12	3				1621
4	Perylene-d12	4				1855
5	Toluene-d8	1	2.575	2.609	-1.3%	210
6	o-Xylene-d10	1	1.370	1.382	-.8%	393
7	Phenol-d5	1	2.026	2.011	.7%	505
8	o-Cresol-d7H	1	1.565	1.553	.8%	585
9	Naphthalene-d8	2	1.204	1.307	-7.9%	726
10	Benzo(a)pyrene-d12	4	1.214	1.213	.1%	1842
11	Ethylbenzene-d10	5	.399	.359	11.2%	352
12	2-Chlorophenol-d4	7	.755	.678	11.3%	517
13	Acenaphthene-d10	9	.535	.448	19.5%	982
14	Terphenyl-d14	3	.826	.711	16.1%	1452
15	Benzo(e)pyrene-d12	10	.481	.399	20.6%	1834
16	Toluene	5	1.179	1.035	13.9%	217
17	o-Xylene	6	2.280	1.914	19.1%	402
18	Phenol	7	1.236	1.061	16.5%	507
19	m-/p-Cresol	8	1.113	.936	19.0%	611
20	Naphthalene	9	1.031	.862	19.6%	729
21	Benzo(a)pyrene	10	1.115	.970	15.0%	1846

12-9-91

TRIANGLE LABORATORIES,INC.
FF615
CONTINUING CALIBRATION

11-24-91
COKE ANALYTES

	NAME	REF ID	RF50	RF MEAN	% D	SCAN
1	1,4-Dichlorobenzene-d4	1				535
2	Phenanthrene-d10	2				1184
3	Chrysene-d12	3				1600
4	Perylene-d12	4				1832
5	Toluene-d8	1	2.515	2.609	-3.6%	194
6	o-Xylene-d10	1	1.362	1.382	-1.4%	379
7	Phenol-d5	1	2.020	2.011	.4%	492
8	o-Cresol-d7H	1	1.570	1.553	1.1%	571
9	Naphthalene-d8	2	1.172	1.307	-10.3%	711
10	Benzo(a)pyrene-d12	4	1.151	1.213	-5.1%	1820
11	Ethylbenzene-d10	5	.418	.359	16.3%	337
12	2-Chlorophenol-d4	7	.753	.678	11.0%	503
13	Acenaphthene-d10	9	.543	.448	21.1%	967
14	Terphenyl-d14	3	.795	.711	11.8%	1433
15	Benzo(e)pyrene-d12	10	.502	.399	25.9%	1812
16	Toluene	5	1.210	1.035	16.9%	201
17	o-Xylene	6	2.250	1.914	17.5%	387
18	Phenol	7	1.267	1.061	19.4%	494
19	m-/p-Cresol	8	1.142	.936	22.1%	598
20	Naphthalene	9	1.028	.862	19.3%	714
21	Benzo(a)pyrene	10	1.152	.970	18.8%	1824

SA
12-09-91

TRIANGLE LABORATORIES,INC.
FF633
CONTINUING CALIBRATION

11-25-91
COKE ANALYTES

	NAME	REF ID	RF50	RF MEAN	% D	SCAN
1	1,4-Dichlorobenzene-d4	1				523
2	Phenanthrene-d10	2				1171
3	Chrysene-d12	3				1584
4	Perylene-d12	4				1816
5	Toluene-d8	1	2.499	2.609	-4.2%	180
6	o-Xylene-d10	1	1.339	1.382	-3.1%	367
7	Phenol-d5	1	2.019	2.011	.4%	481
8	o-Cresol-d7H	1	1.521	1.553	-2.1%	561
9	Naphthalene-d8	2	1.126	1.307	-13.8%	.699
10	Benzo(a)pyrene-d12	4	1.175	1.213	-3.1%	1803
11	Ethylbenzene-d10	5	.411	.359	14.4%	325
12	2-Chlorophenol-d4	7	.730	.678	7.5%	492
13	Acenaphthene-d10	9	.541	.448	20.8%	954
14	Terphenyl-d14	3	.734	.711	3.2%	1419
15	Benzo(e)pyrene-d12	10	.498	.399	25.0%	1795
16	Toluene	5	1.170	1.035	13.0%	187
17	o-Xylene	6	2.266	1.914	18.4%	375
18	Phenol	7	1.242	1.061	17.1%	483
19	m-/p-Cresol	8	1.164	.936	24.4%	587
20	Naphthalene	9	1.029	.862	19.3%	702
21	Benzo(a)pyrene	10	1.177	.970	21.3%	1807

SA
12-10-91

11-25-91P
COKE ANALYTES

TRIANGLE LABORATORIES,INC.
FF650
CONTINUING CALIBRATION

	NAME	REF ID	RF50	RF MEAN	% D	SCAN
1	1,4-Dichlorobenzene-d4	1				510
2	Phenanthrene-d10	2				1156
3	Chrysene-d12	3				1566
4	Perylene-d12	4				1797
5	Toluene-d8	1	2.585	2.609	-.9%	166
6	o-Xylene-d10	1	1.392	1.382	.7%	354
7	Phenol-d5	1	2.139	2.011	6.4%	470
8	o-Cresol-d7H	1	1.618	1.553	4.2%	549
9	Naphthalene-d8	2	1.132	1.307	-13.4%	686
10	Benzo(a)pyrene-d12	4	1.198	1.213	-1.2%	1785
11	Ethylbenzene-d10	5	.412	.359	14.7%	312
12	2-Chlorophenol-d4	7	.710	.678	4.7%	479
13	Acenaphthene-d10	9	.538	.448	20.0%	940
14	Terphenyl-d14	3	.798	.711	12.1%	1403
15	Benzo(e)pyrene-d12	10	.503	.399	26.1%	1776
16	Toluene	5	1.185	1.035	14.5%	172
17	o-Xylene	6	2.257	1.914	17.9%	363
18	Phenol	7	1.228	1.061	15.8%	472
19	m-/p-Cresol	8	1.149	.936	22.8%	575
20	Naphthalene	9	1.048	.862	21.5%	689
21	Benzo(a)pyrene	10	1.188	.970	22.5%	1789

SA
12-10-91

TRIANGLE LABORATORIES,INC.
FF668
CONTINUING CALIBRATION

11-26-91
COKE ANALYTES

	NAME	REF ID	RF50	RF MEAN	% D	SCAN
1	1,4-Dichlorobenzene-d4	1				493
2	Phenanthrene-d10	2				1136
3	Chrysene-d12	3				1542
4	Perylene-d12	4				1769
5	Toluene-d8	1	2.548	2.609	-2.3%	147
6	o-Xylene-d10	1	1.355	1.382	-1.9%	336
7	Phenol-d5	1	2.098	2.011	4.3%	454
8	o-Cresol-d7H	1	1.576	1.553	1.5%	533
9	Naphthalene-d8	2	1.075	1.307	-17.8%	668
10	Benzo(a)pyrene-d12	4	1.219	1.213	.5%	1757
11	Ethylbenzene-d10	5	.408	.359	13.6%	293
12	2-Chlorophenol-d4	7	.711	.678	4.8%	462
13	Acenaphthene-d10	9	.540	.448	20.5%	921
14	Terphenyl-d14	3	.758	.711	6.6%	1381
15	Benzo(e)pyrene-d12	10	.508	.399	27.3%	1749
16	Toluene	5	1.174	1.035	13.4%	153
17	o-Xylene	6	2.217	1.914	15.8%	344
18	Phenol	7	1.207	1.061	13.8%	455
19	m-/p-Cresol	8	1.141	.936	21.9%	559
20	Naphthalene	9	1.052	.862	22.0%	671
21	Benzo(a)pyrene	10	1.173	.970	21.0%	1761

12-10-91

TRIANGLE LABORATORIES,INC.

11-23-91

COKE ANALYTES

INITIAL CALIBRATION 5 POINT
FF592 FF596 FF595 FF594 FF593

	NAME	REF ID	RF5	RF20	RF50	RF100	RF200	AVG.	%RSD
1	1,4-Dichlorobenzene-d4	1	1.000	1.000	1.000	1.000	1.000		
2	Phenanthrene-d10	2	1.000	1.000	1.000	1.000	1.000		
3	Chrysene-d12	3	1.000	1.000	1.000	1.000	1.000		
4	Perylene-d12	4	1.000	1.000	1.000	1.000	1.000		
5	Toluene-d8	1	2.422	2.772	2.602	2.700	2.549	2.609	5.2%
6	o-Xylene-d10	1	1.335	1.490	1.320	1.432	1.332	1.382	5.4%
7	Phenol-d5	1	1.861	2.138	1.979	2.067	2.009	2.011	5.1%
8	o-Cresol-d7H	1	1.440	1.643	1.538	1.578	1.569	1.553	4.8%
9	Naphthalene-d8	2	1.239	1.431	1.306	1.348	1.209	1.307	6.8%
10	Benzo(a)pyrene-d12	4	1.127	1.260	1.168	1.253	1.256	1.213	5.1%
11	Ethylbenzene-d10	5	.334	.346	.401	.330	.384	.359	8.8%
12	2-Chlorophenol-d4	7	.621	.640	.773	.636	.724	.678	9.8%
13	Acenaphthene-d10	9	.452	.439	.497	.405	.446	.448	7.4%
14	Terphenyl-d14	3	.677	.692	.805	.689	.693	.711	7.5%
15	Benzo(e)pyrene-d12	10	.279	.387	.490	.402	.436	.399	19.5%
16	Toluene	5	.983	1.015	1.177	.890	1.110	1.035	10.8%
17	o-Xylene	6	1.688	1.908	2.286	1.679	2.010	1.914	13.2%
18	Phenol	7	.979	1.084	1.220	.942	1.079	1.061	10.2%
19	m-/p-Cresol	8	.806	.932	1.103	.863	.973	.936	12.1%
20	Naphthalene	9	.824	.879	1.005	.752	.852	.862	10.7%
21	Benzo(a)pyrene	10	.900	.983	1.149	.861	.956	.970	11.4%

DATE: 10-29-91
TLI PROJECT: 91015
Re: EPA Contract number 68D10104

TRIANGLE LABS

Helen Yoest
Entropy Environmentalists
POB 12291, RTP, NC 27709

Dear Helen:

Enclosed are the results from the lab validation studies for the developmental analytical method for toluene, xylene, phenol, cresol, naphthalene, and benzo-a-pyrene.

LAB EVALUATION OF TLI COKE METHOD

1. Project Description and Objectives

The objective of the project was to evaluate an analytical method using the isotope dilution method of analysis for the analytes toluene, xylene, phenol, cresol, naphthalene, and benzo-a-pyrene. The method was designed to meet the requirements of Test Method 301, "Protocol for the Field Validation of Emission Concentrations from Stationary Sources".

1.1 Experimental Design for Semi-vost analysis

The analytes listed in (Table 1 - ANALYTES) are analyzed versus their corresponding labeled internal standard (SOLN C1). At the same time, the surrogate compounds SOLN C2 are measured against the internal standards SOLN C1. These surrogates will be used as pre-spike compounds prior to field sampling, for the actual field study. The XAD resin was also spiked with the PRESPIKE compound terphenyl-d14.

Prior to laboratory extraction, the separate front half (filter and probe rinse), back half (XAD and condenser rinse), and aqueous impinger was fortified with deuterium-labeled compounds that are identical to the analytes of interest, except for the isotopic label (Table 1 - SOLN C1). Prior to GC/MS analysis, the separate front half, back half, and impinger extracts were fortified with deuterium-labeled compounds as recovery internal standards (Table 1 - SOLN C3). Table 1 shows the relationship between the analytes, internal standards and surrogates. QM is the mass from the compound that will be used to generated selected ion current profiles (SICP) for quantitation. The INTID defines the corresponding standard that the compound will be measured against. By means of this analytical relationship, losses of analytes or the surrogates C2, due to laboratory handling are corrected for by measuring these analytes versus a chemically identical labeled compound, that is added at the extraction stage. The actual recovery of the prespiked terphenyl d-14, as well as the laboratory spiked standards C1, are measured versus the recovery internal standards, C3.

Triangle Laboratories, Inc.
801-10 Capitola Drive
Durham, NC 27713
919-544-5729
P.O. Box 13485
Research Triangle Park, NC 277
Fax # 919-544-5401

1.2 Lab validation for the Semi-Vost analysis

The lab validation consists of five steps:

1.2.1 Acquisition and purity verification of labeled standards.

The labeled internal standards were verified by GC/MS analysis, and all standards were 98% or greater purity. A complete set of spectra for one of the matrix spike samples was printed to verify the spectral quality.

1.2.2 Preparation of calibration solutions

The calibration solutions were prepared as in Table 2. The preparation is performed by a trained chemist with the assistance of a witness to verify the correct solutions and amounts are used. Copies of the preparation logbooks are included with the full data package.

1.2.3 Calibration

The GC/MS analysis is performed on a VG Trio-1 mass spectrometer with HP 5890-II GC. A J&W DB-625 30m x 0.32 mm GC column was used, with an initial temperature of 35oC. (3 min.), then ramped at 10oC./min. to 285o, then 3oC./min. to 300C. (hold 3 min.), then 10oC./min. to 320oC. for 1 minute. The mass spectrometer was scanned from m/z 35-510 at one second/ scan. A one microliter aliquot of the calibration solutions was injected, splitless, with an inlet temperature of 250o C.

The analysis of the calibration solutions by GC/MS generated an initial calibration with relative response factors of the analytes with a relative standard deviation (%RSD) of less than 30% (Table 3). The relative response factors are calculated using the following equation:

$$\text{Response Factor} = \frac{\text{Area of analyte} * \text{Amount Int. std. (ug)}}{\text{Area of Int. std.} * \text{Amount of analyte (uG)}}$$

Because the major range of interest was at the lower points of the calibration curve, some of the analytes showed saturated mass spectra in order to maximize sensitivity. Those points were rejected from the calibration curve. The complete calibration curve is reported in the full data package. A continuing calibration was demonstrated on the day of the sample analysis by analyzing the mid-point of the calibration curve and comparing the response factors with those of the initial calibration (Table 4). The %deviation was within QC criteria for all analytes.

1.2.4 Extraction

The laboratory spiking and extraction were done as is shown in Scheme 1. The only changes were that the final extract volume was 10 mL, rather than 5 mL. Copies of the lab extraction notes are included with the complete data package.

1.2.5 Analysis

Sample analysis was performed on an aliquot of each sample extract, by adding SOLN C3 to the aliquot to a final concentration of 50 ug/mL, and analyzing a one microliter aliquot of this extract. After GC/MS analysis, the individual analytes and standards were identified by using a database of retention time information and library mass spectra (FIND DATABASE). The detected peaks are then quantitated by generating a selected ion current peak (SICP) for the quantitation mass (QM) and integrating this peak to generate a peak area. The sample results are then calculated using the following equation:

$$\text{Amount (uG)} = \frac{\text{Area of analyte} * \text{Amount Int. std. (ug)}}{\text{Area of Int. std.} * \text{RF}}$$

1.3 Results

The individual results of the laboratory spiking of the front half, back half and impinger with the analytes and internal standards are reported in the complete data package. On these reports, the concentration in the analyzed aliquot is reported in units of uG/mL, and this is then converted into the amount that would be in the total sample extract in micrograms. The scan number (equivalent to GC retention time) is reported for each detected analyte. The percent recovery, response factor and raw area for each analyte is also reported on the report page. Supporting documentation include the interim report peak integrations and the GC/MS chromatograms. The summary of the recoveries from the triplicate analysis are reported in the accompanying pages, separated by matrix. The results are reported both with and without blank correction, for comparison.

in validation based on C1 or C2 criteria

FRONT HALF

Without blank correction, all of the analytes and of the surrogate C2 compounds recoveries were within the range of 70-130% The percent relative standard deviation of the recoveries were all less than 7% for these compounds. when measured relative to their labeled internal standards. The actual recoveries of the C1 spike solutions ranged between 56 - 77%. The laboratory blank was found to contain 21 uG of toluene and 8.5 uG of benzo-a-pyrene (BAP). If one corrects for this, the percent recovery for toluene changes from an average of 124% to 103%, and that of BAP goes from 77 to 69%, thus falling slightly below the QC goal of 70-130% recovery. For the front half extractions, the laboratory evaluation is considered successful.

toluene which was 16% and

BACK HALF

Without blank correction, toluene and naphthalene both gave recoveries outside of 70-130%, 163 and 284 %, respectively. The percent relative standard deviation of the recoveries were less than 9% for these compounds, except naphthalene, which was 54% The C2 surrogate compounds recoveries ranged from 85-102%. The actual recoveries of the C1 spike solutions ranged between 62 - 77%. The laboratory blank was found to contain 72 uG of toluene and 25 uG of naphthalene. If one corrects for this, the percent recovery for toluene changes from an average of 124% to 91%, and that of ~~BAP~~ Naphthalene goes from 284 to 258%.

The XAD was prepared from the same lot number of XAD resin, but two different bottles were used. Thus, Back Half 1 gave a blank corrected recovery value of 92%, while Back Half 2 and 3, gave values of 292 and 390%. For the back half extractions, the laboratory evaluation is judged successful for xylene, phenol, cresol, and benzo-a-pyrene. For toluene, if one corrects for the blank, the evaluation is successful. However, the variability of toluene from sample to sample is unknown. Because of the laboratory environment where toluene is commonly used, this variability will probably cause problems. Naphthalene was a failure, due to the unpredictable contamination in the XAD resin.

AQUEOUS IMPINGER

Without blank correction, the recovery of toluene was outside the range of 70-130, at 374%. The recoveries of the other analytes and C2 surrogates were acceptable, except the surrogate 2-Chlorophenol-d4 was slightly high at 132%. The percent relative standard deviation of these recoveries were less than 10% for these compounds. The actual recoveries of the C1 spike solutions ranged between 47 - 74%, measured versus the recovery internal standards. The laboratory blank was found to contain 460 uG of toluene. If one corrects for this, the percent recovery for toluene changes from an average of 374% to -87%. thus failing completely. For the impinger extractions, the laboratory evaluation is considered successful for xylene, phenol, cresol, naphthalene, and benzo-a-pyrene, and a complete failure for toluene.

CONCLUSIONS

The primary anticipated problems were that both toluene and naphthalene might be observed as laboratory contaminants. The XAD resin itself contains naphthalene that is difficult to completely remove. It is generally observed in laboratory QC check analyses at levels ranging from one to thirty micrograms per 40 gram extraction batch. However, we have occasionally observed much higher levels at random periods. Apparently, that was experienced during the lab evaluation experiments. Because of this variability, the results for naphthalene are of questionable reliability. A negative result is defensible, if the d8-napthalene standard has a high recovery value. However, a positive result may be the result of random XAD contamination. Since the filter and impinger will be analyzed separately, this data will be useful in evaluating positive results in the XAD.

The use of toluene as an extraction solvent in many of the laboratories at our facility would be expected to lead to some contamination problems. Every attempt was made to reduce the exposure of any of the lab evaluation samples to toluene, during the extraction and concentration steps. Apparently this was only moderately successful, judging from the very high levels observed in the water analyses. Boiling the HPLC grade water prior to its use will help to lower the amount of background contamination that is observed, but it is unknown whether this will be sufficient to allow valid laboratory blanks to be obtained.

The method was judged successful without qualification for the analytes xylene, phenol, cresol, and benzo-a-pyrene.

Sincerely,

Donald Harvan

Donald Harvan
VP Technical Operations

4-1

Table 1

		QM	ID	INTID
ANALYTES				
	Toluene	91	AN	IS5
	Xylene	91	AN	IS6
	Phenol	94	AN	IS7
	Cresol	108	AN	IS8
	Naphthalene	128	AN	IS9
	Benz-a-pyrene	252	AN	IS10
PRESPIKE				
	Terphenyl d14	244	SUR1	IS3
SOLN C2				
surrogates	ethyl benzene d10	116	SUR2	IS5
	2-Cl phenol d4	132	SUR3	IS7
	acenaphthene d10	164	SUR4	IS9
	Benz-e-pyrene d12	264	SUR5	IS10
SOLN C3				
	di Cl benzene d4	152	IS1	
Recovery IS	phenanthrene d10	188	IS2	IS1
	chrysene-d12	240	IS3	IS2
	perylene d12	264	IS4	IS3
SOLN C1				
	Toluene d8	98	IS5	IS1
Lubled IS	o-Xylene d10	116	IS6	IS1
	Phenol d5	99	IS7	IS1
	m-Cresol d7H	115	IS8	IS1
	Naphthalene d8	136	IS9	IS2
	Benz-a-pyrene d12	264	IS10	IS4

Table 2

COKE ANALYTES

(ug/mL)

INITIAL CALIBRATION 5 POINT

CONCENTRATIONS IN CALIBRATION SOLUTION

NAME	RF5	RF20	RF50	RF100	RF200
1,4-Dichlorobenzene-d4	50	50	50	50	50
Phenanthrene-d10	50	50	50	50	50
Chrysene-d12	50	50	50	50	50
Perylene-d12	50	50	50	50	50
Toluene-d8	50	50	50	50	50
o-Xylene-d10	50	50	50	50	50
Phenol-d5	50	50	50	50	50
m-Cresol-d7H	50	50	50	50	50
Naphthalene-d8	50	50	50	50	50
Benzo(a)pyrene-d12	50	50	50	50	50
Ethylbenzene-d10	5	20	50	100	200
2-Chlorophenol-d4	5	20	50	100	200
Acenaphthene-d10	5	20	50	100	200
Terphenyl-d14	5	20	50	100	200
Benzo(e)pyrene-d12	5	20	50	100	200
Toluene	5	20	50	100	200
Xylene	5	20	50	100	200
Phenol	5	20	50	100	200
Cresol	5	20	50	100	200
Naphthalene	5	20	50	100	200
Benzo(a)pyrene	5	20	50	100	200

Table 3

COKE ANALYTES — INITIAL CALIBRATION RESULTS

NAME	RF MEAN	%RSD
Toluene-d8	2.406	6.1%
o-Xylene-d10	1.306	6.3%
Phenol-d5	2.278	5.3%
m-Cresol-d7H	1.622	4.8%
Naphthalene-d8	1.102	4.2%
Benzo(a)pyrene-d12	1.297	5.8%
Ethylbenzene-d10	0.376	11.7%
2-Chlorophenol-d4	0.584	8.5%
Acenaphthene-d10	0.495	13.3%
Terphenyl-d14	0.762	15.6%
Benzo(e)pyrene-d12	0.383	19.1%
Toluene	0.997	12.1%
Xylene	1.876	14.0%
Phenol	1.030	11.6%
Cresol	0.939	10.1%
Naphthalene	0.944	3.5%
Benzo(a)pyrene	1.040	3.4%

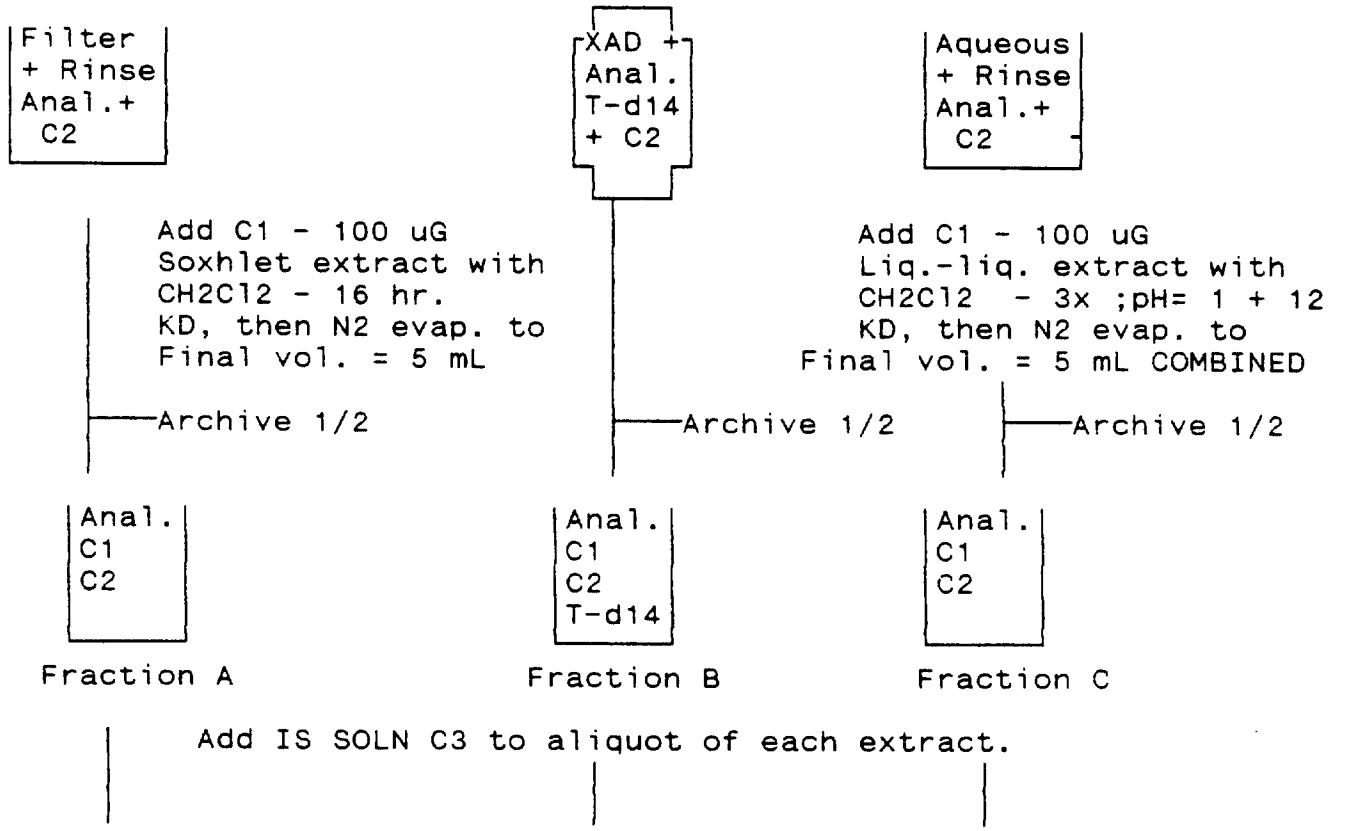
Table 4

COKE ANALYTES — CONTINUING CALIBRATION RESULTS

NAME	RF50	RF MEAN	% DEV.
Toluene-d8	2.058	2.406	-14.5%
o-Xylene-d10	1.214	1.306	-7.0%
Phenol-d5	2.091	2.278	-8.2%
m-Cresol-d7H	1.574	1.622	-3.0%
Naphthalene-d8	1.423	1.102	29.1%
Benzo(a)pyrene-d12	1.197	1.297	-7.8%
Ethylbenzene-d10	0.454	0.376	20.6%
2-Chlorophenol-d4	0.660	0.584	13.0%
Acenaphthene-d10	0.534	0.495	7.8%
Terphenyl-d14	0.714	0.762	-6.2%
Benzo(e)pyrene-d12	0.494	0.383	29.0%
Toluene	1.178	0.997	18.1%
Xylene	2.018	1.876	7.6%
Phenol	1.133	1.030	10.1%
Cresol	1.005	0.939	7.1%
Naphthalene	1.032	0.944	9.4%
Benzo(a)pyrene	1.234	1.040	18.6%

COKE ANALYTES

LAB VALIDATION SCHEME 1.



Add IS SOLN C3 to aliquot of each extract.

Analyze by GC/MS, scanning. Calculate Analyte and C2 vs. C1 - Int.Standard. If Analyte and C2 recoveries are not 70-130 %, lab validation has failed. Use C3 as internal standard to calculate C1 recoveries. If C1 recoveries are less than 10 %, the validity of the analysis is in question.

TLI 91015

COKE LAB EVALUATION

SUMMARY

AQUEOUS

Triangle Laboratories, Inc.

RECOVERIES BLANK CORRECTED

ID	NAME	GE814 SBLK 101991	GE821 AQUEOUS 1	GE822 AQUEOUS 2	GE823 AQUEOUS 3	AVG REC	% RSD
C3	1,4-Dichlorobenzene-d4						
C3	Phenanthrene-d10						
C3	Chrysene-d12						
C3	Perylene-d12						
C1	Toluene-d8	52.9%	55.0%	43.6%	58.5%	52.5%	12.1%
C1	o-Xylene-d10	58.7%	61.8%	50.5%	67.5%	59.6%	11.9%
C1	Phenol-d5	45.2%	49.1%	42.9%	51.9%	47.3%	8.5%
C1	m-Cresol-d7H	61.4%	67.2%	58.2%	74.3%	65.3%	10.8%
C1	Naphthalene-d8	62.5%	61.3%	52.9%	67.2%	61.0%	9.7%
C1	Benzo(a)pyrene-d12	68.3%	77.4%	66.4%	84.1%	74.0%	11.1%
C2	Ethylbenzene-d10	93.4%	89.2%	95.2%	86.5%	91.1%	4.3%
C2	2-Chlorophenol-d4	136.0%	129.6%	131.3%	131.1%	132.0%	2.1%
C2	Acenaphthene-d10	99.7%	101.4%	102.5%	97.8%	100.3%	2.1%
T-D14	Terphenyl-d14						
C2	Benzo(e)pyrene-d12	90.9%	80.6%	77.1%	72.0%	80.2%	9.9%
ANAL	Toluene		22.2%	-132.6%	-150.1%	-86.8%	-109.2%
ANAL	Xylene		101.3%	99.4%	95.5%	98.7%	3.0%
ANAL	Phenol		99.6%	97.8%	96.2%	97.9%	1.8%
ANAL	Cresol		108.9%	107.2%	103.0%	106.4%	2.9%
ANAL	Naphthalene		107.2%	92.8%	89.9%	96.6%	9.6%
ANAL	Benzo(a)pyrene		80.9%	78.6%	78.8%	79.4%	1.6%

TLI 91015
COKE LAB EVALUATION
SUMMARY
HALF

NAME	GE812 SBLK 101991A		GE815 FRONT HALF 1		GE816 FRONT HALF 2		GE817 FRONT HALF 3	
1,4-Dichlorobenzene-d4								
Phenanthrene-d10								
Chrysene-d12								
Perylene-d12								
Toluene-d8	62.99	63.0%	58.06	58.1%	55.54	55.5%	48.23	48.2%
o-Xylene-d10	69.81	69.8%	67.56	67.6%	67.69	67.7%	57.52	57.5%
Phenol-d5	75.02	75.0%	70.98	71.0%	76.66	76.7%	73.63	73.6%
m-Cresol-d7H	68.96	69.0%	63.78	63.8%	69.32	69.3%	68.39	68.4%
Naphthalene-d8	74.52	74.5%	64.59	64.6%	64.24	64.2%	59.80	59.8%
Benzo(a)pyrene-d12	78.64	78.6%	74.12	74.1%	78.07	78.1%	75.23	75.2%
Ethylbenzene-d10	91.83	91.8%	97.76	97.8%	99.23	99.2%	101.47	101.5%
2-Chlorophenol-d4	84.94	84.9%	88.18	88.2%	83.87	83.9%	85.35	85.3%
Acenaphthene-d10	94.46	94.5%	97.75	97.7%	99.76	99.8%	103.54	103.5%
Terphenyl-d14								
Benzo(e)pyrene-d12	95.45	95.5%	88.55	88.5%	84.73	84.7%	87.79	87.8%
Toluene	20.89		123.97	124.0%	117.37	117.4%	131.21	131.2%
Xylene	0.00		95.32	95.3%	92.67	92.7%	104.52	104.5%
Phenol	0.00		89.83	89.8%	90.78	90.8%	99.27	99.3%
Cresol	0.00		98.68	98.7%	105.52	105.5%	109.32	109.3%
Naphthalene	0.00		85.46	85.5%	87.88	87.9%	95.26	95.3%
Benzo(a)pyrene	8.63		74.59	74.6%	74.04	74.0%	82.89	82.9%

TLI 91015

COKE LAB EVALUATION

SUMMARY

BACK HALF

NAME	GE813 SBLK 101991B		GE818 BACK HALF 1		GE819 BACK HALF 2		GE820 BACK HALF 3	
1,4-Dichlorobenzene-d4								
Phenanthrene-d10								
Chrysene-d12								
Perylene-d12								
Toluene-d8	57.03	57.0%	63.77	63.8%	63.18	63.2%	63.41	63.4%
o-Xylene-d10	63.75	63.8%	70.24	70.2%	68.07	68.1%	70.03	70.0%
Phenol-d5	69.76	69.8%	80.68	80.7%	77.69	77.7%	80.05	80.0%
m-Cresol-d7H	65.07	65.1%	73.24	73.2%	75.52	75.5%	80.34	80.3%
Naphthalene-d8	63.57	63.6%	64.95	64.9%	66.81	66.8%	65.78	65.8%
Benzo(a)pyrene-d12	67.99	68.0%	76.98	77.0%	77.31	77.3%	79.51	79.5%
Ethylbenzene-d10	101.41	101.4%	97.47	97.5%	90.77	90.8%	97.91	97.9%
2-Chlorophenol-d4	88.79	88.8%	84.54	84.5%	82.53	82.5%	84.67	84.7%
Acenaphthene-d10	105.44	105.4%	102.46	102.5%	97.32	97.3%	102.93	102.9%
Terphenyl-d14	56.42	56.4%	60.89	60.9%	60.94	60.9%	65.39	65.4%
Benzo(e)pyrene-d12	97.53	97.5%	91.43	91.4%	86.76	86.8%	90.34	90.3%
Toluene	71.95		150.72	150.7%	158.86	158.9%	179.54	179.5%
Xylene	0.00		101.11	101.1%	97.00	97.0%	101.90	101.9%
Phenol	0.00		96.75	96.8%	93.09	93.1%	96.86	96.9%
Cresol	0.00		110.14	110.1%	97.50	97.5%	99.51	99.5%
Naphthalene	25.45		117.57	117.6%	317.59	317.6%	415.61	415.6%
Benzo(a)pyrene	0.00		80.56	80.6%	77.94	77.9%	81.13	81.1%

TLI 91015

COKE LAB EVALUATION
SUMMARY
AQUEOUS

NAME	GE814 SBLK 101991C		GE821 AQUEOUS 1		GE822 AQUEOUS 2		GE823 AQUEOUS 3	
1,4-Dichlorobenzene-d4								
Phenanthrene-d10								
Chrysene-d12								
Perylene-d12								
Toluene-d8	52.86	52.9%	55.00	55.0%	43.56	43.6%	58.45	58.5%
o-Xylene-d10	58.70	58.7%	61.75	61.8%	50.51	50.5%	67.50	67.5%
Phenol-d5	45.21	45.2%	49.06	49.1%	42.90	42.9%	51.93	51.9%
m-Cresol-d7H	61.44	61.4%	67.19	67.2%	58.24	58.2%	74.28	74.3%
Naphthalene-d8	62.53	62.5%	61.30	61.3%	52.95	52.9%	67.21	67.2%
Benzo(a)pyrene-d12	68.27	68.3%	77.42	77.4%	66.42	66.4%	84.07	84.1%
Ethylbenzene-d10	93.42	93.4%	89.16	89.2%	95.20	95.2%	86.54	86.5%
2-Chlorophenol-d4	136.04	136.0%	129.56	129.6%	131.30	131.3%	131.10	131.1%
Acenaphthene-d10	99.69	99.7%	101.40	101.4%	102.48	102.5%	97.77	97.8%
Terphenyl-d14								
[illegible] (e)pyrene-d12	90.86	90.9%	80.57	80.6%	77.13	77.1%	72.04	72.0%
Toluene	460.93		483.16	483.2%	328.33	328.3%	310.79	310.8%
Xylene	0.00		101.34	101.3%	99.35	99.4%	95.47	95.5%
Phenol	0.00		99.64	99.6%	97.81	97.8%	96.21	96.2%
Cresol	0.00		108.94	108.9%	107.20	107.2%	102.98	103.0%
Naphthalene	0.00		107.22	107.2%	92.77	92.8%	89.93	89.9%
Benzo(a)pyrene	0.00		80.92	80.9%	78.58	78.6%	78.82	78.8%

TLI 91015
COKE LAB EVALUATION
SUMMARY
FRONT HALF

Triangle Laboratories, Inc.
RECOVERIES NOT BLANK CORRECTED

ID	NAME	GE812 SBLK 101991	GE815 FRONT HALF	GE816 FRONT HALF	GE817 FRONT HALF	AVG REC	% RSD
						-	-
C3	1,4-Dichlorobenzene-d4						
C3	Phenanthrene-d10						
C3	Chrysene-d12						
C3	Perylene-d12						
C1	Toluene-d8	63.0%	58.1%	55.5%	48.2%	56.2%	10.9%
C1	o-Xylene-d10	69.8%	67.6%	67.7%	57.5%	65.6%	8.4%
C1	Phenol-d5	75.0%	71.0%	76.7%	73.6%	74.1%	3.2%
C1	m-Cresol-d7H	69.0%	63.8%	69.3%	68.4%	67.6%	3.8%
C1	Naphthalene-d8	74.5%	64.6%	64.2%	59.8%	65.8%	9.5%
C1	Benzo(a)pyrene-d12	78.6%	74.1%	78.1%	75.2%	76.5%	2.9%
C2	Ethylbenzene-d10	91.8%	97.8%	99.2%	101.5%	97.6%	4.2%
C2	2-Chlorophenol-d4	84.9%	88.2%	83.9%	85.3%	85.6%	2.1%
C2	Acenaphthene-d10	94.5%	97.7%	99.8%	103.5%	98.9%	3.8%
T-D14	Terphenyl-d14						
C2	Benzo(e)pyrene-d12	95.5%	88.5%	84.7%	87.8%	89.1%	5.1%
ANAL	Toluene		124.0%	117.4%	131.2%	124.2%	5.6%
ANAL	Xylene		95.3%	92.7%	104.5%	97.5%	6.4%
ANAL	Phenol		89.8%	90.8%	99.3%	93.3%	5.6%
ANAL	Cresol		98.7%	105.5%	109.3%	104.5%	5.2%
ANAL	Naphthalene		85.5%	87.9%	95.3%	89.5%	5.7%
ANAL	Benzo(a)pyrene		74.6%	74.0%	82.9%	77.2%	6.4%

TLI 91015 Triangle Laboratories, Inc.

COKE LAB EVALUATION RECOVERIES NOT BLANK CORRECTED

SUMMARY

BACK HALF

ID	NAME	GE813 SBLK 101991	GE818 BACK HALF 1	GE819 BACK HALF 2	GE820 BACK HALF 3	AVG REC	% RSD
C3	1,4-Dichlorobenzene-d4						
C3	Phenanthrene-d10						
C3	Chrysene-d12						
C3	Perylene-d12						
C1	Toluene-d8	57.0%	63.8%	63.2%	63.4%	61.8%	5.2%
C1	o-Xylene-d10	63.8%	70.2%	68.1%	70.0%	68.0%	4.4%
C1	Phenol-d5	69.8%	80.7%	77.7%	80.0%	77.0%	6.5%
C1	m-Cresol-d7H	65.1%	73.2%	75.5%	80.3%	73.5%	8.7%
C1	Naphthalene-d8	63.6%	64.9%	66.8%	65.8%	65.3%	2.1%
C1	Benzo(a)pyrene-d12	68.0%	77.0%	77.3%	79.5%	75.4%	6.8%
C2	Ethylbenzene-d10	101.4%	97.5%	90.8%	97.9%	96.9%	4.6%
C2	2-Chlorophenol-d4	88.8%	84.5%	82.5%	84.7%	85.1%	3.1%
C2	Acenaphthene-d10	105.4%	102.5%	97.3%	102.9%	102.0%	3.3%
T-D14	Terphenyl-d14	56.4%	60.9%	60.9%	65.4%	60.9%	6.0%
C2	Benzo(e)pyrene-d12	97.5%	91.4%	86.8%	90.3%	91.5%	4.9%
ANAL	Toluene		150.7%	158.9%	179.5%	163.0%	9.1%
ANAL	Xylene		101.1%	97.0%	101.9%	100.0%	2.6%
ANAL	Phenol		96.8%	93.1%	96.9%	95.6%	2.2%
ANAL	Cresol		110.1%	97.5%	99.5%	102.4%	6.6%
	Naphthalene		117.6%	317.6%	415.6%	283.6%	53.6%
ANAL	Benzo(a)pyrene		80.6%	77.9%	81.1%	79.9%	2.1%

TLI 91015 Triangle Laboratories, Inc.
COKE LAB EVALUATION RECOVERIES NOT BLANK CORRECTED
SUMMARY
AQUEOUS

ID	NAME	GE814 SBLK 101991	GE821 AQUEOUS 1	GE822 AQUEOUS 2	GE823 AQUEOUS 3	AVG REC	% RSD
C3	1,4-Dichlorobenzene-d4						
C3	Phenanthrene-d10						
C3	Chrysene-d12						
C3	Perylene-d12						
C1	Toluene-d8	52.9%	55.0%	43.6%	58.5%	52.5%	12.1%
C1	o-Xylene-d10	58.7%	61.8%	50.5%	67.5%	59.6%	11.9%
C1	Phenol-d5	45.2%	49.1%	42.9%	51.9%	47.3%	8.5%
C1	m-Cresol-d7H	61.4%	67.2%	58.2%	74.3%	65.3%	10.8%
C1	Naphthalene-d8	62.5%	61.3%	52.9%	67.2%	61.0%	9.7%
C1	Benzo(a)pyrene-d12	68.3%	77.4%	66.4%	84.1%	74.0%	11.1%
C2	Ethylbenzene-d10	93.4%	89.2%	95.2%	86.5%	91.1%	4.3%
C2	2-Chlorophenol-d4	136.0%	129.6%	131.3%	131.1%	132.0%	2.1%
C2	Acenaphthene-d10	99.7%	101.4%	102.5%	97.8%	100.3%	2.1%
T-D14	Terphenyl-d14						
C2	Benzo(e)pyrene-d12	90.9%	80.6%	77.1%	72.0%	80.2%	9.9%
ANAL	Toluene		483.2%	328.3%	310.8%	374.1%	25.4%
ANAL	Xylene		101.3%	99.4%	95.5%	98.7%	3.0%
ANAL	Phenol		99.6%	97.8%	96.2%	97.9%	1.8%
ANAL	Cresol		108.9%	107.2%	103.0%	106.4%	2.9%
ANAL	Naphthalene		107.2%	92.8%	89.9%	96.6%	9.6%
ANAL	Benzo(a)pyrene		80.9%	78.6%	78.8%	79.4%	1.6%

TLI 91015

COKE LAB EVALUATION

SUMMARY

FRONT HALF

Triangle Laboratories, Inc.

RECOVERIES BLANK CORRECTED

ID	NAME	GE812 SBLK 101991	GE815 FRONT HALF	GE816 FRONT HALF	GE817 FRONT HALF	AVG REC	% RSD
C3	1,4-Dichlorobenzene-d4						
C3	Phenanthrene-d10						
C3	Chrysene-d12						
C3	Perylene-d12						
C1	Toluene-d8	63.0%	58.1%	55.5%	48.2%	56.2%	10.9%
C1	o-Xylene-d10	69.8%	67.6%	67.7%	57.5%	65.6%	8.4%
C1	Phenol-d5	75.0%	71.0%	76.7%	73.6%	74.1%	3.2%
C1	m-Cresol-d7H	69.0%	63.8%	69.3%	68.4%	67.6%	3.8%
C1	Naphthalene-d8	74.5%	64.6%	64.2%	59.8%	65.8%	9.5%
C1	Benzo(a)pyrene-d12	78.6%	74.1%	78.1%	75.2%	76.5%	2.9%
C2	Ethylbenzene-d10	91.8%	97.8%	99.2%	101.5%	97.6%	4.2%
C2	2-Chlorophenol-d4	84.9%	88.2%	83.9%	85.3%	85.6%	2.1%
C2	Acenaphthene-d10	94.5%	97.7%	99.8%	103.5%	98.9%	3.8%
T-D14	Terphenyl-d14						
C2	Benzo(e)pyrene-d12	95.5%	88.5%	84.7%	87.8%	89.1%	5.1%
ANAL	Toluene		103.1%	96.5%	110.3%	103.3%	6.7%
ANAL	Xylene		95.3%	92.7%	104.5%	97.5%	6.4%
ANAL	Phenol		89.8%	90.8%	99.3%	93.3%	5.6%
	Cresol		98.7%	105.5%	109.3%	104.5%	5.2%
	Naphthalene		85.5%	87.9%	95.3%	89.5%	5.7%
ANAL	Benzo(a)pyrene		66.0%	65.4%	74.3%	68.5%	7.2%

TLI 91015 Triangle Laboratories, Inc.
COKE LAB EVALUATION RECOVERIES BLANK CORRECTED
SUMMARY
BACK HALF

ID	NAME	GE813 SBLK 101991	GE818 BACK HALF 1	GE819 BACK HALF 2	GE820 BACK HALF 3	AVG REC	% RSD
C3	1,4-Dichlorobenzene-d4						
C3	Phenanthrene-d10						
C3	Chrysene-d12						
C3	Perylene-d12						
C1	Toluene-d8	57.0%	63.8%	63.2%	63.4%	61.8%	5.2%
C1	o-Xylene-d10	63.8%	70.2%	68.1%	70.0%	68.0%	4.4%
C1	Phenol-d5	69.8%	80.7%	77.7%	80.0%	77.0%	6.5%
C1	m-Cresol-d7H	65.1%	73.2%	75.5%	80.3%	73.5%	8.7%
C1	Naphthalene-d8	63.6%	64.9%	66.8%	65.8%	65.3%	2.1%
C1	Benzo(a)pyrene-d12	68.0%	77.0%	77.3%	79.5%	75.4%	6.8%
C2	Ethylbenzene-d10	101.4%	97.5%	90.8%	97.9%	96.9%	4.6%
C2	2-Chlorophenol-d4	88.8%	84.5%	82.5%	84.7%	85.1%	3.1%
C2	Acenaphthene-d10	105.4%	102.5%	97.3%	102.9%	102.0%	3.3%
T-D14	Terphenyl-d14	56.4%	60.9%	60.9%	65.4%	60.9%	6.0%
C2	Benzo(e)pyrene-d12	97.5%	91.4%	86.8%	90.3%	91.5%	4.9%
ANAL	Toluene		78.8%	86.9%	107.6%	91.1%	16.3%
ANAL	Xylene		101.1%	97.0%	101.9%	100.0%	2.6%
ANAL	Phenol		96.8%	93.1%	96.9%	95.6%	2.2%
ANAL	Cresol		110.1%	97.5%	99.5%	102.4%	6.6%
ANAL	Naphthalene		92.1%	292.1%	390.2%	258.1%	58.8%
ANAL	Benzo(a)pyrene		80.6%	77.9%	81.1%	79.9%	2.1%

toluene which was 16% and

BACK HALF

Without blank correction, toluene and naphthalene both gave recoveries outside of 70-130%, 163 and 284 %, respectively. The percent relative standard deviation of the recoveries were less than 9% for these compounds, except naphthalene, which was 54% The C2 surrogate compounds recoveries ranged from 85-102%. The actual recoveries of the C1 spike solutions ranged between 62 - 77%. The laboratory blank was found to contain 72 uG of toluene and 25 uG of naphthalene. If one corrects for this, the percent recovery for toluene changes from an average of 124% to 91%, and that of ~~BAP~~ Naphthalene goes from 284 to 258%.

The XAD was prepared from the same lot number of XAD resin, but two different bottles were used. Thus, Back Half 1 gave a blank corrected recovery value of 92%, while Back Half 2 and 3, gave values of 292 and 390%. For the back half extractions, the laboratory evaluation is judged successful for xylene, phenol, cresol, and benzo-a-pyrene. For toluene, if one corrects for the blank, the evaluation is successful. However, the variability of toluene from sample to sample is unknown. Because of the laboratory environment where toluene is commonly used, this variability will probably cause problems. Naphthalene was a failure, due to the unpredictable contamination in the XAD resin.

AQUEOUS IMPINGER

Without blank correction, the recovery of toluene was outside the range of 70-130, at 374%. The recoveries of the other analytes and C2 surrogates were acceptable, except the surrogate 2-Chlorophenol-d4 was slightly high at 132%. The percent relative standard deviation of these recoveries were less than 10% for these compounds. The actual recoveries of the C1 spike solutions ranged between 47 - 74%, measured versus the recovery internal standards. The laboratory blank was found to contain 460 uG of toluene. If one corrects for this, the percent recovery for toluene changes from an average of 374% to -87%. thus failing completely. For the impinger extractions, the laboratory evaluation is considered successful for xylene, phenol, cresol, naphthalene, and benzo-a-pyrene, and a complete failure for toluene.

Laboratory Evaluation

I Front Day -

When the data is uncorrected, all analytes and surrogates pass the validation requirements.

% RSD: 1.88% - 6.43%

C.F. : 0.81 - 1.30

BaP had the correction factor of 1.3, which is the cut-off to pass validation. The C.F. must be within .7 to 1.3.

When the data is corrected, BaP fails the requirements with a correction factor of 1.46. The % RSD's ranged from 1.88% - 7.25%.

II Back Day -

When the data is uncorrected, Naphthalene fails the % RSD requirement (≤ 50%) with a % RSD of 53.56%. Toluene and Terphenyl-d14 fail the requirements with C.F.'s of 0.61 and 1.60, respectively.

When the data is corrected, Naphthalene still fails with a % RSD of 58.86%. Terphenyl-d14 fails with a C.F. of 1.60; however Toluene passes when corrected.

III. Comments

When the data is uncorrected, Toluene fails with a CF of 0.21. BeP-d12 barely fails with a C.F. of 1.31 (requirement is ≤ 1.30).

When the data is corrected, Toluene fails with a % RSD of -109.21; BeP-d12 still has a C.F. of 1.31.

SEMIVOST ISOTOPE DILUTION COKE PLAN 10-11-91 DJM 10-17-91
LAB VALIDATION

1. Prepare and analyze Analyte, C1, C2, and C3 solutions, independently, for purity and retention time information.
2. Prepare initial calibration solution as in attached document Table 1.
3. Demonstrate RSD < 30% for initial calibration.
4. Spike A)Filter +Rinse, B) XAD +Rinse, and C) HPLC water in triplicate.
5. Analytes, Terphenyl-d14, C1, and C2 are all spiked at 100uG.
6. Extract and analyze as below:

Lab Validation

Filter + Rinse Anal.+ C2	XAD + Anal. T-d14 + C2	Aqueous + Rinse Anal.+ C2
Add C1 - 100 uG Soxhlet extract with CH2Cl2 - 16 hr. KD, then N2 evap. to Final vol. = 5 mL		Add C1 - 100 uG Liq.-liq. extract with CH2Cl2 - 3x :pH= 1 + 12 KD, then N2 evap. to Final vol. = 5 mL COMBINED
Archive 1/2	Archive 1/2	Archive 1/2
Anal. C1 C2	Anal. C1 C2 T-d14	Anal. C1 C2
Fraction A	Fraction B	Fraction C

Add IS SOLN C3 to aliquot of each extract.

Analyze by GC/MS, scanning. Calculate Analyte and C2 vs. C1 - Int.Standard. If Analyte and C2 recoveries are not 70-130 %, lab validation has failed. Use C3 as internal standard to calculate C1 recoveries. If C1 recoveries are less than 10 %, the validity of the analysis is in question.

(one blank for eq. matrix w/o analyte solns.)

Blank: Everything except the analyte

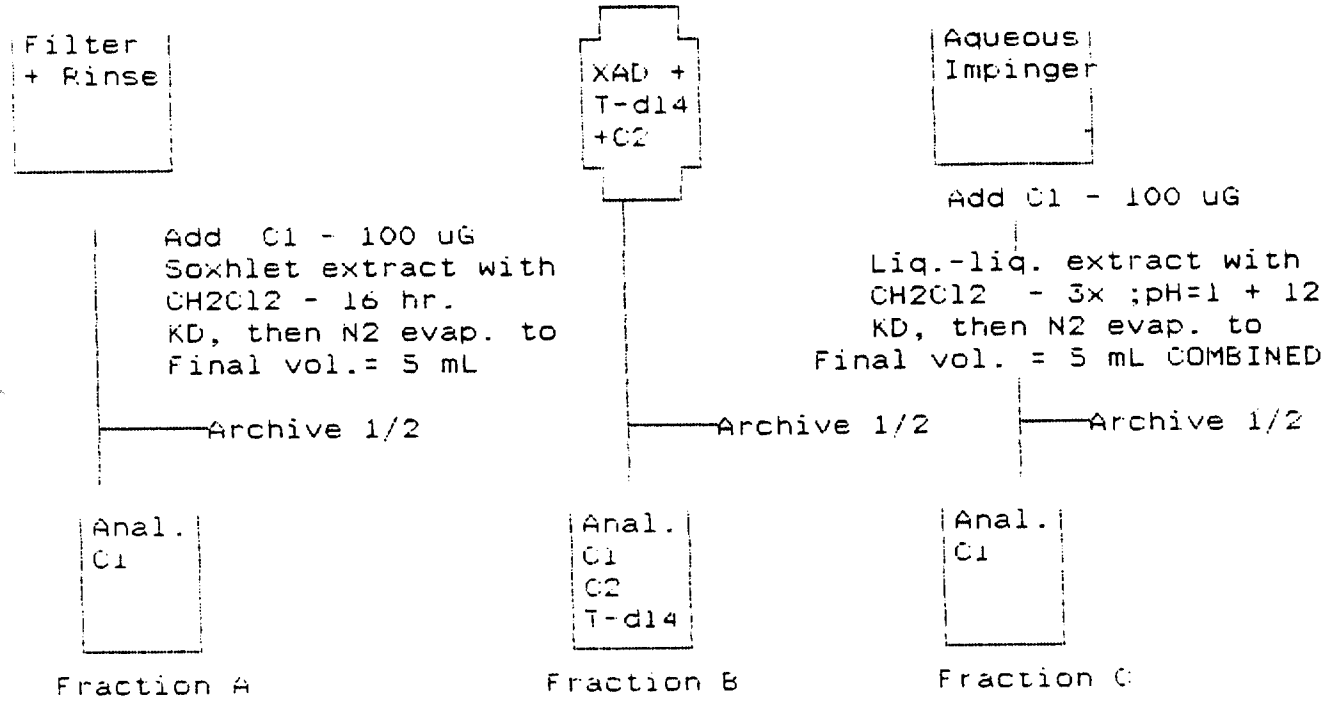
EMIVOST ISOTOPE DILUTION COKE PLAN 10-11-91 DJY 10-17-91
FIELD PLAN

repare XAD and spike all traps with Terphenyl d14 and
with C2 at 100 uG. Mark trap and inlet end.
.. Deliver traps for sampling. Include 1 trip blanks - 3 field blanks.
.. Field sampling is in pairs.
.. Trains returned to lab as normal.
.. Extract and analyze as below:

Actual Field Samples

CAUTION !! TOLUENE TO BE AVOIDED IN ALL HANDLING,

AND IN ALL PHASES OF THE LAB WORKUP AND CALIBRATIONS



Add IS SOLN C3 to aliquot of each extract.

- Analyze by GC/MS, scanning. Calculate Analyte and C2 vs. C1 - Int. standard. Analyte and C2 recoveries should be 70-130 %. Use C3 as internal standard to calculate C1 recoveries. If less than 10%, validity of analysis is in question. If C2 recoveries are low, the efficiency of trapping of the analytes on the XAD is in question.

Secondary goal is to achieve QUALITATIVE results for the Clean Air Act compounds that are in the TLI calibration solution.

COKE PLAN 10-17-91 VER 6 DJM 10-17-91

VOST
CALIBRATION CURVE

ANALYTES
WILL USE CAA CALIBRATION BUT QC CRITERIA ONLY FOR BENZENE AND TOLUENE.

SURROGATES
INCLUDE O-XYLENE D10 AS A SURROGATE PRESPIKE
SPIKE LEVEL WILL BE 0.25 UG/ TENAX TUBE ONLY.

INT STDS.
NORMAL FOR VOST

==========
==========

SEMI-VOST
CALIBRATION CURVE

				CONCN			ID	INTID
ANALYTES	QM	UG/ML	UG/ML	UG/ML	UG/ML	UG/ML		
Toluene	91	5	20	50	100	200	AN	IS0
Xylene	106	5	20	50	100	200	AN	IS1
Phenol	94	5	20	50	100	200	AN	IS2
Cresol	107	5	20	50	100	200	AN	IS3
Naphthalene	128	5	20	50	100	200	AN	IS4
Benz-a-pyrene	252	5	20	50	100	200	AN	IS5
PRESPIKE								
Terphenyl d14	244	5	20	50	100	200	SUR1	IS3
SOLN C1								
Toluene d8	98	50	50	50	50	50	IS0	IS6
o-Xylene d10	116	50	50	50	50	50	IS1	IS6
Phenol d5	99	50	50	50	50	50	IS2	IS6
m-Cresol d8 (d7-H?	115	50	50	50	50	50	IS3	IS6
Naphthalene d8	136	50	50	50	50	50	IS4	IS7
Benz-a-pyrene d12	264	50	50	50	50	50	IS5	IS9
SOLN C2								
ethyl benzene d10	116	5	20	50	100	200	SUR2	IS0
2-Cl phenol d4	132	5	20	50	100	200	SUR3	IS2
acenaphthene d10	164	5	20	50	100	200	SUR4	IS4
Benz-e-pyrene d12	264	5	20	50	100	200	SUR5	IS5
SOLN C3								
di Cl benzene d4	152	50	50	50	50	50	IS6	
phenanthrene d10	188	50	50	50	50	50	IS7	
chrysene-d12	240	50	50	50	50	50	IS8	
perylene d12	264	50	50	50	50	50	IS9	

SECONDARY GOAL IS TO PERFORM A QUALITATIVE ANALYSIS FOR THE CAA LIST
THIS WILL INVOLVE A SINGLE CALIBRATION POINT TO ESTABLISH A FIND DATABASE
USING THE SAME GC PARAMETERS AS FOR THE ABOVE CALIBRATION CURVE.
THE SAME GC/MS RUN WILL THEN BE PROCESSED USING BOTH SETS OF FIND
DATABASES, ONE FOR QUANTITATIVE ANALYSES, THE OTHER FOR QUALITATIVE.

JEWELL COKE OVEN SEMI-VOST SAMPLES
VER. 10-17-91

DJM 10-17-91

DAY 1

	COND 1	COND 2	COND 3	COND 4
RUNS	2 AT 3 HR	2 AT 6 HR	2 AT 6 HR	2 AT 6 HR
ANALYSES	FH BH IMP.	FH BH IMP.	FH BH IMP.	FH BH IMP.
	FH BH IMP.	FH BH IMP.	FH BH IMP.	FH BH IMP.
F. BLANK		FH BH IMP.		
REAGENT BLNK		FH BH IMP.		
	1 + 1 + 1	1 + 1 + 1	1 + 1 + 1	1 + 1 + 1
	1 + 1 + 1	1 + 1 + 1	1 + 1 + 1	1 + 1 + 1
		1 + 1 + 1		
		1 + 1 + 1		
	54	6 12	6	6

DAY 2

	COND 1	COND 2	COND 3	COND 4
	2 AT 3 HR	2 AT 6 HR	2 AT 6 HR	2 AT 6 HR
	FH BH IMP.	FH BH IMP.	FH BH IMP.	FH BH IMP.
	FH BH IMP.	FH BH IMP.	FH BH IMP.	FH BH IMP.
	1 + 1 + 1	1 + 1 + 1	1 + 1 + 1	1 + 1 + 1
	1 + 1 + 1	1 + 1 + 1	1 + 1 + 1	1 + 1 + 1
	6	6	6	6

DAY 3

COND 1	COND 2	COND 3	COND 4
2 AT 3 HR	2 AT 6 HR	2 AT 6 HR	2 AT 6 HR
FH BH IMP.	FH BH IMP.	FH BH IMP.	FH BH IMP.
FH BH IMP.	FH BH IMP.	FH BH IMP.	FH BH IMP.
1 + 1 + 1	1 + 1 + 1	1 + 1 + 1	1 + 1 + 1
1 + 1 + 1	1 + 1 + 1	1 + 1 + 1	1 + 1 + 1
24	6	6	6	6

78
TOTAL SAMPLE ANALYSES
WITHOUT LAB BLANKS

JEWELL COKE OVEN VOST SAMPLES

VER. 10-17-91

DJM 10-17-91

DAY 1

	COND 1	COND 2	COND 3	COND 4
RUNS	1 AT 20 MIN	1	1	1
	2 AT 20 MIN	2	2	2
	1 AT 40 MIN	3	3	3
	2 AT 40 MIN			
ANALYSES	T TC C T	TC C T	TC C T	TC C
	T TC C T	TC C T	TC C T	TC C
	T	TC C T	TC C T	TC C
	T TC C			
	T TC C			
	ANALYZE ALL COMBINE COND.	ANALYZE 2 COMBINE COND. ARCHIVE 1	ANALYZE 2 COMBINE COND. ARCHIVE 1	ANALYZE 2 COMBINE COND. ARCHIVE 1
	4 + 1	4 + 1	4 + 1	4 + 1
	4 + 1			
F BLANK				T+TC
	46	10	5	5	6

DAY 2

	COND 1	COND 2	COND 3	COND 4
RUNS	1 AT 20 MIN	1	1	1
	2 AT 20 MIN	2	2	2
	1 AT 40 MIN			
	2 AT 40 MIN			
ANALYSES	T TC C T	TC C T	TC C T	TC C
	T TC C T	TC C T	TC C T	TC C
	T TC C			
	T TC C			
	ANALYZE ALL COMBINE COND.	ANALYZE 1 COMBINE COND. ARCHIVE 1	ANALYZE 1 COMBINE COND. ARCHIVE 1	ANALYZE 1 COMBINE COND. ARCHIVE 1
	4 + 1	2 + 1	2 + 1	2 + 1
	4 + 1			
F BLANK				T+TC
	10	3	3	4

DAY 3

	COND 1	COND 2	COND 3	COND 4
RUNS	1 AT 20 MIN	1	1	1
	2 AT 20 MIN	2	2	2
	1 AT 40 MIN			
	2 AT 40 MIN			
ANALYSES	T TC C T	TC C T	TC C T	TC C
	T TC C T	TC C T	TC C T	TC C
	T TC C			
	T TC C			
	ANALYZE ALL COMBINE COND.	ANALYZE 1 COMBINE COND. ARCHIVE 1	ANALYZE 1 COMBINE COND. ARCHIVE 1	ANALYZE 1 COMBINE COND. ARCHIVE 1
	4 + 1	2 + 1	2 + 1	2 + 1
	4 + 1			
F BLANK				T+TC
	20	10	3	3	4

SAMPLE AN	66
MATRIX SP	3
LAB CONT	3
TRIP BLK.	1
QC CHECK	3
TOTAL	76

T = TENAX TC = TENAX/CHARCOAL C = CONDENSATE

SEMIVOLATILE EXTRACTION FORM

TLI #: 91015 A CLIENT ID: (TLI R&D Coke Plan Entropy)

SDG #:

SAMPLE #: 0 → 3

EXT DATE:

METHOD: 8270 (mod.)

EXTRACTION: SEP (SOX) SON

LEVEL: LOW MED

JOINT PROJECT: Y (N)

REEXTRACTION: Y (N)

WATER ___
SOIL ___
MMS ___
PUF ___
ASH ___
FISH ___
OTHER 3 filters

SOLVENT: (CH2CL2) TOLUENE 10%ETHER/HEXANE CH2CL2:ACETONE 1:1

SOLVENT LOT NUMBER(S): CH2Cl2 913714

MS/MSD: Y N
MS/MSD ID:
MS/MSD VOL:
SURR ID:
SURR VOL:

NUM	TLI ID	CLIENT ID	WT/VOL	FINAL VOL	FINAL SOLV	PH	SPIKE INT	SPIKE WTS	SPIKE INT	SPIKE WT	SPIKE INT	SPIKE WT	SPIKE INT	SPIKE W
							BS6-78-3 Coke Plan Soln. C1 100 mg/mL		BS6-78-1 Coke Plan Soln-C2 100 mg/mL		BS6-78-2 Coke Plan Analyte mix 100 mg/mL			
							1000 uL		1000 uL		1000 uL			
0	TLI BLK	Front Half SBLK A		5 ml	CH2Cl2		WM	FBM	WM	FBM	X		X	
1	Fraction A	Front Half #1		5 ml	CH2Cl2		WM	FBM	WM	FBM			WM	FB
2	Fraction A	Front Half #2		5 ml	CH2Cl2		WM	FBM	WM	FBM			WM	FB
3	Fraction A	Front Half #3		5 ml	CH2Cl2		WM	FBM	WM	FBM			WM	FB
4														
5														
6														
7														
8														
9														
10														
11														
12														
13														
14														
15														

COMMENTS: Extract was split 50:50. ½ was archived

Chain of Custody

1. Relinquished by CSA date 10/21/91 Received by DD date 10/21/91
   number of samples 4 of 4
2. Relinquished by _____ date _____ Received by _____ date _____
   number of samples _____ of _____
3. Relinquished by _____ date _____ Received by _____ date _____
   number of samples _____ of _____

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SAMPLE PREPARATION LABORATORY
SAMPLE EXTRACTION AND CLEANUP TRACKING FORM
ORGANIC WET LABORATORY

Filters

TLI PROJECT NO. 91015A

SAMPLE NO.	STEP NO. AND DESCRIPTION	INITIAL	DATE	TIME
0→3	Prep glassware for soxhlet extraction	WM	10/19/91	1/2 hr
0→3	Add filter to extraction thimble	↓	↓	↓
0→3	Add conc. MeCl2/MeOH rinse (~1 mL) to thimble	↓	↓	↓
(*) 0→3	Spike 1 mL Coke Plan soln. C1 @ 100 ng/mL	WM, FBM	10/19/91	3/4 hr
(*) 0→3	Spike 1 mL Coke Plan soln. C2 @ 100 ng/mL	WM, FBM	↓	↓
(*) 1→3	Spike 1 mL Coke Plan Analyte mix @ 100 ng/mL	WM, FBM	↓	↓
0→3	Extract 16 hrs. MeCl2	WM	10/19/91	16 hrs.
0→3	KD to 5 mL MeCl2; Rinse KD @ 5 mL MeCl2	FBM	10/21/91	1 1/2 hr
0→3	Transfer to graduated centrifuge tube; Adjust vol. to 10 mL MeCl2	FBM	↓	↓
0→3	Archive 5 mL extract (Split 50:50)	FBM	↓	↓
0→3	Transfer remaining 5 mL to labeled scintillation vial	FBM	↓	↓
0→3	Relinquish to GC/MS @ 5 mL MeCl2 final volume	LA	10/21/91	1/4 hr.

3hrs Sox of Filter

WATER BATH TEMPERATURE: _____
TOTAL HOURS: _____
COMMENTS: _____

(*) Spikes are volatile and should be spiked into small beaker or scintillation vial containing acetone; then acetone will be added to each sample thereafter

SAMPLE PREPARATION LABORATORY
EXTRACTION OBSERVATIONS
ORGANIC WET LAB

TLI# 91015A
METHOD 8270 (modif. cd)

OBSERVER WM
DATE 10/19/91

SAMPLE NO. Ø MATRIX Filter WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. 1 MATRIX Filter WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. 2 MATRIX Filter WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. 3 MATRIX Filter WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. _____ MATRIX _____ WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. _____ MATRIX _____ WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. _____ MATRIX _____ WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

Page _____ of _____

LEGEND ON REVERSE SIDE

SEMIVOLATILE EXTRACTION FORM

TLI #: 91015B CLIENT ID: TLI RVD (Coke Plan Entropy)

SDG #:

SAMPLE #: 0→3

EXT DATE: 10/11/91

METHOD: 8270 (lw 8/)

EXTRACTION: SEP (SOX) SON

LEVEL: LOW MED

JOINT PROJECT: Y (N)

REEXTRACTION: Y (N)

WATER ___
SOIL ___
MMS ___
PUF ___
ASH ___
FISH ___
OTHER 3

SOLVENT: (CH2CL2) TOLUENE 10%ETHER/HEXANE CH2CL2:ACETONE 1:1

SOLVENT LOT NUMBER(S): CH2CL2 913714

MS/MSD: Y N
MS/MSD ID:
MS/MSD VOL:
SURR ID: 386-51-3 Terphenyl-d,u Ptespike
SURR VOL: 1000mg/mL 1000uL

BS6-78-3 Coke Plan Soln C1 1000ug/mL 1000uL

BS6-78-1 Coke Plan Soln C2 1000mg/mL 1000uL

X(A1) BS6-[illegible] Coke Am [illegible] 1000uL

NUM	TLI ID	CLIENT ID	WT/VOL	FINAL VOL	FINAL SOLV	PH	SPIKE INT	SPIKE WTS	SPIKE INT	SPIKE WT	SPIKE INT	SPIKE WT	SPIKE INT
0	TLI BLK	BACK HALF SBLK B	40.37g	5mls	CH2Cl2		WM	TBM	WM	TBM	WM	TBM	X
1	Fraction B	Back Half #1	40.42g	5mls	CH2Cl2		WM	TBM	WM	TBM	WM	TBM	WM
2	Fraction B	Back Half #2	40.15g	5mls	CH2Cl2		WM	TBM	WM	TBM	WM	TBM	WM
3	Fraction B	Back Half #3	40.67g	5mls	CH2Cl2		WM	TBM	WM	TBM	WM	TBM	WM
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

COMMENTS: Extract WD → Spin 50:50. ½ WD → Archived

Chain of Custody

1. Relinquished by CSA date 10/21/91 Received by DD date 10/21
   number of samples 4 of 4
2. Relinquished by ___ date ___ Received by ___ date ___
   number of samples ___ of ___
3. Relinquished by ___ date ___ Received by ___ date ___
   number of samples ___ of ___

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SAMPLE PREPARATION LABORATORY
SAMPLE EXTRACTION AND CLEANUP TRACKING FORM
ORGANIC WET LABORATORY

XAD

TLI PROJECT NO. 91015 B

SAMPLE NO.	STEP NO. AND DESCRIPTION	INITIAL	DATE	TIME
0→3	Prep glassware for soxhlet extraction	WM	10/19/91	1/2 hr
0→3	Prep thimble with ~40g XAD resin	↓	↓	↓
0→3	Add conc. MeCl2/MeOH rinse (~1 mL) to thimble	↓	↓	↓
(*) 0→3	Spike 1 mL Coke Plan Soln. C1 @ 100 mg/mL	WM, FBM	10/19/91	3/4 hr
(*) 0→3	Spike 1 mL Coke Plan Soln. C2 @ 102 mg/mL	WM, FBM	↓	↓
(*) 0→3	Spike 1 mL Terphenyl-d14 surrogate @ 100 mg/mL	WM, FBM	↓	↓
(*) 1→3	Spike 1 mL Coke Plan analyte mix @ 100 mg/mL	WM, FBM	↓	↓
0→3	Extract 16 hrs. MeCl2	WM	10/19/91	16 hrs
0→3	KD extracts to 5 mL MeCl2; Rinse KD w 5 mL MeCl2	FBM	10/21/91	1/4 hrs
0→3	Transfer to graduated centrifuge tube; Adjust volume to 10 mL MeCl2	FBM	↓	↓
0→3	Archive 5 mL extract (Split Sample)	FBM	↓	↓
0→3	Transfer remaining 5 mL to labelled scintillation vial	FBM	↓	↓
0→3	Relinquish to GC/MS @ 5 mL MeCl2 final volume	LA	10/21/91	1/4 hr.

3 hrs for glassware presox

WATER BATH TEMPERATURE: _____
TOTAL HOURS: _____
COMMENTS: _____

(*) Spikes are volatile and should be spiked into small beaker or scintillation vial containing acetone; then acetone will be added to each sample thereafter.

SAMPLE PREPARATION LABORATORY
EXTRACTION OBSERVATIONS
ORGANIC WET LAB

TLI# 91015B
METHOD 5270 (Modified)

OBSERVER WM
DATE 10/14/91

SAMPLE NO. B MATRIX XAD WT./VOL. 40.37 g COLOR white
CLARITY ____ ODOR ____ PH ____ TEXTURE ____
MULTILAYERS ____ VISIBLE MOISTURE ____ OTHER ____
Lot # T601

SAMPLE NO. 1 MATRIX XAD WT./VOL. 40.42 g COLOR white
CLARITY ____ ODOR ____ PH ____ TEXTURE ____
MULTILAYERS ____ VISIBLE MOISTURE ____ OTHER ____
Lot # T601

SAMPLE NO. 2 MATRIX XAD WT./VOL. 40.15 g COLOR white
CLARITY ____ ODOR ____ PH ____ TEXTURE ____
MULTILAYERS ____ VISIBLE MOISTURE ____ OTHER ____
Lot # T601

SAMPLE NO. 3 MATRIX XAD WT./VOL. 40.07 g COLOR white
CLARITY ____ ODOR ____ PH ____ TEXTURE ____
MULTILAYERS ____ VISIBLE MOISTURE ____ OTHER ____
Lot # T601

SAMPLE NO. ____ MATRIX ____ WT./VOL. ____ COLOR ____
CLARITY ____ ODOR ____ PH ____ TEXTURE ____
MULTILAYERS ____ VISIBLE MOISTURE ____ OTHER ____

SAMPLE NO. ____ MATRIX ____ WT./VOL. ____ COLOR ____
CLARITY ____ ODOR ____ PH ____ TEXTURE ____
MULTILAYERS ____ VISIBLE MOISTURE ____ OTHER ____

SAMPLE NO. ____ MATRIX ____ WT./VOL. ____ COLOR ____
CLARITY ____ ODOR ____ PH ____ TEXTURE ____
MULTILAYERS ____ VISIBLE MOISTURE ____ OTHER ____

LEGEND ON REVERSE SIDE

SEMIVOLATILE EXTRACTION FORM

TLI #: 91015C CLIENT ID: TLI R&D (Coke Plan Entropy)

SDG #:

SAMPLE #: 0 → 3

EXT DATE: 10/19/91

METHOD: 8270 (mod.)

EXTRACTION: SEP SOX SON

SOLVENT: CH2Cl2 TOLUENE 10%ETHER/HEXANE CH2Cl2:ACETONE 1:1

SOLVENT LOT NUMBER(S): CH2Cl2 913714

LEVEL: LOW MED

JOINT PROJECT: Y (N)

REEXTRACTION: Y (N)

WATER 3 ~~X~~

SOIL

MMS

PUF

ASH

FISH

OTHER

MS/MSD: Y N

MS/MSD ID:

MS/MSD VOL:

SURR ID: Coke Plan Soln. C1 B$6-78-3 100 mg/mL

SURR VOL: 1000 uL

Coke Plan Soln. C2 B$6-78-1 100 mg/mL 1000 uL

Coke Plan Analyte M. B$6-78-2 100 mg/mL 1000 uL

NUM	TLI ID	CLIENT ID	WT/VOL	FINAL VOL	FINAL SOLV	PH	SPIKE INT	SPIKE WTS	SPIKE INT	SPIKE WT	SPIKE INT	SPIKE WT	SPIK INT
0	TLI BLK	Aqueous SBLK C	1000 mls	5 mls	CH2Cl2	7	WM	CA	CA	WM			
1	Fraction C	Aqueous #1	1000 mls	5 mls	CH2Cl2	7	WM	CA	CA	WM	CA	WM	
2	Fraction C	Aqueous #2	1000 mls	5 mls	CH2Cl2	7	WM	CA	CA	WM	CA	WM	
3	Fraction C	Aqueous #3	1000 mls	5 mls	CH2Cl2	7	WM	CA	CA	WM	CA	WM	
4													
5													
6													
7													
8													
9													
10													
11													
12													
13													
14													
15													

COMMENTS: Extract was split 50:50. 1/2 was archived.

Chain of Custody

1. Relinquished by CSA date 10/21/91 Received by DD date 10/21/
   number of samples 4 of 4
2. Relinquished by _____ date _____ Received by _____ date _____
   number of samples _____ of _____
3. Relinquished by _____ date _____ Received by _____ date _____
   number of samples _____ of _____

rev 9 12/05/90

SAMPLE PREPARATION LABORATORY
SAMPLE EXTRACTION AND CLEANUP TRACKING FORM
ORGANIC WET LABORATORY

Aqueous

TLI PROJECT NO. 91015 C

SAMPLE NO.	STEP NO. AND DESCRIPTION	INITIAL	DATE	TIME
0→3	Prep glassware for liq./liq. extraction	CA	10/19/91	1/2hr.
0→3	Add 1000mL HPLC H_2O to sep funnel	↓	↓	↓
0→3	Add 5mL $MeCl_2$/MeOH rinse (~1mL) to sep funnel	WM		1/2hr
⊕ 0→3	Spike 1mL Coke Plan Soln. C1 @ 100 ng/mL	CA, WM		
⊕ 0→3	Spike 1mL Coke Plan Soln. C2 @ 100 ng/mL			
⊕ 1→3	Spike 1mL Coke Plan Analyte Mix @ 100 ng/mL			
0→3	Adjust pH ≥12 w/ 10N NaOH	↓	↓	↓
0→3	Extract 3x60mL $MeCl_2$	TBM	10/19/91	1½hr
0→3	Adjust pH ≤2 w/ 50% H_2SO_4	TBM	↓	↓
0→3	(In same flask, collect extracts) Extract 3x60mL $MeCl_2$	TBM	↓	↓
0→3	KD combined extracts to 5mL $MeCl_2$; Rinse KD w/ 5mL $MeCl_2$	CA, TBM	10/21/91	1½hr
0→3	Transfer to graduated centrifuge tube; Adjust volume to 10mL $MeCl_2$	TBM	↓	↓
0→3	Split 50/50; Archive 5mL extract	TBM	↓	↓
0→3	Transfer remaining 5mL extract to labelled scintillation vial	TBM	↓	↓
0→3	Relinquish to GC/MS @ 5mL $MeCl_2$ final vol.	CA	10/21/91	1/4hr.

WATER BATH TEMPERATURE: _____
TOTAL HOURS: _____
COMMENTS: ⊕ Spikes are volatile and should be spiked into small beaker or scintillation vial containing acetone; then acetone will be added to each sample thereafter.

SAMPLE PREPARATION LABORATORY
EXTRACTION OBSERVATIONS
ORGANIC WET LAB

TLI# 910|8C
METHOD 8270 (Modified)

OBSERVER wm/CA/FBr SB.M
DATE [illegible]

SAMPLE NO. Ø MATRIX H2O WT./VOL. 1000 ml COLOR clear
CLARITY _____ ODOR _____ PH 7 TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. 1 MATRIX H2O WT./VOL. 1000 mL COLOR clear
CLARITY _____ ODOR _____ PH 7 TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. 2 MATRIX H2O WT./VOL. 1000 mL COLOR clear
CLARITY _____ ODOR _____ PH 7 TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. 3 MATRIX H2O WT./VOL. 1000 mL COLOR clear
CLARITY _____ ODOR _____ PH 7 TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. _____ MATRIX _____ WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. _____ MATRIX _____ WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

SAMPLE NO. _____ MATRIX _____ WT./VOL. _____ COLOR _____
CLARITY _____ ODOR _____ PH _____ TEXTURE _____
MULTILAYERS _____ VISIBLE MOISTURE _____ OTHER _____

Page _____ of _____

LEGEND ON REVERSE SIDE

TRIANGLE LABORATORIES INC
RUN LOG

MS#	COLUMN TYPE	COLUMN #	METHOD TYPE	ACQ METHOD	G/C METHOD	OTHER
G	DB5-625	0217625	BNA	BNA	BNA	

DATE	TIME	PROJECT#	SAMPLE#	CLIENT SAMPLE ID	FILE NAME	op	spe	rpt	pro	backup	comments
10-22-91			BS767-2	DFTPP	GE800	Jm					127 Too hi.
			BS7-67-2	DFTPP	GE801						
			BS7 67-2	DFTPP	GE802						
			BS7-67-2	DFTPP	GE803						Sens. low
			BS7-67-2	DFTPP	GE804	DJY					
	1646		BS7-67-2	DFTPP	GE805	DJY	—	—	—		up mult. plier to 330v
	17:09		BS7-74-5	SSTD050	GE806	JD	—	—	—		
	17:57			Hexane Blank	GE807		—	—	—		
	18:44	19251		SBLK 101691	GE808		—	—	—		
	19:34		SD-152-1	Outfall 001	GE809		—	—	—		
	20:43		BS4-73-2	SSTD050 COKE	GE810	RW					
	21:35		—	Hexane Blank	GE811						
	22:29	91015A	—	SBLK 101991 A	GE812						
	23:11	91015B	—	SBLK 101991 B	GE813						
	00:9	91015C	—	SBLK 101991 C	GE814						

PAGE # 06

CHECKED BY

..UN LOG

MS#	COLUMN TYPE	COLUMN #	METHOD TYPE	ACQ METHOD	G/C METHOD	OTHER

DATE	TIME	PROJECT#	SAMPLE#	CLIENT SAMPLE ID	FILE NAME	op	ape	rpt	pro	backup	comments
	00:50	91015A	Fraction A	Front Half 1	GE815	✓					
	01:40		Fraction A	Front Half 2	GE816						
	02:29		Fraction A	Front Half 3	GE817						
	03:19	91015B	Fraction B	Back Half 1	GE818						
	04:08		Fraction B	Back Half 2	GE819						
	04:57		Fraction B	Back Half 3	GE820						
	05:47	91015C	Fraction C	Aqueous 1	GE821						
	06:36		Fraction C	Aqueous 2	GE822						
	07:25		Fraction C	Aqueous 3	GE823	↓					
			BS 6-79-4 DJH 10-24-91	QC Test Solution	GE824						

PAGE #	07	

CHECKED BY

TRIANGLES LABORATORIES,INC.
SAMPLE ANALYSIS COKE ANALYTES

REPORT DATE 10/24/91

FILE GE815 SAMPLE ID FRONT HALF 1
ANALYIS DATE 10/23/91
EXT. VOL.(ML) 10

NAME	AMT FOUND EXT. CONCN. (UG/ML)	SAMPLE AMT. UG TOTAL	SCAN NO.	% RECOVERY	RF50	AREA
1,4-Dichlorobenzene-d4			510			468512
Phenanthrene-d10			1164			1884948
Chrysene-d12			1564			2749892
Perylene-d12			1772			1765924
Toluene-d8	5.81	58.06	240	58.1%	2.058	111984
o-Xylene-d10	6.76	67.56	371	67.6%	1.214	76872
Phenol-d5	7.10	70.98	470	71.0%	2.091	139052
m-Cresol-d7H	6.38	63.78	546	63.8%	1.574	94068
Naphthalene-d8	6.46	64.59	683	64.6%	1.423	346416
Benzo(a)pyrene-d12	7.41	74.12	1760	74.1%	1.197	313247
Ethylbenzene-d10	9.78	97.76	337	97.8%	.454	49660
2-Chlorophenol-d4	8.82	88.18	481	88.2%	.660	80960
Acenaphthene-d10	9.77	97.75	941	97.7%	.534	180832
Terphenyl-d14	.00	.00	0	.0%	.714	0
Benzo(e)pyrene-d12	8.85	88.55	1751	88.5%	.494	137008
Toluene	12.40	123.97	244	124.0%	1.178	163516
Xylene	9.53	95.32	377	95.3%	2.018	147888
Phenol	8.98	89.83	471	89.8%	1.133	141576
Cresol	9.87	98.68	572	98.7%	1.005	9332
Naphthalene	8.55	85.46	686	85.5%	1.032	305606
Benzo(a)pyrene	7.46	74.59	1763	74.6%	1.234	288360

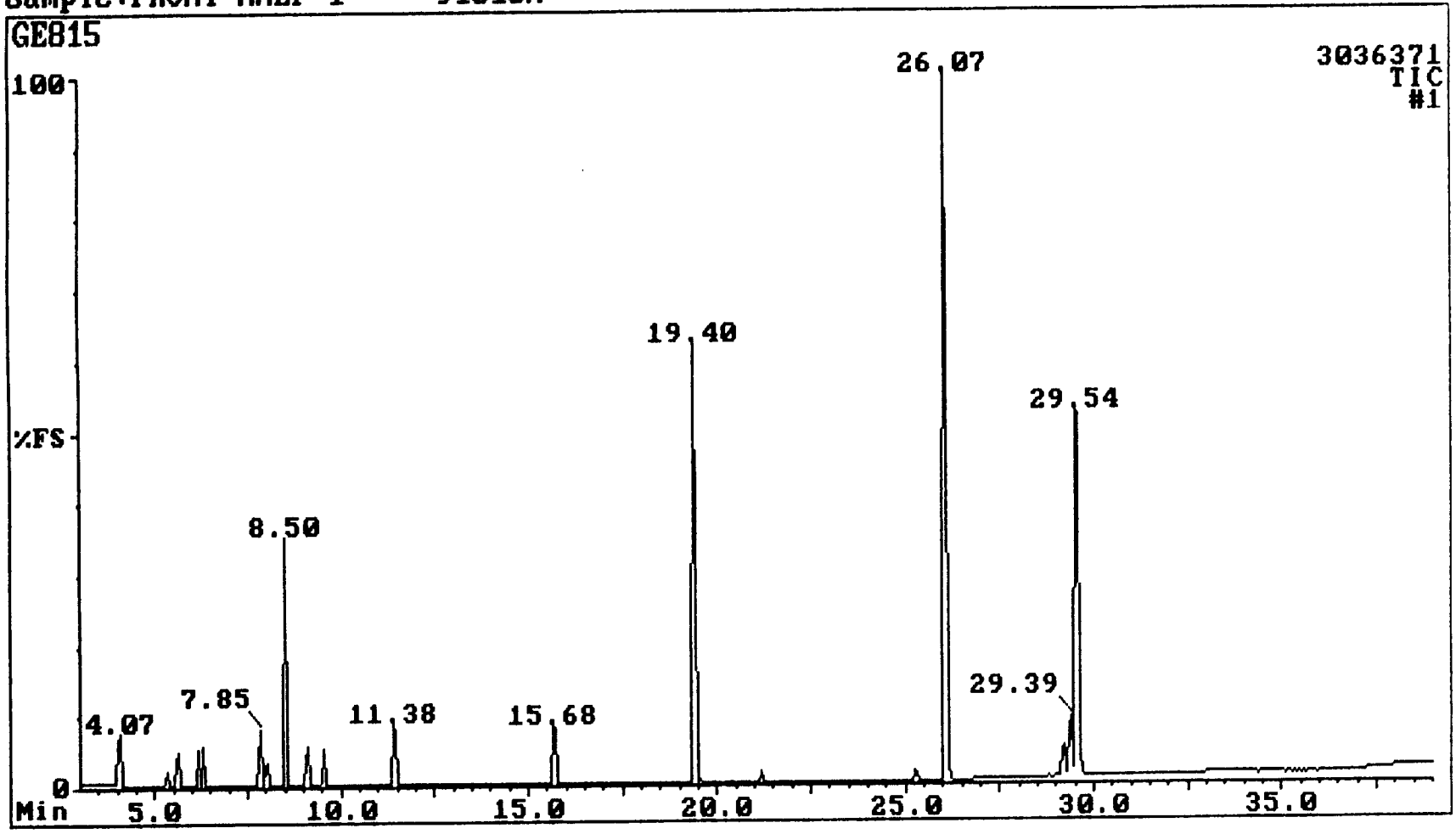
AN DB : GE815 LAB-BASE QUAN 23-Oct-91 11:03

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	100	87	99	0	468510	bb	510	152	1,4-Dichlorobenzene-d4
2	100	92	96	0	1884900	bv	1164	188	Phenanthrene-d10
3	100	88	94	0	2749900	bv	1564	240	Chrysene-d12
4	100	85	91	-1	1765900	vv	1772	264	Perylene-d12
5	100	90	97	0	111980	bb	240	98	Toluene-d8
6	100	90	94	0	76872	bb	371	116	o-Xylene-d10
7	100	69	97	0	139050	bb	470	99	Phenol-d5
8	100	89	92	0	94068	bb	546	115	m-Cresol-d7H
9	100	83	91	0	346420	bb	683	136	Naphthalene-d8
10	100	76	92	0	313250	vv	1760	264	Benzo(a)pyrene-d12
11	100	86	94	0	49660	bb	337	116	Ethylbenzene-d10
12	100	84	87	0	80960	bb	481	132	2-Chlorophenol-d4
13	100	89	92	-1	180830	bb	941	164	Acenaphthene-d10
14	0	0	0	0	0		0	244	Terphenyl-d14
15	100	76	92	0	137010	bv	1751	264	Benzo(e)pyrene-d12
16	100	92	98	1	163520	bb	244	91	Toluene
17	100	93	98	-1	147890	bb	377	91	Xylene
18	100	87	97	-1	141580	bb	471	94	Phenol
19	100	89	92	0	93324	bb	572	108	Cresol
20	100	90	95	0	305610	bb	686	128	Naphthalene
21	94	64	90	0	288360	bv	1763	252	Benzo(a)pyrene

DJH 10-26-91

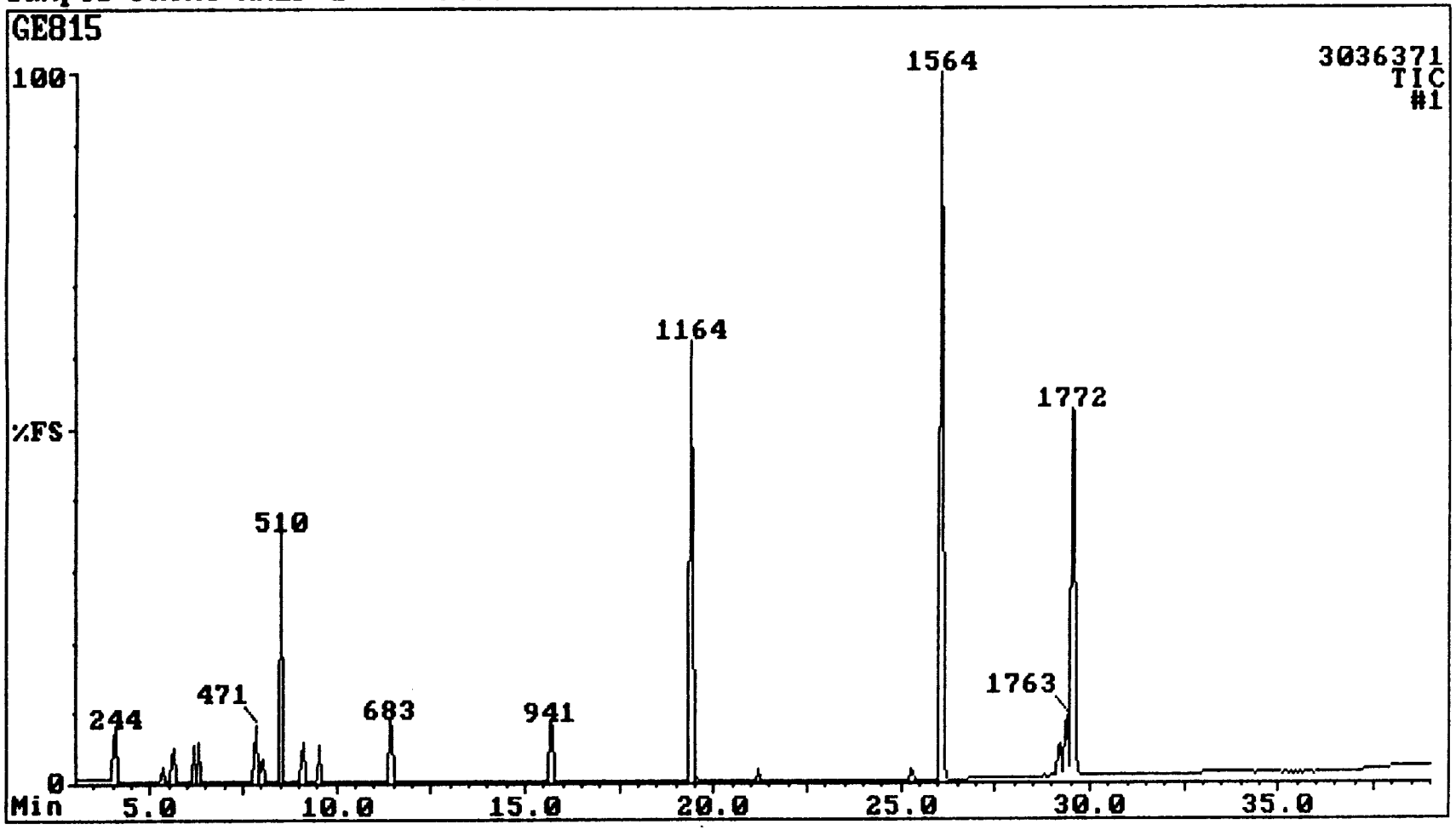
23-Oct-91 00:50 Triangle Laboratories, Inc. (919) 544-5729

Sample:FRONT HALF 1 91015A Instrument G



23-Oct-91 00:50 Triangle Laboratories, Inc. (919) 544-5729

Sample:FRONT HALF 1 91015A Instrument G



TRIANGLES LABORATORIES,INC.
SAMPLE ANALYSIS COKE ANALYTES

REPORT DATE 10/24/91

FILE GE816 SAMPLE ID FRONT HALF 2
ANALYIS DATE 10/23/91
EXT. VOL.(ML) 10

NAME	AMT FOUND EXT. CONCN. (UG/ML)	SAMPLE AMT. UG TOTAL	SCAN NO.	% RECOVERY	RF50	AREA
1,4-Dichlorobenzene-d4			510			485616
Phenanthrene-d10			1164			2010816
Chrysene-d12			1564			2882280
Perylene-d12			1772			1803772
Toluene-d8	5.55	55.54	240	55.5%	2.058	111044
o-Xylene-d10	6.77	67.69	371	67.7%	1.214	79832
Phenol-d5	7.67	76.66	470	76.7%	2.091	155668
m-Cresol-d7H	6.93	69.32	546	69.3%	1.574	105976
Naphthalene-d8	6.42	64.24	683	64.2%	1.423	367568
Benzo(a)pyrene-d12	7.81	78.07	1760	78.1%	1.197	336991
Ethylbenzene-d10	9.92	99.23	337	99.2%	.454	49984
2-Chlorophenol-d4	8.39	83.87	481	83.9%	.660	86204
Acenaphthene-d10	9.98	99.76	941	99.8%	.534	195832
Terphenyl-d14	.00	.00	0	.0%	.714	0
Benzo(e)pyrene-d12	8.47	84.73	1751	84.7%	.494	141038
Toluene	11.74	117.37	244	117.4%	1.178	153508
Xylene	9.27	92.67	377	92.7%	2.018	149312
Phenol	9.08	90.78	471	90.8%	1.133	160160
Cresol	10.55	105.52	572	105.5%	1.005	11242[illegible]
Naphthalene	8.79	87.88	686	87.9%	1.032	3334[illegible]
Benzo(a)pyrene	7.40	74.04	1763	74.0%	1.234	307952

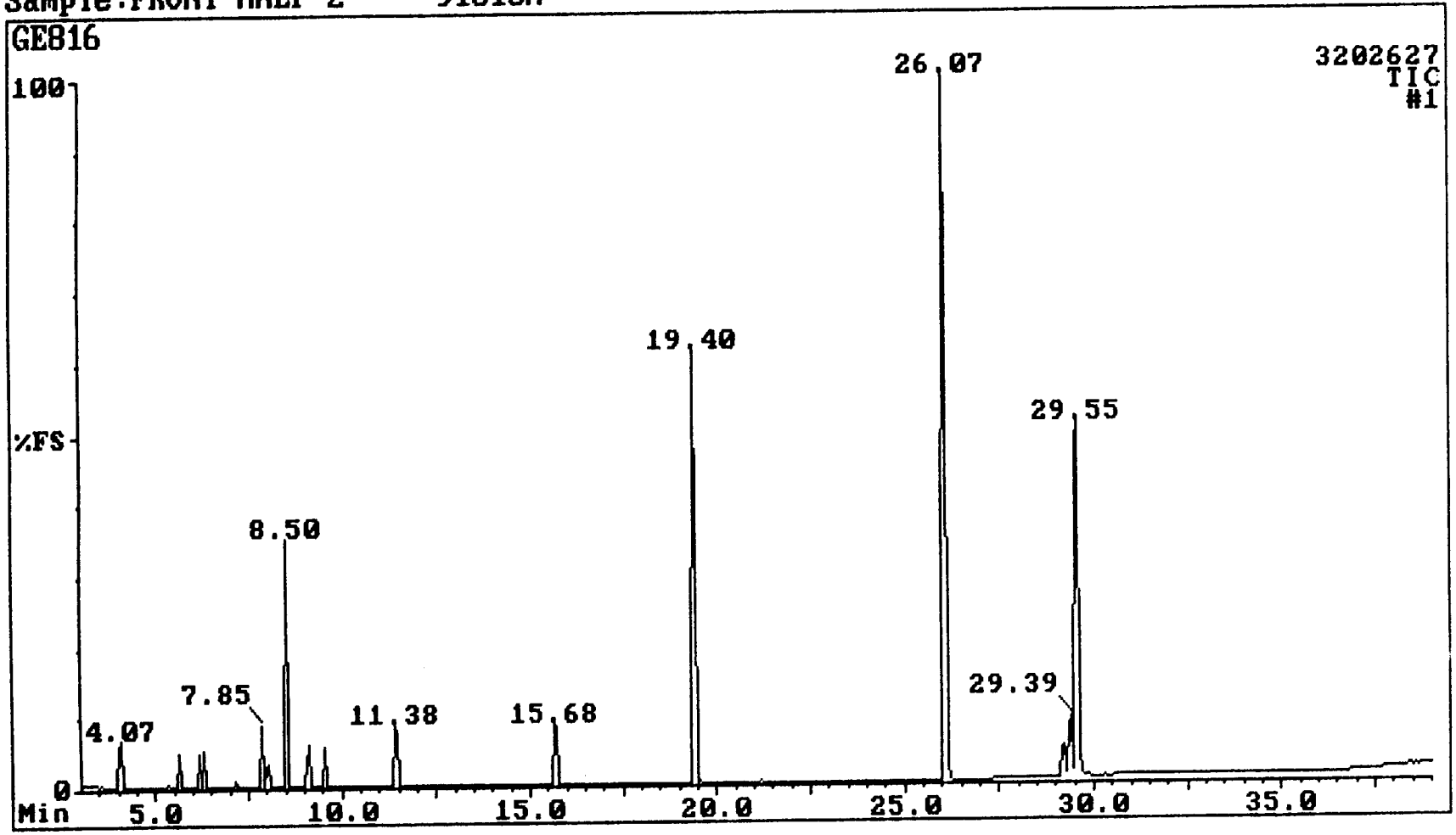
QUAN DB : SE816 LAB-BASE QUAN 23-Oct-91 11:03

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	100	87	99	0	485620	bb	510	152	1,4-Dichlorobenzene-d4
2	100	92	96	0	2010800	bv	1164	188	Phenanthrene-d10
3	100	89	94	0	2882300	bv	1564	240	Chrysene-d12
4	100	85	91	-1	1803800	vv	1772	264	Perylene-d12
5	100	89	97	0	111040	bb	240	98	Toluene-d8
6	100	89	93	0	79832	bb	371	116	o-Xylene-d10
7	100	68	97	0	155670	bb	470	99	Phenol-d5
8	100	91	93	0	105980	bb	546	115	m-Cresol-d7H
9	100	82	92	0	367570	bb	683	136	Naphthalene-d8
10	100	76	91	0	336990	vv	1760	264	Benzo(a)pyrene-d12
11	100	84	91	0	49984	bb	337	116	Ethylbenzene-d10
12	100	84	86	0	86204	bb	481	132	2-Chlorophenol-d4
13	100	90	92	-1	195830	bb	941	164	Acenaphthene-d10
14	0	0	0	0	0		0	244	Terphenyl-d14
15	100	77	92	0	141040	bv	1751	264	Benzo(e)pyrene-d12
16	100	92	98	1	153510	bb	244	91	Toluene
17	100	92	98	-1	149310	bb	377	91	Xylene
18	100	73	97	-1	160160	bb	471	94	Phenol
19	100	91	94	0	112430	bb	572	108	Cresol
20	100	91	95	0	333460	bb	686	128	Naphthalene
21	94	60	90	0	307950	bv	1763	252	Benzo(a)pyrene

DJM
10-26-91

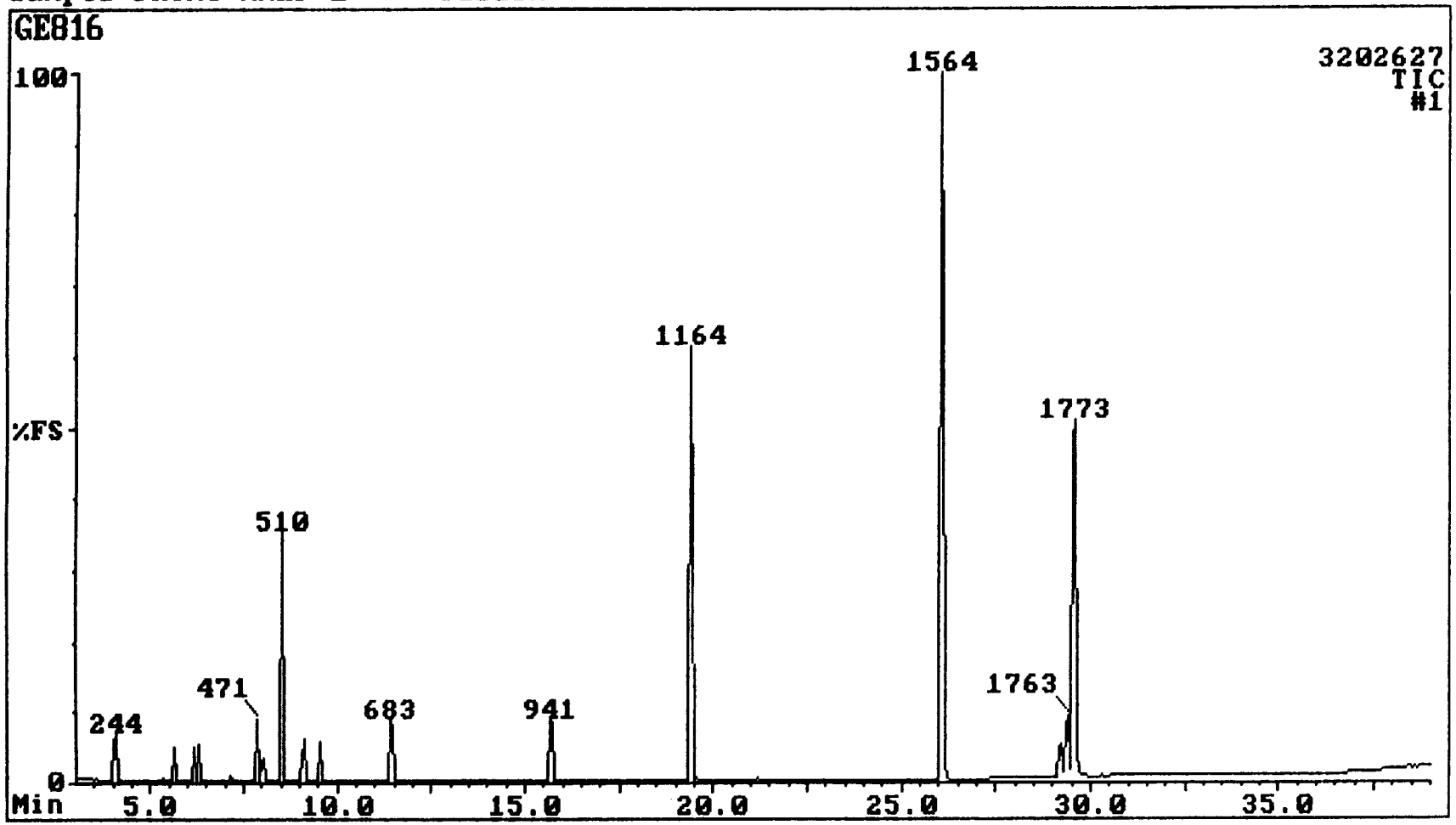
23-Oct-91 01:40 Triangle Laboratories, Inc. (919) 544-5729

Sample:FRONT HALF 2 91015A Instrument G



23-Oct-91 01:40 Triangle Laboratories, Inc. (919) 544-5729

Sample:FRONT HALF 2 91015A Instrument G



TRIANGLES LABORATORIES,INC.
SAMPLE ANALYSIS COKE ANALYTES

REPORT DATE 10/24/91

FILE GE817 SAMPLE ID FRONT HALF 3
ANALYIS DATE 10/23/91
EXT. VOL.(ML) 10

NAME	AMT FOUND EXT. CONCN. (UG/ML)	SAMPLE AMT. UG TOTAL	SCAN NO.	% RECOVERY	RF50	AREA
1,4-Dichlorobenzene-d4			510			526384
Phenanthrene-d10			1164			2135496
Chrysene-d12			1564			3095660
Perylene-d12			1772			1912736
Toluene-d8	4.82	48.23	240	48.2%	2.058	104512
o-Xylene-d10	5.75	57.52	371	57.5%	1.214	73536
Phenol-d5	7.36	73.63	470	73.6%	2.091	162076
m-Cresol-d7H	6.84	68.39	546	68.4%	1.574	113324
Naphthalene-d8	5.98	59.80	683	59.8%	1.423	363360
Benzo(a)pyrene-d12	7.52	75.23	1760	75.2%	1.197	344374
Ethylbenzene-d10	10.15	101.47	337	101.5%	.454	48104
2-Chlorophenol-d4	8.53	85.35	481	85.3%	.660	91332
Acenaphthene-d10	10.35	103.54	941	103.5%	.534	200916
Terphenyl-d14	.00	.00	0	.0%	.714	0
Benzo(e)pyrene-d12	8.78	87.79	1751	87.8%	.494	149344
Toluene	13.12	131.21	244	131.2%	1.178	161516
Xylene	10.45	104.52	377	104.5%	2.018	155120
Phenol	9.93	99.27	471	99.3%	1.133	1823[illegible]
Cresol	10.93	109.32	572	109.3%	1.005	1245[illegible]
Naphthalene	9.53	95.26	686	95.3%	1.032	357316
Benzo(a)pyrene	8.29	82.89	1763	82.9%	1.234	352304

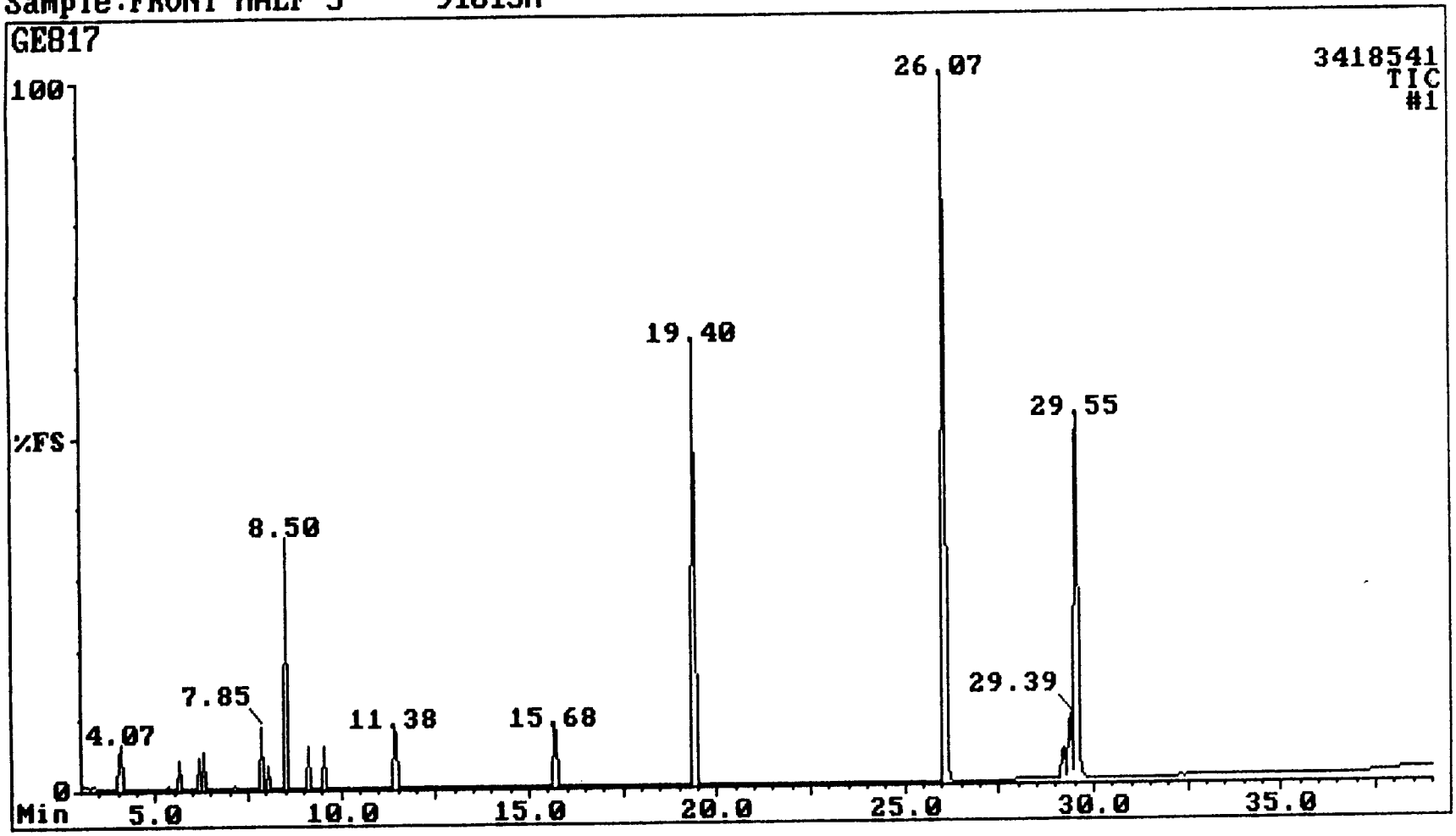
AN DB : GE817 LAB-BASE QUAN 23-Oct-91 11:03

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	100	87	99	0	526380	bb	510	152	1,4-Dichlorobenzene-d4
2	100	92	96	0	2135500	bv	1164	188	Phenanthrene-d10
3	100	88	93	0	3095700	bv	1564	240	Chrysene-d12
4	100	86	91	-1	1912700	vv	1772	264	Perylene-d12
5	100	89	97	0	104510	bb	240	98	Toluene-d8
6	100	90	94	0	73536	bb	371	116	o-Xylene-d10
7	100	65	96	0	162080	bb	470	99	Phenol-d5
8	100	91	93	0	113320	bb	546	115	m-Cresol-d7H
9	100	82	92	0	363360	bb	683	136	Naphthalene-d8
10	100	76	92	0	344370	vv	1760	264	Benzo(a)pyrene-d12
11	100	86	94	0	48104	bb	337	116	Ethylbenzene-d10
12	100	86	88	0	91332	bb	481	132	2-Chlorophenol-d4
13	100	90	92	-1	200920	bb	941	164	Acenaphthene-d10
14	0	0	0	0	0		0	244	Terphenyl-d14
15	100	75	91	0	149340	bv	1751	264	Benzo(e)pyrene-d12
16	100	93	98	1	161520	bb	244	91	Toluene
17	100	93	98	-1	155120	bb	377	91	Xylene
18	100	76	97	-1	182350	bb	471	94	Phenol
19	100	92	94	0	124560	bb	572	108	Cresol
20	100	91	95	0	357320	bb	686	128	Naphthalene
21	96	62	91	0	352300	bv	1763	252	Benzo(a)pyrene

DJY
10-26-91

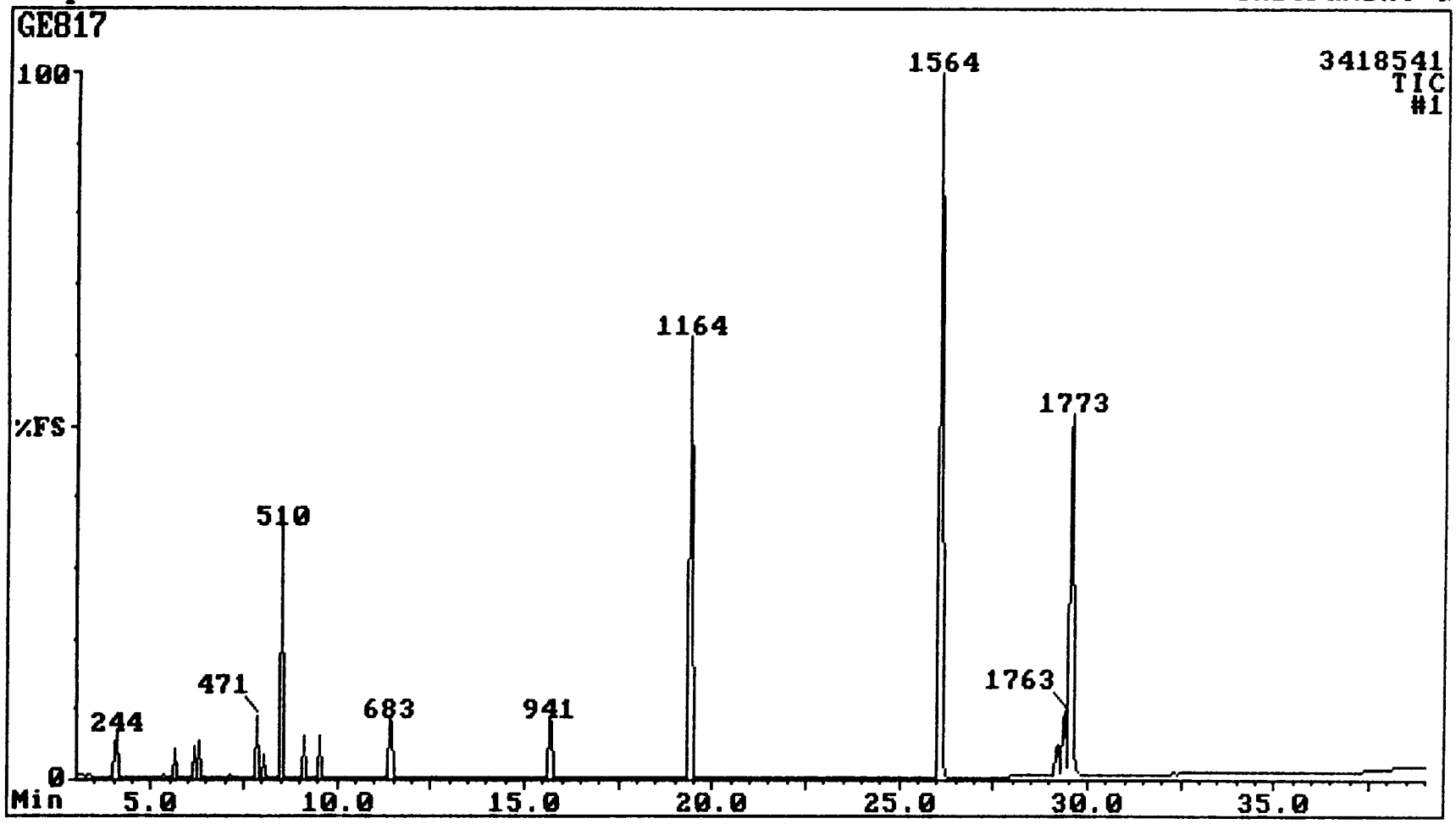
23-Oct-91 02:29 Triangle Laboratories, Inc. (919) 544-5729

Sample:FRONT HALF 3 91015A Instrument G



23-Oct-91 02:29 Triangle Laboratories, Inc. (919) 544-5729

Sample:FRONT HALF 3 91015A Instrument G



TRIANGLES LABORATORIES,INC.
SAMPLE ANALYSIS COKE ANALYTES

REPORT DATE 10/24/91

FILE GE818 SAMPLE ID BACK HALF 1
ANALYIS DATE 10/23/91
EXT. VOL.(ML) 10

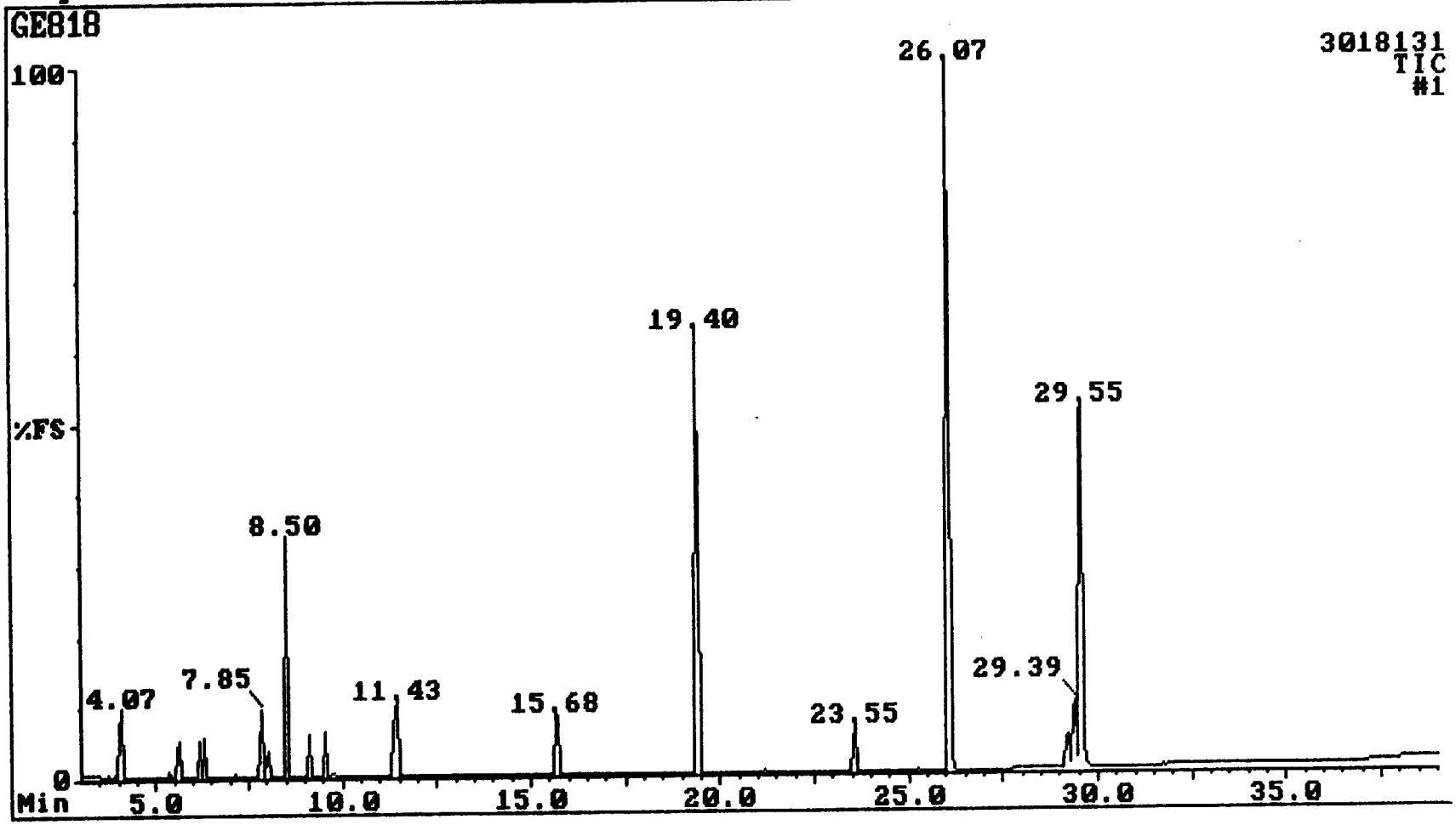
NAME	AMT FOUND EXT. CONCN. (UG/ML)	SAMPLE AMT. UG TOTAL	SCAN NO.	% RECOVERY	RF50	AREA
1,4-Dichlorobenzene-d4			510			449824
Phenanthrene-d10			1164			1907964
Chrysene-d12			1564			2745296
Perylene-d12			1772			1752264
Toluene-d8	6.38	63.77	240	63.8%	2.058	118100
o-Xylene-d10	7.02	70.24	371	70.2%	1.214	76736
Phenol-d5	8.07	80.68	470	80.7%	2.091	151748
m-Cresol-d7H	7.32	73.24	546	73.2%	1.574	103712
Naphthalene-d8	6.49	64.95	683	64.9%	1.423	352624
Benzo(a)pyrene-d12	7.70	76.98	1760	77.0%	1.197	322827
Ethylbenzene-d10	9.75	97.47	337	97.5%	.454	52216
2-Chlorophenol-d4	8.45	84.54	481	84.5%	.660	84704
Acenaphthene-d10	10.25	102.46	941	102.5%	.534	192944
Terphenyl-d14	6.09	60.89	1413	60.9%	.714	238736
Benzo(e)pyrene-d12	9.14	91.43	1751	91.4%	.494	145790
Toluene	15.07	150.72	244	150.7%	1.178	209660
Xylene	10.11	101.11	377	101.1%	2.018	156592
Phenol	9.68	96.75	471	96.8%	1.133	16640[illegible]
Cresol	11.01	110.14	572	110.1%	1.005	1148
Naphthalene	11.76	117.57	686	117.6%	1.032	42796[illegible]
Benzo(a)pyrene	8.06	80.56	1763	80.6%	1.234	320992

AN DB : GE818 LAB-BASE QUAN 23-Oct-91 11:03

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	100	87	99	0	449820	bb	510	152	1,4-Dichlorobenzene-d4
2	100	92	96	0	1908000	bv	1164	188	Phenanthrene-d10
3	100	89	94	0	2745300	bv	1564	240	Chrysene-d12
4	100	86	92	-1	1752300	vb	1772	264	Perylene-d12
5	100	87	97	0	118100	bb	240	98	Toluene-d8
6	100	88	92	0	76736	bb	371	116	o-Xylene-d10
7	100	67	97	0	151750	bb	470	99	Phenol-d5
8	100	89	93	0	103710	bb	546	115	m-Cresol-d7H
9	100	83	93	0	352620	bb	683	136	Naphthalene-d8
10	100	77	90	0	322830	vv	1760	264	Benzo(a)pyrene-d12
11	100	85	92	0	52216	bb	337	116	Ethylbenzene-d10
12	100	84	86	0	84704	bb	481	132	2-Chlorophenol-d4
13	100	88	90	-1	192940	bb	941	164	Acenaphthene-d10
14	100	89	94	0	238740	bb	1413	244	Terphenyl-d14
15	100	79	92	0	145790	bv	1751	264	Benzo(e)pyrene-d12
16	100	94	99	1	209660	bb	244	91	Toluene
17	100	94	98	-1	156590	bb	377	91	Xylene
18	100	75	97	-1	166400	bb	471	94	Phenol
19	100	92	94	0	114840	bb	572	108	Cresol
20	100	92	96	0	427970	bb	686	128	Naphthalene
21	95	66	90	0	320990	bv	1763	252	Benzo(a)pyrene

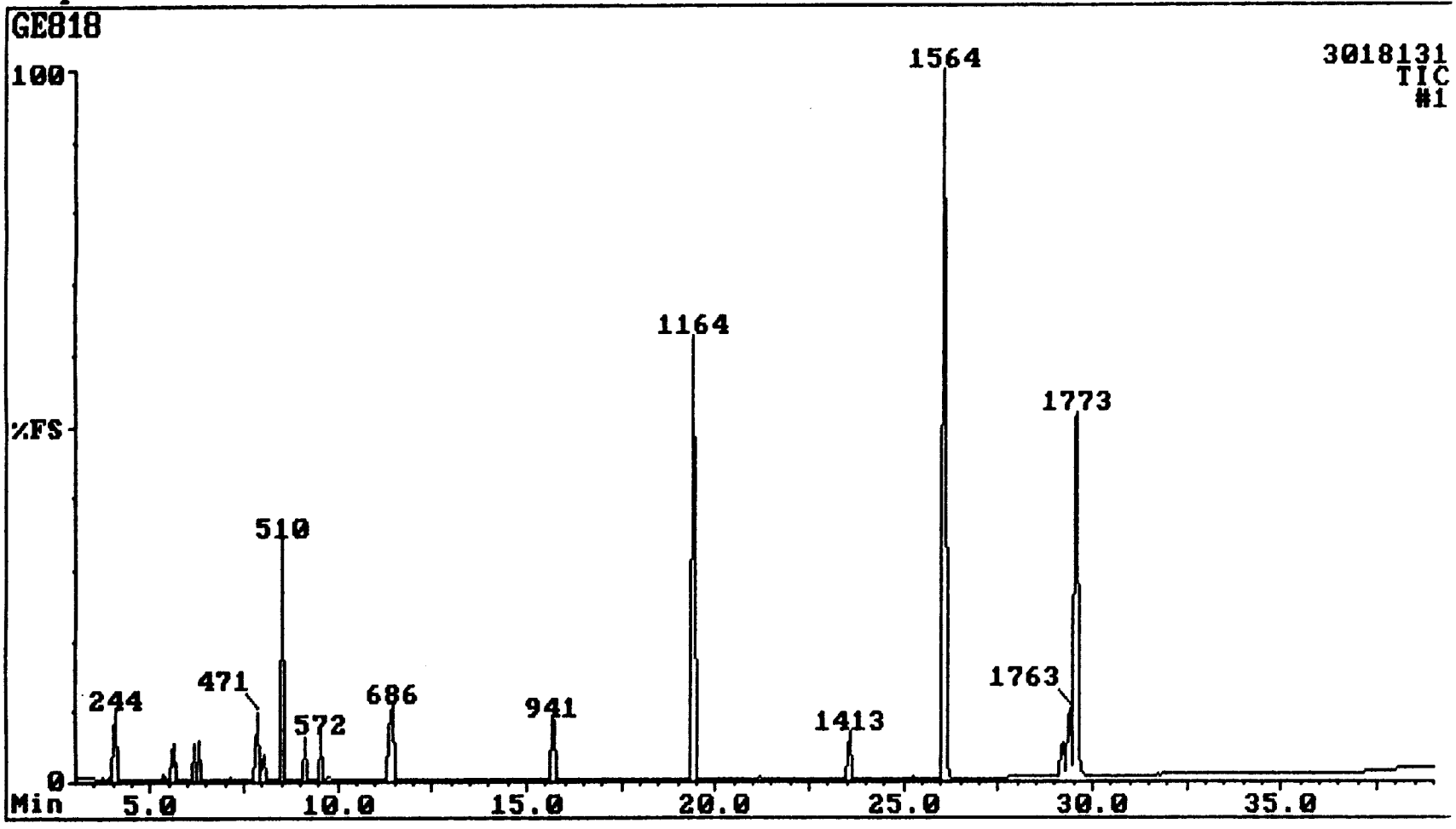
DJY 10-26-91

23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729
Sample:BACK HALF 1 91015B Instrument G



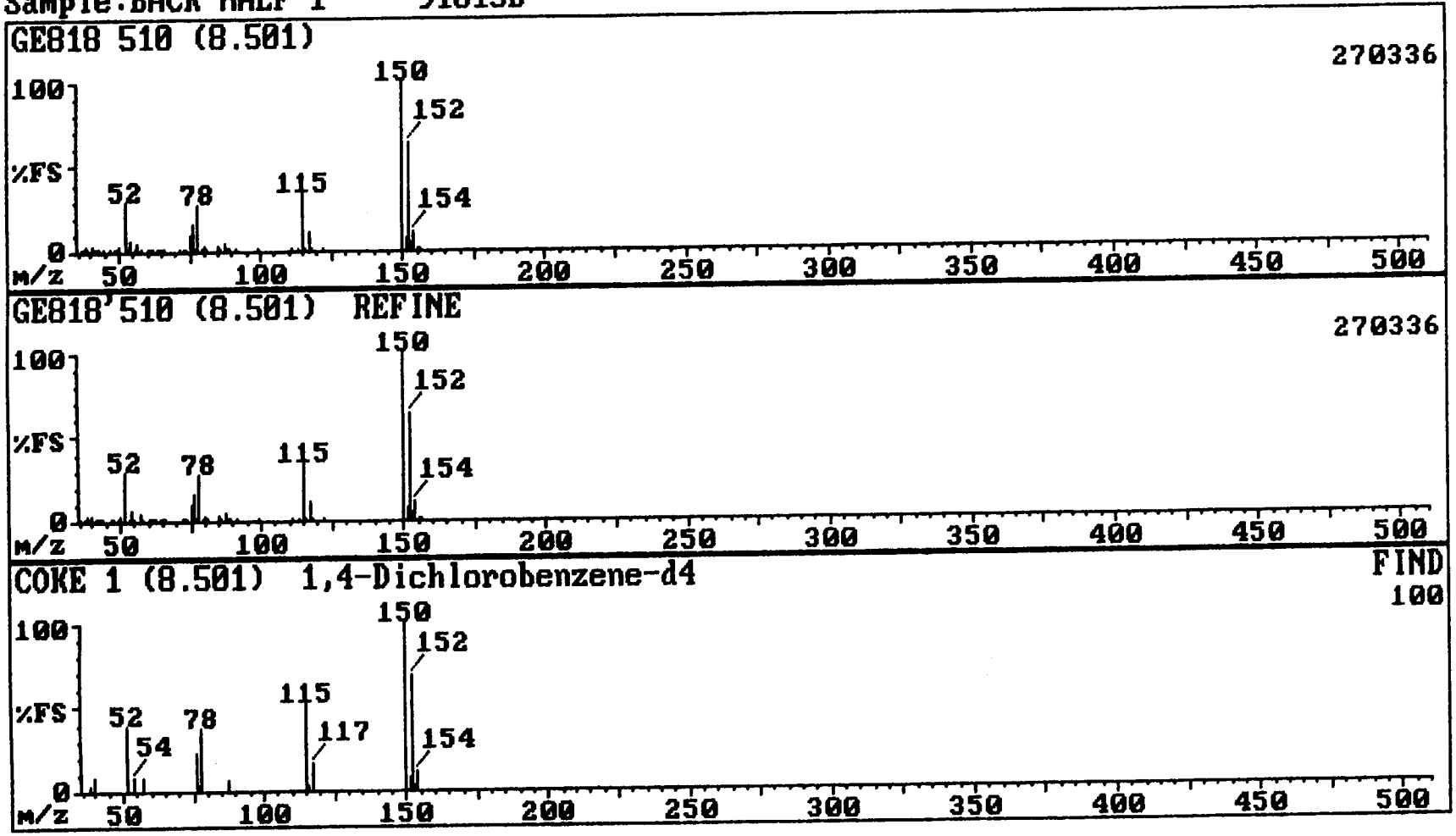
23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 1 91015B Instrument G



23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

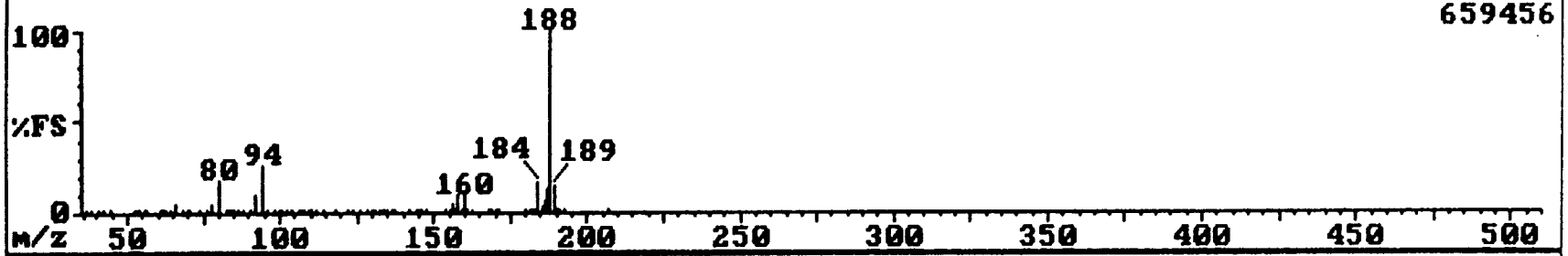
Sample:BACK HALF 1 91015B Instrument G



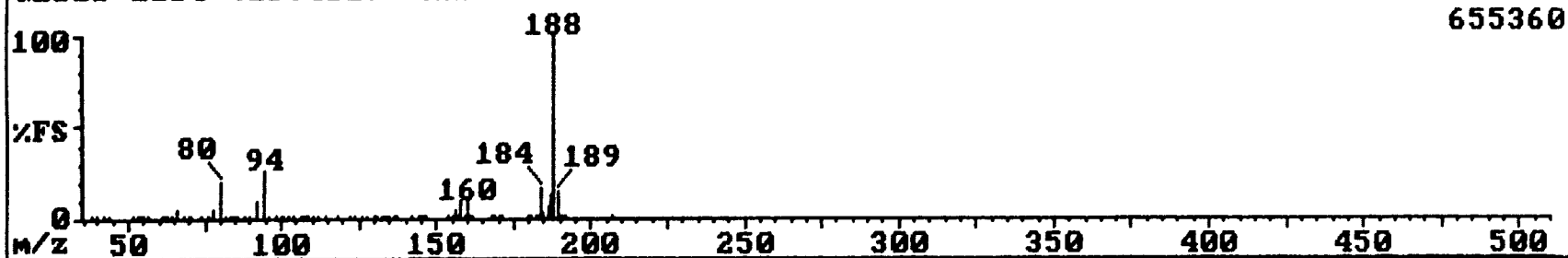
23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 1 91015B Instrument G

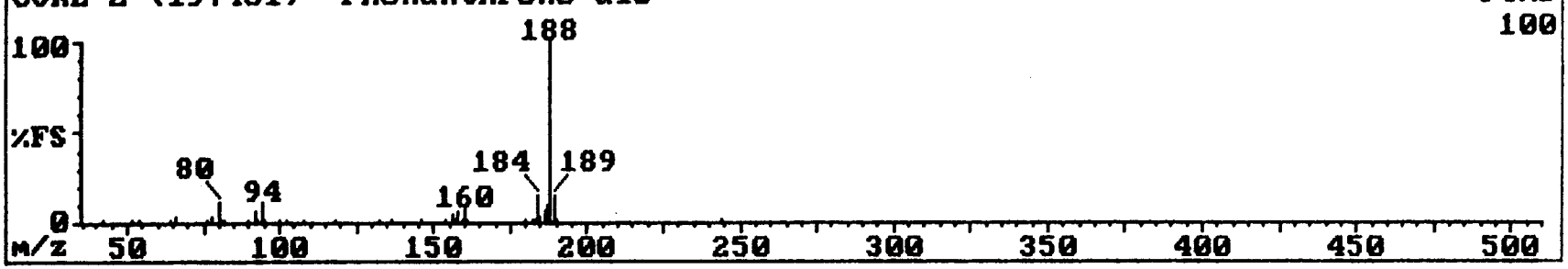
GE818 1164 (19.401) 659456



GE818 1164 (19.401) REFINE 655360



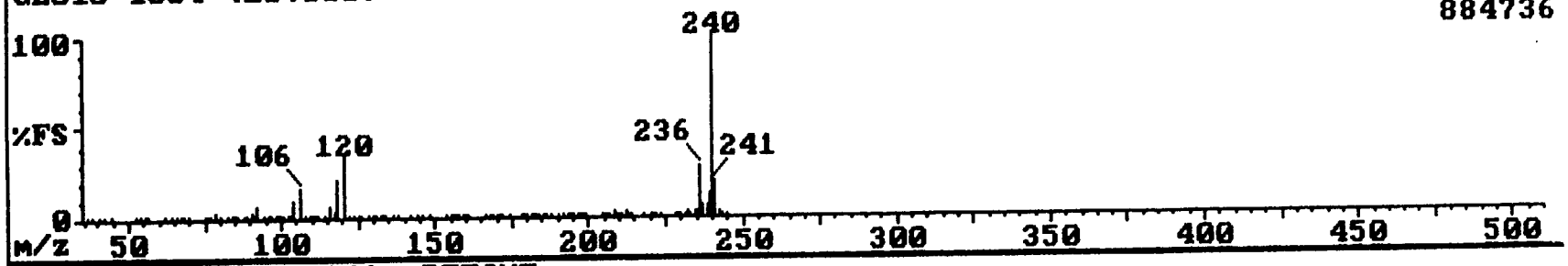
COKE 2 (19.401) Phenanthrene-d10 FIND 100



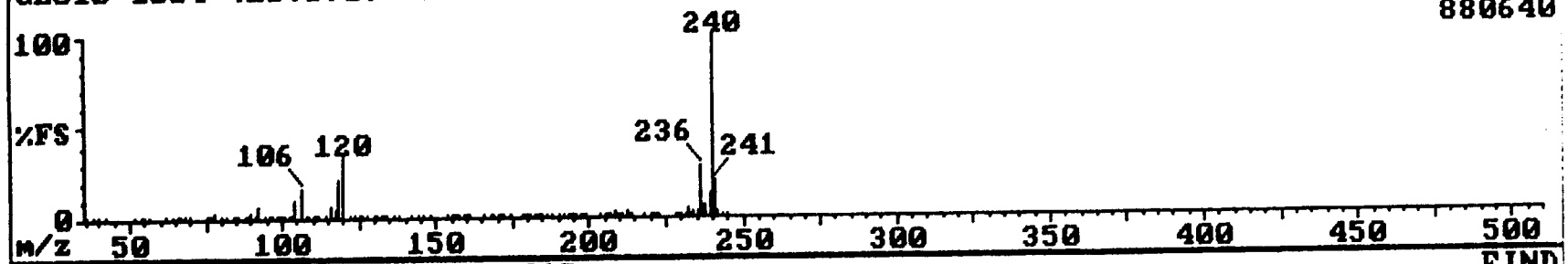
23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 1 91015B Instrument G

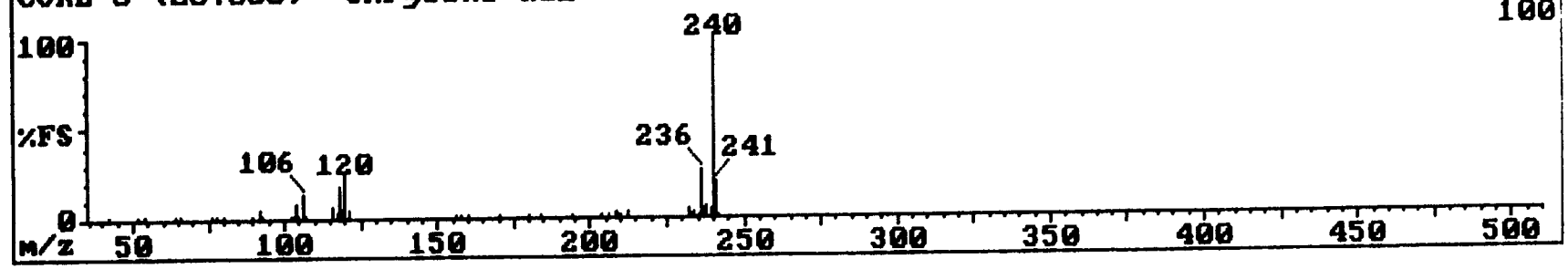
GE818 1564 (26.068) 884736



GE818' 1564 (26.071) REFINE 880640



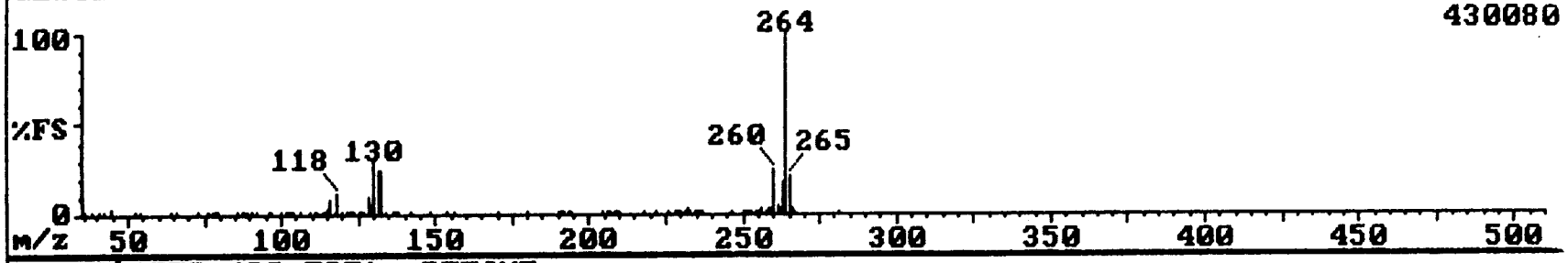
COKE 3 (26.068) Chrysene-d12 FIND 100



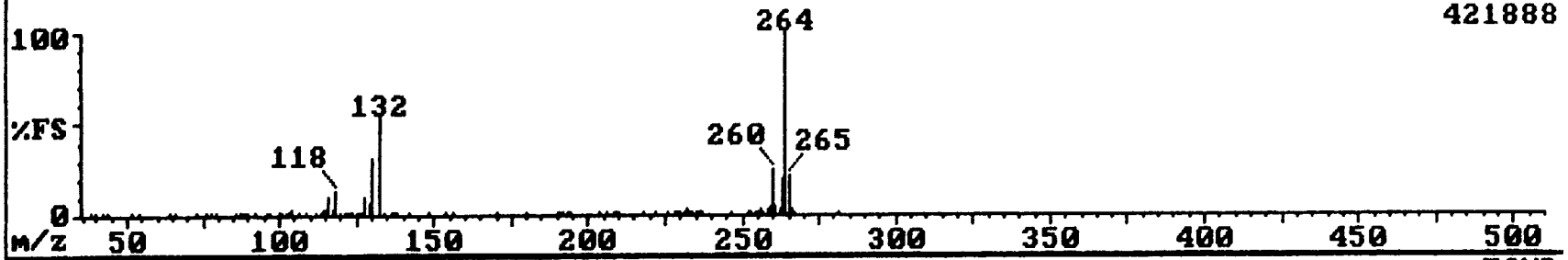
23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 1 91015B Instrument G

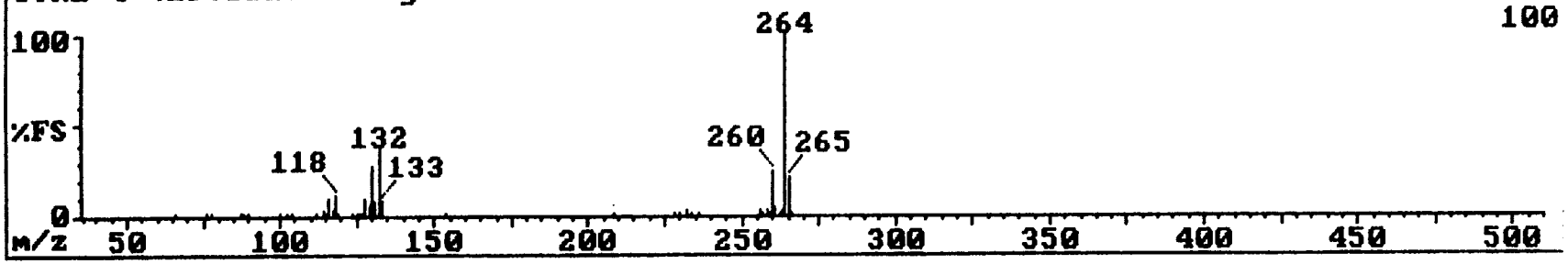
GE818 1772 (29.535) 430080



GE818'1772 (29.537) REFINE 421888

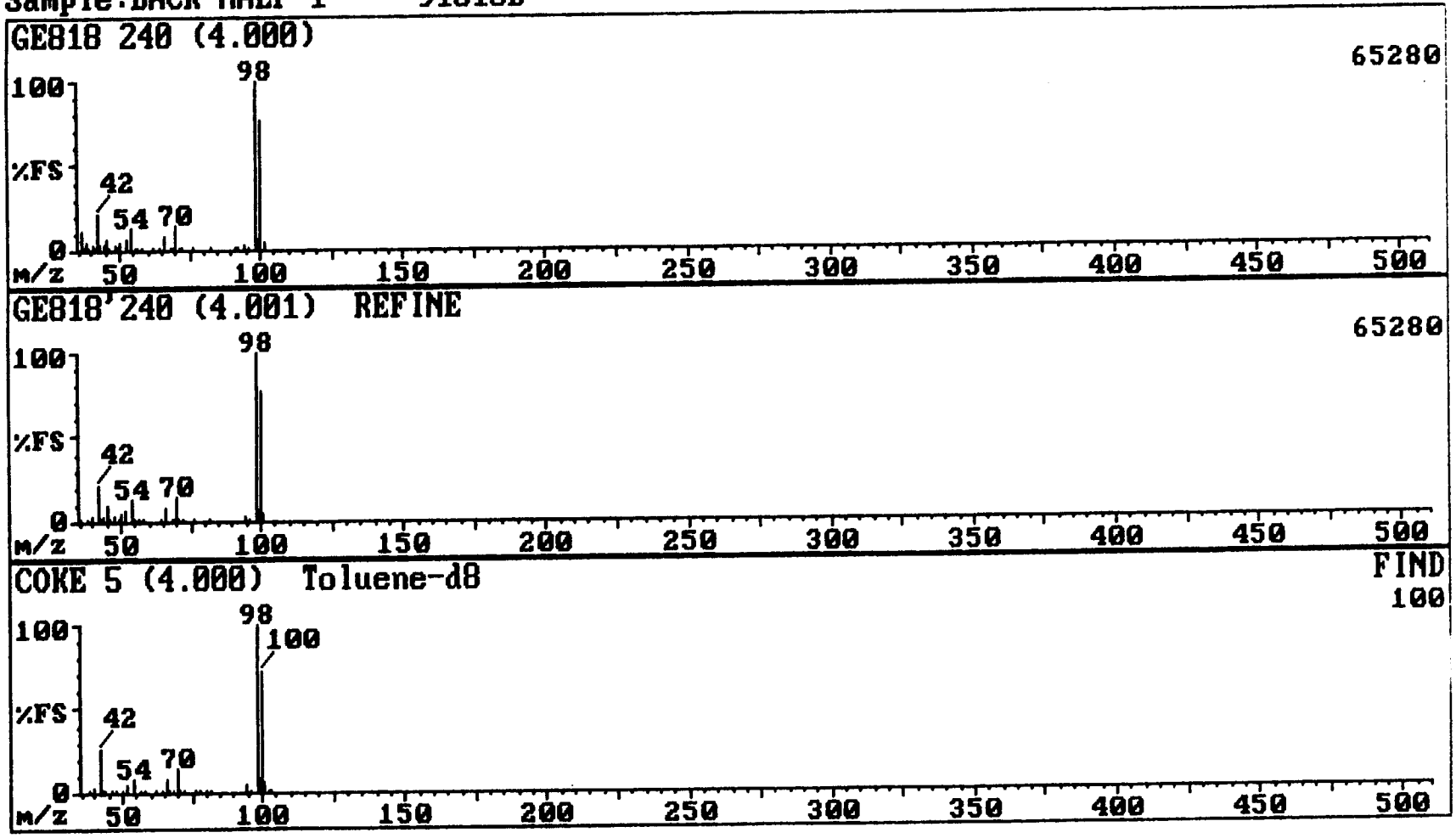


COKE 4 (29.552) Perylene-d12 FIND 100



23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

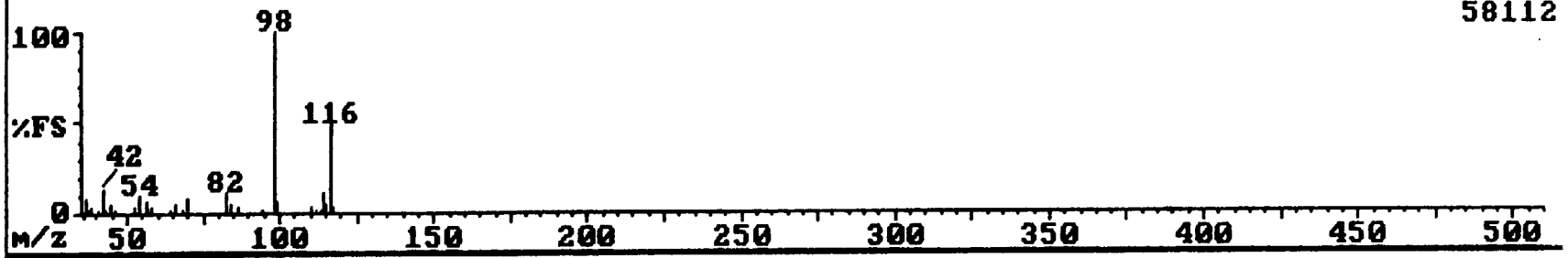
Sample:BACK HALF 1 91015B Instrument G



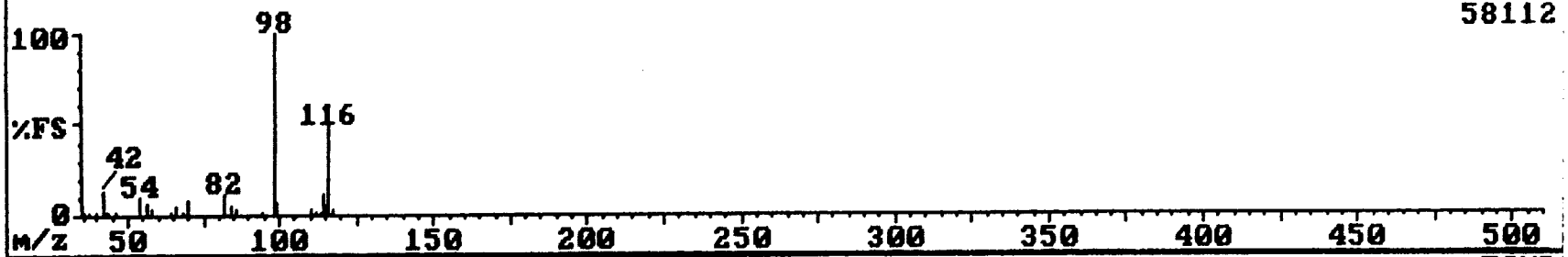
23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 1 91015B Instrument G

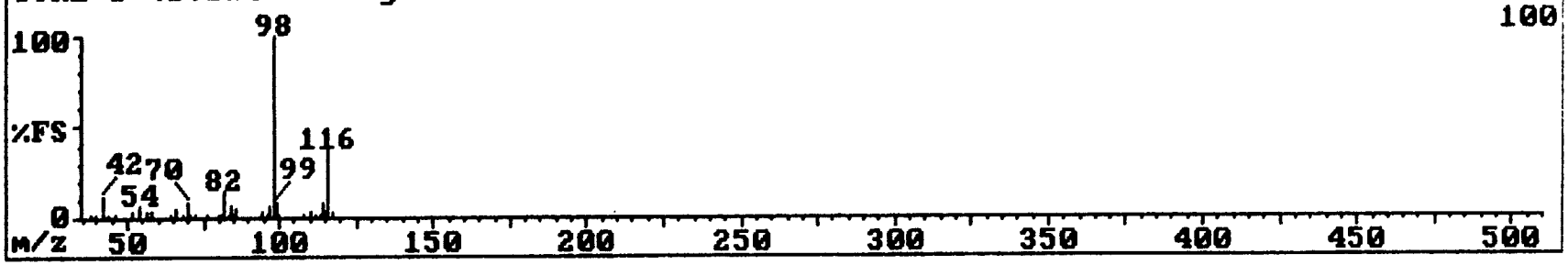
GE818 371 (6.184) 58112



GE818'371 (6.184) REFINE 58112

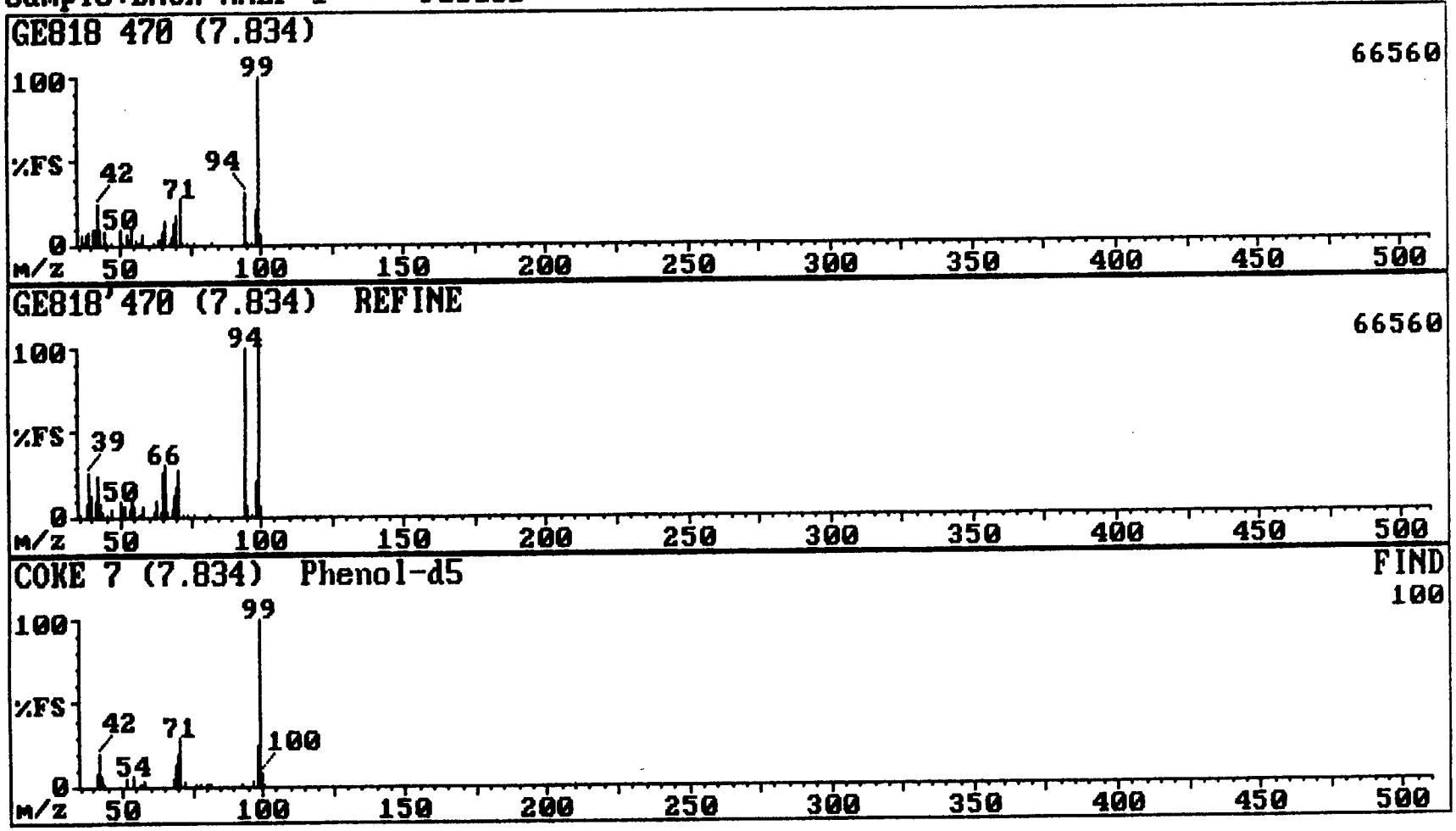


COKE 6 (6.184) o-Xylene-d10 FIND 100



23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 1 91015B Instrument G



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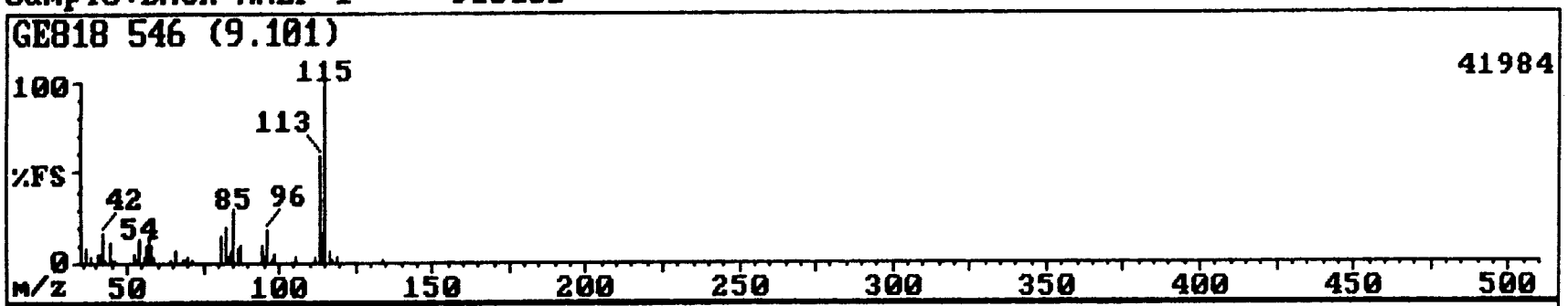
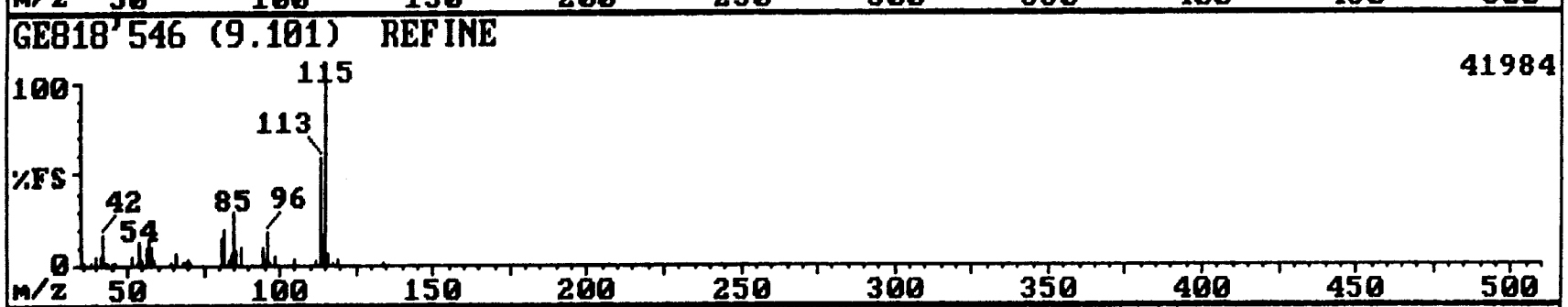
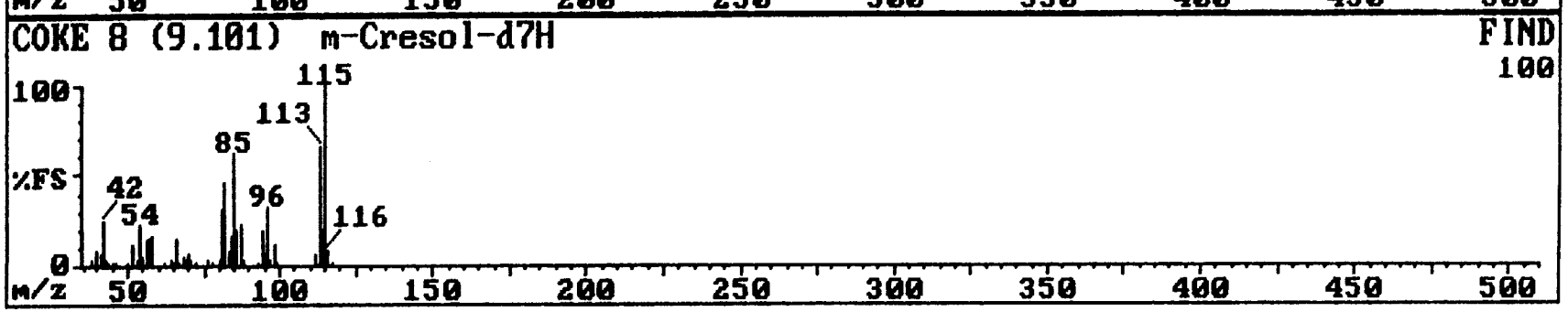
Sample:BACK HALF 1 91015B Instrument G



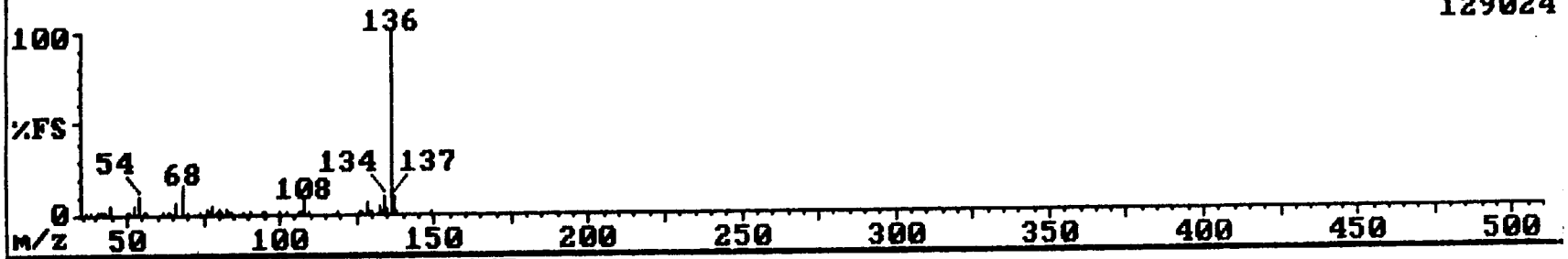




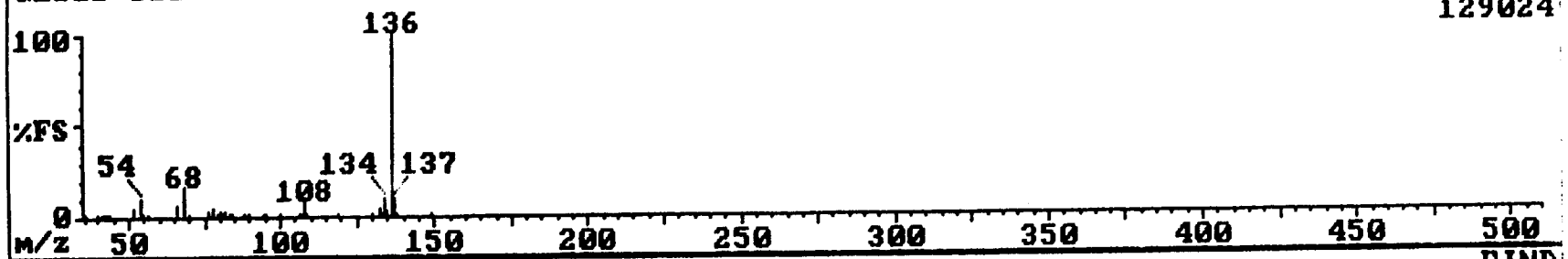
23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 1 91015B Instrument G

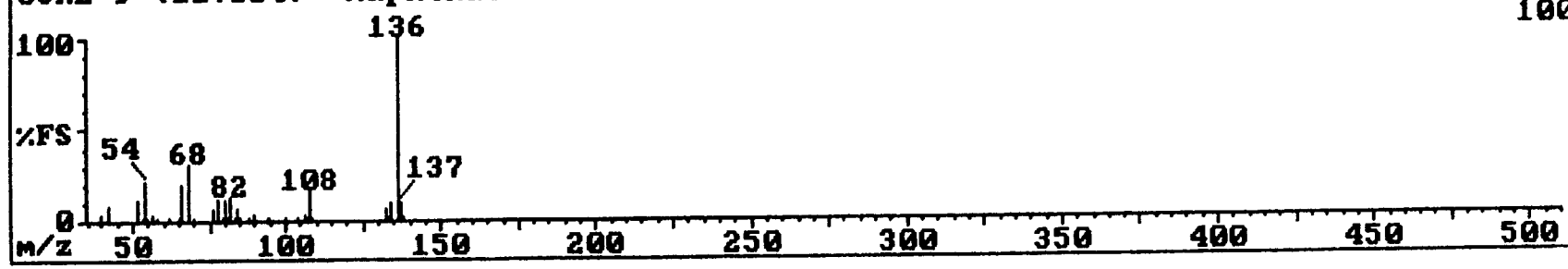
GE818 683 (11.384) 129024



GE818'683 (11.384) REFINE 129024

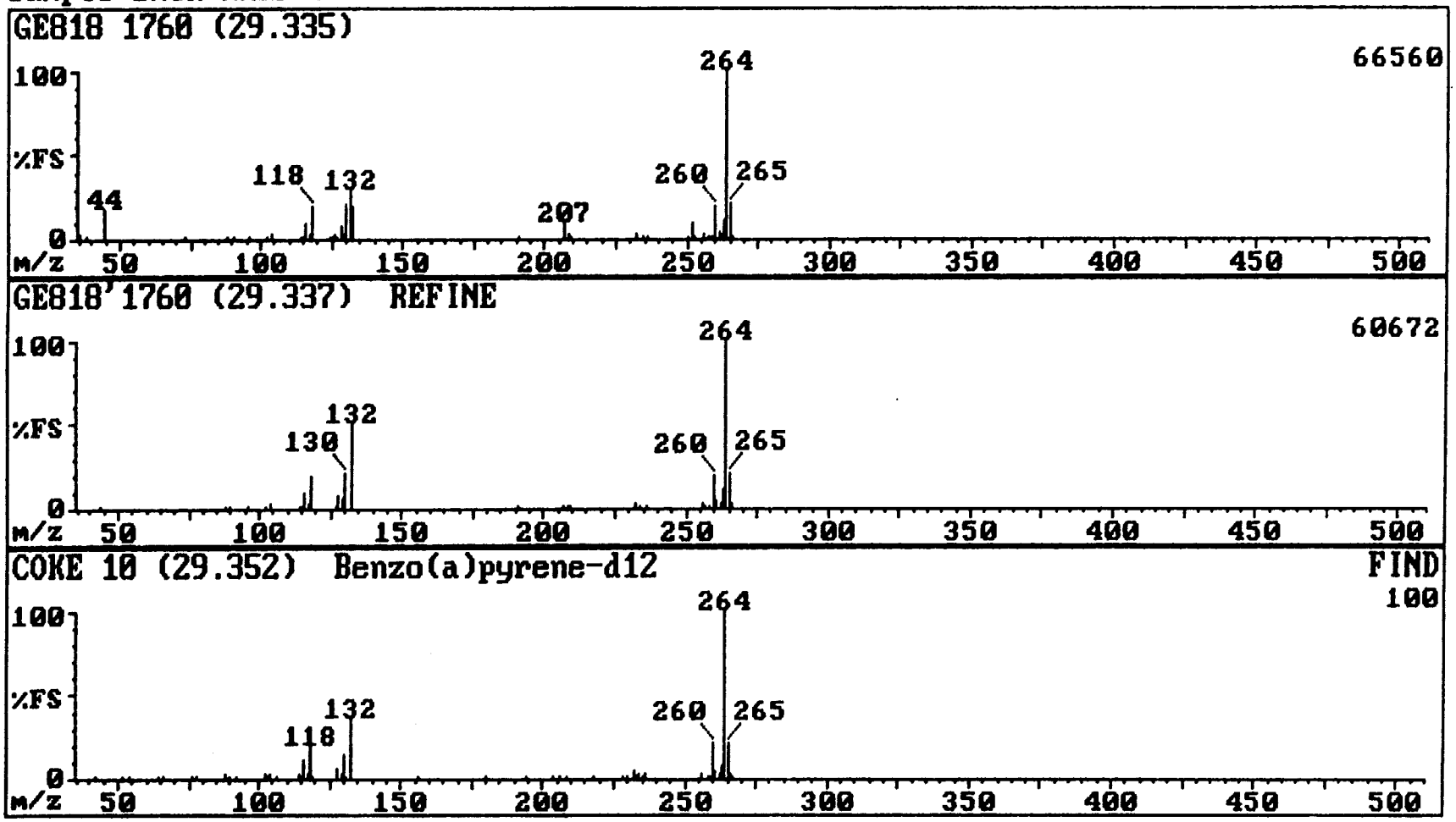


COKE 9 (11.384) Naphthalene-d8 FIND 100



23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

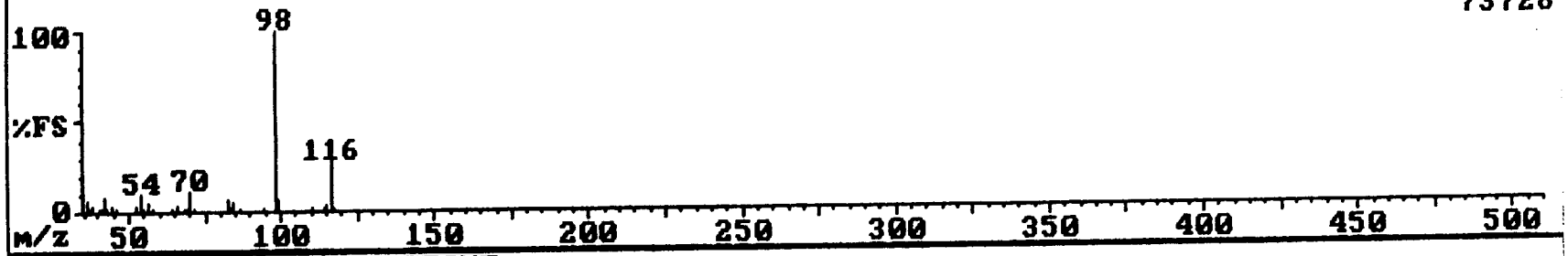
Sample:BACK HALF 1 91015B Instrument G



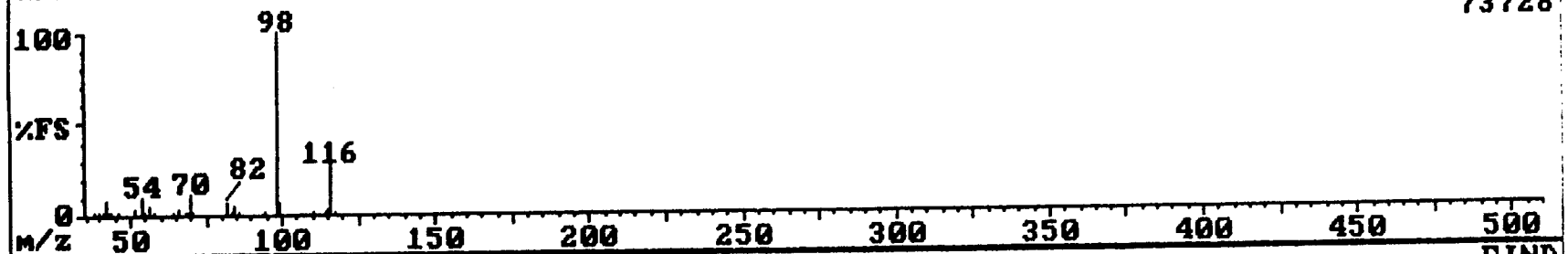
23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 1 91015B Instrument G

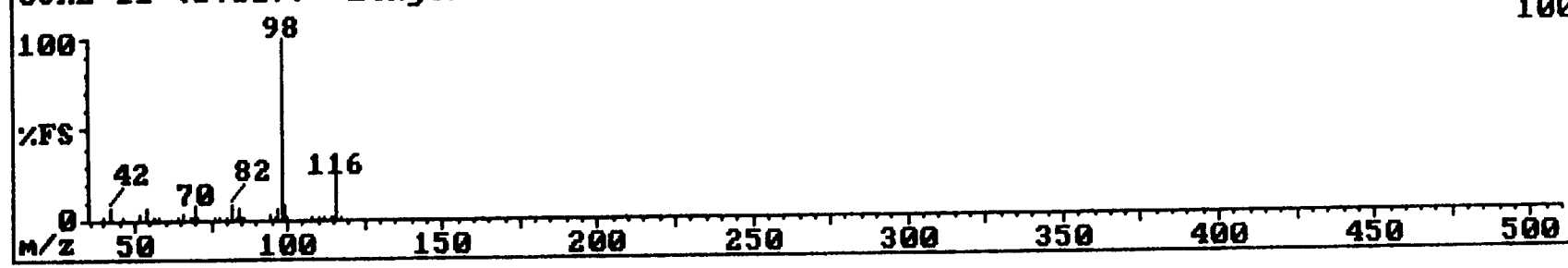
GE818 337 (5.617) 73728



GE818 337 (5.617) REFINE 73728

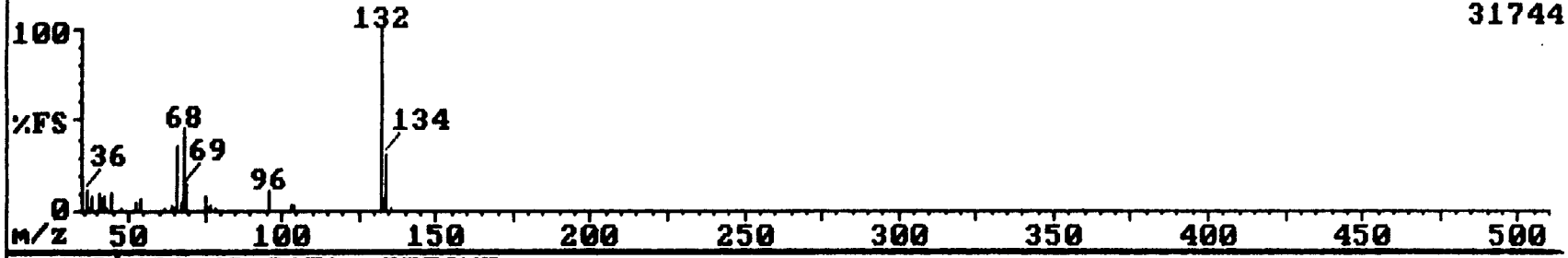


COKE 11 (5.617) Ethylbenzene-d10 FIND 100

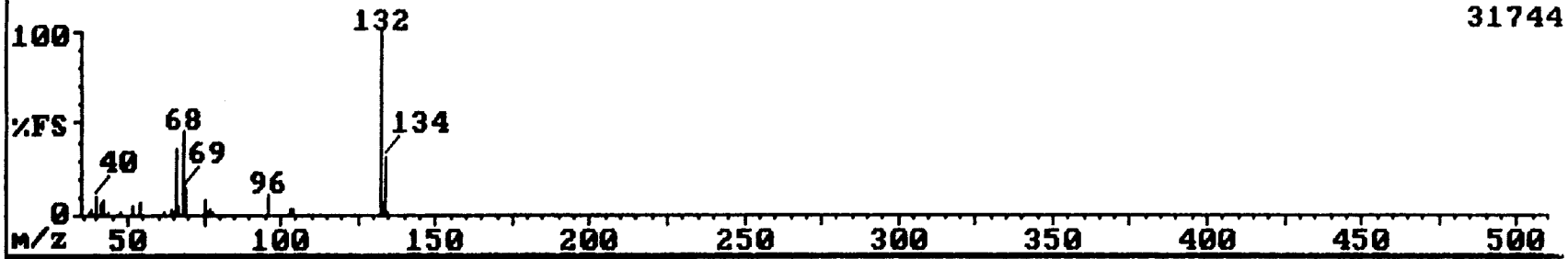


23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729
Sample:BACK HALF 1 91015B Instrument (

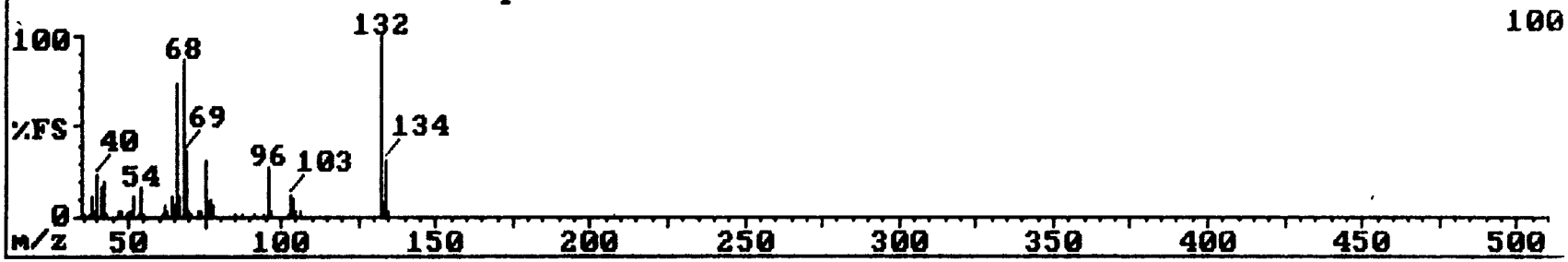
GE818 481 (8.017) 31744



GE818'481 (8.017) REFINE 31744

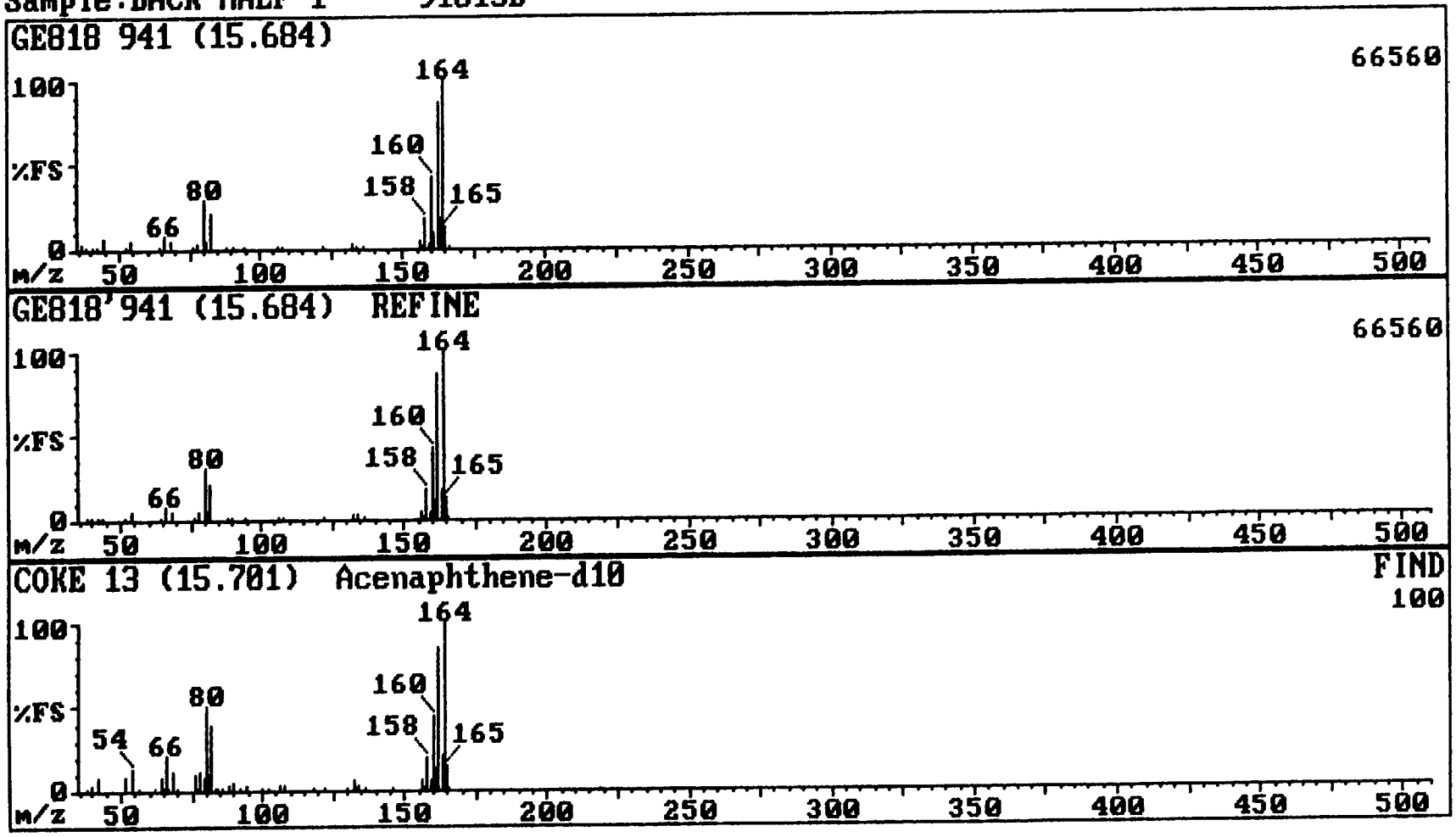


COKE 12 (8.017) 2-Chlorophenol-d4 FIND 100



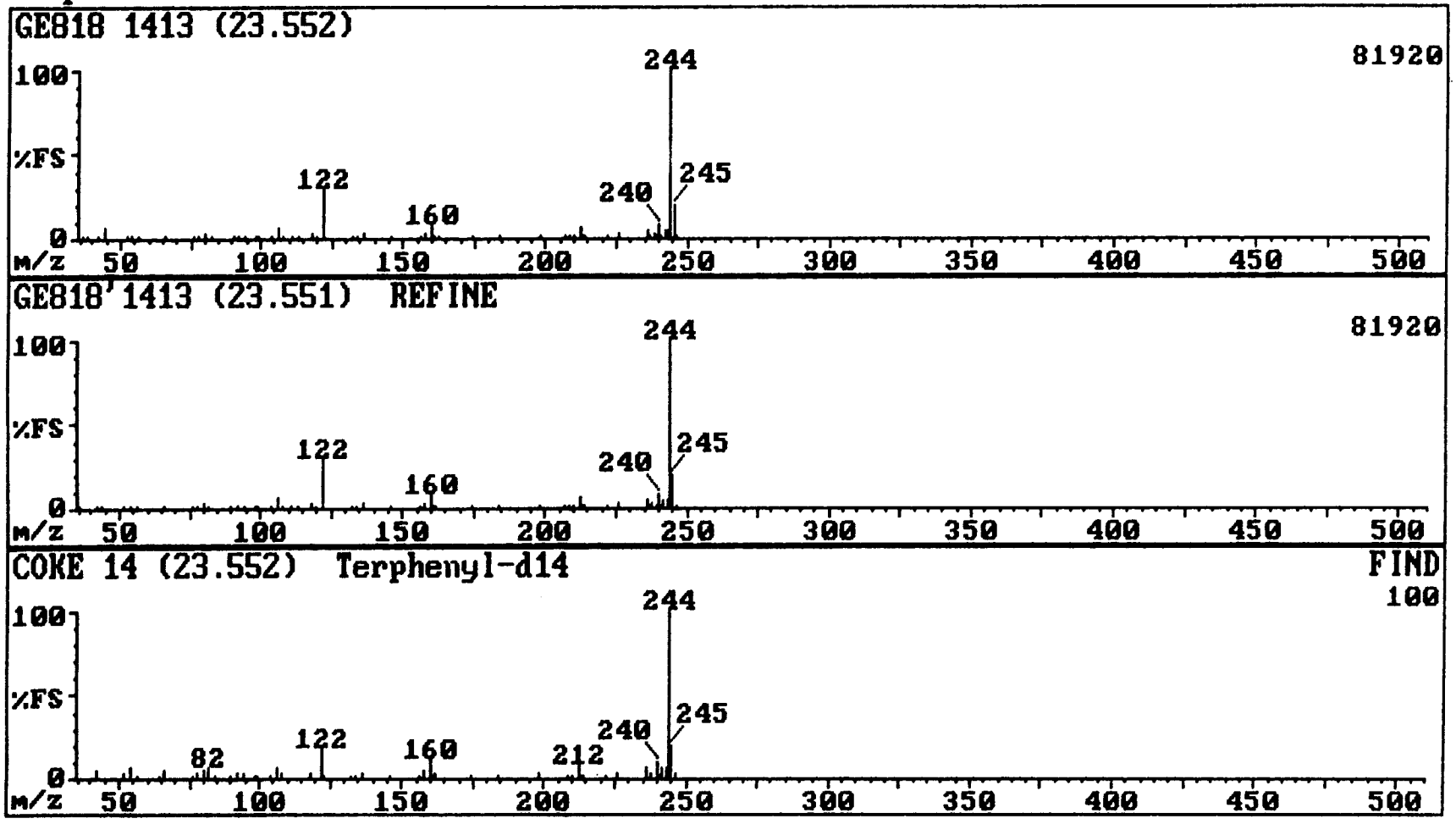
23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 1 91015B Instrument G



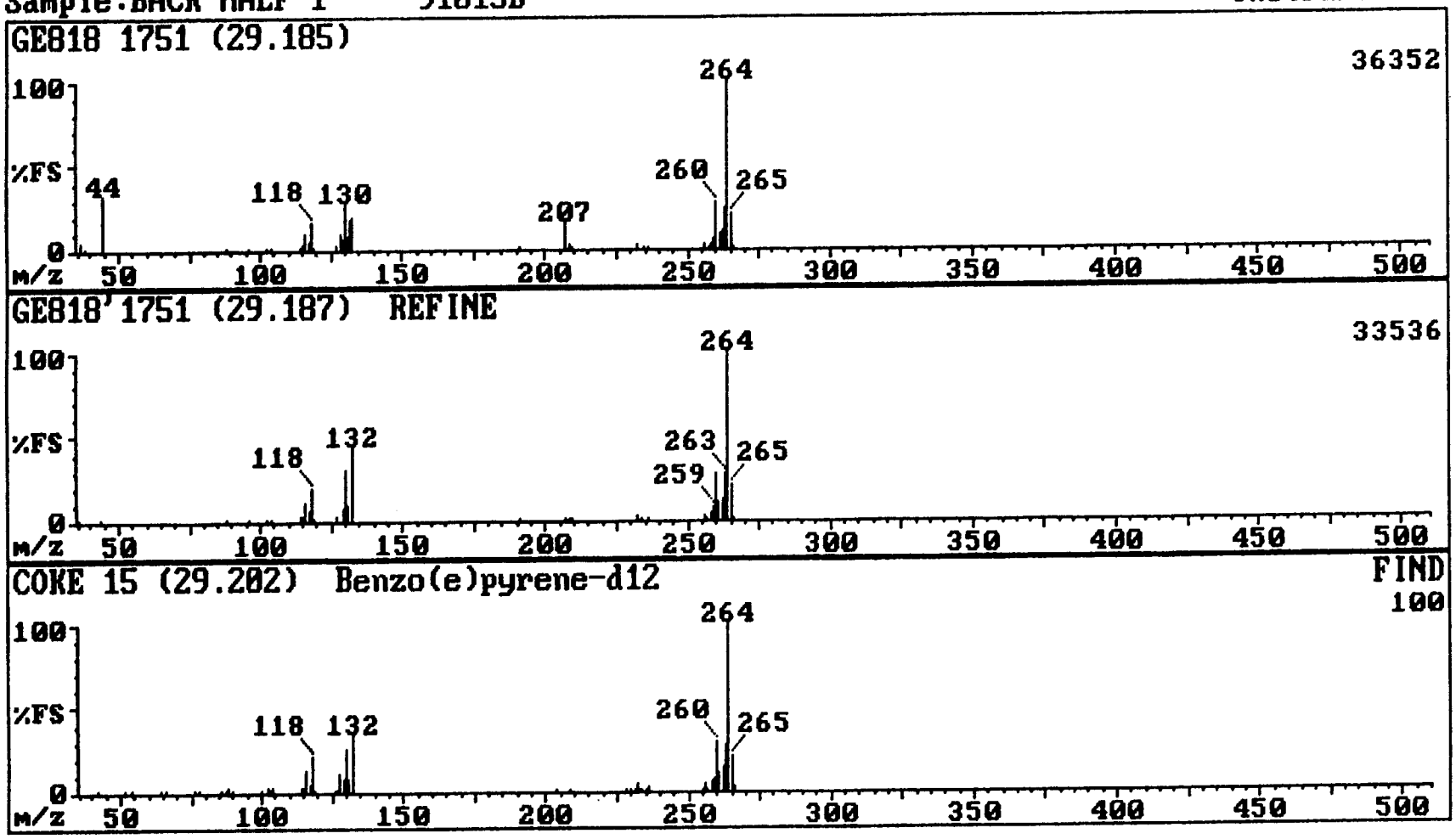
23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 1 91015B Instrument G



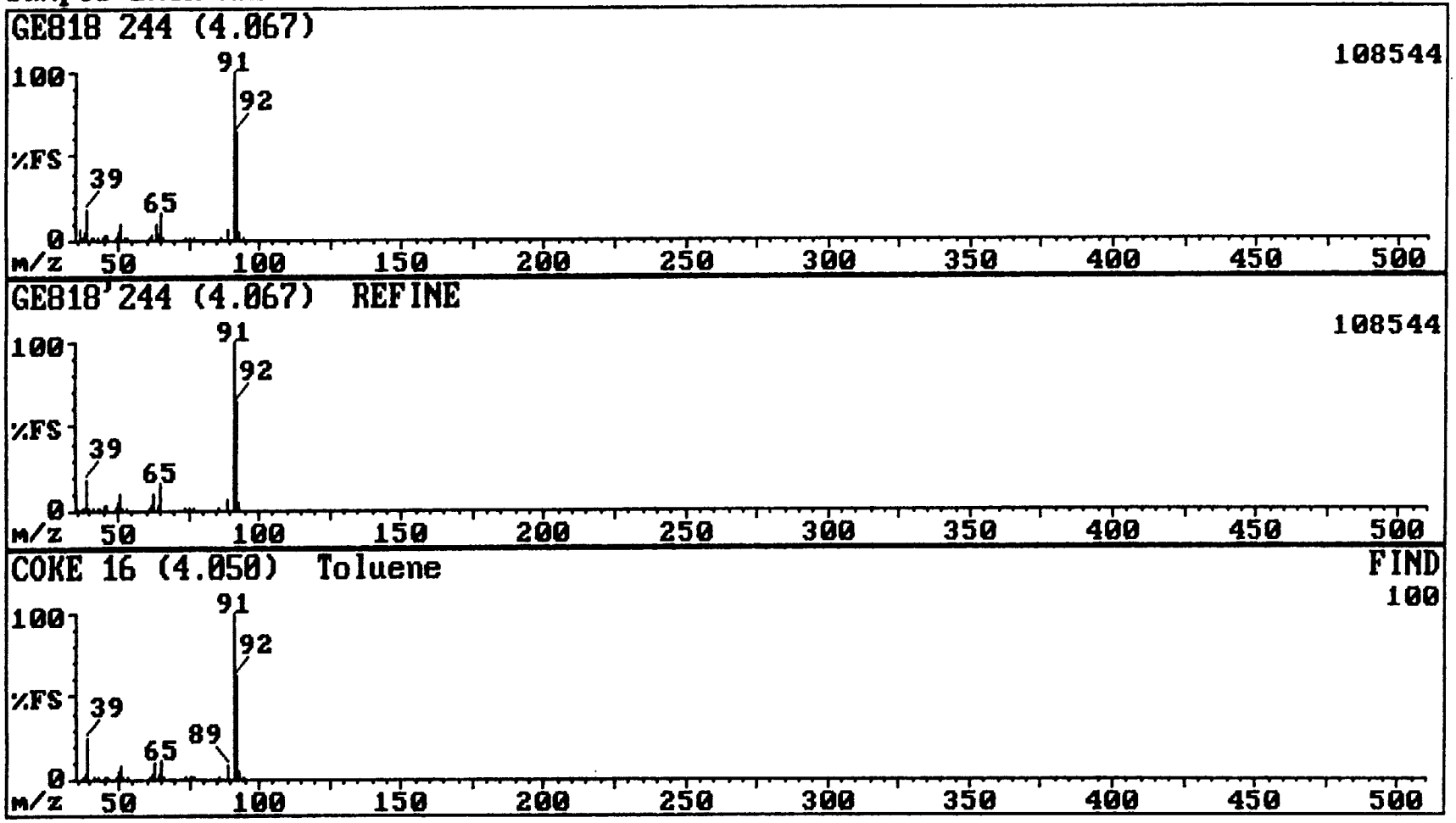
23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 1 91015B Instrument G



23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 1 91015B Instrument G



23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

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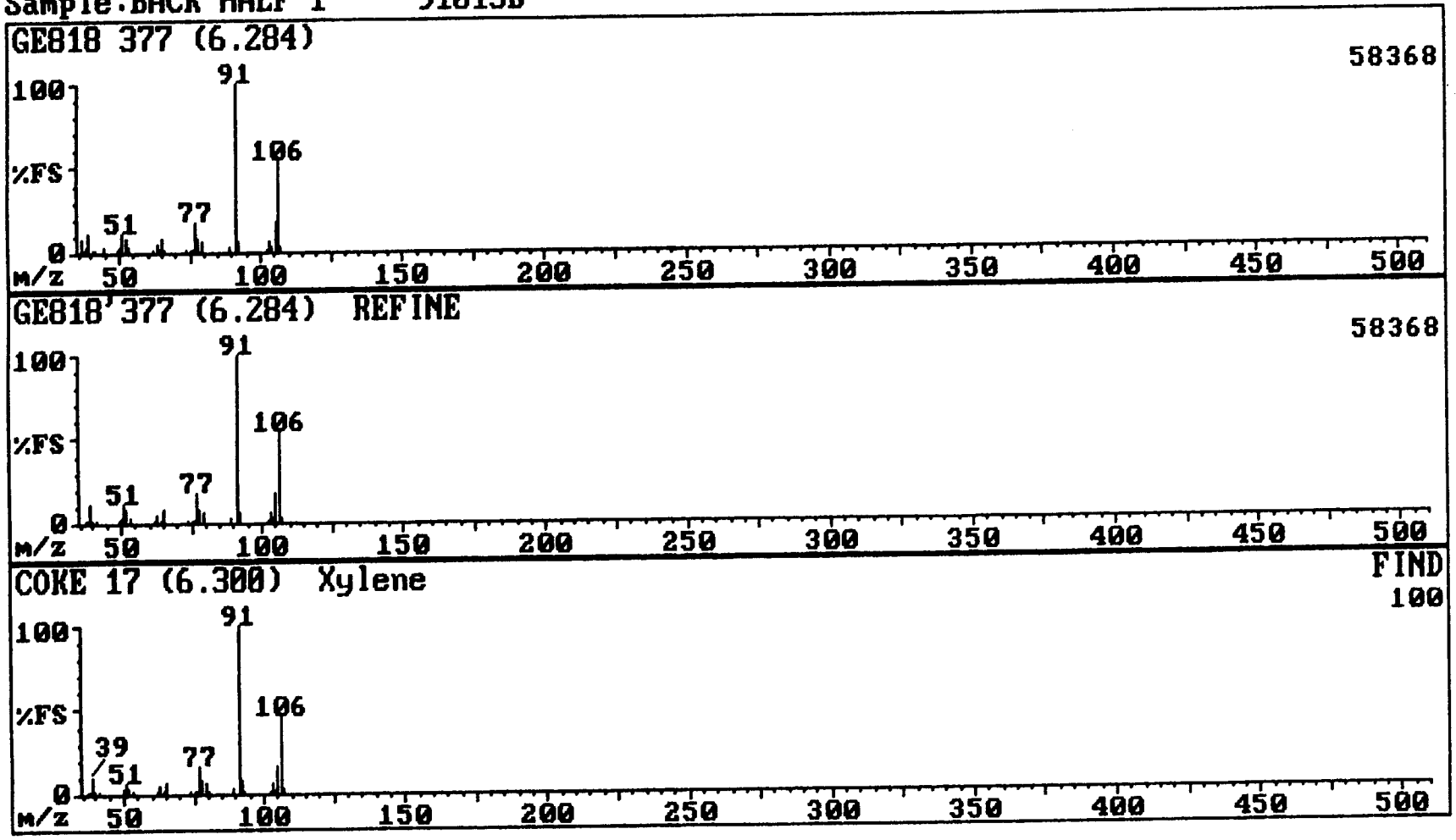

23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

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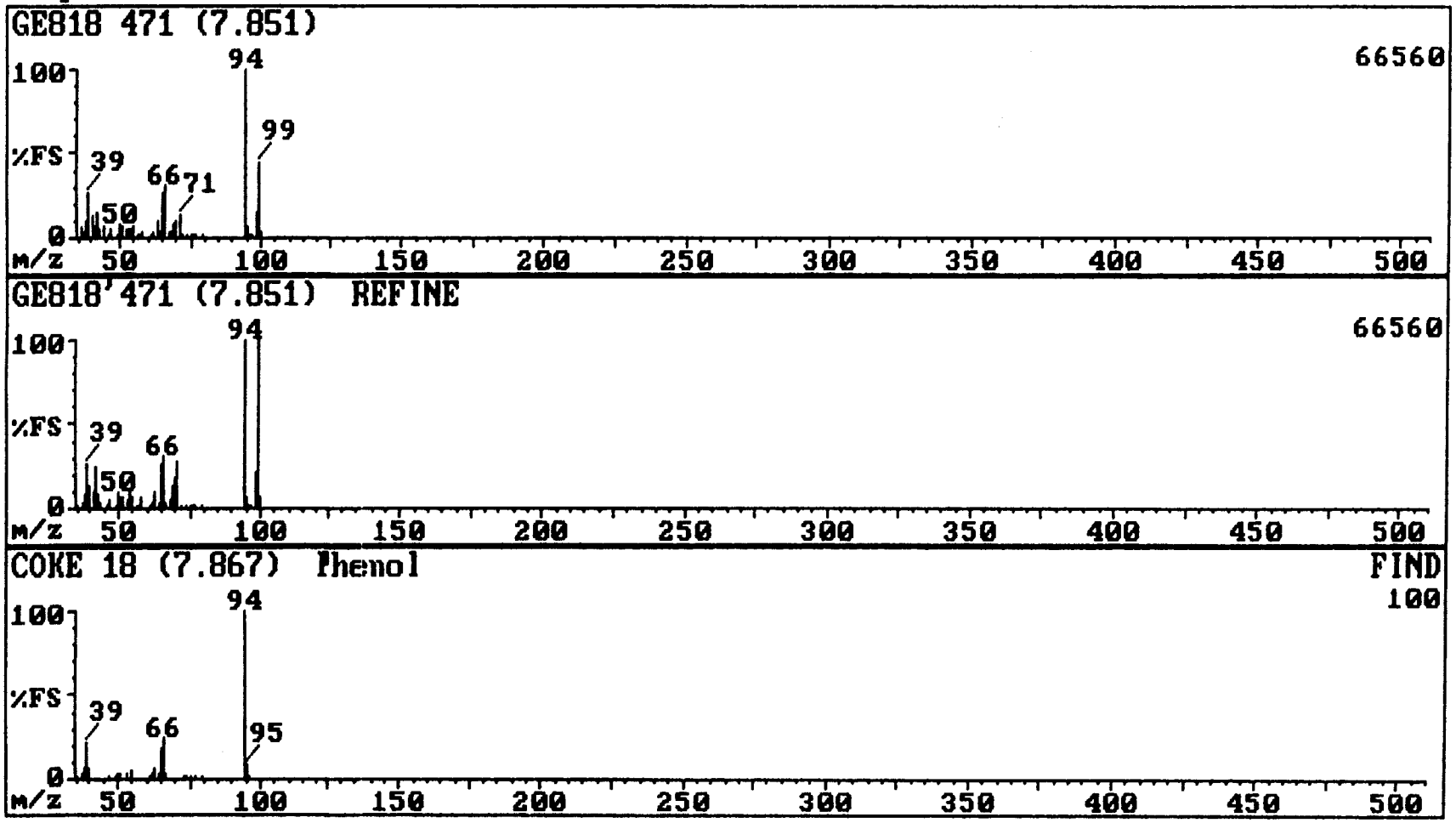
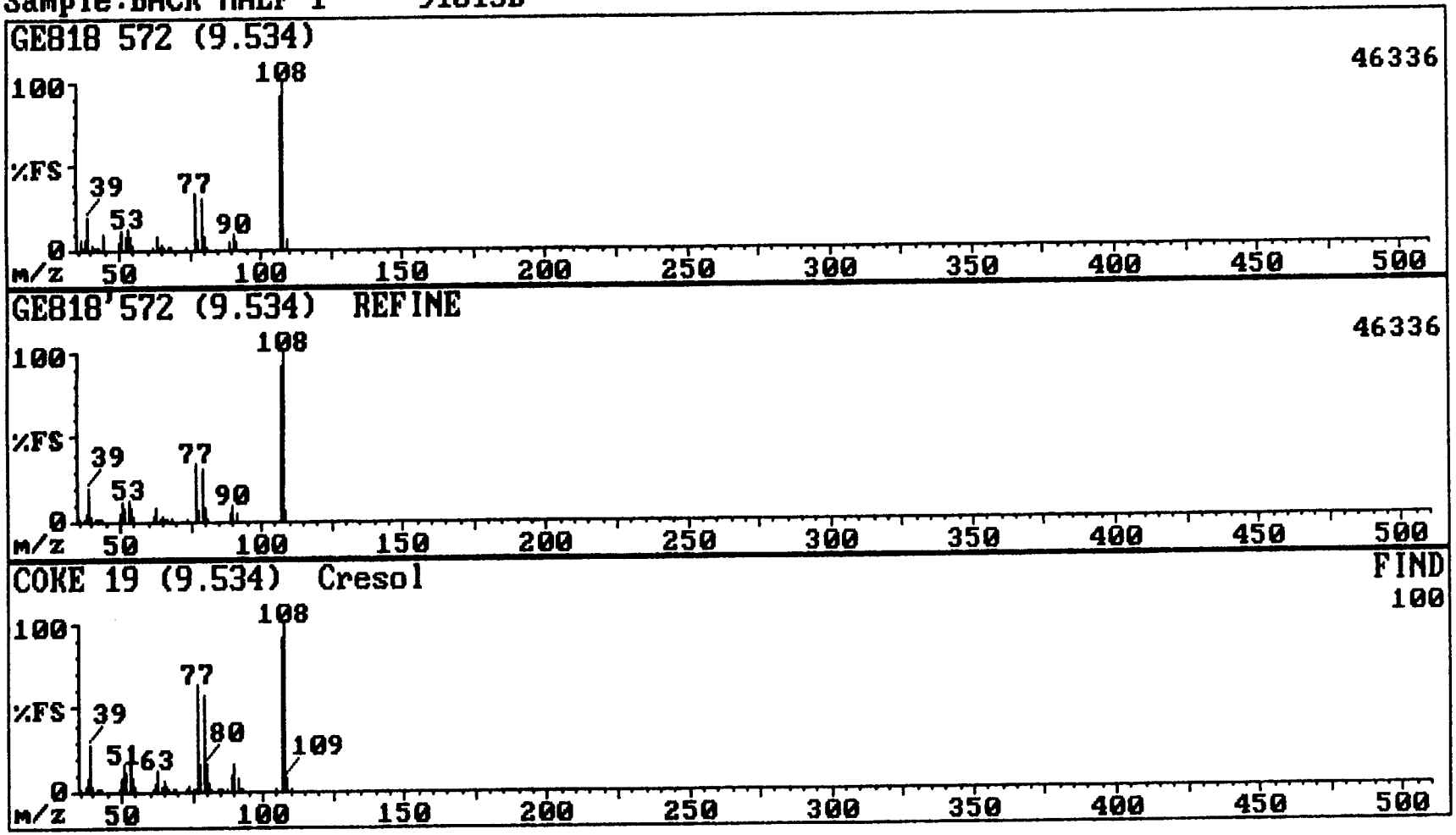


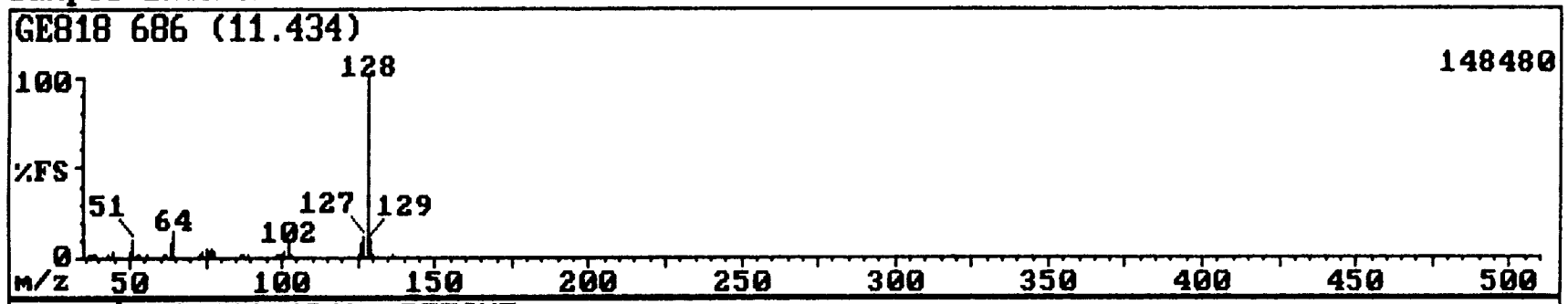
23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

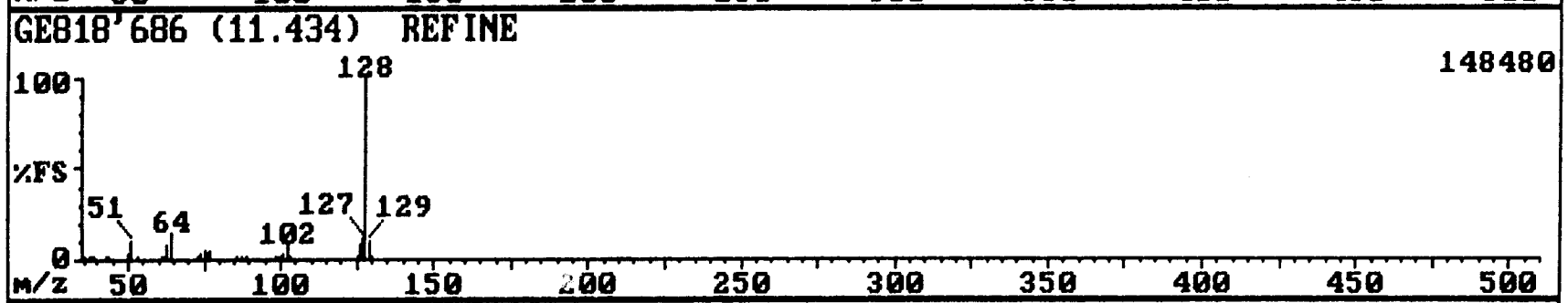
Sample:BACK HALF 1 91015B Instrument G

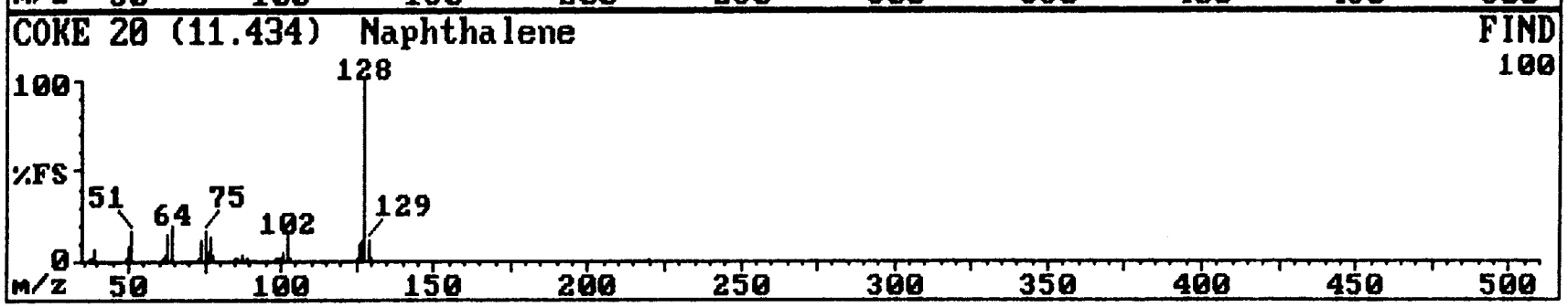


23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 1 91015B Instrument G

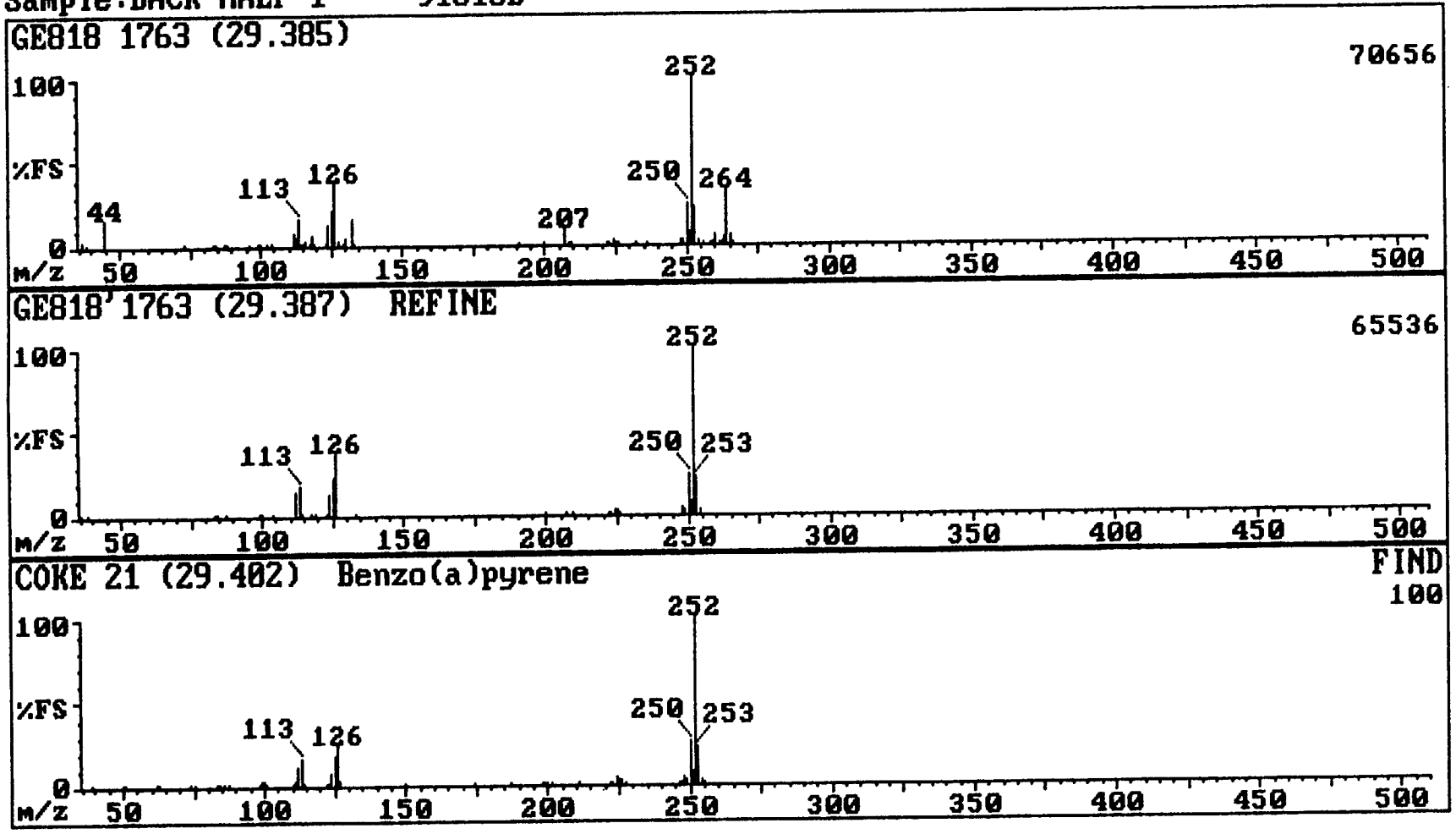






23-Oct-91 03:18 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 1 91015B Instrument G



TRIANGLES LABORATORIES,INC.
SAMPLE ANALYSIS COKE ANALYTES

REPORT DATE 10/24/91

FILE GE819 SAMPLE ID BACK HALF 2
ANALYIS DATE 10/23/91
EXT. VOL.(ML) 10

NAME	AMT FOUND EXT. CONCN. (UG/ML)	SAMPLE AMT. UG TOTAL	SCAN NO.	% RECOVERY	RF50	AREA
1,4-Dichlorobenzene-d4			510			476960
Phenanthrene-d10			1164			1908068
Chrysene-d12			1564			2841284
Perylene-d12			1772			1784888
Toluene-d8	6.32	63.18	240	63.2%	2.058	124056
o-Xylene-d10	6.81	68.07	371	68.1%	1.214	78852
Phenol-d5	7.77	77.69	470	77.7%	2.091	154956
m-Cresol-d7H	7.55	75.52	546	75.5%	1.574	113396
Naphthalene-d8	6.68	66.81	683	66.8%	1.423	362736
Benzo(a)pyrene-d12	7.73	77.31	1760	77.3%	1.197	330215
Ethylbenzene-d10	9.08	90.77	337	90.8%	.454	51080
2-Chlorophenol-d4	8.25	82.53	481	82.5%	.660	84436
Acenaphthene-d10	9.73	97.32	941	97.3%	.534	188528
Terphenyl-d14	6.09	60.94	1413	60.9%	.714	247304
Benzo(e)pyrene-d12	8.68	86.76	1751	86.8%	.494	141510
Toluene	15.89	158.86	244	158.9%	1.178	232124
Xylene	9.70	97.00	377	97.0%	2.018	154368
Phenol	9.31	93.09	471	93.1%	1.133	163484
Cresol	9.75	97.50	572	97.5%	1.005	111160
Naphthalene	31.76	317.59	686	317.6%	1.032	1189248
Benzo(a)pyrene	7.79	77.94	1763	77.9%	1.234	317636

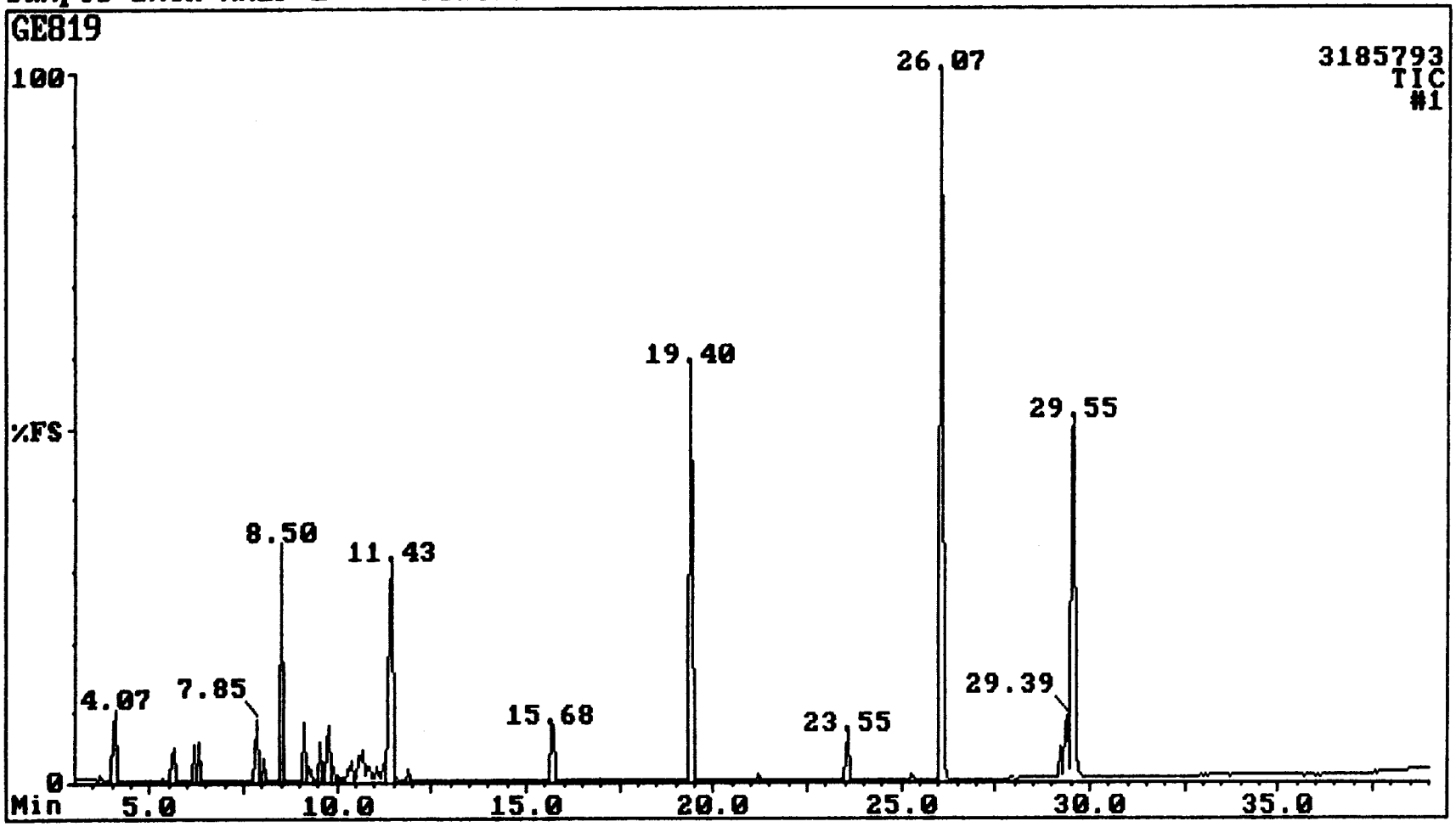
QUAN DB : GE819 LAB-BASE QUAN 23-Oct-91 11:03

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	100	87	99	0	476960	bb	510	152	1,4-Dichlorobenzene-d4
2	100	92	96	0	1908100	bv	1164	188	Phenanthrene-d10
3	100	88	94	0	2841300	bv	1564	240	Chrysene-d12
4	100	86	92	-1	1784900	vv	1772	264	Perylene-d12
5	100	79	96	0	124060	bb	240	98	Toluene-d8
6	100	91	95	0	78852	bb	371	116	o-Xylene-d10
7	100	68	97	0	154960	bb	470	99	Phenol-d5
8	100	77	93	0	113400	bb	546	115	m-Cresol-d7H
9	100	71	94	0	362740	bb	683	136	Naphthalene-d8
10	100	78	92	0	330220	vv	1760	264	Benzo(a)pyrene-d12
11	100	85	92	0	51080	bb	337	116	Ethylbenzene-d10
12	100	85	87	0	84436	bb	481	132	2-Chlorophenol-d4
13	100	88	91	-1	188530	bb	941	164	Acenaphthene-d10
14	100	90	95	0	247300	bb	1413	244	Terphenyl-d14
15	100	78	92	0	141510	bv	1751	264	Benzo(e)pyrene-d12
16	100	95	99	1	232120	bb	244	91	Toluene
17	100	93	98	-1	154370	bb	377	91	Xylene
18	100	84	97	-1	163480	bb	471	94	Phenol
19	100	91	94	0	111160	bb	572	108	Cresol
20	100	92	97	0	1189200	bb	686	128	Naphthalene
21	95	61	91	0	317640	bv	1763	252	Benzo(a)pyrene

DJM 10-26-91

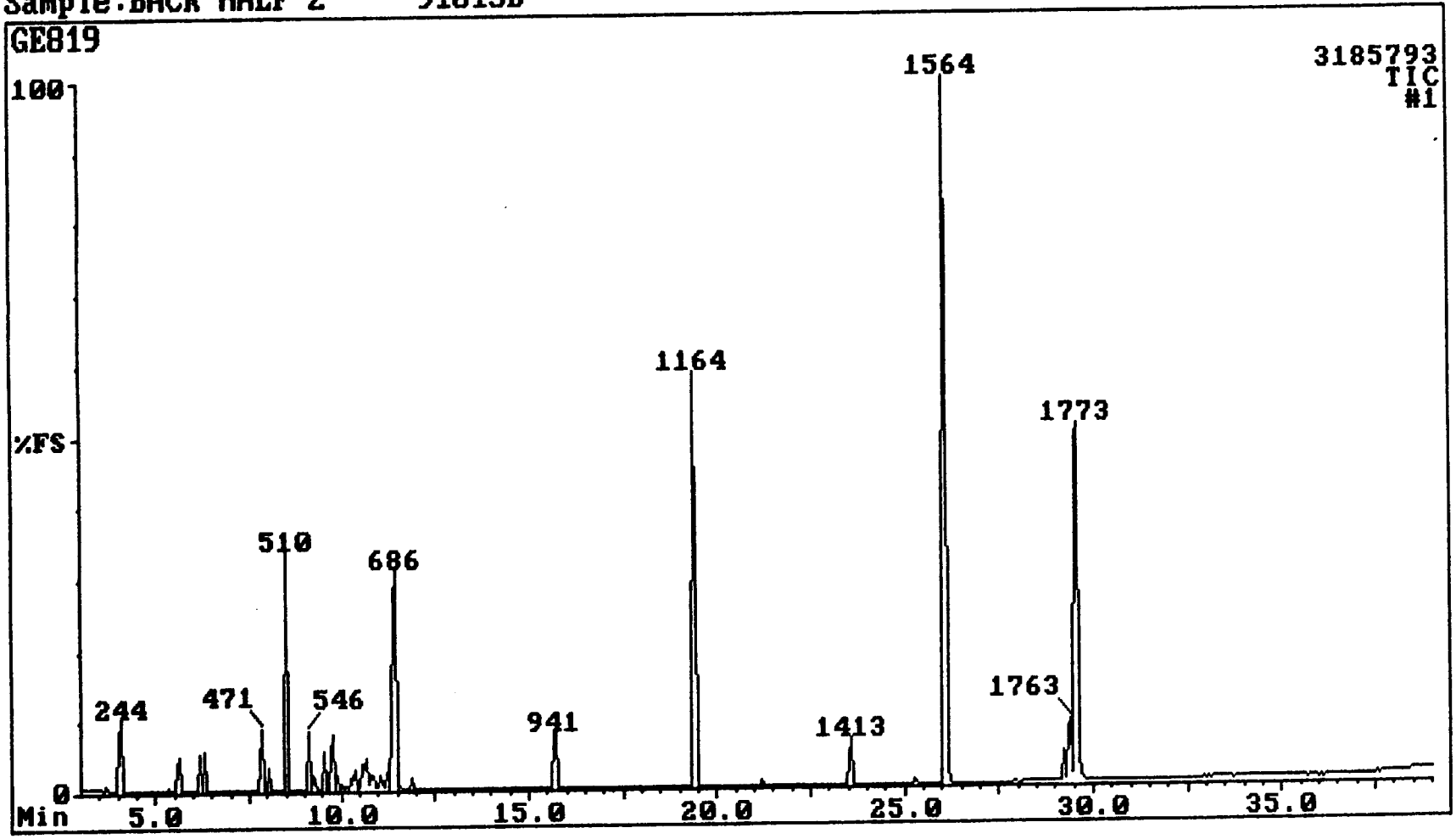
23-Oct-91 04:08 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 2 91015B Instrument G



23-Oct-91 04:08 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 2 91015B Instrument G



TRIANGLES LABORATORIES,INC.
SAMPLE ANALYSIS COKE ANALYTES

REPORT DATE 10/24/91

FILE GE820 SAMPLE ID BACK HALF 3
ANALYIS DATE 10/23/91
EXT. VOL.(ML) 10

NAME	AMT FOUND EXT. CONCN. (UG/ML)	SAMPLE AMT. UG TOTAL	SCAN NO.	% RECOVERY	RF50	AREA
1,4-Dichlorobenzene-d4			510			517456
Phenanthrene-d10			1164			2160160
Chrysene-d12			1564			3171028
Perylene-d12			1772			1988236
Toluene-d8	6.34	63.41	240	63.4%	2.058	135088
o-Xylene-d10	7.00	70.03	370	70.0%	1.214	88016
Phenol-d5	8.00	80.05	470	80.0%	2.091	173204
m-Cresol-d7H	8.03	80.34	546	80.3%	1.574	130876
Naphthalene-d8	6.58	65.78	683	65.8%	1.423	404328
Benzo(a)pyrene-d12	7.95	79.51	1760	79.5%	1.197	378316
Ethylbenzene-d10	9.79	97.91	337	97.9%	.454	59996
2-Chlorophenol-d4	8.47	84.67	481	84.7%	.660	96832
Acenaphthene-d10	10.29	102.93	941	102.9%	.534	222248
Terphenyl-d14	6.54	65.39	1413	65.4%	.714	296176
Benzo(e)pyrene-d12	9.03	90.34	1751	90.3%	.494	168812
Toluene	17.95	179.54	244	179.5%	1.178	285672
Xylene	10.19	101.90	377	101.9%	2.018	181008
Phenol	9.69	96.86	471	96.9%	1.133	190140
Cresol	9.95	99.51	572	99.5%	1.005	130940
Naphthalene	41.56	415.61	686	415.6%	1.032	1734712
Benzo(a)pyrene	8.11	81.13	1763	81.1%	1.234	378816

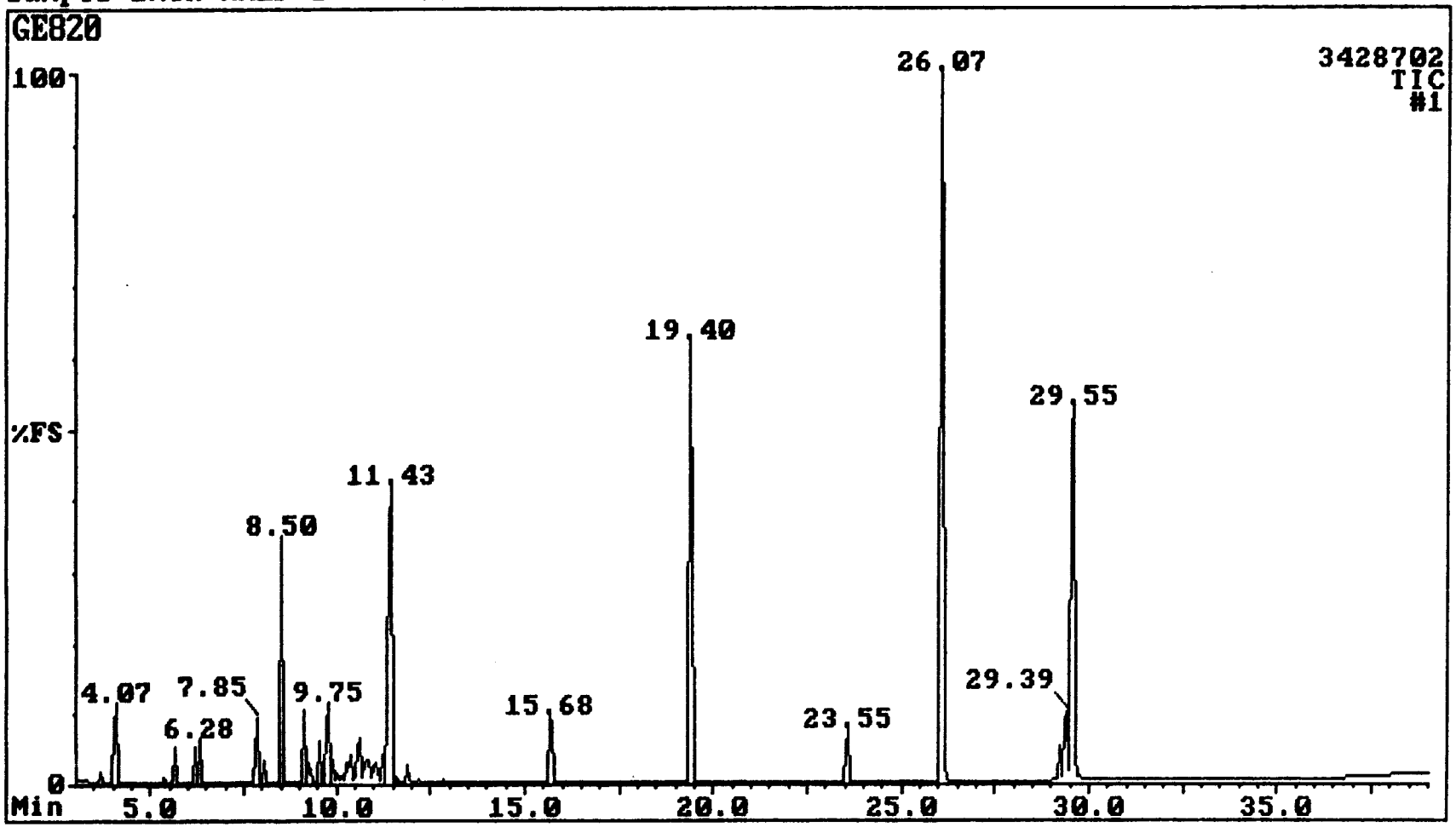
QUAN DB : GE820 LAB-BASE QUAN 23-Oct-91 11:03

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	100	86	99	0	517460	bb	510	152	1,4-Dichlorobenzene-d4
2	100	92	96	0	2160200	bv	1164	188	Phenanthrene-d10
3	100	88	94	0	3171000	bv	1564	240	Chrysene-d12
4	100	86	92	-1	1988200	vv	1772	264	Perylene-d12
5	100	76	96	0	135090	bb	240	98	Toluene-d8
6	100	90	94	-1	88016	bb	370	116	o-Xylene-d10
7	100	67	98	0	173200	bb	470	99	Phenol-d5
8	100	74	95	0	130880	bb	546	115	m-Cresol-d7H
9	99	64	94	0	404330	bb	683	136	Naphthalene-d8
10	100	80	93	0	378320	vv	1760	264	Benzo(a)pyrene-d12
11	100	88	95	0	59996	bb	337	116	Ethylbenzene-d10
12	100	86	88	0	96832	bb	481	132	2-Chlorophenol-d4
13	100	91	93	-1	222250	bb	941	164	Acenaphthene-d10
14	100	91	95	0	296180	bb	1413	244	Terphenyl-d14
15	100	81	93	0	168810	bv	1751	264	Benzo(e)pyrene-d12
16	100	95	99	1	285670	bb	244	91	Toluene
17	100	93	98	-1	181010	bb	377	91	Xylene
18	100	77	98	-1	190140	bb	471	94	Phenol
19	100	92	94	0	130940	bb	572	108	Cresol
20	100	91	96	0	1734700	bb	686	128	Naphthalene
21	98	69	91	0	378820	bv	1763	252	Benzo(a)pyrene

DJM 10-26-91

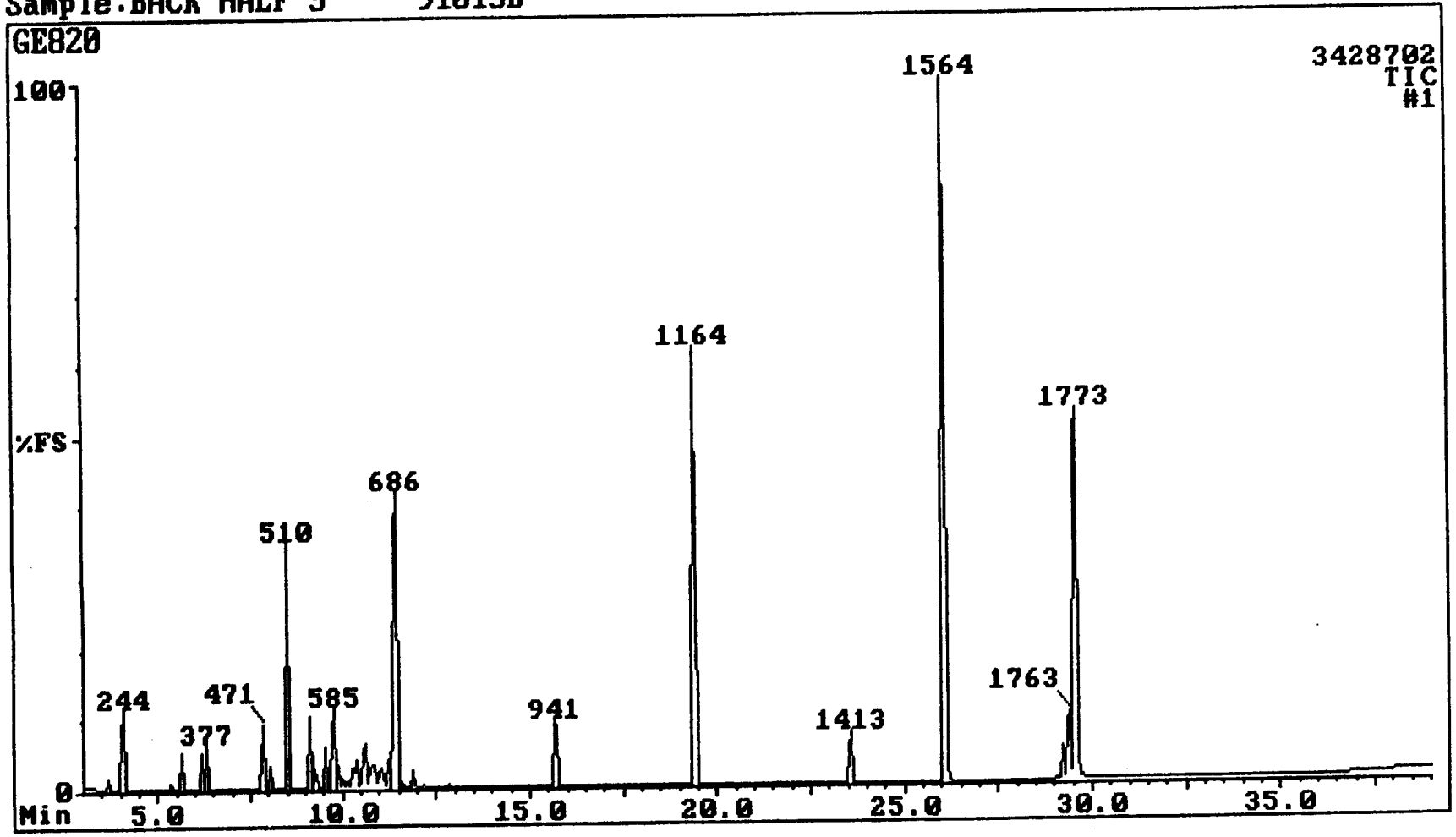
23-Oct-91 04:57 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 3 91015B Instrument G



23-Oct-91 04:57 Triangle Laboratories, Inc. (919) 544-5729

Sample:BACK HALF 3 91015B Instrument G



TRIANGLES LABORATORIES,INC.
SAMPLE ANALYSIS COKE ANALYTES

REPORT DATE 10/24/91

FILE GE821 SAMPLE ID AQUEOUS 1
ANALYIS DATE 10/23/91
EXT. VOL.(ML) 10

NAME	AMT FOUND EXT. CONCN. (UG/ML)	SAMPLE AMT. UG TOTAL	SCAN NO.	% RECOVERY	RF50	AREA
1,4-Dichlorobenzene-d4			510			456800
Phenanthrene-d10			1164			1970064
Chrysene-d12			1564			2755860
Perylene-d12			1772			1728688
Toluene-d8	5.50	55.00	240	55.0%	2.058	103444
o-Xylene-d10	6.18	61.75	371	61.8%	1.214	68512
Phenol-d5	4.91	49.06	470	49.1%	2.091	93712
m-Cresol-d7H	6.72	67.19	546	67.2%	1.574	96616
Naphthalene-d8	6.13	61.30	683	61.3%	1.423	343648
Benzo(a)pyrene-d12	7.74	77.42	1760	77.4%	1.197	320307
Ethylbenzene-d10	8.92	89.16	337	89.2%	.454	41836
2-Chlorophenol-d4	12.96	129.56	481	129.6%	.660	80164
Acenaphthene-d10	10.14	101.40	941	101.4%	.534	186096
Terphenyl-d14	.32	3.16	1413	3.2%	.714	12448
Benzo(e)pyrene-d12	8.06	80.57	1751	80.6%	.494	127482
Toluene	48.32	483.16	244	483.2%	1.178	588688
Xylene	10.13	101.34	377	101.3%	2.018	140128
Phenol	9.96	99.64	471	99.6%	1.133	105828
Cresol	10.89	108.94	572	108.9%	1.005	105820
Naphthalene	10.72	107.22	686	107.2%	1.032	380372
Benzo(a)pyrene	8.09	80.92	1763	80.9%	1.234	319904

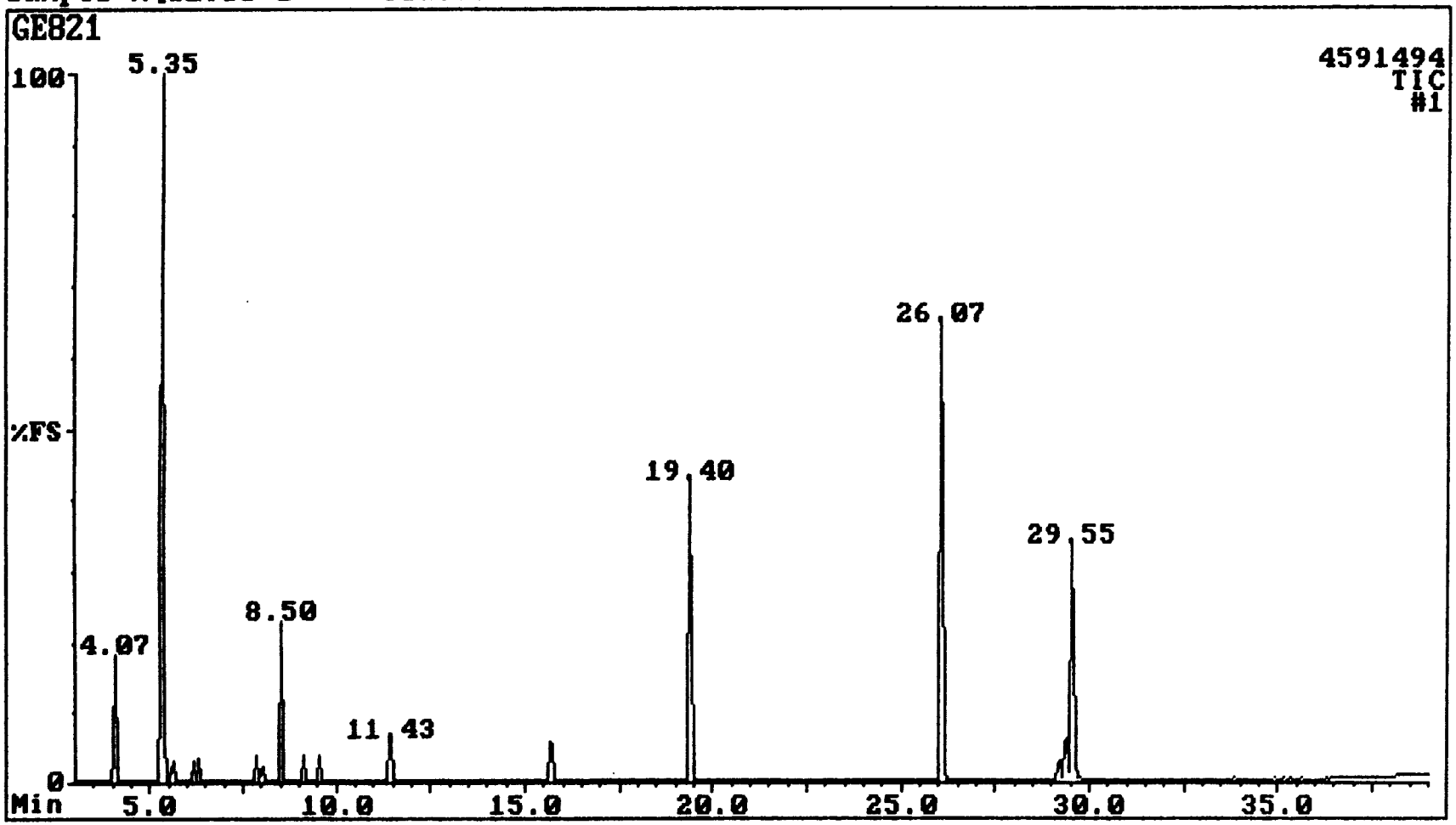
QUAN DB : GE821 LAB-BASE QUAN 23-Oct-91 11:03

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	100	87	99	0	456800	bb	510	152	1,4-Dichlorobenzene-d4
2	100	92	96	0	1970100	bv	1164	188	Phenanthrene-d10
3	100	89	94	0	2755900	bv	1564	240	Chrysene-d12
4	100	86	91	-1	1728700	vv	1772	264	Perylene-d12
5	100	88	97	0	103440	bb	240	98	Toluene-d8
6	100	90	95	0	68512	bb	371	116	o-Xylene-d10
7	100	65	95	0	93712	bb	470	99	Phenol-d5
8	100	91	93	0	96616	bb	546	115	m-Cresol-d7H
9	100	82	92	0	343650	bb	683	136	Naphthalene-d8
10	100	79	92	0	320310	vv	1760	264	Benzo(a)pyrene-d12
11	100	86	94	0	41836	bb	337	116	Ethylbenzene-d10
12	100	85	87	0	80164	bb	481	132	2-Chlorophenol-d4
13	100	90	92	-1	186100	bb	941	164	Acenaphthene-d10
14	41	21	45	0	12448	bb	1413	244	Terphenyl-d14
15	100	78	91	0	127480	bv	1751	264	Benzo(e)pyrene-d12
16	100	96	99	1	588690	bb	244	91	Toluene
17	100	94	98	-1	140130	bb	377	91	Xylene
18	100	83	95	-1	105830	bb	471	94	Phenol
19	100	91	93	0	105820	bb	572	108	Cresol
20	100	93	96	0	380370	bb	686	128	Naphthalene
21	95	66	90	0	319900	bv	1763	252	Benzo(a)pyrene

DJM 10-26-91

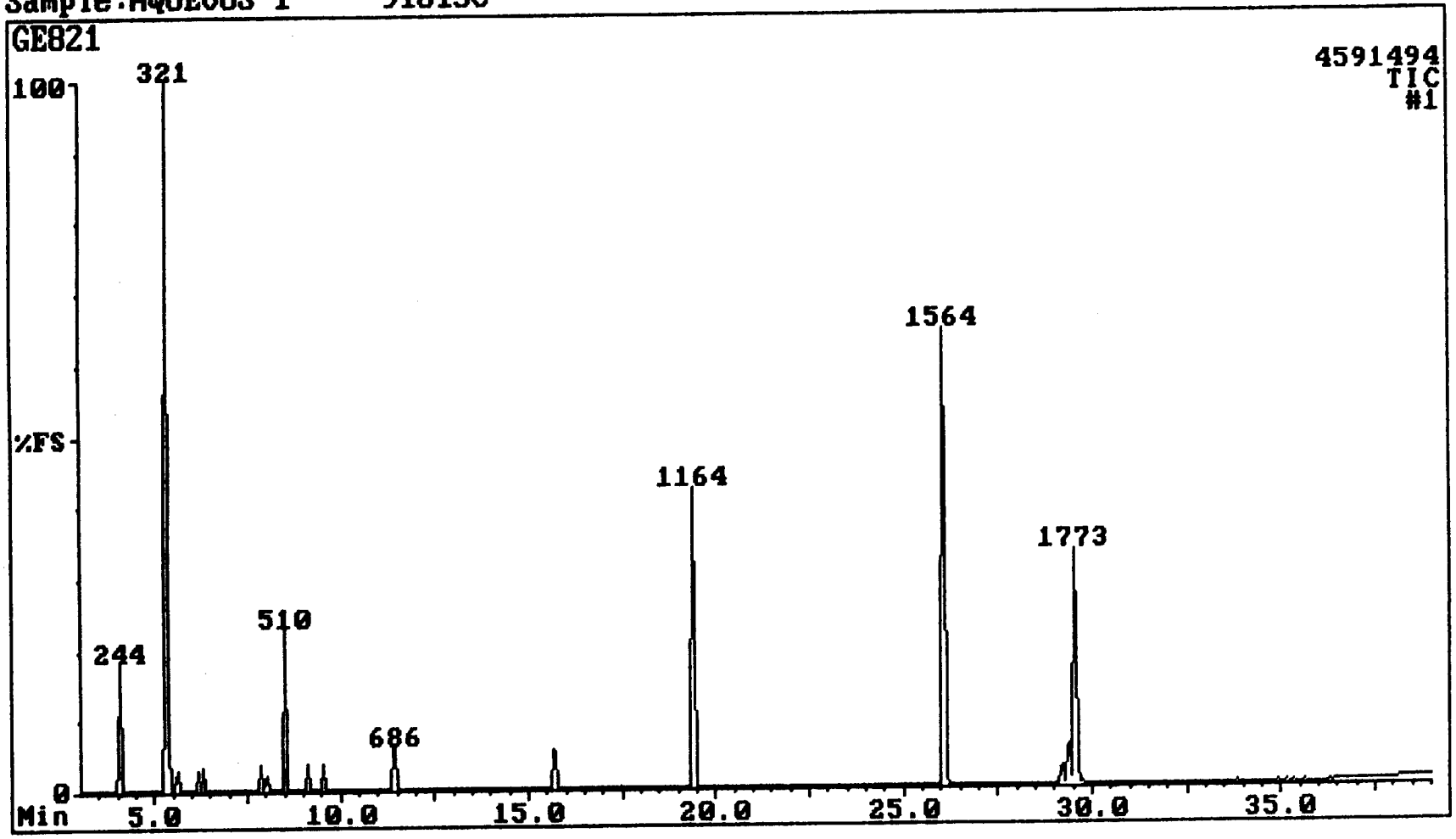
23-Oct-91 05:47 Triangle Laboratories, Inc. (919) 544-5729

Sample:AQUEOUS 1 91015C Instrument G



23-Oct-91 05:47 Triangle Laboratories, Inc. (919) 544-5729

Sample:AQUEOUS 1 91015C Instrument G



TRIANGLES LABORATORIES,INC.
SAMPLE ANALYSIS COKE ANALYTES

REPORT DATE 10/24/91

FILE GE822 SAMPLE ID AQUEOUS 2
ANALYIS DATE 10/23/91
EXT. VOL.(ML) 10

NAME	AMT FOUND EXT. CONCN. (UG/ML)	SAMPLE AMT. UG TOTAL	SCAN NO.	% RECOVERY	RF50	AREA
1,4-Dichlorobenzene-d4			510			474352
Phenanthrene-d10			1164			2003704
Chrysene-d12			1564			2816848
Perylene-d12			1772			1764392
Toluene-d8	4.36	43.56	240	43.6%	2.058	85068
o-Xylene-d10	5.05	50.51	371	50.5%	1.214	58196
Phenol-d5	4.29	42.90	470	42.9%	2.091	85084
m-Cresol-d7H	5.82	58.24	546	58.2%	1.574	86976
Naphthalene-d8	5.29	52.95	683	52.9%	1.423	301872
Benzo(a)pyrene-d12	6.64	66.42	1760	66.4%	1.197	280473
Ethylbenzene-d10	9.52	95.20	337	95.2%	.454	36736
2-Chlorophenol-d4	13.13	131.30	481	131.3%	.660	73760
Acenaphthene-d10	10.25	102.48	941	102.5%	.534	165216
Terphenyl-d14	.00	.00	0	.0%	.714	0
Benzo(e)pyrene-d12	7.71	77.13	1751	77.1%	.494	106854
Toluene	32.83	328.33	244	328.3%	1.178	328976
Xylene	9.94	99.35	377	99.4%	2.018	116696
Phenol	9.78	97.81	471	97.8%	1.133	94320
Cresol	10.72	107.20	572	107.2%	1.005	93744
Naphthalene	9.28	92.77	686	92.8%	1.032	289100
Benzo(a)pyrene	7.86	78.58	1763	78.6%	1.234	272012

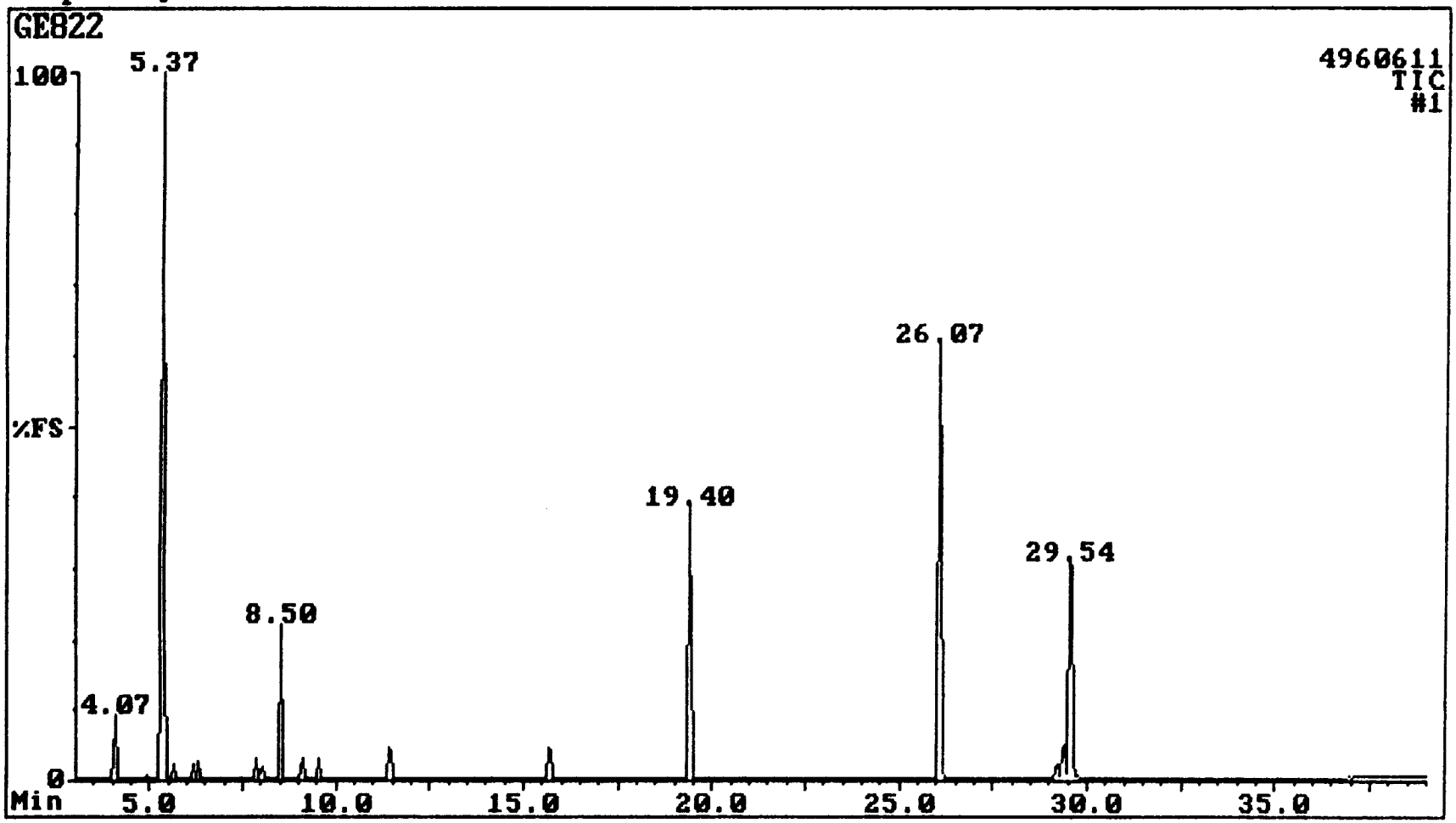
QUAN DB : GE822 LAB-BASE QUAN 23-Oct-91 11:02

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	100	87	99	0	474350	bb	510	152	1,4-Dichlorobenzene-d4
2	100	92	96	0	2003700	bv	1164	188	Phenanthrene-d10
3	100	88	94	0	2816800	bb	1564	240	Chrysene-d12
4	100	86	91	-1	1764400	vb	1772	264	Perylene-d12
5	100	86	96	0	85068	bb	240	98	Toluene-d8
6	100	88	94	0	58196	bb	371	116	o-Xylene-d10
7	100	65	95	0	85084	bb	470	99	Phenol-d5
8	100	90	93	0	86976	bb	546	115	m-Cresol-d7H
9	100	81	91	0	301870	bb	683	136	Naphthalene-d8
10	100	78	91	0	280470	vv	1760	264	Benzo(a)pyrene-d12
11	100	83	93	0	36736	bb	337	116	Ethylbenzene-d10
12	100	83	85	0	73760	bb	481	132	2-Chlorophenol-d4
13	100	89	91	-1	165220	bb	941	164	Acenaphthene-d10
14	0	0	0	0	0		0	244	Terphenyl-d14
15	100	78	91	0	106850	bv	1751	264	Benzo(e)pyrene-d12
16	100	96	99	1	328980	bb	244	91	Toluene
17	100	92	98	-1	116700	bb	377	91	Xylene
18	100	83	94	-1	94320	bb	471	94	Phenol
19	100	91	94	0	93744	bb	572	108	Cresol
20	100	90	94	0	289100	bb	686	128	Naphthalene
21	93	64	89	0	272010	bv	1763	252	Benzo(a)pyrene

DJM
10-26-91

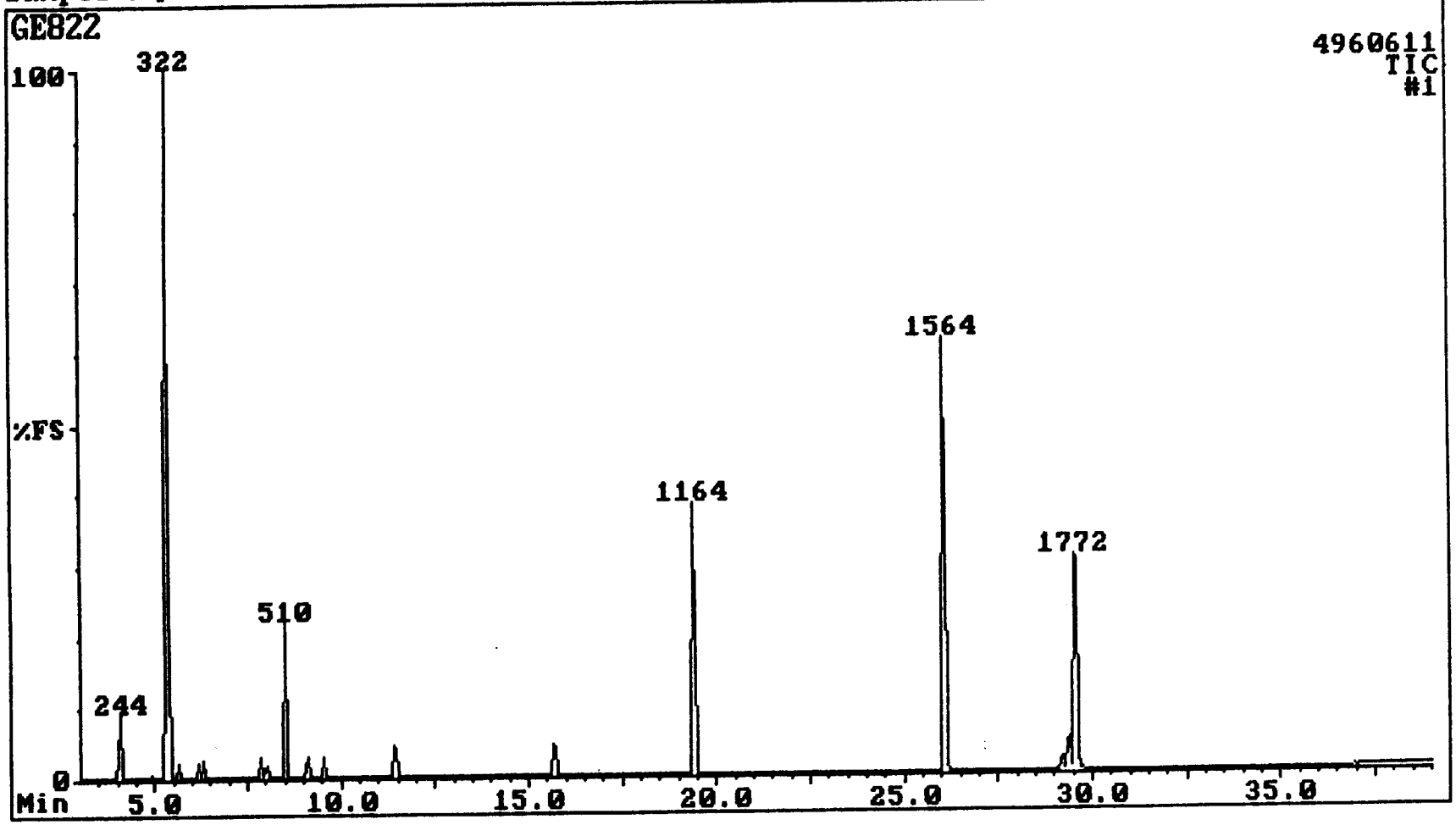
23-Oct-91 06:36 Triangle Laboratories, Inc. (919) 544-5729

Sample:AQUEOUS 2 91015C Instrument G



23-Oct-91 06:36 Triangle Laboratories, Inc. (919) 544-5729

Sample:AQUEOUS 2 91015C Instrument G



TRIANGLES LABORATORIES,INC.
SAMPLE ANALYSIS COKE ANALYTES

REPORT DATE 10/24/91

FILE GE823 SAMPLE ID AQUEOUS 3
ANALYIS DATE 10/23/91
EXT. VOL.(ML) 10

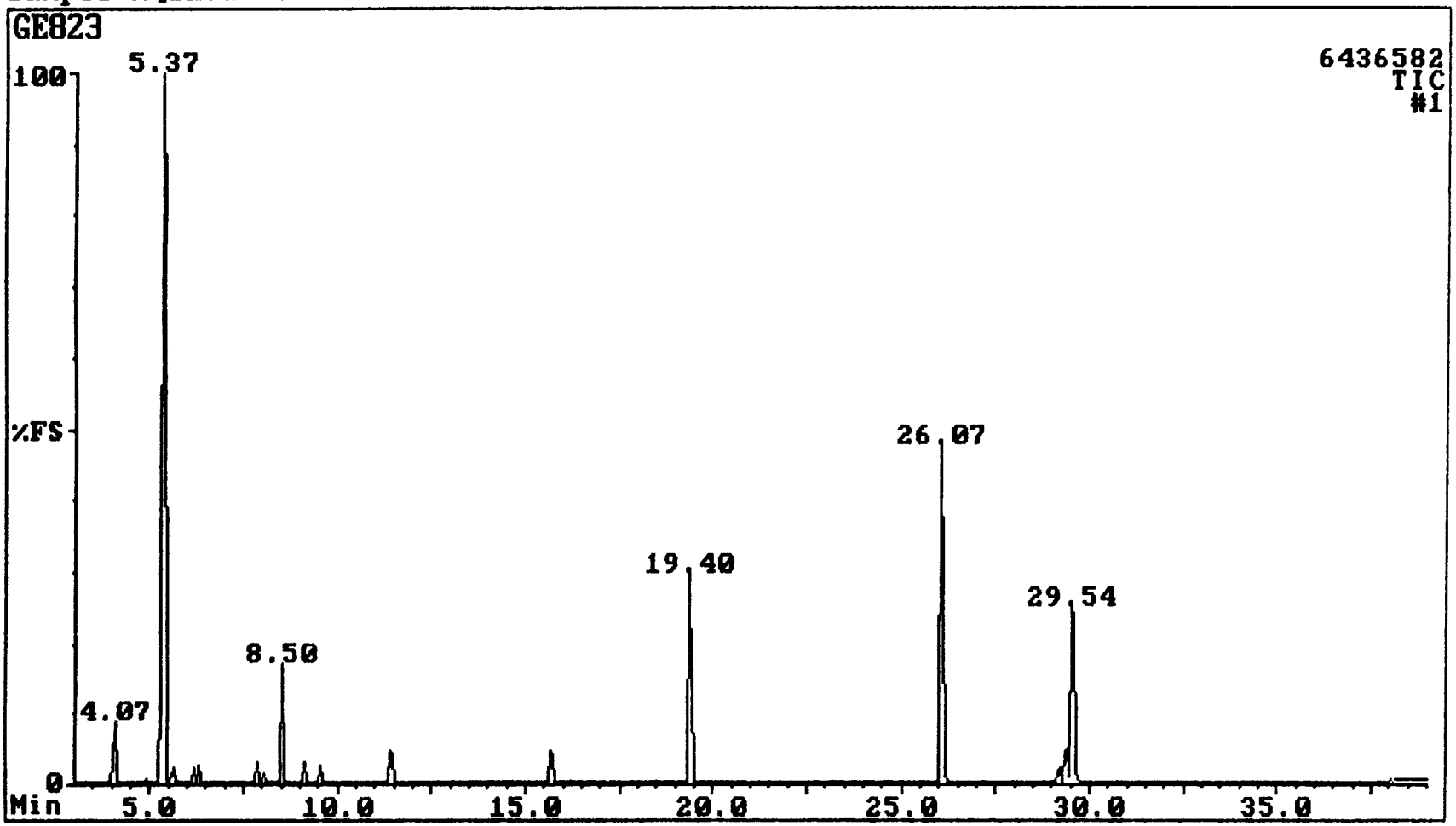
NAME	AMT FOUND EXT. CONCN. (UG/ML)	SAMPLE AMT. UG TOTAL	SCAN NO.	% RECOVERY	RF50	AREA
1,4-Dichlorobenzene-d4			510			466432
Phenanthrene-d10			1164			2001904
Chrysene-d12			1564			2846748
Perylene-d12			1772			1787032
Toluene-d8	5.85	58.45	240	58.5%	2.058	112248
o-Xylene-d10	6.75	67.50	371	67.5%	1.214	76472
Phenol-d5	5.19	51.93	470	51.9%	2.091	101288
m-Cresol-d7H	7.43	74.28	546	74.3%	1.574	109076
Naphthalene-d8	6.72	67.21	683	67.2%	1.423	382880
Benzo(a)pyrene-d12	8.41	84.07	1760	84.1%	1.197	359556
Ethylbenzene-d10	8.65	86.54	337	86.5%	.454	44064
2-Chlorophenol-d4	13.11	131.10	480	131.1%	.660	87676
Acenaphthene-d10	9.78	97.77	941	97.8%	.534	199916
Terphenyl-d14	.00	.00	0	.0%	.714	0
Benzo(e)pyrene-d12	7.20	72.04	1751	72.0%	.494	127946
Toluene	31.08	310.79	244	310.8%	1.178	410896
Xylene	9.55	95.47	377	95.5%	2.018	147344
Phenol	9.62	96.21	471	96.2%	1.133	110448
Cresol	10.30	102.98	572	103.0%	1.005	112928
Naphthalene	8.99	89.93	686	89.9%	1.032	355460
Benzo(a)pyrene	7.88	78.82	1763	78.8%	1.234	349760

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	100	87	99	0	466430	bb	510	152	1,4-Dichlorobenzene-d4
2	100	93	97	0	2001900	bv	1164	188	Phenanthrene-d10
3	100	89	94	0	2846700	bb	1564	240	Chrysene-d12
4	100	86	91	-1	1787000	vv	1772	264	Perylene-d12
5	100	89	97	0	112250	bb	240	98	Toluene-d8
6	100	90	94	0	76472	bb	371	116	o-Xylene-d10
7	100	65	95	0	101290	bb	470	99	Phenol-d5
8	100	92	94	0	109080	bb	546	115	m-Cresol-d7H
9	100	83	92	0	382880	bb	683	136	Naphthalene-d8
10	100	79	92	0	359560	vv	1760	264	Benzo(a)pyrene-d12
11	100	85	93	0	44064	bb	337	116	Ethylbenzene-d10
12	100	85	87	-1	87676	bb	480	132	2-Chlorophenol-d4
13	100	90	92	-1	199920	bb	941	164	Acenaphthene-d10
14	0	0	0	0	0		0	244	Terphenyl-d14
15	100	81	91	0	127950	bv	1751	264	Benzo(e)pyrene-d12
16	100	96	99	1	410900	bb	244	91	Toluene
17	100	94	98	-1	147340	bb	377	91	Xylene
18	100	83	95	-1	110450	bb	471	94	Phenol
19	100	92	94	0	112930	bb	572	108	Cresol
20	100	92	95	0	355460	bb	686	128	Naphthalene
21	95	61	91	0	349760	bv	1763	252	Benzo(a)pyrene

DJH
10-26-91

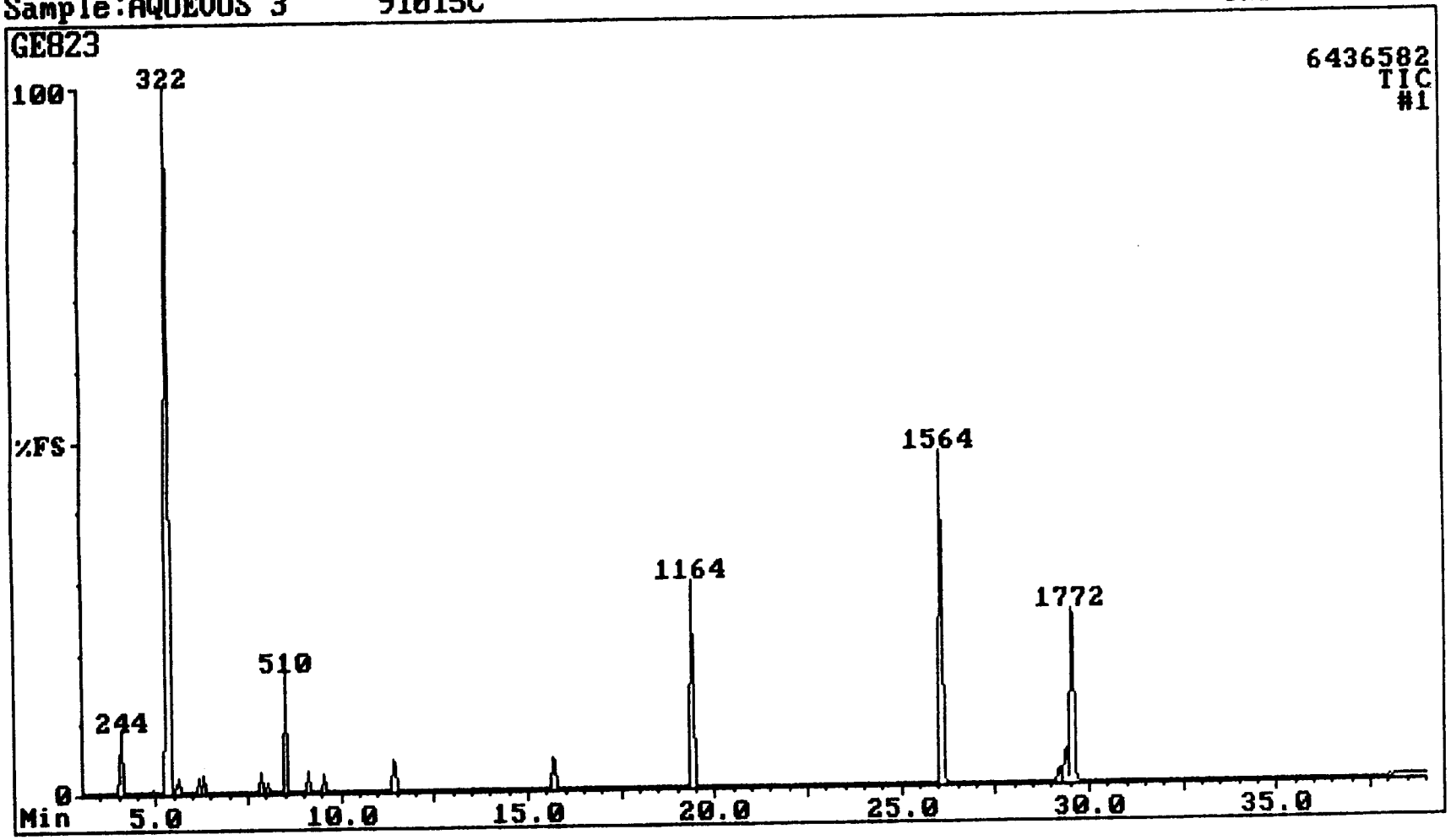
23-Oct-91 07:25 Triangle Laboratories, Inc. (919) 544-5729

Sample:AQUEOUS 3 91015C Instrument G



23-Oct-91 07:25 Triangle Laboratories, Inc. (919) 544-5729

Sample:AQUEOUS 3 91015C Instrument G



TRIANGLES LABORATORIES,INC.
SAMPLE ANALYSIS COKE ANALYTES

REPORT DATE 10/24/91

FILE GE812 SAMPLE ID SBLK 101991A
ANALYIS DATE 10/22/91 FRONT HALF
AMT FOUND EXT. VOL.(ML) 10

NAME	EXT. CONCN. (UG/ML)	SAMPLE AMT. UG TOTAL	SCAN NO.	% RECOVERY	RF50	AREA
1,4-Dichlorobenzene-d4			510			479696
Phenanthrene-d10			1164			1737496
Chrysene-d12			1564			2830780
Perylene-d12			1772			1725664
Toluene-d8	6.30	62.99	240	63.0%	2.058	124400
o-Xylene-d10	6.98	69.81	371	69.8%	1.214	81336
Phenol-d5	7.50	75.02	470	75.0%	2.091	150484
m-Cresol-d7H	6.90	68.96	546	69.0%	1.574	104144
Naphthalene-d8	7.45	74.52	683	74.5%	1.423	368432
Benzo(a)pyrene-d12	7.86	78.64	1760	78.6%	1.197	324753
Ethylbenzene-d10	9.18	91.83	337	91.8%	.454	51816
2-Chlorophenol-d4	8.49	84.94	481	84.9%	.660	84392
Acenaphthene-d10	9.45	94.46	941	94.5%	.534	185856
Terphenyl-d14	0.00	0.00	0		.714	0
Benzo(e)pyrene-d12	9.55	95.45	1751	95.5%	.494	153120
Toluene	2.09	20.89	244		1.178	30608
Xylene	.00	.00	0		2.018	0
Phenol	.00	.00	0		1.133	0
Cresol	.00	.00	0		1.005	0
Naphthalene	.00	.00	0		1.032	0
Benzo(a)pyrene	.86	8.63	1763		1.234	34588

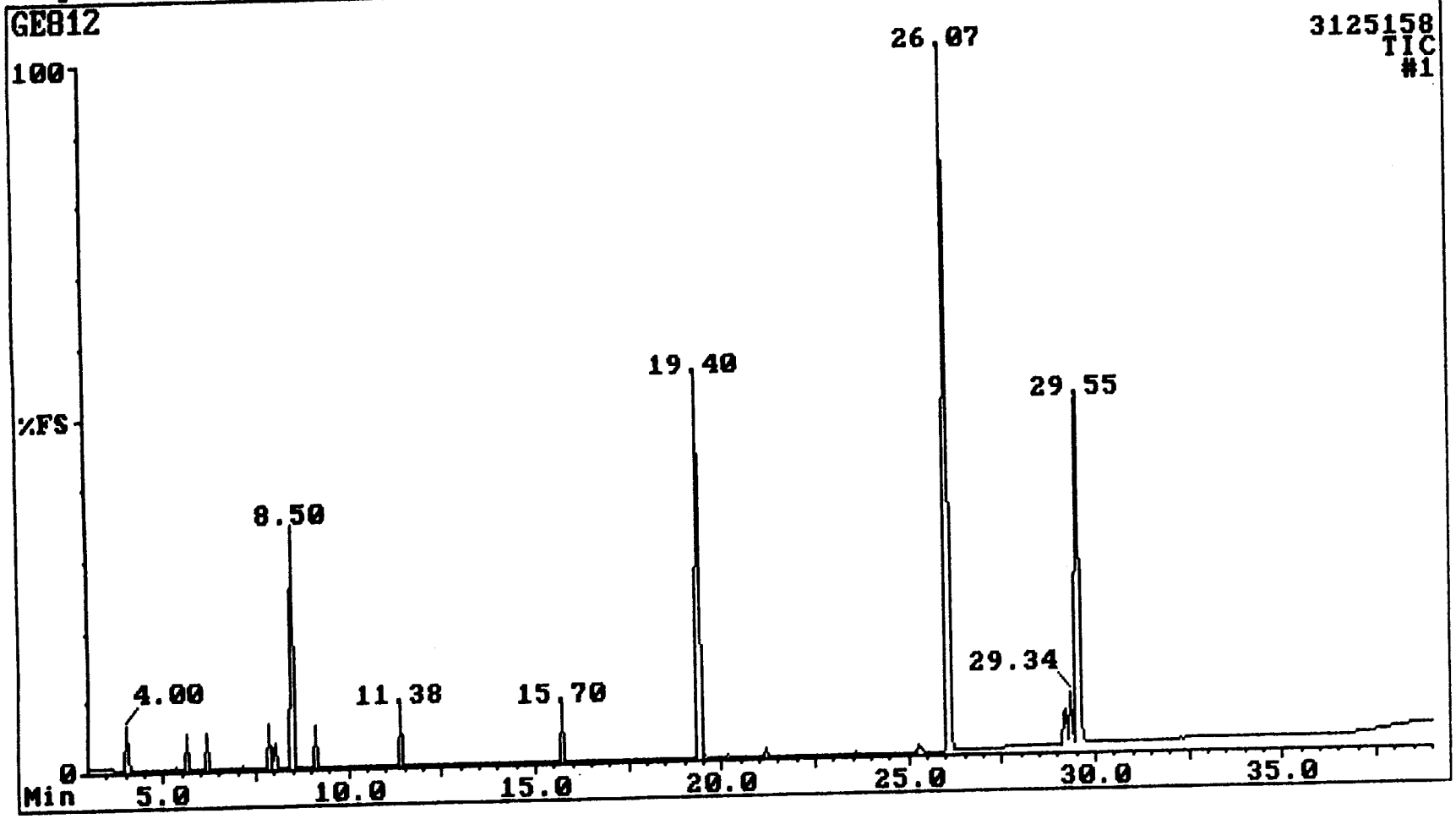
QUAN DB : GEB12 LAB-BASE QUAN 23-Oct-91 11:03

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	100	87	99	0	479700	bb	510	152	1,4-Dichlorobenzene-d4
2	100	92	96	0	1737500	bv	1164	188	Phenanthrene-d10
3	100	88	94	0	2830800	bv	1564	240	Chrysene-d12
4	100	84	90	-1	1725700	vv	1772	264	Perylene-d12
5	100	88	94	0	124400	bb	240	98	Toluene-d8
6	100	89	93	0	81336	bb	371	116	o-Xylene-d10
7	100	82	96	0	150480	bb	470	99	Phenol-d5
8	100	90	92	0	104140	bb	546	115	m-Cresol-d7H
9	100	86	91	0	368430	bb	683	136	Naphthalene-d8
10	100	77	92	0	324750	vv	1760	264	Benzo(a)pyrene-d12
11	100	84	92	0	51816	bb	337	116	Ethylbenzene-d10
12	100	84	87	0	84392	bb	481	132	2-Chlorophenol-d4
13	100	86	91	-1	185860	bb	941	164	Acenaphthene-d10
14	39	18	45	0	16424	bb	1413	244	Terphenyl-d14
15	100	72	92	0	153120	bv	1751	264	Benzo(e)pyrene-d12
16	100	72	92	1	30608	bb	244	91	Toluene
17	0	0	0	0	0		0	91	Xylene
18	41	16	50	-1	4700	bb	471	94	Phenol — NO
19	21	11	23	1	2204	bb	573	108	Cresol — NO
20	0	0	0	0	0		0	128	Naphthalene
21	56	13	76	0	34588	bv	1763	252	Benzo(a)pyrene

DJH
10-24-91

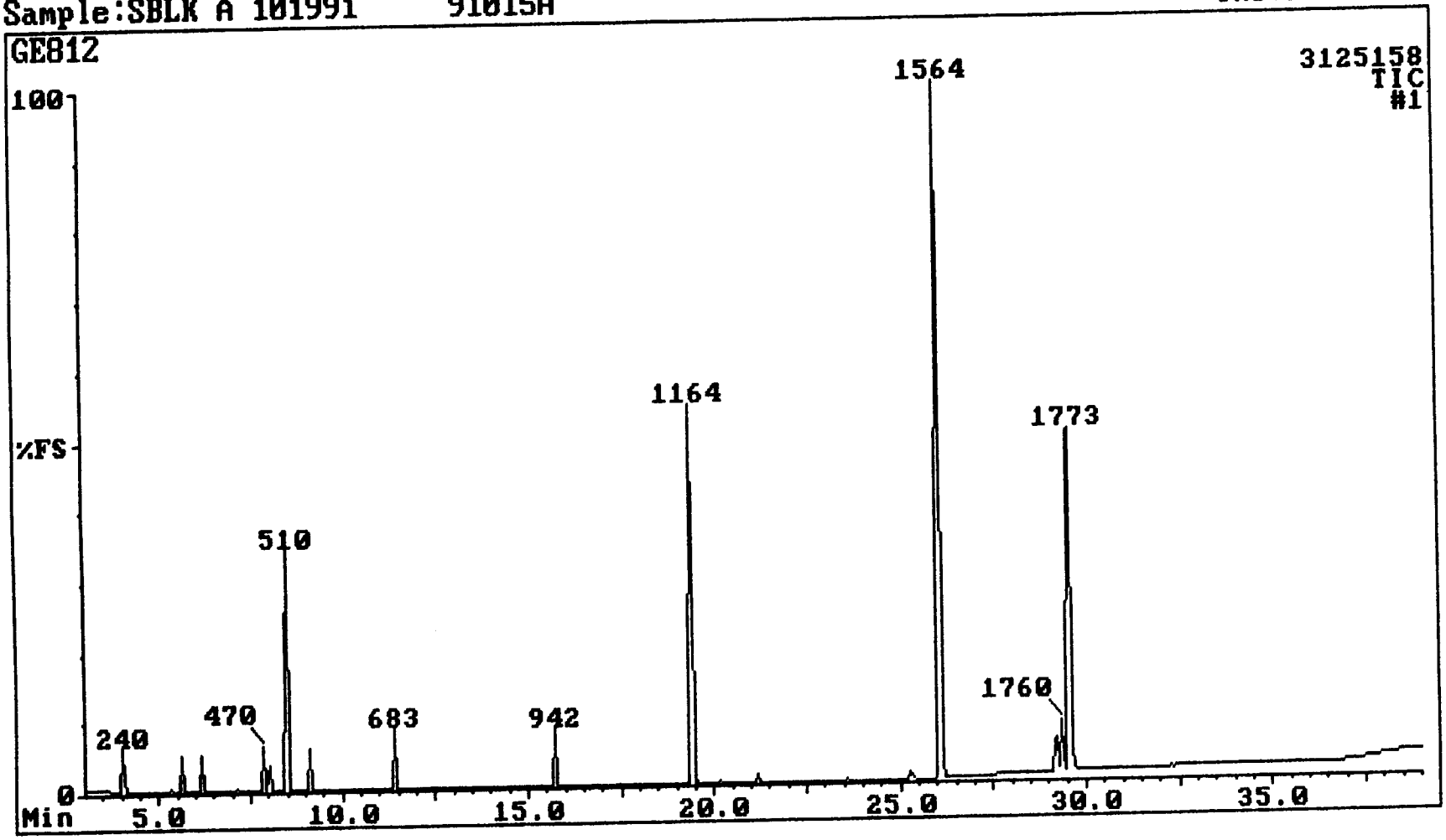
22-Oct-91 22:29 Triangle Laboratories, Inc. (919) 544-5729

Sample:SBLK A 101991 91015A Instrument G



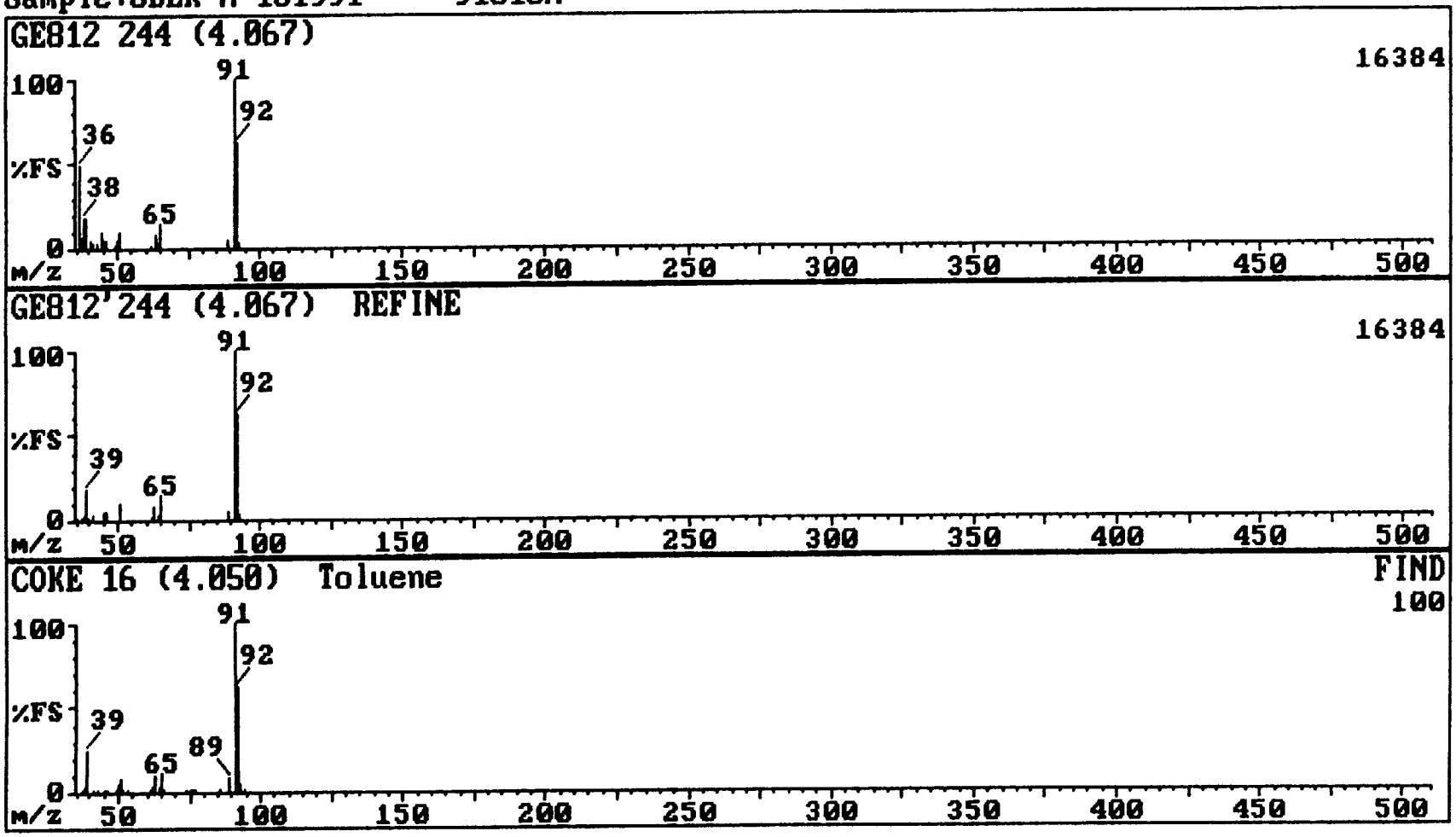
22-Oct-91 22:29 Triangle Laboratories, Inc. (919) 544-5729

Sample:SBLK A 101991 91015A Instrument G



22-Oct-91 22:29 Triangle Laboratories, Inc. (919) 544-5729

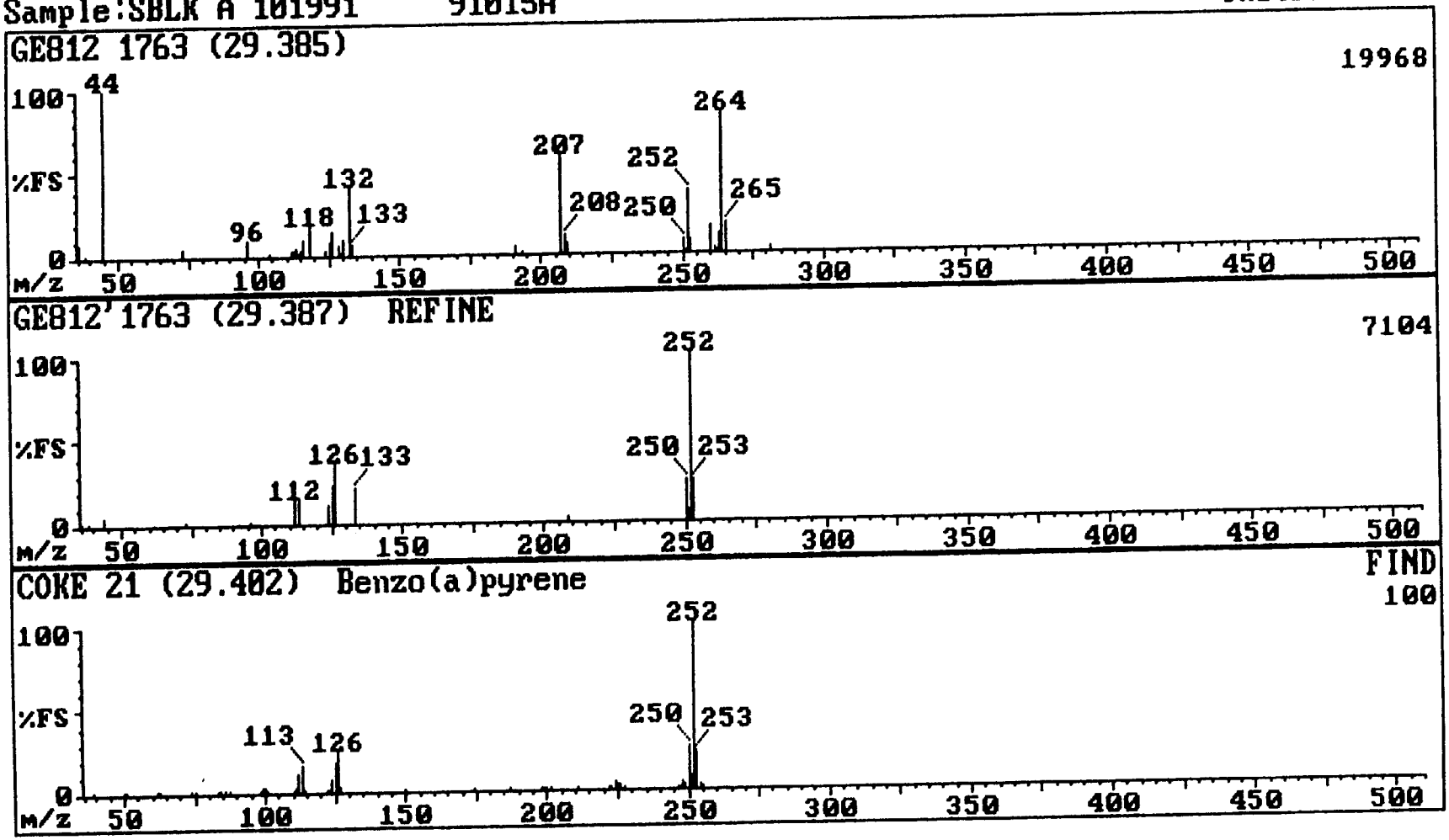
Sample:SBLK A 101991 91015A Instrument G



OK

22-Oct-91 22:29 Triangle Laboratories, Inc. (919) 544-5729

Sample:SBLK A 101991 91015A Instrument G



TRIANGLES LABORATORIES,INC.
SAMPLE ANALYSIS COKE ANALYTES

REPORT DATE 10/24/91

FILE GE813 SAMPLE ID SBLK 101991B
ANALYIS DATE 10/22/91 BACK HALF
AMT FOUND EXT. VOL.(ML) 10

NAME	EXT. CONCN. (UG/ML)	SAMPLE AMT. UG TOTAL	SCAN NO.	% RECOVERY	RF50	AREA
1,4-Dichlorobenzene-d4			510			519248
Phenanthrene-d10			1163			1983336
Chrysene-d12			1564			3084204
Perylene-d12			1772			1899020
Toluene-d8	5.70	57.03	240	57.0%	2.058	121912
o-Xylene-d10	6.38	63.75	370	63.8%	1.214	80404
Phenol-d5	6.98	69.76	470	69.8%	2.091	151468
m-Cresol-d7H	6.51	65.07	546	65.1%	1.574	106360
Naphthalene-d8	6.36	63.57	683	63.6%	1.423	358772
Benzo(a)pyrene-d12	6.80	67.99	1759	68.0%	1.197	308980
Ethylbenzene-d10	10.14	101.41	337	101.4%	.454	56080
2-Chlorophenol-d4	8.88	88.79	480	88.8%	.660	88796
Acenaphthene-d10	10.54	105.44	941	105.4%	.534	202020
Terphenyl-d14	5.64	56.42	1413	56.4%	.714	248516
Benzo(e)pyrene-d12	9.75	97.53	1751	97.5%	.494	148858
Toluene	7.19	71.95	244	71.9%	1.178	103312
Xylene	.00	.00	0	.0%	2.018	0
Phenol	.00	.00	0	.0%	1.133	0
Cresol	.00	.00	0	.0%	1.005	0
Naphthalene	2.55	25.45	685	25.5%	1.032	94272
Benzo(a)pyrene	.00	.00	0	.0%	1.234	0

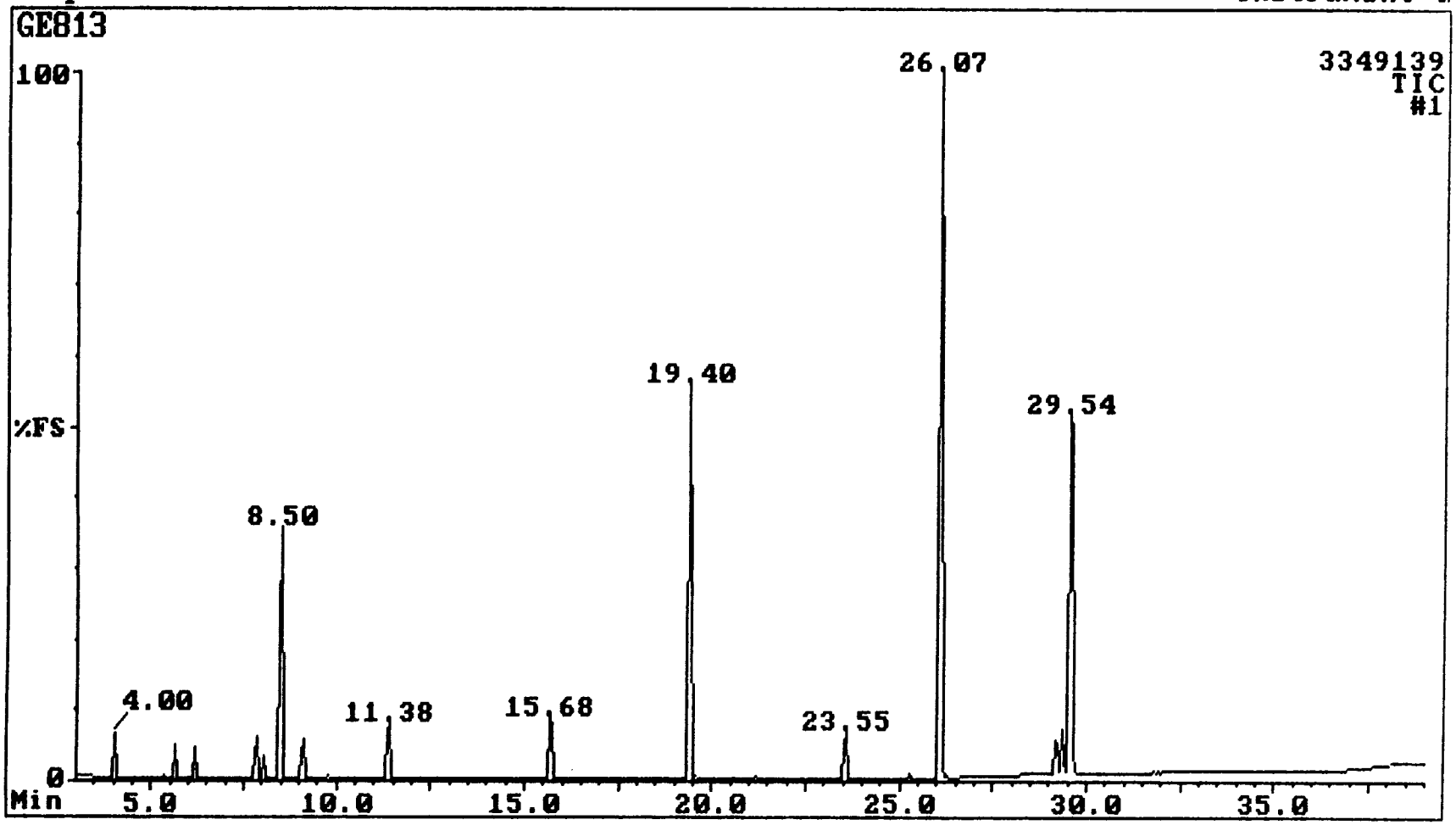
QUAN DB : GE813 LAB-BASE QUAN 23-Oct-91 11

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	100	87	99	0	519250	bb	510	152	1,4-Dichlorobenzene-d4
2	100	93	97	-1	1983300	bv	1163	188	Phenanthrene-d10
3	100	89	94	1	3084200	bb	1564	240	Chrysene-d12
4	100	85	90	-1	1899000	vv	1772	264	Perylene-d12
5	100	88	97	0	121910	bb	240	98	Toluene-d8
6	100	86	90	-1	80404	bb	370	116	o-Xylene-d10
7	100	82	96	0	151470	bb	470	99	Phenol-d5
8	100	88	92	0	106360	bb	546	115	m-Cresol-d7H
9	100	85	92	0	358770	bb	683	136	Naphthalene-d8
10	100	77	91	-1	308980	vv	1759	264	Benzo(a)pyrene-d12
11	100	85	92	0	56080	bb	337	116	Ethylbenzene-d10
12	100	84	88	-1	88796	bb	480	132	2-Chlorophenol-d4
13	100	89	92	0	202020	bb	941	164	Acenaphthene-d10
14	100	89	96	0	248520	bb	1413	244	Terphenyl-d14
15	100	75	92	0	148860	bv	1751	264	Benzo(e)pyrene-d12
16	100	89	97	1	103310	bb	244	91	Toluene
17	0	0	0	0	0		0	91	Xylene
18	0	0	0	0	0		0	94	Phenol
19	0	0	0	0	0		0	108	Cresol
20	100	73	87	-1	94272	bb	685	128	Naphthalene
21	0	0	0	0	0		0	252	Benzo(a)pyrene

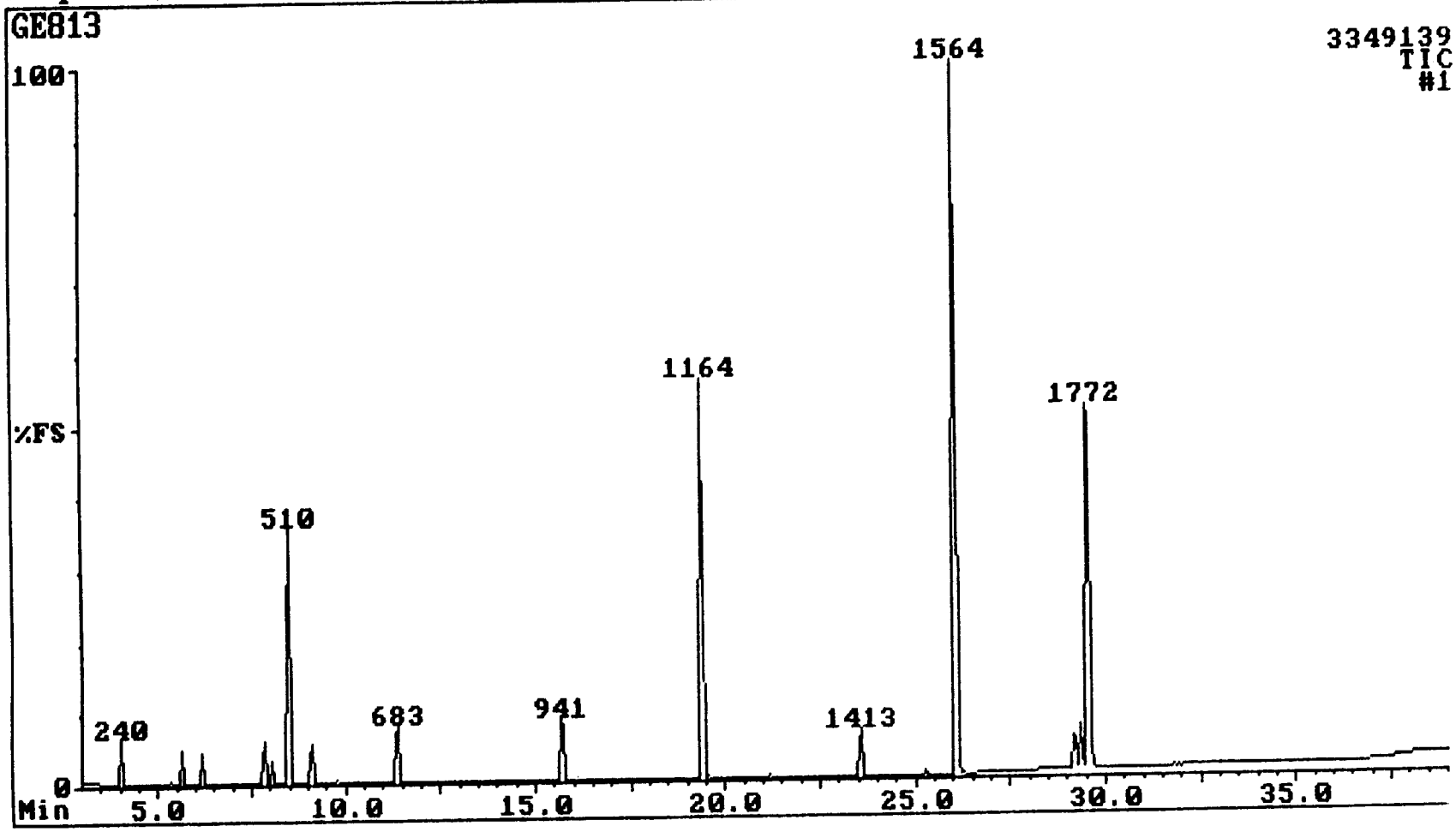
DJY
10-24-91

22-Oct-91 23:11 Triangle Laboratories, Inc. (919) 544-5729

Sample:SBLK B 101991 91015B Instrument G



22-Oct-91 23:11 Triangle Laboratories, Inc. (919) 544-5729
Sample:SBLK B 101991 91015B Instrument G



TRIANGLES LABORATORIES,INC.
SAMPLE ANALYSIS COKE ANALYTES

REPORT DATE 10/24/91

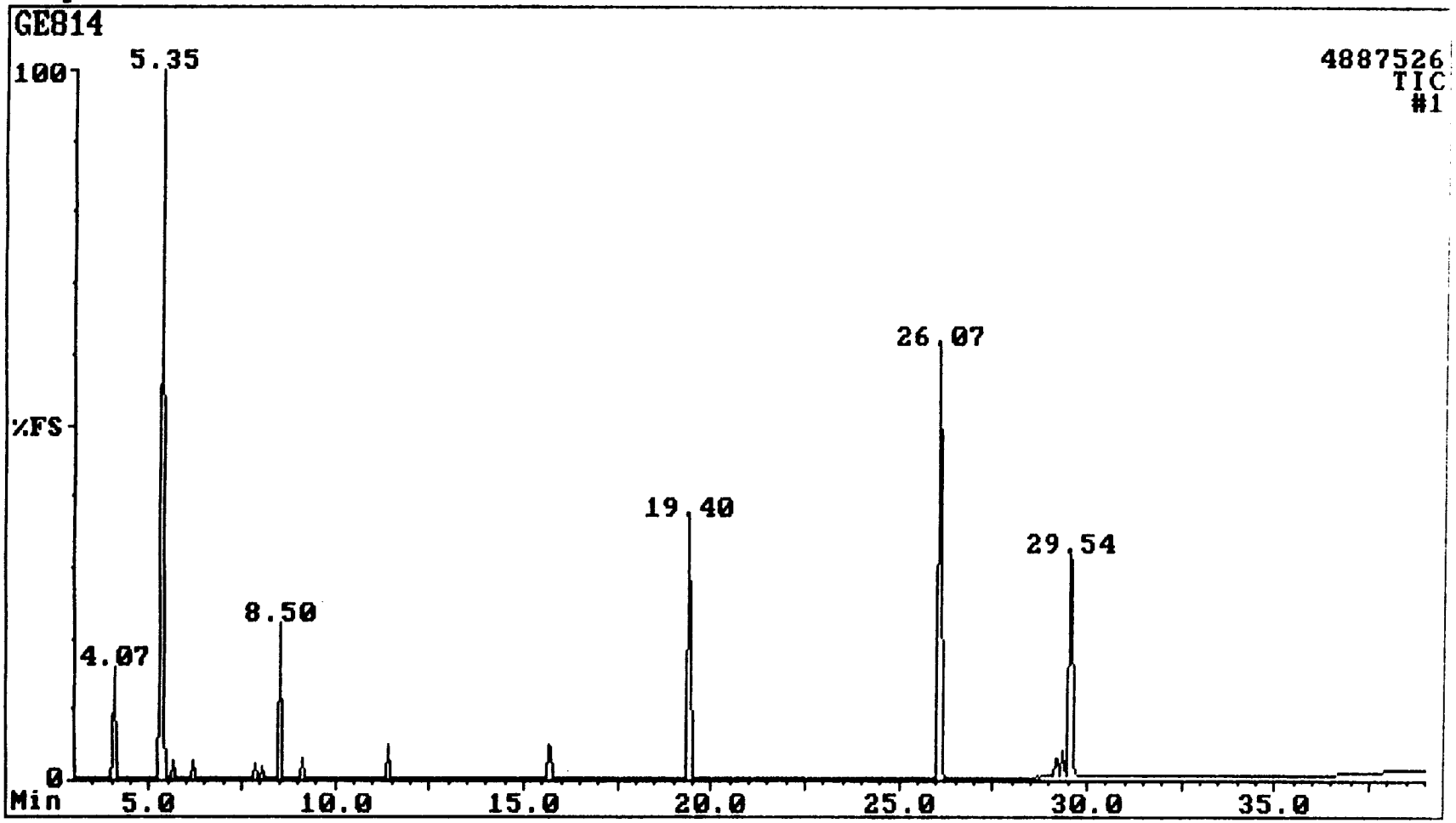
FILE GE814 SAMPLE ID SBLK 101991C
ANALYIS DATE 10/23/91 HPLC WATER
AMT FOUND EXT. VOL.(ML) 10
EXT. CONCN. SAMPLE AMT.

NAME	(UG/ML)	UG TOTAL	SCAN NO.	% RECOVERY	RF50	AREA
1,4-Dichlorobenzene-d4			510			459504
Phenanthrene-d10			1164			1862484
Chrysene-d12			1564			2695572
Perylene-d12			1772			1716852
Toluene-d8	5.29	52.86	240	52.9%	2.058	99996
o-Xylene-d10	5.87	58.70	371	58.7%	1.214	65512
Phenol-d5	4.52	45.21	470	45.2%	2.091	86876
m-Cresol-d7H	6.14	61.44	546	61.4%	1.574	88872
Naphthalene-d8	6.25	62.53	683	62.5%	1.423	331376
Benzo(a)pyrene-d12	6.83	68.27	1760	68.3%	1.197	280499
Ethylbenzene-d10	9.34	93.42	337	93.4%	.454	42376
2-Chlorophenol-d4	13.60	136.04	481	136.0%	.660	78032
Acenaphthene-d10	9.97	99.69	941	99.7%	.534	176416
Terphenyl-d14	.00	.00	0		.714	0
Benzo(e)pyrene-d12	9.09	90.86	1751	90.9%	.494	125896
Toluene	46.09	460.93	244		1.178	542880
Xylene	.00	.00	0		2.018	0
Phenol	.00	.00	0		1.133	0
Cresol	.00	.00	0		1.005	0
Naphthalene	.00	.00	0		1.032	0
Benzo(a)pyrene	.00	.00	0		1.234	0

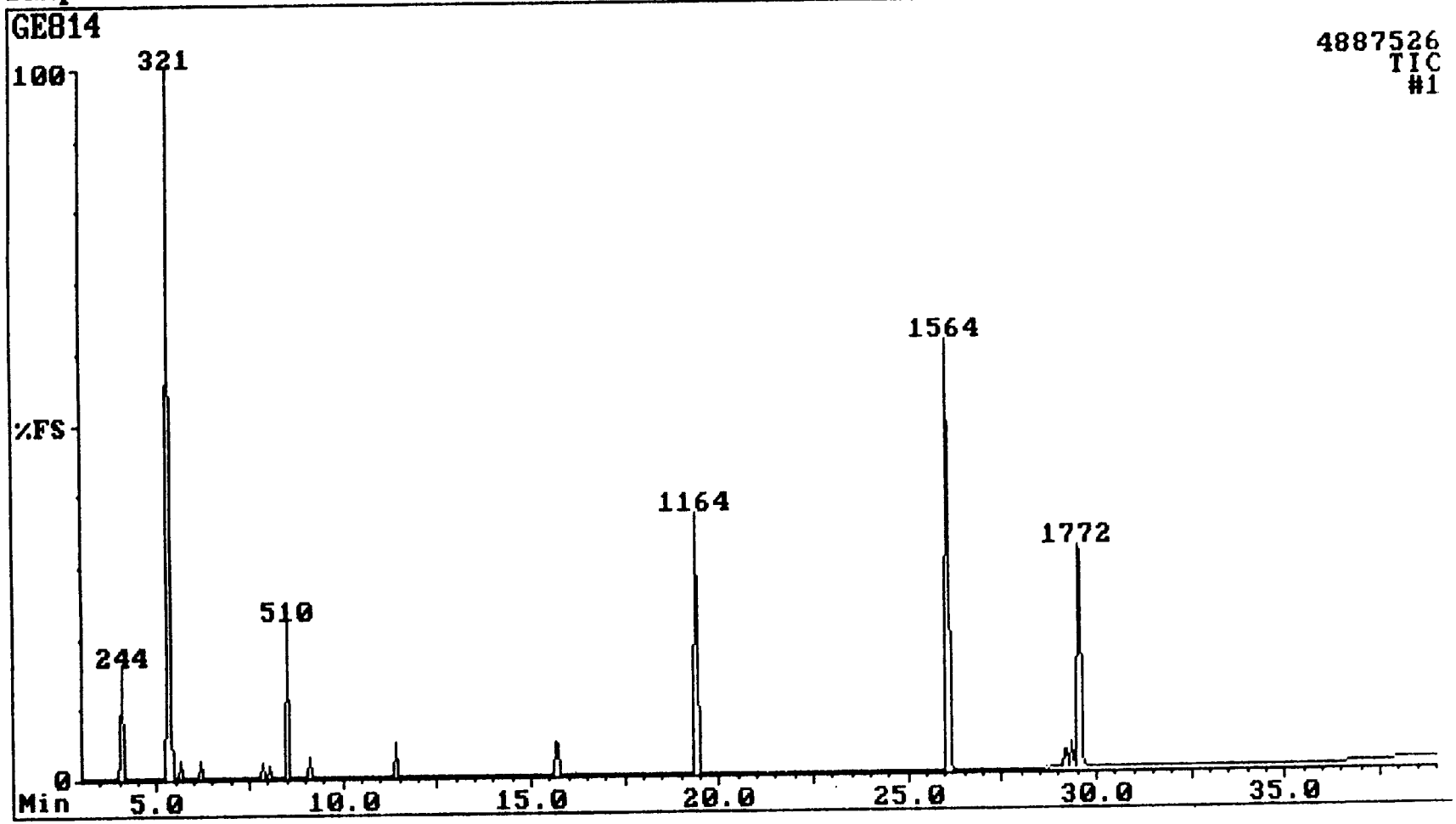
No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	100	87	99	0	459500	bb	510	152	1,4-Dichlorobenzene-d4
2	100	92	96	0	1862500	bv	1164	188	Phenanthrene-d10
3	100	88	93	0	2695600	bv	1564	240	Chrysene-d12
4	100	86	90	-1	1716900	vb	1772	264	Perylene-d12
5	100	87	96	0	99996	bb	240	98	Toluene-d8
6	100	87	91	0	65512	bb	371	116	o-Xylene-d10
7	100	81	94	0	86876	bb	470	99	Phenol-d5
8	100	89	91	0	88872	bb	546	115	m-Cresol-d7H
9	100	85	90	0	331380	bb	683	136	Naphthalene-d8
10	100	78	91	0	280500	vv	1760	264	Benzo(a)pyrene-d12
11	100	82	91	0	42376	bb	337	116	Ethylbenzene-d10
12	100	82	86	0	78032	bb	481	132	2-Chlorophenol-d4
13	100	86	91	-1	176420	bb	941	164	Acenaphthene-d10
14	38	15	45	0	10072	bb	1413	244	Terphenyl-d14
15	100	73	92	0	125900	bv	1751	264	Benzo(e)pyrene-d12
16	100	96	99	1	542880	bb	244	91	Toluene
17	0	0	0	0	0		0	91	Xylene
18	0	0	0	0	0		0	94	Phenol
19	0	0	0	0	0		0	108	Cresol
20	0	0	0	0	0		0	128	Naphthalene
21	0	0	0	0	0		0	252	Benzo(a)pyrene

DJM 10-26-91

23-Oct-91 00:01 Triangle Laboratories, Inc. (919) 544-5729
Sample:SBLK C 101991 91015C Instrument G



23-Oct-91 00:01 Triangle Laboratories, Inc. (919) 544-5729
Sample:SBLK C 101991 91015C Instrument (



TRIANGLES LABORATORIES,INC.

0-20-91

GE746 GE747 GE748 GE749 GE750

COKE ANALYTES INITIAL CALIBRATION 5 POINT

NAME	RF5	RF20	RF50	RF100	RF200	AVG.	%RSD
1,4-Dichlorobenzene-d4	1.000	1.000	1.000	1.000	1.000		
Phenanthrene-d10	1.000	1.000	1.000	1.000	1.000		
Chrysene-d12	1.000	1.000	1.000	1.000	1.000		
Perylene-d12	1.000	1.000	1.000	1.000	1.000		
Toluene-d8	2.311	2.579	2.331	2.550	2.260	2.406	6.1%
o-Xylene-d10	1.252	1.418	1.297	1.352	1.208	1.306	6.3%
Phenol-d5	2.120	2.452	2.268	2.314	2.234	2.278	5.3%
m-Cresol-d7H	1.524	1.724	1.620	1.666	1.576	1.622	4.8%
Naphthalene-d8	1.078	1.171	1.083	1.124	1.053	1.102	4.2%
Benzo(a)pyrene-d12	1.198	1.329	1.241	1.378	1.341	1.297	5.8%
Ethylbenzene-d10	.348	.345	.431	.340	.417	.376	11.7%
2-Chlorophenol-d4	.556	.553	.663	.546	.605	.584	8.5%
Acenaphthene-d10	.527	.498	.583	.461	.408	.495	13.3%
Terphenyl-d14	.820	.784	.854	.589		.762	15.6%
Benzo(e)pyrene-d12	.273	.373	.478	.390	.400	.383	19.1%
Toluene	.978	.990	1.157	.863		.997	12.1%
Xylene	1.860	1.928	2.280	1.732	1.579	1.876	14.0%
Phenol	1.037	1.016	1.179	.887		1.030	11.6%
Cresol	.939	.915	1.099	.854	.889	.939	10.1%
Naphthalene	.926	.924	.982			.944	3.5%
Benzo(a)pyrene	1.038	1.006	1.077			1.040	3.4%

TRIANGLES LABORATORIES,INC.
INITIAL CALIBRATION

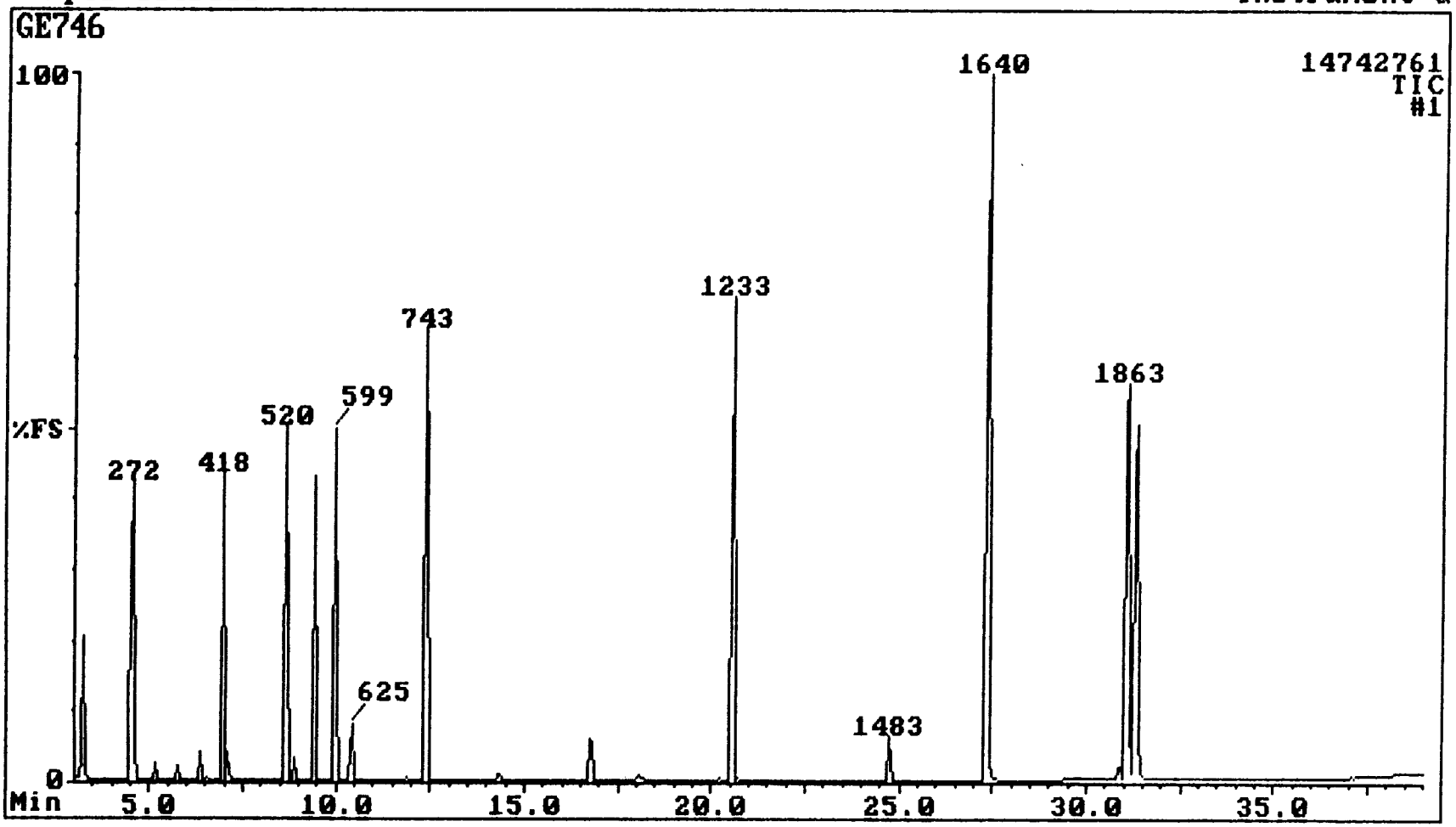
10-20-91

COKE ANALYTES

		FILENAME	GE746	GE747	GE748	GE749	GE750
		MULT. BY -->	1	4	10	20	40
NAME	SCAN	CONC	AREA	AREA	AREA	AREA	
1,4-Dichlorobenzene-d4	565	50.00	2138776	1847808	1971632	1649536	1603536
Phenanthrene-d10	1233	50.00	8579648	7841488	8493824	7296428	7154288
Chrysene-d12	1640	50.00	12011135	10975265	11955413	10589585	10444915
Perylene-d12	1878	50.00	8690311	8242075	9366771	6934980	7261710
Toluene-d8	272	50.00	4942048	4764800	4596016	4206992	3624512
o-Xylene-d10	418	50.00	2678816	2620876	2557952	2229360	1937456
Phenol-d5	520	50.00	4534724	4529916	4472072	3816396	3583072
m-Cresol-d7H	599	50.00	3258740	3186348	3193068	2748720	2527960
Naphthalene-d8	743	50.00	9246048	9180300	9202424	8203676	7530220
Benzo(a)pyrene-d12	1863	50.00	10413780	10952428	11620519	9555516	9736221
Ethylbenzene-d10	381	5.00	172048	658240	1980848	2859212	6040152
2-Chlorophenol-d4	534	5.00	252032	1002636	2962856	4167580	8666988
Acenaphthene-d10	1006	5.00	487040	1829024	5361232	7569680	12285652
Terphenyl-d14	1483	5.00	984992	3440728	10211592	12474257	17272813
Benzo(e)pyrene-d12	1852	5.00	284391	1636153	5549408	7448832	15583694
Toluene	276	5.00	483276	1887392	5319480	7263908	11919484
Xylene	426	5.00	498128	2020752	5832064	7722992	12236684
Phenol	521	5.00	470208	1840672	5271792	6769504	11115728
Cresol	625	5.00	306040	1165744	3507608	4696880	8986896
Naphthalene	746	5.00	855780	3392556	9039872	10886180	14266920
Benzo(a)pyrene	1867	5.00	1080672	4409296	12517598	15177280	25854934

18-Oct-91 05:02 Triangle Laboratories, Inc. (919) 544-5729

Sample:SSTD005 Instrument G



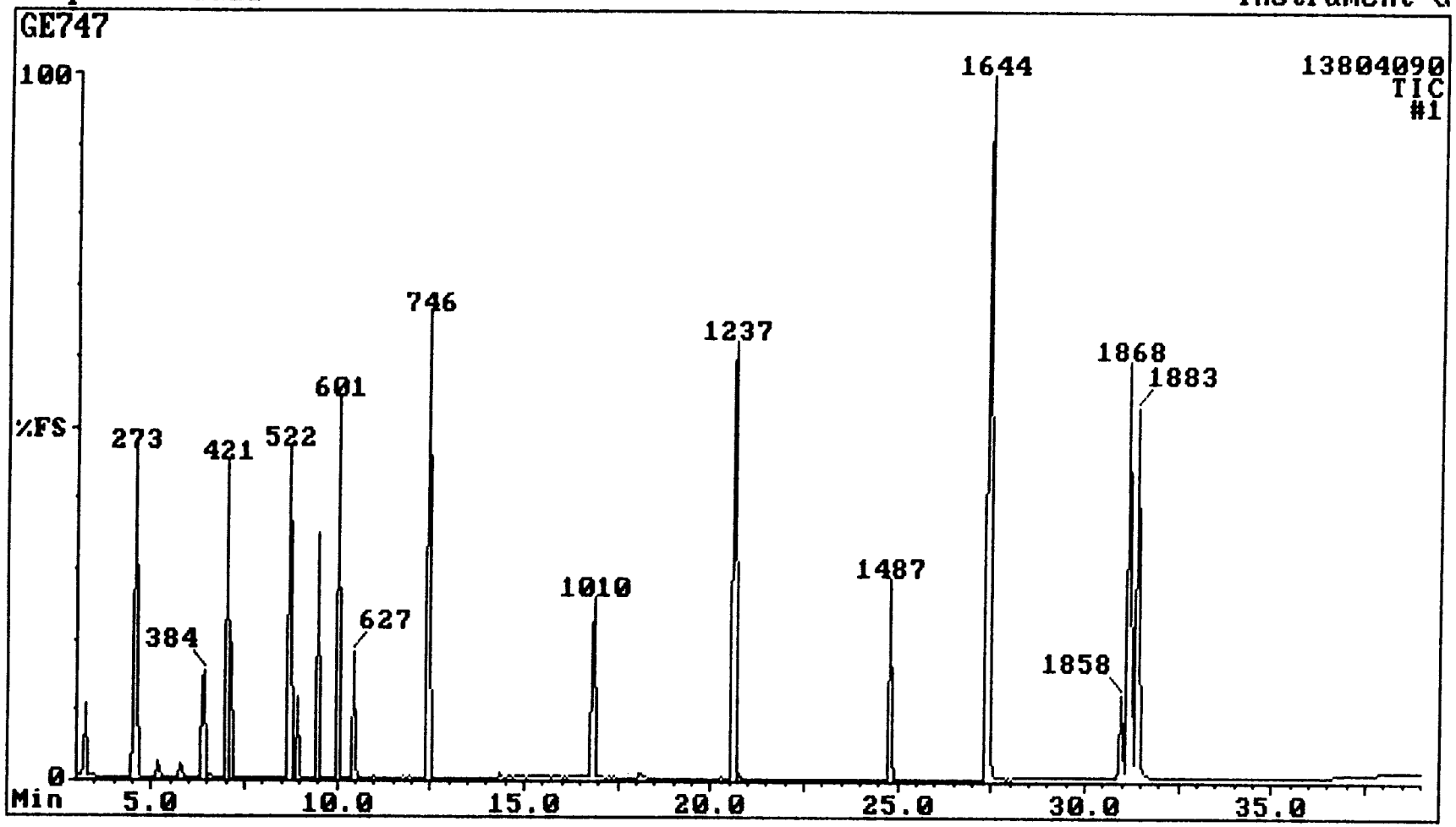
SSTOCKS

QUAN DB : GE746 LAB-BASE QUAN 24-Oct-91 13:15

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	100	84	100	0	2138800	bb	565	152	1,4-Dichlorobenzene-d4
2	100	90	97	0	8579600	bv	1233	188	Phenanthrene-d10
3	100	86	94	0	12011000	bv	1640	240	Chrysene-d12
4	100	83	90	0	8690300	v? DD 10-24-91	1878	264	Perylene-d12
5	100	97	99	0	4942000	bb	272	98	Toluene-d8
6	100	93	96	0	2678800	bb	418	116	o-Xylene-d10
7	100	82	99	0	4534700	bv	520	99	Phenol-d5
8	100	96	98	0	3258700	bv	599	115	m-Cresol-d7H
9	100	88	96	0	9246000	bv	743	136	Naphthalene-d8
10	100	89	98	0	10414000	vv	1863	264	Benzo(a)pyrene-d12
11	100	87	98	0	172050	bb	381	116	Ethylbenzene-d10
12	100	88	95	0	252030	bb	534	132	2-Chlorophenol-d4
13	100	88	96	0	487040	bb	1006	164	Acenaphthene-d10
14	100	85	96	0	984990	bb DD 10-24-91	1483	244	Terphenyl-d14
15	100	71	97	0	~~240790~~ ~~bb~~ 284391		1852	264	Benzo(e)pyrene-d12
16	100	90	99	0	483280	bb	276	91	Toluene
17	100	90	99	0	498130	bb	426	91	Xylene
18	100	78	96	0	470210	bb	521	94	Phenol
19	100	79	96	0	306040	bb	625	108	Cresol
20	100	87	97	0	855780	bb	746	128	Naphthalene
21	99	60	98	0	~~910900~~ ~~bv~~ 1080672	DD 10-24-91	1867	252	Benzo(a)pyrene

18-Oct-91 05:51 Triangle Laboratories, Inc. (919) 544-5729

Sample:SSTD020 Instrument G



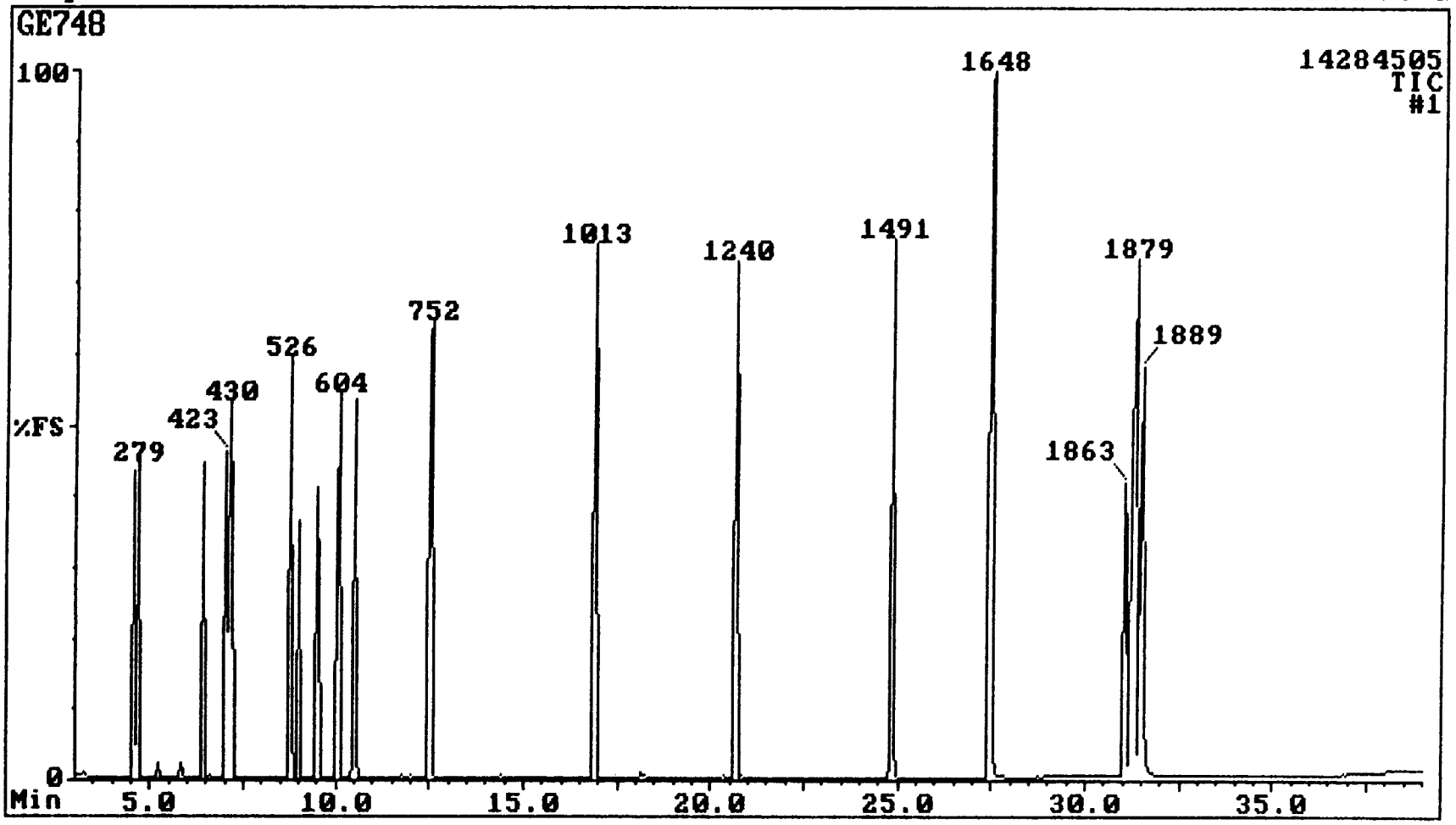
DD SSTD020

QUAN DB : GE747 LAB-BASE QUAN 24-Oct-91 13:15

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	99	85	99	2	1847800	bb	567	152	1,4-Dichlorobenzene-d4
2	100	90	97	-1	7841500	bv	1236	188	Phenanthrene-d10
3	100	87	94	0	10975000	b? DD 10-24-91	1644	240	Chrysene-d12
4	100	82	90	0	8242100	v? DD 10-24-91	1883	264	Perylene-d12
5	100	97	99	0	4764800	bb	273	98	Toluene-d8
6	100	94	98	2	2620900	bb	421	116	o-Xylene-d10
7	100	83	99	0	4529900	bv	522	99	Phenol-d5
8	100	95	98	0	3186300	bv	601	115	m-Cresol-d7H
9	100	88	95	0	9180300	bv	746	136	Naphthalene-d8
10	100	89	97	0	10952000	vv	1868	264	Benzo(a)pyrene-d12
11	100	93	99	1	658240	bb	383	116	Ethylbenzene-d10
12	100	92	95	0	1002600	bb	536	132	2-Chlorophenol-d4
13	100	94	97	2	1829000	bb	1010	164	Acenaphthene-d10
14	100	88	98	0	3440700	bb	1487	244	Terphenyl-d14
15	100	89	98	0	1636200	bv	1857	264	Benzo(e)pyrene-d12
16	100	94	99	0	1887400	bb	277	91	Toluene
17	100	95	99	0	2020800	bb	428	91	Xylene
18	100	85	99	1	1840700	bb	524	94	Phenol
19	100	96	98	0	1165700	bv	627	108	Cresol
20	100	93	97	0	3392600	bb	749	128	Naphthalene
21	100	83	97	1	~~4010500 bv~~ 4409296 DD 10-24-91		1873	252	Benzo(a)pyrene

18-Oct-91 06:40 Triangle Laboratories, Inc. (919) 544-5729

Sample:SSTD050 Instrument G



SSTD050 DD

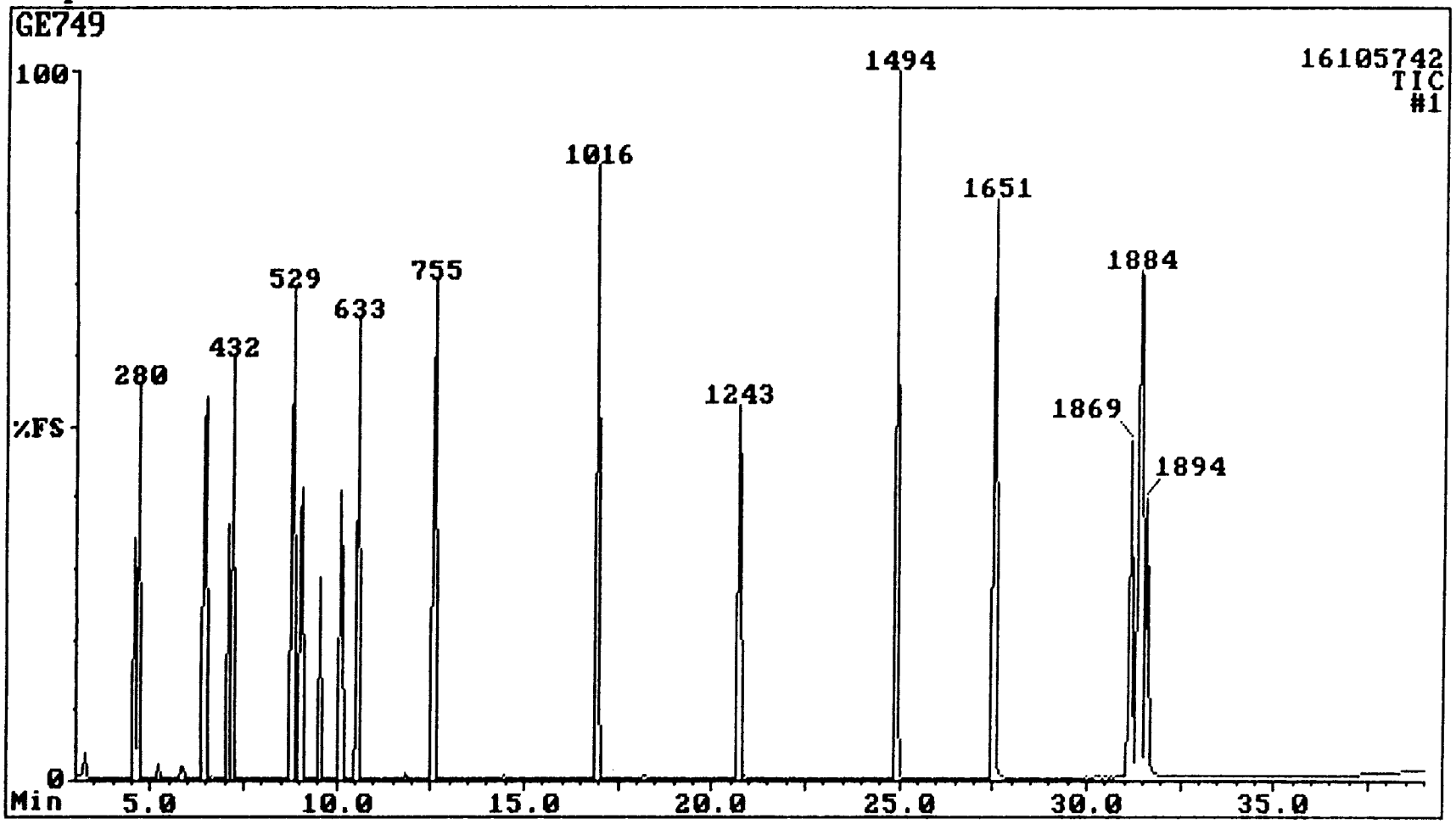
QUAN DB : GE748 LAB-BASE QUAN 24-Oct-91 13:14

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	74	84	99	5	1971600	bb	570	152	1,4-Dichlorobenzene-d4
2	83	90	96	-4	8493800	bv	1240	188	Phenanthrene-d10
3	96	86	93	-2	11955000	bv	1647	240	Chrysene-d12
4	85	82	90	3	9366800	v? DD 10-24-91	1889	264	Perylene-d12
5	100	95	99	0	4596000	bb	274	98	Toluene-d8
6	100	92	96	1	2558000	bb	423	116	o-Xylene-d10
7	100	72	99	0	4472100	bb	525	99	Phenol-d5
8	100	95	98	0	3193100	bb	604	115	m-Cresol-d7H
9	100	88	95	-1	9202400	bb	749	136	Naphthalene-d8
10	100	88	97	0	11621000	vv	1874	264	Benzo(a)pyrene-d12
11	100	94	99	2	1980800	bb	386	116	Ethylbenzene-d10
12	100	93	95	0	2962900	bb	539	132	2-Chlorophenol-d4
13	100	92	96	1	5361200	bb	1013	164	Acenaphthene-d10
14	100	88	97	1	10212000	bv	1490	244	Terphenyl-d14
15	100	92	98	0	5549400	bv	1863	264	Benzo(e)pyrene-d12
16	100	94	96	1	5319500	bb	279	91	Toluene
17	100	96	99	0	5832100	bb	430	91	Xylene
18	100	93	99	1	5271800	bv	527	94	Phenol
19	100	96	98	-1	3507600	bv	630	108	Cresol
20	100	91	97	-1	9039900	bb	752	128	Naphthalene
21	100	90	97	1	~~11717000~~	~~vv~~ 125 17596	1879	252	Benzo(a)pyrene

DD 10-24-91

18-Oct-91 07:29 Triangle Laboratories, Inc. (919) 544-5729

Sample:SSTD100 Instrument G



DD SSTD 1¢¢

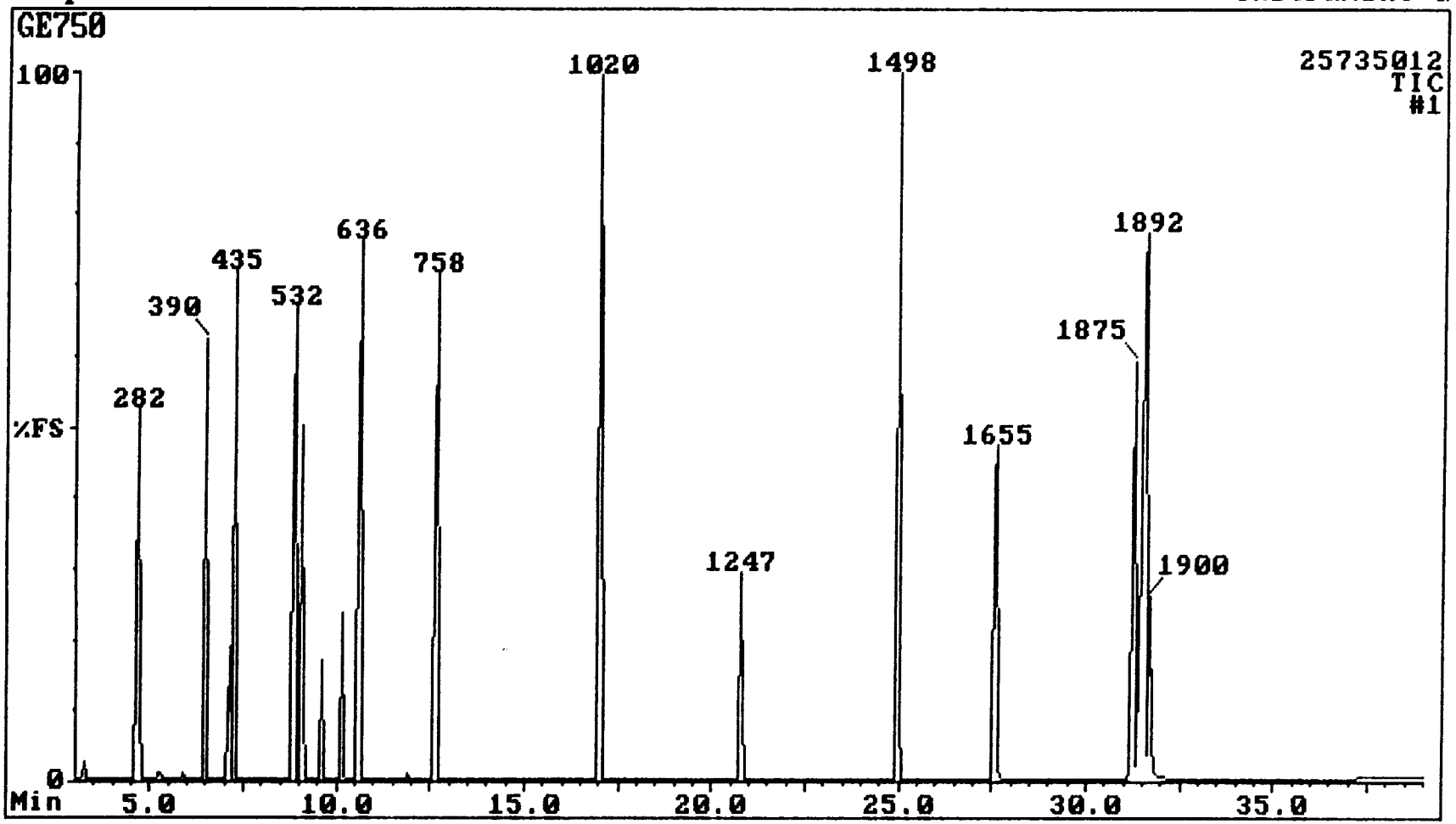
QUAN DB : GE749 LAB-BASE QUAN 24-Oct-91 13:14

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	50	83	100	8	1649500	bb	573	152	1,4-Dichlorobenzene-d4
2	78	46	89	1	83116	vb	1252	188	Phenanthrene-d10
3	0	0	0	0	10590000	A	1651	240	Chrysene-d12
4	100	83	91	1	6935000	A	1894	264	Perylene-d12
5	100	95	99	-1	4207000	bb	275	98	Toluene-d8
6	100	92	96	1	2229400	bb	425	116	o-Xylene-d10
7	100	75	99	0	3816400	bb	527	99	Phenol-d5
8	100	95	96	-2	2748700	bb	606	115	m-Cresol-d7H
9	98	87	95	-2	8203700	bb	752	136	Naphthalene-d8
10	81	86	94	4	9555500	A	1879	264	Benzo(a)pyrene-d12
11	100	94	98	1	2859200	bb	387	116	Ethylbenzene-d10
12	100	94	96	0	4167600	bv	542	132	2-Chlorophenol-d4
13	68	92	96	-6	7569700	bb	1016	164	Acenaphthene-d10
14	0	0	0	0	12474000	A	1494	244	Terphenyl-d14
15	0	0	0	0	7448800	A	1868	264	Benzo(e)pyrene-d12
16	100	95	99	0	7263900	bb	280	91	Toluene
17	100	95	99	0	7723000	bb	432	91	Xylene
18	100	92	99	1	6769500	bv	529	94	Phenol
19	100	96	98	-1	4696900	bv	633	108	Cresol
20	100	92	97	-2	10886000	bb	755	128	Naphthalene
21	0	0	0	0	~~14774000 A~~ 15177260		1884	252	Benzo(a)pyrene

DD
10-24-91

18-Oct-91 08:19 Triangle Laboratories, Inc. (919) 544-5729

Sample:SSTD200 Instrument G

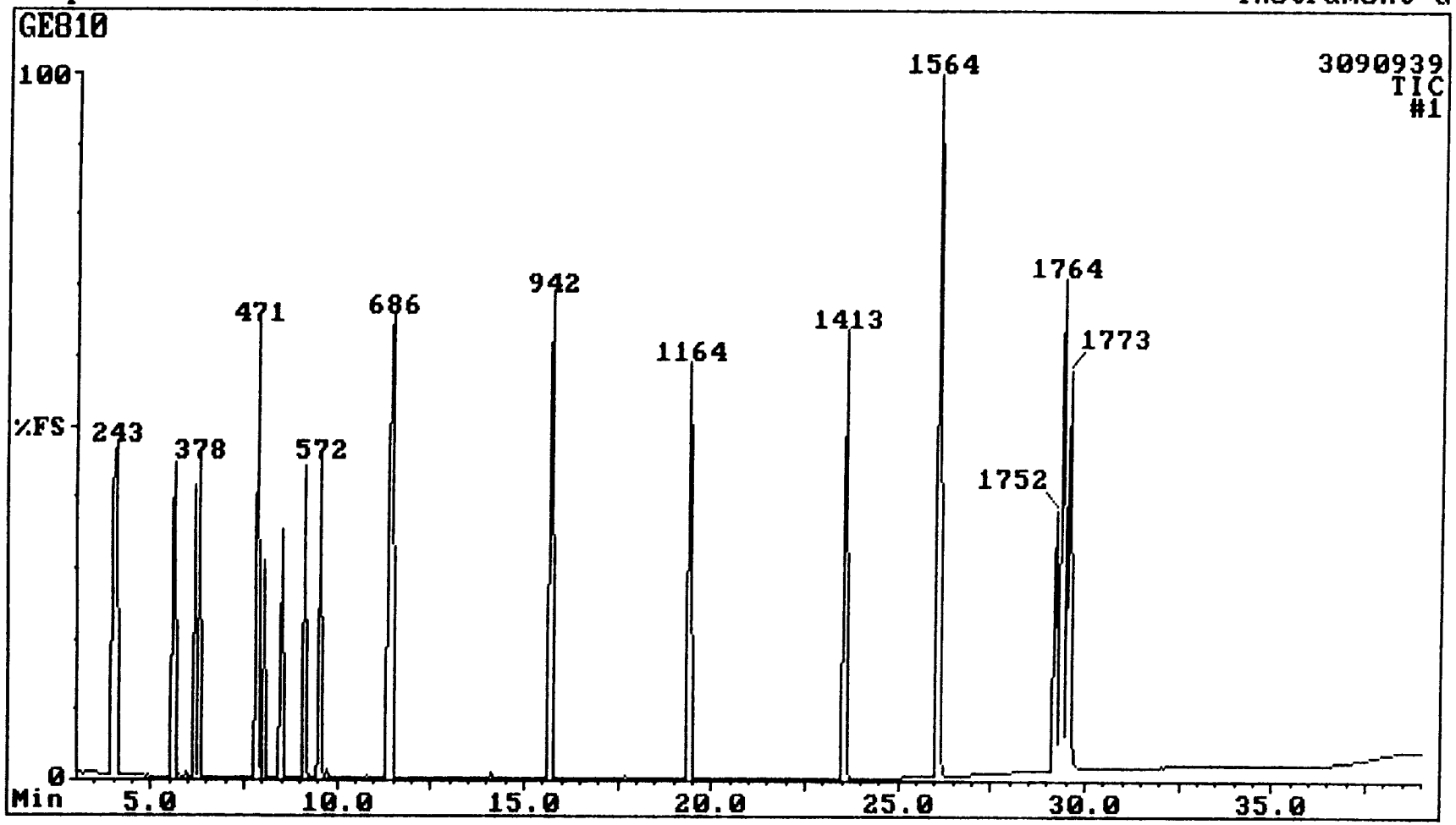


QUAN DB : GE750 LAB-BASE QUAN 24-Oct-91 13:13

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	100	85	99	0	1603500	bb	575	152	1,4-Dichlorobenzene-d4
2	100	91	97	0	7154300	bv	1246	188	Phenanthrene-d10
3	100	87	94	0	10445000	bv	1654	240	Chrysene-d12
4	100	79	90	0	7261700	v? DD 10-24-91	1900	264	Perylene-d12
5	100	96	99	-1	3624500	bb	276	98	Toluene-d8
6	100	92	95	2	1937500	bb	427	116	o-Xylene-d10
7	90	56	99	1	3583100	bb	530	99	Phenol-d5
8	100	95	98	-1	2528000	bb	609	115	m-Cresol-d7H
9	100	87	94	-1	7530200	bb	755	136	Naphthalene-d8
10	100	86	97	0	9736200	vv	1885	264	Benzo(a)pyrene-d12
11	95	86	91	2	6040200	bb	390	116	Ethylbenzene-d10
12	100	92	94	1	8667000	bv	544	132	2-Chlorophenol-d4
13	92	91	95	3	12286000	bb	1020	164	Acenaphthene-d10
14	100	86	96	1	17273000	bv	1497	244	Terphenyl-d14
15	100	89	98	0	15584000	bv	1875	264	Benzo(e)pyrene-d12
16	100	94	98	0	11919000	bb	281	91	Toluene
17	100	93	96	1	12237000	bb	435	91	Xylene
18	100	91	96	2	11116000	bv	532	94	Phenol
19	100	97	99	0	8986900	bv	636	108	Cresol
20	100	91	97	-1	14267000	bv	758	128	Naphthalene
21	99	90	95	2	~~24033000~~	~~vv~~ 25854934 DD 10-24-91	1891	252	Benzo(a)pyrene

22-Oct-91 20:43 Triangle Laboratories, Inc. (919) 544-5729

Sample:SSTD050 Instrument G



SSTD050 D

QUAN DB : 66810 LAB-BASE QUAN 24-Oct-91 14:25

No.	MAT	FOR	REV	Delta	Area	F.Flags	Scan	OM	Name
1	100	86	99	0	508090	bb	510	152	1,4-Dichlorobenzene-d4
2	100	92	96	0	1831500	bv	1164	188	Phenanthrene-d10
3	100	88	93	0	2830800	bb	1564	240	Chrysene-d12
4	100	83	91	0	1647600	A	1773	264	Perylene-d12
5	100	92	95	-6	1045900	A	240	98	Toluene-d8
6	100	92	94	-6	617020	bb	371	116	o-Xylene-d10
7	100	76	98	1	1062300	bb	470	99	Phenol-d5
8	100	91	92	5	799760	bb	546	115	m-Cresol-d7H
9	82	88	93	12	2605800	bb	683	136	Naphthalene-d8
10	0	0	0	0	1971500	A	1761	264	Benzo(a)pyrene-d12
11	97	90	94	-7	474430	bb	337	116	Ethylbenzene-d10
12	100	91	92	-1	701390	bb	481	132	2-Chlorophenol-d4
13	96	93	95	-8	1391600	bb	942	164	Acenaphthene-d10
14	100	89	96	-1	2021600	bb	1413	244	Terphenyl-d14
15	0	0	0	0	773840	A	1752	164	Benzo(e)pyrene-d12
16	100	96	99	-6	1231900	bb	243	91	Toluene
17	100	95	98	-7	1245300	bb	379	91	Xylene
18	100	85	97	2	1204000	bv	472	94	Phenol
19	99	96	97	8	304080	bb	572	108	Cresol
20	78	87	90	13	2690000	bb	686	128	Naphthalene
21	100	84	96	1	2433200	vv	1764	252	Benzo(a)pyrene

GE810 10-22-91 GE810

COKE ANALYTES CONTINUING CALIBRATION

R_REF		CONCN	AREA 50	NAME	RF50	RF MEAN	% D
1	1	50.00	508090	1,4-Dichlorobenzene-d4			
2	2	50.00	1831500	Phenanthrene-d10			
3	3	50.00	2830800	Chrysene-d12			
4	4	50.00	1647600	Perylene-d12			
1	5	50.00	1045900	Toluene-d8	2.058	2.406	-14.5%
1	6	50.00	617020	o-Xylene-d10	1.214	1.306	-7.0%
1	7	50.00	1062300	Phenol-d5	2.091	2.278	-8.2%
1	8	50.00	799760	m-Cresol-d7H	1.574	1.622	-3.0%
2	9	50.00	2605800	Naphthalene-d8	1.423	1.102	29.1%
4	10	50.00	1971500	Benzo(a)pyrene-d12	1.197	1.297	-7.8%
5	11	5.00	474430	Ethylbenzene-d10	.454	.376	20.6%
7	12	5.00	701390	2-Chlorophenol-d4	.660	.584	13.0%
9	13	5.00	1391600	Acenaphthene-d10	.534	.495	7.8%
3	14	5.00	2021600	Terphenyl-d14	.714	.762	-6.2%
10	15	5.00	973840	Benzo(e)pyrene-d12	.494	.383	29.0%
5	16	5.00	1231900	Toluene	1.178	.997	18.1%
6	17	5.00	1245300	Xylene	2.018	1.876	7.6%
7	18	5.00	1204000	Phenol	1.133	1.030	10.1%
8	19	5.00	804080	Cresol	1.005	.939	7.1%
9	20	5.00	2690000	Naphthalene	1.032	.944	9.4%
10	21	5.00	2433200	Benzo(a)pyrene	1.234	1.040	18.6%

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10-22-91 GE810

COKE ANALYTES CONTINUING CALIBRATION

NAME	RF50	RF MEAN	% D	SCAN
1,4-Dichlorobenzene-d4				510
Phenanthrene-d10				1164
Chrysene-d12				1564
Perylene-d12				1773
Toluene-d8	2.058	2.406	-14.5%	240
o-Xylene-d10	1.214	1.306	-7.0%	371
Phenol-d5	2.091	2.278	-8.2%	470
m-Cresol-d7H	1.574	1.622	-3.0%	546
Naphthalene-d8	1.423	1.102	29.1%	683
Benzo(a)pyrene-d12	1.197	1.297	-7.8%	1761
Ethylbenzene-d10	.454	.376	20.6%	337
2-Chlorophenol-d4	.660	.584	13.0%	481
Acenaphthene-d10	.534	.495	7.8%	942
Terphenyl-d14	.714	.762	-6.2%	1413
Benzo(e)pyrene-d12	.494	.383	29.0%	1752
Toluene	1.178	.997	18.1%	243
Xylene	2.018	1.876	7.6%	378
Phenol	1.133	1.030	10.1%	472
Cresol	1.005	.939	7.1%	572
Naphthalene	1.032	.944	9.4%	686
Benzo(a)pyrene	1.234	1.040	18.6%	1764

22-Oct-91 20:43
Sample:SSTD050

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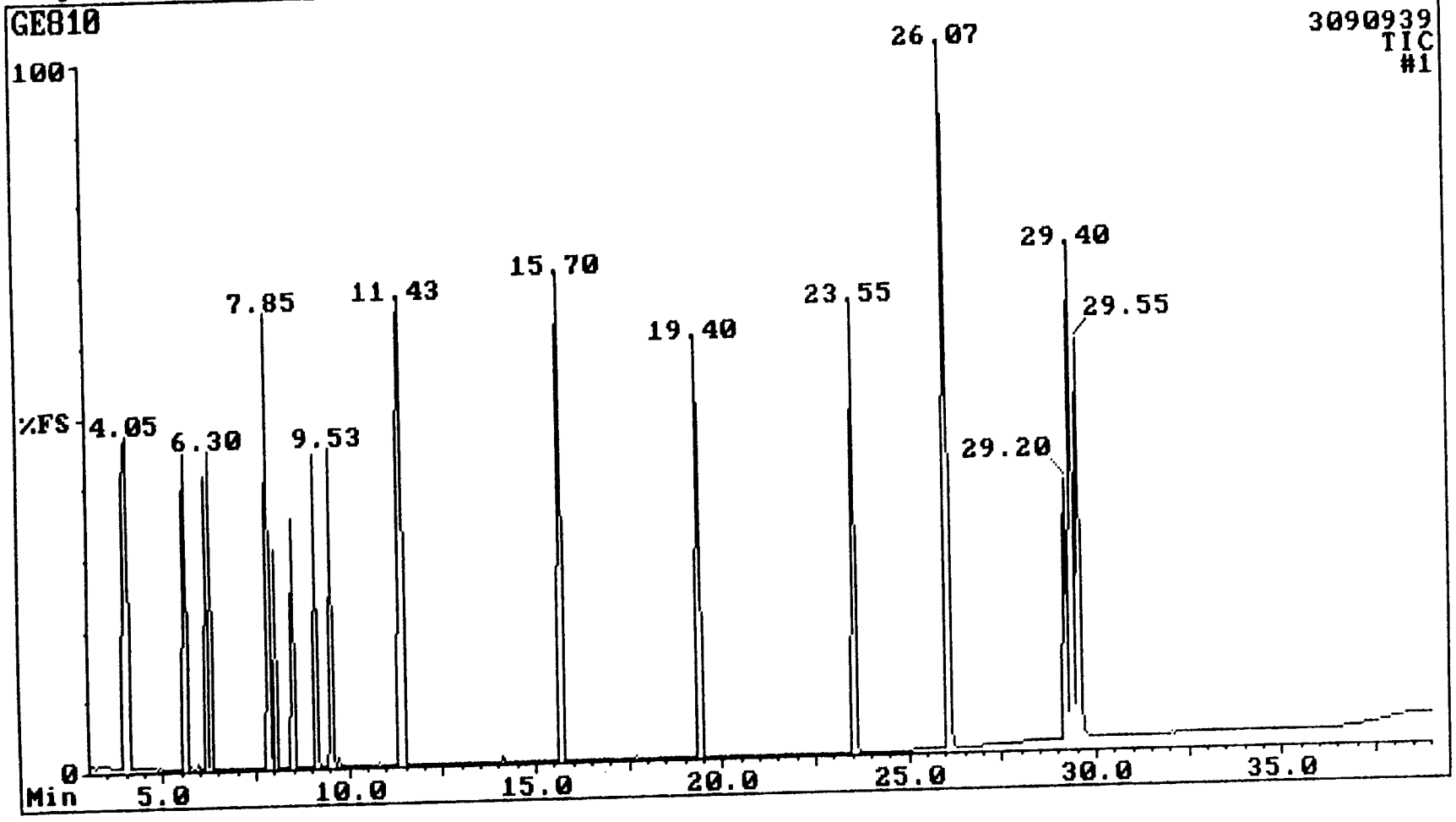
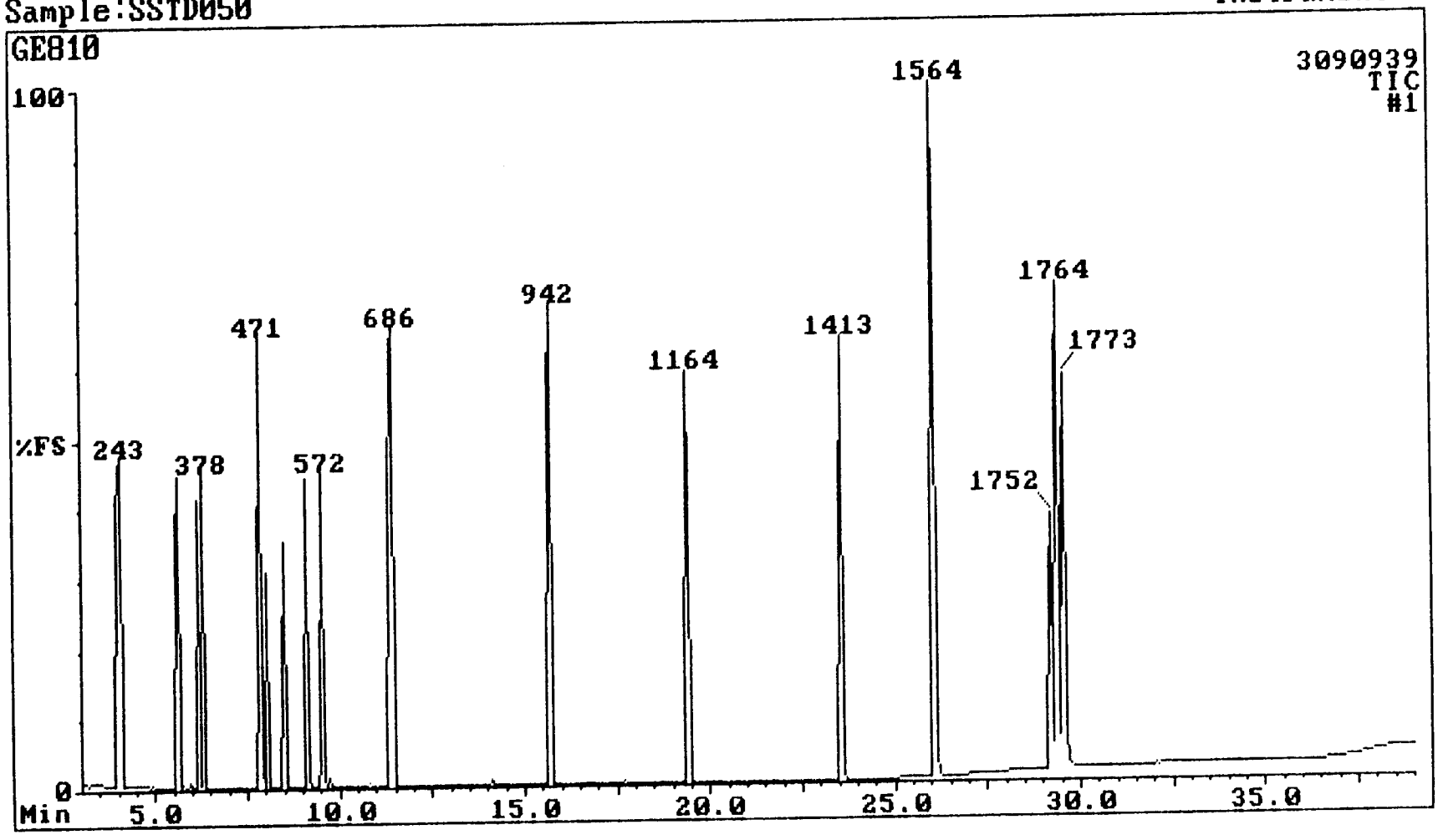
Instrument G



22-Oct-91 20:43
Sample:SSTD050

Triangle Laboratories, Inc.

(919) 544-5729
Instrument G



QUAN DB : GE810 LAB-BASE QUAN 22-Oct-91 22:08

No.	MAT	FOR	REV	Delta	Area	P.Flags	Scan	QM	Name
1	100	86	98	0	508090	bb	510	152	1,4-Dichlorobenzene-d4
2	100	92	96	0	1831500	bv	1164	188	Phenanthrene-d10
3	100	88	93	0	2830800	bb	1564	240	Chrysene-d12
4	100	83	91	0	1647600	A	1773	264	Perylene-d12
5	100	92	95	-6	1045900	A	240	98	Toluene-d8
6	100	92	94	-6	617020	bb	371	116	o-Xylene-d10
7	100	76	98	1	1062300	bb	470	99	Phenol-d5
8	100	91	92	5	799760	bb	546	115	m-Cresol-d7H
9	82	88	93	12	2605800	bb	683	136	Naphthalene-d8
10	0	0	0	0	1971500	A	1761	264	Benzo(a)pyrene-d12
11	97	90	94	-7	474430	bb	337	116	Ethylbenzene-d10
12	100	91	92	-1	701390	bb	481	132	2-Chlorophenol-d4
13	96	93	95	-8	1391600	bb	942	164	Acenaphthene-d10
14	100	89	96	-1	2021600	bb	1413	244	Terphenyl-d14
15	0	0	0	0	973840	A	1752	264	Benzo(e)pyrene-d12
16	100	96	99	-6	1231900	bb	243	91	Toluene
17	100	95	98	-7	1245300	bb	378	91	Xylene
18	100	85	97	2	1204000	bv	472	94	Phenol
19	99	96	97	8	804080	bb	572	108	Cresol
20	78	87	90	13	2690000	bb	686	128	Naphthalene
21	100	84	96	1	2433200	vv	1764	252	Benzo(a)pyrene

TLI Report: M202

7/25/91

The EPA proposes to amend Title 40, Chapter I, Part 51 of the Code of Federal Regulations as follows:

1. The authority citation for Part 51 continues to read as follows:

Authority: Section 110 of the Clean Air Act as amended (42 U.S.C. 7410).

2. Appendix M, Table of Contents is amended by adding an entry to read as follows:

Method 202--Determination of Condensible Particulate Emissions from Stationary Sources.

3. By adding Method 202 to read as follows:

Method 202 - Determination of Condensible Particulate Emissions from Stationary Sources

1. APPLICABILITY AND PRINCIPLE

1.1 Applicability.

1.1.1 This method applies to the determination of condensible particulate matter (CPM) emissions from stationary sources. (**Note:** It is not to be used when determining compliance with an emission limit that does not measure CPM.) It is intended to represent condensible matter as material that condenses after passing through a filter and as measured by this method (**Note:** The filter catch can be analyzed according to the appropriate method).

1.1.2 This method may be used in conjunction with Method 201 or 201A if the probes are glass-lined. Using Method 202 in conjunction with Method 201 or 201A, only the impinger train

configuration and analysis is addressed by this method. The sample train operation and front end recovery and analysis shall be conducted according to Method 201 or 201A.

1.1.3 This method may also be modified to measure material that condenses at other temperatures by specifying the filter and probe temperature. A heated Method 5 out-of-stack filter may be used instead of the in-stack filter to determine condensible emissions at wet sources.

1.2 **Principle.**

1.2.1 The CPM is collected in the impinger portion of a Method 17 (Appendix A, 40 CFR Part 60) type sampling train. The impinger contents are immediately purged after the run with nitrogen (N_2) to remove dissolved sulfur dioxide (SO_2) gases from the impinger contents. The impinger solution is then extracted with methylene chloride ($MeCl_2$). The organic and aqueous fractions are then taken to dryness and the residues weighed. The total of both fractions represents the CPM.

1.2.2 The potential for low collection efficiency exist at oil-fired boilers. To improve the collection efficiency at these type of sources, an additional filter placed between the second and third impinger is recommended.

2. PRECISION AND INTERFERENCE

2.1 **Precision.** The precision based on method development tests at an oil-fired boiler and a catalytic cracker were 11.7 and 4.8 percent, respectively.

2.2 **Interference.** Ammonia. In sources that use ammonia injection as a control technique for hydrogen chloride (HCl), the ammonia interferes by reacting with HCl in the gas stream to form ammonium chloride (NH_4Cl) which would be measured as CPM. The sample may be analyzed for chloride and the equivalent amount of NH_4Cl can be subtracted from the CPM weight. However, if NH_4Cl is to be counted as CPM, the inorganic fraction should be taken to near dryness (less than 1 ml liquid) in the oven and then allowed to air dry at ambient temperature to prevent any NH_4Cl from vaporizing.

3. **APPARATUS**

3.1 **Sampling Train.** Same as in Method 17, Section 2.1, with the following exceptions noted below (see Figure 202-1). **Note:** Mention of trade names or specific products does not constitute endorsement by EPA.

3.1.1 The probe extension shall be glass-lined or Teflon.

3.1.2 Both the first and second impingers shall be of the Greenburg-Smith design with the standard tip.

3.1.3 All sampling train glassware shall be cleaned prior to the test with soap and tap water, water, and rinsed using tap water, water, acetone, and finally, $MeCl_2$. It is important to completely remove all silicone grease from areas that will be exposed to the $MeCl_2$ during sample recovery.

3.2 **Sample Recovery.** Same as in Method 17, Section 2.2, with the following additions:

3.2.1 **N_2 Purge Line.** Inert tubing and fittings capable of delivering 0 to 28 liters/min of N_2 gas to the impinger train from a standard gas cylinder (see Figure 202-2). Standard 0.95 cm (3/8-inch) plastic tubing and compression fittings in conjunction with an adjustable pressure regulator and needle valve may be used.

3.2.2 **Rotameter.** Capable of measuring gas flow at 20 liters/min.

3.3 **Analysis.** The following equipment is necessary in addition to that listed in Method 17, Section 2.3:

3.3.1 **Separatory Funnel.** Glass, 1-liter.

3.3.2 **Weighing Tins.** 350-ml.

3.3.3 **Drying Equipment.** Hot plate and oven with temperature control.

3.3.4 **Pipets.** 5-ml.

3.3.5 **Ion Chromatograph.** Same as in Method 5F, Section 2.1.6.

4. REAGENTS

Unless otherwise indicated, all reagents must conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society. Where such specifications are not available, use the best available grade.

4.1 **Sampling.** Same as in Method 17, Section 3.1, with the addition of deionized distilled water to conform to the American Society for Testing and Materials Specification D 1193-74, Type II and the omittance of Section 3.1.4.

4.2 Sample Recovery. Same as in Method 17, Section 3.2, with the following additions:

4.2.1 N_2 Gas. Zero grade N_2 gas at delivery pressures high enough to provide a flow of 20 liters/min for 1 hour through the sampling train.

4.2.2 Methylene Chloride, ACS grade. Blanks shall be run prior to use and only methylene chloride with low blank values (0.001 percent) shall be used.

4.2.3 Water. Same as in Section 4.1.

4.3 Analysis. Same as in Method 17, Section 3.3, with the following additions:

4.3.1 Methylene Chloride. Same as Section 4.2.2.

4.3.2 Ammonium Hydroxide. Concentrated (14.8 M) NH_4OH.

4.3.3 Water. Same as in Section 4.1.

4.3.4 Phenolphthalein. The pH indicator solution, 0.05 percent in 50 percent alcohol.

5. PROCEDURE

5.1 Sampling. Same as in Method 17, Section 4.1, with the following exceptions:

5.1.1 Place 100 ml of water in the first three impingers.

5.1.2 The use of silicone grease in train assembly is not recommended because it is very soluble in $MeCl_2$ which may result in sample contamination. Teflon tape or similar means may be used to provide leak-free connections between glassware.

5.2 Sample Recovery. Same as in Method 17, Section 4.2 with the addition of a post-test N_2 purge and specific changes in handling of individual samples as described below.

5.2.1 Post-test N_2 Purge for Sources Emitting SO_2. (Note: This step is recommended, but is optional. When little or no SO_2 is present in the gas stream, i.e., the pH of the impinger solution is greater than 4.5, purging has been found to be unnecessary.) As soon as possible after the post-test leak check, detach the probe and filter from the impinger train. Leave the ice in the impinger box to prevent removal of moisture during the purge. If necessary, add more ice during the purge to maintain the gas temperature below 20°C. With no flow of gas through the clean purge line and fittings, attach it to the input of the impinger train (see Figure 202-2). To avoid over- or under-pressurizing the impinger array, slowly commence the N_2 gas flow through the line while simultaneously opening the meter box pump valve(s). When using the gas cylinder pressure to push the purge gas through the sample train, adjust the flow rate to 20 liters/min through the rotameter. When pulling the purge gas through the sample train using the meter box vacuum pump, set the orifice pressure differential to $\Delta H_@$ and maintain an overflow rate through the rotameter of less than 2 liters/min. This will guarantee that the N_2 delivery system is operating at greater than ambient pressure and prevents the possibility of passing ambient air (rather than N_2) through the impingers. Continue the purge under these conditions for 1 hour, checking the rotameter

and ΔH value(s) periodically. After 1 hour, simultaneously turn off the delivery and pumping systems.

5.2.2 **Sample Handling.**

5.2.2.1 <u>Container Nos. 1, 2, and 3</u>. If filter catch is to be determined, as detailed in Method 17, Section 4.2.

5.2.2.2 <u>Container No. 4</u> **(Impinger Contents).** Measure the liquid in the first three impingers to within 1 ml using a clean graduated cylinder or by weighing it to within 0.5 g using a balance. Record the volume or weight of liquid present to be used to calculate the moisture content of the effluent gas. Quantitatively transfer this liquid into a clean sample bottle (glass or plastic); rinse each impinger and the connecting glassware, including probe extension, twice with water, recover the rinse water, and add it to the same sample bottle. Mark the liquid level on the bottle.

5.2.2.3 <u>Container No. 5</u> **($MeCl_2$ Rinse).** Follow the water rinses of each impinger and the connecting glassware, including the probe extension with two rinses of $MeCl_2$; save the rinse products in a clean, glass sample jar. Mark the liquid level on the jar.

5.2.2.4 <u>Container No. 6</u> **(Water Blank).** Once during each field test, place 500 ml of water in a separate sample container.

5.2.2.5 <u>Container No. 7</u> **($MeCl_2$ Blank).** Once during each field test, place in a separate glass sample jar a volume of $MeCl_2$ approximately equivalent to the volume used to conduct the $MeCl_2$ rinse of the impingers.

5.3 **Analysis.** Record the data required on a sheet such as the one shown in Figure 202-3. Handle each sample container as follows:

5.3.1 <u>Container Nos. 1, 2, and 3</u>. If filter catch is analyzed, as detailed in Method 17, Section 4.3.

5.3.2 <u>Container Nos. 4 and 5</u>. Note the level of liquid in the containers and confirm on the analytical data sheet whether leakage occurred during transport. If a noticeable amount of leakage has occurred, either void the sample or use methods, subject to the approval of the Administrator, to correct the final results. Measure the liquid in Container No. 4 either volumetrically to ±1 ml or gravimetrically to ±0.5 g. Remove a 5-ml aliquot and set aside for later ion chromatographic (IC) analysis of sulfates. (**Note:** Do not use this aliquot to determine chlorides since the HCl will be evaporated during the first drying step; Section 8.2 details a procedure for this analysis.)

5.3.2.1 **Extraction.** Separate the organic fraction of the sample by adding the contents of Container No. 5 ($MeCl_2$) to the contents of Container No. 4 in a 1000-ml separatory funnel. After mixing, allow the aqueous and organic phases to fully separate, and drain off most of the organic/$MeCl_2$ phase. Then add 75 ml of $MeCl_2$ to the funnel, mix well, and drain off the lower organic phase. Repeat with another 75 ml of $MeCl_2$. This extraction should yield about 250 ml of organic extract. Each time, leave a small amount of the organic/$MeCl_2$ phase in the separatory funnel ensuring that no water is collected in the

organic phase. Place the organic extract in a tared 350-ml weighing tin.

5.3.2.2 Organic Fraction Weight Determination (Organic Phase from Container Nos. 4 and 5). Evaporate the organic extract at room temperature and pressure in a laboratory hood. Following evaporation, desiccate the organic fraction for 24 hours in a desiccator containing anhydrous calcium sulfate. Weigh to a constant weight and report the results to the nearest 0.1 mg.

5.3.2.3 Inorganic Fraction Weight Determination. [**Note:** If NH_4Cl is to be counted as CPM, the inorganic fraction should be taken to near dryness (less than 1 ml liquid) in the oven and then allow to air dry at ambient temperature. If multiple acid emissions are suspected, the ammonia titration procedure in Section 8.1 may be perferred.] Using a hot plate, or equivalent, evaporate the aqueous phase to approximately 50 ml; then, evaporate to dryness in a 105°C oven. Redissolve the residue in 100 ml of water. Add five drops of phenolphthalein to this solution; then, add concentrated (14.8 M) NH_4OH until the sample turns pink. Any excess NH_4OH will be evaporated during the drying step. Evaporate the sample to dryness in a 105°C oven, desiccate the sample for 24 hours, weigh to a constant weight, and record the results to the nearest 0.1 mg. (**Note:** The addition of NH_4OH is recommended, but is optional.) ~~when little or no SO_2 is present in the gas stream, i.e., when the pH of the impinger solution is greater than 4.5, the addition of NH_4OH is not necessary.)~~

5.3.2.4 Analysis of Sulfate by IC to Determine Ammonium Ion (NH_4^+) Retained in the Sample. (**Note:** If NH_4OH is not added, omit this step.) Determine the amount of sulfate in the aliquot taken from Container No. 4 earlier as described in Method 5F (Appendix A, 40 CFR Part 60). Based on the IC SO_4^{-2} analysis of the aliquot, calculate the correction factor to subtract the NH_4^+ retained in the sample and to add the combined water removed by the acid-base reaction (see Section 7.2).

5.3.3 Analysis of Water and $MeCl_2$ Blanks (Container Nos. 6 and 7). Analyze these sample blanks as described above in Sections 5.3.2.3 and 5.3.2.2, respectively.

5.3.4 Analysis of Acetone Blank (Container No. 8). Same as in Method 17, Section 4.3.

6. CALIBRATION

Same as in Method 17, Section 5, except for the following:

6.1 IC Calibration. Same as Method 5F, Section 5.

6.2 Audit Procedure. Concurrently, analyze the audit sample and a set of compliance samples in the same manner to evaluate the technique of the analyst and the standards preparation. The same analyst, analytical reagents, and analytical system shall be used both for compliance samples and the EPA audit sample. If this condition is met, auditing of subsequent compliance analyses for the same enforcement agency within 30 days is not required. An audit sample set may not be used to validate different sets of compliance samples under the jurisdiction of different enforcement agencies, unless prior arrangements are made with both enforcement agencies.

6.3 Audit Samples. Audit Sample Availability. Audit samples will be supplied only to enforcement agencies for compliance tests. The availability of audit samples may be obtained by writing:

Source Test Audit Coordinator (MD-77B)
Quality Assurance Division
Atmospheric Research and Exposure Assessment Laboratory
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

or by calling the Source Test Audit Coordinator (STAC) at (919) 541-7834. The request for the audit sample must be made at least 30 days prior to the scheduled compliance sample analysis.

6.4 Audit Results. Calculate the audit sample concentration according to the calculation procedure described in the audit instructions included with the audit sample. Fill in the audit sample concentration and the analyst's name on the audit response form included with the audit instructions. Send one copy to the EPA Regional Office or the appropriate enforcement agency and a second copy to the STAC. The EPA Regional Office or the appropriate enforcement agency will report the results of the audit to the laboratory being audited. Include this response with the results of the compliance samples in relevant reports to the EPA Regional Office or the appropriate enforcement agency.

7. CALCULATIONS

Same as in Method 17, Section 6, with the following additions:

7.1 Nomenclature. Same as in Method 17, Section 6.1 with the following additions.

C_{cpm} = Concentration of the CPM in the stack gas, dry basis, corrected to standard conditions, g/dscm (g/dscf).

C_{SO4} = Concentration of SO_4^{-2} in the sample, mg/ml.

? m_b = Sum of the mass of the water and $MeCl_2$ blanks, mg.

? m_c = Mass of the NH_4^+ added to sample to form ammonium sulfate, mg.

m_i = Mass of inorganic CPM matter, mg.

m_o = Mass of organic CPM, mg.

m_r = Mass of dried sample from inorganic fraction, mg.

V_b = Volume of aliquot taken for IC analysis, ml.

V_{ic} = Volume of impinger contents sample, ml.

7.2 **Correction for NH_4^+ and H_2O.** Calculate the correction factor to subtract the NH_4^+ retained in the sample based on the IC SO_4^{-2} and if desired, add the combined water removed by the acid-base reaction. $m_c = (0.0205)($

$$m_c = K\, C_{SO4}\, V_{ic} \qquad \text{Eq. 202-1}$$

SO4?

where:

K = 0.0205, when correcting for NH_4^+ and H_2O.

= 0.1840, when only correcting for NH_4^+.

7.3 **Mass of Inorganic CPM.**

$$m_i = m_r \frac{V_{ic}}{V_{ic} - V_b} - m_c \qquad \text{Eq. 202-2}$$

7.4 **Concentration of CPM.**

$$C_{cpm} = \frac{m_o + m_i - m_b}{V_{m_{std}}} \qquad \text{Eq. 202-3}$$

8. ALTERNATIVE PROCEDURES

8.1 Determination of NH_4^+ Retained in Sample by Titration.

8.1.1 An alternative procedure to determine the amount of NH_4^+ added to the inorganic fraction by titration may be used. After dissolving the inorganic residue in 100 ml of water, titrate the solution with 0.1 N NH_4OH to a pH of 7.0, as indicated by a pH meter. The 0.1 N NH_4OH is made as follows: Add 7 ml of concentrated (14.8 M) NH_4OH to 1 liter of water. Standardize against standardized 0.1 N H_2SO_4 and calculate the exact normality using a procedure parallel to that described in Section 5.5 of Method 6 (Appendix A, 40 CFR Part 60). Alternatively, purchase 0.1 N NH_4OH that has been standardized against a National Institute of Standards and Technology reference material.

8.1.2 Calculate the concentration of SO_4^{-2} in the sample using the following equation.

$$C_{SO_4} = \frac{48.03\ V_t\ N}{100} \qquad \text{Eq. 202-4}$$

where:

N = Normality of the NH_4OH, mg/ml.

V_t = Volume of NH_4OH titrant, ml.

48.03 = mg/meq.

100 = Volume of solution, ml.

8.1.3 Calculate the CPM as described in Section 7.

8.2 Analysis of Chlorides by IC. At the conclusion of the final weighing as described in Section 5.3.2.3, redissolve the inorganic fraction in 100 ml of water. Analyze an aliquot of the redissolved sample for chlorides by IC using techniques similar to those described in Method 5F for sulfates. Previous drying of the sample should have removed all HCl. Therefore, the remaining chlorides measured by IC can be assumed to be NH_4Cl, and this weight can be subtracted from the weight determined for CPM.

8.3 Air Purge to Remove SO_2 from Impinger Contents. As an alternative to the post-test N_2 purge described in Section 5.2.1, the tester may opt to conduct the post-test purge with air at 20 liter/min. **Note:** The use of an air purge is not as effective as a N_2 purge.

8.4 Chloroform-ether Extraction. As an alternative to the methylene chloride extraction described in Section 5.3.2.1, the tester may opt to conduct a chloroform-ether extraction. **Note:** The chloroform-ether was not as effective as the $MeCl_2$ in removing the organics, but it was found to be an acceptable organic extractant. Chloroform and diethlyether of ACS grade, with low blank values (0.001 percent), shall be used. Analysis of the chloroform and diethlyether blanks shall be conducted according to Section 5.3.3 for $MeCl_2$.

8.4.1 Add the contents of Container No. 4 to a 1000-ml separatory funnel. Then add 75 ml of chloroform to the funnel, mix well, and drain off the lower organic phase. Repeat two more times with 75 ml of chloroform. Then perform three extractions

with 75 ml of diethylether. This extraction should yield approximately 450 ml of organic extraction. Each time, leave a small amount of the organic/$MeCl_2$ phase in the separatory funnel ensuring that no water is collected in the organic phase.

8.4.2 Add the contents of Container No. 5 to the organic extraction. Place approximately 300 ml of the organic extract in a tared 350-ml weighing tin while storing the remaining organic extract in a sample container. As the organic extract evaporates, add the remaining extract to the weighing tin.

8.4.3 Determine the weight of the organic phase as described in Section 5.3.2.2.

8.5 Improving Collection Efficiency. If low impinger collection efficiency is suspected, the following procedure may be used.

8.5.1 Place an out-of-stack filter as described in Method 8 between the second and third impingers.

8.5.2 Recover and anaylze the filter according to Method 17, Section 4.2. Include the filter holder as part of the connecting glassware and handle as described in Sections 5.2.2.2 and 5.2.2.3.

8.5.3 Calculate the Concentration of CPM as follows:

$$C_{cpm} = \frac{m_o + m_i + m_f - m_b}{V_{m_{std}}} \qquad \text{Eq. 202-5}$$

where:

m_f = Ammout of CPM collected on out-of-stack filter, mg.

8.6 **Wet Source Testing.** When testing at a wet source, use a heated out-of-stack filter as described in Method 5.

9. BIBLIOGRAPHY

1. DeWees, W.D., S.C. Steinsberger, G.M. Plummer, L.T. Lay, G.D. McAlister, and R.T. Shigehara. "Laboratory and Field Evaluation of the EPA Method 5 Impinger Catch for Measuring Condensible Matter from Stationary Sources." Paper presented at the 1989 EPA/AWMA International Symposium on Measurement of Toxic and Related Air Pollutants. Raleigh, North Carolina. May 1-5, 1989.

2. DeWees, W.D. and K.C. Steinsberger. "Method Development and Evaluation of Draft Protocol for Measurement of Condensible Particulate Emissions." Draft Report. November 17, 1989.

3. Texas Air Control Board, Laboratory Division. "Determination of Particulate in Stack Gases Containing Sulfuric Acid and/or Sulfur Dioxide." Laboratory Methods for Determination of Air Pollutants. Modified December 3, 1976.

4. Nothstein, Greg. Masters Thesis. University of Washington. Department of Environmental Health. Seattle, Washington.

5. "Particulate Source Test Procedures Adopted by Puget Sound Air Pollution Control Agency Board of Directors." Puget Sound Air Pollution Control Agency, Engineering Division. Seattle, Washington. August 11, 1983.

6. Commonwealth of Pennsylvania, Department of Environmental Resources. Chapter 139, Sampling and Testing

(Title 25, Rules and Regulations, Part I, Department of Environmental Resources, Subpart C, Protection of Natural Resources, Article III, Air Resources). January 8, 1960.

7. Wisconsin Department of Natural Resources. Air Management Operations Handbook, Revision 3. January 11, 1988.

4. Add Figures 202-1, 202-2, and 202-3 after Section 9 of Method 202.

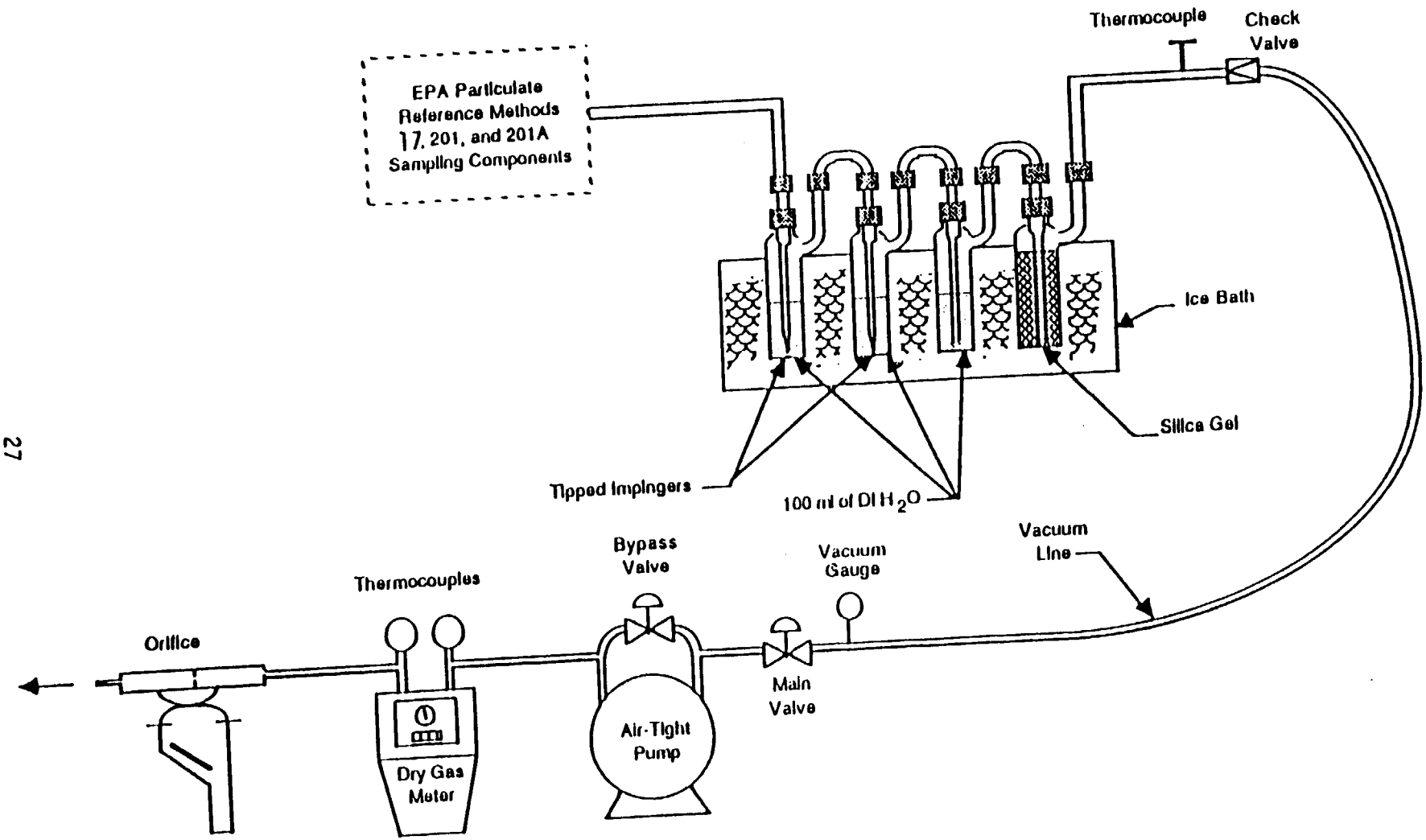


Figure 202-1. Schematic of condensible particulate sampling train.

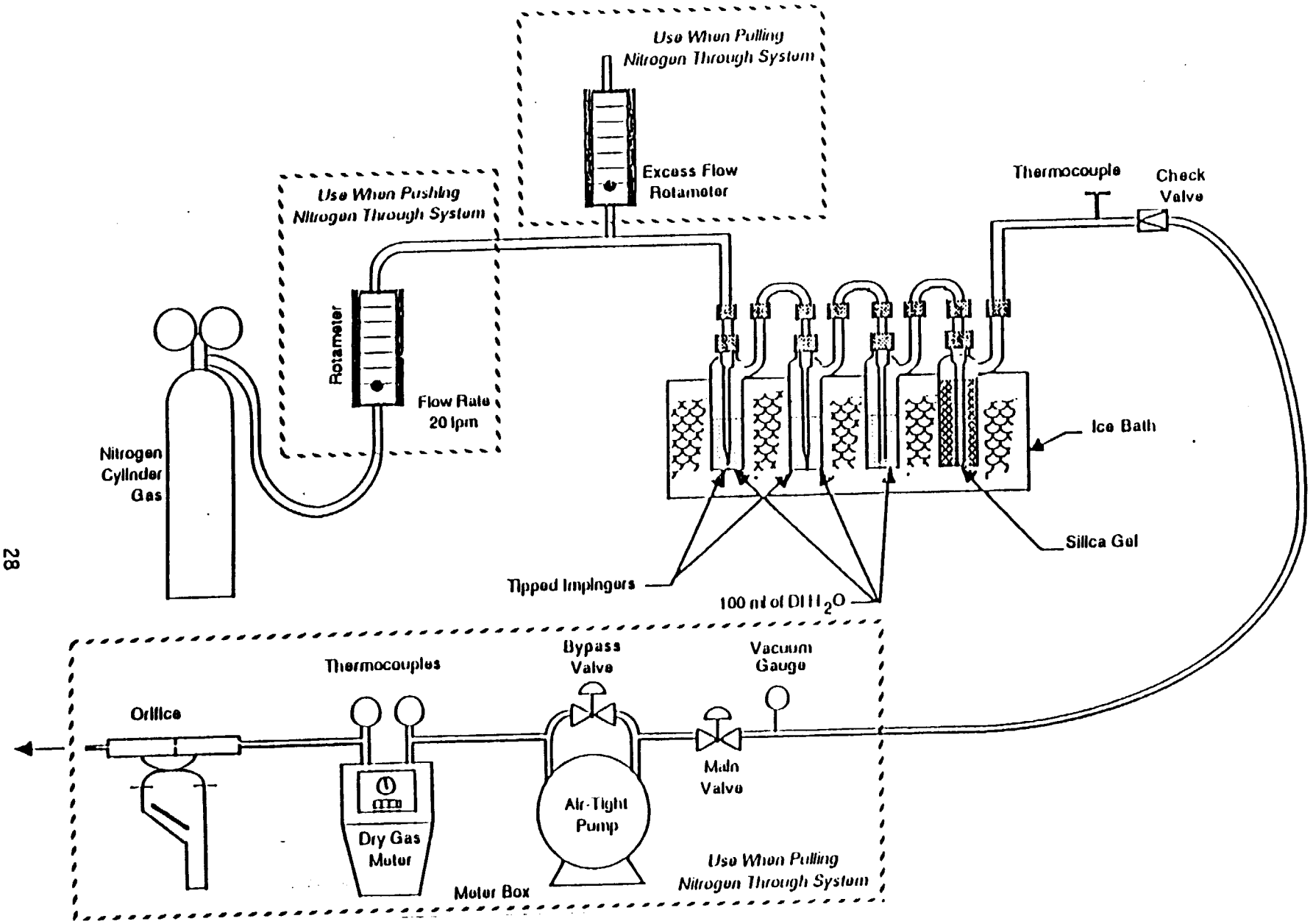


Figure 202-2. Schematic of post-test nitrogen purge system.

Moisture Determination

Volume or weight of liquid in impingers _____ ml or g
Weight of moisture in silica gel _____ g

Sample Preparation (Container No. 4)

Amount of liquid lost during transport _____ ml
Final volume _____ ml
pH of sample prior to analysis _____
Addition of NH_4OH required? _____
Sample extracted 2X with 75 ml $MeCl_2$? _____

For Titration of Sulfate

Normality of NH_4OH _____ N
Volume of sample titrated _____ ml
Volume of titrant _____ ml

Sample Analysis

Container number	Weight of Condensible Particulate, mg		
	Final Weight	Tare Weight	Weight Gain
4 (Inorganic)			
4 & 5 (Organic)			
		Total	
		Less Blank	
Weight of Condensible Particulate			

Figure 202-3. Analytical data sheet.

TLI Report: MMTL

TRIANGLE LABORATORIES
801 CAPITOLA DRIVE
DURHAM, NC 27713

ANALYSIS REPORT

Coke Oven Characterization

Prepared for:

Roy F. Weston, Inc.

Dr. William H. Wadlin
Inorganic Laboratory Manager

Wanda Antel
Quality Assurance

December 6, 1991

TRIANGLE LABORATORIES

801 CAPITOLA DR.
DURHAM, NC 27713

Project: 90005
Roy F. Weston, Inc.
Project: Coke Oven

Date in: 08-Nov-91
Date out: 06-Dec-91

CASE NARRATIVE

Overview

This work follows the analysis protocol described in sections 5-7 of the EPA Draft Document *"Methodology for the Determination of Metals Emissions in Exhaust Gases from Hazardous Waste Incineration and Similar Combustion Processes."* No additional QC requirements were specified in the contract. A detailed description of the processing scheme for each Run is found on the "Multi-Metals Train Worksheets" included in this report. They show the specific sample IDs and volumes involved in all splits, combinations and volume changes due to digestion or dilution.

The analysis report section presents the results for each front-half, back-half on pages 2-7. Results for the mercury impingers are on pages 8-14. The last line on the Mercury pages, labelled "TOTAL ug" gives the mercury result for each solution. Results of matrix spikes are on page 15.

Raw data from instrument readings, sample volumes and aliquot sizes are found in the Sample Preparation Worksheet section, pages 16-19.

Preparation

Samples were prepared by microwave digestion, as required by the referenced analysis protocol. Details of spiking and dilution are also presented in the Worksheets.

Analysis

This project specified that Graphite Furnace AA be used where necessary to achieve lower detection limits. Due to the very high concentrations of most elements in the Front-Halves, these were determined by ICP. The corresponding Back-Halves were much cleaner, so they were run by Graphite Furnace AA where possible.

The matrix spikes indicated interference problems in the GFAA analysis for Sb, As, Cr, Ni, and Se. Accordingly, Sb, Cr and Ni were determined by the method of Standard Additions. The MSA was not applied to As, Se, since the concentrations present in the back halves was negligible compared to the high concentrations found in the front half.

TRIANGLE LABORATORIES
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A N A L Y S I S R E P O R T

TLI Proj # 90005 Date of Report: 06-Dec-91
Client: Roy F. Weston, Inc. Date Received: 08-Nov-91

Client Project Name: Coke Oven

	RUN # I-1		RUN # I-3	
	Total ug catch		Total ug catch	
	Front Half	Back Half	Front Half	Back Half
	51.203.5F	51.203.6B	51.203.11F	51.203.12
Antimony	16.80	<1	19.90	17.18
Arsenic	398.00	2.87	384.20	3.08
Barium	43.53	<4	30.56	<4
Beryllium	2.31	<.1	3.95	<.1
Cadmium	24.81	.34	15.56	<.3
Chromium	81.06	3.48	81.99	3.49
Copper	366.70	3.78	622.36	3.31
Lead	538.00	9.45	857.90	7.94
Manganese	14.83	3.40	19.10	3.05
Mercury	.44	6.50	1.72	4.68
Nickel	63.54	2.41	91.90	2.35
Phosphorus	1804.67	724.48	2159.53	747.11
Selenium	80.00	<.4	46.10	.41
Silver	16.75	.10	7.97	.20
Thallium	33.35	<.5	40.16	<.5
Zinc	951.80	13.56	1360.30	16.35

	RUN # II-1-AFUR		RUN # II-1	
	Total ug catch		Total ug catch	
	Front Half 51.203.17F	Back Half 51.203.18B	Front Half 51.203.23F	Back Half 51.203.24
Antimony	28.50	1.42	28.90	13.88
Arsenic	585.70	1.04	261.20	2.16
Barium	43.41	<4	23.04	4.96
Beryllium	10.26	<.1	3.83	<.1
Cadmium	79.54	3.57	28.38	.87
Chromium	393.80	4.73	678.50	7.43
Copper	1209.20	5.02	4.81	11.16
Lead	931.40	3.59	846.40	22.07
Manganese	65.60	12.90	54.85	8.18
Mercury	.31	15.11	.59	5.43
Nickel	280.90	5.05	349.60	6.48
Phosphorus	4051.65	785.71	2371.14	779.39
Selenium	140.60	.44	59.40	.46
Silver	11.78	.19	4.38	.15
Thallium	59.88	<.5	33.57	.80
Zinc	2136.80	36.96	968.60	246.84

	RUN # II-2		RUN # III-1	
	Total ug catch		Total ug catch	
	Front Half 51.203.29F	Back Half 51.203.30B	Front Half 51.203.35F	Back Half 51.203.36
Antimony	14.60	10.28	31.70	4.27
Arsenic	185.20	4.61	390.00	.91
Barium	15.06	<4	39.72	<4
Beryllium	4.20	<.1	7.39	<.1
Cadmium	22.10	1.23	63.44	<.3
Chromium	68.05	5.40	104.40	2.57
Copper	367.60	2.21	1044.80	1.20
Lead	526.80	1.39	966.10	.95
Manganese	23.33	3.83	81.49	95.20
Mercury	.29	10.33	.14	13.89
Nickel	70.42	3.29	137.87	2.87
Phosphorus	1494.55	784.01	3314.15	726.42
Selenium	42.20	.90	84.50	.42
Silver	3.69	.13	10.37	<.1
Thallium	25.76	<.5	52.75	<.5
Zinc	616.43	82.11	1610.40	10.41

	RUN # III-2		RUN # IV-1	
	Total ug catch		Total ug catch	
	Front Half 51.203.41F	Back Half 51.203.42B	Front Half 51.203.47F	Back Half 51.203.48
Antimony	36.10	14.77	16.30	8.73
Arsenic	503.40	4.62	186.10	3.61
Barium	24.51	<4	38.59	<4
Beryllium	8.08	<.1	4.06	<.1
Cadmium	72.75	.42	36.81	.71
Chromium	144.08	11.29	72.81	6.08
Copper	1238.00	13.09	630.20	6.56
Lead	1705.90	12.20	605.70	11.66
Manganese	55.56	22.65	77.26	21.28
Mercury	<.02	8.81	.40	10.28
Nickel	177.50	7.66	92.63	6.50
Phosphorus	3462.15	794.96	2108.13	736.04
Selenium	175.40	.47	59.40	<.4
Silver	16.47	.20	12.00	.12
Thallium	70.78	.53	34.96	.54
Zinc	1559.90	64.67	932.30	42.60

FIELD BLANKS

	Total ug catch		Total ug catch	
	Front Half	Back Half	Front Half	Back Half
	51.203.53F	51.203.54B	51.203.58F	51.203.59
Antimony	26.20	2.05	<1	<1
Arsenic	358.20	2.73	3.10	1.86
Barium	28.76	<4	21.99	4.40
Beryllium	7.94	<.1	<.3	<.1
Cadmium	69.07	<.3	1.47	<.3
Chromium	95.65	4.59	14.43	2.37
Copper	1210.60	10.17	19.02	2.68
Lead	1015.20	4.66	63.10	6.55
Manganese	37.92	21.75	17.54	15.97
Mercury	7.25	11.00	<.02	<.02
Nickel	170.93	6.90	16.59	.92
Phosphorus	4529.94	751.56	66.61	604.02
Selenium	101.50	<.4	<.4	.72
Silver	13.80	<.1	21.03	<.1
Thallium	57.04	<.5	.69	<.5
Zinc	2010.80	26.88	28.62	5.63

RUN:Reagent Blanks

	Total ug catch Front Half 51.203.63F	Back Half 51.203.65B	Detection Limit ug Front	Detection Limit Back
Antimony	<1	1.57	1.00	1.00
Arsenic	.90	2.04	.30	.30
Barium	22.98	<4	4.00	4.00
Beryllium	<.3	<.3	.30	.10
Cadmium	.91	<.3	.50	.30
Chromium	10.41	8.06	2.50	.20
Copper	8.16	2.44	1.50	.20
Lead	38.50	10.08	.30	.30
Manganese	13.05	2.12	1.00	1.00
Mercury	.10	<.02	.02	.02
Nickel	10.82	4.41	5.00	.20
Phosphorus	<50	538.00	50.00	50.00
Selenium	<.4	.69	.40	.40
Silver	4.08	<.1	2.00	.10
Thallium	2.97	<.5	.50	.50
Zinc	10.86	8.80	2.00	2.00

Mercury Impingers

I-1	I-1	I-1	I-3	I-3	I-3
51.203.1	51.203.2	51.203.3	51.203.7	51.203.8	51.203.9

Raw Data for KMnO4 Impingers

Volume rec'd						
Volume used						
Hg reading	4.47	3.06	2.92	3.84	3.11	2.43
Hg duplic.	6.33	2.8	2.86	3.79	2.99	2.32
Hg avg.	5.40	2.93	2.89	3.82	3.05	2.38
Post dig.vol	130	130	120	126	114	124
Vol used	32.5	32.5	30	31.5	28.5	31
Post dig conc	10.80	5.86	5.78	7.63	6.10	4.75
ug in aliquot	1.08	.59	.58	.76	.61	.48
aliquot vol	50.00	5.00	5.00	50.00	5.00	5.00
total vol	100	300	225	135	425	240
TOTAL ug	2.16	35.16	26.01	2.0601	51.85	22.8

	II-1-AFUR	II-1-AFUR	II-1-AFUR	II-1	II-1
	51.203.13	51.203.14	51.203.15	51.203.19	51.203.20
Volume rec'd					
Volume used					
Hg reading	5.86	2.2	2.47	5.27	2.03
Hg duplic.	4.57	2.71	2.42	4.24	2.43
Hg avg.	5.22	2.46	2.45	4.76	2.23
Post dig.vol	130	120	114	110	120
Vol used	32.5	30	28.5	27.5	30
Post dig conc	10.43	4.91	4.89	9.51	4.46
ug in aliquot	1.04	.49	.49	.95	.45
aliquot vol	50.00	5.00	5.00	50.00	5.00
total vol	105	375	225	105	295
TOTAL ug	2.1903	36.825	22.005	1.9971	26.314

	II-1	II-2	II-2	II-2
	51.203.21	51.203.25	51.203.26	51.203.27
Volume rec'd				
Volume used				
Hg reading	2.73	2.97	3.04	2.37
Hg duplic.	2.44	3.86	2.88	2.4
Hg avg.	2.59	3.42	2.96	2.39
Post dig.vol	120	128	118	130
Vol used	30	32	29.5	32.5
Post dig conc	5.17	6.83	5.92	4.77
ug in aliquot	.52	.68	.59	.48
aliquot vol	5.00	50.00	5.00	5.00
total vol	230	110	390	230
TOTAL ug	23.782	1.5026	46.176	21.942

	III-1	III-1	III-1	III-2
	51.203.31	51.203.32	51.203.33	51.203.37
Volume rec'd				
Volume used				
Hg reading	6.16	2.49	3.47	4.88
Hg duplic.	6.48	2.28	3.36	4.48
Hg avg.	6.32	2.39	3.42	4.68
Post dig.vol	116	108	114	110
Vol used	29	27	28.5	27.5
Post dig conc	12.64	4.77	6.83	9.36
ug in aliquot	1.26	.48	.68	.94
aliquot vol	50.00	5.00	5.00	50.00
total vol	100	360	315	100
TOTAL ug	2.528	34.344	43.029	1.872

	III-2	III-2	IV-1	IV-1	IV-1
	51.203.38	51.203.39	51.203.43	51.203.44	51.203.45
Volume rec'd					
Volume used					
Hg reading	2.74	2.98	2.88	2.34	2.43
Hg duplic.	2.6	3.5	2.77	1.98	2.45
Hg avg.	2.67	3.24	2.83	2.16	2.44
Post dig.vol	100	114	104	110	110
Vol used	25	28.5	26	27.5	27.5
Post dig conc	5.34	6.48	5.65	4.32	4.88
ug in aliquot	.53	.65	.57	.43	.49
aliquot vol	5.00	5.00	50.00	5.00	5.00
total vol	385	425	250	420	370
TOTAL ug	41.118	55.08	2.825	36.288	36.112

	IV-2	IV-2	IV-2	FB	FB
	51.203.49	51.203.50	51.203.51	51.203.55	51.203.56
Volume rec'd					
Volume used					
Hg reading	5.63	2.47	2.18	1.66	1.94
Hg duplic.	6.1	3.26	2.01	1.9	1.77
Hg avg.	5.87	2.87	2.10	1.78	1.86
Post dig.vol	112	120	110	110	110
Vol used	28	30	27.5	27.5	27.5
Post dig conc	11.73	5.73	4.19	3.56	3.71
ug in aliquot	1.17	.57	.42	.36	.37
aliquot vol	50.00	5.00	5.00	50.00	5.00
total vol	130	435	270	360	250
TOTAL ug	3.0498	49.851	22.626	2.5632	18.55

RB RB RB

51.203.6051.203.6151.203.62

Volume rec'd			
Volume used			
Hg reading	1.81	1.76	1.66
Hg duplic.	1.76	1.75	1.53
Hg avg.	1.79	1.76	1.60
Post dig.vol	120	110	120
Vol used	30	27.5	30
Post dig conc	3.57	3.51	3.19
ug in aliquot	.36	.35	.32
aliquot vol	50.00	5.00	5.00
total vol	200	295	225
TOTAL ug	1.428	20.709	14.355

SPIKES

FRONT HALF

	True Spike ug/L	Sample 203.5 ug/L	Spike 203.5MS ug/L	Recovery %
Antimony	100	16.8	105.6	88.8%
Arsenic	50	99.5	153.6	108.2%
Lead	50	53.8	119.2	130.8%
Selenium	50	80.0	126.9	93.8%
Thallium	50	33.4	76.8	86.8%

BACK HALF

	True Spike ug/L	Sample 203.6 ug/L	Spike 203.6MS ug/L	Recovery %	
Antimony	100	<10	54.8	54.8%	*
Arsenic	50	17.5	43.2	51.4%	**
Beryllium	20	<1	16.6	83.0%	
Cadmium	10	<3	10.1	100.6%	
Chromium	50	19.2	49.5	60.5%	*
Copper	100	23.1	104.9	81.8%	
Lead	50	57.1	102.0	89.8%	
Mercury	5	13.6	17.15	71.4%	
Nickel	50	7.5	29	43.0%	*
Selenium	50	<4	<4	.0%	**
Silver	10	<1	6.19	61.9%	
Thallium	50	<5	51.24	102.5%	

* Quantified by Method of Standard Additions

** MSA not applied since back-half concentrations found were <1% of the front half readings.

KMnO4 Impinger
Mercury only

Run I-1

	203.1 IR4	203.2 KMnO4	203.3 HCl
Sample	10.8	5.86	5.78
Spike	14.82	9.16	8.68
True	5	5	5
Recovery	80.4%	66.0%	58.0%

TRIANGLE LABORATORIES

SAMPLE PREPARATION WORKSHEET

TLI Proj # 90005
Client: Roy F. Weston, Inc.

RAW DATA

	RUN # I-1		RUN # I-3		RUN # II-1-AFUR	
	ug/L					
	51.203.5F	51.203.6B	51.203.11	51.203.12	51.203.17F	51.203.18B
Antimony	168.00	5.10	199.0000	141.2	285	12.5
Arsenic	3980.00	17.50	3842.00	25.3	5857	9.1
Barium	435.30	22.00	305.60	29.50	434.1	27.5
Beryllium	23.09	.40	39.50	.57	102.57	.12
Cadmium	248.05	2.10	155.61	2.05	795.36	31.36
Chromium	810.60	21.20	819.90	28.70	3938	41.5
Copper	3667.00	23.05	6223.63	27.25	12092	44.07
Lead	5380.00	57.60	8579.00	65.30	9314	31.5
Manganese	148.3	20.7	191	25.1	656	113.3
Mercury						
Nickel	635.4	14.7	919	19.3	2809	44.3
Phosphorus	18046.7	4414.8	21595.3	6141.7	40516.5	6898.9
Selenium	800	1.3	461	3.4	1406	3.9
Silver	167.5	.63	79.65	1.68	117.8	1.67
Thallium	333.5	2.97	401.6	1.56	598.8	1.55
Zinc	9518.0	82.6	13603.00	134.44	21368.00	324.50
Volume rec'd	118.00	512.00	60	562	100	820
Volume used	118.00	312.00	60	462	100	720
Hg reading	1.10	OVER	5.09	OVER	.72	8.89
Hg duplic.	1.10	6.59	3.51	4.07	.82	9.54
Hg avg.	1.10	6.59	4.30	4.07	.77	9.22
Post dig.vol	130.00	104.00	120	90	120	100
Vol used	65.00	27.00	60	22	60	25
Post dig conc	1.10	12.69	4.30	8.33	.77	18.43
ug in aliquot	.11	1.27	.43	.83	.08	1.84
aliquot vol	25.00	100.00	25.00	100.00	25.00	100.00
total vol	100.00	512.00	100.00	562.00	100.00	820.00
TOTAL ug	.44	6.50	1.72	4.68	.31	15.11

	RUN # II-1		RUN # II-2		RUN # III-1	
	ug/L					
	51.203.23F	51.203.24	51.203.29	51.203.30	51.203.35	51.203.36
Antimony	289	118.10	146.0000	86.7	317	35.2
Arsenic	2612	18.40	1852.0	38.9	3900	7.5
Barium	230.4	42.20	150.6	28.6	397.2	23.9
Beryllium	38.29	.22	42.0	0	73.94	0
Cadmium	283.8	7.41	221.0	10.39	634.37	1.38
Chromium	6785	63.20	680.5	45.6	1044	21.2
Copper	48.05	94.95	3676	18.66	10448	9.86
Lead	8464	187.8	5268	11.7	9661	7.8
Manganese	548.5	69.6	233.3	32.3	814.9	785
Mercury						
Nickel	3496	55.1	704.17	27.8	1378.7	23.65
Phosphorus	23711.4	6630.6	14945.5	6615.1	33141.5	5989.8
Selenium	594	3.9	422	7.6	845	3.5
Silver	43.76	1.29	36.86	1.13	103.7	.73
Thallium	335.7	6.77	257.6	.13	527.5	2.36
Zinc	9686	2100	6164	692.8	16104	85.86
Volume rec'	98	670	200	640	70	570
Volume used	98	570	200	540	70	470

	RUN = III-2		RUN = IV-1		IV-2	
	ug/L					
	.203.41F	.203.42B	.203.47F	.203.48B	.203.53F	.203.54B
Antimony	361	125.30	163.00	69.8	262	17
Arsenic	5034	39.20	1861.00	28.9	3582	22.6
Barium	245.1	26.80	385.90	24.9	287.6	25.4
Beryllium	80.81	.21	40.56	.11	79.38	0
Cadmium	727.47	3.55	368.10	5.67	690.7	2.11
Chromium	1440.8	95.80	728.10	48.6	956.5	38
Copper	12380	111.03	6302.00	52.46	12106	84.13
Lead	17059	103.5	6057	93.3	10152	38.6
Manganese	555.6	192.2	772.6	170.2	379.2	180
Mercury						
Nickel	1775	65	926.3	52	1709.28	57.1
Phosphorus	34621.5	6745.1	21081.3	5888.3	45299.4	6219.8
Selenium	1754	4	594	2.4	1015	3.2
Silver	164.7	1.72	120	.98	137.95	.63
Thallium	707.8	4.51	349.6	4.32	570.4	1.43
Zinc	15599	548.7000	9323	340.8	20108	222.47
Volume rec'd	78	660	66	500	195	580
Volume used	78	560	66	400	195	480
Hg reading	0	6.1	.86	4.55	5.84	7.73
Hg duplic.	.06	5.02	1.15	4.02	6.25	6.58
Hg avg.	.03	5.56	1.01	4.29	6.05	7.16
Post dig.vol	120	120	120	120	120	106
Vol used	60	25	60	12.5	20	20
Post dig conc	.03	13.34	1.01	20.57	18.14	18.96
ug in aliquot	.00	1.33	.10	2.06	1.81	1.90
aliquot vol	25.00	100.00	25.00	100.00	25.00	100.00
total vol	100.00	660.00	100.00	500.00	100.00	580.00
TOTAL ug	.01	8.81	.40	10.28	7.25	11.00

FIELD BLANKS RUN:Reagent Blanks

ug/L	51.203.58F	51.203.59B	51.203.63F	51.203.65B
Antimony	0	5.0	0	8.2
Arsenic	31	12.2000	9.0	10.7
Barium	219.9	28.8000	229.8	20.6
Beryllium	.14	.0300	0.0	0
Cadmium	14.66	1.4200	9.1	1.2
Chromium	144.3	15.5000	104.1	42.2
Copper	190.24	17.5700	81.6000	12.79
Lead	631	42.9	385	52.8
Manganese	175.4	104.6	130.5	11.1
Mercury				
Nickel	165.89	6	108.15	23.1
Phosphorus	666.1	3957.4	28.5	2818.1
Selenium	.1	4.7	0	3.6
Silver	210.3	.4	40.76	.26
Thallium	6.9	1.58	29.7	2.49
Zinc	286.24	37	109	46.1

Volume rec'd	114	290	114	210
Volume used	114	190	114	110
Hg reading	0	0	.1	.07
Hg duplic.	0	0		.17
Hg avg.	.00	.00	.10	.12
Post dig.vol	120	120	128	102
Vol used	25	25	25	75
Post dig conc	.00	.00	.26	.08
ug in aliquot	.00	.00	.03	.01
aliquot vol	25.00	100.00	25.00	100.00
total vol	100.00	290.00	100.00	110.00
TOTAL ug	.00	.00	.10	.01

TLI Report: VOST

TRIANGLE LABS

Janaury 28, 1992

Ms. Helen Yeost
Entropy Environmentalists
Post Office Box 12291
Research Triangle Park, N.C. 27709

Dear Helen:

Attached is the Triangle Laboratories, Research and Development (TLRD) summary and interpretation report for the Jewell Company, Vansant, Virginia volatile emissions analytical results. Please find attached an original and two copies.

If you require additional information regarding these volatile analytical results, please do not hesitate to contact either myself or Don Harvan.

Sincerely

Gene Riley

Gene Riley

cc: Don Harvan w/attachment
Roy Huntley w/attachment
Gary McAlister w/attachment
Jim Serne w/attachment

Triangle Laboratories, Inc.
801-10 Capitola Drive
Durham, NC 27713
919-544-5729
P.O. Box 13485
Research Triangle Park, NC 27709
Fax # 919-544-5491

Coke Oven Project

Jewell Company—Vansant, Virginia

VOLATILE ANALYTICAL RESULTS SUMMARY AND INTERPRETATION REPORT

Prepared by:

TRIANGLE LABORATORIES R & D DIVISION

Research Triangle Park, North Carolina

Prepared for:

ENTROPY ENVIRONMENTALISTS

Research Triangle Park, North Carolina

EPA Contract No. 68D10104

January 28, 1992

Volatiles

1. Introduction

1.1 Project Objectives

1.1.1 Analytical Objectives

The major objective was to analyze air samples collected from a coke oven facility, in accordance with the guidelines of Methods 8240 and 5040, for 40 target volatile organic compounds selected from the Clean Air Act (CAA) list, and 21 additional 8240 organic compounds associated with the coke oven industry. In addition, qualitative analysis for other major organic components were compared for agreement and reported as tentatively identified compounds (TICs). The air samples were collected and analyzed as separate Tenax, Tenax-charcoal and condensate samples using the Volatile Organic Sampling Train (VOST) methodology. The target analytes are listed in Table 1. The primary analytes of interest were benzene and toluene, and the QC criteria were designed for those analytes.

1.2 Project Description

1.2.1 Background

The Environmental Protection Agency (EPA) is currently developing a comprehensive source category document for the coke oven industry. The Office of Air Quality Planning and Standards (OAQPS) is participating in an effort to assess the potential environmental impact of non-recovery coke oven technology as directed by the Clean Air Act (CAA) of 1990.

The Emissions Standards and Engineering Division (ESED) of OAQPS, through its Industrial Studies Branch (ISB) and the Technical Support Division of OAQPS, through its Emissions Measurement Branch (EMB), are responsible for reviewing the existing air emissions data and gathering additional data where necessary. The database may be used to estimate emission factors and to evaluate the various emissions reduction alternatives that are available for the coke oven facilities. The volatile emissions are one of the pollutants being studied in this assessment.

1.2.2 Test Facility

The Jewell Company facility located at Vansant, Virginia was selected for the emissions testing because it is believed to represent a well controlled coke oven process typical of existing plants and is in close proximity to Research Triangle Park, North Carolina. The process site selected for emission testing was sampled during four separate test conditions.

1.2.3 Sample Matrix

Air emission samples were collected at the various conditions over a three day period for a total of 21 volatile (VOST) samples and 4 field blanks. The VOST samples consisted of Tenax, Tenax-Charcoal and Condensate fractions. The Tenax and Tenax Charcoal fractions were analyzed separately for all field samples and in tandem for the field blanks. Three laboratory control spikes (one for each fraction) were also analyzed.

1.2.4 Analytical Method

Analysis for the volatile organics was performed following the procedure specified in EPA Methods 8240 and 5040. Other non-target compounds were matched against two separate libraries, the National Bureau of Standards (NBS) and the Clean Air Act (CAA) library constructed by Triangle Labs from the mass spectra of the CAA compounds.

1.3 Prespiking of Surrogates

The Tenax only tube for all samples was prespiked prior to field sampling with the labeled compound, o-xylene-d_{10} at 0.25 µg. This labeled analyte was chosen on the basis of availability and because preliminary tests indicated that the potential for interference for this analyte was negligible. The recovery of this analyte (surrogate) is used to give an indication of the overall sampling and recovery efficiency. The surrogate was directly introduced (in a methanol solution) into the inlet end of the Tenax trap via syringe, immediately before sealing and packing the traps for shipping.

1.4 Analytical Methodology

The analysis is based on the guidelines of Methods 8240 and 5040. An initial calibration using the internal standards (bromochloromethane, 1,4-difluorobenzene, and chlorobenzene-d_5), the analytes of interest and the labeled surrogates (toluene-d_8, 1,2-dichloroethane-d_4, benzene-d_6, 4-bromofluorobenzene and

xylene-d_{10}) is performed as described in Section 1.6. After GC/MS calibration but immediately prior to analysis by GC/MS, the VOST tube, or an aliquot of the condensate sample, is fortified with the above internal standards and surrogates such that the amount of internal standards and surrogates is 0.25 µg per sample. For the condensate analysis, the same amount of internal standards and surrogates is added to a 5 mL sample aliquot yielding a concentration of 50 µg/L (50 parts per billion, ppb). After GC/MS analysis the sample amounts or concentrations are calculated using the following equations:

Amount in samples, µg (for VOST):

$$\textit{Amount, } \mu g = \frac{(\textit{Area } X \times \textit{Amt Int Std})}{(\textit{Area Int Std} \times \textit{RF } X)} \qquad \text{Equation 1}$$

where:

X = Analyte
Int Std = Internal Standard
Amt Int Std = Amount of Internal Standard = 0.25 µg
RF X = Response Factor of Analyte X from Initial Calibration

Concentration in samples, µg/L (for condensates):

$$\textit{Concentration, } \mu g/L = \frac{(\textit{Area } X \times \textit{Amt Int Std})}{(\textit{Area Int Std} \times \textit{RF } X \times 0.005\ L)} \qquad \text{Equation 2}$$

where:

X = Analyte
Int Std = Internal Standard
Amt Int Std = Amount of Internal Standard = 0.25 µg
RF X = Response Factor of Analyte X from Continuing Calibration

The GC/MS analysis conditions are listed below for the Tenax and Tenax-Charcoal analysis:

VOLATILES:	
Purge and Trap:	Tekmar LSC-2000
Purge:	11 min
Desorb Temperature:	240° C
Desorb Time:	2 min
GC CONDITIONS:	
Column:	30 m x 0.53 mm x 0.3µ J&W DB624
Program:	-30° C hold .5 min to 45° C at 10° C/min to 90° C at 6° C/min, hold 4 min to 200° C at 15° C/min

MS CONDITIONS:

Instrument:	VG TRIO-1 (VOST tubes), LAB-BASE data system
Scan:	35-350 amu at 0.6 sec/scan
Source Temperature:	180° C
Interface:	Jet Separator, 200° C

The GC/MS analysis conditions are listed below for the condensate analysis:

VOLATILES:

Purge and Trap:	Tekmar LSC-2000,
Purge:	11 min
Desorb Temperature:	240° C
Desorb Time:	2 min

GC CONDITIONS:

Column:	30 m x 0.53 mm x 0.3µ J&W DB624
Program:	-30° C hold .5 min to 45° C at 10° C/min to 90° C at 6° C/min, hold 4 min to 200° C at 15° C/min

MS CONDITIONS:

Instrument:	VG 12-250, LAB-BASE data system
Scan:	35-350 amu at 0.6 sec/scan
Source Temperature:	180° C
Interface:	Jet Separator, 160° C

1.5 Data Processing

1.5.1 Targets and Find Databases

Prior to analysis, a library of reference mass spectra and retention time information is assembled into a database, referred to as a Find database in LAB-BASE terminology. A quantitation mass, either the molecular ion or the most intense peak in its mass spectrum, is chosen for each of the analytes in the Find database. After the GC/MS analysis, the data file retention time window is searched for the occurrence of any mass spectrum containing the quantitation mass for a given analyte. The plot of the intensity of this quantitation mass versus time is the selected ion current profile (SICP) for that mass. The area under that particular peak is used to quantitatively measure the amount of the compound present. If a peak occurs at the proper time and mass for a target analyte, then the compound's mass spectrum is compared to the library spectrum stored in the database. The compound is considered detected if its match is above the selected match tolerance. This occurs in the preliminary report generation

stage, the output of which is an interim report. The resulting mass spectra of detected targets are plotted versus their corresponding library spectra. A trained chemist then evaluates whether the match is correct or not. If not, the compound is removed from the list of detected target compounds. For those detected target compounds, the concentration is calculated as described in Section 1.4.

1.5.2 NBS and CAA Library Searches for TICs

Besides the target compounds, there are generally a number of non-target components that are observed in the chromatogram. The mass spectrum of these compounds is searched against two separate libraries. The National Bureau of Standard's (NBS) library contains the mass spectra of 49,469 compounds and is typically used to identify an unknown mass spectrum. The CAA library has been constructed by Triangle Labs from the mass spectra of the Clean Air Act compounds from the NBS library as well as some spectra generated at TLI. By searching an unknown spectrum against both libraries, one maximizes the possibility of finding CAA compounds while also comparing to the mass spectra of the NBS library. Any compounds that are observed and identified are referred to as tentatively identified compounds (TICS), since there is no reference standard analyzed at the same time as the unknown analyte. The quantitation that is given to these TICS is based on the area of the peak compared directly to the area of the nearest internal standard and assumes a response factor of one. The error caused by this approximation is unknown.

1.6 Calibration

1.6.1 Range of Calibration

The analytes are prepared in solutions ranging from 0.10 µg to 1.0 µg, with the internal standards injected at a constant amount of 0.25 µg. After analyzing the calibration solution, selected ion current plots (SICPs) are generated for the quantitation mass for each analyte. The area for the SICP mass is used to calculate a response factor (RF) at a given concentration using the following equation:

$$RF = \frac{(Area\ X \times Amount\ Int\ Std)}{(Area\ Int\ Std \times Amount\ X)}$$

where:

X = Analyte Quantitation Mass
Int Std = Internal Standard Quantitation Mass
Amt Int Std = Amount of Internal Standard = 0.25 µg
Amount X = Amount of Analyte in the Calibration Solution; varies from 0.10 to 1.0 µg (equivalent to 20 to 200 µg/L for condensates)

The five individual response factors, at analyte amounts of 0.10, 0.25, 0.50, 0.75 and 1.0 µg, are averaged to calculate a mean RF. If the relative standard deviation of these RFs is less than 30%, the calibration is considered acceptable.

1.6.2 Initial Calibrations

For the VOST analyses, one initial calibration was generated on November 5, 1991. The mean RFs and %RSD of this calibration are shown in Table 2. The majority of the analytes are within QC criteria with the exception of acrolein, 2-butanone, 4-methyl-2-pentanone, acetone, 2-chloroethylvinyl ether, 2-hexanone, 1,2,3-trichloropropane and 1,4-dichloro-2-butene. Benzene and toluene showed a %RSD of less than 20%. The general trend was a stable set of response factors with %RSDs ranging from 7-30%.

For the condensate analyses, one initial calibrations was generated for this work, on November 11, 1991. The mean RFs and %RSD of these calibrations are summarized in Table 3 (last two columns). The majority of the analytes are within QC criteria with the exception of chloromethane, 2-chloroethylvinylether, ethyl methacrylate and 2-butanone. The general trend was a stable set of response factors with %RSDs ranging from 1% to 30%. The relative standard deviation of the means also showed reasonable stability.

1.6.3 Continuing Calibrations

Five continuing calibrations were generated for the Tenax and Tenax-Charcoal analyses. The percent difference (%D) calculated for each analyte per continuing calibration is given by the following equation:

$$\%D = \frac{RF_{Mean} - RF_{0.25}}{RF_{Mean}} \times 100$$

where:

RF_{mean} = Mean ICAL Response Factor

$RF_{0.25}$ = Continuing Calibration Response Factor

A summary of the RFs from the continuing calibrations and the %D of these RFs from the Mean, for the Tenax/Tenax-Charcoal data, are summarized in Table 4. The reproducibility of the response factors for benzene and toluene is demonstrated by the low %D observed for these calibrations.

Two continuing calibrations, November 11, 1991 and November 12, 1991, were generated for the condensate analyses. A summary of the mean of the RFs from the continuing calibrations and the %D of these RFs are presented in Table 3. Again the deviation of calibration for benzene and toluene is less than 20% from the initial calibrations. More variability in the RFs for some of the other target analytes was observed during these calibrations.

2. Summary and Interpretation of Results

2.1 Field Sample Results

2.1.1 Visible Observations

The VOST tube for sample II-3-S3-V-3A T was observed to contain excessive moisture, thus causing the run to be lost. Consequently, the archived samples for run II-3-S3-V-3B were analyzed instead.

2.1.2 Sample Analysis Summary

VOST tubes for the field samples were analyzed separately; the samples were tagged with either a 'T' (Tenax) or with a 'TC' (Tenax-Charcoal), respectively. The field blanks were analyzed in tandem as per client's request; the sample names were tagged with a 'T/TC' (Tenax/Tenax-Charcoal).

The analysis of benzene and toluene is quantitative, whereas information obtained for the other analytes should be considered semi-quantitative since the calibration criteria were not met for some of them.

Condensate samples from the same day under the same conditions were combined and analyzed as one, as per the client's request. The VOST tube for sample II-3-S3-V-3A contained moisture and, consequently, the run was lost. Therefore, in order to maintain consistency between VOST tube and condensate samples, the condensate sample II-3-S3-V-3B was analyzed instead of sample II-3-S3-V-3A.

Acrylonitrile and 1,3-butadiene co-elute. The quantitation mass for acrylonitrile is 53. However, the 1,3-butadiene spectrum contains a mass 53 which may artificially inflate acrylonitrile values when 1,3-butadiene is present.

The quantitation mass inadvertently used for tert-butyl methyl ether was 45. This mass does not provide as precise a quantitation as would the quantitation mass of 73. All amounts should be considered estimates for this compound. Since this compound was not observed in the samples, this is not a significant problem. Future analyses for this analyte should use the quantitation mass of 73.

Sample IV-3-S3-V-3A TC was inadvertently spiked with 0.167 µg of internal standards and o-xylene-d_{10} and with 0.334 µg of the other surrogate standards. All surrogate recoveries are within the acceptable limits of the method and the results appear to be unaffected.

Sample I-1-S3-V-1B TC was cracked and was therefore repacked after it was spiked with internal and surrogate standards. This affected the internal standard areas. It accounts for the low 1,2-dichloroethane-d_4 and the unusually high toluene-d_8 and 4-bromofluorobenzene recoveries. The surrogate standard recoveries are unusually high and the sample results are suspect.

The volatile results for the samples are summarized in Tables 5 through 9, organized by fraction and condition. Tenax tube results for all four conditions are presented in Tables 5 and 8, Tenax-charcoal results are in Tables 6 and 8, and condensate results are presented in Tables 7 and 9. All of the VOST results are expressed in micrograms (µg) found in that fraction and the condensates are expressed in micrograms per liter (µg/L). The results for the tentatively identified compounds, those components not on

the target list but identified by comparison of their mass spectra with a library, are summarized similarly in Tables 10 through 15.

2.1.3 Tenax Results

Table 5 contains a summary of the Tenax results for conditions I through IV for the field samples.

The major components consistently observed in the Tenax tubes were benzene, toluene, m/p-xylene, carbon disulfide, and methylene chloride. Benzene was detected in 20 of the 21 analyses at amounts ranging from 0.024 to 16.65 µg, and toluene was also detected in 20 of the 21 analyses at amounts ranging from 0.012 to 0.38 µg. Toluene amounts did not exceed the calibration range for any of the samples. Benzene amounts did exceed the calibration range of 0.1 µg to 1.0 µg for samples I-2-S3-V-2B T, I-2-S3-V-2D T, III-1-S3-V-1C T, and IV-1-S3-V-1A T.

Large amounts of benzene were sporadically observed. On Day 1, this was observed during Conditions III and IV. On Day 2, this was observed during Condition I, and on Day 3, not at all. However, Day 3 only had a single sampling point for each Condition. A correlation between the amounts of benzene and toluene was not observed. A further demonstration of the rapidly fluctuating values for benzene is that on Day 2, Condition I, the values for runs A and C were both at about 0.045 µg, while for runs B and D the values were 4.5 and 2.6 µg, respectively.

M/p-xylene was detected (in 17 of the 21 analyses) at amounts ranging from 0.01 to 0.43 µg. Carbon disulfide was observed in 14 analyses at amounts ranging from 0.006 to 0.106 µg. Methylene chloride was also detected in 14 analyses at amounts ranging between 0.008 and 0.265 µg.

Hexane, trichloroethene, 1,1,1-trichloroethane, isooctane, o-xylene, ethylbenzene and acetone were sporadically observed. The levels were generally low and would not be considered constant emissions in these samples.

The non-target compounds found in the Tenax tubes were primarily sulfur dioxide, substituted hydrocarbons, siloxanes, silanes, and silanols. Sulfur dioxide accounted for the largest quantity of the TICs in most of the analyses. In several runs (Condition IV, days 1 and 2), the siloxanes were observed in large amounts, and sulfur dioxide was not identified. The total mass observed as TICs for Condition I ranged from 12 to 50 ug, for

Condition II from 24 to 80 ug, for Condition III from 40 to 140 ug, and for Condition IV from 5 to 210 ug.

Most samples showed the presence of a large peak around scan number 200 that had a mass spectrum that matched that of sulfur dioxide; for those samples the peak was identified as sulfur dioxide. However, a few of the samples showed the presence of another peak near scan number 500 that had a spectrum that also matched that of sulfur dioxide; for those samples, the peak was labeled as Unknown.

2.1.4 Tenax-Charcoal Results

Table 6 contains a summary of the Tenax-Charcoal results for Conditions I through IV for the field samples.

Benzene and toluene were both consistently observed on the Tenax-Charcoal tubes. Benzene levels were less (10-30% of the values) than on the corresponding Tenax tubes and probably represent a small amount of breakthrough. The toluene values were generally higher than those observed on the corresponding Tenax tubes. If this is the result of breakthrough, it is unclear why benzene did not exhibit the same phenomenon. The corresponding field blanks and lab blanks did NOT show evidence of contamination.

Bromomethane and chloromethane were detected at concentrations ranging from 0.23 to 2.02 μg and 0.38 to 3.39 μg, respectively. These must represent breakthrough since the two analytes were only observed in two of the Tenax tubes.

Methylene chloride was observed in 19 of the 21 Tenax-Charcoal tubes, at higher amounts (from 0.029 to 0.345 μg) than the corresponding Tenax tubes. Two of the four field blanks contained methylene chloride at 0.026 and 0.095 μg levels.

Hexane, isooctane, carbon disulfide, trichlorofluoromethane and acetone were sporadically observed; these levels were generally low and would not be considered constant emissions in these samples.

The non-target compounds found in the samples were primarily sulfur dioxide, substituted hydrocarbons, siloxanes, silanes and silanols. Sulfur dioxide accounted for the largest quantity of the TICs in most of the analyses. In several runs, siloxanes were observed in large amounts, and

sulfur dioxide was not identified or was a lesser component. The total mass observed as TICs for Condition I ranged from 0.4 to 7 ug, for Condition II from 1.5 to 2 ug, for Condition III from 2 to 36 ug, and Condition IV from 0.8 to 28 ug. The amount of material observed on the Tenax-Charcoal tubes was usually less than 10% of that observed on the corresponding Tenax tubes, and probably represents a small amount of breakthrough.

Most samples showed the presence of a large peak around the scan number 200 that had a mass spectrum that matched that of sulfur dioxide; for those samples the peak was identified as sulfur dioxide. However, a few of the samples showed the presence of another peak around the scan number 500 that has a spectrum that also matches that of sulfur dioxide; for those samples, the peak was labeled as Unknown.

Sample I-1-S3-V-1B TC was cracked and was therefore repacked after it was spiked with internal and surrogate standards. This affected the internal standard areas. It accounts for the low 1,2-dichloroethane-d_4 and the unusually high toluene-d_8 and 4-bromofluorobenzene recoveries. The surrogate standard recoveries are unusually high and the sample results are suspect.

2.1.5 Condensate Results

Table 7 contains a summary of the Condensate results for Conditions I through IV for the field samples.

Benzene was not observed in any of the condensate analyses. Toluene was consistently observed in the condensates. However, toluene was also observed in the field blanks at levels similar to those observed in the field samples. The levels of toluene observed in the laboratory blanks were much lower than those observed in the field blanks and samples. Therefore, the toluene observed in the field samples can be attributed to contamination found in the field.

Benzene and toluene concentrations did not exceed the calibration range for any of the samples. Although concentrations above 200 µg/L were reported for certain analytes, these are qualitative values only.

Major components observed in the condensates were dibromomethane, 2-butanone, methylene chloride, toluene, acetone, and 2-hexanone. Methylene chloride was detected at concentrations ranging from 10.1 to 96.2 µg/L and acetone was detected at concentrations ranging from 70.4 to 246.9

µg/L. The absence of high levels of methylene chloride and acetone in the Tenax and Tenax-Charcoal tube analyses and the presence of them in the condensate field blanks implies a field or laboratory contamination problem. Acetone was observed in the laboratory blanks at 20 or less µg/L but up to 262 µg/L in the field blanks. Methylene chloride was observed at less than 1 µg/L in the laboratory blanks but up to 102 µg/L in the field blanks. This leads one to believe that a field contamination problem existed.

The analyte 2-butanone was detected at concentrations ranging from 0.7 to 30.7 µg/L, but it was also detected in the laboratory blanks (up to 2.7 µg/L) and in the field blanks (up to 8.8 µg/L). This compound is a known contaminant of methanol used in the analysis. The levels observed were not significantly higher than those in the lab blanks. Conceivably, 2-butanone could be a reult of contamination from the analytical effort.

2-Hexanone was detected in many of the field samples at concentrations ranging from 0.6 to 19 µg/L, but it was also detected in the laboratory blanks (up to 2.5 µg/L) and in the field blanks (up to 3.9 µg/L).

Ethylbenzene, m/p-xylene, dibromomethane and o-xylene were all observed at blank levels similar to those seen in the field blanks. Thus, none of these compounds can be attributed to the source in this analytical fraction. A compound identified as acrolein was observed in three samples. A similar compound was detected in one of the field blanks. The mass spectrum contained additional peaks NOT consistent with the spectrum of acrolein.

There were not many TICs observed in the condensate samples. The identified compounds included siloxanes, hydrocarbons, methyl ethyl benzene and some aldehydes. The total amounts observed as TICs for Condition I ranged from 1.2 to 1.8 µg, for Condition II from 0.2 to 1.3 µg, for Condition III from 0.2 to 4.8 µg, and Condition IV from 0.1 to 6.9 µg. These values represent total amounts detected in the combined condensate fractions and calculated by multiplying the volume of the combined condensate (in L) by the concentration (in µg/L).

2.2 QA/QC Results

2.2.1 Laboratory Control Spikes

The laboratory control spike results for the Tenax and Tenax-Charcoal analysis are summarized in Table 8. The results are expressed as percent recoveries in Table 16. Both the Tenax and Tenax-Charcoal portion of the

laboratory control spike were contaminated with chloromethane; however, the recoveries for benzene and toluene are within acceptable limits.

The Laboratory Control Spike results for the Condensate fractions are listed in Table 9. The results are expressed as percent recoveries in Table 16.

The percent recovery values for benzene and toluene calculated for the Tenax analysis were 119 and 128%, respectively. The Tenax-Charcoal analysis recoveries were 115 and 120% for benzene and toluene, respectively. The Condensate analysis percent recoveries were 77% for benzene and 100% for toluene. All recoveries were within the QC limits of 50 to 150%.

2.2.2 Field Blanks and Laboratory Blanks

The analytical results for the laboratory blank and field blanks for the Tenax/Tenax-charcoal analyses are displayed in Table 8 and for the TICs in Table 14. No target analytes were detected in the laboratory blanks. There is, however, contamination of sulfur dioxide and silane reported as TICs in one or more blanks reported in Table 14. The sulfur dioxide contamination may be attributed to carryover due to the high levels that were detected in the preceeding run. The first blank run did not have any contamination. Although these TICs are partially qualitative, they should not be considered truly present in the native samples associated with these blanks unless detected at levels above five times the contamination in the blank.

The analytical results for the laboratory blanks and field blanks for the condensates are displayed in Table 9 and for the TICs in Table 15. Several target analytes were detected in the laboratory blanks at levels below the quantitation limit. This is probably due to carryover from the calibration run immediately before the blank. In addition, acetone was detected in the laboratory blank dated November 11, 1991 at 20 µg/L. Although this is qualitative, acetone should not be considered truly present in the native samples associated with this blank unless detected at levels above five times the contamination in the blank.

2.2.3 Surrogate Standard Recovery and Internal Standard Area Results

The surrogate standard recovery results are presented in Table 15.

Samples II-1-S3-V-1B T, II-1-S3-V-1B TC, III-3-S3-V-3A T and IV-3-S3-V-3A T showed internal standard areas that were outside the quality control

criteria. The surrogate standard recoveries, however, were within the quality control limits and the quantitation is believed to be unaffected.

Samples III-1-S3-V-1C T and IV-1-S3-V-1A T showed internal standard areas that were outside the QC criteria and surrogate standard recoveries for most standards that were also outside the QC limits: all surrogates were outside QC limits except for benzene-d_6, for sample III-1-S3-V-1C T; and, all surrogates except toluene-d_8 were outside QC limits for sample IV-1-S3-V-1A T. Sample I-2-S3-1B T also showed high recovery for surrogate standard 1,2-dichloroethane-d_4. All three samples showed the presence of high amounts of benzene which may account for the high recoveries.

Sample I-1-S3-V-1B TC was cracked and therefore repacked after it was spiked with internal and surrogate standards. This appears to have affected the internal standard area counts. It is also believed to be the reason for the exceedingly high surrogate standard recoveries for toluene-d_8 and 4-bromofluorobenzene, and for the low 1,2-dichloroethane-d_4 recovery. The analyte sample results are therefore suspect.

Sample IV-3-S3-V-3A TC was inadvertently spiked with 0.167 µg of internal standards and o-xylene-d_{10} and with 0.334 µg of the other surrogate standards. All surrogate recoveries are within the acceptable limits of the method and the results appear to be unaffected.

Samples I-2-S3-V-2B T, III-1-S3-V-1C TC and IV-3-S3-V-3A show surrogate standard recoveries outside QC limits for 1,2-dichloroethane-d_4, benzene-d_6, and benzene-d_6, respectively.

All internal standard areas for all other samples, blanks, laboratory blanks and the laboratory control spike were within normal quality control limits. There are no quality control criteria for the surrogate recovery of 4-bromofluorobenzene.

The pre-spiked o-xylene-d_{10} surrogate was recovered from the Tenax tube analyses with recoveries close to 100%. The recoveries from the lab blanks and lab control spike samples averaged 130%. O-xylene-d_{10} was not added to the condensate samples and is, therefore, not reported. The average percent recoveries for the control samples were close to 100%. The percent relative standard deviations (%RSD) for the surrogate recoveries for the control samples were calculated to be less than 20%.

3. Conclusions

The results obtained from the laboratory control spikes demonstrate the applicability of the method for the analysis of benzene and toluene. Matrix spike results would be necessary in order to thoroughly evaluate the ability to analyze and quantitate for all analytes. The use of labeled standards and isotope dilution methodology could possibly eliminate and simplify the evaluation of such a great number of analytes per analysis.

This methodology has been previously validated for benzene and toluene, the primary targets. The laboratory control spikes demonstrate acceptable accuracy in the analytical methodology. The primary difficulty encountered was the variability observed for benzene during the different sampling periods. This is presumably due to some rapidly-changing characteristics of this type of source.

Surrogate standard recoveries were acceptable for all analyses except for the ones that exhibited very high analyte amounts or problems during the analytical procedures. In the presence of large amounts of extraneous compounds, the surrogate recoveries are occasionally affected.

For the target analytes other than benzene and toluene, the general screen provided an indication of the compounds and approximate amounts observed from this type of source.

This evaluation demonstrated the applicability of the analytical methodology within the analytical laboratory. It does not demonstrate that a given compound would have necessarily been recovered during the sampling process. The question is best addressed by dynamic spiking of the compounds of interest during field sampling.

Don Harvan
Vice President, Technical Operations

Table 1
Volatiles—Coke Oven
CAA Target Compounds

	TLI Name	CAA Name
1.	Acrolein	Acrolein
2.	Acrylonitrile	Acrylonitrile
3.	Allyl chloride	Allyl chloride
4.	Benzene	Benzene
5.	Bromoform	Bromoform
6.	1,3-butadiene	1,3-butadiene
7.	Carbon disulfide	Carbon disulfide
8.	Carbon tetrachloride	Carbon tetrachloride
9.	Chlorobenzene	Chlorobenzene
10.	Chloroform	Chloroform
11.	Cumene (isopropylbenzene)	Cumene (isopropylbenzene)
12.	cis-1,3-Dichloropropene	1,3-Dichloropropene
13.	trans-1,3-Dichloropropene	1,3-Dichloropropene
14.	Ethylbenzene	Ethylbenzene
15.	Dibromomethane*	Ethylene dibromide (Dibromoethane)*
16.	1,2-Dichloroethane	Ethylene dichloride
17.	1,1-Dichloroethane	Ethylidene dichloride
18.	n-Hexane	Hexane
19.	Bromomethane	Methyl bromide
20.	Chloromethane	Methyl chloride
21.	1,1,1-Trichloroethane	Methyl chloroform
22.	2-Butanone	Methyl ethyl ketone
23.	Iodomethane	Methyl iodide
24.	4-Methyl-2-pentanone	Methyl isobutyl ketone
25.	Tert-Butyl methyl ether	Methyl tert butyl ether
26.	Methylene chloride	Methylene chloride
27.	1,2-Dichloropropane	Propylene dichloride
28.	Styrene	Styrene
29.	1,1,2,2-Tetrachloroethane	1,1,2,2-Tetrachloroethane
30.	Tetrachloroethene	Tetrachloroethylene (Perchloroethylene)
31.	Toluene	Toluene
32.	1,1,2-Trichloroethane	1,1,2-Trichloroethane
33.	Trichloroethene	Trichloroethylene
34.	Isooctane	2,2,4-trimethyl pentane
35.	Vinyl acetate	Vinyl acetate
36.	Vinyl bromide	Vinyl bromide
37.	Vinyl chloride	Vinyl chloride
38.	1,1-Dichloroethene	Vinylidene chloride
39.	m-/p-Xylene	m-/p-Xylene
40.	o-Xylene	o-Xylene

Table 1 **Volatiles—Coke Oven**

CAA Target Compounds

8240 Compounds

41.	Acetone
42.	Bromodichloromethane
43.	Chloroethane
44.	2-Chloroethylvinylether
45.	Dibromochloromethane
46.	Dichlorodifluoromethane
47.	1,3 Dichlorobenzene
48.	1,4 Dichlorobenzene
49.	1,2 Dichlorobenzene
50.	cis-1,2-Dichloroethene
51.	trans-1,2-Dichloroethene
52.	1,4-Dichloro-2-butene
53.	Ethyl methacrylate
54.	2-Hexanone
55.	Trichlorofluoromethane
56.	1,2,3-Trichloropropane

Other Compounds of Interest

57.	Dimethyl sulfide
58.	Dimethyl disulfide
59.	α-Pinene
60.	β-Pinene
61.	P-Cymene

* Not identical; dibromomethane inadvertantly analyzed.

Table 2
Volatiles—Coke Oven
Initial Calibrations Tenax and Tenax-Charcoal

	11/05/91	
CAA Compounds	**RF Mean**	**%RSD**
Acrolein	0.059	61.1
Acrylonitrile	0.302	15.5
Allyl chloride	0.823	10.3
Benzene	1.176	11.6
Bromoform	0.235	14.4
1,3-butadiene	0.385	16.7
Carbon disulfide	4.522	17.4
Carbon tetrachloride	0.542	18.1
Chlorobenzene	0.966	10.3
Chloroform	3.209	11.4
Cumene (isopropylbenzene)	1.324	10.6
cis-1,3-Dichloropropene	0.450	11.7
trans-1,3-Dichloropropene	0.809	14.1
Ethylbenzene	0.549	11.2
Dibromomethane	0.217	16.5
1,2-Dichloroethane	2.516	7.4
1,1-Dichloroethane	3.193	17.1
n-Hexane	3.917	17.9
Bromomethane	0.849	21.3
Chloromethane	0.871	14.0
1,1,1-Trichloroethane	0.627	16.5
2-Butanone	0.043	52.1
Iodomethane	1.582	23.5
4-Methyl-2-pentanone	0.277	38.1
Tert-Butyl methyl ether	0.411	17.0
Methylene chloride	1.728	11.8
1,2-Dichloropropane	0.467	11.4
Styrene	1.102	13.5
1,1,2,2-Tetrachloroethane	0.348	24.5
Tetrachloroethene	0.334	8.0
Toluene	0.737	18.0
1,1,2-Trichloroethane	0.374	10.6
Trichloroethene	0.442	7.9
Isooctane	11.730	9.0
Vinyl acetate	0.759	24.8
Vinyl bromide	1.330	9.4
Vinyl chloride	0.949	19.6
1,1-Dichloroethene	1.461	16.8
m-/p-Xylene	0.716	15.6
o-Xylene	0.633	11.3

Table 2 (continued) **Volatiles—Coke Oven**

Initial Calibrations Tenax and Tenax-Charcoal

	11/05/91	
8240 Compounds	**RF Mean**	**%RSD**
Acetone	0.698	39.5
Bromodichloromethane	0.525	10.1
Chloroethane	0.897	13.32
2-Chloroethylvinylether	0.070	47.5
Dibromochloromethane	0.430	10.3
Dichlorodifluoromethane	2.075	11.5
1,3 Dichlorobenzene	0.717	11.0
1,4 Dichlorobenzene	0.631	11.5
1,2 Dichlorobenzene	0.654	10.0
cis-1,2-Dichloroethene	2.110	12.7
trans-1,2-Dichloroethene	1.931	10.1
1,4-Dichloro-2-butene	0.125	33.4
Ethyl methacrylate	0.464	14.8
2-Hexanone	0.272	50.8
Trichlorofluoromethane	2.090	14.3
1,2,3-Trichloropropane	0.253	30.5
Other Compounds of Interest		
Dimethyl sulfide	1.708	16.9
Dimethyl disulfide	4.310	14.2
α-Pinene	0.978	10.5
β-Pinene	1.001	9.9
P-Cymene	1.710	10.0

Table 3
Volatiles—Coke Oven
Daily and Initial Calibrations Condensate

	Daily				Initial	
	11/11/91		11/12/91		11/11/91	
	BA702		BA709			
CAA Compounds	RF 50	%D	RF 50	%D	RF Mean	%RSD
Acrolein	0.101	43.6	0.107	40.1	0.179	28.9
Acrylonitrile	0.969	-64.6	1.058	-79.7	0.589	25.2
Allyl chloride	0.877	23.1	0.912	20.0	1.141	16.5
Benzene	1.303	-17.3	1.096	1.3	1.111	21.1
Bromoform	0.672	-56.4	0.571	-32.9	0.430	11.2
1,3-butadiene	1.552	-18.5	1.248	4.8	1.310	28.0
Carbon disulfide	4.630	28.3	4.864	24.7	6.459	21.3
Carbon tetrachloride	0.499	12.8	0.468	18.2	0.573	5.4
Chlorobenzene	1.013	-6.1	0.957	-0.3	0.955	6.0
Chloroform	5.222	0.3	5.046	3.7	5.240	13.9
Cumene (isopropylbenzene)	1.798	-35.0	1.694	-27.2	1.332	5.5
cis-1,3-Dichloropropene	0.921	-20.2	0.815	-6.4	0.766	25.8
trans-1,3-Dichloropropene	0.791	-15.3	0.769	-12.1	0.686	20.7
Ethylbenzene	0.618	-12.0	0.578	-4.9	0.551	9.8
Dibromomethane	0.394	-26.9	0.334	-7.5	0.310	9.7
1,2-Dichloroethane	4.357	-6.7	4.019	1.6	4.085	18.0
1,1-Dichloroethane	5.427	-8.5	5.233	-4.6	5.002	20.1
n-Hexane	5.034	-5.2	5.199	-8.6	4.786	19.2
Bromomethane	2.256	-51.4	2.053	-37.8	1.490	22.8
Chloromethane	2.410	-89.3	2.051	-61.1	1.273	32.0
1,1,1-Trichloroethane	0.577	11.9	0.547	16.4	0.655	8.9
2-Butanone	0.045	15.1	0.033	38.4	0.054	21.3
Iodomethane	1.693	42.2	2.094	28.5	2.929	8.1
4-Methyl-2-pentanone	0.661	3.3	0.746	-9.2	0.683	9.9
Tert-Butyl methyl ether	0.684	-16.3	0.807	-37.3	0.588	4.6
Methylene chloride	1.912	5.2	2.059	-2.1	2.017	14.0
1,2-Dichloropropane	0.840	-57.5	0.673	-26.2	0.534	26.0
Styrene	1.199	-21.0	1.137	-14.7	0.991	4.5
1,1,2,2-Tetrachloroethane	1.039	-68.4	0.961	-55.6	0.617	14.9
Tetrachloroethene	0.300	-0.5	0.364	-21.8	0.299	17.2
Toluene	0.723	-5.6	0.817	-19.4	0.684	15.5
1,1,2-Trichloroethane	0.658	-45.8	0.489	-8.3	0.451	8.2
Trichloroethene	0.470	-11.2	0.476	-12.6	0.422	2.0
Isooctane	20.310	-42.0	19.486	-36.2	14.307	17.1
Vinyl acetate	1.037	9.4	0.949	17.1	1.144	7.0
Vinyl bromide	1.711	-2.3	1.532	8.4	1.672	17.5
Vinyl chloride	2.951	-76.2	2.406	-43.7	1.675	26.6
1,1-Dichloroethene	1.027	39.1	1.434	14.9	1.685	15.7
m-/p-Xylene	0.722	-11.6	0.669	-3.4	0.647	6.4
o-Xylene	0.706	-21.2	0.631	-8.3	0.583	5.8

Table 3 (continued) **Volatiles—Coke Oven**

Daily and Initial Calibrations Condensate

	Daily				Initial	
	11/11/91		11/12/91		11/11/91	
	BA702		BA709			
8240 Compounds	**RF 50**	**%D**	**RF 50**	**%D**	**RF Mean**	**%RSD**
Acetone	0.543	40.4	0.536	41.3	0.913	3.1
Bromodichloromethane	0.795	-22.6	0.733	-13.0	0.649	14.4
Chloroethane	2.229	-65.9	1.774	-32.0	1.344	24.0
2-Chloroethylvinylether	0.291	-63.1	0.213	-19.4	0.178	34.1
Dibromochloromethane	0.782	-36.0	0.642	-11.6	0.575	6.7
Dichlorodifluoromethane	3.386	-0.2	3.388	-0.2	3.380	18.5
1,3 Dichlorobenzene	0.085	-71.2	0.983	-55.2	0.634	14.4
1,4 Dichlorobenzene	0.989	-65.9	0.890	-49.2	0.596	14.0
1,2 Dichlorobenzene	0.943	-49.3	0.675	13.7	0.632	13.7
cis-1,2-Dichloroethene	2.253	6.0	2.477	-3.4	2.396	10.9
trans-1,2-Dichloroethene	1.762	12.3	2.051	-2.1	2.009	12.6
1,4-Dichloro-2-butene	0.576	-124.1	0.376	-46.4	0.257	20.0
Ethyl methacrylate	0.713	-20.9	0.699	-18.7	0.589	30.9
2-Hexanone	0.495	-6.2	0.532	-14.2	0.466	5.4
Trichlorofluoromethane	2.720	18.0	2.275	31.4	3.317	19.2
1,2,3-Trichloropropane	0.708	-58.9	0.606	-36.1	0.446	24.8
Other Compounds of Interest						
Dimethyl sulfide	2.295	10.7	2.296	10.6	2.570	16.1
Dimethyl disulfide	6.264	-30.9	5.985	-25.1	4.784	12.8
α-Pinene	1.427	-54.7	1.398	-51.6	0.922	10.4
β-Pinene	1.287	-43.7	1.279	-42.8	0.895	12.7
P-Cymene	2.142	-46.9	1.881	-29.0	1.458	15.0

Table 4
Volatiles—Coke Oven
Daily Calibrations Tenax and Tenax-Charcoal

	11/05/91		11/05/91		11/06/91		11/06/91		11/07/91	
	HF870		HF880		HF896		HF912		HF928	
CAA Compounds	**RF 0.25**	**%D**	**RF 0.25**	**%D**	**RF 0.25**	**%D**	**RF 0.25**	**%D**	**RF 0.25**	**%D**
Acrolein	0.026	55.9	0.015	74.1	0.003	94.8	0.000	N/A	0.000	N/A
Acrylonitrile	0.300	0.8	0.279	7.7	0.257	15.0	0.278	7.9	0.305	-0.8
Allyl chloride	0.800	2.7	0.823	-0.1	0.910	-10.7	0.892	-8.4	0.839	-2.0
Benzene	1.294	-10.0	1.188	-1.1	1.305	-11.0	1.150	2.1	1.112	5.4
Bromoform	0.243	-3.5	0.255	-8.6	0.257	-9.5	0.247	-5.2	0.220	6.5
1,3-butadiene	0.280	27.4	0.301	21.9	0.291	24.6	0.383	0.6	0.413	-7.3
Carbon disulfide	5.396	-19.3	4.189	7.4	4.675	-3.4	5.086	-12.5	5.012	-10.8
Carbon tetrachloride	0.447	17.5	0.447	17.5	0.487	10.1	0.556	-2.6	0.591	-9.1
Chlorobenzene	1.032	-6.8	0.989	-2.4	1.013	-4.9	0.923	4.4	0.975	-1.0
Chloroform	3.977	-24.0	3.034	5.5	2.817	12.2	2.689	16.2	2.897	9.7
Cumene (isopropylbenzene)	1.588	-20.0	1.318	0.5	1.392	-5.1	1.616	-22.1	1.443	-9.0
cis-1,3-Dichloropropene	0.778	3.7	0.732	9.5	0.797	1.5	0.811	-0.2	0.771	4.7
trans-1,3-Dichloropropene	0.490	-8.9	0.474	-5.3	0.493	-9.5	0.455	-1.1	0.426	5.0
Ethylbenzene	0.583	-6.1	0.545	0.8	0.565	-2.8	0.519	5.5	0.517	5.9
Dibromomethane	0.215	1.0	0.199	8.0	0.186	14.1	0.235	-8.3	0.203	6.4
1,2-Dichloroethane	2.915	-15.9	2.213	12.0	2.145	14.7	1.719	31.7	1.788	28.9
1,1-Dichloroethane	3.988	-24.9	3.062	4.1	3.253	-1.9	2.813	11.9	0.305	4.5
n-Hexane	3.282	16.2	3.161	19.3	3.470	11.4	3.058	21.9	3.221	17.8
Bromomethane	1.041	-22.7	0.822	3.1	0.790	6.9	0.957	-12.8	1.004	-18.3
Chloromethane	0.892	-2.4	0.555	36.3	0.586	32.7	0.765	12.2	1.396	-60.2
1,1,1-Trichloroethane	0.572	8.7	0.525	16.2	0.561	10.5	0.643	-2.7	0.646	-3.1
2-Butanone	0.029	32.6	0.055	-28.0	0.047	-9.1	0.045	-4.7	0.026	39.1
Iodomethane	1.630	-3.1	1.637	-3.5	1.866	-18.0	1.820	-15.0	2.185	-38.2
4-Methyl-2-pentanone	0.189	31.7	0.027	90.3	0.031	88.9	0.026	90.8	0.023	91.8
Tert-Butyl methyl ether	0.227	44.8	0.232	43.5	0.285	30.7	0.271	33.9	0.284	30.8
Methylene chloride	1.880	-8.8	1.516	12.3	1.734	-0.4	1.828	-5.8	1.816	-5.1
1,2-Dichloropropane	0.491	-5.1	0.451	3.3	0.467	-0.1	0.476	-2.0	0.450	3.7
Styrene	1.180	-7.1	1.078	2.2	1.148	-4.2	1.112	-0.9	1.060	3.8
1,1,2,2-Tetrachloroethane	0.375	-8.0	0.381	-9.8	0.395	-13.8	0.428	-23.2	0.373	-7.3
Tetrachloroethene	0.346	-2.8	0.347	-3.8	0.372	-11.4	0.285	14.5	0.313	6.2
Toluene	0.776	-5.4	0.747	-1.4	0.805	-9.3	0.679	7.8	0.709	3.7
1,1,2-Trichloroethane	0.356	5.0	0.335	10.6	0.345	7.9	0.366	2.2	0.351	6.2
Trichloroethene	0.430	2.7	0.414	6.2	0.421	4.6	0.419	5.1	0.416	5.8
Isooctane	13.637	-16.3	10.905	7.0	11.510	1.9	8.892	24.2	9.469	19.3
Vinyl acetate	0.514	32.3	0.677	10.8	0.782	-3.1	0.712	6.2	0.701	7.6
Vinyl bromide	1.069	19.6	0.991	25.5	1.106	16.9	1.077	19.0	1.152	13.4
Vinyl chloride	1.125	-18.5	0.854	10.0	0.864	9.0	0.950	-0.1	1.024	-7.9
1,1-Dichloroethene	1.375	5.9	1.217	16.7	1.312	10.2	1.433	2.0	1.460	0.1
m-/p-Xylene	0.776	-8.4	0.715	0.3	0.763	-6.1	0.734	-2.4	0.699	2.5
o-Xylene	0.715	-13.0	0.630	0.5	0.664	-5.0	0.659	-4.1	0.622	1.7

Table 4 (continued) **Volatiles—Coke Oven**

Daily Calibrations Tenax and Tenax-Charcoal

	11/05/91 HF 870		11/05/91 HF880		11/06/91 HF896		11/06/91 HF912		11/07/91 HF928	
8240 Compounds	**RF 0.25**	**%D**	**RF 0.25**	**%D**	**RF 0.25**	**%D**	**RF 0.25**	**%D**	**RF 0.25**	**%D**
Acetone	0.571	18.1	0.407	41.7	0.371	46.8	0.428	38.6	0.243	65.2
Bromodichloromethane	0.564	-7.6	0.496	5.4	0.548	-4.4	0.828	-57.7	0.633	-20.7
Chloroethane	0.980	-9.3	0.601	33.0	0.930	-3.7	0.822	8.3	0.711	20.7
2-Chloroethylvinylether	0.055	21.9	0.052	26.0	0.053	25.3	0.049	30.7	0.042	40.4
Dibromochloromethane	0.425	1.1	0.406	5.5	0.411	4.2	0.417	2.8	0.412	4.0
Dichlorodifluoromethane	2.754	-32.7	1.995	3.9	1.826	12.0	1.786	13.9	1.878	9.5
1,3 Dichlorobenzene	0.805	-12.3	0.726	-1.3	0.766	-6.8	0.909	-26.8	0.836	-16.5
1,4 Dichlorobenzene	0.708	-12.1	0.649	-2.8	0.716	-12.5	0.867	-37.4	0.756	-19.8
1,2 Dichlorobenzene	0.699	-6.8	0.695	-6.3	0.724	-10.7	0.873	-33.4	0.812	-24.5
cis-1,2-Dichloroethene	2.105	0.3	1.915	9.3	2.061	2.3	1.898	10.0	1.975	6.4
trans-1,2-Dichloroethene	1.873	3.0	1.632	15.5	1.755	9.1	1.749	9.4	1.812	6.1
1,4-Dichloro-2-butene	0.099	20.8	0.116	6.8	0.105	15.7	0.132	-5.9	0.113	9.2
Ethyl methacrylate	0.370	20.2	0.469	-1.0	0.499	-7.5	0.405	12.7	0.410	11.6
2-Hexanone	0.226	16.7	0.243	10.5	0.305	-12.4	0.223	17.8	0.162	40.5
Trichlorofluoromethane	0.610	70.8	0.347	83.4	0.357	82.9	0.187	91.1	0.165	92.1
1,2,3-Trichloropropane	0.259	-2.3	0.266	-5.4	0.275	-8.7	0.290	-14.8	0.247	2.2
Other Compounds of Interest										
Dimethyl sulfide	1.748	-2.3	1.591	6.8	1.706	0.1	1.838	-7.6	1.628	4.6
Dimethyl disulfide	3.768	12.6	3.313	23.1	3.032	29.7	2.778	35.5	2.481	42.4
α-Pinene	4.203	-23.0	0.957	2.1	1.013	-3.5	1.030	-5.3	0.674	31.1
β-Pinene	1.193	-19.2	1.017	-1.6	1.087	-8.6	1.067	-6.6	0.936	9.5
P-Cymene	2.085	-21.9	1.741	-1.8	1.769	-3.4	2.087	-22.0	1.986	-16.1

Table 5
Volatiles—Coke Oven
Tenax Results Expressed in Micrograms (µg)

	Condition I									Condition II			
	1-S A	1-S B	1-S C	1-S D	2-S A	2-S B	2-S C	2-S D	3-S A	1-S A	1-S B	2-S A	3-S B
CAA Compounds	HF877	HF882	HF884	HF886	HF888	HF891	HF893	HF898	HF926	HF906	HF908	HF919	HF932
Acrolein	–	–	–	–	–	–	–	–	–	–	–	–	–
Acrylonitrile	–	–	–	–	–	–	–	–	–	–	–	–	–
Allyl chloride	–	–	–	–	–	–	–	–	–	–	–	–	–
Benzene	0.079	0.047	0.072	0.046	0.044	4.507	0.047	2.566	0.038	0.093	0.038	0.036	0.024
Bromoform	–	–	–	–	–	–	–	–	–	–	–	–	–
1,3-butadiene	–	–	–	–	–	–	–	–	–	–	–	–	–
Carbon disulfide	0.008	0.006	0.078	0.025	0.041	0.015	0.025	–	0.106	–	0.024	–	0.029
Carbon tetrachloride	–	–	–	–	–	–	–	–	–	–	–	–	–
Chlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–	–
Chloroform	–	–	–	–	–	0.294	–	0.076	–	–	–	–	–
Cumene (isopropylbenzene)	–	–	0.008	–	–	0.011	–	–	–	–	–	–	–
cis-1,3-Dichloropropene	–	–	–	–	–	–	–	–	–	–	–	–	–
trans-1,3-Dichloropropene	–	–	–	–	–	–	–	–	–	–	–	–	–
Ethylbenzene	–	–	0.004	–	–	0.007	–	–	–	–	0.019	–	–
Dibromomethane	–	–	–	–	–	–	–	–	–	–	–	–	–
1,2-Dichloroethane	–	–	–	–	–	–	–	–	–	–	–	–	–
1,1-Dichloroethane	–	–	–	–	–	–	–	–	–	–	–	–	–
n-Hexane	0.012	–	0.014	–	–	–	–	0.010	–	0.011	–	–	–
Bromomethane	–	0.186	–	–	–	–	–	–	–	–	–	–	–
Chloromethane	–	–	–	–	–	–	–	–	–	–	–	–	–
1,1,1-Trichloroethane	0.017	0.027	0.007	–	–	–	–	–	–	–	–	–	–
2-Butanone	–	–	–	–	–	0.078	–	–	–	–	–	–	–
Iodomethane	–	–	–	–	–	–	–	–	–	–	–	–	–
4-Methyl-2-pentanone	–	–	–	–	–	–	–	–	–	–	–	–	–
Tert-butyl methyl ether	–	–	0.001	–	–	–	–	–	–	–	–	–	–
Methylene chloride	0.021	0.008	0.015	0.155	0.013	–	0.013	0.076	0.077	0.265	0.148	0.041	0.138
1,2-Dichloropropane	–	–	–	–	–	–	–	–	–	–	–	–	–
Styrene	–	–	–	–	–	0.005	–	–	–	–	–	–	–
1,1,2,2-Tetrachloroethane	–	–	–	–	–	–	–	–	–	–	–	–	–
Tetrachloroethene	–	–	0.009	–	–	–	–	–	–	–	–	–	–
Toluene	0.065	0.055	0.099	0.025	0.030	0.050	0.045	0.026	0.040	0.108	0.024	0.027	0.024
1,1,2-Trichloroethane	–	–	–	–	–	–	–	–	–	–	–	–	–
Trichloroethene	0.030	0.024	0.010	–	–	0.037	–	0.018	–	0.018	–	–	–
Isooctane	0.028	–	0.020	–	–	–	–	–	0.039	–	–	–	–
Vinyl acetate	–	–	–	–	–	–	–	–	–	–	–	–	–
Vinyl bromide	–	–	–	–	–	–	–	–	–	–	–	–	–
Vinyl chloride	–	–	–	–	–	–	–	–	–	–	–	–	–
1,1-Dichloroethene	–	–	–	–	–	–	–	–	–	–	–	–	–
m-/p-Xylene	0.020	0.015	0.023	0.015	0.014	0.025	0.015	0.014	0.015	0.016	–	0.014	0.014
o-Xylene	0.003	–	0.005	–	–	0.006	–	–	–	–	–	–	–

Table 5 (continued) **Volatiles—Coke Oven**

Tenax Results Expressed in Micrograms (µg)

Page 2

	Condition I									Condition II			
	1-S A	1-S B	1-S C	1-S D	2-S A	2-S B	2-S C	2-S D	3-S A	1-S A	1-S B	2-S A	3-S B
8240 Compounds	HF877	HF882	HF884	HF886	HF888	HF891	HF893	HF898	HF926	HF906	HF908	HF919	HF932
Acetone	–	0.081	–	–	–	0.187	0.093	–	–	–	–	–	–
Bromodichloromethane	–	–	–	–	–	–	–	–	–	–	–	–	–
Chloroethane	–	–	–	–	–	–	–	–	–	–	–	–	–
Dibromochloromethane	–	–	–	–	–	–	–	–	–	–	–	–	–
2-Chloroethylvinylether	–	–	–	–	–	–	–	–	–	–	–	–	–
Dichlorodifluoromethane	–	–	–	–	–	–	–	–	–	–	–	–	–
1,3 Dichlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–	–
1,4 Dichlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–	–
1,2 Dichlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–	–
cis-1,2-Dichloroethene	–	–	–	–	–	–	–	–	–	–	–	–	–
trans-1,2-Dichloroethene	–	–	–	–	–	–	–	–	–	–	–	–	–
1,4-Dichloro-2-butene	–	–	–	–	–	–	–	–	–	–	–	–	–
Ethyl methacrylate	–	–	–	–	–	–	–	–	–	–	–	–	–
2-Hexanone	–	–	–	–	–	–	–	–	–	–	–	–	–
Trichlorofluoromethane	–	–	–	–	–	–	–	–	–	–	–	–	–
1,2,3-Trichloropropane	–	–	–	–	–	–	–	–	–	–	–	–	–
Other Compounds of Interest													
Dimethyl sulfide	–	–	–	–	–	–	–	–	–	–	–	–	–
Dimethyl disulfide	–	–	–	–	–	–	–	–	–	–	–	–	–
α-Pinene	–	–	–	–	–	–	–	–	–	–	–	–	–
β-Pinene	–	–	–	–	–	–	–	–	–	–	–	–	–
P-Cymene	–	0.004	–	–	–	0.010	–	–	–	–	–	–	–

Table 5 (continued) **Volatiles—Coke Oven**

Tenax Results Expressed in Micrograms (µg)

Page 3

	Condition III				Condition IV			
	1-S	1-S	2-S	3-S	1-S	1-S	2-S	3-S
	B	C	B	A	A	C	A	A
CAA Compounds	HF900	HF902	HF921	HF934	HF904	HF916	HF923	HF936
Acrolein	–	243.918	–	–	–	–	–	–
Acrylonitrile	–	–	–	–	–	–	–	–
Allyl chloride	–	–	–	–	–	–	–	–
Benzene	0.080	16.650	0.274	–	12.164	0.139	0.042	0.032
Bromoform	–	–	–	–	–	–	–	–
1,3-butadiene	–	–	–	–	–	–	–	–
Carbon disulfide	0.010	–	–	0.045	–	0.017	–	0.027
Carbon tetrachloride	–	–	–	–	–	–	–	–
Chlorobenzene	–	–	–	–	0.031	–	–	–
Chloroform	–	–	0.096	–	–	–	–	–
Cumene (isopropylbenzene)	–	–	–	–	0.015	–	–	–
cis-1,3-Dichloropropene	–	–	–	–	–	–	–	–
trans-1,3-Dichloropropene	–	–	–	–	–	–	–	–
Ethylbenzene	–	–	–	–	–	0.006	–	–
Dibromomethane	–	–	–	–	–	–	–	–
1,2-Dichloroethane	–	–	–	–	–	–	–	–
1,1-Dichloroethane	–	–	–	–	–	–	–	–
n-Hexane	0.134	–	–	–	0.132	0.015	–	–
Bromomethane	–	–	–	–	0.434	–	–	–
Chloromethane	–	–	–	–	0.612	–	–	–
1,1,1-Trichloroethane	0.016	–	–	–	–	0.017	–	–
2-Butanone	–	–	–	–	–	–	–	–
Iodomethane	–	–	0.088	–	–	–	–	–
4-Methyl-2-pentanone	–	–	–	–	–	–	–	–
Tert-butyl methyl ether	–	–	–	–	–	–	–	–
Methylene chloride	–	–	–	–	–	0.023	–	0.053
1,2-Dichloropropane	–	–	–	–	–	–	–	–
Styrene	–	0.141	–	–	0.038	–	–	–
1,1,2,2-Tetrachloroethane	–	–	–	–	–	–	–	–
Tetrachloroethene	–	–	–	–	–	–	–	–
Toluene	0.100	0.380	0.012	0.016	–	0.082	0.042	0.035
1,1,2-Trichloroethane	–	–	–	–	–	–	–	–
Trichloroethene	0.048	–	0.032	–	–	–	–	–
Isooctane	0.297	–	–	–	–	–	–	–
Vinyl acetate	–	–	–	–	–	–	–	–
Vinyl bromide	–	–	–	–	–	–	–	–
Vinyl chloride	–	–	–	–	–	–	–	–
1,1-Dichloroethene	–	–	–	–	–	–	–	–
m-/p-Xylene	0.010	–	–	–	0.043	0.018	0.015	0.015
o-Xylene	–	–	–	–	0.008	–	–	–

Table 5 (continued) **Volatiles—Coke Oven**

Tenax Results Expressed in Micrograms (µg)

Page 4

	Condition III				Condition IV			
	1-S	1-S	2-S	3-S	1-S	1-S	2-S	3-S
	B	C	B	A	A	C	A	A
8240 Compounds	HF900	HF902	HF921	HF934	HF904	HF916	HF923	HF936
Acetone	–	–	–	–	4.650	–	–	–
Bromodichloromethane	–	–	–	–	–	–	–	–
Chloroethane	–	–	–	–	–	–	–	–
Dibromochloromethane	–	–	–	–	–	–	–	–
2-Chloroethylvinylether	–	–	–	–	–	–	–	–
Dichlorodifluoromethane	–	–	–	–	–	–	–	–
1,3 Dichlorobenzene	–	–	–	–	–	–	–	–
1,4 Dichlorobenzene	–	–	–	–	–	–	–	–
1,2 Dichlorobenzene	–	–	–	–	–	–	–	–
cis-1,2-Dichloroethene	–	–	–	–	–	–	–	–
trans-1,2-Dichloroethene	–	–	–	–	–	–	–	–
1,4-Dichloro-2-butene	–	–	–	–	–	–	–	–
Ethyl methacrylate	–	–	–	–	–	–	–	–
2-Hexanone	–	–	–	–	–	–	–	–
Trichlorofluoromethane	–	–	–	–	–	–	–	–
1,2,3-Trichloropropane	–	–	–	–	–	–	–	–
Other Compounds of Interest								
Dimethyl sulfide	–	–	–	–	–	–	–	–
dimethyl disulfide	–	–	–	–	–	–	–	–
α-Pinene	–	–	–	–	–	–	–	–
β-Pinene	–	–	–	–	–	–	–	–
P-Cymene	–	–	–	–	–	–	–	–

Table 6
Volatiles—Coke Oven
Tenax-Charcoal Results Expressed in Micrograms (µg)

	Condition I									Condition II			
	1-S A	1-S B	1-S C	1-S D	2-S A	2-S B	2-S C	2-S D	3-S A	1-S A	1-S B	2-S A	3-S B
CAA Compounds	HF878	HF883	HF885	HF887	HF889	HF892	HF894	HF910	HF930	HF907	HF909	HF920	HF933
Acrolein	–	–	–	–	–	–	–	–	–	–	–	–	–
Acrylonitrile	–	–	–	–	–	–	–	–	–	–	–	–	–
Allyl chloride	–	–	–	–	–	–	–	–	–	–	–	–	–
Benzene	0.016	–	0.017	0.013	0.008	0.032	0.024	–	–	0.009	0.014	0.016	0.014
Bromoform	–	–	–	–	–	–	–	–	–	–	–	–	–
1,3-butadiene	–	–	–	–	–	–	–	–	–	–	–	–	–
Carbon disulfide	0.008	0.011	–	0.022	–	–	–	–	0.023	–	–	–	–
Carbon tetrachloride	–	–	–	–	–	–	–	–	–	–	–	–	–
Chlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–	–
Chloroform	–	–	–	–	–	–	–	–	–	–	–	–	–
Cumene (isopropylbenzene)	–	–	–	–	–	–	–	–	–	–	–	–	–
cis-1,3-Dichloropropene	–	–	–	–	–	–	–	–	–	–	–	–	–
trans-1,3-Dichloropropene	–	–	–	–	–	–	–	–	–	–	–	–	–
Ethylbenzene	–	–	–	–	–	–	–	–	–	–	–	–	–
Dibromomethane	–	–	–	–	–	–	–	–	–	–	–	–	–
1,2-Dichloroethane	–	–	–	–	–	–	–	–	–	–	–	–	–
1,1-Dichloroethane	–	–	–	–	–	–	–	–	–	–	–	–	–
n-Hexane	–	–	0.008	0.006	0.027	–	0.005	–	0.034	0.009	0.010	–	–
Bromomethane	1.220	0.225	0.565	0.825	0.676	0.985	1.016	0.717	2.022	0.992	1.620	0.897	1.372
Chloromethane	2.423	0.375	0.604	1.189	0.889	1.036	1.163	1.406	2.330	1.498	2.024	1.439	2.926
1,1,1-Trichloroethane	–	–	0.007	–	–	–	–	–	–	–	–	–	–
2-Butanone	–	–	–	–	–	–	–	–	–	–	–	–	–
Iodomethane	0.037	–	–	–	0.035	–	–	–	–	–	–	–	–
4-Methyl-2-pentanone	–	–	–	–	–	–	–	–	–	–	–	–	–
Tert-Butyl methyl ether	–	–	–	–	–	–	–	–	–	–	–	–	–
Methylene chloride	0.241	0.076	0.235	0.345	0.029	0.061	0.061	0.097	0.174	0.221	0.127	0.044	0.328
1,2-Dichloropropane	–	–	–	–	–	–	–	–	–	–	–	–	–
Styrene	–	–	–	–	–	–	–	–	–	–	–	–	–
1,1,2,2-Tetrachloroethane	–	–	–	–	–	–	–	–	–	–	–	–	–
Tetrachloroethene	–	–	–	–	–	–	–	–	–	–	–	–	–
Toluene	0.046	0.056	0.361	0.209	0.143	0.190	0.105	0.105	0.148	0.259	0.077	0.098	0.154
1,1,2-Trichloroethane	–	–	–	–	–	–	–	–	–	–	–	–	–
Trichloroethene	0.008	0.001	–	–	–	–	–	–	–	–	–	–	–
Isooctane	–	–	–	–	0.038	–	–	–	0.035	–	–	–	–
Vinyl acetate	–	–	–	–	–	–	–	–	–	–	–	–	–
Vinyl bromide	–	–	–	–	–	–	–	–	–	–	–	–	–
Vinyl chloride	–	–	–	–	–	–	–	–	–	–	–	–	–
1,1-Dichloroethene	–	–	–	–	–	–	–	–	–	–	–	–	–
m-/p-Xylene	0.004	–	0.004	–	0.002	0.004	0.002	–	–	–	–	–	–
o-Xylene	–	–	–	–	–	–	–	–	–	–	–	–	–

Table 6 **Volatiles—Coke Oven**

Tenax-Charcoal Results Expressed in Micrograms (μg)

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	Condition I									Condition II			
	1-S A	1-S B	1-S C	1-S D	2-S A	2-S B	2-S C	2-S D	3-S A	1-S A	1-S B	2-S A	3-S B
8240 Compounds	HF878	HF883	HF885	HF887	HF889	HF892	HF894	HF910	HF930	HF907	HF909	HF920	HF933
Acetone	0.043	–	–	–	–	0.338	–	–	–	–	–	–	–
Bromodichloromethane	–	–	–	–	–	–	–	–	–	–	–	–	–
Chloroethane	–	–	–	–	–	–	–	–	–	–	–	–	–
Dibromochloromethane	–	–	–	–	–	–	–	–	–	–	–	–	–
2-Chloroethylvinylether	–	–	–	–	–	–	–	–	–	–	–	–	–
Dichlorodifluoromethane	–	–	–	–	–	–	–	–	–	–	–	–	–
1,3 Dichlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–	–
1,4 Dichlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–	–
1,2 Dichlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–	–
cis-1,2-Dichloroethene	–	–	–	–	–	–	–	–	–	–	–	–	–
trans-1,2-Dichloroethene	–	–	–	–	–	–	–	–	–	–	–	–	–
1,4-Dichloro-2-butene	–	–	–	–	–	–	–	–	–	–	–	–	–
Ethyl methacrylate	–	–	–	–	–	–	–	–	–	–	–	–	–
2-Hexanone	–	–	–	–	–	–	–	–	–	–	–	–	–
Trichlorofluoromethane	0.025	0.007	0.118	–	–	–	–	–	–	0.049	–	–	–
1,2,3-Trichloropropane	–	–	–	–	–	–	–	–	–	–	–	–	–
Other Compounds of Interest													
Dimethyl sulfide	–	–	–	–	–	–	–	–	–	–	–	–	–
Dimethyl disulfide	–	–	–	–	–	–	–	–	–	–	–	–	–
α-Pinene	–	–	–	–	–	–	–	–	–	–	–	–	–
β-Pinene	–	–	–	–	–	–	–	–	–	–	–	–	–
P-Cymene	–	–	–	–	–	–	–	–	–	–	–	–	–

Table 6 **Volatiles—Coke Oven**

Tenax-Charcoal Results Expressed in Micrograms (µg)

Page 3

	Condition III				Condition IV			
	1-S	1-S	2-S	3-S	1-S	1-S	2-S	3-S
	B	C	B	A	A	C	A	A
CAA Compounds	HF901	HF903	HF922	HF935	HF905	HF917	HF924	HF937
Acrolein	–	192.081	–	–	–	–	–	–
Acrylonitrile	–	–	–	–	–	–	–	–
Allyl chloride	–	–	–	–	–	–	–	–
Benzene	0.009	0.061	0.022	0.037	0.081	0.014	0.014	–
Bromoform	–	–	–	–	–	–	–	–
1,3-butadiene	–	–	–	–	–	–	–	–
Carbon disulfide	–	–	–	0.036	–	–	–	–
Carbon tetrachloride	–	–	–	–	–	–	–	–
Chlorobenzene	–	–	–	–	–	–	–	–
Chloroform	–	–	–	–	–	–	–	–
Cumene (isopropylbenzene)	–	–	–	–	–	–	–	–
cis-1,3-Dichloropropene	–	–	–	–	–	–	–	–
trans-1,3-Dichloropropene	–	–	–	–	–	–	–	–
Ethylbenzene	–	–	–	–	–	–	–	–
Dibromomethane	–	–	–	–	–	–	–	–
1,2-Dichloroethane	–	–	–	–	–	–	–	–
1,1-Dichloroethane	–	–	–	–	–	–	–	–
n-Hexane	0.054	–	–	0.063	0.018	–	–	–
Bromomethane	1.016	–	1.214	1.671	0.412	0.555	1.534	0.939
Chloromethane	1.491	–	1.838	3.386	0.465	0.564	–	1.352
1,1,1-Trichloroethane	–	–	–	–	–	–	–	–
2-Butanone	–	–	–	–	–	–	–	–
Iodomethane	–	–	–	–	–	–	–	–
4-Methyl-2-pentanone	–	–	–	–	–	–	–	–
Tert-Butyl methyl ether	–	–	–	–	–	–	–	–
Methylene chloride	0.172	0.081	0.041	0.152	0.207	0.130	–	–
1,2-Dichloropropane	–	–	–	–	–	–	–	–
Styrene	–	–	–	–	–	–	–	–
1,1,2,2-Tetrachloroethane	–	–	–	–	–	–	–	–
Tetrachloroethene	–	–	–	–	–	–	–	–
Toluene	0.342	0.341	0.080	0.263	0.660	0.324	0.023	0.081
1,1,2-Trichloroethane	–	–	–	–	–	–	–	–
Trichloroethene	–	–	–	–	–	–	–	–
Isooctane	0032	–	–	–	–	–	–	–
Vinyl acetate	–	–	–	–	–	–	–	–
Vinyl bromide	–	–	–	–	–	–	–	–
Vinyl chloride	–	–	–	–	–	–	–	–
1,1-Dichloroethene	–	–	–	–	–	–	–	–
m-/p-Xylene	0.003	–	–	–	0.004	–	–	–
o-Xylene	–	–	–	–	–	–	–	–

Table 6 **Volatiles—Coke Oven**

Tenax-Charcoal Results Expressed in Micrograms (μg)

Page 4

	Condition III				Condition IV			
	1-S	1-S	2-S	3-S	1-S	1-S	2-S	3-S
	B	C	B	A	A	C	A	A
CAA Compounds	HF901	HF903	HF922	HF935	HF905	HF917	HF924	HF937
Acetone	–	0.759	–	–	0.842	–	–	–
Bromodichloromethane	–	–	–	–	–	–	–	–
Chloroethane	–	–	–	–	–	–	–	–
Dibromochloromethane	–	–	–	–	–	–	–	–
2-Chloroethylvinylether	–	–	–	–	–	–	–	–
Dichlorodifluoromethane	–	–	–	–	–	–	–	–
1,3 Dichlorobenzene	–	–	–	–	–	–	–	–
1,4 Dichlorobenzene	–	–	–	–	–	–	–	–
1,2 Dichlorobenzene	–	–	–	–	–	–	–	–
cis-1,2-Dichloroethene	–	–	–	–	–	–	–	–
trans-1,2-Dichloroethene	–	–	–	–	–	–	–	–
1,4-Dichloro-2-butene	–	–	–	–	–	–	–	–
Ethyl methacrylate	–	–	–	–	–	–	–	–
2-Hexanone	–	–	–	–	–	–	–	–
Trichlorofluoromethane	–	–	–	0.109	–	–	–	–
1,2,3-Trichloropropane	–	–	–	–	–	–	–	–
Other Compounds of Interest								
Dimethyl sulfide	–	–	–	–	–	–	–	–
Dimethyl disulfide	–	–	–	–	–	–	–	–
α-Pinene	–	–	–	–	–	–	–	–
β-Pinene	–	–	–	–	–	–	–	–
P-Cymene	–	–	–	–	–	–	–	–

Table 7
Volatiles—Coke Oven
Condensate Results Expressed in Micrograms per Liter (µg/L)

	Condition I			Condition II			Condition III			Condition IV		
	1-S3	2-S3	3-S3	1-S	2-S	3-S	1-S	2-S	3-S	1-S	2-S	3-S
	ABCD	ABCD	A	A B	A	B	B C	B	A	A C	A	A
CAA Compounds	BA7051	BA7057	BA7116	BA7053	BA7112	BA7117	BA7054	BA7113	BA7118	BA7055	BA7114	BA7119
Acrolein	–	64.605	–	–	–	–	24.014	–	–	39.662	–	–
Acrylonitrile	–	–	–	–	–	–	–	–	–	–	–	–
Allyl chloride	–	–	–	–	–	–	–	–	–	–	–	–
Benzene	–	–	–	–	–	–	–	–	–	–	–	–
Bromoform	–	2.040	–	–	–	–	–	–	–	–	–	–
1,3-Butadiene	–	–	–	–	–	–	–	–	–	–	–	–
Carbon disulfide	–	–	–	–	–	–	–	0.244	–	–	–	–
Carbon tetrachloride	–	–	–	–	–	–	–	–	–	–	–	–
Chlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–
Chloroform	–	–	–	–	–	–	–	–	–	–	–	–
Cumene (isopropylbenzene)	–	–	–	–	–	–	–	–	–	–	–	–
cis-1,3-Dichloropropene	–	–	–	–	–	–	–	–	–	–	–	–
trans-1,3-Dichloropropene	–	–	–	–	–	–	–	–	–	–	–	–
Ethylbenzene	0.291	0.396	0.102	0.102	0.116	0.090	0.392	0.125	0.100	0.275	0.134	0.115
Dibromomethane	0.555	1.503	0.722	0.627	0.665	0.655	0.567	0.679	0.668	0.716	0.640	0.658
1,2-Dichloroethane	–	–	–	–	–	–	–	–	–	–	–	–
1,1-Dichloroethane	–	–	–	–	–	–	–	–	–	–	–	–
n-Hexane	–	–	–	–	–	–	–	–	–	–	–	–
Bromomethane	–	–	–	–	–	–	–	–	–	–	–	–
Chloromethane	–	–	–	–	–	–	–	–	–	–	–	–
1,1,1-Trichloroethane	–	–	–	–	–	–	–	–	–	–	–	–
2-Butanone	0.661	30.664	2.274	3.600	1.789	2.210	2.281	1.580	3.240	5.325	2.644	4.832
Iodomethane	–	–	–	–	–	–	–	–	–	–	–	–
4-Methyl-2-pentanone	–	15.855	–	–	–	–	–	–	–	–	–	–
Tert-butyl methyl ether	–	–	–	–	–	–	–	–	–	–	–	–
Methylene chloride	96.209	25.247	34.407	83.436	18.158	37.186	54.287	23.029	25.608	10.136	23.035	24.958
1,2-Dichloropropane	–	–	–	–	–	–	–	–	–	–	–	–
Styrene	–	–	–	–	–	–	–	–	–	–	–	–
1,1,2,2-Tetrachloroethane	–	3.588	–	–	–	–	–	–	–	–	–	–
Tetrachloroethene	–	–	–	–	–	–	–	–	–	–	–	–
Toluene	33.309	16.542	29.197	27.928	16.404	33.996	31.932	18.991	21.574	7.055	23.391	18.559
1,1,2-Trichloroethane	–	1.028	–	–	–	–	–	–	–	–	–	–
Trichloroethene	–	2.134	–	–	–	–	–	–	–	–	–	–
Isooctane	–	–	–	–	–	–	–	–	–	–	–	–
Vinyl acetate	–	1.932	–	–	–	–	–	–	–	0.494	–	–
Vinyl bromide	–	–	–	–	–	–	–	–	–	–	–	–
Vinyl chloride	–	–	–	–	–	–	–	–	–	–	–	–
1,1-Dichloroethane	–	–	–	–	–	–	–	–	–	–	–	–
m-/p-Xylene	–	0.339	0.391	0.343	0.501	0.391	0.336	0.427	0.364	–	0.440	0.420
o-Xylene	–	–	0.167	–	0.217	0.161	–	0.175	0.175	–	0.200	0.163

Table 7 (continued) **Volatiles—Coke Oven**

Condensate Results Expressed in Micrograms per Liter (µg/L)

	Condition I			Condition II			Condition III			Condition IV		
	1-S3	2-S3	3-S3	1-S	2-S	3-S	1-S	2-S	3-S	1-S	2-S	3-S
	ABCD	ABCD	A	A B	A	B	B C	B	A	A C	A	A
8240 Compounds	BA7051	BA7057	BA7116	BA7053	BA7112	BA7117	BA7054	BA7113	BA7118	BA7055	BA7114	BA7119
Acetone	216.407	129.000	134.702	246.892	70.415	110.018	222.479	107.612	78.948	137.065	107.375	121.166
Bromodichloromethane	–	–	–	–	–	–	–	–	–	–	–	–
Chloroethane	–	–	–	–	–	–	–	–	–	–	–	–
Dibromochloromethane	–	0.438	–	–	–	–	–	–	–	–	–	–
2-Chloroethylvinylether	–	–	–	–	–	–	–	–	–	–	–	–
Dichlorodifluoromethane	–	–	–	–	–	–	–	–	–	–	–	–
1,3 Dichlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–
1,4 Dichlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–
1,2 Dichlorobenzene	–	–	–	–	–	–	–	–	–	–	–	–
cis-1,2-Dichloroethene	–	–	–	–	–	–	–	–	–	–	–	–
trans-1,2-Dichloroethene	–	–	–	–	–	–	–	–	–	–	–	–
1,4-Dichloro-2-butene	–	2.441	–	–	–	–	–	–	–	–	–	–
Ethyl methacrylate	–	4.386	–	0.416	–	–	–	–	–	0.560	–	–
2-Hexanone	–	18.967	0.581	2.159	0.941	0.753	–	0.851	1.230	2.428	0.627	1.937
Trichlorofluoromethane	–	–	–	–	–	–	–	–	–	–	–	–
1,2,3-Trichloropropane	–	6.830	–	–	–	–	–	–	–	0.549	–	0.288
Other Compounds of Interest												
Dimethyl sulfide	–	–	–	–	–	–	1.461	–	–	–	1.042	–
Dimethyl disulfide	–	–	–	–	–	–	–	–	–	–	–	–
α-Pinene	–	–	–	–	–	–	–	–	–	–	–	–
β-Pinene	–	–	–	–	–	–	–	–	–	–	–	–
P-Cymene	–	–	0.211	–	–	–	–	–	–	–	–	–

Table 8
Volatiles—Coke Oven
Field Blank, Laboratory Blank and Laboratory Control Spike for Tenax, Tenax-Charcoal Results Expressed in Micrograms (µg)

CAA Compounds	VOSTBL 110591 HF873	VOSTBL 110591 HF881	VOSTBL 110691 HF897	VOSTBL 110691 HF914	VOSTBL 110791 HF929	LCS/QC T HF874	LCS/QC TC HF876	I-1-S3 FB T/TC HF899	I-2-S3 FB T/TC HF915	IV-1-S3 FB T/TC HF918	IV-2-S3 FB T/TC HF925
Acrolein	–	–	–	–	–	–	–	–	–	–	–
Acrylonitrile	–	–	–	–	–	–	–	–	–	–	–
Allyl chloride	–	–	–	–	–	–	–	–	–	–	–
Benzene	–	–	–	–	–	0.597	0.577	0.032	0.008	–	–
Bromoform	–	–	–	–	–	–	–	–	–	–	–
1,3-butadiene	–	–	–	–	–	–	–	–	–	–	–
Carbon disulfide	–	–	–	–	–	–	–	0.008	–	–	–
Carbon tetrachloride	–	–	–	–	–	–	–	–	–	–	–
Chlorobenzene	–	–	–	–	–	–	–	–	–	–	–
Chloroform	–	–	–	–	–	–	–	–	–	–	–
Cumene (isopropylbenzene)	–	–	–	–	–	–	–	–	–	–	–
cis-1,3-Dichloropropene	–	–	–	–	–	–	–	–	–	–	–
trans-1,3-Dichloropropene	–	–	–	–	–	–	–	–	–	–	–
Ethylbenzene	–	–	–	–	–	–	–	–	–	–	–
Dibromomethane	–	–	–	–	–	–	–	–	–	–	–
1,2-Dichloroethane	–	–	–	–	–	–	–	–	–	–	–
1,1-Dichloroethane	–	–	–	–	–	–	–	–	–	–	–
n-Hexane	–	–	–	–	–	–	–	0.018	0.021	0.011	–
Bromomethane	–	–	–	–	–	–	–	0.055	–	–	–
Chloromethane	–	–	–	–	–	0.218	0.154	–	–	–	–
1,1,1-Trichloroethane	–	–	–	–	–	–	–	–	–	–	–
2-Butanone	–	–	–	–	–	–	–	–	–	–	–
Iodomethane	–	–	–	–	–	–	–	–	–	–	–
4-Methyl-2-pentanone	–	–	–	–	–	–	–	–	–	–	–
Tert-Butyl methyl ether	–	–	–	–	–	–	–	–	–	–	–
Methylene chloride	–	–	–	–	–	–	–	0.095	0.026	–	–
1,2-Dichloropropane	–	–	–	–	–	–	–	–	–	–	–
Styrene	–	–	–	–	–	–	–	–	–	–	–
1,1,2,2-Tetrachloroethane	–	–	–	–	–	–	–	–	–	–	–
Tetrachloroethene	–	–	–	–	–	–	–	–	–	–	–
Toluene	–	0.004	–	–	–	0.639	0.601	–	–	–	–
1,1,2-Trichloroethane	–	–	–	–	–	–	–	–	–	–	–
Trichloroethene	–	–	–	–	–	–	–	–	–	–	–
Isooctane	–	–	–	–	–	–	–	0.032	0.053	0.030	0.026
Vinyl acetate	–	–	–	–	–	–	–	–	–	–	–
Vinyl bromide	–	–	–	–	–	–	–	–	–	–	–
Vinyl chloride	–	–	–	–	–	–	–	–	–	–	–
1,1-Dichloroethene	–	–	–	–	–	–	–	–	–	–	–
m-/p-Xylene	–	–	–	–	–	–	–	–	–	–	–
o-Xylene	–	–	–	–	–	–	–	–	–	–	–

Table 8 (continued) **Volatiles—Coke Oven**

Field Blank, Laboratory Blank and Laboratory Control Spike for Tenax, Tenax-Charcoal Results Expressed in Micrograms (μg)

CAA Compounds	VOSTBL 110591 HF873	VOSTBL 110591 HF881	VOSTBL 110691 HF897	VOSTBL 110691 HF914	VOSTBL 110791 HF929	LCS/QC T HF874	LCS/QC TC HF876	I-1-83 FB T/TC HF899	I-2-83 FB T/TC HF915	IV-1-83 FB T/TC HF918	IV-2-83 FB T/TC HF925
Acetone	–	–	–	–	–	–	–	–	–	–	–
Bromodichloromethane	–	–	–	–	–	–	–	–	–	–	–
Chloroethane	–	–	–	–	–	–	–	–	–	–	–
Dibromochloromethane	–	–	–	–	–	–	–	–	–	–	–
2-Chloroethylvinylether	–	–	–	–	–	–	–	–	–	–	–
Dichlorodifluoromethane	–	–	–	–	–	–	–	–	–	–	–
1,3 Dichlorobenzene	–	–	–	–	–	–	–	–	–	–	–
1,4 Dichlorobenzene	–	–	–	–	–	–	–	–	–	–	–
1,2 Dichlorobenzene	–	–	–	–	–	–	–	–	–	–	–
cis-1,2-Dichloroethene	–	–	–	–	–	–	–	–	–	–	–
trans-1,2-Dichloroethene	–	–	–	–	–	–	–	–	–	–	–
1,4-Dichloro-2-butene	–	–	–	–	–	–	–	–	–	–	–
Ethyl methacrylate	–	–	–	–	–	–	–	–	–	–	–
2-Hexanone	–	–	–	–	–	–	–	–	–	–	–
Trichlorofluoromethane	–	–	–	–	–	–	–	–	–	–	–
1,2,3-Trichloropropane	–	–	–	–	–	–	–	–	–	–	–
Other Compounds of Interest											
Dimethyl sulfide	–	–	–	–	–	–	–	–	–	–	–
Dimethyl disulfide	–	–	–	–	–	–	–	–	–	–	–
α-Pinene	–	–	–	–	–	–	–	–	–	–	–
β-Pinene	–	–	–	–	–	–	–	–	–	–	–
P-Cymene	–	–	–	–	–	–	–	–	–	–	–

Table 9
Volatiles—Coke Oven
Condensate Blanks, Field Blanks and Lab Control Spike
Expressed in Micrograms per Liter (µg/L)

CAA Compounds	Blank BA703	Blank BA710	I-1-S LCS BA704	I-2-S FB BA7052	IV-1-S FB BA7111	IV-2-S FB BA7056	FB BA7115
Acrolein	–	–	–	–	–	21.487	–
Acrylonitrile	–	–	–	–	–	–	–
Allyl chloride	–	–	–	–	–	–	–
Benzene	–	–	76.752	–	–	–	–
Bromoform	0.574	–	–	–	–	–	–
1,3-butadiene	–	–	–	–	–	–	–
Carbon disulfide	0.376	–	–	–	–	–	–
Carbon tetrachloride	–	–	–	–	–	–	–
Chlorobenzene	–	–	–	–	–	–	–
Chloroform	0.568	0.260	–	–	–	–	–
Cumene (isopropylbenzene)	0.417	0.526	0.220	–	–	–	–
cis-1,3-Dichloropropene	0.627	–	–	–	–	–	–
1,3-Dichloropropene	–	–	–	–	–	–	–
Ethylbenzene	0.396	0.612	–	–	0.199	0.365	0.506
Dibromomethane	0.278	0.816	0.618	0.518	0.665	0.904	0.651
1,2-Dichloroethane	–	–	–	–	–	–	–
1,1-Dichloroethane	0.707	0.428	–	–	–	–	–
n-Hexane	–	–	–	–	–	–	–
Bromomethane	–	–	–	–	–	–	–
Chloromethane	–	–	–	–	–	–	–
1,1,1-Trichloroethane	–	–	–	–	–	–	–
2-Butanone	2.651	0.396	–	0.899	0.966	8.802	2.035
Iodomethane	–	1.818	–	–	–	–	–
4-Methyl-2-pentanone	–	–	–	–	–	–	–
Tert-Butyl methyl ether	1.035	–	–	–	–	–	–
Methylene chloride	0.777	0.506	–	94.623	29.355	101.747	27.627
1,2-Dichloropropane	0.421	–	–	–	–	–	–
Styrene	0.475	0.457	–	–	0.188	–	–
1,1,2,2-Tetrachloroethane	1.278	–	–	–	–	–	–
Tetrachloroethene	–	–	–	–	–	–	–
Toluene	0.674	1.156	100.207	39.048	27.454	50.896	26.389
1,1,2-Trichloroethane	0.569	–	–	–	–	–	–
Trichloroethene	–	–	–	–	–	–	–
Isooctane	–	–	–	–	–	–	–
Vinyl acetate	0.910	–	–	–	–	0.998	–
Vinyl bromide	–	–	–	–	–	–	–
Vinyl chloride	–	–	–	–	–	–	–
1,1-Dichloroethene	–	–	–	–	–	–	–
m-/p-Xylene	0.884	0.861	0.271	0.238	0.549	0.312	0.437
o-Xylene	0.445	0.459	–	–	0.276	–	0.186

Table 9 (continued) **Volatiles—Coke Oven**

Condensate Blanks, Field Blanks and Lab Control Spike
Expressed in Micrograms per Liter (µg/L)

CAA Compounds	BA703	BA710	LCS BA704	I-1-S FB BA7052	I-2-S FB BA7111	IV-1-S FB BA7056	IV-2-S FB BA7115
Acetone	20.260	3.786	–	262.070	79.263	259.553	90.386
Bromodichloromethane	0.432	–	–	–	–	–	–
Chloroethane	–	–	–	–	–	–	–
Dibromochloromethane	0.426	–	–	–	–	–	–
2-Chloroethylvinylether	–	–	–	–	–	–	–
Dichlorodifluoromethane	–	–	–	–	–	–	–
1,3 Dichlorobenzene	0.517	0.700	–	–	–	–	–
1,4 Dichlorobenzene	0.561	0.809	–	–	–	–	–
1,2 Dichlorobenzene	0.517	0.772	–	–	–	–	–
cis-1,2-Dichloroethene	0.575	–	–	–	–	–	–
trans-1,2-Dichloroethene	0.315	–	–	–	–	–	–
1,4-Dichloro-2-butene	0.937	–	–	–	–	–	–
Ethyl methacrylate	1.015	0.296	–	–	–	0.974	–
2-Hexanone	2.544	0.860	–	–	–	3.888	0.613
Trichlorofluoromethane	–	–	–	–	–	–	–
1,2,3-Trichloropropane	1.386	0.523	–	–	–	0.717	–
Other Compounds of Interest							
Dimethyl sulfide	–	–	–	–	–	–	–
Dimethyl disulfide	0.451	–	–	–	–	–	–
α-Pinene	–	–	–	–	–	–	–
β-Pinene	–	–	–	–	–	–	–
P-Cymene	0.329	0.555	–	–	–	0.215	–

Table 10
Volatiles—Coke Oven
Tentatively Identified Compounds for Condition I

Tenax

Expressed in Micrograms (µg)

1-S A HF877		1-S B HF882		1-S C HF884		1-S D HF886		2-S A HF888	
Unknown	0.630	Unknown	1.350	Unknown	1.598	Unknown	1.434	Substituted Hydrocarbon	1.570
Siloxane	0.292	Siloxane	0.804	Siloxane	0.387	Siloxane	0.704	Siloxane	0.811
Methyl Furan	0.095	Fluorinated Hydrocarbon	0.617	Silane	0.301	Substituted Hydrocarbon	0.634	Silane	0.274
Siloxane	0.080	Fluorinated Hydrocarbon	0.346	Substituted Hydrocarbon	0.224	Siloxane	0.247	Siloxane	0.212
Substituted Hydrocarbon	0.061	Fluorinated Hydrocarbon	0.335	Siloxane	0.149	Substituted Hydrocarbon	0.220	Siloxane	0.190
Siloxane	0.056	Silane	0.297	Siloxane	0.103	Fluorinated Hydrocarbon	0.192	Substituted Hydrocarbon	0.174
Substituted Hydrocarbon	0.043	Fluorinated Hydrocarbon	0.280	Siloxane	0.100	Fluorinated Hydrocarbon	0.191	Siloxane	0.093
Substituted Hydrocarbon	0.019	Fluorinated Hydrocarbon	0.260	Methyl Furan	0.060	Siloxane	0.184	Siloxane	0.059
Siloxane	0.127	Fluorinated Hydrocarbon	0.260	Siloxane	0.059	Siloxane	0.182	Methyl Furan	0.056
Sulfur Dioxide	21.569	Sulfur Dioxide	11.526	Sulfur Dioxide	8.276	Sulfur Dioxide	34.587	Sulfur Dioxide	26.774
TOTAL	22.972	TOTAL	16.076	TOTAL	11.258	TOTAL	38.576	TOTAL	30.214

Tenax-Charcoal

Expressed in Micrograms (µg)

1-S A HF878		1-S B HF883		1-S C HF885		1-S D HF887		2-S A HF889	
Siloxane	0.120			Siloxane	0.237	Siloxane	0.072	Siloxane	0.145
Siloxane	0.105	No TICs		Siloxane	0.120	Siloxane	0.052	Siloxane	0.141
Siloxane	0.048			Siloxane	0.078	Siloxane	0.031	Siloxane	0.038
Substituted Hydrocarbon	0.027			Substituted Hydrocarbon	0.062	1-phenyl-ethanone	0.024	Sulfur Dioxide	0.477
Substituted Hydrocarbon	0.025			Substituted Hydrocarbon	0.054	Substituted Aromatic	0.026		
1-phenyl-ethanone	0.032			1-Phenyl Ethanone	0.032	Sulfur Dioxide	0.821		
Sulfur Dioxide	0.453			Substd Cyclic HC	0.028				
Benzaldehyde	0.031			Sulfur Dioxide	0.759				
Substituted Hydrocarbon	0.013								
TOTAL	0.854			TOTAL	1.370	TOTAL	1.026	TOTAL	0.801

Condensate

Expressed in Micrograms per Liter (µg/L)

1-S A,B,C,D BA7051		2-S A,B,C,D BA7057		3-S A BA7116
Aldehyde	4.003	Propenenitrile	6.000	No TICs
Aldehyde	3.737	Substituted Benzene	5.230	
TOTAL	7.740	TOTAL	11.230	

Tentatively Identified Compounds for Condition I

Tenax

Expressed in Micrograms (µg)

2-S B HF891		2-S C HF893		2-S D HF898		3-S A HF926	
Siloxane	10.621	Unknown	2.710	Siloxane	3.384	Substituted Hydrocarbon	2.416
Siloxane	9.036	Siloxane	0.679	Siloxane	3.257	Unknown	2.209
Silane	2.618	Siloxane	0.462	Substituted Hydrocarbon	2.999	Siloxane	0.476
Siloxane	1.826	Substituted Hydrocarbon	0.407	Unknown	1.169	Siloxane	0.137
Silanol	1.589	Siloxane	0.158	Siloxane	0.603	Siloxane	0.133
Unknown	0.381	Siloxane	0.152	Trichlorothiophene	0.096	Substituted Hydrocarbon	0.100
Trichlorothiophene	0.287	Silane	0.142	Methyl Furan	0.077	Methyl Furan	0.081
Furan	0.272	Methyl Furan	0.087	Silane	0.018	Siloxane	0.081
Methyl Furan	0.261	Siloxane	0.068	Silane	0.270	Siloxane	0.042
Sulfur Dioxide	24.193	Sulfur Dioxide	25.857	Sulfur Dioxide	32.039	Sulfur Dioxide	50.782
TOTAL	51.085	TOTAL	30.722	TOTAL	43.913	TOTAL	56.457

Tenax-Charcoal

Expressed in Micrograms (µg)

2-S B HF892		2-S C HF894		2-S D HF910		3-S A HF930	
Silanol	2.626	1-Phenyl-Ethanone	0.100	Siloxane	0.092	Siloxane	0.069
Silane	0.811	Siloxane	0.050	Silanol	0.072	Siloxane	0.039
Siloxane	0.373	Siloxane	0.036	Siloxane	0.065	Siloxane	0.037
Siloxane	0.360	Siloxane	0.025	Siloxane	0.043	Substituted Hydrocarbon	0.024
Siloxane	0.161	Sulfur Dioxide	1.064	Sulfur Dioxide	0.306	Unknown	0.128
Silane	0.144	Unknown	0.086	Silane	0.148	Unknown	0.099
Sulfur Dioxide	0.566			Unknown	0.045		
Silane	1.203						
Unknown	0.305						
Unknown	0.758						
TOTAL	7.307	TOTAL	1.361	TOTAL	0.771	TOTAL	0.396

Condensate

Expressed in Micrograms per Liter (µg/L)

Table 11
Volatiles—Coke Oven
Tentatively Identified Compounds for Condition II

Tenax

Expressed in Micrograms (µg)

1-S		1-S		2-S		3-S	
A		B		A		B	
HF906		HF908		HF919		HF932	
Unknown	4.012	Fluorinated Hydrocarbon	0.971	Substituted Hydrocarbon	2.360	Unknown	0.802
Siloxane	0.994	Siloxane	0.797	Unknown	1.415	Siloxane	0.748
Substituted Hydrocarbon	0.640	Fluorinated Hydrocarbon	0.637	Siloxane	0.596	Siloxane	0.220
Siloxane	0.398	Fluorinated Hydrocarbon	0.599	Siloxane	0.161	Siloxane	0.217
Siloxane	0.273	Fluorinated Hydrocarbon	0.566	Siloxane	0.113	Substituted Hydrocarbon	0.170
Siloxane	0.237	Fluorinated Hydrocarbon	0.534	Siloxane	0.098	Methyl Furan	0.118
Silane	0.117	Unknown	0.525	Methyl Furan	0.061	Siloxane	0.036
Silanol	0.090	Fluorinated Hydrocarbon	0.451	Silane	0.024	Substituted Benzene	0.033
Methyl Furan	0.085	Fluorinated Hydrocarbon	0.346	Substituted Hydrocarbon	0.021	Sulfur Dioxide	81.518
Sulfur Dioxide	45.592	Sulfur Dioxide	18.598	Sulfur Dioxide	41.412		
TOTAL	52.437	TOTAL	24.024	TOTAL	46.261	TOTAL	83.862

Tenax-Charcoal

Expressed in Micrograms (µg)

1-S		1-S		2-S		3-S	
A		B		A		B	
HF907		HF909		HF920		HF933	
Siloxane	0.071	Unknown	0.073	Siloxane	0.124	Siloxane	0.055
Siloxane	0.053	Fluorinated Hydrocarbon	0.062	Unknown	1.207	Siloxane	0.050
Siloxane	0.044	Siloxane	0.035	Siloxane	0.076	Siloxane	0.043
1-Phenyl-ethanone	0.041	Siloxane	0.031	Siloxane	0.063	Sulfur Dioxide	1.387
Substituted Hydrocarbon	0.028	Siloxane	0.022	Silane	0.054		
1,1'-Biphenyl	0.025	Sulfur Dioxide	1.660	Silanol	0.027		
Silane	0.022			Substituted Hydrocarbon	0.026		
Substituted Hydrocarbon	0.021			Substituted Hydrocarbon	0.023		
Sulfur Dioxide	1.291			Substituted Hydrocarbon	0.021		
TOTAL	1.597	TOTAL	1.884	TOTAL	1.620	TOTAL	1.536

Condensate

Expressed in Micrograms per Liter (µg/L)

1-S		2-S		3-S
A,B		A		B
BA7053		BA7112		BA7117
Methyl Ethyl Benzene	15.475	Methyl Ethyl Benzene	3.739	No TICs
TOTAL	15.475	TOTAL	3.739	

Table 12
Volatiles—Coke Oven
Tentatively Identified Compounds for Condition III

Tenax

Expressed in Micrograms (µg)

1-S		1-S		2-S		3-S	
B		C		B		A	
HF900		HF902		HF921		HF934	
Unknown	1.713	Substituted Hydrocarbon	16.152	Unknown	1.144	Unknown	1.674
Siloxane	1.420	Silanol	47.221	Siloxane	0.745	Siloxane	0.639
Siloxane	0.559	Unknown	0.806	Substituted Hydrocarbon	0.281	Substituted Hydrocarbon	0.268
Siloxane	0.430	Siloxane	33.871	Siloxane	0.259	Siloxane	0.201
Siloxane	0.283	Siloxane	16.499	Siloxane	0.148	Siloxane	0.166
Substituted Silane	0.234	Siloxane	10.688	Siloxane	0.144	Siloxane	0.113
Siloxane	0.133	Siloxane	10.066	Trichlorothiophene	0.104	Methyl Furan	0.095
Silane	0.065	Substituted Hydrocarbon	2.532	Silane	0.039	Silane	0.072
Substituted Hydrocarbon	1.278	Siloxane	2.286	Silane	0.034	Unknown	0.040
Sulfur Dioxide	38.264	Substituted Hydrocarbon	1.572	Sulfur Dioxide	70.840	Sulfur Dioxide	118.469
TOTAL	44.379	TOTAL	141.693	TOTAL	73.739	TOTAL	121.737

Tenax-Charcoal

Expressed in Micrograms (µg)

1-S		1-S		2-S		3-S	
B		C		B		A	
HF901		HF903		HF922		HF935	
Siloxane	0.077	Siloxane	22.629	Siloxane	0.520	Siloxane	0.048
Siloxane	0.075	Silanol	10.012	Siloxane	0.193	Siloxane	0.041
Unknown	0.046	Substituted Hydrocarbon	1.692	Siloxane	0.068	Substituted Hydrocarbon	0.032
Siloxane	0.036	Silane	0.673	1-Phenyl-Ethanone	0.021	Sulfur Dioxide	1.624
Substituted Hydrocarbon	0.019	Siloxane	0.234	Sulfur Dioxide	1.130	Unknown	0.129
Unknown	0.018	Substituted Hydrocarbon	0.202	Silane	0.729	Siloxane	0.020
Sulfur Dioxide	1.409	Furan	0.146				
		Siloxane	0.133				
		Substituted Benzene	0.123				
		Silane	0.097				
TOTAL	1.679	TOTAL	35.941	TOTAL	2.662	TOTAL	1.893

Condensate

Expressed in Micrograms per Liter (µg/L)

1-S		2-S		3-S3
B,C		B		A
BA7054		BA7113		BA7118
Silanol	42.894	Methyl Ethyl Benzene	4.197	No TICs
Silane	11.455			
Methyl Ethyl Benzene	5.149			
TOTAL	59.498	TOTAL	4.197	

Table 13
Volatiles—Coke Oven
Tentatively Identified Compounds for Condition IV

Tenax

Expressed in Micrograms (µg)

1-S		1-S		2-S		3-S	
A		C		A		A	
HF904		HF916		HF923		HF936	
Siloxane	77.968	Siloxane	1.549	Substituted Hydrocarbon	1.948	Unknown	1.612
Siloxane	28.244	Siloxane	1.211	Unknown	1.322	Siloxane	0.578
Siloxane	25.370	Unknown	1.197	Siloxane	0.592	Substituted Hydrocarbon	0.460
Siloxane	21.664	Siloxane	0.162	Siloxane	0.171	Siloxane	0.161
Silane	20.714	Silane	0.114	Siloxane	0.139	Siloxane	0.140
Silanol	12.758	Silane	0.063	Siloxane	0.114	Methyl Furan	0.139
Siloxane	6.695	Silane	0.062	Unknown	0.107	Substituted Hydrocarbon	0.108
Substituted Benzene	6.318	Substituted Hydrocarbon	0.062	Methyl Furan	0.088	Silane	0.071
Siloxane	6.112	Substd Cyclic HC	0.042	Substituted Hydrocarbon	0.045	Silane	0.027
Substituted Hydrocarbon	3.288	Sulfur Dioxide	0.061	Sulfur Dioxide	35.996	Sulfur Dioxide	49.555
Total	209.131	TOTAL	4.521	Total	40.521	TOTAL	52.852

Tenax-Charcoal

Expressed in Micrograms (µg)

1-S		1-S		2-S		3-S	
A		C		A		A	
HF905		HF917		HF924		HF937	
Siloxane	4.723	Unknown	0.482	Siloxane	0.071	Siloxane	0.072
Silanol	3.432	Siloxane	0.088	Siloxane	0.032	Substd Cyclic HC	0.070
Siloxane	0.601	Siloxane	0.077	Substituted Hydrocarbon	0.032	Siloxane	0.039
Siloxane	0.356	Silane	0.052	Substituted Hydrocarbon	0.028	Siloxane	0.027
Siloxane	0.270	Siloxane	0.031	Siloxane	0.027	Sulfur Dioxide	0.780
Substituted Hydrocarbon	0.140	Substituted Hydrocarbon	0.020	Substituted Hydrocarbon	0.025		
Substituted Hydrocarbon	0.137			Substituted Hydrocarbon	0.022		
Substituted Hydrocarbon	0.078			Sulfur Dioxide	0.921		
Silane	14.524						
Substituted Hydrocarbon	3.539						
TOTAL	27.800	TOTAL	0.750	TOTAL	1.159	TOTAL	0.988

Condensate

Expressed in Micrograms per Liter (µg/L)

1-S		2-S		3-S
A,C		A		A
BA7055		BA7114		BA7119
Silanol	61.616	Methyl Ethyl Benzene	2.872	No TICs
Silane	17.803			
Substituted Hydrocarbon	7.095			
TOTAL	86.515	TOTAL	2.872	

Table 14

Volatiles—Coke Oven

Tentatively Identified Compounds for Tenax and Tenax-Charcoal Lab Blanks, Field Blanks and Lab Control Spikes Expressed in Micrograms (µg)

Lab Blanks

VOSTBLK		VOSTBLK		VOSTBLK		VOSTBLK		VOSTBLK	
HF873		HF881		HF897		HF914		HF929	
No TICs		Unknown	0.119	Unknown	0.233	Silane	0.024	Silane	0.031
						Unknown	0.119	Unknown	0.741
		TOTAL	0.119	TOTAL	0.233	TOTAL	0.143	TOTAL	0.772

Field Blanks

I-1-83 FB T/TC		I-2-83 FB T/TC		IV-1-83 FB T/TC		IV-2-83 FB T/TC	
HF899		HF915		HF918		HF925	
Siloxane	0.052	Unknown	0.076	Subst Hydrocarbon	0.023	Unknown	1.150
Siloxane	0.052	Subst Hydrocarbon	0.039				
1-Phenyl-Ethanone	0.049						
Subst Hydrocarbon	0.024						
Subst Hydrocarbon	0.022						
Siloxane	0.021						
Subst.Hydrocarbon	0.019						
Sulfur Dioxide	1.439						
Benzaldehyde	0.024						
TOTAL	1.702	TOTAL	0.115	TOTAL	0.023	TOTAL	1.150

Lab Control Spikes

LCS/QC T	LCS/QC TC
HF874	HF876
No TICs	No TICs

Table 15
Volatiles-Coke Oven
Tentatively Identified Compounds for Condensate Lab Blanks, Field Blanks and Lab Control Spikes Expresed in Micrograms per Liter (µg/L)

Lab Blanks

VOSTBLK	VOSTBLK
BA703	BA710
No TICs	No TICs

Field Blanks

I-1-83-V-1 FB		I-2-83-V-2 FB	IV-1-83-V-1 FB	IV-2-83-V-2 FB
BA7052		BA7111	BA7056	BA7115
Methyl Ethyl Benzene	3.988	No TICS	No TICs	No TICs
TOTAL	3.988			

Lab Control Spikes

LCS
BA704
No TICs

Table 16
Volatiles-Coke Oven
Laboratory Control Spike Summary Results for Tenax, Tenax-Charcoal and Condensate Analyses

Sample ID	Filename	Amount/ Concentration Spiked	Amount/ Concentration Recovered	%Recovery
Benzene Results				
LCS/QC T	HF874	0.5 µg	0.597 µg	119
LCS/QC TC	HF876	0.5 µg	0.577 µg	115
LCS	BA704	100 µg/L	76.8 µg/L	77
Toluene Results				
LCS/QC T	HF874	0.5 µg	0.639 µg	128
LCS/QC TC	HF876	0.5 µg	0.601 µg	120
LCS	BA704	100 µg/L	100.2 µg/L	100

Table 17
Volatiles—Coke Oven
Surrogate Recovery

Tenax

	Condition I									Condition II			
	1-S	1-S	1-S	1-S	2-S	2-S	2-S	2-S	3-S	1-S	1-S	2-S	3-S
	A	B	C	D	A	B	C	D	A	A	B	A	B
	HF877	HF882	HF884	HF886	HF888	HF891	HF893	HF898	HF926	HF906	HF908	HF919	HF932
1,2-Dichloroethane-d_4	105	90	83	101	80	172	88	131	83	81	89	94	101
4-Bromofluorobenzene	108	111	177	125	121	111	120	117	121	126	97	127	132
Toluene-d_8	116	118	127	117	106	126	119	115	93	108	127	91	86
Benzene-d_6	104	97	101	101	122	137	106	126	79	97	101	89	75
o-Xylene-d_{10}	124	131	121	129	116	68	132	109	104	141	147	127	123

	Condition III				Condition IV					
	1-S	1-S	2-S	3-S	1-S	1-S	2-S	3-S		
	B	C	B	A	A	C	A	A		
	HF900	HF902	HF921	HF934	HF904	HF916	HF923	HF936	Avg.	%RSD
1,2-Dichloroethane-d_4	105	0	82	100	213	77	84	128	99.5	40.6
4-Bromofluorobenzene	99	257	100	126	154	110	126	87	126.3	28.3
Toluene-d_8	115	302	107	80	127	85	99	94	117.1	38.3
Benzene-d_6	101	139	93	76	322	102	89	68	110.6	47.0
o-Xylene-d_{10}	86	192	18	92	154	113	124	92	116.3	29.7

Tenax-Charcoal

	Condition I									Condition II			
	1-S	1-S	1-S	1-S	2-S	2-S	2-S	2-S	3-S	1-S	1-S	2-S	3-S
	A	B	C	D	A	B	C	D	A	A	B	A	B
	HF878	HF883	HF885	HF887	HF889	HF892	HF894	HF910	HF930	HF907	HF909	HF920	HF933
1,2-Dichloroethane-d_4	98	46	90	86	83	79	81	80	101	80	78	70	113
4-Bromofluorobenzene	121	2612	143	130	130	135	129	133	138	134	132	128	141
Toluene-d_8	114	1210	119	115	115	121	117	110	95	116	113	103	93
Benzene-d_6	103	106	104	104	106	106	105	100	67	99	98	91	74
o-Xylene-d_{10}	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A

	Condition III				Condition IV					
	1-S	1-S	2-S	3-S	1-S	1-S	2-S	3-S		
	B	C	B	A	1A	1C	2A	3A		
	HF901	HF903	HF922	HF935	HF905	HF917	HF924	HF937	Avg.	%RSD
1,2-Dichloroethane-d_4	87	47	90	108	83	79	81	78	82.8	19.3
4-Bromofluorobenzen	125	149	134	137	134	131	134	129	133.0	4.7
Toluene-d_8	115	117	104	89	118	104	101	122	110.0	8.8
Benzene-d_6	102	169	93	69	102	89	85	111	99.2	20.4
o-Xylene-d_{10}	N/A	N/A	N/A	N/A	N/A	N/A	N/A	132	132.0	N/A

Table 17 (continued)

Volatiles—Coke Oven

Surrogate Recovery

Condensate

	1-S	2-S	3-S	1-S	2-S	3-S	1-S	2-S	3-S	1-S	2-S	3-S		
	ABCD	ABCD	A	A,B	A	B	B C	B	A	A C	A	A		
	BA7051	BA7057	BA7116	BA7053	BA7112	BA7117	BA7054	BA7113	BA7118	BA7055	BA7114	BA7119	Avg.	%RSD
1,2-Dichloroethane-d_4	86	90	99	87	90	96	85	93	90	85	98	100	91.5	6.1
4-Bromofluorobenzene	105	100	111	104	111	113	103	111	111	98	124	110	108.4	6.2
Toluene-d_8	127	119	119	124	119	118	121	116	111	120	133	113	120.0	4.9
Benzene-d_6	91	82	146	85	131	139	86	140	149	83	136	158	119.0	25.6

Tenax and Tenax/Charcoal Blanks/Field Blanks/LCS

	VOSTBL	VOSTBL	VOSTBL	VOSTBL	VOSTBL	LCS/QC	LCS/QC	I-1-S3	I-2-S3	IV-1-S3		
	110591	110591	110691	110691	110791	T	TC	FB T/TC	FB T/TC	FB T/TC		
	HF873	HF881	HF897	HF914	HF929	HF874	HF876	HF899	HF915	HF918	Avg.	%RSD
1,2-Dichloroethane-d_4	97	101	80	92	87	109	108	85	97	78	93.4	11.6
4-Bromofluorobenzene	125	119	122	126	132	121	118	129	135	125	125.2	4.3
Toluene-d_8	120	113	116	102	96	115	113	114	107	106	110.3	6.7
Benzene-d_6	108	99	101	92	74	110	109	99	82	94	96.7	12.1
o-Xylene-d_{10}	138	126	127	125	N/A	135	N/A	135	129	119	129.0	4.9

Condensate Blanks/Field Blanks/LCS

			I-S	I-S	V-S	IV-S			
	Blank	Blank	LCS	FB	FB	FB	FB		
	BA703	BA710	BA704	BA7052	BA7111	BA7056	BA7115	Avg.	%RSD
1,2-Dichloroethane-d_4	87	88	88	88	88	86	99	89.2	4.7
4-Bromofluorobenzene	111	112	105	103	110	100	110	107.2	4.3
Toluene-d_8	136	127	128	126	119	115	116	123.8	6.0
Benzene-d_6	102	118	90	87	127	86	136	106.6	19.4

CASE NARRATIVE

Triangle Laboratories, Inc.
801 Capitola Drive
Durham, N.C. 27713
(919) 544-5729

DATE: December 20, 1991

CLIENT P.O. NO: 68010104

TLI NO: 90003

OBJECTIVE: Twenty-one Tenax/Tenax-Charcoal VOST tube pairs, four field blank pairs, and two laboratory control spikes (LCS) for quantitative analysis of benzene and toluene and semi-quantitative analysis of Clean Air Act volatile compounds and tentatively identified compounds (TICs).

METHOD:

The VOST tube samples were analyzed according to the guidelines of Methods 8240 and 5040. The internal standards bromochloromethane, 1,4-difluorobenzene, and chlorobenzene-d5 were added in the amount of 0.25 micrograms (ug) immediately prior to analysis by GC/MS. The surrogate standards toluene-d8, 1,2-dichloroethane-d4, benzene-d6, and 4-bromofluorobenzene were added in the amount of 0.25 ug immediately prior to analysis by GC/MS. The Tenax VOST tubes were prespiked with .25 ug of o-xylene-d10 before sampling.

The GC/MS analysis conditions are listed below:

VOLATILES:

Purge and trap:	Tekmar LSC-2000
Purge:	11 min.
Desorb Temperature:	240 C
Desorb Time:	2 min.

GC CONDITIONS:

Column:	30 m x .53 mm x 0.3u J&W DB624
Program:	-30 C hold .5 min. to 45 C at 10 C/min, to 90 C at 6 C/min, hold 4 min to 200 at 15 C/min.

MS CONDITIONS:

Instrument:	VG TRIO-1 (VOST tubes) Lab Base data system
Scan:	35-350 amu at 1s/scan
Source temperature:	180 C
Interface:	Jet Separator, 200 C

CASE NARRATIVE
Triangle Laboratories, Inc.
801 Capitola Drive
Durham, N.C. 27713
(919) 544-5729

REPORT:

Enclosed with the case narrative are copies of all client paperwork, the chain of custody sheets, sample log-in sheets, instrument work sheets, and log book pages.

The data are reported as quantitation reports, TIC reports, chromatograms, interim reports, and spectra of detected target analytes and TICs. The quantitation report header gives the sample and calibration injection ID, as 'file name' and 'RF file' respectively. The sample name, TL1 project number, date of report, and analysis date are also listed in the quantitation report header. The raw areas and scan numbers found on the quantitation report are from the interim report. The response factors used are the average response factors from the initial calibration. All initial and continuing calibration data is located in the back of the data package. The ISID is the internal standard identifier. Those compounds matched to chlorobenzene-d5, for example, are flagged with the ISID number 30. The amounts for the target compounds are reported in ug. The sample calculations are listed below. If the target compound is detected, a code of 'D' is reported. If the target compound is detected but below the quantitation limit, a code of 'E' or estimated is reported. If the target compound is not detected, a code of 'ND' or not detected is reported. Amounts reported for target compounds that are not detected are calculated using an area of 20 counts. Compounds flagged with the code 'IS' are internal standards.

In addition to the quantitation report, a tentatively identified compound report is also present. The TIC report includes the name, scan number, area, scan # of internal standard, amount of internal standard, and the amount in ug. Below this information the internal standards are listed with their scan number and area. The amounts of the TICs should be considered estimates because they are calculated using the total ion current areas of the internal standard. These TICs were searched against both the CAA and NBS libraries. The three best matches were found from each library, and from this information a tentative identification was assigned. All of the spectral searches are included in the data package behind the spectra of target analytes.

CASE NARRATIVE

Triangle Laboratories, Inc.
801 Capitola Drive
Durham, N.C. 27713
(919) 544-5729

RESULTS:

VOST tubes for samples were run separately while Tenax/Tenax-Charcoal portions of field blanks were run in tandem as per your request. The requested Laboratory Control Spike was not run in tandem.

The VOST tube for sample II-3-S3-V-3A T contained moisture causing the run to be lost. Therefore, archived sample II-3-S3-V-3B was run in its place.

Analysis of benzene and toluene is quantitative. Although concentrations for all analytes are reported, the calibrations are only good for benzene and toluene so all other analyte results should be considered semi-quantitative estimates only.

All internal standard areas were outside of quality control limits for samples II-1-S3-V-1B T/TC and III-1-S3-V-1C T. Chlorobenzene-d5 and 1,4-difluorobenzene were out of quality control limits for samples III-1-S3-V-1C TC and IV-1-S3-V-1A T. Bromochloromethane was outside quality control limits for III-3-S3-V-3A T and IV-3-S3-V-3A T. All other internal standard areas for samples, field blanks, laboratory blanks and the laboratory control spike were within normal quality control limits.

There are no quality control criteria for the surrogate recovery of 4-bromofluorobenzene for this matrix or for o-xylene-d10. The surrogate standard, 1,2-dichloroethane-d4 was outside quality control percent recovery criteria of 50-150% for samples I-1-S3-V-1B TC, I-2-S3-V-2B T, III-1-S3-V-1C TC, A,D IV-1-S3-V-1A T and was not detected in sample III-1-S3-V-1C T due to matrix interference. Toluene-d8 was outside acceptable criteria for samples I-1-S3-V-1B TC and III-1-S3-V-1C TC and benzene-d6 recoveries were high for samples III-1-S3-V-1C TC and IV-1-S3-V-1A T. All other surrogate recoveries were within quality control criteria for all samples and blanks. O-xylene-d10 was only prespiked into Tenax tube portions. O-xylene-d10 detected in Tenax-Charcoal tubes may be due to breakthrough from the prespiked Tenax tubes.

Sample IV-3-S3-V-3A TC was accidentally spiked with 16.7 ug of internal standards and o-xylene-d10 and with 33.4 ug of the other surrogate standards. All surrogate recoveries are within acceptable limits for this method so this should not have significantly affected the results.

CASE NARRATIVE

Triangle Laboratories, Inc.
801 Capitola Drive
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(919) 544-5729

Sample I-1-S3-V-1B TC was cracked and so was repacked after it was spiked with internal and surrogate standards. This does not appear to have affected the internal standard areas, however this may account for the low 1,2-dichloroethane-d4 and the unusually high toluene-d8 and 4-bromofluorobenzene recoveries.

No target analytes were detected in the laboratory blanks. There is, however, contamination of sulfur dioxide and silane reported as TICs in one or more blanks. This contamination may be attributed to carryover due to the high levels of these TICs which were detected in preceeding runs. The first blank run did not have any contamination. Although these TICs are partially qualitative, these TICs should not be considered truly present in the native samples associated with these blanks unless detected at levels above five times the contamination in the blank.

Toluene amounts did not exceed the calibration range for any samples. Benzene amounts did exceed the calibration range for samples I-2-S3-V-2B T, I-2-S3-V-2D T, III-1-S3-V-1C T, and IV-1-S3-V-1A T. Although chloromethane, bromomethane, acrolein, and acetone are reported with amounts above 1.000 ug for some samples, these should be considered qualitative only.

There were several large TICs in most samples. Most TICs were either silicon-containing siloxanes, silanes, or silanols or were substituted hydrocarbons. Sulfur dioxide was detected at high, often saturated levels in most samples. This often formed a hump in the chromatogram which caused interference with early eluting target analytes and may have masked their presence in some samples. There was a large amount of matrix interference in samples III-1-S3-V-1C T/TC which caused most analytes which may have been present as well as the surrogate, 1,2-dichloroethane-d4 to be not detected.

Both the Tenax and Tenax-Charcoal portions of the Laboratory Control Spike were contaminated with chloromethane, however, recoveries of benzene and toluene were within acceptable limits.

SAMPLE CALCULATIONS:

$$\text{response factor} = \frac{(\text{area analyte ical}) * (\text{amt IS ical})}{(\text{area IS ical}) * (\text{amt analyte ical})}$$

CASE NARRATIVE

Triangle Laboratories, Inc.
801 Capitola Drive
Durham, N.C. 27713
(919) 544-5729

Amount in ug:

$$\text{amount of analyte} = \frac{(\text{area analyte in sample}) * (\text{amt IS})}{(\text{area IS in sample}) * (\text{avg RF})}$$

ical = initial calibration
IS = internal standard
amt IS ical = amount of internal standard in the ical = 0.25 ug
amt analyte ical = amount of analyte in the ical = .1 to 1.0 ug
amt IS = amount of internal standard added to the sample =0.25 ug
RF= the response factor from the initial calibration

For Triangle Laboratories, Inc.,

Laboratory Management	Quality Assurance Unit	Report Generation/ Quality Control
	Penny Brock	Eileen Winchester
Bob Smith Process Control Mgr.	Penny Brock QA Officer	Eileen Winchester Data Reviewer

CASE NARRATIVE
Triangle Laboratories, Inc.
801 Capitola Drive
Durham, N.C. 27713
(919) 544-5729

DATE: December 9, 1991

CLIENT P.O. NO: 68010104

TLI NO: 90003

OBJECTIVE: Sixteen combined VOST tube condensate samples and one laboratory control spike (LCS) for quantitative analysis of benzene and toluene and qualitative analysis of Clean Air Act volatile compounds and tentatively identified compounds (TICs).

METHOD:

The VOST tube condensate samples were analyzed according to the guidelines of Methods 8240 and 5040. The internal standards bromochloromethane, 1,4-difluorobenzene, and chlorobenzene-d5 were added in the amount of 0.25 micrograms (ug) immediately prior to analysis by GC/MS. The surrogate standards toluene-d8, 1,2-dichloroethane-d4, benzene-d6, and 4-bromofluorobenzene were added in the amount of 0.25 ug immediately prior to analysis by GC/MS.

The GC/MS analysis conditions are listed below:

VOLATILES:

Purge and trap:	Tekmar LSC-2000
Purge:	11 min.
Desorb Temperature:	180 C
Desorb Time:	4 min.

GC CONDITIONS:

Column:	30 m x .53 mm x 0.3u J&W DB624
Program:	0 C hold 4 min. to 105 C at 6 C/min to 150 C at 24 C/min

MS CONDITIONS:

Instrument:	VG 12-250, Lab Base data system
Scan:	35-300 amu at 1s/scan
Source temperature:	180 C
Interface:	Jet Separator, 160 C

CASE NARRATIVE
Triangle Laboratories, Inc.
801 Capitola Drive
Durham, N.C. 27713
(919) 544-5729

REPORT:

Enclosed with the case narrative are copies of all client paperwork, the chain of custody sheets, sample log-in sheets, instrument work sheets, and log book pages.

The data are reported as quantitation reports, TIC reports, chromatograms, interim reports, and spectra of detected target analytes and TICs. The quantitation report header gives the sample and calibration injection ID, as 'file name' and 'RF file' respectively. The sample name, dilution factor, TLI project number, date of report, and analysis date are also listed in the quantitation report header. The raw areas and scan numbers found on the quantitation report are from the interim report. The response factors used are from the continuing calibration. All initial and continuing calibration data is located in the back of the data package. The ISID is the internal standard identifier. Those compounds matched to chlorobenzene-d5, for example, are flagged with the ISID number 30. The concentrations for the target compounds are reported in ug/L. The sample calculations are listed below. If the target compound is detected, a code of 'D' is reported. If the target compound is detected but below the quantitation limit, a code of 'E' or estimated is reported. If the target compound is not detected, a code of 'ND' or not detected is reported. Concentrations reported for target compounds that are not detected are calculated using an area of 20 counts. Compounds flagged with the code 'IS' are internal standards.

In addition to the quantitation report, a tentatively identified compound report is also present. The TIC report includes the name, scan number, area, scan # of internal standard, amount of internal standard, and the concentration in ug/L. Below this information the internal standards are listed with their scan number and area. The concentrations of the TICs should be considered estimates because they are calculated using the total ion current areas of the internal standard. These TICs were searched against both the CAA and NBS libraries. The three best matches were found from each library, and from this information a tentative identification was assigned. All of the spectral searches are included in the data package behind the spectra of target analytes.

CASE NARRATIVE
Triangle Laboratories, Inc.
801 Capitola Drive
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RESULTS:

Condensate samples from the same day under the same conditions were combined for GC/MS analysis per your request. The VOST tube for sample II-3-S3-V-3A contained moisture and the run was lost. Therefore, to maintain consistency between VOST tube and condensate samples reported, the condensate sample II-3-S3-V-3B was run in place of sample II-3-S3-V-3A.

Analysis of benzene and toluene is quantitative. Although concentrations for all analytes are reported, the calibration is only good for benzene and toluene so all other analyte results should be considered qualitative and advisory only.

All internal standard areas for all samples, blanks, laboratory blanks and the laboratory control spike were within normal quality control limits.

There are no quality control criteria for the surrogate recovery of 4-bromofluorobenzene. All other surrogate recoveries were within quality control criteria for all samples and blanks.

Several target analytes were detected in the laboratory blanks at levels below the quantitation limit. This is probably due to carryover from the calibration run immediately before the blank. In addition, acetone was detected in the laboratory blank dated 11/11/91. Although this is qualitative, acetone should not be considered truly present in the native samples associated with this blank unless detected at levels above five times the contamination in the blank.

Benzene and toluene concentrations did not exceed the calibration range for any samples. Although some analytes are reported with concentrations above 200 ug/L, these are qualitative only.

There were not many TICs in the samples although CAA compounds were detected as TICs in some samples.

CASE NARRATIVE
Triangle Laboratories, Inc.
801 Capitola Drive
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(919) 544-5729

SAMPLE CALCULATIONS

$$\text{response factor} = \frac{(\text{area analyte ccal}) * (\text{amt IS ccal})}{(\text{area IS ccal}) * (\text{amt analyte ccal})}$$

Amount in ug/L:

$$\text{amount of analyte} = \frac{(\text{area analyte in sample}) * (\text{amt IS})}{(\text{area IS in sample}) * (\text{RF}) * (\text{vol})}$$

ccal = continuing calibration
IS = internal standard
amt IS ccal = amount of internal standard in the ccal = 0.5 ug
amt analyte ccal = amount of analyte in the ccal = 0.5 ug
amt IS = amount of internal standard added to the sample =0.25 ug
RF= the response factor from the continuing calibration
vol = volume of condensate purged

For Triangle Laboratories, Inc.,

Laboratory Management	Quality Assurance Unit	Report Generation/ Quality Control
William J. Waddell, Jr.	Wanda Antel	Eileen Winchester
Operations Manager	QA Officer	Data Reviewer

Product Description: Pressure Transducer

FURNESS CONTROLS PRESSURE STANDARD.

FRS4 PRODUCT DESCRIPTION.

The FRS4 (Furness Controls Reference Standard) is a high resolution low pressure standard directly traceable to national standards via linear and mass measurement.

The system consists of four units and, when split is very portable.

These units are:

1. The measuring piston and cylinder.
2. The balance with digital readout.
3. A set of reference weights.
4. The pneumatic pressure supply.

The measuring piston assembly is mounted on the balance, the two together forming the pressure measuring system.

The reference weights are used to verify the accuracy of calibration of the balance.

The pressure supply unit controls the gas pressure / flow applied to the top of the piston assembly and the output line.

In use pressurised gas (normally air or nitrogen) is fed to the top of the piston. The flow of gas is regulated to match that lost through the gap between the cylinder and piston. The pressure on top of the piston results in a force which is measured by the balance and displayed as grams. As the cross sectional area of the piston and cylinder are known the pressure in N/m2 (Pa) can be calculated.

The cross sectional area of the piston and cylinder assembly and the weights are veryfied as traceable to national standards by accredited B.C.S. laboratories.

The balance is then calibrated using the weights. Correction for local gravity and other variations can be made by
either adding factors in the final pressure calculation
or by calculating an overall factor to vary the calibration weight to incorporate this factor.

The balance interfaces with any computor via the inbuilt RS232 / V24 communications link. Readings can be transfered wihtout human error.

MEASURING PISTON ASSEMBLY.

This assembly consists of the piston, the cylinder, the piston support elements, the overpressure check elements and the pneumatic connectors.

The piston of the 100 cm square unit is of hollow construction in stainless steel. (10 cm square or smaller would be solid) This keeps the weight to less than 2 kg. The working diameter is hard chromed and ground 0.05 mm less than that required for the nominal cross section. The cavety is open to ambient pressure. The center bore holds some of the overpressure elements.

The cylinder is in stainless steel with the inside diameter hard chromed and ground 0.05 mm larger in diameter than that required for the 100 cm square cross section. One end is closed with a lid which has a take off for the reference pressure. Two grooves are machined on the inside of the cylinder, one near each end with gas inlet and outlet holes taken through to the outside diameter. In use pressurised gas is fed through the groove near the enclosed end and exhausted to atmosphere or reference pressure level through the other groove.

The piston is mounted inside the cylinder and held concentric by the piston mounting elements. "Flextures" are mounted to each end of the piston and the cylinder. These are linked by two levers. The piston does not touch any part of the cylinder, although the clearance is only 0.05 mm. For correctly assembled units this holds true for any position. End stops prevent the piston from moving to far along the axis and thus eliminate possible damage or wear due to touching the cylinder wall. The only change in diameter of piston or cylinder is due to ageing of materials, accidental damage or contamination do to use of dirty gas.

To safeguard the balance mechanism against damage due to over pressure the plunger transfering the resultant force from the piston to the balance is sprung loaded and retracts at approximatly 130 % full load.

BALANCE WITH DIGITAL READOUT

The balance is a digital precision balance mounted in a custom designed cast alluminium enclosure. This allowes for very rigid mounting points for the piston assembly and near leaktight enclosure of all pressure balance elements. Adjustable feet and a level indicator are provided. The appature in the base is for access to the weigh pan hanger. This is used to calibrate the balance and to verify the accuracy of the balance mechanism and piston effects. This appature can be sealed when checks have been completed.

The angled front panel contains the digital display, the ON/OFF, PRINT and TARE buttons and the access hole for the program lock. The top plate has the mounting points for the measuring piston assembly, pneumatic connections to the cylinder, pneumatic connections for the pressure output, the vent valve and the top cover.

The rear panel holds the flow input and return connections, the power input plug, the level indicator, the RS232 and the temperature sensor sockets.

REFERENCE WEIGHTS

A set of weights is required for two reasons. The first: To check and verify the accuracy of the electronic balance and the second: To set the calibration of the balance allowing for small discrepancies in piston diameter and local gravity variation.

For least uncertainty high quality stainless steel weights are used. They have to be certified traceable to the national standards by a B.C.S. laboratory.

Four 1 kg, one 500 g and four 100 g weights are the best combination. Small "make up" weights are also required to allow for any deviation of the piston area from the nominal 100 or 10 cm square. Local variation in the gravitational force can also be cancelled if the "make up" weight has been corrected for this. Another small correction for the floatation effect of the weights in the surrounding air can be accomodated too. This would have to be calculated for different barrometric pressures to obtain best possible accuracy.

PNEUMATIC PRESSURE SUPPLY.

Various means of supplying gas pressure / flow are possible. The cheapest is a unit that uses clean, dry compressed air and regulates this to a constant pressure. A needle valve is used to adjust the flow of air between zero and approximatly 5 litres per minute. As the pressure on the mesuring piston is the result of the supply pressure and the air flow, it can be seen that any variation in this supply pessure will affect the balance pressure. At very low pressure levels the ratio of supply pressure to piston pressure is extremely large and results in little or no fluctuation. At the 4000 Pa end some unsteadiness can be seen. It is small enough. ie. typically 0.01% of reading so that for commercial calibration any increase in uncertainty is grossly outweighed by convenience of use. In the next best method the compressed air is replaced by a compressed gas cylinder. Nytrogen is the preferred one since it has near identical properties to air. A flow restrictor is used to reduce the pressure from between 100 and 2000 PSI down to a working one of 4000 Pa with a resultant flow of 5 litres of gas. This flow restrictor has to be kept at 20 degree C to avoid any fluctuation of pressure and flow.

Both methods require for the atmosphere to be used as the reference level. This can cause problems when windy weather causes violent changes. The third method overcomes these problems but is expensive and throws up different problems.

A long pump piston is moved by an electric motor into a cylinder and thus displaces a measured amount of gas. The whole assembly is mounted inside a pressure casing. A positive displacement in the cylinder results in an equal negative one in the pressure casing. The pressure reference standard is connected between the cylinder and the pressure casing. As the gas flows through the 0.05 mm annulus in the measuring piston assembly it creates a differential pressure proportional to the speed of the pump piston.

The whole system is now isolated from any atmospheric influence. The biggest disadvantage is the limited travell of the pump piston which restricts the length of time the reference pressure can be held at a set pressure. At very low pressures the speed of the pump piston is extremly slow. This gives longer cycle times but requires very accurate, jerk free movement of the pump piston. This option is not yet available.

Consideration of the uncertainties of pressure measurement associated with the FRS4 Pressure standard.

Uncertainties of pressure measurement with the FRS-4 system involves the following elements:

1) *A piston and cylinder arrangement of known cross-sectional area (usually 100 cm2)*
2) *The measurement of axial thrust produced by an introduced gas flow to the 'cylinder head'. This thrust measurement is carried out using an electronic precision balance. (The usual range is 0 to 4000 grams).*
3) *The axial and radial alignement of the piston and the balance mechanism.*
4) *The accuracy of the check weights and their application to the pressure measuring system.*
5) *Local Gravity effets, temperature and atmospheric pressure will have to be considered although their effect is very small.*
6) *The pressure / flow supply unit stability. The theory of flow between parallel planes as applied to the FRS4 Pressure Standard has to be considered also.*

Traceability to National Standards of the FRS-4 Pressure Standard.

Traceability is established and maintained by the following fundamental measurements:

a) *Linear measurement of piston / cylinder diameter.*

b) *The measurement of mass or weight.*

Uncertainty of Traceability.

1.1) Piston / cylinder uncertainty for a 100 cm2 unit:

The diameter of the piston and the cylinder have been measured and certified by the Surface Flatness Company, BCS approval number 0067 or Micron Metrology, No 0177 The uncertainty of measurement is defined as +/- 0.003 mm. The average of measurements of the 100 cm2 piston/cylinder is confirmed as typically 112.8357 mm diameter (average of 6 measurements each for piston and cylinder).

The nominal piston area = 3.1416 x d2 = 99.996 cm2
4

The maximum uncertainty of piston and cylinder areas is: the effective diameter of the piston assy + / - .003mm

max. area,	11.28357 + .0003 cm dia =	100.00369 cm2
min. area,	11.28357 - .0003 cm dia =	99.99075 cm2
Hence the Area uncertainty is		0.01294 cm2

This is 0.013 % or +/- 0.0065 % of nom. area.

Note: For best possible uncertainty the piston and the cylinder require a larger number of measurements in at least 4 positions along the

1.2) Temperature effect on piston area.

Coefficient of expansion.

a (linear) = 16 x 10 -6 mm /xC
for piston and cylinder material used.

a (superficial) = 32 x 10-6 mm2/xC or 0.0032 % /xC

ie. for temperature maintained within +/- 0.5 xC with an uncertainty of +/- 0.5 xC ,ie within +/- 1 xC total
the area temperature effect is +/- 0.0016 % .

2.1) Uncertainty of axial thrust measurement.

The balance unit (Sartorius U 4800P) used for the measurement of the axial thrust generated by the piston has the following specification quoted:

Range	0 - 600	1200	3000	4800 g
Resolution	+/- 0.01	0.02	0.05	0.1 g
Standard deviation <	+/- 0.01	0.01	0.02	0.03 g

As resolution is the same or larger than the standard deviation the resolution is the limiting figure.

Max. range change / xC is +/- 3 x 10-6 between 283 and 303 xK

Or	+/- 0.0018	0.0036	0.009	0.0144g

3,1 The resultant force on the the balance mechanism with an error of alignement of n x between the axis of the piston and the balance mechanism is the thrust x cos n.

This gives the following errors:

n	0.1	0.2	0.4	0.6
Error %	0.00015	0.0006	0.0024	0.0055

The two case components responsible for the alignement of the piston with the balance mechanism are machined parallel to better than 0.1 mm over 300 mm and the piston unit is better than 0.02 mm over 120 mm. The maximum angular error expected is therefore less than 0.1x resulting in an uncertainty of less than 0.00015 %.

4.1) The reference weights used to set the FRS-4 standard and to check the accuracy of the same, are traceable to National Standards, currently via the South Yorkshire Trading Standards Unit. (BCS Accreditation Number 0134) Class C calibration.

The quoted weight and uncertainty figures quoted are:

Nominal	Measured	Uncertainty +/-	
1000 g	1000.001 g	0.003 g	.0003%
500 g	500.0002g	0.0015g	.0003%
100 g	99.9999g	0.0003g	.0003%

Higher specification class B or A certificate is available if

4.2) The "make up" weight used with 2 of 1000 g calibration weights is 1) to allow for deviation from the ideal piston assy area.
2) to allow for local gravity and
3) to allow for floatation effect on the weights.
the nominal value for this is 40 g. The uncertainty with equipment available at FCL is maximum 0.002g and class C will result in an uncertainty of 0.0002g.

5.1) The value of gravity obtained from British Geological Survey is quoted as .00003 m/s/s in 9.81 m/s/s.
This results in an uncertainty of 0.0003 %

6.1) The uncertainty most difficult to asses is due to random interference from atmospheric pressure changes when the FRS4 is used under unfavourable condition. The most common are doors opening and shutting in adjacent rooms or pressure pulses from air conditionig units used in calibration laboratories. Windy weather is also a problem. If time allowes waiting for ideal conditions is required to avoid uncertainty.
Any uncertainty due to inaccuracy in calculating the exact position of the boundry of flow when using simple averge of piston and cylinder dimension is taken care of when the computer program as described in "The Pressure Balance" is used.
Air flowing between the piston and cylinder wall expands and cools. This heat loss is cooling the piston and cylinder assembly and consequently reduces the size. The temperature change is 0.1 xC in 15 minutes at full scale pressure and is therefore insignificant.

Summary of uncertainties.

piston area	.0065 %
temperature effect on area	.0016 %
axial alignement piston to balance	.00015%
calibration weight made up of 2 x 1000 g and make up weight 40 g with uncertainties of 2 x .003 g + .0002 g = .0062 g	.0003 %
value of gravity	.0003 %
range change of balance per 1xC	.0003 %
sum of % uncertainties	.00915%

Reading	1	600	1200	3000	4000	Pa
% uncert.(sum)	.00009	.055	.11	.275	.366	Pa
resolution	.01	.01	.02	.05	.1	Pa
total	.01009	.065	.13	.325	.466	Pa
or	1.009	.01	.0108	.0108	.0117	%

(all figures +/-)

Updated by H.R.
19.3.91

FURNESS CONTROLS LTD

CALCULATIONS FOR FRS4 PISTON UNIT No: FCPS 07

Dimensions measured in mm Certificate No: 97707 NAMAS LAB 0117

Piston	top	middle	bottom	average
min.	35.6513	35.6490	35.6525	
max.	35.6544	35.6521	35.6522	35.65192
Cylinder				
min.	35.7488	35.7421	35.7435	
max.	35.7476	35.7441	35.7450	35.745183

Average working area of the piston (piston/cylinder unit) in cm²

$$\frac{3.565192^2 + 3.574518^2}{4 \times 2} \times \pi = 10.009025 \text{ cm}^2$$

Standard Gravity	=	9.80665	m/s²
Gravity at FCI	=	9.79715	m/s²
(location 35° 12.9' 80° 56.3')			
Mass of air	=	1.2	gram/L
Density of cal weights	=	8	kg/L
Float effect on weights	=	0.0015	%
Nominal piston area	=	10	cm²

Calibration weight required to give a reading of 2000 g on pressure balance for a pressure of 2000 Pa applied to the piston unit

$$= 2000 \times \frac{\text{area of piston}}{\text{nominal area}} \times \frac{\text{standard G}}{\text{location G}} \times \frac{10}{\text{std G}} \times 1.0015 \text{ gram}$$

$$\text{or } 2000 \times \frac{\text{area of piston}}{1 \times \text{location G}} \times 1.0015 \text{ gram}$$

$$= 2000 \times \frac{10.009025}{9.79715} \times 1.0015 = 2046.3171 \text{ gram}$$

use a standard 2 Kg weight plus a 46.317 gram make-up weight

CERTIFICATE OF CALIBRATION

Micron Metrology Services Ltd.
Bannerley Road, Garretts Green Industrial Estate, Birmingham, B33 0SL
Tel 021 784 7498 Fax 021 783 6031 Telex 94017058-MICR G

NAMAS
CALIBRATION
No. 0177

DATE OF ISSUE
10 July 1990

SERIAL NUMBER
97707

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APPROVED SIGNATORIES
D HUGHES R. SHIAL
R OLDFIELD

Furness Controls Limited,
Beeching Road,
Bexhill,
East Sussex,
TN39 3LJ.

IDENTIFICATION No. FCPS 07

DESCRIPTION A Hardened Steel Piston and Cylinder Unit.

REPORT The above unit has been examined and tested at 20 degrees celsius and the measured results are detailed below:

FEATURE TESTED	MEASURED RESULTS (mm)		
	TOP	MIDDLE	BOTTOM
Piston Diameter	35,6513	35,6490	35,6525
@ 90 degrees	35,6544	35,6521	35,6522
Cylinder Diameter	35,7488	35,7421	35,7435
@ 90 degrees	35,7476	35,7441	35,7450

MEASUREMENT UNCERTAINTY : External Diameter 0,001 5mm
: Internal Diameter 0,002 5mm

The uncertainties are for a confidence probability of not less than 95%

This certificate is issued in accordance with the conditions of accreditation granted by the National Measurement Accreditation Service which has assessed the measurement capability of the laboratory and its traceability to recognised national standards and to the units of measurement realised at the corresponding national standards laboratory. Copyright of this certificate is owned jointly by the Crown and the issuing laboratory and may not be reproduced other than in full except with the prior written approval of the issuing laboratory. NAMAS and the

FURNESS CONTROLS LTD

CALCULATIONS FOR FRS4 PISTON UNIT No: FCPS 05

Dimensions measured in mm Certificate No: 97706 NAMAS LAB 0117

Piston	top	middle	bottom	average
max.	112.7843	112.7843	112.7834	
min.	112.7842	112.7827	112.7814	112.78338
Cylinder				
min.	112.8948	112.8963	112.8984	
max.	112.8993	112.8983	112.8981	112.89753

Average working area of the piston (piston/cylinder unit) in cm²

$$\frac{11.278338^2 + 11.289753^2}{4 \times 2} \times \pi = 100.00452 \text{ cm}^2$$

Standard Gravity	=	9.80665	m/s²
Gravity at FCI	=	9.79715	m/s²
(location 35° 12.9' 80° 56.3')			
Mass of air	=	1.2	gram/L
Density of cal weights	=	8	kg/L
Float effect on weights	=	0.0015	%
nominal piston area	=	100	cm²

Calibration weight required to give a reading of 2000 g on pressure balance for a pressure of 2000 Pa applied to the piston unit

$$= 2000 \times \frac{\text{area of piston}}{\text{nom pist. area}} \times \frac{\text{standard G}}{\text{location G}} \times \frac{10}{\text{std G}} \times 1.0015 \text{ gram}$$

$$\text{or } 2000 \times \frac{\text{area of piston}}{10 \times \text{location G}} \times 1.0015 \text{ gram}$$

$$= 2000 \times \frac{100.00452}{10 \times 9.79715} \times 1.0015 = 2044.5644 \text{ gram}$$

use a standard 2 Kg weight plus a 44.564 gram make-up weight

CERTIFICATE OF CALIBRATION

Micron Metrology Services Ltd.
Bannerley Road, Garretts Green Industrial Estate, Birmingham, B33 0SL
Tel 021 784 7498 Fax 021 783 6031 Telex 94017058 MICR G

NAMAS
CALIBRATION
No. 0177

DATE OF ISSUE
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Bexhill,
East Sussex,
TN39 3LJ.

IDENTIFICATION No. FCPS 05

DESCRIPTION A Hardened Steel Piston and Cylinder Unit.

REPORT The above unit has been examined and tested at 20 degrees celsius and the measured results are detailed below:

FEATURE TESTED	MEASURED RESULTS (mm) TOP	MIDDLE	BOTTOM
Piston Diameter @ 90 degrees	112,7843 112,7842	112,7843 112,7827	112,7834 112,7814
Cylinder Diameter @ 90 degrees	112,8948 112,8993	112,8963 112,8983	112,8984 112,8981

MEASUREMENT UNCERTAINTY : External Diameter 0,002mm
: Internal Diameter 0,003mm

The uncertainties are for a confidence probability of not less than 95%

This certificate is issued in accordance with the conditions of accreditation granted by the National Measurement Accreditation Service, which has assessed the measurement capability of the laboratory and its traceability to recognised national standards and to the units of measurement realised at the corresponding national standards [illegible]

Furness Controls Inc.

January 21, 1992

Entrophy Environmental
8724 Glenwood Ave.
Raleigh, NC 27612

Attention: Ms. Helen Yoest, Project Mgr.

QUOTATION

Item	Qty.	Description	Price
1.	1 ea. - FC034	Pressure Transducer	$ 640.00
2.	1 ea. - FC042	Pressure Transducer	$ 890.00

Delivery: 6 weeks ARO.

FOB: Charlotte, NC

Terms: 30 days.

We thank you for your interest in Furness Controls Inc.

Sincerely,

J.M. Campbell
General Manager

Quotation valid for 60 days.

3801-A Beam Road / Charlotte, North Carolina 28217 / Telephone No. (704) 357-0078 / Fax No. (704) 357-1103

Method 5

METHOD 5—DETERMINATION OF PARTICULATE EMISSIONS FROM STATIONARY SOURCES

1. *Principle and Applicability*

1.1 Principle. Particulate matter is withdrawn isokinetically from the source and collected on a glass fiber filter maintained at a temperature in the range of 120±14° C (248±25° F) or such other temperature as specified by an applicable subpart of the standards or approved by Administrator, U.S. Environmental Protection Agency, for a particular application. The particulate mass, which includes any material that condenses at or above the filtration temperature, is determined gravimetrically after removal of uncombined water.

1.2 Applicability. This method is applicable for the determination of particulate emissions from stationary sources.

2. *Apparatus*

2.1 Sampling Train. A schematic of the sampling train used in this method is shown in Figure 5-1. Complete construction details are given in APTD-0581 (Citation 2 in Bibliography); commercial models of this train are also available. For changes from APTD-0581 and for allowable modifications of the train shown in Figure 5-1, see the following subsections.

The operating and maintenance procedures for the sampling train are described in APTD-0576 (Citation 3 in Bibliography). Since correct usage is important in obtaining valid results, all users should read APTD-0576 and adopt the operating and maintenance procedures outlined in it, unless otherwise specified herein. The sampling train consists of the following components:

2.1.1 Probe Nozzle. Stainless steel (316) or glass with sharp, tapered leading edge. The angle of taper shall be <30° and the taper shall be on the outside to preserve a constant internal diameter. The probe nozzle shall be of the button-hook or elbow design, unless otherwise specified by the Administrator. If made of stainless steel, the nozzle shall be constructed from seamless tubing; other materials of construction may be used, subject to the approval of the Administrator.

A range of nozzle sizes suitable for isokinetic sampling should be available, e.g., 0.32 to 1.27 cm (⅛ to ½ in.)—or larger if higher volume sampling trains are used—inside diameter (ID) nozzles in increments of 0.16 cm (1/16 in.). Each nozzle shall be calibrated according to the procedures outlined in Section 5.

2.1.2 Probe Liner. Borosilicate or quartz glass tubing with a heating system capable of maintaining a gas temperature at the exit end during sampling of 120±14° C (248±25° F), or such other temperature as specified by an applicable subpart of the standards or approved by the Administrator for a particular application. (The tester may opt to operate the equipment at a temperature lower than that specified.) Since the actual temperature at the outlet of the probe is not usually monitored during sampling, probes constructed according to APTD-0581 and utilizing the calibration curves of APTD-0576 (or calibrated according to the procedure outlined in APTD-0576) will be considered acceptable.

Either borosilicate or quartz glass probe liners may be used for stack temperatures up to about 480° C (900° F); quartz liners shall be used for temperatures between 480 and 900° C (900 and 1,650° F). Both types of liners may be used at higher temperatures than specified for short periods of time, subject to the approval of the Administrator. The softening temperature for borosilicate is 820° C (1,508° F), and for quartz it is 1,500° C (2,732° F).

Whenever practical, every effort should be made to use borosilicate or quartz glass probe liners. Alternatively, metal liners (e.g., 316 stainless steel, Incoloy 825,[1] or other corrosion resistant metals) made of seamless tubing may be used, subject to the approval of the Administrator.

2.1.3 Pitot Tube. Type S, as described in Section 2.1 of Method 2, or other device approved by the Administrator. The pitot tube shall be attached to the probe (as shown in Figure 5-1) to allow constant monitoring of the stack gas velocity. The impact (high pressure) opening plane of the pitot tube shall be even with or above the nozzle entry plane (see Method 2, Figure 2-6b) during sampling. The Type S pitot tube assembly shall have a known coefficient, determined as outlined in Section 4 of Method 2.

[1] Mention of trade names or specific product does not constitute endorsement by the Environmental Protection Agency.

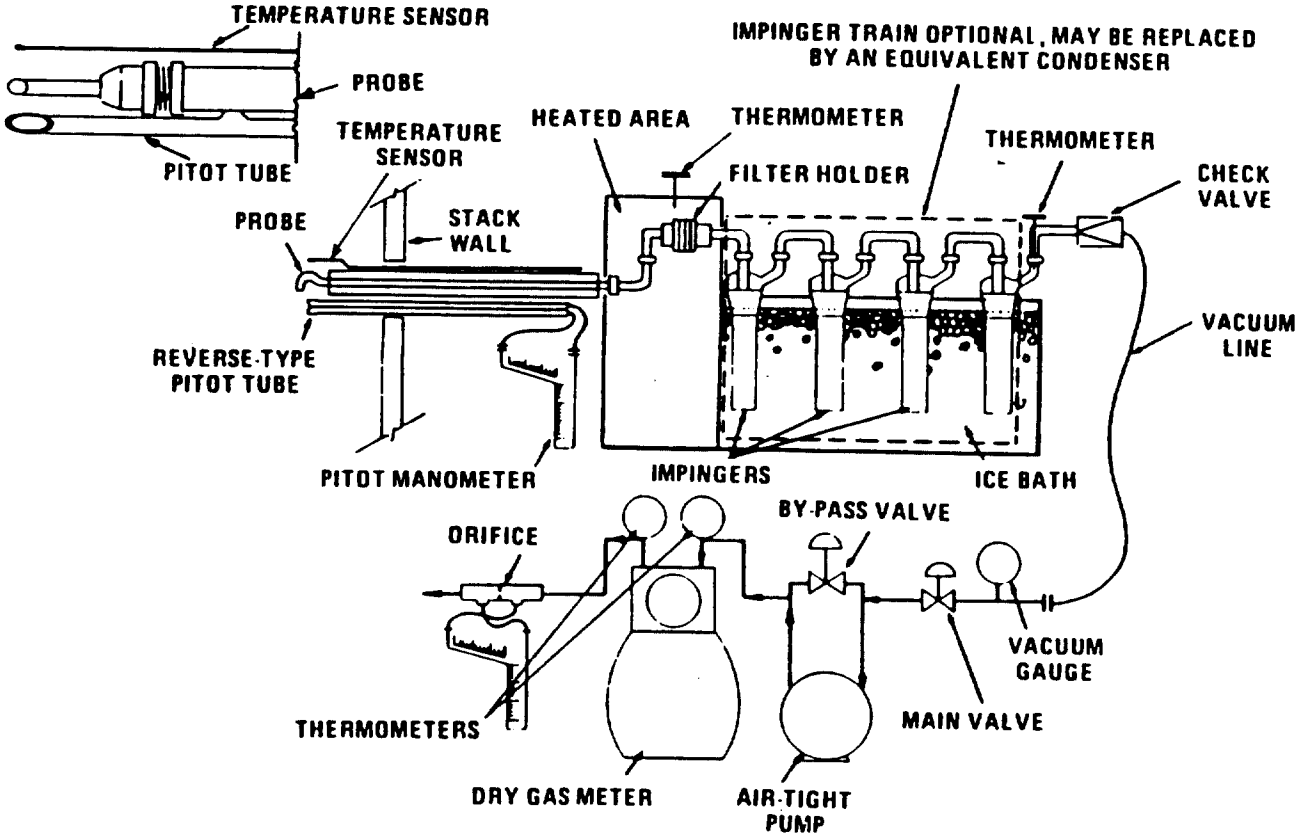

Figure 5-1. Particulate-sampling train.

2.1.4 Differentia Pressure Gauge. Inclined manometer or equivalent device (two), as described in Section 2.2 of Method 2. One manometer shall be used or velocity head (Δp) readings, and the other, for orifice differentia pressure readings.

2.1.5 Filter Holder. Borosilicate glass, with a glass frit filter support and a silicone rubber gasket. Other materials of construction (e.g., stainless steel, Teflon, Viton) may be used, subject to approval of the Administrator. The holder design shall provide a positive seal against leakage from the outside or around the filter. The holder shall be attached immediately at the outlet of the probe (or cyclone, it used).

2.1.6 Filter Heating System. Any heating system capable of maintaining a temperature around the filter holder during sampling of 120±14° C (248±25° F), or such other temperature as specified by an applicable subpart of the standards or approved by the Administrator for a particular application. Alternatively, the tester may opt to operate the equipment at a temperature lower than that specified. A temperature gauge capable of measuring temperature to within 3° C (5.4° F) shall be installed so that the temperature around the filter holder can be regulated and monitored during sampling. Heating systems other than the one shown in APTD-0581 may be used.

2.1.7 Condenser. The following system shall be used to determine the stack gas moisture content: Four impingers connected in series with leak-free ground glass fittings or any similar leak-free non-contaminating fittings. The first, third, and fourth impingers shall be of the Greenburg-Smith design, modified by replacing the tip with 1.3 cm (½ in.) ID glass tube extending to about 1.3 cm (½ in.) from the bottom of the flask. The second impinger shall be of the Greenburg-Smith design with the standard tip. Modifications (e.g., using flexible connections between the impingers, using materials other than glass, or using flexible vacuum lines to connect the filter holder to the condenser) may be used, subject to the approval of the Administrator. The first and second impingers shall contain known quantities of water (Section 4.1.3), the third shall be empty, and the fourth shall contain a known weight of silica gel, or equivalent desiccant. A thermometer, capable of measuring temperture to within 1° C (2° F) shall be placed at the outlet of the fourth impinger for monitoring purposes.

Alternatively, any system that cools the sample gas stream and allows measurement of the water condensed and moisture leaving the condenser, each to within 1 ml or 1 g may be used, subject to the approval of the Administrator. Acceptable means are to measure the condensed water either gravimetrically or volumetrically and to measure the moisture leaving the condenser by: (1) monitoring the temperature and pressure at the exit of the condenser and using Dalton's law of partial pressures; or (2) passing the sample has stream through a tared silica gel (or equivalent desiccant) trap with exit gases kept below 20° C (68° F) and determining the weight gain.

If means other than silica gel are used to determine the amount of moisture leaving the condenser, it is recommended that silica gel (or equivalent) still be used between the condenser system and pump to prevent moisture condensation in the pump and metering devices and to avoid the need to make corrections for moisture in the metered volume.

NOTE: If a determination of the particulate matter collected in the impingers is desired in addition to moisture content, the impinger system described above shall be used, without modification. Individual States or control agencies requiring this information shall be contacted as to the sample recovery and analysis of the impinger contents.

2.1.8 Metering System. Vacuum gauge, leak-free pump, thermometers capable of measuring temperature to within 3° C (5.4° F), dry gas meter capable of measuring volume to within 2 percent, and related equipment, as shown in Figure 5-1. Other metering systems capable of maintaining sampling rates within 10 percent of isokinetic and of determining sample volumes to within 2 percent may be used, subject to the approval of the Administrator. When the metering system is used in conjunction with a pitot tube, the system shall enable checks of isokinetic rates.

Sampling trains utilizing metering systems designed for higher flow rates than that decribed in APTD-0581 or APDT-0576 may be used provided that the specifications of this method are met.

2.1.9 Barometer. Mercury aneroid, or other barometer capable of measuring atmospheric pressure to within 2.5 mm Hg (0.1 in. Hg). In many cases the barometric reading may be obtained from a nearby national weather service station, in which case the station value (which is the absolute barometric pressure) shall be requested and an adjustment for elevation differences between the weather station and sampling point shall be applied at a rate of minus 2.5 mm Hg (0.1 in. Hg) per 30 m (100 ft) elevation increase or vice versa for elevation decrease.

2.1.10 Gas Density Determination Equipment. Temperature sensor and pressure gauge, as described in Sections 2.3 and 2.4 of Method 2, and gas analyzer, if necessary, as described in Method 3. The temperature sensor shall, preferably, be permanently attached to the pitot tube or sampling probe in a fixed configuration, such that the tip of the sensor extends beyond the leading edge of the probe sheath and does not touch any metal. Alternatively, the sensor may be attached just prior to use in the field. Note, however, that if the temperature sensor is attached in the field, the sensor must be placed in an interference-free arrangement with respect to the Type S pitot tube openings (see Method 2, Figure 2-7). As a second alternative, if a difference of not more than 1 percent in the average velocity measurement is to be introduced, the temperature gauge need not be attached to the probe or pitot tube. (This alternative is subject to the approval of the Administrator.)

2.2 Sample Recovery. The following items are needed.

2.2.1 Probe-Liner and Probe-Nozzle Brushes. Nylon bristle brushes with stainless steel wire handles. The probe brush shall have extensions (at least as long as the probe) of stainless steel, Nylon, Teflon, or similarly inert material. The brushes shall be properly sized and shaped to brush out the probe liner and nozzle.

2.2.2 Wash Bottles—Two. Glass wash bottles are recommended; polyethylene wash bottles may be used at the option of the tester. It is recommended that acetone not be stored in polyethylene bottles fo longer than a month.

2.2.3 Glass Sample Storage Containers. Chemically resistant, borosilicate glass bo:tles, for acetone washes, 500 ml or 1000 ml. Screw cap liners shall either be rubber-backed Teflon or shall be constructed to be leak-free and resistant to ch attack by acetone. (Narrow mouth glas. tles have been found to be less pront leakage.) Alternatively, polyethylene bottles may be used.

2.2.4 Petri Dishes. For filter samples, glass or polyethylene, unless otherwise specified by the Administrator.

2.2.5 Graduated Cylinder and/or Balance. To measure condensed water to within 1 ml or 1 g. Graduated cylinders shall have subdivisions no greater than 2 ml. Most laboratory balances are capable of weighing to the nearest 0.5 g or less. Any of these balances is suitable or use here and in Section 2.3.4.

2.2.6 Plastic Storage Containers. Airtight containers to store silica gel.

2.2.7 Funnel and Rubber Policeman. To aid in transfer of silica gel to container; not

2.2.8 Funnel. Glass or polyethylene, to aid in sample recovery.

2.2 Analysis. For analysis, the following equipment is needed.

2.3.1 Glass Weighing Dishes.

2.3.2 Desiccator.

2.3.3 Analytical Balance. To measure to within 0.1 mg.

2.3.4 Balance. To measure to within 0.5 g.

2.3.5 Beakers. 250 ml.

2.3.6 Hygrometer. To measure the relative humidity of the laboratory environment.

2.3.7 Temperature Gauge. To measure the temperature of the laboratory environment.

3. *Reagents*

3.1 Sampling. The reagents used i. pling are as follows:

3.1.1 Filters. Glass fiber filters, without organic binder, exhibiting at least 99.95 percent efficiency (<0.05 percent penetration) on 0.3-micron dioctyl phthalate smoke particles. The filter efficiency test shall be conducted in accordance with ASTM standard method D2986-71 (Reapproved 1978) (incorporated by reference—see § 60.17). Test data from the supplier's quality control program are sufficient for this purpose. In sources containing SO_2 or SO_3, the filter material must be of a type that is unreactive to SO_2 or SO_3. Citation 10 in Bibliography, may be used to select the appropriate filter.

3.1.2 Silica Gel. Indicating type, 6 to 16 mesh. If previously used, dry at 175° C (350° F) for 2 hours. New silica gel may be used as received. Alternatively, other types of desiccants (equivalent or better) may be used, subject to the approval of the Administrator.

3.1.3 Water. When analysis of the mate rial caught in the impingers is required, deionized distilled water shall be used. Ru blanks prior to field use to eliminate a high blank on test samples.

3.1.4 Crushed Ice.

3.1.5 Stopcock Grease. Acetone-insolubl heat-stable silicone grease. This is not nece sary if screw-on connectors with Teflo sleeves, or similar, are used. Alternativel other types of stopcock grease may be use subject to the approval of the Adm tor.

3.2 Sample Recovery. Acetone-reagent grade, <0.001 percent residue, in glass bottles—is required. Acetone from metal containers generally has a high residue blank and should not be used. Sometimes, suppliers transfer acetone to glass bottles from metal containers; thus, acetone blanks shall be run prior to field use and only acetone with low blank values (<0.001 percent) shall be used. In no case shall a blank value of greater than 0.001 percent of the weight of acetone used be subtracted from the sample weight.

3.3 Analysis. Two reagents are required for the analysis:

3.3.1 Acetone. Same as 3.2.

3.3.2 Desiccant. Anhydrous calcium sulfate, indicating type. Alternatively, other types of desiccants may be used, subject to the approval of the Administrator.

4. *Procedure*

4.1 Sampling. The complexity of this method is such that, in order to obtain reliable results, testers should be trained and experienced with the test procedures.

4.1.1 Pretest Preparation. It is suggested that sampling equipment be maintained according to the procedures described in APTD-0576.

Weigh several 200 to 300 g portions of silica gel in air-tight containers to the nearest 0.5 g. Record the total weight of the silica gel plus container, on each container. As an alternative, the silica gel need not be preweighed, but may be weighed directly in the impinger or sampling holder just prior to train assembly.

Check filters visually against light for irregularities and flaws or pinhole leaks. Label filters of the proper diameter on the back side near the edge using numbering machine ink. As an alternative, label the shipping containers (glass or plastic petri dishes) and keep the filters in these containers at all times except during sampling and weighing.

Desiccate the filters at 20±5.6° C (68±10° F) and ambient pressure for at least 24 hours and weigh at intervals of at least 6 hours to a constant weight, i.e., 0.5 mg change from previous weighing; record results to the nearest 0.1 mg. During each weighing the filter must not be exposed to the laboratory atmosphere for a period greater than 2 minutes and a relative humidity above 50 percent. Alternatively (unless otherwise specified by the Administrator), the filters may be oven dried at 105° C (220° F) for 2 to 3 hours, desiccated for 2 hours, and weighed. Procedures other than those described, which account for relative humidity effects, may be used, subject to the approval of the Administrator.

4.1.2 Preliminary Determinations. Select the sampling site and the minimum number of sampling points according to Method 1 or as specified by the Administrator. Determine the stack pressure, temperature, and the range of velocity heads using Method 2; it is recommended that a leak-check of the pitot lines (see Method 2, Section 3.1) be performed. Determine the moisture content using Approximation Method 4 or its alternatives for the purpose of making isokinetic sampling rate settings. Determine the stack gas dry molecular weight, as described in Method 2, Section 3.6; if integrated Method 3 sampling is used for molecular weight determination, the integrated bag sample shall be taken simultaneously with, and for the same total length of time as, the particulate sample run.

Select a nozzle size based on the range of velocity heads, such that it is not necessary to change the nozzle size in order to maintain isokinetic sampling rates. During the run, do not change the nozzle size. Ensure that the proper differential pressure gauge is chosen for the range of velocity heads encountered (see Section 2.2 of Method 2).

Select a suitable probe liner and probe length such that all traverse points can be sampled. For large stacks, consider sampling from opposite sides of the stack to reduce the length of probes.

Select a total sampling time greater than or equal to the minimum total sampling time specified in the test procedures for the specific industry such that (1) the sampling time per point is not less than 2 min (or some greater time interval as specified by the Administrator), and (2) the sample volume taken (corrected to standard conditions) will exceed the required minimum total gas sample volume. The latter is based on an approximate average sampling rate.

It is recommended that the number of minutes sampled at each point be an integer or an integer plus one-half minute, in order to avoid timekeeping errors. The sampling time at each point shall be the same.

In some cirumstances, e.g., batch cycles, it may be necessary to sample for shorter times at the traverse points and to obtain smaller gas sample volumes. In these cases, the Administrator's approval must first be obtained.

4.1.3 Preparation of Collection Train. During preparation and assembly of the sampling train, keep all openings where contamination can occur covered until just prior to assembly or until sampling is about to begin.

Place 100 ml of water in each of the first two impingers, leave the third impinger empty, and transfer approximately 200 to 300 g of preweighed silica gel from its container to the fourth impinger. More silica gel may be used, but care should be taken to ensure that it is not entrained and carried out from the impinger during sampling. Place the container in a clean place for later use in the sample recovery. Alternatively, the weight of the silica gel plus impinger may be determined to the nearest 0.5 g and recorded.

Using a tweezer or clean disposable surgical gloves, place a labeled (identified) and weighed filter in the filter holder. Be sure that the filter is properly centered and the gasket properly placed so as to prevent the sample gas stream from circumventing the filter. Check the filter for tears after assembly is completed.

When glass liners are used, install the selected nozzle using a Viton A O-ring when stack temperatures are less than 260° C (500° F) and an asbestos string gasket when temperatures are higher. See APTD-0576 for details. Other connecting systems using either 316 stainless steel or Teflon ferrules may be used. When metal liners are used, install the nozzle as above or by a leak-free direct mechanical connection. Mark the probe with heat resistant tape or by some other method to denote the proper distance into the stack or duct for each sampling point.

Set up the train as in Figure 5-1, using (if necessary) a very light coat of silicone grease on all ground glass joints, greasing only the outer portion (see APTD-0576) to avoid possibility of contamination by the silicone grease. Subject to the approval of the Administrator, a glass cyclone may be used between the probe and filter holder when the total particulate catch is expected to exceed 100 mg or when water droplets are present in the stack gas.

Place crushed ice around the impingers.

4.1.4 Leak-Check Procedures.

4.1.4.1 Pretest Leak-Check. A pretest leak-check is recommended, but not required. If the tester opts to conduct the pretest leak-check, the following procedure shall be used.

After the sampling train has been assembled, turn on and set the filter and probe heating systems at the desired operating temperatures. Allow time for the temperatures to stabilize. If a Viton A O-ring or other leak-free connection is used in assembling the probe nozzle to the probe liner, leak-check the train at the sampling site by plugging the nozzle and pulling a 380 mm Hg (15 in. Hg) vacuum.

NOTE: A lower vacuum may be used, provided that it is not exceeded during the test.

If an asbestos string is used, do not connect the probe to the train during the leak-check. Instead, leak-check the train by first plugging the inlet to the filter holder (cyclone, if applicable) and pulling a 380 mm Hg (15 in. Hg) vacuum (see Note immediately above). Then connect the probe to the train and leak-check at about 25 mm Hg (1 in. Hg) vacuum; alternatively, the probe may be leak-checked with the rest of the sampling train, in one step, at 380 mm Hg (15 in. Hg) vacuum. Leakage rates in excess of 4 percent of the average sampling rate or 0.00057 m^3/min (0.02 cfm), whichever is less, are unacceptable.

The following leak-check instructions for the sampling train described in APTD-0576 and APTD-0581 may be helpful. Start the pump with bypass valve fully open and coarse adjust valve, completely closed. Partially open the coarse adjust valve and slowly close the bypass valve until the desired vacuum is reached. Do not reverse direction of bypass value; this will cause water to back up into the filter holder. If the desired vacuum is exceeded, either leak-check at this higher vacuum or end the leak-check as shown below and start over.

When the leak-check is completed, first slowly remove the plug from the inlet to the probe, filter holder, or cyclone (if applicable) and immediately turn off the vacuum pump. This prevents the water in the impingers from being forced backward into the filter holder and silica gel from being entrained backward into the third impinger.

4.1.4.2 Leak-Checks During Sample Run. If, during the sampling run, a component (e.g., filter assembly or impinger) change becomes unecessary, a leak-check shall be conducted immediately before the change is made. The leak-check shall be done according to the procedure outlined in Section 4.1.4.1 above, except that it shall be done at a vacuum equal to or greater than the maximum value recorded up to that point in the test. If the leakage rate is found to be no greater than 0.00057 m^3/min (0.02 cfm) or 4 percent of the average sampling rate (whichever is less), the results are acceptable, and no correction will need to be applied to the total volume of dry gas metered;

If, however, a higher leakage rate is obtained, the tester shall either record the leakage rate and plan to correct the sample volume as shown in Section 6.3 of this method, or shall void the sampling run.

Immediately after component changes, leak-checks are optional; if such leak-checks are done, the procedure outlined in Section 4.1.4.1 above shall be used.

4.1.4.3 Post-test Leak-Check. A leak-check is mandatory at the conclusion of each sampling run. The leakcheck shall be done in accordance with the procedures outlined in Section 4.1.4.1, except that it shall be conducted at a vacuum equal to or greater than the maximum value reached during the sampling run. If the leakage rate is found to be no greater than 0.00057 m³/min (0.02 cfm) or 4 percent of the average sampling rate (whichever is less), the results are acceptable, and no correction need be applied to the total volume of dry gas metered.

If, however, a higher leakage rate is obtained, the tester shall either record the leakage rate and correct the sample volume as shown in Section 6.3 of this method, or shall void the sampling run.

4.1.5 Particulate Train Operation. During the sampling run, maintain an isokinetic sampling rate (within 10 percent of true isokinetic unless otherwise specified by the Administrator) and a temperature around the filter of 120±14° C (248±25° F), or such other temperature as specified by an applicable subpart of the standards or approved by the Administrator.

For each run, record the data required on a data sheet such as the one shown in Figure 5-2. Be sure to record the initial dry gas meter reading. Record the dry gas meter readings at the beginning and end of each sampling time increment, when changes in flow rates are made, before and after each leak-check, and when sampling is halted. Take other readings required by Figure 5-2 at least once at each sample point during each time increment and additional readings when significant changes (20 percent variation in velocity head readings) necessitate additional adjustments in flow rate. Level and zero the manometer. Because the manometer level and zero may drift due to vibrations and temperature changes, make periodic checks during the traverse.

Clean the portholes prior to the test run to minimize the chance of sampling deposited material. To begin sampling, remove the nozzle cap, verify that the filter and probe heating systems are up to temperature, and that the pitot tube and probe are properly positioned. Position the nozzle at the first traverse point with the tip pointing directly into the gas stream. Immediately start the pump and adjust the flow to isokinetic conditions. Nomographs are available, which aid in the rapid adjustment of the isokinetic sampling rate without excessive computations. These nomographs are designed for use when the Type S pitot tube coefficient is 0.85±0.02, and the stack gas equivalent density (dry molecular weight) is equal to 29±4. APTD-0576 details the procedure for using the nomographs. If C_p and M_s are outside the above stated ranges do not use the nomographs unless appropriate steps (see Citation 7 in Bibliography) are taken to compensate for the deviations.

When the stack is under significant negative pressure (height of impinger stem), take care to close the coarse adjust valve before inserting the probe into the stack to prevent water from backing into the filter holder. If necessary, the pump may be turned on with the coarse adjust valve closed.

When the probe is in position, block off the openings around the probe and porthole to prevent unrepresentative dilution of the gas stream.

Traverse the stack cross-section, as required by Method 1 or as specified by the Administrator, being careful not to bump the probe nozzle into the stack walls when sampling near the walls or when removing or inserting the probe through the portholes; this minimizes the chance of extracting deposited material.

During the test run, make periodic adjustments to keep the temperature around the filter holder at the proper level; add more ice and, if necessary, salt to maintain a temperature of less than 20° C (68° F) at the condenser/silica gel outlet. Also, periodically check the level and zero of the manometer.

If the pressure drop across the filter becomes too high, making isokinetic sampling difficult to maintain, the filter may be replaced in the midst of a sample run. It is recommended that another complete filter assembly be used rather than attempting to change the filter itself. Before a new filter assembly is installed, conduct a leak-check (see Section 4.1.4.2). The total particulate weight shall include the summation of all filter assembly catches.

A single train shall be used for the entire sample run, except in cases where simultaneous sampling is required in two or more separate ducts or at two or more different locations within the same duct, or, in cases where equipment failure necessitates a change of trains. In all other situations, the use of two or more trains will be subject to the approval of the Administrator.

FIGURE 5-2—PARTICULATE FIELD DATA

Plant .....
Location .....
Operator .....
Date .....
Run No .....
Sample box No .....
Meter box No .....
Meter ΔH@ .....
C factor .....
Pitot tube coefficient, C_p .....

SCHEMATIC OF STACK CROSS SECTION

Ambient temperature .....
Barometric pressure .....
Assumed moisture, % .....
Probe length, m. (ft.) .....
Nozzle identification No. .....
Average calibrated nozzle diameter, cm (in.) .....
Probe heater setting .....
Leak rate, m³/min. (cfm) .....
Probe liner material .....
Static pressure, mm. Hg (in. Hg) .....
Filter No. .....

Traverse point number	Sampling time (θ), min.	Vacuum mm Hg (in. Hg)	Stack temperature (T_s), °C (° F)	Velocity head (ΔP_s), mm (in.) H_2O	Pressure differential across orifice meter mm H_2O (in. H_2O)	Gas sample volume m³ (ft³)	Gas sample temperature at dry gas meter Inlet °C (° F)	Gas sample temperature at dry gas meter Outlet °C (° F)	Filter holder temperature °C (° F)	Temperature of gas leaving condenser or last impinger °C (° F)
Total							Avg.	Avg.		
Average							Avg.			

Note that when two or more trains are used, separate analyses of the front-half and (if applicable) impinger catches from each train shall be performed, unless identical nozzle sizes were used on all trains, in which case, the front-half catches from the individual trains may be combined (as may the impinger catches) and one analysis of front-half catch and one analysis of impinger catch may be performed. Consult with the Administrator for details concerning the calculation of results when two or more trains are used.

At the end of the sample run, turn off the coarse adjust valve, remove the probe and nozzle from the stack, turn off the pump, record the final dry gas meter reading, and conduct a post-test leak-check, as outlined in Section 4.1.4.3. Also, leak-check the pitot lines as described in Method 2, Section 3.1; the lines must pass this leak-check, in order to validate the velocity head data.

4.1.6 Calculation of Percent Isokinetic. Calculate percent isokinetic (see Calculations, Section 6) to determine whether the run was valid or another test run should be made. If there was difficulty in maintaining isokinetic rates due to source conditions, consult with the Administrator for possible variance on the isokinetic rates.

4.2 Sample Recovery. Proper cleanup procedure begins as soon as the probe is removed from the stack at the end of the sampling period. Allow the probe to cool.

When the probe can be safely handled, wipe off all external particulate matter near the tip of the probe nozzle and place a cap over it to prevent losing or gaining particulate matter. Do not cap off the probe tip tightly while the sampling train is cooling down as this would create a vacuum in the filter holder, thus drawing water from the impingers into the filter holder.

Before moving the sample train to the cleanup site, remove the probe from the sample train, wipe off the silicone grease, and cap the open outlet of the probe. Be careful not to lose any condensate that might be present. Wipe off the silicone grease from the filter inlet where the probe was fastened and cap it. Remove the umbilical cord from the last impinger and cap the impinger. If a flexible line is used between the first impinger or condenser and the filter holder, disconnect the line at the filter holder and let any condensed water or liquid drain into the impingers or condenser. After wiping off the silicone grease, cap off the filter holder outlet and impinger inlet. Either ground-glass stoppers, plastic caps, or serum caps may be used to close these openings.

Transfer the probe and filter-impinger assembly to the cleanup area. This area should be clean and protected from the wind so that the chances of contaminating or losing the sample will be minimized.

Save a portion of the acetone used for cleanup as a blank. Take 200 ml of this acetone directly from the wash bottle being used and place it in a glass sample container labeled "acetone blank."

Inspect the train prior to and during disassembly and note any abnormal conditions. Treat the samples as follows:

Container No. 1. Carefully remove the filter from the filter holder and place it in its identified petri dish container. Use a pair of tweezers and/or clean disposable surgical gloves to handle the filter. If it is necessary to fold the filter, do so such that the particulate cake is inside the fold. Carefully transfer to the petri dish any particulate matter and/or filter fibers which adhere to the filter holder gasket, by using a dry Nylon bristle brush and/or a sharp-edged blade. Seal the container.

Container No. 2. Taking care to see that dust on the outside of the probe or other exterior surfaces does not get into the sample, quantitatively recover particulate matter or any condensate from the probe nozzle, probe fitting, probe liner, and front half of the filter holder by washing these components with acetone and placing the wash in a glass container. Distilled water may be used instead of acetone when approved by the Administrator and shall be used when specified by the Administrator; in these cases, save a water blank and follow the Administrator's directions on analysis. Perform the acetone rinses as follows:

Carefully remove the probe nozzle and clean the inside surface by rinsing with acetone from a wash bottle and brushing with a Nylon bristle brush. Brush until the acetone rinse shows no visible particles, after which make a final rinse of the inside surface with acetone.

Brush and rinse the inside parts of the Swagelok fitting with acetone in a similar way until no visible particles remain.

Rinse the probe liner with acetone by tilting and rotating the probe while squirting acetone into its upper end so that all inside surfaces will be wetted with acetone. Let the acetone drain from the lower end into the sample container. A funnel (glass or polyethylene) may be used to aid on transferring liquid washes to the container. Follow the acetone rinse with a probe brush. Hold the probe in an inclined position, squirt acetone into the upper end as the probe brush is being pushed with a twisting action through the probe; hold a sample container underneath the lower end of the probe, and catch any acetone and particulate matter which is brushed from the probe. Run the brush through the probe three times or more until no visible particulate matter is carried out with the acetone or until none remains in the probe liner on visual inspection. With stainless steel or other metal probes, run the brush through in the above prescribed manner at least six times since metal probes have small crevices in which particulate matter can be entrapped. Rinse the brush with acetone, and quantitatively collect these washings in the sample container. After the brushing, make a final acetone rinse of the probe as described above.

It is recommended that two people clean the probe to minimize sample losses. Between sampling runs, keep brushes clean and protected from contaminations.

After ensuring that all joints have been wiped clean of silicone grease, clean the inside of the front half of the filter holder by rubbing the surfaces with a Nylon bristle brush and rinsing with acetone. Rinse each surface three times or more if needed to remove visible particulate. Make a final rinse of the brush and filter holder. Carefully rinse out the glass cyclone, also (if applicable). After all acetone washings and particulate matter have been collected in the sample container, tighten the lid on the sample container so that acetone will not leak out when it is shipped to the laboratory. Mark the height of the fluid levcel to determine whether or not leakage occured during transport. Label the container to clearly identify its contents.

Container No. 3. Note the color of the indicating silica gel to determine if it has been completely spent and make a notation of its condition. Transfer the silica gel from the fourth impinger to its original container and seal. A funnel may make it easier to pour the silica gel without spilling. A rubber policeman may be used as an aid in removing the silica gel from the impinger. It is not necessary to remove the small amount of dust particles that may adhere to the impinger wall and are difficult to remove. Since the gain in weight is to be used for moisture calculations, do not use any water or other liquids to transfer the silica gel. If a balance is available in the field, follow the procedure for container No. 3 in Section 4.3.

Impinger Water. Treat the impingers as follows: Make a notation of any color or film in the liquid catch. Measure the liquid which is in the first three impingers to within ±1 ml by using a graduated cylinder or by weighing it to within ±0.5 g by using a balance (if one is available). Record the volume or weight of liquid present. This information is required to calculate the moisture content of the effluent gas.

Discard the liquid after measuring and recording the volume or weight, unless analysis of the impinger catch is required (see Note, Section 2.1.7).

If a different type of condenser is used, measure the amount of moisture condensed either volumetrically or gravimetrically.

Whenever possible, containers should be shipped in such a way that they remain upright at all times.

4.3 Analysis. Record the data required on a sheet such as the one shown in Figure 5-3. Handle each sample container as follows:

FIGURE 5-3—ANALYTICAL DATA

Plant _____

Date _____

Run No. _____

Filter No. _____

Amount liquid lost during transport _____

Acetone blank volume, ml _____

Acetone wash volume, ml _____

Acetone blank concentration, mg/mg (equation 5-4) _____

Acetone wash blank, mg (equation 5-5) _____

Container number	Weight of particulate collected, mg		
	Final weight	Tare weight	Weight ga
1 _____			
2 _____			
Total _____			
Less acetone blank _____			
Weight of particulate matter _____			

	Volume of liquid water collect	
	Impinger volume, ml	Silica gel weight, g
Final _____		
Initial _____		
Liquid collected _____		
Total volume collected _____		g*

*Convert weight of water to volume by dividing total wei increase by density of water (1 g/ml).

$$\frac{\text{Increase, g}}{\text{(1 g/ml)}} = \text{Volume water, ml}$$

ner No. 1. Leave the contents in the container or transfer the filter and e particulate from the sample con- a tared glass weighing dish. Desic- 24 hours in a desiccator containing us calcium sulfate. Weigh to a con- ight and report the results to the).1 mg. For purposes of this Section, erm "constant weight" means a dif- of no more than 0.5 mg or 1 percent weight less tare weight, whichever is between two consecutive weighings, less than 6 hours of desiccation ween weighings.

atively, the sample may be oven 105° C (220° F) for 2 to 3 hours, n the desiccator, and weighed to a weight, unless otherwise specified Administrator. The tester may also ven dry the sample at 105° C (220° to 3 hours, weigh the sample, and weight as a final weight.

ner No. 2. Note the level of liquid in ainer and confirm on the analysis hether or not leakage occurred ransport. If a noticeable amount of has occurred, either void the sample ethods, subject to the approval of inistrator, to correct the final re- easure the liquid in this container metrically to ±1 ml or gravimet- .5 g. Transfer the contents to a beaker and evaporate to dry- ent temperature and pressure. e r 24 hours and weigh to a con- ight. Report the results to the near- g.

ner No. 3. Weigh the spent silica ilica gel plus impinger) to the near- using a balance. This step may be ed in the field.

ne Blank" Container. Measure ace- this container either volumentrical- avimetrically. Transfer the acetone ed 250-ml beaker and evaporate to at ambient temperature and pres- siccate for 24 hours and weigh to a t weight. Report the results to the 0.1 mg.

At the option of the tester, the con- Container No. 2 as well as the ace- ink container may be evaporated at ttures higher than ambient. If evap- is done at an elevated temperature, perature must be below the boiling the solvent; also, to prevent "bump- e evaporation process must be close- ervised, and the contents of the must be swirled occasionally to main- even temperature. Use extreme care, one is highly flammable and has a h point.

Quality Control Procedures. The fol- quality control procedures are sug- o check the volume metering system ion values at the field test site prior ple collection. These procedures are l for the tester.

Meter Orifice Check. Using the cali- data obtained during the calibration re described in Section 5.3, deter- e $\Delta H_@$ for the metering system or- e $\Delta H_@$ is the orifice pressure differ- n units of in. H_2O that correlates to n of air at 528°R and 29.92 in. Hg. $_@$ is calculated as follows:

$$H_@ = 0.0319\ \Delta H \frac{T_m}{P_{bar}} \frac{\Theta'}{Y V'_m}$$

Eq. 5-9

Where:

ΔH = Average pressure differential across the orifice meter, in. H_2O.

T_m = Absolute average dry gas meter temperature, °R.

P_{bar} = Barometric pressure, in. Hg.

Θ = Total sampling time, min.

Y = Dry gas meter calibration factor, dimensionless.

V_m = Volume of gas sample as measured by dry gas meter, dcf.

0.0319 = (0.0567 in. Hg/°R) x (0.75 cfm)[1]

Before beginning the field test (a set of three runs usually constitutes a field test), operate the metering system (i.e., pump, volume meter, and orifice) at the $\Delta H_@$ pressure differential for 10 minutes. Record the volume collected, the dry gas meter temperature, and the barometric pressure. Calculate a dry gas meter calibration check value, Y_c, as follows:

$$Y_c = \frac{10}{V_m} \left[\frac{0.0319\ T_m}{P_{bar}} \right]^{1/2}$$

Eq. 5-10

Where:

Y_c = Dry gas meter calibration check value, dimensionless.

10 = 10 minutes of run time.

Compare the Y_c value with the dry gas meter calibration factor Y to determine that:

$$0.97Y < Y_c < 1.03Y$$

If the Y_c value is not within this range, the volume metering system should be investigated before beginning the test.

4.4.2 Calibrated Critical Orifice. A calibrated critical orifice, calibrated against a wet test meter or spirometer and designed to be inserted at the inlet of the sampling meter box may be used as a quality control check by following the procedure of Section 7.2.

5. *Calibration*

Maintain a laboratory log of all calibrations.

5.1 Probe Nozzle. Probe nozzles shall be calibrated before their initial use in the field. Using a micrometer, measure the inside diameter of the nozzle to the nearest 01.025 mm (0.001 in.). Make three separate measurements using different diameters each time, and obtain the average of the measurements. The difference between the high and low numbers shall not exceed 0.1 mm (0.004 in.). When nozzles become nicked, dented, or corroded, they shall be reshaped, sharpened, and recalibrated before use. Each nozzle shall be permanently and uniquely identified.

5.2 Pitot Tube. The Type S pitot tube assembly shall be calibrated according to the procedure outlined in Section 4 of Method 2.

5.3 Metering System.

5.3.1 Calibration Prior to Use. Before its initial use in the field, the metering system shall be calibrated as follows: Connect the metering system inlet to the outlet of a wet test meter that is accurate to within 1 percent. Refer to Figure 5.5. The wet test meter should have a capacity of 30 liters/rev (1 ft^3/rev). A spirometer of 400 liters (14 ft^3) or more capacity, or equivalent, may be used for this calibration, although a wet test meter is usually more practical. The wet test meter should be periodically calibrated with a spirometer or a liquid displacement meter to ensure the accuracy of the wet test meter. Spirometers or wet test meters of other sizes may be used, provided that the specified accuracies of the procedure are maintained. Run the metering system pump for about 15 minutes with the orifice manometer indicating a median reading as expected in field use to allow the pump to warm up and to permit the interior surface of the wet test meter to be thoroughly wetted. Then, at each of a minimum of three orifice manometer settings, pass an exact quantity of gas through the wet test meter and note the gas volume indicated by the dry gas meter. Also note the barometric pressure, and the temperatures of the wet test meter, the inlet of the dry gas meter, and the outlet of the dry gas meter. Select the highest and lowest orifice settings to bracket the expected field operating range of the orifice. Use a minimum volume of 0.15 m^3 (5 cf) at all orifice settings. Record all the data on a form similar to Figure 5.6, and calculate Y, the dry gas meter calibration factor, and $\Delta H_@$, the orifice calibration factor, at each orifice setting as shown on Figure 5.6. Allowable tolerances for individual Y and $\Delta H_@$ values are given in Figure 5.6. Use the average of the Y values in the calculations in Section 6.

Before calibrating the metering system, it is suggested that a leak-check be conducted. For metering systems having diaphragm pumps, the normal leak-check procedure will not detect leakages within the pump. For these cases the following leak-check procedure is suggested: make a 10-minute calibration run at 0.00057m³/min (0.02 cfm); at the end of the run, take the difference of the measured wet test meter and dry gas meter volumes; divided the difference by 10, to get the leak rate. The leak rate should not exceed 0.00057 m³/min (0.02 cfm).

5.3.2 Calibration After Use. After each filed use, the calibration of the metering system shall be checked by performing three calibration runs at a single, intermediate orifice setting (based on the previous field test), with the vacuum set at the maximum value reached during the test series. To adjust the vacuum, inset a valve between the wet test meter and the inlet of the metering system. Calculate the average value of the dry gas meter calibration factor. If the value has changed by more than 5 percent, recalibrate the meter over the full range of orifice settings, as previously detailed.

Alternative procedures, e.g., rechecking the orifice meter coefficient may be used, subject to the approval of the Administrator.

5.3.3 Acceptable Variation in Calibration. If the dry gas meter coefficient values obtained before and after a test series differ by more than 5 percent, the test series shall either be voided, or calculations for the test series shall be performed using whichever meter coefficient value (i.e., before or after) gives the lower value of total sample volume.

5.4 Probe Heater Calibration. The probe heating system shall be calibrated before its initial use in the field.

Use a heat source to generate air heated to selected temperatures that approximate those expected to occur in the sources to be sampled. Pass this air through the probe at a typical simple flow rate while measuring the probe inlet and outlet temperatures at various probe heater settings. For each air temperature generated, construct a graph of probe heating system setting versus probe outlet temperature. The procedure outlined in APTD-0576 can also be used. Probes constructed according to APTD-0581 need not be calibrated if the calibration curves in APTD-0576 are used. Also, probes with outlet temperature monitoring capabilities do not require calibration.

5.5 Temperature Gauges. Use the procedure in Section 4.3 of Method 2 to calibrate in-stack temperature gauges. Dial thermometers, such as are used for the dry gas meter and condenser outlet, shall be calibrated against mercury-in-glass thermometers.

5.6 Leak Check of Metering System Shown in Figure 5-1. That portion of the sampling train from the pump to the orifice meter should be leak checked prior to initial use and after each shipment. Leakage after the pump will result in less volume being recorded than is actually sampled. The follow-

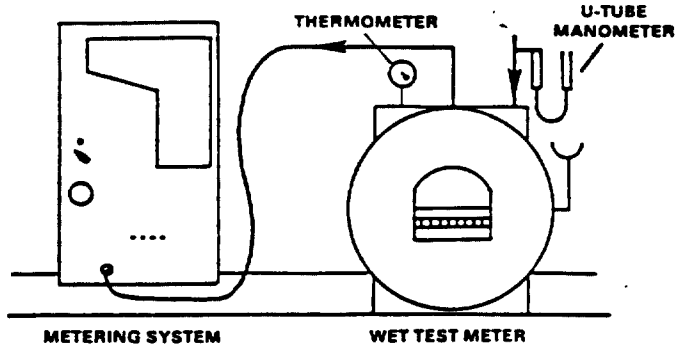

Figure 5.5 Equipment arrangement for metering system calibration.

Date_____ Metering System Identification:_____

Barometric pressure, P_b = _____ in. Hg

Orifice manometer setting ΔH in. H_2O	Spirometer (wet meter) gas volume (V_w) ft^3	Dry gas meter volume (V_m) ft^3	Temperatures: Spirometer (wet meter) (t_w) °F	Dry Gas Meter: Inlet (t_i) °F	Dry Gas Meter: Outlet (t_o) °F	Dry Gas Meter: Average (t_m) °F	Time (θ) min

Calculations

ΔH in. H_2O	Y: $\frac{V_w P_b (t_m + 460)}{V_m(P_b + \frac{\Delta H}{13.6})(t_w + 460)}$	$\Delta H@$: $\frac{0.0317\ \Delta H}{P_b (t_o + 460)}\left[\frac{(t_w + 460)\theta}{V_w}\right]^2$,
Average		

Y = Ratio of reading of wet test meter to dry test meter; tolerance for individual values ±0.02 from average.

$\Delta H@$ = Orifice pressure differential that equates to 0.75 cfm of air @ 68°F and 29.92 inches of mercury, in. H_2O; tolerance for individual values ±0.20 from average.

Figure 5.6. Example data sheet for calibration of metering system (English units).

ing procedure is suggested (see Figure 5-4): Close the main valve on the meter box. Insert a one-hole rubber stopper with rubber tubing atached into the orifice exhaust pipe. Disconnect and vent the low side of the orifice manometer. Close off the low side orifice tap. Pressurize the system to 13 to 18 cm (5 to 7 in.) water column by blowing into the rubber tubing. Pinch off the tubing and observe the manometer for one minute. A loss of pressure on the manometer indicates a leak in the meter box; leaks, if present, must be corrected.

5.7 Barometer. Calibrate against a mercury barometer.

6. *Calculations*

Carry out calculations, retaining at least one extra decimal figure beyond that of the acquired data. Round off figures after the final calculation. Other forms of the equations may be used as long as they give equivalent results.

6.1 Nomenclature

A_n = Cross-sectional area of nozzle, m^2 (ft^2).

B_{ws} = Water vapor in the gas stream, proportion by volume.

C_a = Acetone blank residue concentration, mg/mg.

c_s = Concentration of particulate matter in stack gas, dry basis, corrected to standard conditions, g/dscm (g/dscf).

I = Percent of isokinetic sampling.

L_a = Maximum acceptable leakage rate for either a pretest leak check or for a leak check following a component change; equal to 0.00057 m^3/min (0.02 cfm) or 4 percent of the average sampling rate, whichever is less.

L_i = Individual leakage rate observed during the leak check conducted prior to the "i^{th}" component change (i=1, 2, 3.....n), m^3/min (cfm).

L_p = Leakage rate observed during the post-test leak check, m^3/min (cfm).

m_a = Total amount of particulate matter collected, mg.

M_w = Molecular weight of water, 18.0 g/g-mole (18.0lb/lb-mole).

m_a = Mass of residue of acteone after evaporation, mg.

P_{bar} = Barometric pressure at the sampling site, mm Hg (in. Hg).

P_s = Absolute stack gas pressure, mm Hg (in. Hg).

P_{std} = Standard absolute pressure, 760 mm Hg (29.92 in. Hg).

R = Ideal gas constant, 0.06236 mm Hg-m^3/°K-g-mole (21.85 in. Hg-ft^3/°R-lb-mole).

T_m = Absolute average dry gas meter temperature (see Figure 5-2), °K (°R).

T_s = Absolute average stack gas temperature (see Figure 5-2), °K (°R).

T_{std} = Standard absolute temperature, 293° K (528° R).

V_a = Volume of acetone blank, ml.

V_{aw} = Volume of acetone used in wash, ml.

V_{lc} = Total volume of liquid collected in impingers and silica gel (see Figure 5-3), ml.

V_m = Volume of gas sample as measured by dry gas meter, dcm (dscf).

$V_{m(std)}$ = Volume of gas sample measured by the dry gas meter, corrected to standard conditions, dscm (dscf).

$V_{w(std)}$ = Volume of water vapor in the gas sample, corrected to standard conditions, scm (scf).

v_s = Stack gas velocity, calculated by Method 2, Equation 2-9, using data obtained from Method 5, m/sec (ft/sec).

W_a = Weight of residue in acetone wash, mg.

Y = Dry gas meter calibration factor.

ΔH = Average pressure differential across the orifice meter (see Figure 5-2), mm H_2O (in. H_2O).

ρ_a = Density of acetone, mg/ml (see label on bottle).

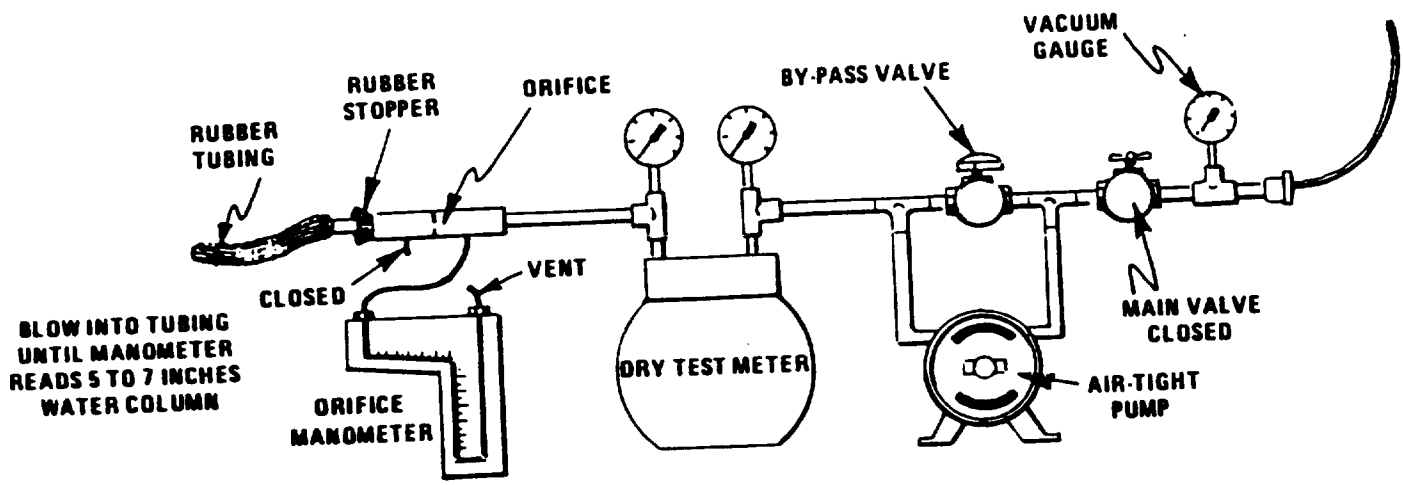

Figure 5-4. Leak check of meter box.

ρ_w = Density of water, 0.9982 g/ml (0.002201 lb/ml).
θ = Total sampling time, min.
θ_1 = Sampling time interval, from the beginning of a run until the first component change, min.
θ_i = Sampling time interval, between two successive component changes, beginning with the interval between the first and second changes, min.
θ_p = Sampling time interval, from the final (n^{th}) component change until the end of the sampling run, min.
13.6 = Specific gravity of mercury.
60 = Sec/min.
100 = Conversion to percent.

6.2 Average dry gas meter temperature and average orifice pressure drop. See data sheet (Figure 5-2).

6.3 Dry Gas Volume. Correct the sample volume measured by the dry gas meter to standard conditions (20° C, 760 mm Hg or 68° F, 29.92 in. Hg) by using Equation 5-1.

$$V_{m(std)} = V_m Y \left(\frac{T_{std}}{T_m}\right)\left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{P_{std}}\right]$$

$$= K_1 V_m Y \frac{P_{bar} + (\Delta H/13.6)}{T_m}$$

Equation 5-1

where:
K_1 = 0.3858 °K/mm Hg for metric units
= 17.64 °R/in. Hg for English units

NOTE: Equation 5-1 can be used as written unless the leakage rate observed during any of the mandatory leak checks (i.e., the post-test leak check or leak checks conducted prior to component changes) exceeds L_a. If L_i or L_p exceeds L_a, Equation 5-1 must be modified as follows:

(a) Case I. No component changes made during sampling run. In this case, replace V_m in Equation 5-1 with the expression:

$$V_m - (L_p - L_a)\theta]$$

(b) Case II. One or more component changes made during the sampling run. In this case, replace V_m in Equation 5-1 by the expression:

$$\left[V_m - (L_1 - L_a)\theta_1 - \sum_{i=2}^{n} (L_i - L_a)\theta_i - (L_p - L_a)\theta_p\right]$$

and substitute only for those leakage rates (L_i or L_p) which exceed L_a.

6.4 Volume of water vapor.

$$V_{w(std)} = V_{lc}\left(\frac{\rho_w}{M_w}\right)\left(\frac{RT_{std}}{P_{std}}\right) = K_2 V_{lc}$$

Equation 5-2

where:
K_2 = 0.001333 m³/ml for metric units
= 0.04707 ft³/ml for English units.

6.5 Moisture Content.

$$B_{ws} = \frac{V_{w(std)}}{V_{m(std)} + V_{w(std)}}$$

Equation 5-3

NOTE: In saturated or water droplet-laden gas streams, two calculations of the moisture content of the stack gas shall be made, one from the impinger analysis (Equation 5-3), and a second from the assumption of saturated conditions. The lower of the two values of B_{ws} shall be considered correct. The procedure for determining the moisture content based upon assumption of saturated conditions is given in the Note of Section 1.2 of Method 4. For the purposes of this method, the average stack gas temperature from Figure 5-2 may be used to make this determination, provided that the accuracy of the in-stack temperature sensor is ±1° C (2° F).

6.6 Acetone Blank Concentration.

Equation 5-4

$$C_a = \frac{m_a}{V_a \rho_a}$$

6.7 Acetone Wash Blank.

$$W_a = C_a V_{aw} \rho_a \qquad \text{Equation 5-5}$$

6.8 Total Particulate Weight. Determine the total particulate catch from the sum of the weights obtained from containers 1 and 2 less the acetone blank (see Figure 5-3).

NOTE: Refer to Section 4.1.5 to assist in calculation of results involving two or more filter assemblies or two or more sampling trains.

6.9 Particulate Concentration.

$$C_s = (0.001\ g/mg)\ (m_n / V_{m(std)}) \qquad \text{Equation 5-6}$$

6.10 Conversion Factors:

From	To	Multiply by
scf	m³	0.02832.
g/ft³	gr/ft³	15.43.
g/ft³	lb/ft³	2.205×10^{-3}
g/ft³	g/m³	35.31.
g	mg	0.001

6.11 Isokinetic Varition.

6.11.1 Calculation From Raw Data.

$$I = \frac{100\ T_s [K_3 V_{lc} - (\Phi / T_m)(P_{bar} + \Delta H/13.6)]}{60 \theta_n P_s A_n}$$

Equation 5-7

where:
K_3 = 0.003454 mm Hg-m³/ml-°K for metric units.
= 0.002669-in. Hg-ft³/ml-°R for English units.

6.11.2 Calculation From Intermediate Values.

$$I = \frac{T_s V_{m(std)} P_{std} 100}{T_{std} v_s \theta A_n P_s 60 (1 - B_{ws})}$$

$$= K_4 \frac{T_s V_{m(std)}}{P_s V_s A_n \theta (1 - B_{ws})}$$

Equation 5-8

where:
K_4 = 4.320 for metric units
= 0.09450 for English units.

6.12 Acceptable Results. If 90 percent < I < 110 percent, the results are acceptable. If the particulate results are low in comparison to the standard, and I is over 110 percent or less than 90 percent, the Administrator may accept the results. Citation 4 in the bibliography section can be used to make acceptability judgments. If I is judged to be unacceptable, reject the particulate results and repeat the test.

6.13 Stack Gas Velocity and Volumetric Flow Rate. Calculate the average stack gas velocity and volumetric flow rate, if needed, using data obtained in this method and the equations in Sections 5.2 and 5.3 of Method 2.

7. *Alternative Procedures*

7.1 Dry Gas Meter as a Calibration Standard. A dry gas meter may be used as a calibration standard for volume measurements in place of the wet test meter specified in Section 5.3, provided that it is calibrated initially and recalibrated periodically as follows:

7.1.1 Standard Dry Gas Meter Calibration.

7.1.1.1 The dry gas meter to be calibrated and used as a secondary reference meter should be of high quality and have an appropriately sized capacity, e.g., 3 liters/rev (0.1 ft³/rev). A spirometer (400 liters or more capacity), or equivalent, may be used for this calibration, although a wet test meter is usually more practical. The wet test meter should have a capacity of 30 liters/rev (1 ft³/rev) and capable of measuring volume to within ±1.0 percent; wet test meters should be checked against a spirometer or a liquid displacement meter to ensure the accuracy of the wet test meter. Spirometers or wet test meters of other sizes may be used, provided that the specified accuracies of the procedure are maintained.

7.1.1.2 Set up the components as shown in Figure 5.7. A spirometer, or equivalent, may be used in place of the wet test meter in the system. Run the pump for at least 5 minutes at a flow rate of about 10 liters/min (0.35 cfm) to condition the interior surface of the wet test meter. The pressure drop indicated by the manometer at the inlet side of the dry gas meter should be minimized [no greater than 100 mm H_2O (4 in. H_2O) at a flow rate of 30 liters/min (1 cfm)]. This can be accomplished by using large diameter tubing connections and straight pipe fittings.

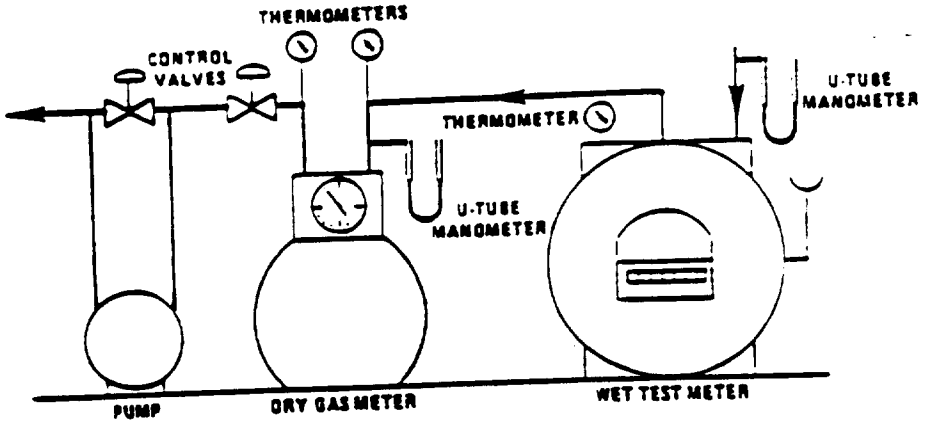

Figure 5.7 . Equipment arrangement for dry-gas meter calibration.

7.1.1.3 Collect the data as shown in the example data sheet (see Figure 5-8). Make triplicate runs at each of the flow rates and at no less than five different flow rates. The range of flow rates should be between 10 and 34 liters/min (0.35 and 1.2 cfm) or over the expected operating range.

DATE: _____

DRY GAS METER IDENTIFICATION: _____

BAROMETRIC PRESSURE (P_b): _____ in. Hg

APPROXIMATE FLOW RATE ($\bar{Q}$) cfm	SPIROMETER (WET METER) GAS VOLUME (V_s) ft^3	DRY GAS METER VOLUME (V_{dg}) ft^3	TEMPERATURES: SPIROMETER (WET METER) (t_s) °F	TEMPERATURES: DRY GAS METER: INLET (t_i) °F	TEMPERATURES: DRY GAS METER: OUTLET (t_o) °F	TEMPERATURES: DRY GAS METER: AVERAGE ($\bar{t}_d$) °F	DRY GAS METER PRESSURE (Δp) in. H_2O	TIME (Θ) min.	FLOW RATE (Q) cfm	METER METER COEFFICIENT (Y_{ds})	AVERAGE METER COEFFICIENT ($\bar{Y}_{ds}$)
0.40											
0.60											
0.80											
1.00											
1.20											

$$Q = 17.65 \cdot \frac{V_s}{\Theta} \cdot \frac{P_b}{(t_s + 460)}$$

$$Y_{ds} = \frac{V_s}{V_{dg}} \cdot \frac{(\bar{t}_d + 460)}{(t_s + 460)} \cdot \frac{P_b}{\left(P_b + \frac{\Delta p}{13.6}\right)}$$

Figure 5.8. Example data sheet for calibration of a standard dry gas meter for method 5 sampling equipment (English units).

7.1.1.4 Calculate flow rate, Q, for each run using the wet test meter gas volume, V_w, and the run time, θ. Calculate the dry gas meter coefficient, Y_{dm}, for each run. These calculations are as follows:

$$Q = K_1 \frac{P_{bar}}{t_w + t_{std}} \frac{V_w}{\theta}$$

$$Y_{dm} = \frac{V_w}{V_{dm}} \frac{(t_{dm} + t_{std})}{(t_w + t_{std})} \frac{P_{bar}}{\left(P_{bar} + \frac{\Delta p}{13.6}\right)}$$

Where:

K_1 = 0.3858 for international system of units (SI); 17.64 for English units.

V_w = Wet test meter volume, liters (ft^3).

V_{dm} = Dry gas meter volume, liters (ft^3).

t_{dm} = Average dry gas meter temperature, °C (°F).

t_{std} = 273° C for SI units; 460° F for English units.

t_w = Average wet test meter temperature, °C (°F).

P_{bar} = Barometric pressure, mm Hg (in. Hg).

Δp = Dry gas meter inlet differential pressure, mm H_2O (in. H_2O).

θ = Run time, min.

7.1.1.5 Compare the three Y_{dm} values at each of the flow rates and determine the maximum and minimum values. The difference between the maximum and minimum values at each flow rate should be no greater than 0.030. Extra sets of triplicate runs may be made in order to complete this requirement. In addition, the meter coefficients should be between 0.95 and 1.05. If these specifications cannot be met in three sets of successive triplicate runs, the meter is not suitable as a calibration standard and should not be used as such. If these specifications are met, average the three Y_{dm} values at each flow rate resulting in five average meter coefficients, $\overline{Y}_{dm}$.

7.1.1.6 Prepare a curve of meter coefficient, $\overline{Y}_{dm}$ versus flow rate, Q, for the dry gas meter. This curve shall be used as a reference when the meter is used to calibrate other dry gas meters and to determine whether recalibration is required.

7.1.2 Standard Dry Gas Meter Recalibration.

7.1.2.1 Recalibrate the standard dry gas meter against a wet test meter or spirometer annually or after every 200 hours of operation, whichever comes first. This requirement is valid provided the standard dry gas meter is kept in a laboratory and, if transported, cared for as any other laboratory instrument. Abuse to the standard meter may cause a change in the calibration and will require more frequent recalibrations.

7.1.2.2 As an alternative to full recalibration, a two-point calibration check may be made. Follow the same procedure and equipment arrangement as for a full recalibration, but run the meter at only two flow rates (suggested rates are 14 and 28 liters/min (0.5 and 1.0 cfm)). Calculate the meter coefficients for these two points, and compare the values with the meter calibration curve. If the two coefficients are within ±1.5 percent of the calibration curve values at the same flow rates, the meter need not be recalibrated until the next date for a recalibration check.

7.2 Critical Orifices As Calibration Standards. Critical orifices may be used as calibration standards in place of the wet test meter specified in Section 5.3, provided that they are selected, calibrated, and used as follows:

7.2.1 Section of Critical Orifices.

7.2.1.1 The procedure that follows describes the use of hypodermic needles or stainless steel needle tubings which have been found suitable for use as critical orifices. Other materials and critical orifice designs may be used provided the orifices act as true critical orifices: i.e., a critical vacuum can be obtained, as described in Section 7.2.2.2.3. Select five critical orifices that are appropriately sized to cover the range of flow rates between 10 and 34 liters/min or the expected operating range. Two of the critical orifices should bracket the expected operating range.

A minimum of three critical orifices will be needed to calibrate a Method 5 dry gas meter (DGM); the other two critical orifices can serve as spares and provide better selection for bracketing the range of operating flow rates. The needle sizes and tubing lengths shown below give the following approximate flow rates:

Gauge/cm	Flow rate (liters/min)	Gauge/cm	Flow rate (liters/min)
12/7.6	32.56	14/2.5	19.54
12/10.2	30.02	14/5.1	17.27
13/2.5	25.77	14/7.6	16.14
13/5.1	23.50	15/3.2	14.16
13/7.6	22.37	15/7.6	11.81
13/10.2	20.67	15/10.2	10.48

7.2.1.2 These needles can be adapted to a Method 5 type sampling train as follows: Insert a serum bottle stopper, 13- by 20-mm sleeve type, into a ½-inch Swagelok quick connect. Insert the needle into the stopper as shown in Figure 5-8.

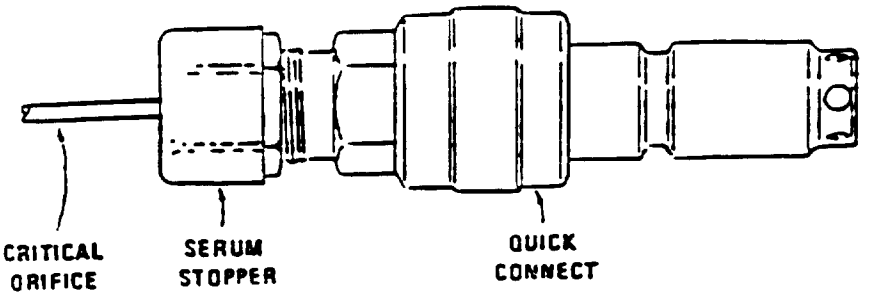

Figure 5-9. Critical orifice adaptation to Method 5 metering system.

7.2.2 Critical Orifice Calibration. The procedure described in this section uses the Method 5 meter box configuration with a DGM as described in Section 2.1.8 to calibrate the critical orifices. Other schemes may be used, subject to the approval of the Administrator.

7.2.2.1 Calibration of Meter Box. The critical orifices must be calibrated in the same configuration as they will be used: i.e., there should be no connections to the inlet of the orifice.

7.2.2.1.1 Before calibrating the meter box, leak check the system as follows: Fully open the coarse adjust valve, and completely close the by-pass valve. Plug the inlet. Then turn on the pump, and determine whether there is any leakage. The leakage rate shall be zero: i.e., no detectable movement of the DGM dial shall be seen for 1 minute.

7.2.2.1.2 Check also for leakages in that portion of the sampling train between the pump and the orifice meter. See Section 5.6 for the procedure: make any corrections, if necessary. If leakage is detected, check for cracked gaskets, loose fittings, worn O-rings, etc., and make the necessary repairs.

7.2.2.1.3 After determining that the meter box is leakless, calibrate the meter box according to the procedure given in Section 5.3. Make sure that the wet test meter meets the requirements stated in Section 7.1.1.1. Check the water level in the wet test meter. Record the DGM calibration factor, Y.

7.2.2.2 Calibration of Critical Orifices. Set up the apparatus as shown in Figure 5–10.

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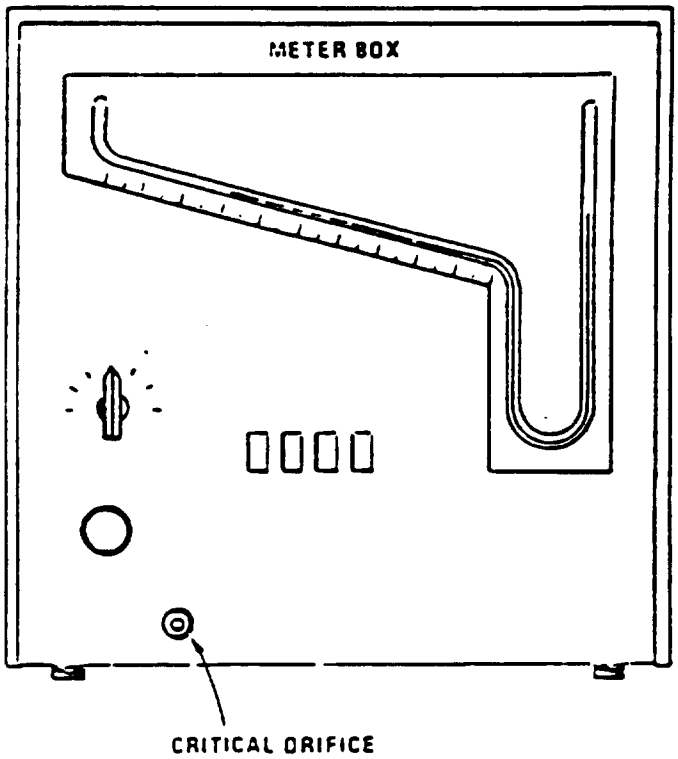


Figure 5-10. Apparatus setup.

7.2.2.2.1 Allow a warm-up time of 15 minutes. This step is important to equilibrate the temperature conditions through the DGM.

7.2.2.2.2 Leak check the system as in Section 7.2.2.1.1. The leakage rate shall be zero.

7.2.2.2.3 Before calibrating the critical orifice, determine its suitability and the appropriate operating vacuum as follows: Turn on the pump, fully open the coarse adjust valve, and adjust the by-pass valve to give a vacuum reading corresponding to about half of atmospheric pressure. Observe the meter box orifice manometer reading, H. Slowly increase the vacuum reading until a stable reading is obtained on the meter box orifice manometer. Record the critical vacuum for each orifice.

Orifices that do not reach a critical value shall not be used.

7.2.2.2.4 Obtain the barometric pressure using a barometer as described in Section 2.1.9. Record the barometric pressure, P_{bar}, in mm Hg (in. Hg).

7.2.2.2.5 Conduct duplicate runs at a vacuum of 25 to 50 mm Hg (1 to 2 in. Hg) above the critical vacuum. The runs shall be at least 5 minutes each. The DGM volume readings shall be in increments of 0.00283 m^3 (0.1 ft^3) or in increments of complete revolutions of the DGM. As a guideline, the times should not differ by more than 3.0 seconds (this includes allowance for changes in the DGM temperatures) to achieve ± 0.5 percent in K'. Record the information listed in Figure 5-11.

7.2.2.2.6 Calculate K' using Equation 5-9.

Where:

$$K' = \frac{K_1 V_m Y (P_{bar} + \Delta H/13.6) \sqrt{T_{amb}}}{P_{bar}\, T_m \Theta}$$

Eq. 5-9

$$K' = \text{Critical orifice coefficient,} \quad \frac{(m^3)(°K)^{1/2}}{(mm.\ Hg)(min)} \left[\frac{(ft^3)(°R)^{1/2}}{(in.\ Hg)(min)} \right]$$

T_{amb} = Absolute ambient temperature, °K (°R).

Average the K' values. The individual K' values should not differ by more than ±0.5 percent from the average.

7.2.3 Using the Critical Orifices as Calibration Standards.

7.2.3.1 Record the barometric pressure.

Date _____ Train ID _____ DGM cal. factor _____ Critical orifice ID _____

Dry gas meter		Run number 1	Run number 2
Final reading	m^3 (ft^3)		
Initial reading	m^3 (ft^3)		
Difference, V_m	m^3 (ft^3)		
Inlet/Outlet temperatures:			
Initial	°C (°F)	/	/
Final	°C (°F)	/	/
Avg. Temperature, t_m	°C (°F)		
Time, Θ	min/sec	/	/
	min		
Orifice man. rdg., ΔH	mm (in.) H_2O		
Bar. pressure, P_{bar}	mm (in.) Hg		
Ambient temperature, t_{amb}	°C (°F)		
Pump vacuum	mm (in.) Hg		
K' factor			
Average			

Figure 5-11. Data sheet for determining K' factor.

7.2.3.2 Calibrate the metering system according to the procedure outlined in Sections 7.2.2.2.1 to 7.2.2.2.5. Record the information listed in Figure 5.12.

7.2.3.3 Calculate the standard volumes of air passed through the DGM and the critical orifices, and calculate the DGM calibration factor, Y, using the equations below:

$$V_m(std) = K_1 V_m \frac{P_{bar} + (\Delta H/13.6)}{T_m}$$

Eq. 5-10

$$V_{cr}(std) = K' \sqrt{\frac{P_{bar}\Theta}{T_{amb}}}$$

Eq. 5-11

$$Y = \frac{V_{cr(std)}}{V_{m(std)}}$$

Eq. 5-12

where:

$V_{cr(std)}$ = Volume of gas sample passed through the critical orifice, corrected to standard conditions, dsm^3 (dscf).

K_1 = 0.3858 °K/mm Hg for metric units
= 17.64 °R/in. Hg for English units.

7.2.3.4 Average the DGM calibration values for each of the flow rates. The calibration factor, Y, at each of the flow rates should not differ by more than ±2 percent from the average.

7.2.3.5 To determine the need for recalibrating the critical orifices, compare the DGM Y factors obtained from two adjacent orifices each time a DGM is calibrated; for example, when checking 13/2.5, use orifices 12/10.2 and 13/5.1. If any critical orifice yields a DGM Y factor differing by more than 2 percent from the others, recalibrate the critical orifice according to Section 7.2.2.2.

Date _____ Train ID _____ Critical orifice ID _____ Critical orifice K' factor _____

Dry gas meter		Run number 1	Run number 2
Final reading	m^3 (ft^3)		
Initial reading	m^3 (ft^3)		

Dry gas meter		Run number	
		1	2
Difference, V_m	m^3 (ft^3)		
Inlet/outlet temperatures			
Initial	°C (°F)	/	/
Final	°C (°F)		/
Avg. Temperature, t_m	°C (°F)		
Time, θ	min/sec	/	/
	min		
Orifice man. rdg., ΔH	mm (in.) H_2O		
Bar. pressure, P_{bar}	mm (in.) Hg		
Ambient temperature, t_{amb}	°C (°F)		
Pump vacuum	mm (in.) Hg		
$V_{m(std)}$	m^3 (ft^3)		
$V_{w(std)}$	m^3 (ft^3)		
DGM cal. factor, Y			

Figure 5-12. Data sheet for determining DGM Y factor.

8. *Bibliography*

1. Addendum to Specifications for Incinerator Testing at Federal Facilities. PHS, NCAPC. Dec. 6, 1967.

2. Martin, Robert M. Construction Details of Isokinetic Source-Sampling Equipment. Environmental Protection Agency. Research Triangle Park, NC. APTD-0581. April 1971.

3. Rom, Jerome J. Maintenance, Calibration, and Operation of Isokinetic Source Sampling Equipment. Environmental Protection Agency. Research Triangle Park, NC. APTD-0576. March, 1972.

4. Smith, W. S., R. T. Shigehara, and W. F. Todd. A Method of Interpreting Stack Sampling Data. Paper Presented at the 63d Annual Meeting of the Air Pollution Control Association, St. Louis, MO, June 14-19, 1970.

5. Smith, W. S., et al. Stack Gas Sampling Improved and Simplified With New Equipment. APCA Paper No. 67-119. 1967.

6. Specifications for Incinerator Testing at Federal Facilities. PHS, NCAPC. 1967.

7. Shigehara, R. T. Adjustments in the EPA Nomograph for Different Pitot Tube Coefficients and Dry Molecular Weights. Stack Sampling News *2*:4-11. October, 1974.

8. Vollaro, R. F. A Survey of Commercially Available Instrumentation For the Measurement of Low-Range Gas Velocities. U.S. Environmental Protection Agency, Emission Measurement Branch, Research Triangle Park, NC. November, 1976 (unpublished paper).

9. Annual Book of ASTM Standards. Part 26. Gaseous Fuels; Coal and Coke; Atmospheric Analysis. American Society for Testing and Materials. Philadelphia, PA. 1974. pp. 617-622.

10. Felix, L. G., G. I. Clinard, G. E. Lacey, and J. D. McCain. Inertial Cascade Impactor Substrate Media for Flue Gas Sampling. U.S. Environmental Protection Agency. Research Triangle Park, NC 27711. Publication No. EPA-600/7-77-060. June 1977. 83 p.

11. Westlin, P. R. and R. T. Shigehara. Procedure for Calibrating and Using Dry Gas Volume Meters as Calibration Standards. Source Evaluation Society Newsletter. *3*(1):17-30. February 1978.

12. Lodge, J.P., Jr., J.B. Pate, B.E. Ammons, and G.A. Swanson. The Use of Hypodermic Needles as Critical Orifices in Air Sampling. J. Air Pollution Control Association. *16*:197-200. 1966.

Toluene Soluble Organics Analysis Method

Hilar

Revised 12-2-91

TRIANGLE LABORATORIES, INC.

TOLUENE SOLUBLE ORGANICS

SCOPE AND APPLICATION: This is an analytical procedure for the determination of Toluene Soluble Organics collected in a M-5 stack sampling train (front half fractions).

SAFETY CONSIDERATIONS: This method involves the use of volatile organic solvents as well as the handling of organic compounds of unknown toxicity. The work should be conducted in a well ventilated area, free from sources of potential combustion. Personnel conducting these tests should protect themselves from contact with the materials, and breathing the vapors.

PROCEDURE:

1. Label sufficient No. of 250 ml beakers as follows:

   Container No. 1 through N (where N = No. of samples)*
   Field Acetone Blank (usually one)
   Field Toluene Blank (usually one)
   Field Filter Blank (usually one)
   Lab Toluene Blank (usually one)
   Lab Weighing Blanks (usually two; A and B)

***Note: "Container No. 1 through N beakers- a beaker will be required for each set of combined toluene solutions for the fractions listed in the following references 2., 3. and 4..**

Place beakers in a desiccator containing 6/16 mesh silica gel indicating type desiccant for at least 12 hours.

Perform analytical balance calibrations per TLI Standard Operating Procedures and record date, time and analyst name. Analytical calibrations shall be performed and documented prior to each daily weighing sequence.

Prior to use in subsequent steps, determine and record the tare weights of the beakers to the nearest 0.1 mg.

Measure and record the temperature and humidity in the balance room at least once during each weighing sequence.

Measure and record separately the weights for the two beakers designated "Lab Weighing Blanks (A & B)" at least once during each weighing sequence.

Note: The balance room temperature and humidity data along with the Lab Weighing Blanks (A & B) data are quality control requirements.

These data will be used for monitoring the blank beaker weight differences/changes resulting from the varying balance room environment. Record the room temperature to the nearest 1.0 °C. Record the room humidity to the nearest percent absolute. Record the Lab Weighing Blank beaker weights to the nearest 0.1 mg.

2. Sample Fraction No. 1 (Front half acetone residue)

Note the condition of the sample beaker and dried residue. Add 50 ml of toluene to the residue in the sample beaker and agitate for 1 hour in an ultrasonic bath.

Quantitatively transfer the residue/toluene to a filtering apparatus. Afterward, rinse the sample beaker using three 10 ml portions of toluene and transfer these to the filtering apparatus.

Filter, using the gravity feed procedure, the beaker toluene contents through a Whatman No. 40 filter into a numbered rotovap 250 ml round-bottomed flask and combine with the following filtered Sample Fractions.

Following completion of the filtering (Sample Fractions 1, 2 & 3), rinse the Whatman No. 40 filter with three 10 ml portions of toluene and place in the numbered rotovap flask.

3. Sample Fraction No. 2 (Front half toluene residue)

Note the condition of the sample beaker and dried residue. Add 50 ml of toluene to the residue in the sample beaker and agitate for 1 hour in an ultrasonic bath.

Quantitatively transfer the residue/toluene to a filtering apparatus. Afterward, rinse the sample beaker using three 10 ml portions of toluene and transfer these to the filtering apparatus.

Filter, using the gravity feed procedure, the beaker toluene contents through a Whatman No. 40 filter into a numbered rotovap 250 ml round-bottomed flask and combine with the other filtered Sample Fractions.

Following completion of the filtering (Sample Fractions 1, 2 & 3), rinse the Whatman No. 40 filter with three 10 ml portions of toluene and place in the numbered rotovap flask.

4. Sample Fraction No. 3 (Filter)

Charge a distillation flask containing glass chips (1-5) with 350 ml of toluene and assemble to the Soxhlet extractor.

Quantitatively transfer the Sample Fraction No. 3 filter to the Soxhlet extractor and assemble to the condenser. Pass cold water through the condenser and bring the toluene to reflux using a hot plate or heating mantle. Adjust the heat so that the Soxhlet cycles 5 or 6 times per hour and extract the sample for 16 hours.

After the extraction is completed, filter the contents of the distillation flask through the Whatman No. 40 filter into the numbered rotovap flask used to contain the Sample Fractions Nos. 1 & 2 filtrate. Rinse the distillation flask with three 10 ml portions of toluene and pour through the filter into the rotovap flask.

Using the rotovap unit, evaporate the combined Fractions Nos. 1 & 2 residue/toluene and Fraction No. 3 extract to approximately 1 ml. Transfer the concentrated 1 ml fraction to a numbered tared 250 ml beaker. Afterward, rinse the rotovap flask with three 3 ml portions of toluene and combined into the tared beaker.

Place a ribbed watch glass overtop the beaker. Place the tared beaker with protective watch glass at the front of a vented hood that will provide overnight air sweeping.

Evaporate the contents of the tared beaker to dryness at ambient temperature and pressure. Place in the desiccator for 24 hours, then weigh to constant weight.

Desiccate the tared beaker at 20±5.6°C (68±10°F) and ambient pressure for at least 24 hours and weigh at intervals of at least 6 hours apart to a constant weight, i.e., 0.5 mg change from the previous weighing. Report results to the nearest 0.1 mg.

During each weighing, the tared beaker must not be exposed to the laboratory atmosphere for a period greater than 2 minutes and a relative humidity above 50 percent.

5. Field Acetone Blank

If a liquid acetone sample is received, measure the acetone either volumetrically or gravimetrically. Transfer the acetone to a 250 ml beaker (not the tared one), and evaporate to dryness at ambient temperature and pressure; then follow the dried residue directions.

If a beaker with dried residue is received, add 50 ml of toluene to the residue in the beaker and agitate for 1 hour in an ultrasonic bath. Filter the contents through a Whatman No. 40 filter into the flask prepared for the Acetone Blank.

Place the combined fractions on the rotovap unit and then transfer the 1 ml concentrate to a tared beaker and evaporate to dryness at ambient temperature and pressure. Desiccate for 24 hours and weigh to a constant weight. Report the results to the nearest 0.1 mg.

6. Field Toluene Blank

If a liquid toluene sample is received, measure the toluene either volumetrically or gravimetrically. Transfer the toluene to a 250 ml beaker (not the tared one), and evaporate to dryness at ambient temperature and pressure; then follow the dried residue directions.

If a beaker with dried residue is received, add 50 ml of toluene to the residue in the beaker and agitate for 1 hour in an ultrasonic bath. Filter the contents through a Whatman No. 40 filter into the flask prepared for the Acetone Blank.

Place the combined fractions on the rotovap unit and then transfer the 1 ml concentrate to a tared beaker and evaporate to dryness at ambient temperature and pressure. Desiccate for 24 hours and weigh to a constant weight. Report the results to the nearest 0.1 mg.

7. Field Filter Blank

Filter Blank: Treat the blank filter according to the instructions for the field filter (Sample Fraction No.3), given in section 3 above.

6. Lab Toluene Blank

Measure 600 ml of the blank toluene reagent either volumetrically or gravimetrically and transfer the toluene to a 250 ml rotovap round-bottomed flask and evaporate to approximately 1 ml. Transfer the 1 ml concentrate to a numbered tared 250 ml beaker and evaporate to dryness at ambient temperature and pressure. Desiccate for 24 hours and weigh to a constant weight. Report the results to the nearest 0.1 mg.

APPARATUS AND MATERIALS

A. Analysis: For analysis the following equipment is required

1. Desiccator.
2. Analytical balance; capacity 200 g minimum; sensitivity 0.1 mg minimum.
3. Beakers; 250 ml.
4. Hygrometer; to measure relative humidity of balance room.
5. Thermometer; to measure temperature of the balance room.
6. Filtering apparatus (gravity feed).
7. Soxhlet extraction apparatus (soxhlet extractor, condenser and distillation flask).
8. Ultrasonic Bath.
9. Rotovap apparatus with 250 ml round-bottomed flask.
10. Hand Tongs for weighing 250 ml beakers.
11. Glass or teflon ribbed watch glasses for 250 ml beakers.
12. Ventilation hood.

B. Reagents

1. Toluene, ACS reagent grade
2. Whatman No. 40 filter papers
3. Desiccant, anhydrous calcium sulfate, indicating type

Method 202

Method 202—Determination of Condensible Particulate Emissions From Stationary Sources

1. Applicability and Principle

1.1 Applicability. 1.1.1 This method applies to the determination of condensible particulate matter (CPM) emissions from stationary sources. It is intended to represent condensible matter as material that condenses after passing through a filter and as measured by this method (Note: The filter catch can be analyzed according to the appropriate method).

1.1.2 This method may be used in conjunction with Method 201 or 201A if the probes are glass-lined. Using Method 202 in conjunction with Method 201 or 201A, only the impinger train configuration and analysis is addressed by this method. The sample train operation and front end recovery and analysis shall be conducted according to Method 201 or 201A.

1.1.3 This method may also be modified to measure material that condenses at other temperatures by specifying the filter and probe temperature. A heated Method 5 out-of-stack filter may be used instead of the in-stack filter to determine condensible emissions at wet sources.

1.2 Principle. 1.2.1 The CPM is collected in the impinger portion of a Method 17 (appendix A, 40 CFR part 60) type sampling train. The impinger contents are immediately purged after the run with nitrogen (N_2) to remove dissolved sulfur dioxide (SO_2) gases from the impinger contents. The impinger solution is then extracted with methylene chloride ($MeCl_2$). The organic and aqueous fractions are then taken to dryness and the residues weighed. The total of both fractions represents the CPM.

1.2.2 The potential for low collection efficiency exist at oil-fired boilers. To improve the collection efficiency at these type of sources, an additional filter placed between the second and third impinger is recommended.

2. Precision and Interference

2.1 Precision. The precision based on method development tests at an oil-fired boiler and a catalytic cracker were 11.7 and 4.8 percent, respectively.

2.2 Interference. Ammonia. In sources that use ammonia injection as a control technique for hydrogen chloride (HCl), the ammonia interferes by reacting with HCl in the gas stream to form ammonium chloride (NH_4Cl) which would be measured as CPM. The sample may be analyzed for chloride and the equivalent amount of NH_4Cl can be subtracted from the CPM weight. However, if NH_4Cl is to be counted as CPM, the inorganic fraction should be taken to near dryness (less than 1 ml liquid) in the oven and then allowed to air dry at ambient temperature to prevent any NH_4Cl from vaporizing.

3. Apparatus

3.1 Sampling Train. Same as in Method 17, section 2.1, with the following exceptions noted below (see Figure 202-1). *Note:* Mention of trade names or specific products does not constitute endorsement by EPA.

3.1.1 The probe extension shall be glass-lined or Teflon.

3.1.2 Both the first and second impingers shall be of the Greenburg-Smith design with the standard tip.

3.1.3 All sampling train glassware shall be cleaned prior to the test with soap and tap water, water, and rinsed using tap water, water, acetone, and finally, $MeCl_2$. It is important to completely remove all silicone grease from areas that will be exposed to the $MeCl_2$ during sample recovery.

3.2 Sample Recovery. Same as in Method 17, section 2.2, with the following additions:

3.2.1 N_2 Purge Line. Inert tubing and fittings capable of delivering 0 to 28 liters/min of N_2 gas to the impinger train from a standard gas cylinder (see Figure 202-2). Standard 0.95 cm (⅜-inch) plastic tubing and compression fittings in conjunction with an adjustable pressure regulator and needle valve may be used.

3.2.2 Rotameter. Capable of measuring gas flow at 20 liters/min.

3.3 Analysis. The following equipment is necessary in addition to that listed in Method 17, section 2.3:

3.3.1 Separatory Funnel. Glass, 1-liter.

3.3.2 Weighing Tins. 350-ml.

3.3.3 Dry Equipment. Hot plate and oven with temperature control.

3.3.4 Pipets. 5-ml.

3.3.5 Ion Chromatograph. Same as in Method 5F, Section 2.1.8.

4. Reagents

Unless otherwise indicated, all reagents must conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society. Where such specifications are not available, use the best available grade.

4.1 Sampling. Same as in Method 17, section 3.1, with the addition of deionized distilled water to conform to the American Society for Testing and Materials Specification D 1193-74, Type II and the omittance of section 3.1.4.

4.2 Sample Recovery. Same as in Method 17, section 3.2, with the following additions:

4.2.1 N_2 Gas. Zero N_2 gas at delivery pressures high enough to provide a flow of 20 liters/min for 1 hour through the sampling train.

4.2.2 Methylene Chloride. ACS grade. Blanks shall be run prior to use and only methylene chloride with low blank values (0.001 percent) shall be used.

4.2.3 Water. Same as in section 4.1.

4.3 Analysis. Same as in Method 17, section 3.3, with the following additions:

4.3.1 Methylene Chloride. Same as section 4.2.2.

4.3.2 Ammonium Hydroxide. Concentrated (14.8 M) NH_4OH.

4.3.3 Water. Same as in section 4.1.

4.3.4 Phenolphthalein. The pH indicator solution, 0.05 percent in 50 percent alcohol.

5. Procedure

5.1 Sampling. Same as in Method 17, section 4.1, with the following exceptions:

5.1.1 Place 100 ml of water in the first three impingers.

5.1.2 The use of silicone grease in train assembly is not recommended because it is very soluble in $MeCl_2$ which may result in sample contamination. Teflon tape or similar means may be used to provide leak-free connections between glassware.

5.2 Sample Recovery. Same as in Method 17, section 4.2 with the addition of a post-test N_2 purge and specific changes in handling of individual samples as described below.

5.2.1 Post-test N_2 Purge for Sources Emitting SO_2. (Note: This step is recommended, but is optional. With little or no SO_2 is present in the gas stream, i.e., the pH of the impinger solution is greater than 4.5, purging has been found to be unnecessary.) As soon as possible after the post-test leak check, detach the probe and filter from the impinger train. Leave the ice in the impinger box to prevent removal of moisture during the purge. If necessary, add more ice during the purge to maintain the gas temperature below 20 °C. With no flow of gas through the clean purge line and fittings, attach it to the input of the impinger train (see Figure 202-2). To avoid over- or under-pressurizing the impinger array, slowly commence the N_2 gas flow through the line while simultaneously opening the meter box pump valve(s). When using the gas cylinder pressure to push the purge gas through the sample train, adjust the flow rate to 20 liters/min through the rotameter. When pulling the purge gas through the sample train using the meter box vacuum pump, set the orifice pressure differential to $\Delta H_@$ and maintain an overflow rate through the rotameter of less than 2 liters/min. This will guarantee that the N_2 delivery system is operating at greater than ambient pressure and prevents the possibility of passing ambient air (rather than N_2) through the impingers. Continue the purge under these conditions for 1 hour, checking the rotameter and ΔH value(s) periodically. After 1 hour, simultaneously turn off the delivery and pumping systems.

5.2.2 Sample Handling.

5.2.2.1 Container Nos. 1, 2, and 3. If filter catch is to be determined, as detailed in Method 17, section 4.2.

5.2.2.2 Container No. 4 (Impinger Contents). Measure the liquid in the first three impingers to within 1 ml using a clean graduated cylinder or by weighing it to within 0.5 g using a balance. Record the volume or weight of liquid present to be used to calculate the moisture content of the effluent gas. Quantitatively transfer this liquid into a clean sample bottle (glass or plastic); rinse each impinger and the connecting glassware, including probe extension, twice with water, recover the rinse water, and add it to the same sample bottle. Mark the liquid level on the bottle.

5.2.2.3 Container No. 5 ($MeCl_2$ Rinse). Follow the water rinses of each impinger and the connecting glassware, including the probe extension with two rinses of $MeCl_2$; save the rinse products in a clean, glass sample jar. Mark the liquid level on the jar.

5.2.2.4 Container No. 6 (Water Blank). Once during each field test, place 500 ml of water in a separate sample container.

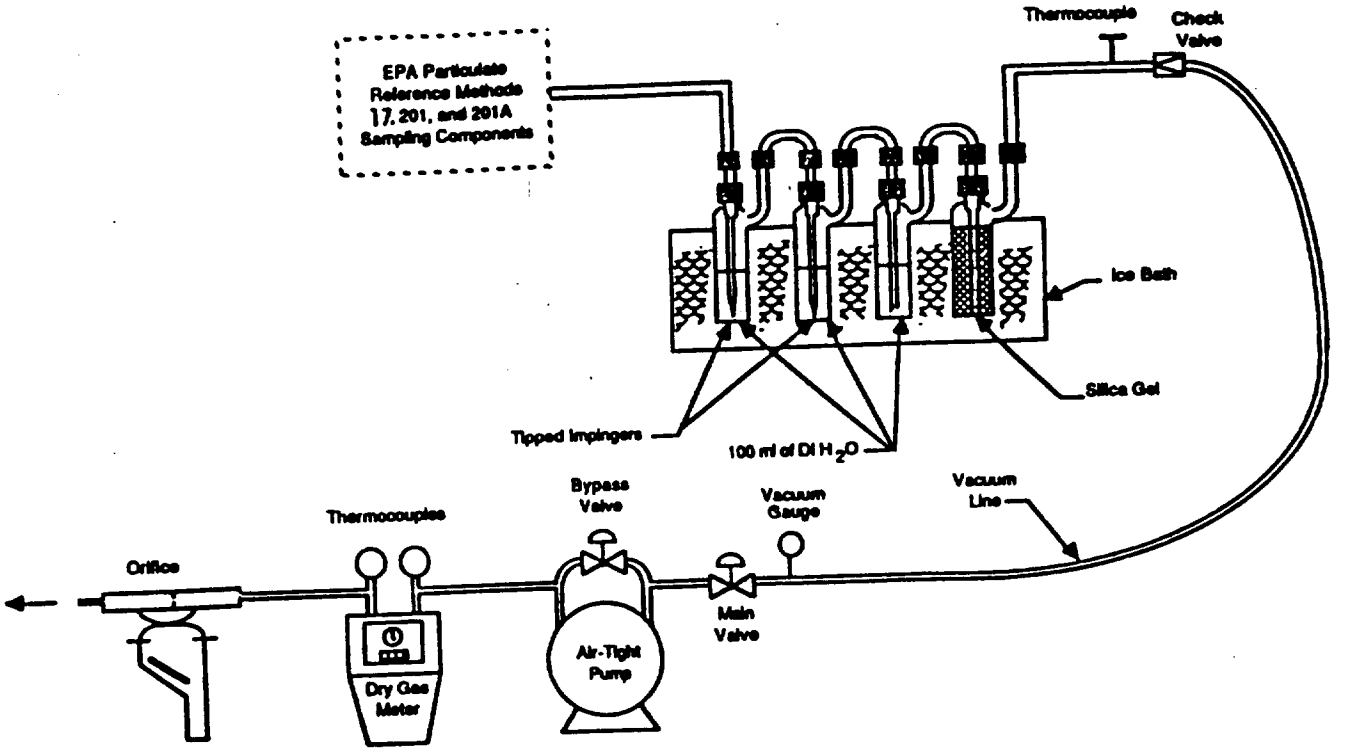


Figure 202-1. Schematic of condensible particulate sampling train.

5.2.2.5 Container No. 7 ($MeCl_2$ Blank). Once during each field test, place in a separate glass sample jar a volume of $MeCl_2$ approximately equivalent to the volume used to conduct the $MeCl_2$ rinse of the impingers.

5.3 Analysis. Record the data required on a sheet such as the one shown in Figure 202-3. Handle each sample container as follows:

5.3.1 Container Nos. 1, 2, and 3. If filter catch is analyzed, as detailed in Method 17, section 4.3.

5.3.2 Container Nos. 4 and 5. Note the level of liquid in the containers and confirm on the analytical data sheet whether leakage occurred during transport. If a noticeable amount of leakage has occurred, either void the sample or use methods, subject to the approval of the Administrator, to correct the final results. Measure the liquid in Container No. 4 either volumetrically to ±1 ml or gravimetrically to ±0.5 g. Remove a 5-ml aliquot and set aside for later ion chromatographic (IC) analysis of sulfates. (Note: Do not use this aliquot to determine chlorides since the HCl will be evaporated during the first drying step; Section 8.2 details a procedure for this analysis.)

5.3.2.1 Extraction. Separate the organic fraction of the sample by adding the contents of Container No. 4 ($MeCl_2$) to the contents of Container No. 4 in a 1000-ml separatory funnel. After mixing, allow the aqueous and organic phases to fully separate, and drain off most of the organic/$MeCl_2$ phase. Then add 75 ml of $MeCl_2$ to the funnel, mix well, and drain off the lower organic phase. Repeat with another 75 ml of $MeCl_2$. This extraction should yield about 250 ml of organic extract. Each time, leave a small amount of the organic/$MeCl_2$ phase in the separatory funnel ensuring that no water is collected in the organic phase. Place the organic extract in a tared 350-ml weighing tin.

5.3.2.2 Organic Fraction Weight Determination (Organic Phase from Container Nos. 4 and 5). Evaporate the organic extract at room temperature and pressure in a laboratory hood. Following evaporation, desiccate the organic fraction for 24 hours in a desiccator containing anhydrous calcium sulfate. Weigh to a constant weight and report the results to the nearest 0.1 mg.

5.3.2.3 Inorganic Fraction Weight Determination. (Note: If NH_4Cl is to be counted as CPM, the inorganic fraction should be taken to near dryness (less than 1 ml liquid) in the oven and then allow to air dry at ambient temperature. If multiple acid emissions are suspected, the ammonia titration procedure in section 8.1 may be preferred.) Using a hot plate, or equivalent, evaporate the aqueous phase to approximately 50 ml; then, evaporate to dryness in a 105 °C oven. Redissovle the residue in 100 ml of water. Add five drops of phenolphthalein to this solution; then, add concentrated (14.8 M) NH_4OH until the sample turns pink. Any excess NH_4OH will be evaporated during the drying step. Evaporate the sample to dryness in a 105 °C oven, desiccate the sample for 24 hours, weigh to a constant weight, and record the results to the nearest 0.1 mg. (Note: The addition of NH_4OH is recommended, but is

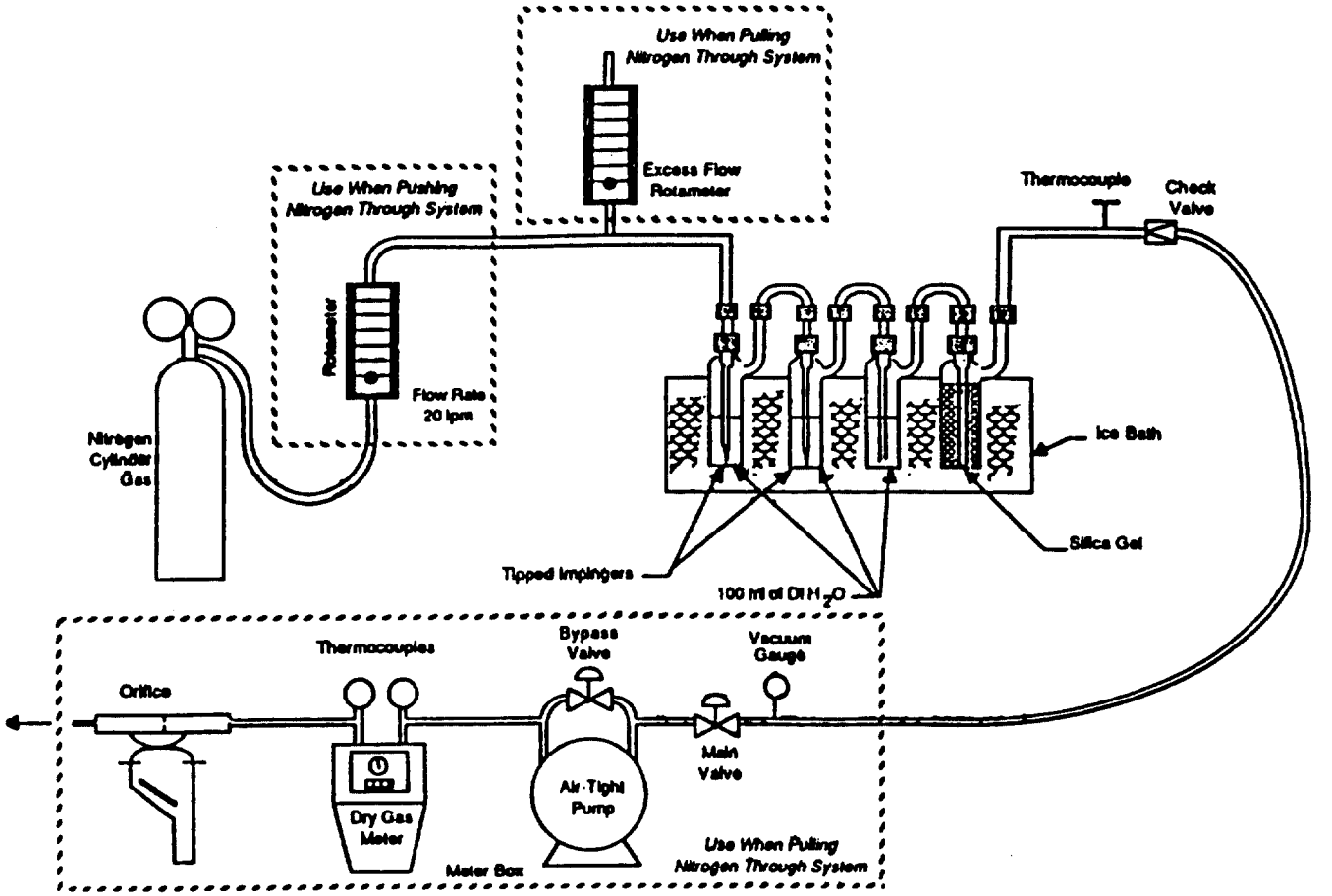


Figure 202-2. Schematic of post-test nitrogen purge system.

optional when little or no SO_2 is present in the gas stream, i.e., when the pH of the impinger solution is greater than 4.5, the addition of NH_4OH is not necessary.)

5.3.2.4 Analysis of Sulfate by IC to Determine Ammonium Ion (NH_4^+) Retained in the Sample. (Note: If NH_4OH is not added, omit this step.) Determine the amount of sulfate in the aliquot taken from Container No. 4 earlier as described in Method 5F (appendix A, 40 CFR part 60). Based on the IC SO_4^{-2} analysis of the aliquot, calculate the correction factor to subtract the NH_4^+ retained in the sample and to add the combined water removed by the acid-base reaction (see section 7.2).

5.3.3 Analysis of Water and $MeCl_2$ Blanks (Container Nos. 6 and 7). Analyze these sample blanks as described above in sections 5.3.2.3 and 5.3.2.2, respectively.

5.3.4 Analysis of Acetone Blank (Container No. 8). Same as in Method 17, section 4.3.

6. Calibration

Same as in Method 17, section 5, except for the following:

6.1 IC Calibration. Same as Method 5F, section 5.

6.2 Audit Procedure. Concurrently, analyze the audit sample and a set of compliance samples in the same manner to evaluate the technique of the analyst and the standards preparation. The same analyst, analytical reagents, and analytical system shall be used both for compliance samples and the EPA audit sample. If this condition is met, auditing of subsequent compliance analyses for the same enforcement agency within 30 days is not required. An audit sample set may not be used to validate different sets of compliance samples under the jurisdiction of different enforcement agencies, unless prior arrangements are made with both enforcement agencies.

6.3 Audit Samples. Audit Sample Availability. Audit samples will be supplied only to enforcement agencies for compliance tests. The availability of audit samples may be obtained by writing:

Source Test Audit Coordinator (MD-77B), Quality Assurance Division, Atmospheric Research and Exposure Assessment Laboratory, U.S. Environmental Protection Agency, Research Triangle, Park, NC 27711

or by calling the Source Test Audit Coordinator (STAC) at (919) 541-7834. The request for the audit sample must be made at least 30 days prior to the scheduled compliance sample analysis.

6.4 Audit Results. Calculate the audit sample concentration according to the calculation procedure described in the audit instructions included with the audit sample. Fill in the audit sample concentration and the analyst's name on the audit response form included with the audit instructions. Send one copy to the EPA Regional Office or the appropriate enforcement agency and a second copy to the STAC. The EPA Regional Office or the appropriate enforcement agency will report the results of the audit to the laboratory being audited. Include this response with the results of the compliance samples in relevant reports to the EPA Regional Office or the appropriate enforcement agency.

7. Calculations

Same as in Method 17, section 6, with the following additions:

7.1 Nomenclature. Same as in Method 17, section 6.1 with the following additions.

C_{cpm} = Concentration of the CPM in the stack gas, dry basis, corrected to standard conditions, g/dscm (g/dscf).

C_{so4} = Concentration of SO_4^{-2} in the sample, mg/ml.

m_b = Sum of the mass of the water and $MeCl_2$ blanks, mg.

m_c = Mass of the NH_4^+ added to sample to form ammonium sulfate, mg.
m_i = Mass of inorganic CPM matter, mg.
m_o = Mass of organic CPM, mg.
m_r = Mass of dried sample from inorganic fraction, mg.

V_b = Volume of aliquot taken for IC analysis, ml.
V_{ic} = Volume of impinger contents sample, ml

7.2 Correction for NH_4^+ and H_2O. Calculate the correction factor to subtract the NH_4^+ retained in the sample based on the IC SO_4^{-2} and if desired, add the combined water removed by the acid-base reaction.

$$m_c = K\, C_{so4}\, V_{ic} \qquad \text{Eq. 202-1}$$

where:
K = 0.0205, when correcting for NH_4^+ and H_2O.
= 0.1840, when only correcting for NH_4^+.

7.3 Mass of Inorganic CPM.

$$m_i = m_r \frac{V_{ic}}{V_{ic} - V_b} - m_c \qquad \text{Eq. 202-2}$$

7.4 Concentration of CPM.

$$C_{cpm} = \frac{m_o + m_i - m_b}{V m_{std}} \qquad \text{Eq. 202-3}$$

8. Alternative Procedures

8.1 Determination of NH_4^+ Retained in Sample by Titration.

8.1.1 An alternative procedure to determine the amount of NH_4^+ added to the inorganic fraction by titration may be used. After dissolving the inorganic residue in 100 ml of water, titrate the solution with 0.1 N NH_4OH to a pH of 7.0, as indicated by a pH meter. The 0.1 N NH_4OH is made as follows: Add 7 ml of concentrated (14.8 M) NH_4OH to 1 liter of water. Standardize against standardized 0.1 N H_2SO_4 and calculate the exact normality using a procedure parallel to that described in section 5.5 of Method 6 (appendix A, 40 CFR part 60). Alternatively, purchase 0.1 N NH_4OH that has been standardized against a National Institute of Standards and Technology reference material.

8.1.2 Calculate the concentration of SO_4^{-2} in the sample using the following equation.

$$CSO_4 = \frac{48.03\, V_t\, N}{100} \qquad \text{Eq. 202-4}$$

where
N = Normality of the NH_4OH, mg/ml.
V_t = Volume of NH_4OH titrant, ml.
48.03 = mg/meq.
100 = Volume of solution, ml.

8.3.1 Calculate the CPM as described in section 7.

8.2 Analysis of Chlorides by IC. At the conclusion of the final weighing as described in section 5.3.2.3, redissolve the inorganic fraction in 100 ml of water. Analyze an aliquot of the redissolved sample for chlorides by IC using techniques similar to those described in Method 5F for sulfates. Previous drying of the sample should have removed all HCl. Therefore, the remaining chlorides measured by IC can be assumed to be NH_4Cl, and this weight can be subtracted from the weight determined for CPM.

8.3 Air Purge to Remove SO_2 from Impinger Contents. As an alternative to the post-test N_2 purge described in section 5.2.1, the tester may opt to conduct the post-test purge with air at 20 liter/min. Note: The use of an air purge is not as effective as a N_2 purge.

8.4 Chloroform-ether Extraction. As an alternative to the methylene chloride extraction described in section 5.3.2.1, the tester may opt to conduct a chloroform-ether extraction. Note: The Chloroform-ether was not as effective as the $MeCl_2$ in removing the organics, but it was found to be an acceptable organic extractant. Chloroform and diethylether of ACS grade, with low blank values (0.001 percent), shall be used. Analysis of the chloroform and diethylether blanks shall be conducted according to Section 5.3.3 for $MeCl_2$.

8.4.1 Add the contents of Container No. 4 to a 1000-ml separatory funnel. Then add 75 ml of chloroform to the funnel, mix well, and drain off the lower organic phase. Repeat two more times with 75 ml of chloroform. Then perform three extractions with 75 ml of diethylether. This extraction should yield approximately 450 ml of organic extraction. Each time, leave a small amount of the organic/$MeCl_2$ phase in the separatory funnel ensuring that no water is collected in the organic phase.

8.4.2 Add the contents of Container No. 5 to the organic extraction. Place approximately 300 ml of the organic extract in a tared 350-ml weighing tin while storing the remaining organic extract in a sample container. As the organic extract evaporates, add the remaining extract to the weighing tin.

8.4.3 Determine the weight of the organic phase as described in Section 5.3.2.2.

8.5 Improving Collection Efficiency. If low impinger collection efficiency is suspected, the following procedure may be used.

8.5.1 Place an out-of-stack filter as described in Method 8 between the second and third impingers.

8.5.2 Recover and analyze the filter according to Method 17, Section 4.2. Include the filter holder as part of the connecting glassware and handle as described in sections 5.2.2.2 and 5.2.2.3.

8.5.3 Calculate the Concentration of CPM as follows:

$$C_{cpm} = \frac{m_o + m_i + m_f - m_b}{V m_{std}} \qquad \text{Eq. 202-5}$$

where:
m_f = amount of CPM collected on out-of-stack filter, mg.

8.6 Wet Source Testing. When testing at a wet source, use a heated out-of-stack filter as described in Method 5.

9. Bibliography

1. DeWees, W.D., S.C. Steinsberger, G.M. Plummer, L.T. Lay, G.D. McAlister, and R.T. Shigehara. "Laboratory and Field Evaluation of the EPA Method 5 Impinger Catch for Measuring Condensible Matter from Stationary Sources." Paper presented at the 1989 EPA/AWMA International Symposium on Measurement of Toxic and Related Air Pollutants, Raleigh, North Carolina, May 1–5, 1989.

2. DeWees, W.D. and K.C. Steinsberger. "Method Development and Evaluation of Draft Protocol for Measurement of Condensible Particulate Emissions." Draft Report, November 17, 1989.

3. Texas Air Control Board, Laboratory Division. "Determination of Particulate in Stack Gases Containing Sulfuric Acid and/or Sulfur Dioxide." *Laboratory Methods for Determination of Air Pollutants*. Modified December 3, 1978.

4. Nothstein, Greg. Masters Thesis. University of Washington, Department of Environmental Health, Seattle, Washington.

5. "Particulate Source Test Procedures Adopted by Puget Sound Air Pollution Control Agency Board of Directors." Puget Sound Air Pollution Control Agency, Engineering Division, Seattle, Washington, August 11, 1983.

6. Commonwealth of Pennsylvania, Department of Environmental Resources, Chapter 139, Sampling and Testing (Title 25, Rules and Regulations, Part I, Department of Environmental Resources, Subpart C, Protection of Natural Resources, Article III, Air Resources). January 8, 1960.

7. Wisconsin Department of Natural Resources. *Air Management Operations Handbook, Revision 3*. January 11, 1988.

Moisture Determination

Volume or weight of liquid in impingers: _____ ml or g
Weight of moisture in silica gel: _____ g

Sample Preparation (Container No. 4)

Amount of liquid lost during transport: _____ ml
Final volume: _____ ml
pH of sample prior to analysis: _____
Addition of NH_4OH required: _____
Sample extracted 2X with 75 ml $MeCl_2$?: _____

For Titration of Sulfate

Normality of NH_2OH: _____ N
Volume of sample titrated: _____ ml
Volume of titrant: _____ ml

Sample Analysis

Container number	Weight of condensible particulate, mg		
	Final weight	Tare weight	Weight gain
4 (Inorganic)			
4 & 5 (Organic)			

Total: _____
Less Blank: _____
Weight of Consensible Particulate: _____

Figure 202-3. Analytical data sheet.

Draft Method for Multiple Metals

METHODOLOGY FOR THE DETERMINATION OF METALS EMISSIONS IN EXHAUST GASES FROM HAZARDOUS WASTE INCINERATION AND SIMILAR COMBUSTION PROCESSES

1. Applicability and Principle

1.1 Applicability. This method is being developed for applicability for the determination of total chromium (Cr), cadmium (Cd), arsenic (As), nickel (Ni), manganese (Mn), beryllium (Be), copper (Cu), zinc (Zn), lead (Pb), selenium (Se), phosphorus (P), thallium (Tl), silver (Ag), antimony (Sb), barium (Ba), and mercury (Hg) stack emissions from hazardous waste incinerators and similar combustion processes. This method may also be used for the determination of particulate emissions following the procedures and precautions described. Modifications to the sample recovery and analysis procedures described in this protocol for the purpose of determining particulate emissions may potentially impact the front-half mercury determination.

1.2 Principle. The stack sample is withdrawn isokinetically from the source, with particulate emissions collected in the probe and on a heated filter and gaseous emissions collected in a series of chilled impingers containing an aqueous solution of dilute nitric acid combined with dilute hydrogen peroxide in each of two impingers, and acidic potassium permanganate solution in each of two impingers. Sampling train components are recovered and digested in separate front- and back-half fractions. Materials collected in the sampling train are digested with acid solutions to dissolve inorganics and to remove organic constituents that may create analytical interferences. Acid digestion is performed using conventional Parr[R] Bomb or microwave digestion techniques. The nitric acid and hydrogen peroxide impinger solution, the acidic potassium permanganate impinger solution, the HCl rinse solution, and the probe rinse and digested filter solutions are analyzed for mercury by cold vapor atomic absorption spectroscopy (CVAAS). The nitric acid and hydrogen peroxide solution and the probe rinse and digested filter solutions of the train catches are analyzed for Cr, Cd, Ni, Mn, Be, Cu, Zn, Pb, Se, P, Tl, Ag, Sb, Ba, and As by inductively coupled argon plasma emission spectroscopy (ICAP) or atomic absorption spectroscopy (AAS). Graphite furnace atomic absorption spectroscopy (GFAAS) is used for analysis of antimony, arsenic, cadmium, lead, selenium, and thallium, if these elements require greater analytical

sensitivity than can be obtained by ICAP. Additionally, if desired, the tester may use AAS for analyses of all metals if the resulting in-stack method detection limits meet the goal of the testing program. For convenience, aliquots of each digested sample Fraction 1A plus Fraction 2A can be combined proportionally with respect to the original Fraction 1 (normally diluted to 300 mL following digestion and prior to analysis) Section 5.3.3; and concentrated Fraction 2A (normally diluted to 150 mL following digestion and prior to analysis) Section 5.3.4.1 or 5.3.4.2 for a single analytical determination. The efficiency of the analytical procedure is quantified by the analysis of spiked quality control samples containing each of the target metals and/or other quality assurance measures, as necessary, including actual sample matrix effects checks.

2. Range, Sensitivity, Precision, and Interferences

2.1 Range. For the analyses described in this methodology and for similar analyses, the ICAP response is linear over several orders of magnitude. Samples containing metal concentrations in the nanograms per milliliter (ng/mL) to micrograms per milliliter (ug/mL) range in the analytical finish solution can be analyzed using this technique. Samples containing greater than approximately 50 ug/mL of chromium, lead, or arsenic should be diluted to that level or lower for final analysis. Samples containing greater than approximately 20 ug/mL of cadmium should be diluted to that level before analysis.

2.2 Analytical Sensitivity. ICAP analytical detection limits for the sample solutions (based on SW-846, Method 6010) are approximately as follows: Sb (32 ng/mL), As (53 ng/mL), Ba (2 ng/mL), Be (0.3 ng/mL), Cd (4 ng/mL), Cr (7 ng/mL), Cu (6 ng/mL), Pb (42 ng/mL), Mn (2 ng/mL), Ni (15 ng/mL), P (75 ng/mL), Se (75 ng/mL), Ag (7 ng/mL), Tl (40 ng/mL), and Zn (2 ng/mL). The actual method detection limits are sample dependent and may vary as the sample matrix may affect the limits. The analytical detection limits for analysis by direct aspiration AAS (based on SW-846, Method 7000 series) are approximately as follows: Sb (200 ng/mL), As (2 ng/mL), Ba (100 ng/mL), Be (5 ng/mL), Cd (5 ng/mL), Cr (50 ng/mL), Cu (20 ng/mL), Pb (100 ng/mL), Mn (10 ng/mL), Ni (40 ng/mL), Se (2 ng/mL), Ag (10 ng/mL), Tl (100 ng/mL), and Zn (5 ng/mL). The detection limit for mercury by CVAAS is approximately 0.2 ng/mL. The use of GFAAS can give added sensitivity compared to the use of direct aspiration AAS

for the following metals: Sb (3 ng/mL), As (1 ng/mL), Be (0.2 ng/mL), Cd (0.1 ng/mL), Cr (1 ng/mL), Pb (1 ng/mL), Se (2 ng/mL), and Tl (1 ng/mL).

Using (1) the procedures described in this method, (2) the analytical detection limits described in the previous paragraph, (3) a volume of 300 mL, Fraction 1, for the front half and 150 mL, Fraction 2A, for the back-half samples, and (4) a stack gas sample volume of 1.25 m^3, the corresponding in-stack method detection limits are presented in Table A-1 and calculated as shown:

$$\frac{A \times B}{C} = D$$

where: A = analytical detection limit, ug/mL.
B = volume of sample prior to aliquot for analysis, mL.
C = stack sample volume, dscm (dsm^3).
D = in-stack detection limit, ug/m^3.

Values in Table A-1 are calculated for the front and back half and/or the total train.

To ensure optimum sensitivity in obtaining the measurements, the concentrations of target metals in the solutions are suggested to be at least ten times the analytical detection limits. Under certain conditions, and with greater care in the analytical procedure, this concentration can be as low as approximately three times the analytical detection limit. In all cases, on at least one sample (run) in the source test and for each metal analyzed, repetitive analyses, method of standard additions (MSA), serial dilution, or matrix spike addition, etc., shall be used to establish the quality of the data.

Actual in-stack method detection limits will be determined based on actual source sampling parameters and analytical results as described above. If required, the method in-stack detection limits can be made more sensitive than those shown in Table A-1 for a specific test by using one or more of the following options:

- A 1-hour sampling run may collect a stack gas sampling volume of about 1.25 m^3. If the sampling time is increased and 5 m^3 are collected, the in-stack method detection limits would be one fourth of the values shown in Table A-1 (this means that with this change, the method is four times more sensitive than a 1-hour run. Larger sample volumes (longer runs) would make it even more sensitive).

TABLE A-1. IN-STACK METHOD DETECTION LIMITS (ug/m^3)
FOR TRAIN FRACTIONS USING ICAP AND AAS

Metal	Front-half Fraction 1 Probe and Filter	Back-half Fraction 2 Impingers 1-3	Back-half Fractions "Hg, only" Impingers 4-6	Total Train
Antimony	7.7 (0.7)*	3.8 (0.4)*		11.5 (1.1)*
Arsenic	12.7 (0.3)*	6.4 (0.1)*		19.1 (0.4)*
Barium	0.5	0.3		0.8
Beryllium	0.07 (0.05)*	0.04 (0.03)*		0.11 (0.08)*
Cadmium	1.0 (0.02)*	0.5 (0.01)*		1.5 (0.03)*
Chromium	1.7 (0.2)*	0.8 (0.1)*		2.5 (0.3)*
Copper	1.4	0.7		2.1
Lead	10.1 (0.2)*	5.0 (0.1)*		15.1 (0.3)*
Manganese	0.5 (0.2)*	0.2 (0.1)*		0.7 (0.3)*
Mercury	0.6**	3.0**	2.0**	5.6**
Nickel	3.6	1.8		5.4
Phosphorus	18	9		27
Selenium	18 (0.5)*	9 (0.3)*		27 (0.8)*
Silver	1.7	0.9		2.6
Thallium	9.6 (0.2)*	4.8 (0.1)*		14.4 (0.3)*
Zinc	0.5	0.3		0.8

( )* Detection limit when analyzed by GFAAS.
** Detection limit when analyzed by CVAAS, estimated for Back Half and Total Train.
Note: Actual method in-stack detection limits will be determined based on actual source sampling parameters and analytical results as described earlier in this section.

- The in-stack detection limits assume that all of the sample is digested (with exception of the aliquot for mercury) and the final liquid volumes for analysis are 300 mL, Fraction 1 for the front half and 150 mL, Fraction 2A, for the back-half sample. If the front-half volume is reduced from 300 mL to 30 mL, the front-half in-stack detection limits would be one tenth of the values shown above (ten times more sensitive). If the back-half volume is reduced from 150 mL to 25 mL, the in-stack detection limits would be one sixth of the above values. Matrix effects checks are necessary on analyses of samples and typically are of greater significance for samples that have been concentrated to less than the normal original sample volume. Reduction to a volume of less than 25 mL may not allow redissolving of the residue and may increase interference by other compounds.

- When both of the above two improvements are used on one sample at the same time, the resultant improvements are multiplicative. For example, where stack gas volume is increased by a factor of five and the total liquid sample digested volume of both the front and back halves is reduced by factor of six, the in-stack method detection limit is reduced by a factor of thirty (the method is thirty times more sensitive).
- Conversely, reducing stack gas sample volume and increasing sample liquid volume will increase in-stack detection limits (the method would then be less sensitive). The front-half and back-half samples (Fractions 1A plus and 2A) can be combined proportionally (see Section 1.2 of this methodology) prior to analysis. The resultant liquid volume (excluding the mercury fractions, which must be analyzed separately) is recorded. Combining the sample as described does not allow determination (whether front or back half) of where in the train the sample was captured. The in-stack method detection limit then becomes a single value for all metals except mercury, for which the contribution of the mercury fractions must be considered.
- The above discussion assumes no blank correction. Blank corrections are discussed later in this method.

2.3 Precision. The precisions (relative standard deviation) for each metal detected in a method development test at a sewage sludge incinerator, are as follows: Sb (12.7%), As (13.5%), Ba (20.6%), Cd (11.5%), Cr (11.2%), Cu (11.5%), Pb (11.6%), P (14.6%), Se (15.3%), Tl (12.3%), and Zn (11.8%). The precision for nickel was 7.7% for another test conducted at a source simulator. Beryllium, manganese and silver were not detected in the tests; however, based on the analytical sensitivity of the ICAP for these metals, it is assumed that their precisions should be similar to those for the other metals, when detected at similar levels.

2.4 Interferences. Iron can be a spectral interference during the analysis of arsenic, chromium, and cadmium by ICAP. Aluminum can be a spectral interference during the analysis of arsenic and lead by ICAP. Generally, these interferences can be reduced by diluting the sample, but this increases the method detection limit (in-stack detection limit). Refer to EPA Method 6010 (SW-846) or the other analytical methods used for details on potential interferences for this method. The analyst must eliminate or reduce

interferences to acceptable levels. For all GFAAS analyses, matrix modifiers should be used to limit interferences, and standards should be matrix matched.

3. Apparatus

3.1 Sampling Train. A schematic of the sampling train is shown in Figure A-1. It is similar to the Method 5 train. The sampling train consists of the following components.

3.1.1 Probe Nozzle (Probe Tip) and Borosilicate or Quartz Glass Probe Liner. Same as Method 5, Sections 2.1.1 and 2.1.2, except that glass nozzles are required unless an alternate probe tip prevents the possibility of contamination or interference of the sample with its materials of construction. If a probe tip other than glass is used, no correction (because of any effect on the sample by the probe tip) of the stack sample test results can be made.

3.1.2 Pitot Tube and Differential Pressure Gauge. Same as Method 2, Sections 2.1 and 2.2, respectively.

3.1.3 Filter Holder. Glass, same as Method 5, Section 2.1.5, except that a Teflon filter support or other non-metallic, non-contaminating support must be used to replace the glass frit.

3.1.4 Filter Heating System. Same as Method 5, Section 2.1.6.

3.1.5 Condenser. The following system shall be used for the condensation and collection of gaseous metals and for determining the moisture content of the stack gas. The condensing system should consist of four to seven impingers connected in series with leak-free ground glass fittings or other leak-free, non-contaminating fittings. The first impinger is optional and is recommended as a moisture knockout trap for use during test conditions which require such a trap. The impingers to be used in the metals train are now described. The first impinger is used as a moisture knockout, and it shall be appropriately-sized, if necessary, for an expected large moisture catch and constructed generally as described for the first impinger in Method 5, Paragraph 2.1.7. The second impinger (or the first HNO_3/H_2O_2 impinger) shall also be as described for the first impinger in Method 5. The third impinger (or in any case the impinger used as the second HNO_3/H_2O_2 impinger) shall be the same as the Greenburg Smith impinger with the standard tip described as the second impinger in Method 5, Paragraph 2.1.7. All other impingers used in the metals train are the same as the first HNO_3/H_2O_2 impinger previously described in this paragraph. In summary, the first impinger which may be optional as

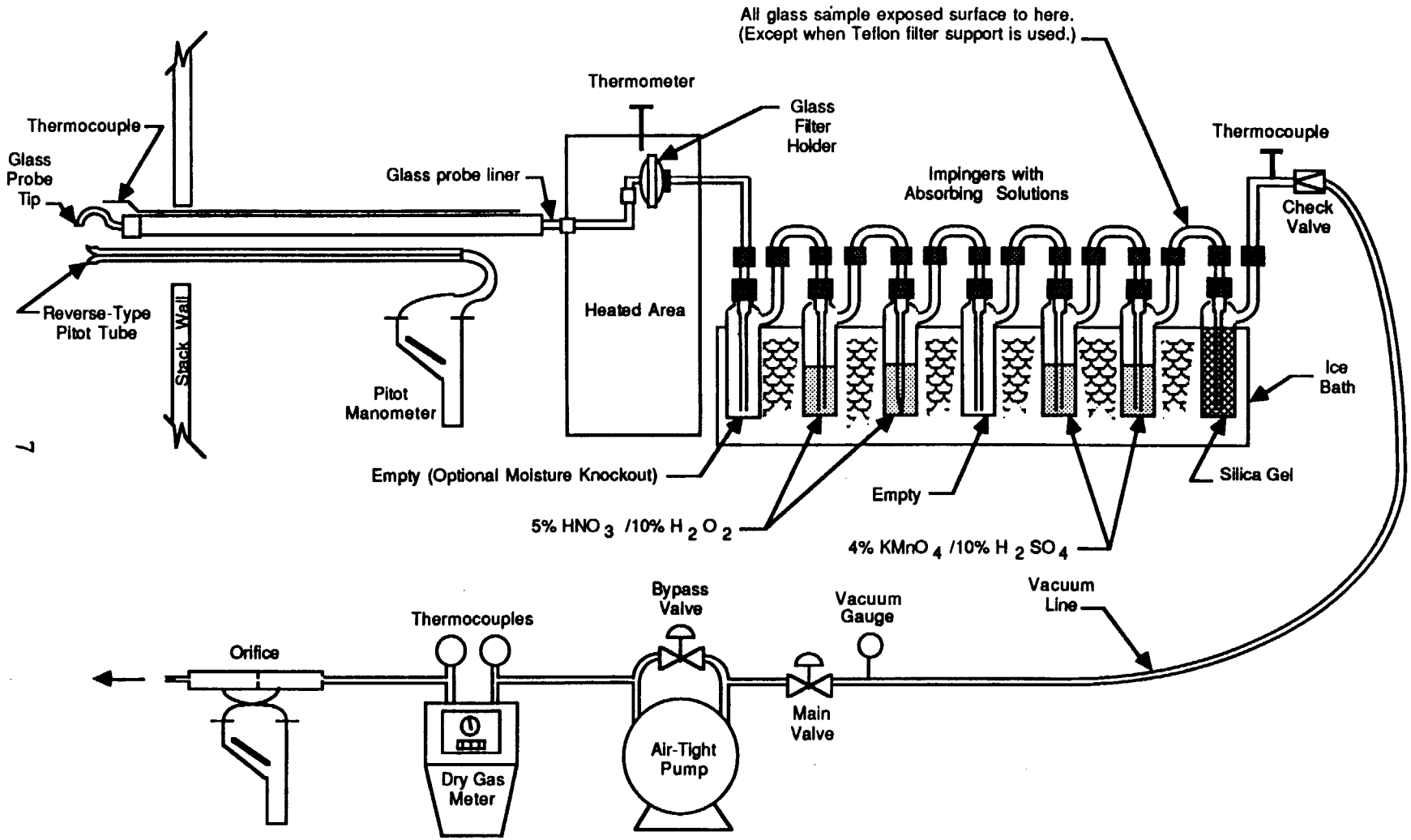


Figure A-1. Schematic of multiple metals sampling train configuration.

described in this methodology shall be empty, the second and third shall contain known quantities of a nitric acid/hydrogen peroxide solution (Section 4.2.1), the fourth shall be empty and the fifth and sixth shall contain a known quantity of acidic potassium permanganate solution (Section 4.2.2), and the last impinger shall contain a known quantity of silica gel. A thermometer capable of measuring to within 1°C (2°F) shall be placed at the outlet of the last impinger. When the moisture knockout impinger is not needed, it is removed from the train and the other impingers remain the same. If mercury analysis is not to be performed, the potassium permanganate impingers and the empty impinger preceding them are removed.

3.1.6 Metering System, Barometer, and Gas Density Determination Equipment. Same as Method 5, Sections 2.1.8 through 2.1.10, respectively.

3.1.7 Teflon Tape. For capping openings and sealing connections, if necessary, on the sampling train.

3.2 Sample Recovery. Same as Method 5, Sections 2.2.1 through 2.2.8 (Nonmetallic Probe-Liner and Probe-Nozzle Brushes or Swabs, Wash Bottles, Sample Storage Containers, Petri Dishes, Glass Graduated Cylinder, Plastic Storage Containers, Funnel and Rubber Policeman, and Glass Funnel), respectively, with the following exceptions and additions:

3.2.1 Nonmetallic Probe-Liner and Probe-Nozzle Brushes or Swabs. For quantitative recovery of materials collected in the front half of the sampling train. Description of acceptable all-Teflon component brushes or swabs to be included in EPA's Emission Measurement Technical Information Center (EMTIC) files.

3.2.2 Sample Storage Containers. Glass bottles with Teflon-lined caps which are non-reactive to the oxidizing solutions, with a capacity of 1000- and 500-mL, shall be used for $KMnO_4$-containing samples and blanks. Polyethylene bottles may be used for other sample types.

3.2.3 Graduated Cylinder. Glass or equivalent.

3.2.4 Funnel. Glass or equivalent.

3.2.5 Labels. For identification of samples.

3.2.6 Polypropylene Tweezers and/or Plastic Gloves. For recovery of the filter from the sampling train filter holder.

3.3 Sample Preparation and Analysis. For the analysis, the following equipment is needed:

3.3.1 Volumetric Flasks, 100-mL, 250-mL, and 1000-mL. For preparation of standards and sample dilution.

3.3.2 Graduated Cylinders. For preparation of reagents.

3.3.3 Parr[R] Bombs or Microwave Pressure Relief Vessels with Capping Station (CEM Corporation model or equivalent).

3.3.4 Beakers and Watchglasses. 250-mL beakers for sample digestion with watchglasses to cover the tops.

3.3.5 Ring Stands and Clamps. For securing equipment such as filtration apparatus.

3.3.6 Filter Funnels. For holding filter paper.

3.3.7 Whatman 541 Filter Paper (or equivalent). For filtration of digested samples.

3.3.8 Disposable Pasteur Pipets and Bulbs.

3.3.9 Volumetric Pipets.

3.3.10 Analytical Balance. Accurate to within 0.1 mg.

3.3.11 Microwave or Conventional Oven. For heating samples at fixed power levels or temperatures.

3.3.12 Hot Plates.

3.3.13 Atomic Absorption Spectrometer (AAS). Equipped with a background corrector.

3.3.13.1 Graphite Furnace Attachment. With antimony, arsenic, cadmium, lead, selenium, thallium, and hollow cathode lamps (HCLs) or electrodeless discharge lamps (EDLs). Same as EPA SW-846 Methods 7041 (antimony), 7060 (arsenic), 7131 (cadmium), 7421 (lead), 7740 (selenium), and 7841 (thallium).

3.3.13.2 Cold Vapor Mercury Attachment. With a mercury HCL or EDL. The equipment needed for the cold vapor mercury attachment includes an air recirculation pump, a quartz cell, an aerator apparatus, and a heat lamp or desiccator tube. The heat lamp should be capable of raising the ambient temperature at the quartz cell by 10°C such that no condensation forms on the wall of the quartz cell. Same as EPA Method 7470.

3.3.14 Inductively Coupled Argon Plasma Spectrometer. With either a direct or sequential reader and an alumina torch. Same as EPA Method 6010.

4. Reagents

The complexity of this methodology is such that to obtain reliable results, the testers (including analysts) should be experienced and knowledgeable in

source sampling, in handling and preparing (including mixing) reagents as described, and using adequate safety procedures and protective equipment in performing this method, including sampling, mixing reagents, digestions, and analyses. Unless otherwise indicated, it is intended that all reagents conform to the specifications established by the Committee on Analytical Reagents of the American Chemical Society, where such specifications are available; otherwise, use the best available grade.

4.1 Sampling. The reagents used in sampling are as follows:

4.1.1 Filters. The filters shall contain less than 1.3 ug/in.^{2} of each of the metals to be measured. Analytical results provided by filter manufacturers are acceptable. However, if no such results are available, filter blanks must be analyzed for each target metal prior to emission testing. Quartz fiber or glass fiber (which meet the requirement of containing less than 1.3 ug/in^2 of each metal) filters without organic binders shall be used. The filters should exhibit at least 99.95 percent efficiency (<0.05 percent penetration) on 0.3 micron dioctyl phthalate smoke particles. The filter efficiency test shall be conducted in accordance with ASTM Standard Method D2986-71 (incorporated by reference). For particulate determination in sources containing SO_2 or SO_3, the filter material must be of a type that is unreactive to SO_2 or SO_3, as described in EPA Method 5. Quartz fiber filters meeting these requirements are recommended for use in this method.

4.1.2 Water. To conform to ASTM Specification D1193.77, Type II (incorporated by reference). If necessary, analyze the water for all target metals prior to field use. All target metals should be less than 1 ng/mL.

4.1.3 Nitric Acid. Concentrated. Baker Instra-analyzed or equivalent.

4.1.4 Hydrochloric Acid. Concentrated. Baker Instra-analyzed or equivalent.

4.1.5 Hydrogen Peroxide, 30 Percent (V/V).

4.1.6 Potassium Permanganate.

4.1.7 Sulfuric Acid. Concentrated.

4.1.8 Silica Gel and Crushed Ice. Same as Method 5, Sections 3.1.2 and 3.1.4, respectively.

4.2 Pretest Preparation for Sampling Reagents.

4.2.1 Nitric Acid (HNO_3)/Hydrogen Peroxide (H_2O_2) Absorbing Solution, 5 Percent HNO_3/10 Percent H_2O_2. Add carefully with stirring 50 mL of concentrated HNO_3 to a 1000-mL volumetric flask containing approximately 500 mL

of water, and then add carefully with stirring 333 mL of 30 percent H_2O_2. Dilute to volume with water. Mix well. The reagent shall contain less than 2 ng/mL of each target metal.

4.2.2 Acidic Potassium Permanganate ($KMnO_4$) Absorbing Solution, 4 Percent $KMnO_4$ (W/V), 10 Percent H_2SO_4 (V/V). Prepare fresh daily. Mix carefully, with stirring, 100 mL of concentrated H_2SO_4 into 800 mL of water, and add water with stirring to make a volume of 1 L: this solution is 10 percent H_2SO_4 (V/V). Dissolve, with stirring, 40 g of $KMnO_4$ into 10 percent H_2SO_4 (V/V) and add 10 percent H_2SO_4 (V/V) with stirring to make a volume of 1 L: this is the acidic potassium permanganate absorbing solution. Prepare and store in glass bottles to prevent degradation. The reagent shall contain less than 2 ng/mL of Hg.

> Precaution: To prevent autocatalytic decomposition of the permanganate solution, filter the solution through Whatman 541 filter paper. Also, due to the potential reaction of the potassium permanganate with the acid, there may be pressure buildup in the sample storage bottle; these bottles shall not be fully filled and shall be vented both to relieve potential excess pressure and prevent explosion due to pressure buildup. Venting is required, but should not allow contamination of the sample; a No. 70-72 hole drilled in the container cap and Teflon liner has been used.

4.2.3 Nitric Acid, 0.1 N. Add with stirring 6.3 mL of concentrated HNO_3 (70 percent) to a flask containing approximately 900 mL of water. Dilute to 1000 mL with water. Mix well. The reagent shall contain less than 2 ng/mL of each target metal.

4.2.4 Hydrochloric Acid (HCl), 8 N. Make the desired volume of 8N HCl in the following proportions. Carefully add with stirring, 690 mL of concentrated HCl to a flask containing 250 mL of water. Dilute to 1000 mL with water. Mix well. The reagent shall contain less than 2 ng/mL of Hg.

4.3 Glassware Cleaning Reagents.

4.3.1 Nitric Acid, Concentrated. Fisher ACS grade or equivalent.

4.3.2 Water. To conform to ASTM Specifications D1193-77, Type II.

4.3.3 Nitric Acid, 10 Percent (V/V). Add with stirring 500 mL of concentrated HNO_3 to a flask containing approximately 4000 mL of water. Dilute to 5000 mL with water. Mix well. Reagent shall contain less than 2 ng/mL of each target metal.

4.4 Sample Digestion and Analysis Reagents.

4.4.1 Hydrochloric Acid, Concentrated.

4.4.2 Hydrofluoric Acid, Concentrated.

4.4.3 Nitric Acid, Concentrated. Baker Instra-analyzed or equivalent.

4.4.4 Nitric Acid, 50 Percent (V/V). Add with stirring 125 mL of concentrated HNO_3 to 100 mL of water. Dilute to 250 mL with water. Mix well. Reagent shall contain less than 2 ng/mL of each target metal.

4.4.5 Nitric Acid, 5 Percent (V/V). Add with stirring 50 mL of concentrated HNO_3 to 800 mL of water. Dilute to 1000 mL with water. Mix well. Reagent shall contain less than 2 ng/mL of each target metal.

4.4.6 Water. To conform to ASTM Specifications D1193-77, Type II.

4.4.7 Hydroxylamine Hydrochloride and Sodium Chloride Solution. See EPA Method 7470 for preparation.

4.4.8 Stannous Chloride. See Method 7470.

4.4.9 Potassium Permanganate, 5 Percent (W/V). See Method 7470.

4.4.10 Sulfuric Acid, Concentrated.

4.4.11 Nitric Acid, 50 Percent (V/V).

4.4.12 Potassium Persulfate, 5 Percent (W/V). See Method 7470.

4.4.13 Nickel Nitrate, $Ni(NO_3)_2 \cdot 6H_2O$.

4.4.14 Lanthanum Oxide, La_2O_3.

4.4.15 AAS Grade Hg Standard, 1000 ug/mL.

4.4.16 AAS Grade Pb Standard, 1000 ug/mL.

4.4.17 AAS Grade As Standard, 1000 ug/mL.

4.4.18 AAS Grade Cd Standard, 1000 ug/mL.

4.4.19 AAS Grade Cr Standard, 1000 ug/mL.

4.4.20 AAS Grade Sb Standard, 1000 ug/mL.

4.4.21 AAS Grade Ba Standard, 1000 ug/mL.

4.4.22 AAS Grade Be Standard, 1000 ug/mL.

4.4.23 AAS Grade Cu Standard, 1000 ug/mL.

4.4.24 AAS Grade Mn Standard, 1000 ug/mL.

4.4.25 AAS Grade Ni Standard, 1000 ug/mL.

4.4.26 AAS Grade P Standard, 1000 ug/mL.

4.4.27 AAS Grade Se Standard, 1000 ug/mL.

4.4.28 AAS Grade Ag Standard, 1000 ug/mL.

4.4.29 AAS Grade Tl Standard, 1000 ug/mL.

4.4.30 AAS Grade Zn Standard, 1000 ug/mL.

4.4.31 AAS Grade Al Standard, 1000 ug/mL.

4.4.32 AAS Grade Fe Standard, 1000 ug/mL.

4.4.33 The metals standards may also be made from solid chemicals as described in EPA Method 200.7. EPA SW-846 Method 7470 or Standard Methods for the Analysis of Water and Wastewater, 15th Edition, Method 303F should be referred to for additional information on mercury standards.

4.4.34 Mercury Standards and Quality Control Samples. Prepare fresh weekly a 10 ug/mL intermediate mercury standard by adding 5 mL of 1000 ug/mL mercury stock solution to a 500-mL volumetric flask; dilute with stirring to 500 mL by first carefully adding 20 mL of 15 percent HNO_3 and then adding water to the 500-mL volume. Mix well. Prepare a 200 ng/mL working mercury standard solution fresh daily: add 5 mL of the 10 ug/mL intermediate standard to a 250-mL volumetric flask and dilute to 250 mL with 5 mL of 4 percent $KMnO_4$, 5 mL of 15 percent HNO_3, and then water. Mix well. At least six separate aliquots of the working mercury standard solution should be used to prepare the standard curve. These aliquots should contain 0.0, 1.0, 2.0, 3.0, 4.0, and 5.0 mL of the working standard solution containing 0, 200, 400, 600, 800, and 1000 ng mercury, respectively. Quality control samples should be prepared by making a separate 10 ug/mL standard and diluting until in the range of the calibration.

4.4.35 ICAP Standards and Quality Control Samples. Calibration standards for ICAP analysis can be combined into four different mixed standard solutions as shown below.

MIXED STANDARD SOLUTIONS FOR ICAP ANALYSIS

Solution	Elements
I	As, Be, Cd, Mn, Pb, Se, Zn
II	Ba, Cu, Fe
III	Al, Cr, Ni
IV	Ag, P, Sb, Tl

Prepare these standards by combining and diluting the appropriate volumes of the 1000 ug/mL solutions with 5 percent nitric acid. A minimum of one standard and a blank can be used to form each calibration curve. However, a separate quality control sample spiked with known amounts of the target metals in quantities in the midrange of the calibration curve should be prepared. Suggested standard levels are 25 ug/mL for AL, Cr and Pb, 15 ug/mL for Fe, and 10 ug/mL for the remaining elements. Standards containing less than 1 ug/mL of

metal should be prepared daily. Standards containing greater than 1 ug/mL of metal should be stable for a minimum of 1 to 2 weeks.

4.4.36 Graphite Furnace AAS Standards. Antimony, arsenic, cadmium, lead, selenium, and thallium. Prepare a 10 ug/mL standard by adding 1 mL of 1000 ug/mL standard to a 100-mL volumetric flask. Dilute with stirring to 100 mL with 10 percent nitric acid. For graphite furnace AAS, the standards must be matrix matched. Prepare a 100 ng/mL standard by adding 1 mL of the 10 ug/mL standard to a 100-mL volumetric flask and dilute to 100 mL with the appropriate matrix solution. Other standards should be prepared by dilution of the 100 ng/mL standards. At least five standards should be used to make up the standard curve. Suggested levels are 0, 10, 50, 75, and 100 ng/mL. Quality control samples should be prepared by making a separate 10 ug/mL standard and diluting until it is in the range of the samples. Standards containing less than 1 ug/mL of metal should be prepared daily. Standards containing greater than 1 ug/mL of metal should be stable for a minimum of 1 to 2 weeks.

4.4.37 Matrix Modifiers.

4.4.37.1 Nickel Nitrate, 1 Percent (V/V). Dissolve 4.956 g of $Ni(NO_3)_2 \cdot 6H_2O$ in approximately 50 mL of water in a 100-mL volumetric flask. Dilute to 100 mL with water.

4.4.37.2 Nickel Nitrate, One-tenth Percent (V/V). Dilute 10 mL of the 1 percent nickel nitrate solution from Section 4.4.37.1 above to 100 mL with water. Inject an equal amount of sample and this modifier into the graphite furnace during AAS analysis for As.

4.4.37.3 Lanthanum. Carefully dissolve 0.5864 g of La_2O_3 in 10 mL of concentrated HNO_3 and dilute the solution by adding it with stirring to approximately 50 mL of water, and then dilute to 100 mL with water. Mix well. Inject an equal amount of sample and this modifier into the graphite furnace during AAS analysis for Pb.

5. Procedure

5.1 Sampling. The complexity of this method is such that, to obtain reliable results, testers and analysts should be trained and experienced with the test procedures, including source sampling, reagent preparation and handling, sample handling, analytical calculations, reporting, and descriptions specifically at the beginning of and throughout Section 4 and all other sections of this methodology.

5.1.1 Pretest Preparation. Follow the same general procedure given in

Method 5, Section 4.1.1, except that, unless particulate emissions are to be determined, the filter need not be desiccated or weighed. All sampling train glassware should first be rinsed with hot tap water and then washed in hot soapy water. Next, glassware should be rinsed three times with tap water, followed by three additional rinses with water. All glassware should then be soaked in a 10 percent (V/V) nitric acid solution for a minimum of 4 hours, rinsed three times with water, rinsed a final time with acetone, and allowed to air dry. All glassware openings where contamination can occur should be covered until the sampling train is assembled for sampling.

5.1.2 Preliminary Determinations. Same as Method 5, Section 4.1.2.

5.1.3 Preparation of Sampling Train. Follow the same general procedures given in Method 5, Section 4.1.3, except place 100 mL of the nitric acid/hydrogen peroxide solution (Section 4.2.1) in each of the two HNO_3/H_2O_2 impingers as shown in Figure A-1 (normally the second and third impingers), place 100 mL of the acidic potassium permanganate absorbing solution (Section 4.2.2) in each of the two permanganate impingers as shown in Figure A-1, and transfer approximately 200 to 300 g of preweighed silica gel from its container to the last impinger. Alternatively, the silica gel may be weighed directly in the impinger just prior to train assembly.

Several options are available to the tester based on the sampling requirements and conditions. The use of an empty first impinger can be eliminated if the moisture to be collected in the impingers will be less than approximately 100 mL. If necessary, use as applicable to this methodology the procedure described in Section 7.1.1 of EPA Method 101A, 40 CFR Part 61, Appendix B, to maintain the desired color in the last permanganate impinger.

Retain for reagent blanks volumes of the nitric acid/hydrogen peroxide solution per Section 5.2.9 of this method and of the acidic potassium permanganate solution per Section 5.2.10. These reagent blanks should be labeled and analyzed as described in Section 7. Set up the sampling train as shown in Figure A-1, or if mercury analysis is not to be performed in the train, then it should be modified by removing the three impingers which are the two permanganate impingers and the impinger preceding the permanganate impingers. If necessary to ensure leak-free sampling train connections, Teflon tape or other non-contaminating material should be used instead of silicone grease to prevent contamination.

Precaution: Extreme care should be taken to prevent contamination within the train. Prevent the mercury collection reagent (acidic potassium permanganate) from contacting any glassware of the train which is washed and analyzed for Mn. Prevent hydrogen peroxide from mixing with the acidic potassium permanganate.

Mercury emissions can be measured, alternatively, in a separate train which measures only mercury emissions by using EPA Method 101A with the modifications described below (and with the further modification that the permanganate containers shall be processed as described in the Precaution in Section 4.2.2 and the Note in Section 5.2.5 of this methodology). This alternative method is applicable for measurement of mercury emissions, and it may be of special interest to sources which must measure both mercury and manganese emissions.

[Section 7.2.1 of Method 101A shall be modified as follows after the 250 to 400-mL $KMnO_4$ rinse:

To remove any precipitated material and any residual brown deposits on the glassware following the permanganate rinse, rinse with approximately 100 mL of deionized distilled water, and add this water rinse carefully assuring transfer of all loose precipitated materials from the three permanganate impingers into the permanganate Container No. 1. If no visible deposits remain after this water rinse, do not rinse with 8 N HCl. However, if deposits do remain on the glassware after this water rinse, wash the impinger surfaces with 25 mL of 8 N HCl, and place the wash in a separate sample container labeled Container No. 1.A. containing 200 mL of water as follows. Place 200 mL of water in a sample container labeled Container No. 1.A. Wash the impinger walls and stem with the HCl by turning the impinger on its side and rotating it so that the HCl contacts all inside surfaces. Use a total of only 25 mL of 8 N HCl for rinsing all permanganate impingers combined. Rinse the first impinger, then pour the actual rinse used for the first impinger into the second impinger for its rinse, etc. Finally, pour the 25 mL of 8 N HCl rinse carefully with

stirring into Container No. 1.A. Analyze the HCl rinse separately by carefully diluting with stirring the contents of Container No. 1.A. to 500 mL with deionized distilled water. Filter (if necessary) through Whatman 40 filter paper, and then analyze for mercury according to Section 7.4, except limit the aliquot size to a maximum of 10 mL. Prepare and analyze a water diluted blank 8 N HCL sample by using the same procedure as that used by Container No. 1.A., except add 5 mL of 8 N HCl with stirring to 40 mL of water, and then dilute to 100 mL with water. Then analyze as instructed for the sample from Container No. 1.A. Because the previous separate permanganate solution rinse (Section 7.2.1) and water rinse (as modified in these guidelines) have the capability to recover a very high percentage of the mercury from the permanganate impingers, the amount of mercury in the HCl rinse in Container No. 1.A. may be very small, possibly even insignificantly small. However, add the total of any mercury analyzed and calculated for the HCl rinse sample Container No. 1.A. to that calculated from the mercury sample from Section 7.3.2 which contains the separate permanganate rinse (and water rinse as modified herein) for calculation of the total sample mercury concentration.]

5.1.4 Leak-Check Procedures. Follow the leak-check procedures given in Method 5, Section 4.1.4.1 (Pretest Leak-Check), Section 4.1.4.2 (Leak-Checks During the Sample Run), and Section 4.1.4.3 (Post-Test Leak-Checks).

5.1.5 Sampling Train Operation. Follow the procedures given in Method 5, Section 4.1.5. For each run, record the data required on a data sheet such as the one shown in Figure 5-2 of Method 5.

5.1.6 Calculation of Percent Isokinetic. Same as Method 5, Section 4.1.6.

5.2 Sample Recovery. Begin cleanup procedures as soon as the probe is removed from the stack at the end of a sampling period.

The probe should be allowed to cool prior to sample recovery. When it can be safely handled, wipe off all external particulate matter near the tip of the probe nozzle and place a rinsed, non-contaminating cap over the probe nozzle to prevent losing or gaining particulate matter. Do not cap the probe tip tightly while the sampling train is cooling. This normally causes a vacuum

to form in the filter holder, thus causing the undesired result of drawing liquid from the impingers into the filter.

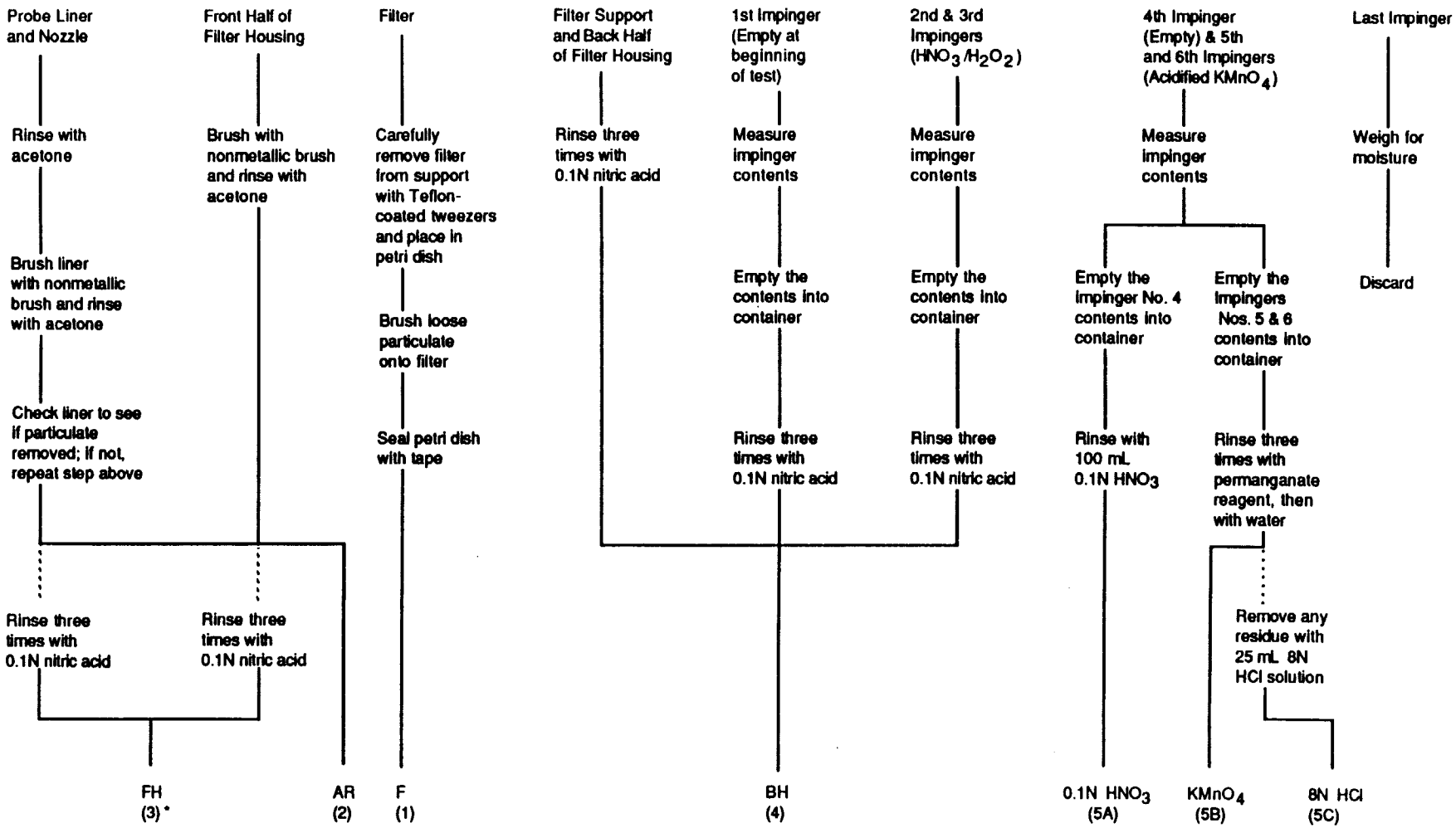
Before moving the sampling train to the cleanup site, remove the probe from the sampling train and cap the open outlet. Be careful not to lose any condensate that might be present. Cap the filter inlet where the probe was fastened. Remove the umbilical cord from the last impinger and cap the impinger. Cap off the filter holder outlet and impinger inlet. Use non-contaminating caps, whether ground-glass stoppers, plastic caps, serum caps, or Teflon tape to close these openings.

Alternatively, the train can be disassembled before the probe and filter holder/oven are completely cooled, if this procedure is followed: Initially disconnect the filter holder outlet/impinger inlet and loosely cap the open ends. Then disconnect the probe from the filter holder or cyclone inlet and loosely cap the open ends. Cap the probe tip and remove the umbilical cord as previously described.

Transfer the probe and filter-impinger assembly to a cleanup area that is clean and protected from the wind and other potential causes of contamination or loss of sample. Inspect the train before and during disassembly and note any abnormal conditions. The sample is recovered and treated as follows (see schematic in Figure A-2). Assure that all items necessary for recovery of the sample do not contaminate it.

5.2.1 Container No. 1 (Filter). Carefully remove the filter from the filter holder and place it in its identified petri dish container. Acid-washed polypropylene or Teflon coated tweezers or clean, disposable surgical gloves rinsed with water and dried should be used to handle the filters. If it is necessary to fold the filter, make certain the particulate cake is inside the fold. Carefully transfer the filter and any particulate matter or filter fibers that adhere to the filter holder gasket to the petri dish by using a dry (acid-cleaned) nylon bristle brush. Do not use any metal-containing materials when recovering this train. Seal the labeled petri dish.

5.2.2 Container No. 2 (Acetone Rinse). NOTE: Perform Section 5.2.2 only if determination of particulate emissions are desired in addition to metals emissions. If only metals emissions are desired, skip Section 5.2.2 and go to Section 5.2.3. Taking care to see that dust on the outside of the probe or other exterior surfaces does not get into the sample, quantitatively recover particulate matter and any condensate from the probe nozzle, probe fitting



* Number in parentheses indicates container number

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Figure A-2. Sample recovery scheme.

(plastic such as Teflon, polypropylene, etc. fittings are recommended to prevent contamination by metal fittings; further, if desired, a single glass piece consisting of a combined probe tip and probe liner may be used, but such a single glass piece is not a requirement of this methodology), probe liner, and front half of the filter holder by washing these components with 100 mL of acetone and placing the wash in a glass container. Note: The use of exactly 100 mL is necessary for the subsequent blank correction procedures. Distilled water may be used instead of acetone when approved by the Administrator and shall be used when specified by the Administrator; in these cases, save a water blank and follow the Administrator's directions on analysis. Perform the acetone rinses as follows: Carefully remove the probe nozzle and clean the inside surface by rinsing with acetone from a wash bottle and brushing with a nonmetallic brush. Brush until the acetone rinse shows no visible particles, after which make a final rinse of the inside surface with acetone.

Brush and rinse the sample exposed inside parts of the fitting with acetone in a similar way until no visible particles remain.

Rinse the probe liner with acetone by tilting and rotating the probe while squirting acetone into its upper end so that all inside surfaces will be wetted with acetone. Allow the acetone to drain from the lower end into the sample container. A funnel may be used to aid in transferring liquid washings to the container. Follow the acetone rinse with a nonmetallic probe brush. Hold the probe in an inclined position, squirt acetone into the upper end as the probe brush is being pushed with a twisting action through the probe; hold a sample container underneath the lower end of the probe, and catch any acetone and particulate matter which is brushed through the probe three times or more until no visible particulate matter is carried out with the acetone or until none remains in the probe liner on visual inspection. Rinse the brush with acetone, and quantitatively collect these washings in the sample container. After the brushing, make a final acetone rinse of the probe as described above.

It is recommended that two people clean the probe to minimize sample losses. Between sampling runs, keep brushes clean and protected from contamination.

Clean the inside of the front half of the filter holder by rubbing the surfaces with a nonmetallic nylon bristle brush and rinsing with acetone. Rinse each surface three times or more if needed to remove visible particulate. Make a final rinse of the brush and filter holder. After all acetone washings

and particulate matter have been collected in the sample container, tighten the lid on the sample container so that acetone will not leak out when it is shipped to the laboratory. Mark the height of the fluid level to determine whether or not leakage occurred during transport. Label the container clearly to identify its contents.

5.2.3 Container No. 3 (Probe Rinse). Keep the probe assembly clean and free from contamination as described in Section 5.2.2 of this method during the 0.1 N nitric acid rinse described below. Rinse the probe nozzle and fitting, probe liner, and front half of the filter holder thoroughly with 100 mL of 0.1 N nitric acid and place the wash into a sample storage container. Note: The use of exactly 100 mL is necessary for the subsequent blank correction procedures. Perform the rinses as applicable and generally as described in Method 12, Section 5.2.2. Record the volume of the combined rinse. Mark the height of the fluid level on the outside of the storage container and use this mark to determine if leakage occurs during transport. Seal the container and clearly label the contents. Finally, rinse the nozzle, probe liner, and front half of the filter holder with water followed by acetone and discard these rinses.

5.2.4 Container No. 4 (Impingers 1 through 3, HNO_3/H_2O_2 Impingers and Moisture Knockout Impinger, when used, Contents and Rinses). Due to the potentially large quantity of liquid involved, the tester may place the impinger solutions from impingers 1 through 3 in more than one container. Measure the liquid in the first three impingers volumetrically to within 0.5 mL using a graduated cylinder. Record the volume of liquid present. This information is required to calculate the moisture content of the sampled flue gas. Clean each of the first three impingers, the filter support, the back half of the filter housing, and connecting glassware by thoroughly rinsing with 100 mL of 0.1 N nitric acid using the procedure as applicable and generally as described in Method 12, Section 5.2.4. Note: The use of exactly 100 mL of 0.1 N nitric acid rinse is necessary for the subsequent blank correction procedures. Combine the rinses and impinger solutions, measure and record the volume. Mark the height of the fluid level on the outside of the container to determine if leakage occurs during transport. Seal the container and clearly label the contents.

5.2.5 Container Nos. 5A, 5B, and 5C. 5A (0.1 N HNO_3), 5B ($KMnO_4/H_2SO_4$ absorbing solution), and 5C (8 N HCl rinse and dilution). (As described

previously at the end of Section 3.1.5 of this method, if mercury is not being measured in this train, then impingers 4, 5, and 6, as shown in Figure A-1, are not necessary and may be eliminated.) Pour all the liquid, if any, from the impinger which was empty at the start of the run and which immediately precedes the two permanganate impingers (normally impinger No. 4) into a graduated cylinder and measure the volume to within 0.5 mL. This information is required to calculate the moisture content of the sampled flue gas. Place the liquid in Sample Container No. 5A. Rinse the impinger (No. 4) with 100 mL of 0.1 N HNO_3 and place this into Container No. 5A.

Pour all the liquid from the two permanganate impingers into a graduated cylinder and measure the volume to within 0.5 mL. This information is required to calculate the moisture content of the sampled flue gas. Place this $KMnO_4$ absorbing solution stack sample from the two permanganate impingers into Container No. 5B. Using 100 mL total of fresh acidified potassium permanganate solution, rinse the two permanganate impingers and connecting glass pieces a minimum of three times and place the rinses into Container No. 5B, carefully assuring transfer of all loose precipitated materials from the two impingers into Container No. 5B. Using 100 mL total of water, rinse the permanganate impingers and connecting glass pieces a minimum of three times, and place the rinses into Container 5B, carefully assuring transfer of all loose precipitated material, if any, from the two impingers into Container No. 5B. Mark the height of the fluid level on the outside of the bottle to determine if leakage occurs during transport. See the following note and the Precaution in Paragraph 4.2.2 and properly prepare the bottle and clearly label the contents.

> Note: Due to the potential reaction of the potassium permanganate with the acid, there may be pressure buildup in the sample storage bottles. These bottles shall not be filled full and shall be vented to relieve potential excess pressure. Venting is required. A No. 70-72 hole drilled in the container cap and Teflon liner has been used.

If no visible deposits remain after the above described water rinse, do not rinse with 8 N HCl. However, if deposits do remain on the glassware after this water rinse, wash the impinger surfaces with 25 mL of 8 N HCl, and place the wash in a separate sample container labeled Container No. 5C containing 200 mL of water as follows. Place 200 mL of water in a sample container labeled Container No. 5C. Wash the impinger walls and stem with the HCl by turning the

impinger on its side and rotating it so that the HCl contacts all inside surfaces. Use a total of only 25 mL of 8 N HCl for rinsing both permanganate impingers combined. Rinse the first impinger, then pour the actual rinse used for the first impinger into the second impinger for its rinse. Finally, pour the 25 mL of 8 N HCl rinse carefully with stirring into Container No. 5C. Mark the height of the fluid level on the outside of the bottle to determine if leakage occurs during transport.

5.2.6 Container No. 6 (Silica Gel). Note the color of the indicating silica gel to determine whether it has been completely spent and make a notation of its condition. Transfer the silica gel from its impinger to its original container and seal. The tester may use a funnel to pour the silica gel and a rubber policeman to remove the silica gel from the impinger. The small amount of particles that may adhere to the impinger wall need not be removed. Do not use water or other liquids to transfer the silica gel since weight gained in the silica gel impinger is used for moisture calculations. Alternatively, if a balance is available in the field, record the weight of the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g.

5.2.7 Container No. 7 (Acetone Blank). If particulate emissions are to be determined, at least once during each field test, place a 100-mL portion of the acetone used in the sample recovery process into a labeled container for use in the front-half field reagent blank. Seal the container.

5.2.8 Container No. 8A (0.1 N Nitric Acid Blank). At least once during each field test, place 300 mL of the 0.1 N nitric acid solution used in the sample recovery process into a labeled container for use in the front-half and back-half field reagent blanks. Seal the container. Container No. 8B (water blank). At least once during each field test, place 100 mL of the water used in the sample recovery process into a labeled Container No. 8B. Seal the container.

5.2.9 Container No. 9 (5% Nitric Acid/10% Hydrogen Peroxide Blank). At least once during each field test, place 200 mL of the 5% nitric acid/10% hydrogen peroxide solution used as the nitric acid impinger reagent into a labeled container for use in the back-half field reagent blank. Seal the container.

5.2.10 Container No. 10 (Acidified Potassium Permanganate Blank). At least once during each field test, place 100 mL of the acidified potassium permanganate solution used as the impinger solution and in the sample recovery

process into a labeled container for use in the back-half field reagent blank for mercury analysis. Prepare the container as described in Section 5.2.5.

Note: Due to the potential reaction of the potassium permanganate with the acid, there may be pressure buildup in the sample storage bottles. These bottles shall not be filled full and shall be vented to relieve potential excess pressure. Venting is required. A No. 70-72 hole drilled in the container cap and Teflon liner has been used.

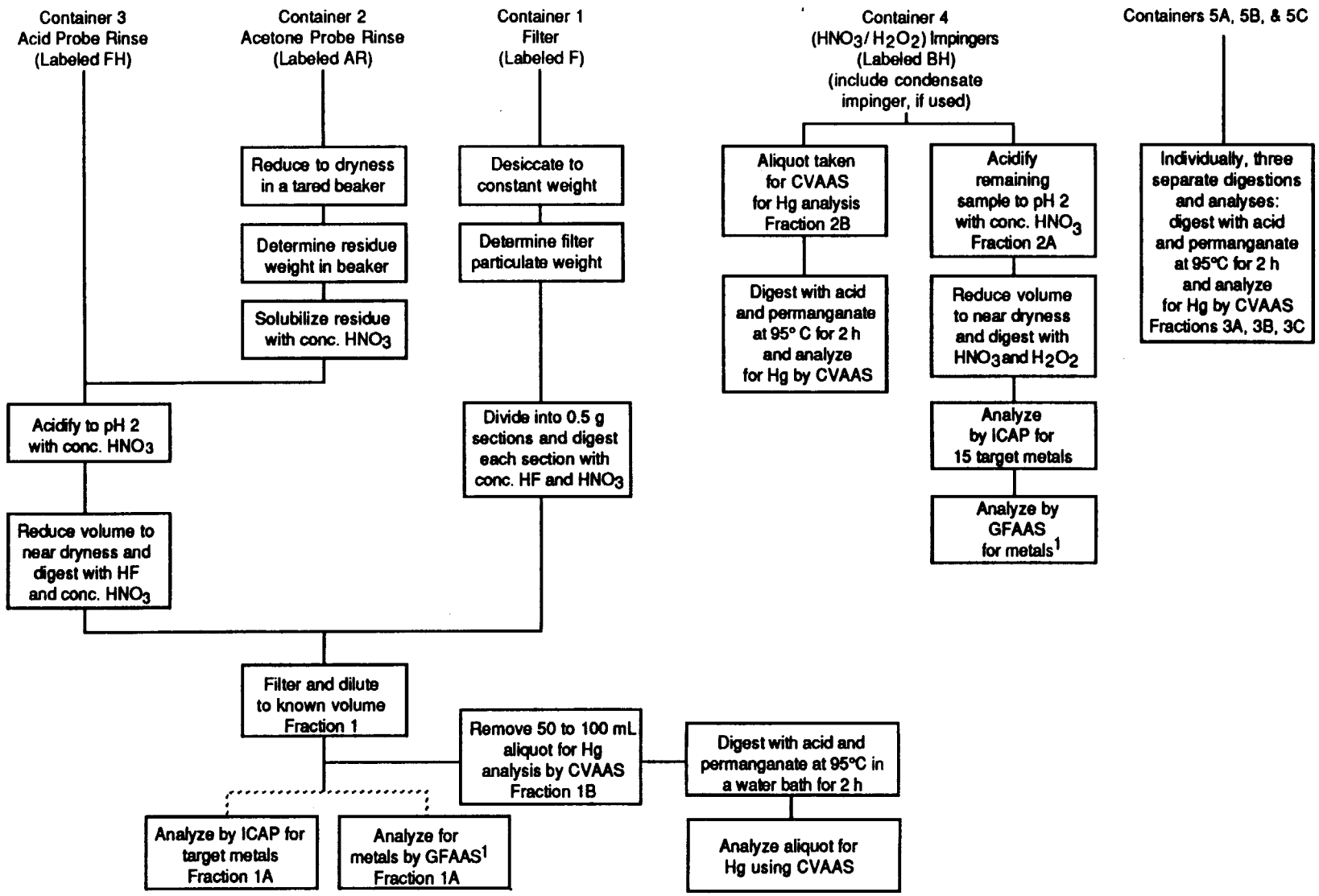
5.2.11 Container No. 11 (8 N HCl Blank). At least once during each field test, perform both of the following. Place 200 mL of water into a sample container. Pour 25 mL of 8 N HCl carefully with stirring into the 200 mL of water in the container. Mix well and seal the container.

5.2.12 Container No. 12 (Filter Blank). Once during each field test, place three unused blank filters from the same lot as the sampling filters in a labeled petri dish. Seal the petri dish. These will be used in the front-half field reagent blank.

5.3 Sample Preparation. Note the level of the liquid in each of the containers and determine if any sample was lost during shipment. If a noticeable amount of leakage has occurred, either void the sample or use methods, subject to the approval of the Administrator, to correct the final results. A diagram illustrating sample preparation and analysis procedures for each of the sample train components is shown in Figure A-3.

5.3.1 Container No. 1 (Filter). If particulate emissions are being determined, then desiccate the filter and filter catch without added heat and weigh to a constant weight as described in Section 4.3 of Method 5. For analysis of metals, divide the filter with its filter catch into portions containing approximately 0.5 g each and place into the analyst's choice of either individual microwave pressure relief vessels or Parr[R] Bombs. Add 6 mL of concentrated nitric acid and 4 mL of concentrated hydrofluoric acid to each vessel. For microwave heating, microwave the sample vessels for approximately 12-15 minutes in intervals of 1 to 2 minutes at 600 Watts. For conventional heating, heat the Parr Bombs at 140°C (285°F) for 6 hours. Then cool the samples to room temperature and combine with the acid digested probe rinse as required in Section 5.3.3, below.

Notes: 1. Suggested microwave heating times are approximate and are dependent upon the number of samples being digested. Twelve to 15 minute



[1] Analysis by AAS for metals found at less than 2 ug/mL in digestate solution, if desired. Or analyze for each metal by AAS, if desired.

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Figure A-3. Sample preparation and analysis scheme.

heating times have been found to be acceptable for simultaneous digestion of up to 12 individual samples. Sufficient heating is evidenced by sorbent reflux within the vessel.

2. If the sampling train uses an optional cyclone, the cyclone catch should be prepared and digested using the same procedures described for the filters and combined with the digested filter samples.

5.3.2 Container No. 2 (Acetone Rinse). Note the level of liquid in the container and confirm on the analysis sheet whether or not leakage occurred during transport. If a noticeable amount of leakage has occurred, either void the sample or use methods, subject to the approval of the Administrator, to correct the final results. Measure the liquid in this container either volumetrically to ±1 mL or gravimetrically to ±0.5 g. Transfer the contents to an acid-cleaned tared 250-mL beaker and evaporate to dryness at ambient temperature and pressure. If particulate emissions are being determined, desiccate for 24 hours without added heat, weigh to a constant weight according to the procedures described in Section 4.3 of Method 5, and report the results to the nearest 0.1 mg. Redissolve the residue with 10 mL of concentrated nitric acid and carefully with stirring, quantitatively combine the resultant sample including all liquid and any particulate matter with Container No. 3 prior to beginning the following Section 5.3.3.

5.3.3 Container No. 3 (Probe Rinse). The pH of this sample shall be 2 or lower. If the pH is higher, the sample should be acidified by careful addition with stirring with concentrated nitric acid to pH 2. The sample should be rinsed into a beaker with water and the beaker should be covered with a ribbed watchglass. The sample volume should be reduced to approximately 20 mL by heating on a hot plate at a temperature just below boiling. Digest the sample in microwave vessels or Parr[R] Bombs by quantitatively transferring the sample to the vessel or bomb, by carefully adding the 6 mL of concentrated nitric acid and 4 mL of concentrated hydrofluoric acid and then continuing to follow the procedures described in Section 5.3.1; then combine the resultant sample directly with the acid digested portions of the filter prepared previously in Section 5.3.1. The resultant combined sample is referred to as Fraction 1 precursor. Filter the combined solution of the acid digested filter and probe rinse samples using Whatman 541 filter paper. Dilute to 300 mL (or the appropriate volume for the expected metals concentration) with water. This dilution is Fraction 1. Measure and record the volume of the Fraction 1

solution to within 0.1 mL. Quantitatively remove a 50-mL aliquot and label as Fraction 1B. Label the remaining 250-mL portion as Fraction 1A. Fraction 1A is used for ICAP or AAS analysis. Fraction 1B is used for the determination of front-half mercury.

5.3.4 Container No. 4 (Impingers 1-3). Measure and record the total volume of this sample (Fraction 2) to within 0.5 mL. Remove a 75- to 100-mL aliquot for mercury analysis and label as Fraction 2B. Label the remaining portion of Container No. 4 as aliquot Fraction 2A. Aliquot Fraction 2A defines the volume of 2A prior to digestion. All of aliquot Fraction 2A is digested to produce concentrated Fraction 2A. Concentrated Fraction 2A defines the volume of 2A after digestion which is normally 150 mL. Only concentrated Fraction 2A is analyzed for metals (except that it is not analyzed for mercury). The Fraction 2B aliquot should be prepared and analyzed for mercury as described in Section 5.4.3. Aliquot Fraction 2A shall be pH 2 or lower. If necessary, use concentrated nitric acid by careful addition and stirring to lower aliquot Fraction 2A to pH 2. The sample should be rinsed into a beaker with water and the beaker should be covered with a ribbed watchglass. The sample volume should be reduced to approximately 20 mL by heating on a hot plate at a temperature just below boiling. Then follow either of the digestion procedures described in Sections 5.3.4.1 and 5.3.4.2, below.

5.3.4.1 Conventional Digestion Procedure. Add 30 mL of 50 percent nitric acid and heat for 30 minutes on a hot plate to just below boiling. Add 10 mL of 3 percent hydrogen peroxide and heat for 10 more minutes. Add 50 mL of hot water and heat the sample for an additional 20 minutes. Cool, filter the sample, and dilute to 150 mL (or the appropriate volume for the expected metals concentrations) with water. This dilution is concentrated Fraction 2A. Measure and record the volume of the Fraction 2A solution to within 0.1 mL.

5.3.4.2 Microwave Digestion Procedure. Add 10 mL of 50 percent nitric acid and heat for 6 minutes in intervals of 1 to 2 minutes at 600 Watts. Allow the sample to cool. Add 10 mL of 3 percent hydrogen peroxide and heat for 2 more minutes. Add 50 mL of hot water and heat for an additional 5 minutes. Cool, filter the sample, and dilute to 150 mL (or the appropriate volume for the expected metals concentrations) with water. This dilution is concentrated Fraction 2A. Measure and record the volume of the Fraction 2A solution to within 0.1 mL.

Note: All microwave heating times given are approximate and are

dependent upon the number of samples being digested at a time. Heating times as given above have been found acceptable for simultaneous digestion of up to 12 individual samples. Sufficient heating is evidenced by solvent reflux within the vessel.

5.3.5 Container Nos. 5A, 5B, and 5C (Impingers 4, 5, and 6). Keep these samples separate from each other and measure and record the volumes of 5A and 5B separately to within 0.5 mL. Dilute sample 5C to 500 mL with water. These samples 5A, 5B, and 5C are referred to respectively as Fractions 3A, 3B, and 3C. Follow the analysis procedures described in Section 5.4.3.

Because the permanganate rinse and water rinse have the capability to recover a high percentage of the mercury from the permanganate impingers, the amount of mercury in the HCl rinse (Fraction 3C) may be very small, possibly even insignificantly small. However, as instructed in this method, add the total of any mercury measured in and calculated for the HCl rinse (Fraction 3C) to that for Fractions 1B, 2B, 3A, and 3B for calculation of the total sample mercury concentration.

5.3.6 Container No. 6 (Silica Gel). Weigh the spent silica gel (or silica gel plus impinger) to the nearest 0.5 g using a balance. (This step may be conducted in the field.)

5.4 Sample Analysis. For each sampling train, seven individual samples are generated for analysis. A schematic identifying each sample and the prescribed sample preparation and analysis scheme is shown in Figure A-3. The first two samples, labeled Fractions 1A and 1B, consist of the digested samples from the front half of the train. Fraction 1A is for ICAP or AAS analysis as described in Sections 5.4.1 and/or 5.4.2. Fraction 1B is for determination of front-half mercury as described in Section 5.4.3.

The back half of the train was used to prepare the third through seventh samples. The third and fourth samples, labeled Fractions 2A and 2B, contain the digested samples from the moisture knockout, if used, and HNO_3/H_2O_2 Impingers 1 through 3. Fraction 2A is for ICAP or AAS analysis. Fraction 2B will be analyzed for mercury.

The fifth through seventh samples, labeled Fractions 3A, 3B, and 3C, consist of the impinger contents and rinses from the empty and permanganate impingers 4, 5, and 6. These samples are analyzed for mercury as described in Section 5.4.3. The total back-half mercury catch is determined from the sum of Fraction 2B and Fractions 3A, 3B, and 3C.

5.4.1 ICAP Analysis. Fraction 1A and Fraction 2A are analyzed by ICAP using EPA SW-846 Method 6010 or Method 200.7 (40 CFR 136, Appendix C). Calibrate the ICAP, and set up an analysis program as described in Method 6010 or Method 200.7. The quality control procedures described in Section 7.3.1 of this method shall be followed. Recommended wavelengths for use in the analysis are listed below.

Element	Wavelength (nm)
Aluminum	308.215
Antimony	206.833
Arsenic	193.696
Barium	455.403
Beryllium	313.042
Cadmium	226.502
Chromium	267.716
Copper	324.754
Iron	259.940
Lead	220.353
Manganese	257.610
Nickel	231.604
Phosphorous	214.914
Selenium	196.026
Silver	328.068
Thallium	190.864
Zinc	213.856

The wavelengths listed are recommended because of their sensitivity and overall acceptance. Other wavelengths may be substituted if they can provide the needed sensitivity and are treated with the same corrective techniques for spectral interference.

Initially, analyze all samples for the desired target metals (except mercury) plus iron and aluminum. If iron and aluminum are present in the sample, the sample may have to be diluted so that each of these elements is at a concentration of less than 50 ppm to reduce their spectral interferences on arsenic, cadmium, chromium, and lead.

Note: When analyzing samples in a hydrofluoric acid matrix, an alumina torch should be used; since all front-half samples will contain hydrofluoric acid, use an alumina torch.

5.4.2 AAS by Direct Aspiration and/or Graphite Furnace. If analysis of metals in Fraction 1A and Fraction 2A using graphite furnace or direct aspiration AAS is desired, Table A-2 should be used to determine which techniques and methods should be applied for each target metal. Table A-2

TABLE A-2. APPLICABLE TECHNIQUES, METHODS, AND MINIMIZATION OF INTERFERENCE FOR AAS ANALYSIS

Metal	Technique	SW-846 Method No.	Wavelength (nm)	Interferences	
				Cause	Minimization
Sb	Aspiration	7040	217.6	1000 mg/mL Pb Ni, Cu, or acid	Use secondary wavelength of 231.1 nm; match sample & standards' acid concentration or use nitrous oxide/acetylene flame
Sb	Furnace	7041	217.6	High Pb	Secondary wavelength or Zeeman correction
As	Furnace	7060	193.7	Arsenic volatization Aluminum	Spiked samples and add nickel nitrate solution to digestates prior to analysis Use Zeeman background correction
Ba	Aspiration	7080	553.6	Calcium Barium ionization	High hollow cathode current and narrow band set 2 mL of KCl per 100 mL of sample
Be	Aspiration	7090	234.9	500 ppm Al High Mg and Si	Add 0.1% fluoride Use method of standard additions
Be	Furnace	7091	234.9	Be in optical path	Optimize parameters to minimize effects
Cd	Aspiration	7130	228.8	Absorption and light scattering	Background correction is required
Cd	Furnace	7131	228.8	As above Excess chloride Pipet tips	As above Ammonium phosphate used as a matrix modifier Use cadmium-free tips
Cr	Aspiration	7190	357.9	Alkali metal Absorption and scatter	KCl ionization suppressant in samples and standards Consult manufacturer's literature
Cr	Furnace	7191	357.9	200 mg/L Ca and P	All calcium nitrate for a known constant effect and to eliminate effect of phosphate
Cu	Aspiration	7210	324.7	Absorption and scatter	Consult manufacturer's manual

(continued)

TABLE A-2 (Continued)

Metal	Technique	SW-846 Method No.	Wavelength (nm)	Interference Cause	Interference Minimization
Fe	Aspiration	7380	248.3	Contamination	Great care taken to avoid contamination
Pb	Aspiration	7420	283.3	217.0 nm alternate	Background correction required
Pb	Furnace	7421	283.3	Poor recoveries	Matrix modifier, add 10 uL of phosphorus acid to 1 mL of prepared sample in sampler cup
Mn	Aspiration	7460	279.5	403.1 nm alternate	Background correction required
Ni	Aspiration	7520	232.0	352.4 nm alternate Fe, Co, and Cr Nonlinear response	Background correction required Matrix matching or a nitrous-oxide/ acetylene flame Sample dilution or use 352.3 nm line
Se	Furnace	7740	196.0	Volatility Adsorption & scatter	Spike samples and reference materials and add nickel nitrate to minimize volatilization Background correction is required and Zeeman background correction can be useful
Ag	Aspiration	7760	328.1	Adsorption & scatter AgCl insoluble Viscosity	Background correction is required Avoid hydrochloric acid unless silver is in solution as a chloride complex Sample and standards monitored for aspiration rate
Tl	Aspiration	7840	276.8		Background correction is required Hydrochloric acid should not be used
Tl	Furnace	7841	276.8	Hydrochloric acid or chloride	Background correction is required Verify that losses are not occurring for volatization by spiked samples or standard addition; Palladium is a suitable matrix modifier
Zn	Aspiration	7950	213.9	High Si, Cu, & P Contamination	Strontium removes Cu and phosphate Great care taken to avoid contamination

should also be consulted to determine possible interferences and techniques to be followed for their minimization. Calibrate the instrument according to Section 6.3 and follow the quality control procedures specified in Section 7.3.2.

5.4.3 Cold Vapor AAS Mercury Analysis. Fraction 1B, Fraction 2B, and Fractions 3A, 3B, and 3C should be analyzed separately for mercury using cold vapor atomic absorption spectroscopy following the method outlined in EPA SW-846 Method 7470 or in Standard Methods for Water and Wastewater Analysis, 15th Edition, Method 303F. Set up the calibration curve (zero to 1000 ng) as described in SW-846 Method 7470 or similar to Method 303F, using 300-mL BOD bottles instead of Erlenmeyers. Dilute separately, as described below, an aliquot sized from 1 mL to 10 mL of each original sample to 100 mL with water. Record the amount of the aliquot used for dilution to 100 mL. If no prior knowledge exists of the expected amount of mercury in the sample, a 5-mL aliquot is suggested for the first dilution to 100 mL and analysis. To determine the stack emission value for mercury, the amount of the aliquot of the sample used for dilution and analysis is dependent on the amount of mercury in the aliquot: the total amount of mercury in the aliquot used for analysis shall be less than 1 ug, and within the range (zero to 1000 ng) of the calibration curve. Place each sample aliquot into a separate 300-mL BOD bottle and add enough Type II water to make a total volume of 100 mL. Then analyze the 100 mL for mercury by adding to it sequentially the sample preparation solutions and performing the sample preparation and analysis as described in the procedures of SW-846 Method 7470 or Method 303F. If, during the described analysis, the reading maximum(s) are off-scale (because the aliquot of the original sample analyzed contained more mercury than the maximum of the calibration range) including the analysis of the 100-mL dilution of the 1-mL aliquot of the original sample causing a reading maximum which is off-scale, then perform the following: dilute the original sample (or a portion of it) with 0.15% HNO_3 in water (1.5 mL concentrated HNO_3 per liter aqueous solution) so that when a 1-mL to 10-mL aliquot of the dilution of the original sample is then further diluted to 100 mL in the BOD bottle, and analyzed by the procedures described above, it will yield an analysis within the range of the calibration curve.

6. Calibration

Maintain a laboratory log of all calibrations.

6.1 Sampling Train Calibration. Calibrate the sampling train components according to the indicated sections of Method 5: Probe Nozzle (Section 5.1); Pitot Tube (Section 5.2); Metering System (Section 5.3); Probe Heater (Section 5.4); Temperature Gauges (Section 5.5); Leak-Check of the Metering System (Section 5.6); and Barometer (Section 5.7).

6.2 Inductively Coupled Argon Plasma Spectrometer Calibration. Prepare standards as outlined in Section 4.4. Profile and calibrate the instrument according to the instrument manufacturer's recommended procedures using the above standards. The instrument calibration should be checked once per hour. If the instrument does not reproduce the concentrations of the standard within 10 percent, the complete calibration procedures should be performed.

6.3 Atomic Absorption Spectrometer - Direct Aspiration, Graphite Furnace and Cold Vapor Mercury Analyses. Prepare the standards as outlined in Section 4.4. Calibrate the spectrometer using these prepared standards. Calibration procedures are also outlined in the EPA methods referred to in Table A-2 and in SW-846 Method 7470 or Standard Methods for Water and Wastewater, 15th Edition, Method 303F (for mercury). Each standard curve should be run in duplicate and the mean values used to calculate the calibration line. The instrument should be recalibrated approximately once every 10 to 12 samples.

7. Quality Control

7.1 Sampling. Field Reagent Blanks. When analyzed, the blank samples in Container Numbers 7 through 12 produced previously in Sections 5.2.7 through 5.2.12, respectively, shall be processed, digested, and analyzed as follows. Digest and process one of the filters from Container No. 12 per Section 5.3.1, 100 mL from Container No. 7 per Section 5.3.2, and 100 mL from Container No. 8A per Section 5.3.3. This produces Fraction Blank 1A and Fraction Blank 1B from Fraction Blank 1. [If desired, the other two filters may be digested separately according to Section 5.3.1, diluted separately to 300 mL each, and analyzed separately to produce a blank value for each of the two additional filters. If these analyses are performed, they will produce two additional values for each of Fraction Blank 1A and Fraction Blank 1B. The three Fraction Blank 1A values will be calculated as three values of M_{fhb} in Equation 3 of Section 8.4.3, then the three values shall be totalled and divided by 3 to become the value M_{fhb} to

be used in the computation of M_t by Equation 3. Similarly, the three Fraction Blank 1B values will be calculated separately as three values, totalled, averaged, and used as the value for Hg_{fhb} in Equation 8 of Section 8.5.3. The analyses of the two extra filters are optional and are not a requirement of this method, but if the analyses are performed, the results must be considered as described above.] Combine 100 mL of Container No. 8A with 200 mL of the contents of Container No. 9 and digest and process the resultant volume per Section 5.3.4. This produces concentrated Fraction Blank 2A and Fraction Blank 2B from Fraction Blank 2. A 100-mL portion of Container No. 8A is Fraction Blank 3A. Combine 100 mL of the contents of Container No. 10 with 33 mL of the contents of Container No. 8B. This produces Fraction Blank 3B (use 400 mL as the volume of Fraction Blank 3B when calculating the blank value. Use the actual volumes when calculating all the other blank values). Dilute 225 mL of the contents of Container No. 11 to 500 mL with water. This produces Fraction Blank 3C. Analyze Fraction Blank 1A and Fraction Blank 2A per Section 5.4.1 and/or 5.4.2. Analyze Fraction Blank 1B, Fraction Blank 2B, and Fraction Blanks 3A, 3B, and 3C per Section 5.4.3. The analysis of Fraction Blank 1A produces the front-half reagent blank correction values for the metals except mercury; the analysis of Fraction Blank 1B produces the front-half reagent blank correction value for mercury. The analysis of concentrated Fraction Blank 2A produces the back-half reagent blank correction values for the metals except mercury, while separate analysis of Fraction Blanks 2B, 3A, 3B, and 3C produce the back-half reagent blank correction value for mercury.

7.2 An attempt may be made to determine if the laboratory reagents used in Section 5.3 caused contamination. They should be analyzed by the procedures in Section 5.4. The Administrator will determine whether or not the laboratory blank reagent values can be used in the calculation of the stationary source test results.

7.3 Quality Control Samples. The following quality control samples should be analyzed.

7.3.1 ICAP Analysis. Follow the quality control shown in Section 8 of Method 6010. For the purposes of a three run test series, these requirements have been modified to include the following: two instrument check standard runs, two calibration blank runs, one interference check sample at the beginning of the analysis (must be within 25% or analyze by standard addition), one quality control sample to check the accuracy of the calibration standards

(must be within 25% of calibration), and one duplicate analysis (must be within 10% of average or repeat all analyses).

7.3.2 Direct Aspiration and/or Graphite Furnace AAS Analysis for antimony, arsenic, barium, beryllium, cadmium, copper, chromium, lead, nickel, manganese, mercury, phosphorus, selenium, silver, thallium, and zinc. All samples should be analyzed in duplicate. Perform a matrix spike on at least one front-half sample and one back-half sample or one combined sample. If recoveries of less than 75 percent or greater than 125 percent are obtained for the matrix spike, analyze each sample by the method of additions. A quality control sample should be analyzed to check the accuracy of the calibration standards. The results must be within 10% or the calibration repeated.

7.3.3 Cold Vapor AAS Analysis for Mercury. All samples should be analyzed in duplicate. A quality control sample should be analyzed to check the accuracy of the calibration standards (within 15% or repeat calibration). Perform a matrix spike on one sample from the nitric impinger portion (must be within 25% or samples must be analyzed by the method of standard additions). Additional information on quality control can be obtained from EPA SW-846 Method 7470 or in Standard Methods for Water and Wastewater, 15th Edition, Method 303F.

8. Calculations

8.1 Dry Gas Volume. Using the data from this test, calculate $V_{m(std)}$, the dry gas sample volume at standard conditions as outlined in Section 6.3 of Method 5.

8.2 Volume of Water Vapor and Moisture Content. Using the data obtained from this test, calculate the volume of water vapor $V_{w(std)}$ and the moisture content B_{ws} of the stack gas. Use Equations 5-2 and 5-3 of Method 5.

8.3 Stack Gas Velocity. Using the data from this test and Equation 2-9 of Method 2, calculate the average stack gas velocity.

8.4 Metals (Except Mercury) in Source Sample.

8.4.1 Fraction 1A, Front Half, Metals (except Hg). Calculate separately the amount of each metal collected in Fraction 1 of the sampling train using the following equation:

$$M_{fh} = C_{a1} \; F_d \; V_{soln,1} \qquad \text{Eq. 1*}$$

*If Fractions 1A and 2A are combined, proportional aliquots must be used. Appropriate changes must be made in Equations 1-3 to reflect this approach.

where:

M_{fh} = total mass of each metal (except Hg) collected in the front half of the sampling train (Fraction 1), ug.

C_{a1} = concentration of metal in sample Fraction 1A as read from the standard curve (ug/mL).

F_d = dilution factor (F_d = the inverse of the fractional portion of the concentrated sample in the solution actually used in the instrument to produce the reading C_{a1}. For example, when 2 mL of Fraction 1A are diluted to 10 mL, F_d = 5).

$V_{soln,1}$ = total volume of digested sample solution (Fraction 1), mL.

8.4.2 Fraction 2A, Back Half, Metals (except Hg). Calculate separately the amount of each metal collected in Fraction 2 of the sampling train using the following equation.

$$M_{bh} = C_{a2} \; F_a \; V_a \qquad \text{Eq. 2*}$$

where:

M_{bh} = total mass of each metal (except Hg) collected in the back half of the sampling train (Fraction 2), ug.

C_{a2} = concentration of metal in sample concentrated Fraction 2A, as read from the standard curve (ug/mL).

F_a = aliquot factor, volume of Fraction 2 divided by volume of aliquot Fraction 2A (see Section 5.3.4).

V_a = total volume of digested sample solution (concentrated Fraction 2A), mL (see Section 5.3.4.1 or 5.3.4.2, as applicable).

8.4.3 Total Train, Metals (except Hg). Calculate the total amount of each of the quantified metals collected in the sampling train as follows:

$$M_t = (M_{fh} - M_{fhb}) + (M_{bh} - M_{bhb}) \qquad \text{Eq. 3*}$$

where:

M_t = total mass of each metal (separately stated for each metal) collected in the sampling train, ug.

M_{fhb} = blank correction value for mass of metal detected in front-half field reagent blank, ug.

M_{bhb} = blank correction value for mass of metal detected in back-half field reagent blank, ug.

*If Fractions 1A and 2A are combined, proportional aliquots must be used. Appropriate changes must be made in Equations 1-3 to reflect this approach.

Note: If the measured blank value for the front half (m_{fhb}) is in the range 0.0 to A ug [where A ug equals the value determined by multiplying 1.4 ug per square inch (1.4 ug/in.^{2}) times the actual area in square inches (in.^{2}) of the filter used in the emission sample], m_{fhb} may be used to correct the emission sample value (m_{fh}); if m_{fhb} exceeds A ug, the greater of the two following values (either I. or II.) may be used:

I. A ug, or

II. the lesser of (a) m_{fhb}, or (b) 5 percent of m_{fh}.

If the measured blank value for the back half (m_{bhb}) is in the range 0.0 to 1 ug, m_{bhb} may be used to correct the emission sample value (m_{bh}); if m_{bhb} exceeds 1 ug, the greater of the two following values may be used: 1 ug or 5 percent of m_{bh}.

8.5 Mercury in Source Sample.

8.5.1 Fraction 1B, Front Half, Hg. Calculate the amount of mercury collected in the front half, Fraction 1, of the sampling train using the following equation:

$$Hg_{fh} = \frac{Q_{fh}}{V_{f1B}} \times V_{soln,1} \qquad \text{Eq. 4}$$

where:

Hg_{fh} = total mass of mercury collected in the front half of the sampling train (Fraction 1), ug.

Q_{fh} = quantity of mercury in analyzed sample, ug.

$V_{soln,1}$ = total volume of digested sample solution (Fraction 1), mL.

V_{f1B} = volume of Fraction 1B analyzed, mL. See the following Note.

Note: V_{f1B} is the actual amount of Fraction 1B analyzed. For example, if 1 mL of Fraction 1B were diluted to 100 mL to bring it into the proper analytical range, and 1 mL of the 100-mL dilution were analyzed, V_{f1B} would be 0.01.

8.5.2 Fraction 2B and Fractions 3A, 3B, and 3C, Back Half, Hg. Calculate the amount of mercury collected in Fractions 2 using Equation 5 and in Fractions 3A, 3B, and 3C using Equation 6. Calculate the total amount of mercury collected in the back half of the sampling train using Equation 7.

$$Hg_{bh2} = \frac{Q_{bh2}}{V_{f2B}} \times V_{soln,2} \qquad \text{Eq. 5}$$

where:

Hg_{bh2} = total mass of mercury collected in Fraction 2, ug.
Q_{bh2} = quantity of mercury in analyzed sample, ug.
$V_{soln,2}$ = total volume of Fraction 2, mL.
V_{f2B} = volume of Fraction 2B analyzed, mL (see the following note).

Note: V_{f2B} is the actual amount of Fraction 2B analyzed. For example, if 1 mL of Fraction 2B were diluted to 10 mL to bring it into the proper analytical range, and 5 mL of the 10-mL dilution was analyzed, V_{f2B} would be 0.5.

Use Equation 6 to calculate separately the back-half mercury for Fractions 3A, then 3B, then 3C.

$$Hg_{bh3(A,B,C)} = \frac{Q_{bh3(A,B,C)}}{V_{f3(A,B,C)}} \times V_{soln,3(A,B,C)} \qquad \text{Eq. 6}$$

where:

$Hg_{bh3(A,B,C)}$ = total mass of mercury collected separately in Fraction 3A, 3B, or 3C, ug.
$Q_{bh3(A,B,C)}$ = quantity of mercury in separately analyzed samples, ug.
$V_{f3(A,B,C)}$ = volume of Fraction 3A, 3B, or 3C analyzed, mL (see Note in Sections 8.5.1 and 8.5.2, and calculate similarly).
$V_{soln,3(A,B,C)}$ = total volume of Fraction 3A, 3B, or 3C, mL.

$$Hg_{bh} = Hg_{bh2} + Hg_{bh3A} + Hg_{bh3B} + Hg_{bh3C} \qquad \text{Eq. 7}$$

where:

Hg_{bh} = total mass of mercury collected in the back half of the sampling train, ug.

8.5.3 Total Train Mercury Catch. Calculate the total amount of mercury collected in the sampling train using Equation 8.

$$Hg_t = (Hg_{fh} - Hg_{fhb}) + (Hg_{bh} - Hg_{bhb}) \qquad \text{Eq. 8}$$

where:

Hg_t = total mass of mercury collected in the sampling train, ug.
Hg_{fhb} = blank correction value for mass of mercury detected in front-half field reagent blank, ug.
Hg_{bhb} = blank correction value for mass of mercury detected in back -half field reagent blanks, ug.

Note: If the total of the measured blank values (Hg_{fhb} + Hg_{bhb}) is in the range of 0 to 6 ug, then the total may be used to correct the emission sample value (Hg_{fh} + Hg_{bh}); if it exceeds 6 ug, the greater of the following two values may be used: 6 ug or 5 percent of the emission sample value (Hg_{fh} + Hg_{bh}).

8.6 Metal Concentration of Stack Gas. Calculate each metal separately for the cadmium, total chromium, arsenic, nickel, manganese, beryllium, copper, lead, phosphorus, thallium, silver, barium, zinc, selenium, antimony, and mercury concentrations in the stack gas (dry basis, adjusted to standard conditions) as follows:

$$C_s = K_4 \ (M_t/V_{m(std)}) \qquad \text{Eq.9}$$

where:

C_s = concentration of each metal in the stack gas, mg/dscm.
K_4 = 10^{-3} mg/ug.
M_t = total mass of each metal collected in the sampling train, ug; (substitute Hg_t for M_t for the mercury calculation).
$V_{m(std)}$ = volume of gas sample as measured by the dry gas meter, corrected to dry standard conditions, dscm.

8.7 Isokinetic Variation and Acceptable Results. Same as Method 5, Sections 6.11 and 6.12, respectively.

9. Bibliography

9.1 Method 303F in Standard Methods for the Examination of Water Wastewater, 15th Edition, 1980. Available from the American Public Health Association, 1015 18th Street N.W., Washington, D.C. 20036.

9.2 EPA Methods 6010, 7000, 7041, 7060, 7131, 7421, 7470, 7740, and 7841, Test Methods for Evaluating Solid Waste: Physical/Chemical Methods. SW-846, Third Edition. September 1988. Office of Solid Waste and Emergency Response, U. S. Environmental Protection Agency, Washington, D.C. 20460.

9.3 EPA Method 200.7, Code of Federal Regulations, Title 40, Part 136, Appendix C. July 1, 1987.

9.4 EPA Methods 1 through 5, Code of Federal Regulations, Title 40, Part 60, Appendix A, July 1, 1987.

Method 0010: Modified Method Five

METHOD 0010

MODIFIED METHOD 5 SAMPLING TRAIN

1.0 SCOPE AND APPLICATION

1.1 This method is applicable to the determination of Destruction and Removal Efficiency (DRE) of semivolatile Principal Organic Hazardous Compounds (POHCs) from incineration systems (PHS, 1967). This method also may be used to determine particulate emission rates from stationary sources as per EPA Method 5 (see References at end of this method).

2.0 SUMMARY OF METHOD

2.1 Gaseous and particulate pollutants are withdrawn from an emission source at an isokinetic sampling rate and are collected in a multicomponent sampling train. Principal components of the train include a high-efficiency glass- or quartz-fiber filter and a packed bed of porous polymeric adsorbent resin. The filter is used to collect organic-laden particulate materials and the porous polymeric resin to adsorb semivolatile organic species. Semivolatile species are defined as compounds with boiling points >100°C.

2.2 Comprehensive chemical analyses of the collected sample are conducted to determine the concentration and identity of the organic materials.

3.0 INTERFERENCES

3.1 Oxides of nitrogen (NO_x) are possible interferents in the determination of certain water-soluble compounds such as dioxane, phenol, and urethane; reaction of these compounds with NO_x in the presence of moisture will reduce their concentration. Other possibilities that could result in positive or negative bias are (1) stability of the compounds in methylene chloride, (2) the formation of water-soluble organic salts on the resin in the presence of moisture, and (3) the solvent extraction efficiency of water-soluble compounds from aqueous media. Use of two or more ions per compound for qualitative and quantitative analysis can overcome interference at one mass. These concerns should be addressed on a compound-by-compound basis before using this method.

4.0 APPARATUS AND MATERIALS

4.1 Sampling train:

4.1.1 A schematic of the sampling train used in this method is shown in Figure 1. This sampling train configuration is adapted from EPA Method 5 procedures, and, as such, the majority of the required equipment

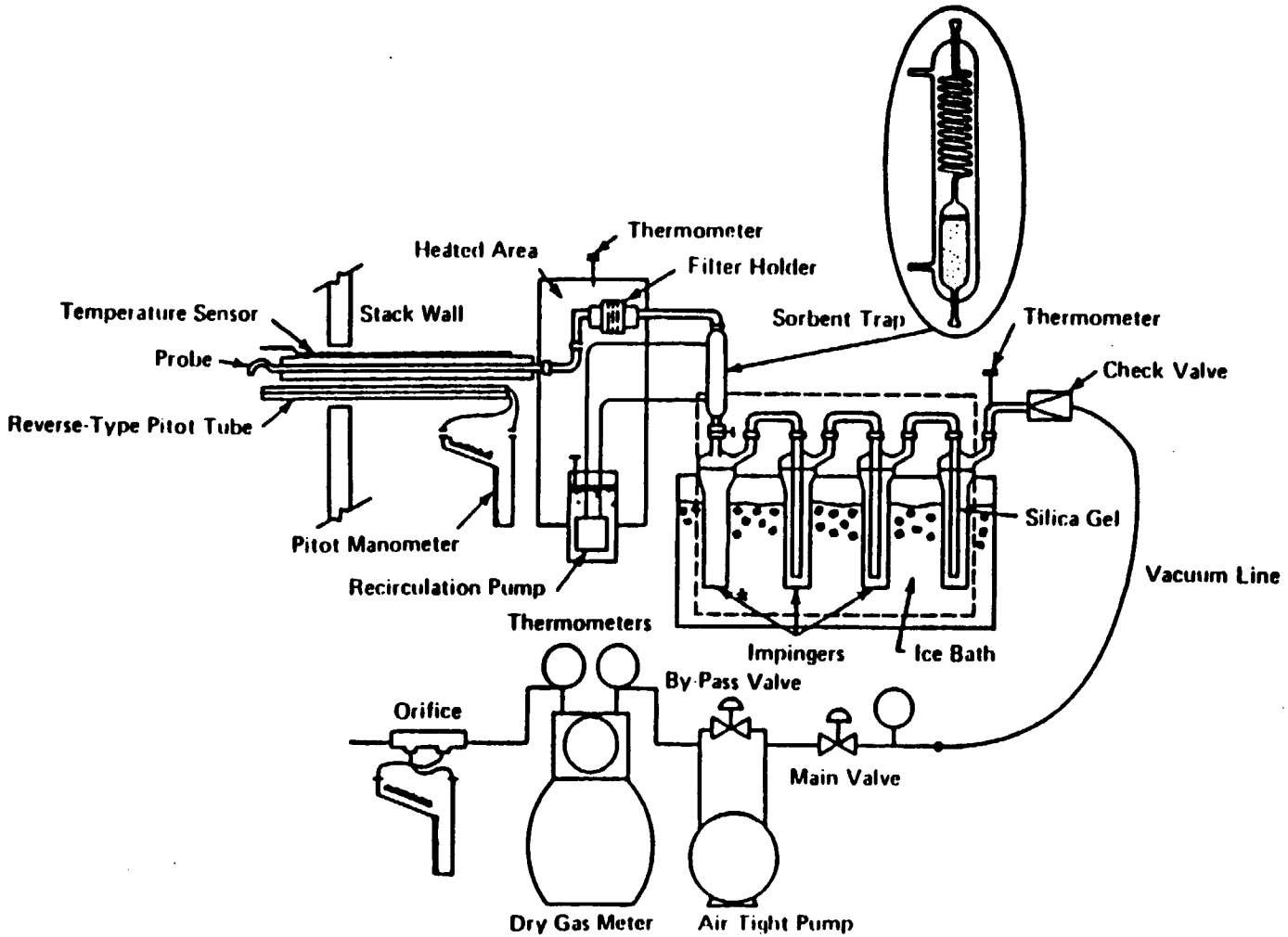


Figure 1. Modified Method 5 Sampling Train.

is identical to that used in EPA Method 5 determinations. The new components required are a condenser coil and a sorbent module, which are used to collect semivolatile organic materials that pass through the glass- or quartz-fiber filter in the gas phase.

4.1.2 Construction details for the basic train components are given in APTD-0581 (see Martin, 1971, in Section 13.0, References); commercial models of this equipment are also available. Specifications for the sorbent module are provided in the following subsections. Additionally, the following subsections list changes to APTD-0581 and identify allowable train configuration modifications.

4.1.3 Basic operating and maintenance procedures for the sampling train are described in APTD-0576 (see Rom, 1972, in Section 13.0, References). As correct usage is important in obtaining valid results, all users should refer to APTD-0576 and adopt the operating and maintenance procedures outlined therein unless otherwise specified. The sampling train consists of the components detailed below.

4.1.3.1 Probe nozzle: Stainless steel (316) or glass with sharp, tapered (30° angle) leading edge. The taper shall be on the outside to preserve a constant I.D. The nozzle shall be buttonhook or elbow design and constructed from seamless tubing (if made of stainless steel). Other construction materials may be considered for particular applications. A range of nozzle sizes suitable for isokinetic sampling should be available in increments of 0.16 cm (1/16 in.), e.g., 0.32-1.27 cm (1/8-1/2 in.), or larger if higher volume sampling trains are used. Each nozzle shall be calibrated according to the procedures outlined in Paragraph 9.1.

4.1.3.2 Probe liner: Borosilicate or quartz-glass tubing with a heating system capable of maintaining a gas temperature of 120 ± 14°C (248 ± 25°F) at the exit end during sampling. (The tester may opt to operate the equipment at a temperature lower than that specified.) Because the actual temperature at the outlet of the probe is not usually monitored during sampling, probes constructed according to APTD-0581 and utilizing the calibration curves of APTD-0576 (or calibrated according to the procedure outlined in APTD-0576) are considered acceptable. Either borosilicate or quartz-glass probe liners may be used for stack temperatures up to about 480°C (900°F). Quartz liners shall be used for temperatures between 480 and 900°C (900 and 1650°F). (The softening temperature for borosilicate is 820°C (1508°F), and for quartz 1500°C (2732°F).) Water-cooling of the stainless steel sheath will be necessary at temperatures approaching and exceeding 500°C.

4.1.3.3 Pitot tube: Type S, as described in Section 2.1 of EPA Method 2, or other appropriate devices (Vollaro, 1976). The pitot tube shall be attached to the probe to allow constant monitoring of the stack-gas velocity. The impact (high-pressure) opening plane of the pitot tube shall be even with or above the nozzle entry plane (see EPA Method 2, Figure 2-6b) during sampling. The Type S pitot tube assembly shall have a known coefficient, determined as outlined in Section 4 of EPA Method 2.

4.1.3.4 Differential pressure gauge: Inclined manometer or equivalent device as described in Section 2.2 of EPA Method 2. One manometer shall be used for velocity-head (ΔP) readings and the other for orifice differential pressure (ΔH) readings.

4.1.3.5 Filter holder: Borosilicate glass, with a glass frit filter support and a sealing gasket. The sealing gasket should be made of materials that will not introduce organic material into the gas stream at the temperature at which the filter holder will be maintained. The gasket shall be constructed of Teflon or materials of equal or better characteristics. The holder design shall provide a positive seal against leakage at any point along the filter circumference. The holder shall be attached immediately to the outlet of the cyclone or cyclone bypass.

4.1.3.6 Filter heating system: Any heating system capable of maintaining a temperature of 120 ± 14°C (248 ± 25°F) around the filter holder during sampling. Other temperatures may be appropriate for particular applications. Alternatively, the tester may opt to operate the equipment at temperatures other than that specified. A temperature gauge capable of measuring temperature to within 3°C (5.4°F) shall be installed so that the temperature around the filter holder can be regulated and monitored during sampling. Heating systems other than the one shown in APTD-0581 may be used.

4.1.3.7 Organic sampling module: This unit consists of three sections, including a gas-conditioning section, a sorbent trap, and a condensate knockout trap. The gas-conditioning system shall be capable of conditioning the gas leaving the back half of the filter holder to a temperature not exceeding 20°C (68°F). The sorbent trap shall be sized to contain approximately 20 g of porous polymeric resin (Rohm and Haas XAD-2 or equivalent) and shall be jacketed to maintain the internal gas temperature at 17 ± 3°C (62.5 ± 5.4°F). The most commonly used coolant is ice water from the impinger ice-water bath, constantly circulated through the outer jacket, using rubber or plastic tubing and a peristaltic pump. The sorbent trap should be outfitted with a glass well or depression, appropriately sized to accommodate a small thermocouple in the trap for monitoring the gas entry temperature. The condensate knockout trap shall be of sufficient size to collect the condensate following gas conditioning. The organic module components shall be oriented to direct the flow of condensate formed vertically downward from the conditioning section, through the adsorbent media, and into the condensate knockout trap. The knockout trap is usually similar in appearance to an empty impinger directly underneath the sorbent module; it may be oversized but should have a shortened center stem (at a minimum, one-half the length of the normal impinger stems) to collect a large volume of condensate without bubbling and overflowing into the impinger train. All surfaces of the organic module wetted by the gas sample shall be fabricated of borosilicate glass, Teflon, or other inert materials. Commercial versions of the

complete organic module are not currently available, but may be assembled from commercially available laboratory glassware and a custom-fabricated sorbent trap. Details of two acceptable designs are shown in Figures 2 and 3 (the thermocouple well is shown in Figure 2).

4.1.3.8 Impinger train: To determine the stack-gas moisture content, four 500-mL impingers, connected in series with leak-free ground-glass joints, follow the knockout trap. The first, third, and fourth impingers shall be of the Greenburg-Smith design, modified by replacing the tip with a 1.3-cm (1/2-in.) I.D. glass tube extending about 1.3 cm (1/2 in.) from the bottom of the outer cylinder. The second impinger shall be of the Greenburg-Smith design with the standard tip. The first and second impingers shall contain known quantities of water or appropriate trapping solution. The third shall be empty or charged with a caustic solution, should the stack gas contain hydrochloric acid (HCl). The fourth shall contain a known weight of silica gel or equivalent desiccant.

4.1.3.9 Metering system: The necessary components are a vacuum gauge, leak-free pump, thermometers capable of measuring temperature to within 3°C (5.4°F), dry-gas meter capable of measuring volume to within 1%, and related equipment, as shown in Figure 1. At a minimum, the pump should be capable of 4 cfm free flow, and the dry-gas meter should have a recording capacity of 0-999.9 cu ft with a resolution of 0.005 cu ft. Other metering systems capable of maintaining sampling rates within 10% of isokineticity and of determining sample volumes to within 2% may be used. The metering system must be used in conjunction with a pitot tube to enable checks of isokinetic sampling rates. Sampling trains using metering systems designed for flow rates higher than those described in APTD-0581 and APTD-0576 may be used, provided that the specifications of this method are met.

4.1.3.10 Barometer: Mercury, aneroid, or other barometer capable of measuring atmospheric pressure to within 2.5 mm Hg (0.1 in. Hg). In many cases the barometric reading may be obtained from a nearby National Weather Service station, in which case the station value (which is the absolute barometric pressure) is requested and an adjustment for elevation differences between the weather station and sampling point is applied at a rate of minus 2.5 mm Hg (0.1 in. Hg) per 30-m (100 ft) elevation increase (vice versa for elevation decrease).

4.1.3.11 Gas density determination equipment: Temperature sensor and pressure gauge (as described in Sections 2.3 and 2.4 of EPA Method 2), and gas analyzer, if necessary (as described in EPA Method 3). The temperature sensor ideally should be permanently attached to the pitot tube or sampling probe in a fixed configuration such that the tip of the sensor extends beyond the leading edge of the probe sheath and does not touch any metal.

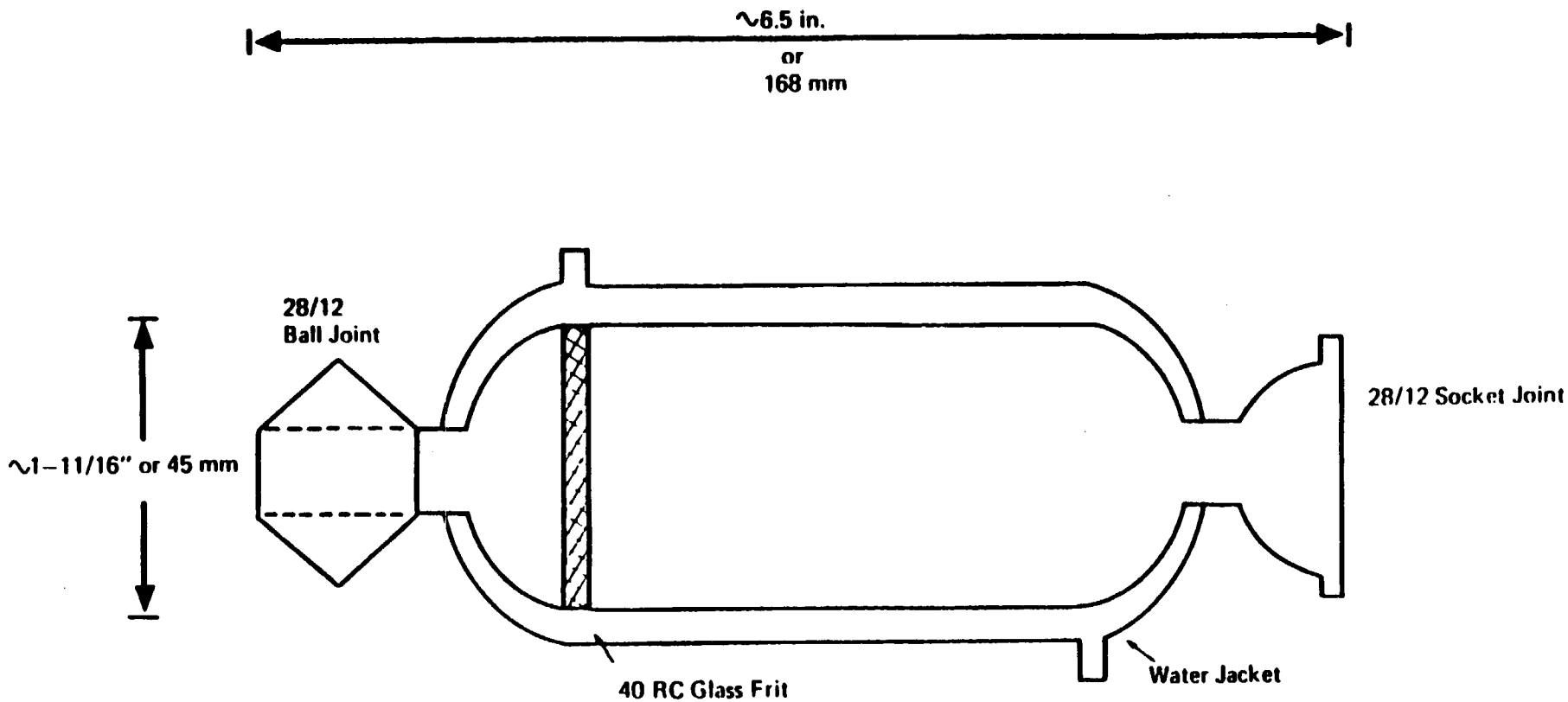


Figure 2. Adsorbent Sampling System.

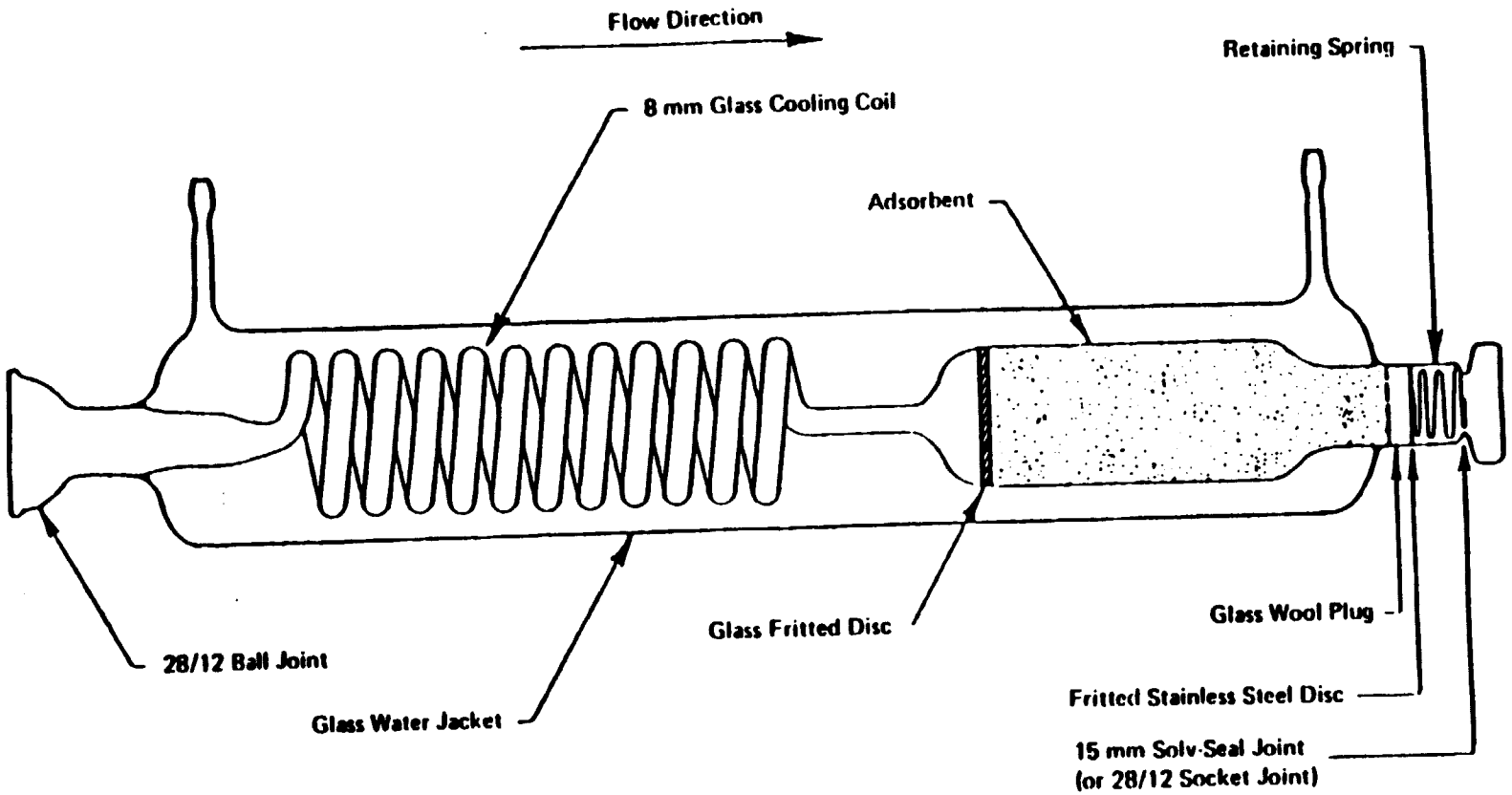


Figure 3. Adsorbent Sampling System.

Alternatively, the sensor may be attached just prior to use in the field. Note, however, that if the temperature sensor is attached in the field, the sensor must be placed in an interference-free arrangement with respect to the Type S pitot tube openings (see EPA Method 2, Figure 2-7). As a second alternative, if a difference of no more than 1% in the average velocity measurement is to be introduced, the temperature gauge need not be attached to the probe or pitot tube.

4.1.3.12 Calibration/field-preparation record: A permanently bound laboratory notebook, in which duplicate copies of data may be made as they are being recorded, is required for documenting and recording calibrations and preparation procedures (i.e., filter and silica gel tare weights, clean XAD-2, quality assurance/quality control check results, dry-gas meter, and thermocouple calibrations, etc.). The duplicate copies should be detachable and should be stored separately in the test program archives.

4.2 Sample Recovery:

4.2.1 **Probe liner:** Probe nozzle and organic module conditioning section brushes; nylon bristle brushes with stainless steel wire handles are required. The probe brush shall have extensions of stainless steel, Teflon, or inert material at least as long as the probe. The brushes shall be properly sized and shaped to brush out the probe liner, the probe nozzle, and the organic module conditioning section.

4.2.2 **Wash bottles:** Three. Teflon or glass wash bottles are recommended; polyethylene wash bottles should not be used because organic contaminants may be extracted by exposure to organic solvents used for sample recovery.

4.2.3 **Glass sample storage containers:** Chemically resistant, borosilicate amber and clear glass bottles, 500-mL or 1,000-mL. Bottles should be tinted to prevent action of light on sample. Screw-cap liners shall be either Teflon or constructed so as to be leak-free and resistant to chemical attack by organic recovery solvents. Narrow-mouth glass bottles have been found to exhibit less tendency toward leakage.

4.2.4 **Petri dishes:** Glass, sealed around the circumference with wide (1-in.) Teflon tape, for storage and transport of filter samples.

4.2.5 **Graduated cylinder and/or balances:** To measure condensed water to the nearest 1 mL or 1 g. Graduated cylinders shall have subdivisions not >2 mL. Laboratory triple-beam balances capable of weighing to ±0.5 g or better are required.

4.2.6 **Plastic storage containers:** Screw-cap polypropylene or polyethylene containers to store silica gel.

4.2.7 **Funnel and rubber policeman:** To aid in transfer of silica gel to container (not necessary if silica gel is weighed in field).

4.2.8 Funnels: Glass, to aid in sample recovery.

4.3 Filters: Glass- or quartz-fiber filters, without organic binder, exhibiting at least 99.95% efficiency (<0.05% penetration) on 0.3-um dioctyl phthalate smoke particles. The filter efficiency test shall be conducted in accordance with ASTM standard method D2986-71. Test data from the supplier's quality control program are sufficient for this purpose. In sources containing SO_2 or SO_3, the filter material must be of a type that is unreactive to SO_2 or SO_3. Reeve Angel 934 AH or Schleicher and Schwell #3 filters work well under these conditions.

4.4 Crushed ice: Quantities ranging from 10-50 lb may be necessary during a sampling run, depending on ambient air temperature.

4.5 Stopcock grease: Solvent-insoluble, heat-stable silicone grease. Use of silicone grease upstream of the module is not permitted, and amounts used on components located downstream of the organic module shall be minimized. Silicone grease usage is not necessary if screw-on connectors and Teflon sleeves or ground-glass joints are used.

4.6 Glass wool: Used to plug the unfritted end of the sorbent module. The glass-wool fiber should be solvent-extracted with methylene chloride in a Soxhlet extractor for 12 hr and air-dried prior to use.

5.0 REAGENTS

5.1 Adsorbent resin: Porous polymeric resin (XAD-2 or equivalent) is recommended. These resins shall be cleaned prior to their use for sample collection. Appendix A of this method should be consulted to determine appropriate precleaning procedure. For best results, resin used should not exhibit a blank of higher than 4 mg/kg of total chromatographable organics (TCO) (see Appendix B) prior to use. Once cleaned, resin should be stored in an airtight, wide-mouth amber glass container with a Teflon-lined cap or placed in one of the glass sorbent modules tightly sealed with Teflon film and elastic bands. The resin should be used within 4 wk of the preparation.

5.2 Silica gel: Indicating type, 6-16 mesh. If previously used, dry at 175°C (350°F) for 2 hr before using. New silica gel may be used as received. Alternatively, other types of desiccants (equivalent or better) may be used, subject to the approval of the Administrator.

5.3 Impinger solutions: Distilled organic-free water (Type II) shall be used, unless sampling is intended to quantify a particular inorganic gaseous species. If sampling is intended to quantify the concentration of additional species, the impinger solution of choice shall be subject to Administrator approval. This water should be prescreened for any compounds of interest. One hundred mL will be added to the specified impinger; the third impinger in the train may be charged with a basic solution (1 N sodium hydroxide or sodium acetate) to protect the sampling pump from acidic gases. Sodium acetate should be used when large sample volumes are anticipated because sodium hydroxide will react with carbon dioxide in aqueous media to form sodium carbonate, which may possibly plug the impinger.

5.4 Sample recovery reagents:

5.4.1 **Methylene chloride:** Distilled-in-glass grade is required for sample recovery and cleanup (see Note to 5.4.2 below).

5.4.2 **Methyl alcohol:** Distilled-in-glass grade is required for sample recovery and cleanup.

NOTE: Organic solvents from metal containers may have a high residue blank and should not be used. Sometimes suppliers transfer solvents from metal to glass bottles; thus blanks shall be run prior to field use and only solvents with low blank value (<0.001%) shall be used.

5.4.3 **Water:** Water (Type II) shall be used for rinsing the organic module and condenser component.

6.0 SAMPLE COLLECTION, PRESERVATION, AND HANDLING

6.1 Because of complexity of this method, field personnel should be trained in and experienced with the test procedures in order to obtain reliable results.

6.2 Laboratory preparation:

6.2.1 All the components shall be maintained and calibrated according to the procedure described in APTD-0576, unless otherwise specified.

6.2.2 Weigh several 200- to 300-g portions of silica gel in airtight containers to the nearest 0.5 g. Record on each container the total weight of the silica gel plus containers. As an alternative to preweighing the silica gel, it may instead be weighed directly in the impinger or sampling holder just prior to train assembly.

6.2.3 Check filters visually against light for irregularities and flaws or pinhole leaks. Label the shipping containers (glass Petri dishes) and keep the filters in these containers at all times except during sampling and weighing.

6.2.4 Desiccate the filters at 20 ± 5.6°C (68 ± 10°F) and ambient pressure for at least 24 hr, and weigh at intervals of at least 6 hr to a constant weight (i.e., <0.5-mg change from previous weighing), recording results to the nearest 0.1 mg. During each weighing the filter must not be exposed for more than a 2-min period to the laboratory atmosphere and relative humidity above 50%. Alternatively (unless otherwise specified by the Administrator), the filters may be oven-dried at 105°C (220°F) for 2-3 hr, desiccated for 2 hr, and weighed.

6.3 Preliminary field determinations:

6.3.1 Select the sampling site and the minimum number of sampling points according to EPA Method 1 or as specified by the Administrator. Determine the stack pressure, temperature, and range of velocity heads using EPA Method 2. It is recommended that a leak-check of the pitot lines (see EPA Method 2, Section 3.1) be performed. Determine the stack-gas moisture content using EPA Approximation Method 4 or its alternatives to establish estimates of isokinetic sampling-rate settings. Determine the stack-gas dry molecular weight, as described in EPA Method 2, Section 3.6. If integrated EPA Method 3 sampling is used for molecular weight determination, the integrated bag sample shall be taken simultaneously with, and for the same total length of time as, the sample run.

6.3.2 Select a nozzle size based on the range of velocity heads so that it is not necessary to change the nozzle size in order to maintain isokinetic sampling rates. During the run, do not change the nozzle. Ensure that the proper differential pressure gauge is chosen for the range of velocity heads encountered (see Section 2.2 of EPA Method 2).

6.3.3 Select a suitable probe liner and probe length so that all traverse points can be sampled. For large stacks, to reduce the length of the probe, consider sampling from opposite sides of the stack.

6.3.4 A minimum of 3 dscm (105.9 dscf) of sample volume is required for the determination of the Destruction and Removal Efficiency (DRE) of POHCs from incineration systems. Additional sample volume shall be collected as necessitated by analytical detection limit constraints. To determine the minimum sample volume required, refer to sample calculations in Section 10.0.

6.3.5 Determine the total length of sampling time needed to obtain the identified minimum volume by comparing the anticipated average sampling rate with the volume requirement. Allocate the same time to all traverse points defined by EPA Method 1. To avoid timekeeping errors, the length of time sampled at each traverse point should be an integer or an integer plus one-half min.

6.3.6 In some circumstances (e.g., batch cycles) it may be necessary to sample for shorter times at the traverse points and to obtain smaller gas-sample volumes. In these cases, the Administrator's approval must first be obtained.

6.4 Preparation of collection train:

6.4.1 During preparation and assembly of the sampling train, keep all openings where contamination can occur covered with Teflon film or aluminum foil until just prior to assembly or until sampling is about to begin.

6.4.2 Fill the sorbent trap section of the organic module with approximately 20 g of clean adsorbent resin. While filling, ensure that the trap packs uniformly, to eliminate the possibility of channeling. When freshly cleaned, many adsorbent resins carry a static charge, which will cause clinging to trap walls. This may be minimized by filling the trap in the presence of an antistatic device. Commercial antistatic devices include Model-204 and Model-210 manufactured by the 3M Company, St. Paul, Minnesota.

6.4.3 If an impinger train is used to collect moisture, place 100 mL of water in each of the first two impingers, leave the third impinger empty (or charge with caustic solution, as necessary), and transfer approximately 200-300 g of preweighed silica gel from its container to the fourth impinger. More silica gel may be used, but care should be taken to ensure that it is not entrained and carried out from the impinger during sampling. Place the container in a clean place for later use in the sample recovery. Alternatively, the weight of the silica gel plus impinger may be determined to the nearest 0.5 g and recorded.

6.4.4 Using a tweezer or clean disposable surgical gloves, place a labeled (identified) and weighed filter in the filter holder. Be sure that the filter is properly centered and the gasket properly placed to prevent the sample gas stream from circumventing the filter. Check the filter for tears after assembly is completed.

6.4.5 When glass liners are used, install the selected nozzle using a Viton-A O-ring when stack temperatures are <260°C (500°F) and a woven glass-fiber gasket when temperatures are higher. See APTD-0576 (Rom, 1972) for details. Other connecting systems utilizing either 316 stainless steel or Teflon ferrules may be used. When metal liners are used, install the nozzle as above, or by a leak-free direct mechanical connection. Mark the probe with heat-resistant tape or by some other method to denote the proper distance into the stack or duct for each sampling point.

6.4.6 Set up the train as in Figure 1. During assembly, do not use any silicone grease on ground-glass joints that are located upstream of the organic module. A very light coating of silicone grease may be used on all ground-glass joints that are located downstream of the organic module, but it should be limited to the outer portion (see APTD-0576) of the ground-glass joints to minimize silicone-grease contamination. Subject to the approval of the Administrator, a glass cyclone may be used between the probe and the filter holder when the total particulate catch is expected to exceed 100 mg or when water droplets are present in the stack. The organic module condenser must be maintained at a temperature of 17 ± 3°C. Connect all temperature sensors to an appropriate potentiometer/display unit. Check all temperature sensors at ambient temperature.

6.4.7 Place crushed ice around the impingers and the organic module condensate knockout.

6.4.8 Turn on the sorbent module and condenser coil coolant recirculating pump and begin monitoring the sorbent module gas entry temperature. Ensure proper sorbent module gas entry temperature before proceeding and again before any sampling is initiated. It is extremely important that the XAD-2 resin temperature never exceed 50°C (122°F), because thermal decomposition will occur. During testing, the XAD-2 temperature must not exceed 20°C (68°F) for efficient capture of the semivolatile species of interest.

6.4.9 Turn on and set the filter and probe heating systems at the desired operating temperatures. Allow time for the temperatures to stabilize.

6.5 Leak-check procedures

6.5.1 Pre-test leak-check:

6.5.1.1 Because the number of additional intercomponent connections in the Semi-VOST train (over the M5 Train) increases the possibility of leakage, a pre-test leak-check is required.

6.5.1.2 After the sampling train has been assembled, turn on and set the filter and probe heating systems at the desired operating temperatures. Allow time for the temperatures to stabilize. If a Viton A O-ring or other leak-free connection is used in assembling the probe nozzle to the probe liner, leak-check the train at the sampling site by plugging the nozzle and pulling a 381-mm Hg (15-in. Hg) vacuum.
(NOTE: A lower vacuum may be used, provided that it is not exceeded during the test.)

6.5.1.3 If an asbestos string is used, do not connect the probe to the train during the leak-check. Instead, leak-check the train by first attaching a carbon-filled leak-check impinger (shown in Figure 4) to the inlet of the filter holder (cyclone, if applicable) and then plugging the inlet and pulling a 381-mm Hg (15-in. Hg) vacuum. (Again, a lower vacuum may be used, provided that it is not exceeded during the test.) Then, connect the probe to the train and leak-check at about 25-mm Hg (1-in. Hg) vacuum; alternatively, leak-check the probe with the rest of the sampling train in one step at 381-mm Hg (15-in. Hg) vacuum. Leakage rates in excess of 4% of the average sampling rate or >0.00057 m^3/min (0.02 cfm), whichever is less, are unacceptable.

6.5.1.4 The following leak-check instructions for the sampling train described in APTD-0576 and APTD-0581 may be helpful. Start the pump with fine-adjust valve fully open and coarse-adjust valve completely closed. Partially open the coarse-adjust valve and slowly close the fine-adjust valve until the desired vacuum is reached. Do <u>not</u> reverse direction of the fine-adjust valve; this will cause water to back up into the organic module. If the desired vacuum is exceeded, either leak-check at this higher vacuum or end the leak-check, as shown below, and start over.

CROSS SECTIONAL VIEW

Leak Testing Apparatus

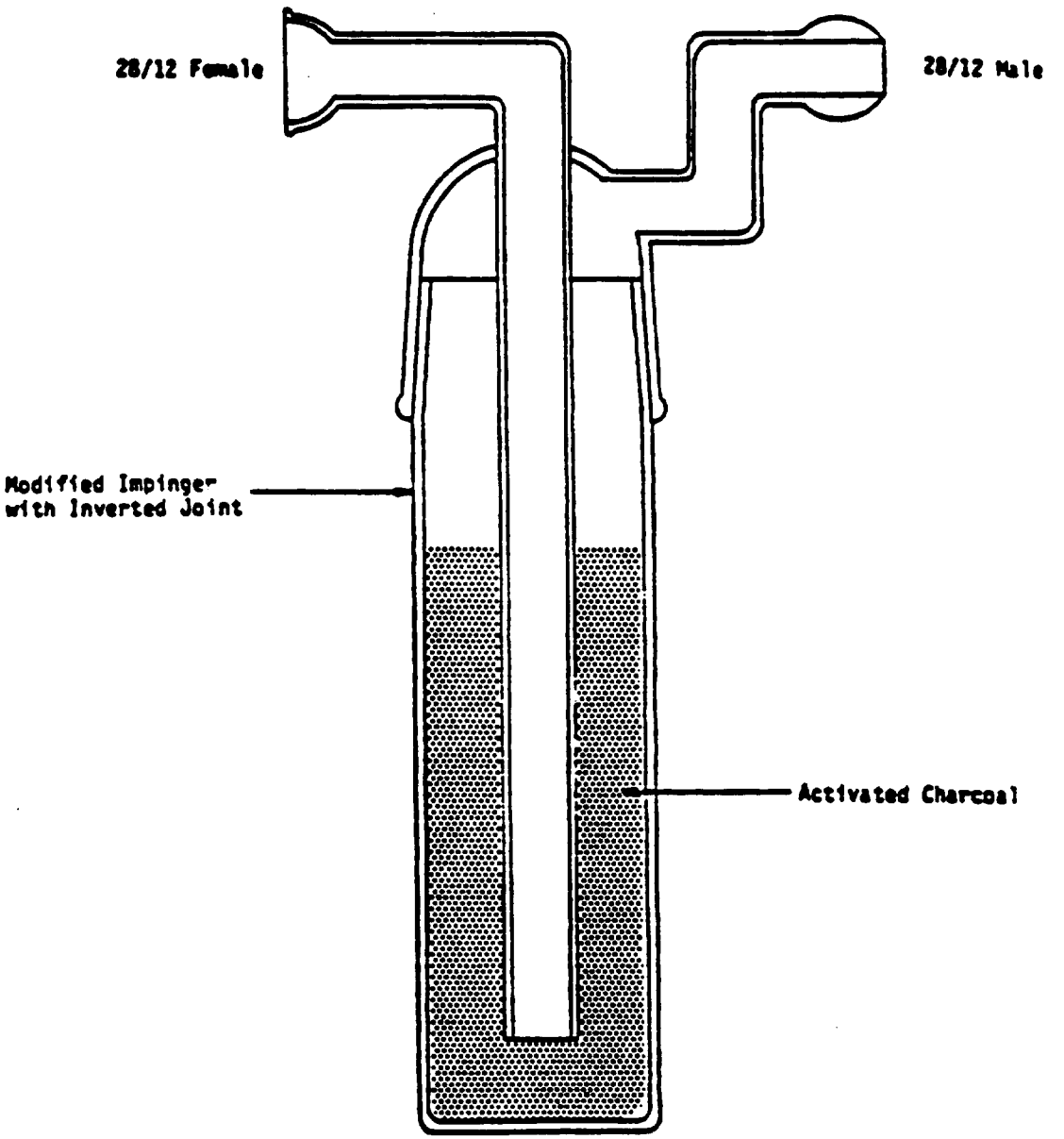


Figure 4. Leak-check impinger.

6.5.1.5 When the leak-check is completed, first slowly remove the plug from the inlet to the probe, filter holder, or cyclone (if applicable). When the vacuum drops to 127 mm (5 in.) Hg or less, immediately close the coarse-adjust valve. Switch off the pumping system and reopen the fine-adjust valve. Do not reopen the fine-adjust valve until the coarse-adjust valve has been closed. This prevents the water in the impingers from being forced backward into the organic module and silica gel from being entrained backward into the third impinger.

6.5.2 **Leak-checks during sampling run:**

6.5.2.1 If, during the sampling run, a component (e.g., filter assembly, impinger, or sorbent trap) change becomes necessary, a leak-check shall be conducted immediately after the interruption of sampling and before the change is made. The leak-check shall be done according to the procedure outlined in Paragraph 6.5.1, except that it shall be done at a vacuum greater than or equal to the maximum value recorded up to that point in the test. If the leakage rate is found to be no greater than 0.00057 m^3/min (0.02 cfm) or 4% of the average sampling rate (whichever is less), the results are acceptable, and no correction will need to be applied to the total volume of dry gas metered. If a higher leakage rate is obtained, the tester shall void the sampling run. (It should be noted that any "correction" of the sample volume by calculation by calculation reduces the integrity of the pollutant concentrations data generated and must be avoided.)

6.5.2.2 Immediately after a component change, and before sampling is reinitiated, a leak-check similar to a pre-test leak-check must also be conducted.

6.5.3 **Post-test leak-check:**

6.5.3.1 A leak-check is mandatory at the conclusion of each sampling run. The leak-check shall be done with the same procedures as those with the pre-test leak-check, except that it shall be conducted at a vacuum greater than or equal to the maximum value reached during the sampling run. If the leakage rate is found to be no greater than 0.00057 m^3/min (0.02 cfm) or 4% of the average sampling rate (whichever is less), the results are acceptable, and no correction need be applied to the total volume of dry gas metered. If, however, a higher leakage rate is obtained, the tester shall either record the leakage rate, correct the sample volume (as shown in the calculation section of this method), and consider the data obtained of questionable reliability, or void the sampling run.

6.6 <u>Sampling-train operation</u>:

6.6.1 During the sampling run, maintain an isokinetic sampling rate to within 10% of true isokinetic, unless otherwise specified by the Administrator. Maintain a temperature around the filter of 120 ± 14°C (248 ± 25°F) and a gas temperature entering the sorbent trap at a maximum of 20°C (68°F).

6.6.2 For each run, record the data required on a data sheet such as the one shown in Figure 5. Be sure to record the initial dry-gas meter reading. Record the dry-gas meter readings at the beginning and end of each sampling time increment, when changes in flow rates are made before and after each leak-check, and when sampling is halted. Take other readings required by Figure 5 at least once at each sample point during each time increment and additional readings when significant changes (20% variation in velocity-head readings) necessitate additional adjustments in flow rate. Level and zero the manometer. Because the manometer level and zero may drift due to vibrations and temperature changes, make periodic checks during the traverse.

6.6.3 Clean the stack access ports prior to the test run to eliminate the chance of sampling deposited material. To begin sampling, remove the nozzle cap, verify that the filter and probe heating systems are at the specified temperature, and verify that the pitot tube and probe are properly positioned. Position the nozzle at the first traverse point, with the tip pointing directly into the gas stream. Immediately start the pump and adjust the flow to isokinetic conditions. Nomographs, which aid in the rapid adjustment of the isokinetic sampling rate without excessive computations, are available. These nomographs are designed for use when the Type S pitot-tube coefficient is 0.84 $\pm$ 0.02 and the stack-gas equivalent density (dry molecular weight) is equal to 29 $\pm$ 4. APTD-0576 details the procedure for using the nomographs. If the stack-gas molecular weight and the pitot-tube coefficient are outside the above ranges, do not use the nomographs unless appropriate steps (Shigehara, 1974) are taken to compensate for the deviations.

6.6.4 When the stack is under significant negative pressure (equivalent to the height of the impinger stem), take care to close the coarse-adjust valve before inserting the probe into the stack, to prevent water from backing into the organic module. If necessary, the pump may be turned on with the coarse-adjust valve closed.

6.6.5 When the probe is in position, block off the openings around the probe and stack access port to prevent unrepresentative dilution of the gas stream.

6.6.6 Traverse the stack cross section, as required by EPA Method 1 or as specified by the Administrator, being careful not to bump the probe nozzle into the stack walls when sampling near the walls or when removing or inserting the probe through the access port, in order to minimize the chance of extracting deposited material.

6.6.7 During the test run, make periodic adjustments to keep the temperature around the filter holder and the organic module at the proper levels; add more ice and, if necessary, salt to maintain a temperature of <20°C (68°F) at the condenser/silica gel outlet. Also, periodically check the level and zero of the manometer.

Plant _____
Location _____
Operator _____
Date _____
Run No. _____
Sample Box No. _____
Meter Box No. _____
Meter H@ _____
C Factor _____
Pitot Tube Coefficient C_p _____

Schematic of Stack Cross Section

Ambient Temperature _____
Barometric Pressure _____
Assumed Moisture % _____
Probe Length, m (ft) _____
Nozzle Identification No. _____
Average Calibrated Nozzle Diameter, cm (in) _____
Probe Heater Setting _____
Leak Rate, m^3/min, (cfm) _____
Probe Liner Material _____
Static Pressure, mm Hg (in. Hg) _____
Filter No. _____

Traverse Point Number	Sampling Time (θ) min.	Vacuum mm Hg (in. Hg)	Stack Temperature (T_s) °C(°F)	Velocity Head (P_s) mm (in) H_2O	Pressure Differential Across Orifice Meter mm (H_2O) (in H_2O)	Gas Sample Volume m_3 (ft_3)	Gas Sample Temp. at Dry Gas Meter Inlet °C(°F)	Gas Sample Temp. at Dry Gas Meter Outlet °C(F°)	Filter Holder Temperature °C(F°)	Temperature of Gas Entering Sorbet Trap °C(F°)	Temperature of Gas Leaving Condenser or Last Impinger
Total							Avg.	Avg.			
Average											

Figure 5. Particulate field data.

6.6.8 If the pressure drop across the filter or sorbent trap becomes too high, making isokinetic sampling difficult to maintain, the filter/sorbent trap may be replaced in the midst of a sample run. Using another complete filter holder/sorbent trap assembly is recommended, rather than attempting to change the filter and resin themselves. After a new filter/sorbent trap assembly is installed, conduct a leak-check. The total particulate weight shall include the summation of all filter assembly catches.

6.6.9 A single train shall be used for the entire sample run, except in cases where simultaneous sampling is required in two or more separate ducts or at two or more different locations within the same duct, or in cases where equipment failure necessitates a change of trains. In all other situations, the use of two or more trains will be subject to the approval of the Administrator.

6.6.10 Note that when two or more trains are used, separate analysis of the front-half (if applicable) organic-module and impinger (if applicable) catches from each train shall be performed, unless identical nozzle sizes were used on all trains. In that case, the front-half catches from the individual trains may be combined (as may the impinger catches), and one analysis of front-half catch and one analysis of impinger catch may be performed.

6.6.11 At the end of the sample run, turn off the coarse-adjust valve, remove the probe and nozzle from the stack, turn off the pump, record the final dry-gas meter reading, and conduct a post-test leak-check. Also, leak-check the pitot lines as described in EPA Method 2. The lines must pass this leak-check in order to validate the velocity-head data.

6.6.12 Calculate percent isokineticity (see Section 10.8) to determine whether the run was valid or another test run should be made.

7.0 SAMPLE RECOVERY

7.1 Preparation:

7.1.1 Proper cleanup procedure begins as soon as the probe is removed from the stack at the end of the sampling period. Allow the probe to cool. When the probe can be safely handled, wipe off all external particulate matter near the tip of the probe nozzle and place a cap over the tip to prevent losing or gaining particulate matter. Do not cap the probe tip tightly while the sampling train is cooling down because this will create a vacuum in the filter holder, drawing water from the impingers into the sorbent module.

7.1.2 Before moving the sample train to the cleanup site, remove the probe from the sample train and cap the open outlet, being careful not to lose any condensate that might be present. Cap the filter inlet.

Remove the umbilical cord from the last impinger and cap the impinger. If a flexible line is used between the organic module and the filter holder, disconnect the line at the filter holder and let any condensed water or liquid drain into the organic module.

7.1.3 Cap the filter-holder outlet and the inlet to the organic module. Separate the sorbent trap section of the organic module from the condensate knockout trap and the gas-conditioning section. Cap all organic module openings. Disconnect the organic-module knockout trap from the impinger train inlet and cap both of these openings. Ground-glass stoppers, Teflon caps, or caps of other inert materials may be used to seal all openings.

7.1.4 Transfer the probe, the filter, the organic-module components, and the impinger/condenser assembly to the cleanup area. This area should be clean and protected from the weather to minimize sample contamination or loss.

7.1.5 Save a portion of all washing solutions (methanol/methylene chloride, Type II water) used for cleanup as a blank. Transfer 200 mL of each solution directly from the wash bottle being used and place each in a separate, prelabeled glass sample container.

7.1.6 Inspect the train prior to and during disassembly and note any abnormal conditions.

7.2 Sample containers:

7.2.1 **Container no. 1:** Carefully remove the filter from the filter holder and place it in its identified Petri dish container. Use a pair or pairs of tweezers to handle the filter. If it is necessary to fold the filter, ensure that the particulate cake is inside the fold. Carefully transfer to the Petri dish any particulate matter or filter fibers that adhere to the filter-holder gasket, using a dry nylon bristle brush or sharp-edged blade, or both. Label the container and seal with 1-in.-wide Teflon tape around the circumference of the lid.

7.2.2 **Container no. 2:** Taking care that dust on the outside of the probe or other exterior surfaces does not get into the sample, quantitatively recover particulate matter or any condensate from the probe nozzle, probe fitting, probe liner, and front half of the filter holder by washing these components first with methanol/methylene chloride (1:1 v/v) into a glass container. Distilled water may also be used. Retain a water and solvent blank and analyze in the same manner as with the samples. Perform rinses as follows:

7.2.2.1 Carefully remove the probe nozzle and clean the inside surface by rinsing with the solvent mixture (1:1 v/v methanol/-methylene chloride) from a wash bottle and brushing with a nylon bristle brush. Brush until the rinse shows no visible particles; then make a final rinse of the inside surface with the solvent mix. Brush and rinse the inside parts of the Swagelok fitting with the solvent mix in a similar way until no visible particles remain.

7.2.2.2 Have two people rinse the probe liner with the solvent mix by tilting and rotating the probe while squirting solvent into its upper end so that all inside surfaces will be wetted with solvent. Let the solvent drain from the lower end into the sample container. A glass funnel may be used to aid in transferring liquid washes to the container.

7.2.2.3 Follow the solvent rinse with a probe brush. Hold the probe in an inclined position and squirt solvent into the upper end while pushing the probe brush through the probe with a twisting action; place a sample container underneath the lower end of the probe and catch any solvent and particulate matter that is brushed from the probe. Run the brush through the probe three times or more until no visible particulate matter is carried out with the solvent or until none remains in the probe liner on visual inspection. With stainless steel or other metal probes, run the brush through in the above-prescribed manner at least six times (metal probes have small crevices in which particulate matter can be entrapped). Rinse the brush with solvent and quantitatively collect these washings in the sample container. After the brushing, make a final solvent rinse of the probe as described above.

7.2.2.4 It is recommended that two people work together to clean the probe to minimize sample losses. Between sampling runs, keep brushes clean and protected from contamination.

7.2.2.5 Clean the inside of the front half of the filter holder and cyclone/cyclone flask, if used, by rubbing the surfaces with a nylon bristle brush and rinsing with methanol/methylene chloride (1:1 v/v) mixture. Rinse each surface three times or more if needed to remove visible particulate. Make a final rinse of the brush and filter holder. Carefully rinse out the glass cyclone and cyclone flask (if applicable). Brush and rinse any particulate material adhering to the inner surfaces of these components into the front-half rinse sample. After all solvent washings and particulate matter have been collected in the sample container, tighten the lid on the sample container so that solvent will not leak out when it is shipped to the laboratory. Mark the height of the fluid level to determine whether leakage occurs during transport. Label the container to identify its contents.

7.2.3 **Container no. 3:** The sorbent trap section of the organic module may be used as a sample transport container, or the spent resin may be transferred to a separate glass bottle for shipment. If the sorbent trap itself is used as the transport container, both ends should be sealed with tightly fitting caps or plugs. Ground-glass stoppers or Teflon caps may be used. The sorbent trap should then be labeled, covered with aluminum foil, and packaged on ice for transport to the laboratory. If a separate bottle is used, the spent resin should be quantitatively transferred from the trap into the clean bottle. Resin that adheres to the walls of the trap should be recovered using a rubber policeman or spatula and added to this bottle.

7.2.4 **Container no. 4:** Measure the volume of condensate collected in the condensate knockout section of the organic module to within ±1 mL by using a graduated cylinder or by weighing to within ±0.5 g using a triple-beam balance. Record the volume or weight of liquid present and note any discoloration or film in the liquid catch. Transfer this liquid to a prelabeled glass sample container. Inspect the back half of the filter housing and the gas-conditioning section of the organic module. If condensate is observed, transfer it to a graduated or weighing bottle and measure the volume, as described above. Add this material to the condensate knockout-trap catch.

7.2.5 **Container no. 5:** All sampling train components located between the high-efficiency glass- or quartz-fiber filter and the first wet impinger or the final condenser system (including the heated Teflon line connecting the filter outlet to the condenser) should be thoroughly rinsed with methanol/methylene chloride (1:1 v/v) and the rinsings combined. This rinse shall be separated from the condensate. If the spent resin is transferred from the sorbent trap to a separate sample container for transport, the sorbent trap shall be thoroughly rinsed until all sample-wetted surfaces appear clean. Visible films should be removed by brushing. Whenever train components are brushed, the brush should be subsequently rinsed with solvent mixture and the rinsings added to this container.

7.2.6 **Container no. 6:** Note the color of the indicating silica gel to determine if it has been completely spent and make a notation of its condition. Transfer the silica gel from the fourth impinger to its original container and seal. A funnel may make it easier to pour the silica gel without spilling. A rubber policeman may be used as an aid in removing the silica gel from the impinger. It is not necessary to remove the small amount of dust particles that may adhere strongly to the impinger wall. Because the gain in weight is to be used for moisture calculations, do not use any water or other liquids to transfer the silica gel. If a balance is available in the field, weigh the container and its contents to 0.5 g or better.

7.3 Impinger water:

7.3.1 Make a notation of any color or film in the liquid catch. Measure the liquid in the first three impingers to within ±1 mL by using a graduated cylinder or by weighing it to within ±0.5 g by using a balance (if one is available). Record the volume or weight of liquid present. This information is required to calculate the moisture content of the effluent gas.

7.3.2 Discard the liquid after measuring and recording the volume or weight, unless analysis of the impinger catch is required (see Paragraph 4.1.3.7). Amber glass containers should be used for storage of impinger catch, if required.

7.3.3 If a different type of condenser is used, measure the amount of moisture condensed either volumetrically or gravimetrically.

7.4 Sample preparation for shipment: Prior to shipment, recheck all sample containers to ensure that the caps are well secured. Seal the lids of all containers around the circumference with Teflon tape. Ship all liquid samples upright on ice and all particulate filters with the particulate catch facing upward. The particulate filters should be shipped unrefrigerated.

8.0 ANALYSIS

8.1 Sample preparation:

8.1.1 **General:** The preparation steps for all samples will result in a finite volume of concentrated solvent. The final sample volume (usually in the 1- to 10-mL range) is then subjected to analysis by GC/MS. All samples should be inspected and the appearance documented. All samples are to be spiked with surrogate standards as received from the field prior to any sample manipulations. The spike should be at a level equivalent to 10 times the MDL when the solvent is reduced in volume to the desired level (i.e., 10 mL). The spiking compounds should be the stable isotopically labeled analog of the compounds of interest or a compound that would exhibit properties similar to the compounds of interest, be easily chromatographed, and not interfere with the analysis of the compounds of interest. Suggested surrogate spiking compounds are: deuterated naphthalene, chrysene, phenol, nitrobenzene, chlorobenzene, toluene, and carbon-13-labeled pentachlorophenol.

8.1.2 **Condensate:** The "condensate" is the moisture collected in the first impinger following the XAD-2 module. Spike the condensate with the surrogate standards. The volume is measured and recorded and then transferred to a separatory funnel. The pH is to be adjusted to pH 2 with 6 N sulfuric acid, if necessary. The sample container and graduated cylinder are sequentially rinsed with three successive 10-mL aliquots of the extraction solvent and added to the separatory funnel. The ratio of solvent to aqueous sample should be maintained at 1:3. Extract the sample by vigorously shaking the separatory funnel for 5 min. After complete separation of the phases, remove the solvent and transfer to a Kuderna-Danish concentrator (K-D), filtering through a bed of precleaned, dry sodium sulfate. Repeat the extraction step two additional times. Adjust the pH to 11 with 6 N sodium hydroxide and reextract combining the acid and base extracts. Rinse the sodium sulfate into the K-D with fresh solvent and discard the desiccant. Add Teflon boiling chips and concentrate to 10 mL by reducing the volume to slightly less than 10 mL and then bringing to volume with fresh solvent. In order to achieve the necessary detection limit, the sample volume can be further reduced to 1 mL by using a micro column K-D or nitrogen blow-down. Should the sample start to exhibit precipitation, the concentration step should be stopped and the sample redissolved with fresh solvent taking the volume to some finite amount. After adding a standard (for the purpose of quantitation by GC/MS), the sample is ready for analysis, as discussed in Paragraph 8.2.

8.1.3 **Impinger:** Spike the sample with the surrogate standards; measure and record the volume and transfer to a separatory funnel. Proceed as described in Paragraph 8.1.2.

8.1.4 **XAD-2:** Spike the resin directly with the surrogate standards. Transfer the resin to the all-glass thimbles by the following procedure (care should be taken so as not to contaminate the thimble by touching it with anything other than tweezers or other solvent-rinsed mechanical holding devices). Suspend the XAD-2 module directly over the thimble. The glass frit of the module (see Figure 2) should be in the up position. The thimble is contained in a clean beaker, which will serve to catch the solvent rinses. Using a Teflon squeeze bottle, flush the XAD-2 into the thimble. Thoroughly rinse the glass module with solvent into the beaker containing the thimble. Add the XAD-2 glass-wool plug to the thimble. Cover the XAD-2 in the thimble with a precleaned glass-wool plug sufficient to prevent the resin from floating into the solvent reservoir of the extractor. If the resin is wet, effective extraction can be accomplished by loosely packing the resin in the thimble. If a question arises concerning the completeness of the extraction, a second extraction, without a spike, is advised. The thimble is placed in the extractor and the rinse solvent contained in the beaker is added to the solvent reservoir. Additional solvent is added to make the reservoir approximately two-thirds full. Add Teflon boiling chips and assemble the apparatus. Adjust the heat source to cause the extractor to cycle 5-6 times per hr. Extract the resin for 16 hr. Transfer the solvent and three 10-mL rinses of the reservoir to a K-D and concentrate as described in Paragraph 8.1.2.

8.1.5 **Particulate filter (and cyclone catch):** If particulate loading is to be determined, weigh the filter (and cyclone catch, if applicable). The particulate filter (and cyclone catch, if applicable) is transferred to the glass thimble and extracted simultaneously with the XAD-2 resin.

8.1.6 **Train solvent rinses:** All train rinses (i.e., probe, impinger, filter housing) using the extraction solvent and methanol are returned to the laboratory as a single sample. If the rinses are contained in more than one container, the intended spike is divided equally among the containers proportioned from a single syringe volume. Transfer the rinse to a separatory funnel and add a sufficient amount of organic-free water so that the methylene chloride becomes immiscible and its volume no longer increases with the addition of more water. The extraction and concentration steps are then performed as described in Paragraph 8.1.2.

8.2 Sample analysis:

8.2.1 The primary analytical tool for the measurement of emissions from hazardous waste incinerators is GC/MS using fused-silica capillary GC columns, as described in Method 8270 in Chapter Four of this manual. Because of the nature of GC/MS instrumentation and the cost associated

with sample analysis, prescreening of the sample extracts by gas chromatography/flame ionization detection (GC/FID) or with electron capture (GC/ECD) is encouraged. Information regarding the complexity and concentration level of a sample prior to GC/MS analysis can be of enormous help. This information can be obtained by using either capillary columns or less expensive packed columns. However, the FID screen should be performed with a column similar to that used with the GC/MS. Keep in mind that GC/FID has a slightly lower detection limit than GC/MS and, therefore, that the concentration of the sample can be adjusted either up or down prior to analysis by GC/MS.

8.2.2 The mass spectrometer will be operated in a full scan (40-450) mode for most of the analyses. The range for which data are acquired in a GC/MS run will be sufficiently broad to encompass the major ions, as listed in Chapter Four, Method 8270, for each of the designated POHCs in an incinerator effluent analysis.

8.2.3 For most purposes, electron ionization (EI) spectra will be collected because a majority of the POHCs give reasonable EI spectra. Also, EI spectra are compatible with the NBS Library of Mass Spectra and other mass spectral references, which aid in the identification process for other components in the incinerator process streams.

8.2.4 To clarify some identifications, chemical ionization (CI) spectra using either positive ions or negative ions will be used to elucidate molecular-weight information and simplify the fragmentation patterns of some compounds. In no case, however, should CI spectra alone be used for compound identification. Refer to Chapter Four, Method 8270, for complete descriptions of GC conditions, MS conditions, and quantitative and quantitative identification.

9.0 CALIBRATION

9.1 Probe nozzle: Probe nozzles shall be calibrated before their initial use in the field. Using a micrometer, measure the inside diameter of the nozzle to the nearest 0.025 mm (0.001 in.). Make measurements at three separate places across the diameter and obtain the average of the measurements. The difference between the high and low numbers shall not exceed 0.1 mm (0.004 in.). When nozzles become nicked, dented, or corroded, they shall be reshaped, sharpened, and recalibrated before use. Each nozzle shall be permanently and uniquely identified.

9.2 Pitot tube: The Type S pitot tube assembly shall be calibrated according to the procedure outlined in Section 4 of EPA Method 2, or assigned a nominal coefficient of 0.84 if it is not visibly nicked, dented, or corroded and if it meets design and intercomponent spacing specifications.

9.3 Metering system:

9.3.1 Before its initial use in the field, the metering system shall be calibrated according to the procedure outlined in APTD-0576. Instead of physically adjusting the dry-gas meter dial readings to correspond to the wet-test meter readings, calibration factors may be used to correct the gas meter dial readings mathematically to the proper values. Before calibrating the metering system, it is suggested that a leak-check be conducted. For metering systems having diaphragm pumps, the normal leak-check procedure will not detect leakages within the pump. For these cases the following leak-check procedure is suggested: Make a 10-min calibration run at 0.00057 m^3/min (0.02 cfm); at the end of the run, take the difference of the measured wet-test and dry-gas meter volumes and divide the difference by 10 to get the leak rate. The leak rate should not exceed 0.00057 m^3/min (0.02 cfm).

9.3.2 After each field use, the calibration of the metering system shall be checked by performing three calibration runs at a single intermediate orifice setting (based on the previous field test). The vacuum shall be set at the maximum value reached during the test series. To adjust the vacuum, insert a valve between the wet-test meter and the inlet of the metering system. Calculate the average value of the calibration factor. If the calibration has changed by more than 5%, recalibrate the meter over the full range of orifice settings, as outlined in APTD-0576.

9.3.3 **Leak-check of metering system:** That portion of the sampling train from the pump to the orifice meter (see Figure 1) should be leak-checked prior to initial use and after each shipment. Leakage after the pump will result in less volume being recorded than is actually sampled. The following procedure is suggested (see Figure 6): Close the main valve on the meter box. Insert a one-hole rubber stopper with rubber tubing attached into the orifice exhaust pipe. Disconnect and vent the low side of the orifice manometer. Close off the low side orifice tap. Pressurize the system to 13-18 cm (5-7 in.) water column by blowing into the rubber tubing. Pinch off the tubing and observe the manometer for 1 min. A loss of pressure on the manometer indicates a leak in the meter box. Leaks, if present, must be corrected.

NOTE: If the dry-gas-meter coefficient values obtained before and after a test series differ by >5%, either the test series shall be voided or calculations for test series shall be performed using whichever meter coefficient value (i.e., before or after) gives the lower value of total sample volume.

9.4 Probe heater: The probe-heating system shall be calibrated before its initial use in the field according to the procedure outlined in APTD-0576. Probes constructed according to APTD-0581 need not be calibrated if the calibration curves in APTD-0576 are used.

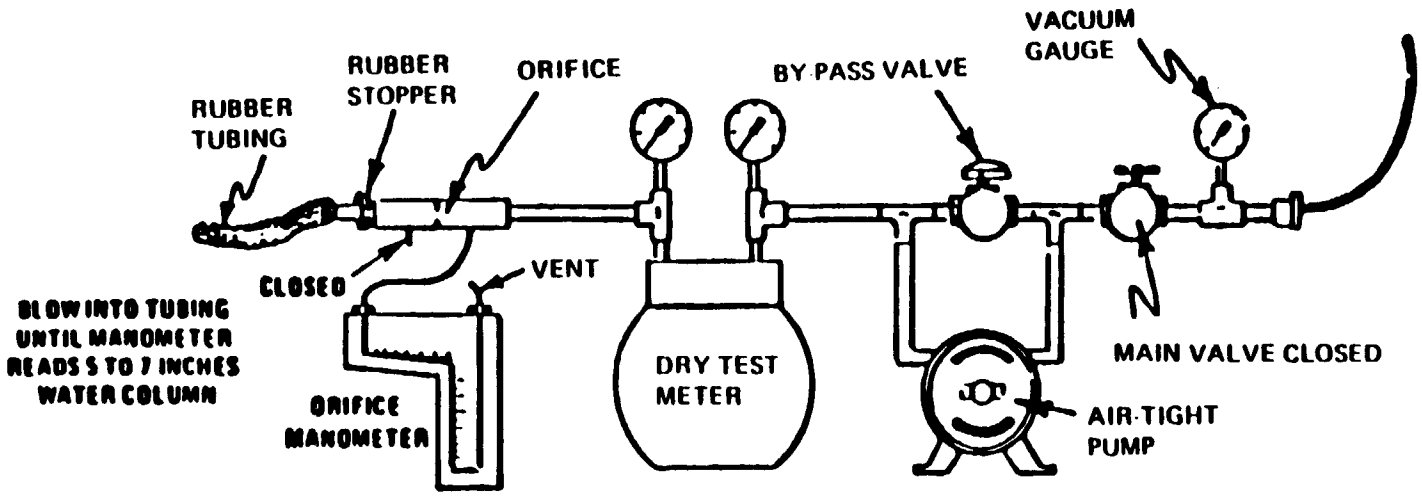


Figure 6. Leak-check of meter box.

9.5 Temperature gauges: Each thermocouple must be permanently and uniquely marked on the casting; all mercury-in-glass reference thermometers must conform to ASTM E-1 63C or 63F specifications. Thermocouples should be calibrated in the laboratory with and without the use of extension leads. If extension leads are used in the field, the thermocouple readings at ambient air temperatures, with and without the extension lead, must be noted and recorded. Correction is necessary if the use of an extension lead produces a change >1.5%.

9.5.1 **Impinger, organic module, and dry-gas meter thermocouples:** For the thermocouples used to measure the temperature of the gas leaving the impinger train and the XAD-2 resin bed, three-point calibration at ice-water, room-air, and boiling-water temperatures is necessary. Accept the thermocouples only if the readings at all three temperatures agree to ±2°C (3.6°F) with those of the absolute value of the reference thermometer.

9.5.2 **Probe and stack thermocouple:** For the thermocouples used to indicate the probe and stack temperatures, a three-point calibration at ice-water, boiling-water, and hot-oil-bath temperatures must be performed; it is recommended that room-air temperature be added, and that the thermometer and the thermocouple agree to within 1.5% at each of the calibration points. A calibration curve (equation) may be constructed (calculated) and the data extrapolated to cover the entire temperature range suggested by the manufacturer.

9.6 Barometer: Adjust the barometer initially and before each test series to agree to within ±25 mm Hg (0.1 in. Hg) of the mercury barometer or the corrected barometric pressure value reported by a nearby National Weather Service Station (same altitude above sea level).

9.7 Triple-beam balance: Calibrate the triple-beam balance before each test series, using Class-S standard weights; the weights must be within ±0.5% of the standards, or the balance must be adjusted to meet these limits.

10.0 CALCULATIONS

10.1 Carry out calculations. Round off figures after the final calculation to the correct number of significant figures.

10.2 Nomenclature:

A_n = Cross-sectional area of nozzle, m^2 (ft^2).

B_{ws} = Water vapor in the gas stream, proportion by volume.

C_d = Type S pitot tube coefficient (nominally 0.84 ± 0.02), dimensionless.

I = Percent of isokinetic sampling.

L_a = Maximum acceptable leakage rate for a leak-check, either pre-test or following a component change; equal to 0.00057 m^3/min (0.02 cfm) or 4% of the average sampling rate, whichever is less.

L_i = Individual leakage rate observed during the leak-check conducted prior to the "i^{th}" component change (i = 1, 2, 3...n) m^3/min (cfm).

L_p = Leakage rate observed during the post-test leak-check, m^3/min (cfm).

M_d = Stack-gas dry molecular weight, g/g-mole (lb/lb-mole).

M_w = Molecular weight of water, 18.0 g/g-mole (18.0 lb/lb-mole).

P_{bar} = Barometric pressure at the sampling site, mm Hg (in. Hg).

P_s = Absolute stack-gas pressure, mm Hg (in. Hg).

P_{std} = Standard absolute pressure, 760 mm Hg (29.92 in. Hg).

R = Ideal gas constant, 0.06236 mm Hg-m^3/K-g-mole (21.85 in. Hg-ft^3/°R-lb-mole).

T_m = Absolute average dry-gas meter temperature (see Figure 6), K (°R).

T_s = Absolute average stack-gas temperature (see Figure 6), K (°R).

T_{std} = Standard absolute temperature, 293K (528°R).

V_{lc} = Total volume of liquid collected in the organic module condensate knockout trap, the impingers, and silica gel, mL.

V_m = Volume of gas sample as measured by dry-gas meter, dscm (dscf).

$V_{m(std)}$ = Volume of gas sample measured by the dry-gas meter, corrected to standard conditions, dscm (dscf).

$V_{w(std)}$ = Volume of water vapor in the gas sample, corrected to standard conditions, scm (scf).

V_s = Stack-gas velocity, calculated by Method 2, Equation 2-9, using data obtained from Method 5, m/sec (ft/sec).

W_a = Weight of residue in acetone wash, mg.

γ = Dry-gas-meter calibration factor, dimensionless.

ΔH = Average pressure differential across the orifice meter (see Figure 2), mm H_2O (in. H_2O).

ρ_w = Density of water, 0.9982 g/mL (0.002201 lb/mL).

θ = Total sampling time, min.

θ_1 = Sampling time interval from the beginning of a run until the first component change, min.

θ_i = Sampling time interval between two successive component changes, beginning with the interval between the first and second changes, min.

θ_p = Sampling time interval from the final (n^{th}) component change until the end of the sampling run, min.

13.6 = Specific gravity of mercury.

60 = sec/min.

100 = Conversion to percent.

10.3 Average dry-gas-meter temperature and average orifice pressure drop: See data sheet (Figure 5, above).

10.4 Dry-gas volume: Correct the sample measured by the dry-gas meter to standard conditions (20°C, 760 mm Hg [68°F, 29.92 in. Hg]) by using Equation 1:

$$V_{m(std)} = V_m \gamma \frac{T_{std}}{T_m} \frac{P_{bar} + \Delta H/13.6}{P_{std}} = K_1 V_m \gamma \frac{P_{bar} + \Delta H/13.6}{T_m} \qquad (1)$$

where:

K_1 = 0.3858 K/mm Hg for metric units, or
K_1 = 17.64°R/in. Hg for English units.

It should be noted that Equation 1 can be used as written, unless the leakage rate observed during any of the mandatory leak-checks (i.e., the post-test leak-check or leak-checks conducted prior to component changes) exceeds L_a. If L_p or L_i exceeds L_a, Equation 1 must be modified as follows:

a. Case I (no component changes made during sampling run): Replace V_m in Equation 1 with the expression:

$$V_m - (L_p - L_a)$$

b. Case II (one or more component changes made during the sampling run): Replace V_m in Equation 1 by the expression:

$$V_m - (L_1 - L_a)\theta_1 - \sum_{i=2}^{n} (L_i - L_a)\theta_1 - (L_p - L_a)\theta_p$$

and substitute only for those leakage rates (L_1 or L_p) that exceed L_a.

10.5 Volume of water vapor:

$$V_{w(std)} = V_{1c} \frac{P_w}{M_w} \frac{RT_{std}}{P_{std}} = K_2 V_{1c} \qquad (2)$$

where:

K_2 = 0.001333 m^3/mL for metric units, or
K_2 = 0.04707 ft^3/mL for English units.

10.6 Moisture content:

$$B_{ws} = \frac{V_{w(std)}}{V_{m(std)} + V_{w(std)}} \qquad (3)$$

NOTE: In saturated or water-droplet-laden gas streams, two calculations of the moisture content of the stack gas shall be made, one from the impinger analysis (Equation 3) and a second from the assumption of saturated conditions. The lower of the two values of B_w shall be considered correct. The procedure for determining the moisture content based upon assumption of saturated conditions is given in the Note to Section 1.2 of Method 4. For the purposes of this method, the average stack-gas temperature from Figure 6 may be used to make this determination, provided that the accuracy of the in-stack temperature sensor is ±1°C (2°F).

10.7 Conversion factors:

From	To	Multiply by
scf	m^3	0.02832
g/ft^3	gr/ft^3	15.43
g/ft^3	lb/ft^3	2.205×10^{-3}
g/ft^3	g/m^3	35.31

10.8 Isokinetic variation:

10.8.1 Calculation from raw data:

$$I = \frac{100\ T_s[K_3F_{1c} + (V_m/T_m)\ (P_{bar} + \Delta H/13.6)]}{60\theta V_s P_s A_n} \qquad (4)$$

where:

K_3 = 0.003454 mm Hg-m^3/mL-K for metric units, or
K_3 = 0.002669 in. Hg-ft^3/mL-°R for English units.

10.8.2 Calculation for intermediate values:

$$I = \frac{T_s V_{m(std)} P_{std} 100}{T_{std} V_s \theta A_n P_s 60(1-B_{ws})} \qquad (5)$$

$$= K_4 \frac{T_s V_{m(std)}}{P_s V_s A_n \theta (1-B_{ws})}$$

where:

K_4 = 4.320 for metric units, or
K_4 = 0.09450 for English units.

10.8.3 Acceptable results: If 90% $\leq$ I $\leq$ 110%, the results are acceptable. If the results are low in comparison with the standard and I is beyond the acceptable range, or if I is less than 90%, the Administrator may opt to accept the results.

10.9 To determine the minimum sample volume that shall be collected, the following sequence of calculations shall be used.

10.9.1 From prior analysis of the waste feed, the concentration of POHCs introduced into the combustion system can be calculated. The degree of destruction and removal efficiency that is required is used to determine the maximum amount of POHC allowed to be present in the effluent. This may be expressed as:

$$\frac{(WF)\ (POHC_i\ conc)}{100} \frac{(100-\%DRE)}{100} = \text{Max } POHC_i \text{ Mass} \qquad (6)$$

where:

WF = mass flow rate of waste feed per hr, g/hr (lb/hr).

$POHC_i$ = concentration of Principal Organic Hazardous Compound (wt %) introduced into the combustion process.

DRE = percent Destruction and Removal Efficiency required.

Max POHC = mass flow rate (g/hr [lb/hr]) of POHC emitted from the combustion source.

10.9.2 The average discharge concentration of the POHC in the effluent gas is determined by comparing the Max POHC with the volumetric flow rate being exhausted from the source. Volumetric flow rate data are available as a result of preliminary Method 1-4 determinations:

$$\frac{\text{Max POHC}_i \text{ Mass}}{DV_{eff(std)}} = \text{Max POHC}_i \text{ conc} \qquad (7)$$

where:

$DV_{eff(std)}$ = volumetric flow rate of exhaust gas, dscm (dscf).

$POHC_i$ conc = anticipated concentration of the POHC in the exhaust gas stream, g/dscm (lb/dscf).

10.9.3 In making this calculation, it is recommended that a safety margin of at least ten be included:

$$\frac{LDL_{POHC} \times 10}{POHC_i \text{ conc}} = V_{TBC} \qquad (8)$$

where:

LDL_{POHC} = detectable amount of POHC in entire sampling train.
NOTE: The whole extract from an XAD-2 cartridge is seldom if ever, injected at once. Therefore, if aliquoting factors are involved, the LDL_{POHC} is not the same as the analytical (or column) detection limit.

V_{TBC} = minimum dry standard volume to be collected at dry-gas meter.

10.10 <u>Concentration of any given POHC in the gaseous emissions of a combustion process</u>:

1) Multiply the concentration of the POHC as determined in Method 8270 by the final concentration volume, typically 10 mL.

C_{POHC} (ug/mL) x sample volume (mL) = amount (ug) of POHC in sample (9)

where:

C_{POHC} = concentration of POHC as analyzed by Method 8270.

2) Sum the amount of POHC found in all samples associated with a single train.

Total (ug) = XAD-2 (ug) + condensate (ug) + rinses (ug) + impinger (ug) (10)

3) Divide the total ug found by the volume of stack gas sampled (m^3).

(Total ug)/(train sample volume) = concentration of POHC (ug/m^3) (11)

11.0 QUALITY CONTROL

11.1 Sampling: See EPA Manual 600/4-77-027b for Method 5 quality control.

11.2 Analysis: The quality assurance program required for this study includes the analysis of field and method blanks, procedure validations, incorporation of stable labeled surrogate compounds, quantitation versus stable labeled internal standards, capillary column performance checks, and external performance tests. The surrogate spiking compounds selected for a particular analysis are used as primary indicators of the quality of the analytical data for a wide range of compounds and a variety of sample matrices. The assessment of combustion data, positive identification, and quantitation of the selected compounds are dependent on the integrity of the samples received and the precision and accuracy of the analytical methods employed. The quality assurance procedures for this method are designed to monitor the performance of the analytical method and to provide the required information to take corrective action if problems are observed in laboratory operations or in field sampling activities.

11.2.1 **Field Blanks:** Field blanks must be submitted with the samples collected at each sampling site. The field blanks include the sample bottles containing aliquots of sample recovery solvents, unused filters, and resin cartridges. At a minimum, one complete sampling train will be assembled in the field staging area, taken to the sampling area, and leak-checked at the beginning and end of the testing (or for the same total number of times as the actual test train). The filter housing and probe of the blank train will be heated during the sample test. The train will be recovered as if it were an actual test sample. No gaseous sample will be passed through the sampling train.

11.2.2 **Method blanks:** A method blank must be prepared for each set of analytical operations, to evaluate contamination and artifacts that can be derived from glassware, reagents, and sample handling in the laboratory.

11.2.3 Refer to Method 8270 for additional quality control considerations.

12.0 METHOD PERFORMANCE

12.1 Method performance evaluation: Evaluation of analytical procedures for a selected series of compounds must include the sample-preparation procedures and each associated analytical determination. The analytical procedures should be challenged by the test compounds spiked at appropriate levels and carried through the procedures.

12.2 Method detection limit: The overall method detection limits (lower and upper) must be determined on a compound-by-compound basis because different compounds may exhibit different collection, retention, and extraction efficiencies as well as instrumental minimum detection limit (MDL). The method detection limit must be quoted relative to a given sample volume. The upper limits for the method must be determined relative to compound retention volumes (breakthrough).

12.3 Method precision and bias: The overall method precision and bias must be determined on a compound-by-compound basis at a given concentration level. The method precision value would include a combined variability due to sampling, sample preparation, and instrumental analysis. The method bias would be dependent upon the collection, retention, and extraction efficiency of the train components. From evaluation studies to date using a dynamic spiking system, method biases of -13% and -16% have been determined for toluene and 1,1,2,2-tetrachloroethane, respectively. A precision of 19.9% was calculated from a field test data set representing seven degrees of freedom which resulted from a series of paired, unspiked Semivolatile Organic Sampling trains (Semi-VOST) sampling emissions from a hazardous waste incinerator.

13.0 REFERENCES

1. Addendum to Specifications for Incinerator Testing at Federal Facilities, PHS, NCAPC, December 6, 1967.

2. Bursey, J., Homolya, J., McAllister, R., and McGangley, J., Laboratory and Field Evaluation of the Semi-VOST Method, Vols. 1 and 2, U.S. Environmental Protection Agency, EPA/600/4-851/075A, 075B (1985).

3. Martin, R.M., Construction Details of Isokinetic Source-Sampling Equipment, Research Triangle Park, NC, U.S. Environmental Protection Agency, April 1971, PB-203 060/BE, APTD-0581, 35 pp.

4. Rom, J.J., Maintenance, Calibration, and Operation of Isokinetic Source-Sampling Equipment, Research Triangle Park, NC, U.S. Environmental Protection Agency, March 1972, PB-209 022/BE, APTD-0576, 39 pp.

5. Schlickenrieder, L.M., Adams, J.W., and Thrun, K.E., Modified Method 5 Train and Source Assessment Sampling System: Operator's Manual, U.S. Environmental Protection Agency, EPA/600/8-85/003, (1985).

6. Shigehara, R.T., Adjustments in the EPA Nomography for Different Pitot Tube Coefficients and Dry Molecular Weights, Stack Sampling News, 2:4-11 (October 1974).

7. U.S. Environmental Protection Agency, CFR 40 Part 60, Appendix A, Methods 1-5.

8. Vollaro, R.F., A Survey of Commercially Available Instrumentation for the Measurement of Low-Range Gas Velocities, Research Triangle Park, NC, U.S. Environmental Protection Agency, Emissions Measurement Branch, November 1976 (unpublished paper).

PREPARATION OF XAD-2 SORBENT RESIN

1.0 SCOPE AND APPLICATION

1.1 XAD-2 resin as supplied by the manufacturer is impregnated with a bicarbonate solution to inhibit microbial growth during storage. Both the salt solution and any residual extractable monomer and polymer species must be removed before use. The resin is prepared by a series of water and organic extractions, followed by careful drying.

2.0 EXTRACTION

2.1 Method 1: The procedure may be carried out in a giant Soxhlet extractor. An all-glass thimble containing an extra-coarse frit is used for extraction of XAD-2. The frit is recessed 10-15 mm above a crenellated ring at the bottom of the thimble to facilitate drainage. The resin must be carefully retained in the extractor cup with a glass-wool plug and stainless steel screen because it floats on methylene chloride. This process involves sequential extraction in the following order.

Solvent	Procedure
Water	Initial rinse: Place resin in a beaker, rinse once with Type II water, and discard. Fill with water a second time, let stand overnight, and discard.
Water	Extract with H_2O for 8 hr.
Methyl alcohol	Extract for 22 hr.
Methylene chloride	Extract for 22 hr.
Methylene chloride (fresh)	Extract for 22 hr.

2.2 Method 2:

2.2.1 As an alternative to Soxhlet extraction, a continuous extractor has been fabricated for the extraction sequence. This extractor has been found to be acceptable. The particular canister used for the apparatus shown in Figure A-1 contains about 500 g of finished XAD-2. Any size may be constructed; the choice is dependent on the needs of the sampling programs. The XAD-2 is held under light spring tension between a pair of coarse and fine screens. Spacers under the bottom screen allow for even distribution of clean solvent. The three-necked flask should be of sufficient size (3-liter in this case) to hold solvent

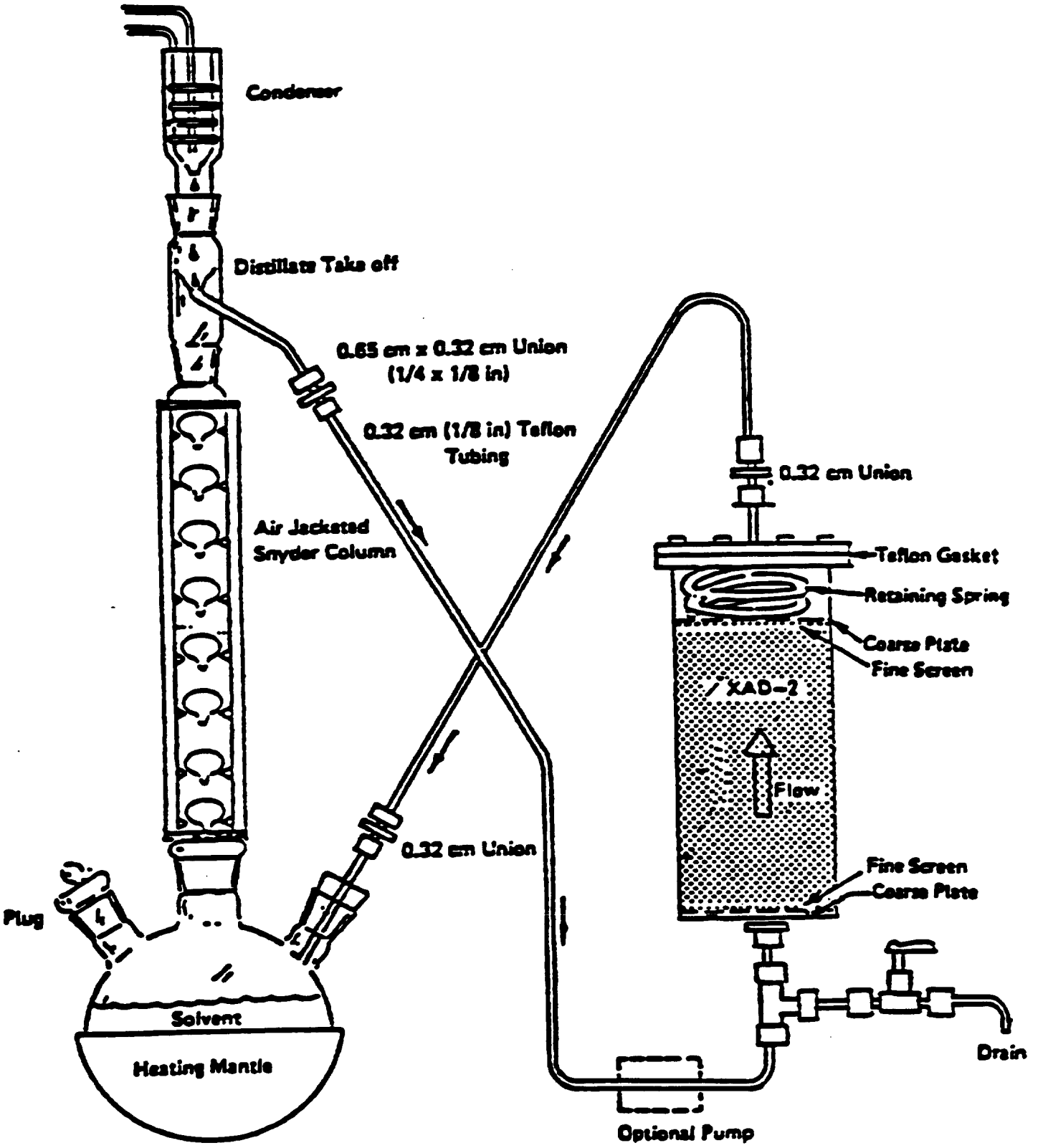


Figure A-1. XAD-2 cleanup extraction apparatus.

equal to twice the dead volume of the XAD-2 canister. Solvent is refluxed through the Snyder column, and the distillate is continuously cycled up through the XAD-2 for extraction and returned to the flask. The flow is maintained upward through the XAD-2 to allow maximum solvent contact and prevent channeling. A valve at the bottom of the canister allows removal of solvent from the canister between changes.

2.2.2 Experience has shown that it is very difficult to cycle sufficient water in this mode. Therefore the aqueous rinse is accomplished by simply flushing the canister with about 20 liters of distilled water. A small pump may be useful for pumping the water through the canister. The water extraction should be carried out at the rate of about 20-40 mL/min.

2.2.3 After draining the water, subsequent methyl alcohol and methylene chloride extractions are carried out using the refluxing apparatus. An overnight or 10- to 20-hr period is normally sufficient for each extraction.

2.2.4 All materials of construction are glass, Teflon, or stainless steel. Pumps, if used, should not contain extractable materials. Pumps are not used with methanol and methylene chloride.

3.0 DRYING

3.1 After evaluation of several methods of removing residual solvent, a fluidized-bed technique has proved to be the fastest and most reliable drying method.

3.2 A simple column with suitable retainers, as shown in Figure A-2, will serve as a satisfactory column. A 10.2-cm (4-in.) Pyrex pipe 0.6 m (2 ft) long will hold all of the XAD-2 from the extractor shown in Figure A-1 or the Soxhlet extractor, with sufficient space for fluidizing the bed while generating a minimum resin load at the exit of the column.

3.3 Method 1: The gas used to remove the solvent is the key to preserving the cleanliness of the XAD-2. Liquid nitrogen from a standard commercial liquid nitrogen cylinder has routinely proved to be a reliable source of large volumes of gas free from organic contaminants. The liquid nitrogen cylinder is connected to the column by a length of precleaned 0.95-cm (3/8-in.) copper tubing, coiled to pass through a heat source. As nitrogen is bled from the cylinder, it is vaporized in the heat source and passes through the column. A convenient heat source is a water bath heated from a steam line. The final nitrogen temperature should only be warm to the touch and not over 40°C. Experience has shown that about 500 g of XAD-2 may be dried overnight by consuming a full 160-liter cylinder of liquid nitrogen.

3.4 Method 2: As a second choice, high-purity tank nitrogen may be used to dry the XAD-2. The high-purity nitrogen must first be passed through a bed

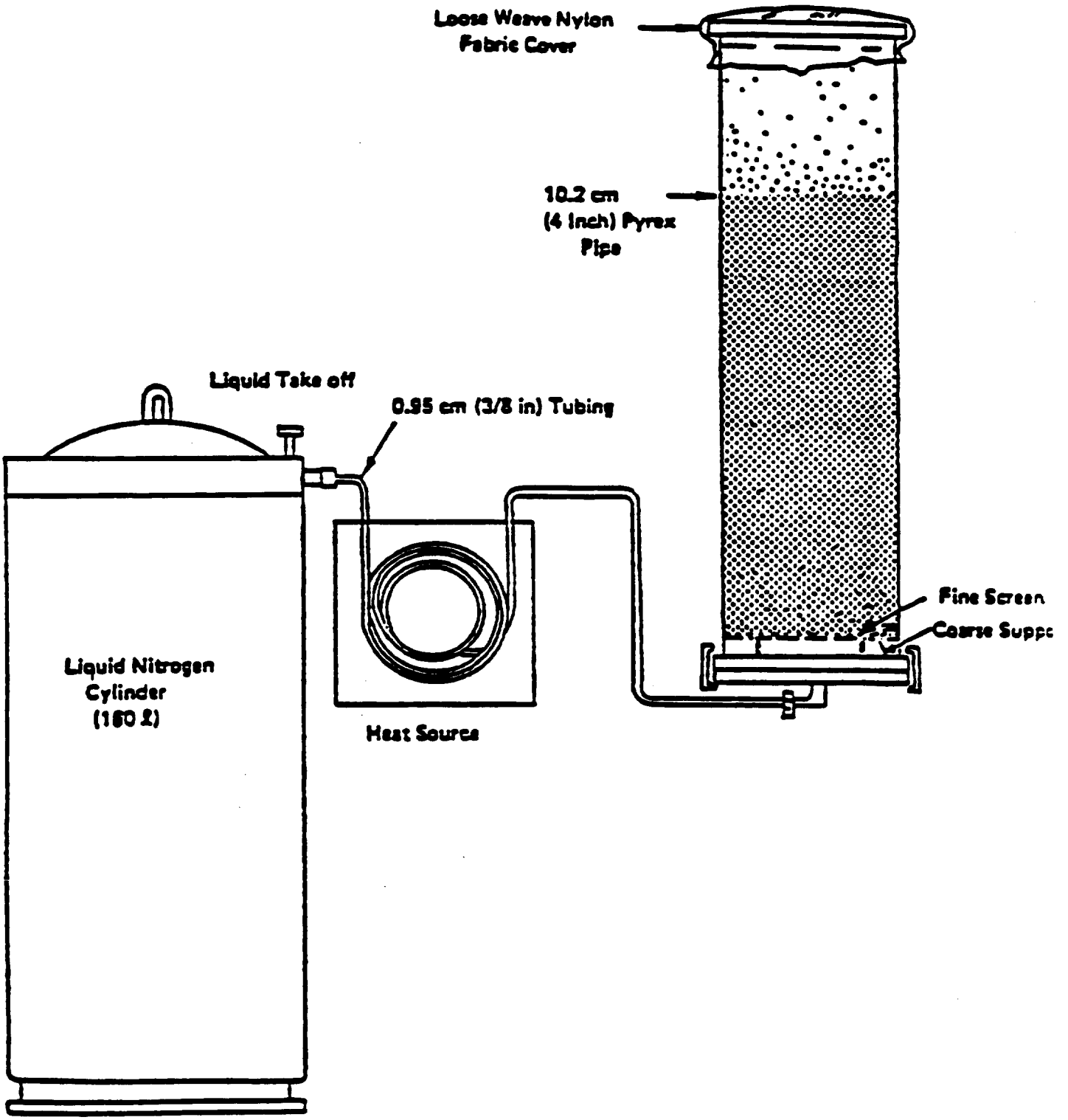


Figure A-2. XAD-2 fluidized-bed drying apparatus.

of activated charcoal approximately 150 mL in volume. With either type of drying method, the rate of flow should gently agitate the bed. Excessive fluidization may cause the particles to break up.

4.0 QUALITY CONTROL PROCEDURES

4.1 For both Methods 1 and 2, the quality control results must be reported for the batch. The batch must be reextracted if the residual extractable organics are >20 ug/mL by TCO analysis or the gravimetric residue is >0.5 mg/20 g XAD-2 extracted. (See also section 5.1, Method 0010.)

4.2 Four control procedures are used with the final XAD-2 to check for (1) residual methylene chloride, (2) extractable organics (TCO), (3) specific compounds of interest as determined by GC/MS, as described in Section 4.5 below, and (4) residue (GRAV).

4.3 Procedure for residual methylene chloride:

4.3.1 **Description:** A 1±0.1-g sample of dried resin is weighed into a small vial, 3 mL of toluene are added, and the vial is capped and well shaken. Five uL of toluene (now containing extracted methylene chloride) are injected into a gas chromatograph, and the resulting integrated area is compared with a reference standard. The reference solution consists of 2.5 uL of methylene chloride in 100 mL of toluene, simulating 100 ug of residual methylene chloride on the resin. The acceptable maximum content is 1,000 ug/g resin.

4.3.2 **Experimental:** The gas chromatograph conditions are as follows:

6-ft x 1/8-in. stainless steel column containing 10% OV-101 on 100/120 Supelcoport;

Helium carrier at 30 mL/min;

FID operated on 4 x 10^{-11} A/mV;

Injection port temperature: 250°C;

Detector temperature: 305°C;

Program: 30°C(4 min) 40°C/min 250°C (hold); and

Program terminated at 1,000 sec.

4.4 Procedure for residual extractable organics:

4.4.1 **Description:** A 20±0.1-g sample of cleaned, dried resin is weighed into a precleaned alundum or cellulose thimble which is plugged with cleaned glass wool. (Note that 20 g of resin will fill a thimble, and the

resin will float out unless well plugged.) The thimble containing the resin is extracted for 24 hr with 200-mL of pesticide- grade methylene chloride (Burdick and Jackson pesticide-grade or equivalent purity). The 200-mL extract is reduced in volume to 10-mL using a Kuderna-Danish concentrator and/or a nitrogen evaporation stream. Five uL of that solution are analyzed by gas chromatography using the TCO analysis procedure. The concentrated solution should not contain >20 ug/mL of TCO extracted from the XAD-2. This is equivalent to 10 ug/g of TCO in the XAD-2 and would correspond to 1.3 mg of TCO in the extract of the 130-g XAD-2 module. Care should be taken to correct the TCO data for a solvent blank prepared (200 mL reduced to 10 mL) in a similar manner.

4.4.2 **Experimental:** Use the TCO analysis conditions described in the revised Level 1 manual (EPA 600/7-78-201).

4.5 GC/MS Screen: The extract, as prepared in paragraph 4.4.1, is subjected to GC/MS analysis for each of the individual compounds of interest. The GC/MS procedure is described in Chapter Four, Method 8270. The extract is screened at the MDL of each compound. The presence of any compound at a concentration >25 ug/mL in the concentrated extract will require the XAD-2 to be recleaned by repeating the methylene chloride step.

4.6 Methodology for residual gravimetric determination: After the TCO value and GC/MS data are obtained for the resin batch by the above procedures, dry the remainder of the extract in a tared vessel. There must be <0.5 mg residue registered or the batch of resin will have to be extracted with fresh methylene chloride again until it meets this criterion. This level corresponds to 25 ug/g in the XAD-2, or about 3.25 mg in a resin charge of 130 g.

TOTAL CHROMATOGRAPHABLE ORGANIC MATERIAL ANALYSIS

1.0 SCOPE AND APPLICATION

1.1 In this procedure, gas chromatography is used to determine the quantity of lower boiling hydrocarbons (boiling points between 90° and 300°C) in the concentrates of all organic solvent rinses, XAD-2 resin and LC fractions - when Method 1 is used (see References, Method 0010) - encountered in Level 1 environmental sample analyses. Data obtained using this procedure serve a twofold purpose. First, the total quantity of the lower boiling hydrocarbons in the sample is determined. Then whenever the hydrocarbon concentrations in the original concentrates exceed 75 ug/m^3, the chromatography results are reexamined to determine the amounts of individual species.

The extent of compound identification is limited to representing all materials as normal alkanes based upon comparison of boiling points. Thus the method is not qualitative. In a similar manner, the analysis is semiquantitative; calibrations are prepared using only one hydrocarbon. They are replicated but samples routinely are not.

1.2 Application: This procedure applies solely to the Level 1 C7-C16 gas chromatographic analysis of concentrates of organic extracts, neat liquids, and of LC fractions. Throughout the procedure, it is assumed the analyst has been given a properly prepared sample.

1.3 Sensitivity: The sensitivity of this procedure, defined as the slope of a plot of response versus concentration, is dependent on the instrument and must be verified regularly. TRW experience indicates the nominal range is of the order of 77 uV·V·sec·uL/ng of n-heptane and 79 uV·sec·ul/ng of n-hexadecane. The instrument is capable of perhaps one hundredfold greater sensitivity. The level specified here is sufficient for Level 1 analysis.

1.4 Detection limit: The detection limit of this procedure as written is 1.3 ng/uL for a 1 uL injection of n-decane. This limit is arbitrarily based on defining the minimum detectable response as 100 uv·sec. This is an easier operational definition than defining the minimum detection limit to be that amount of material which yields a signal twice the noise level.

1.5 Range: The range of the procedure will be concentrations of 1.3 ng/uL and greater.

1.6 Limitations

1.6.1 Reporting limitations: It should be noted that a typical environmental sample will contain compounds which: (a) will not elute in the specified boiling ranges and thus will not be reported, and/or (b)

will not elute from the column at all and thus will not be reported. Consequently, the organic content of the sample as reported is a lower bound and should be regarded as such.

1.6.2 **Calibration limitations:** Quantitation is based on calibration with n-decane. Data should therefore be reported as, e.g., mg C8/m^3 as n-decane. Since response varies linearly with carbon number (over a wide range the assumption may involve a 20% error), it is clear that heptane (C7) detected in a sample and quantitated as decane will be overestimated. Likewise, hexadecane (C16) quantitated as decane will be underestimated. From previous data, it is estimated the error involved is on the order of 6-7%.

1.6.3 **Detection limitations:** The sensitivity of the flame ionization detector varies from compound to compound. However, n-alkanes have a greater response than other classes. Consequently, using an n-alkane as a calibrant and assuming equal responses of all other compounds tends to give low reported values.

2.0 SUMMARY OF METHOD

2.1 A mL aliquot of all 10-mL concentrates is disbursed for GC-TCO analysis. With boiling point-retention time and response-amount calibration curves, the data (peak retention times and peak areas) are interpreted by first summing peak areas in the ranges obtained from the boiling point-retention time calibration. Then, with the response-amount calibration curve, the area sums are converted to amounts of material in the reported boiling point ranges.

2.2 After the instrument is set up, the boiling point-retention time calibration is effected by injecting a mixture of n-C7 through n-C16 hydrocarbons and operating the standard temperature program. Response-quantity calibrations are accomplished by injecting n-decane in n-pentane standards and performing the standard temperature program.

2.3 Definitions

2.3.1 **GC:** Gas chromatography or gas chromatograph.

2.3.2 **C7-C16 n-alkanes:** Heptane through hexadecane.

2.3.3 **GCA temperature program:** 4 min isothermal at 60°C, 10°C/min from 60° to 220°C.

2.3.4 **TRW temperature program:** 5 min isothermal at room temperature, then program from 30°C to 250°C at 15°C/min.

3.0 INTERFERENCES

Not applicable.

4.0 APPARATUS AND MATERIALS

4.1 Gas chromatograph: This procedure is intended for use on a Varian 1860 gas chromatograph, equipped with dual flame ionization detectors and a linear temperature programmer. Any equivalent instrument can be used provided that electrometer settings, etc., be changed appropriately.

4.2 Gases:

4.2.1 **Helium:** Minimum quality is reactor grade. A 4A or 13X molecular sieve drying tube is required. A filter must be placed between the trap and the instrument. The trap should be recharged after every third tank of helium.

4.2.2 **Air:** Zero grade is satisfactory.

4.2.3 **Hydrogen:** Zero grade.

4.3 Syringe: Syringes are Hamilton 701N, 10 uL, or equivalent.

4.4 Septa: Septa will be of such quality as to produce very low bleed during the temperature program. An appropriate septum is Supelco Microsep 138, which is Teflon-backed. If septum bleed cannot be reduced to a negligible level, it will be necessary to install septum swingers on the instrument.

4.5 Recorder: The recorder of this procedure must be capable of not less than 1 mV full-scale display, a 1-sec time constant and 0.5 in. per min chart rate.

4.6 Integrator: An integrator is required. Peak area measurement by hand is satisfactory but too time-consuming. If manual integration is required, the method of "height times width at half height" is used.

4.7 Columns:

4.7.1 **Preferred column:** 6 ft x 1/8 in. O.D. stainless steel column of 10% OV-101 on 100/120 mesh Supelcoport.

4.7.2 **Alternate column:** 6 ft x 1/8 in. O.D. stainless steel column of 10% OV-1 (or other silicon phase) on 100/120 mesh Supelcoport.

4.8 Syringe cleaner: Hamilton syringe cleaner or equivalent connected to a suitable vacuum source.

5.0 REAGENTS

5.1 Pentane: "Distilled-in-Glass" (reg. trademark) or "Nanograde" (reg. trademark) for standards and for syringe cleaning.

5.2 Methylene chloride: "Distilled-in-Glass" (reg. trademark) or "Nanograde" (reg. trademark) for syringe cleaning.

6.0 SAMPLING HANDLING AND PRESERVATION

6.1 The extracts are concentrated in a Kuderna-Danish evaporator to a volume less than 10 mL. The concentrate is then quantitatively transferred to a 10-mL volumetric flask and diluted to volume. A 1-mL aliquot is taken for both this analysis and possible subsequent GC/MS analysis and set aside in the sample bank. For each GC-TCO analysis, obtain the sample sufficiently in advance to allow it to warm to room temperature. For example, after one analysis is started, return that sample to the sample bank and take the next sample.

7.0 PROCEDURES

7.1 Setup and checkout: Each day, the operator will verify the following:

7.1.1 That supplies of carrier gas, air and hydrogen are sufficient, i.e., that each tank contains > 100 psig.

7.1.2 That, after replacement of any gas cylinder, all connections leading to the chromatograph have been leak-checked.

7.1.3 That the carrier gas flow rate is 30 ± 2 mL/min, the hydrogen flow rate is 30 ± 2 mL/min, and the air flow rate is 300 ± 20 mL/min.

7.1.4 That the electrometer is functioning properly.

7.1.5 That the recorder and integrator are functioning properly.

7.1.6 That the septa have been leak-checked (leak-checking is effected by placing the soap bubble flow meter inlet tube over the injection port adaptors), and that no septum will be used for more than 20 injections.

7.1.7 That the list of samples to be run is ready.

7.2 Retention time calibration:

7.2.1 To obtain the temperature ranges for reporting the results of the analyses, the chromatograph is given a normal boiling point-retention time calibration. The n-alkanes, their boiling points, and data reporting ranges are given in the table below:

	NBP, °C	Reporting Range, °C	Report As
n-heptane	98	90-110	C7
n-octane	126	110-140	C8
n-nonane	151	140-160	C9
n-decane	174	160-180	C10
n-undecane	194	180-200	C11
n-dodecane	214	200-220	C12
n-tridecane	234	220-240	C13
n-tetradecane	252	240-260	C14
n-pentadecane	270	260-280	C15
n-hexadecane	288	280-300	C16

7.2.2 **Preparation of standards:** Preparing a mixture of the C7-C16 alkanes is required. There are two approaches: (1) use of a standards kit (e.g., Polyscience Kit) containing bottles of mixtures of selected n-alkanes which may be combined to produce a C7-C16 standard; or (2) use of bottles of the individual C7-C16 alkanes from which accurately known volumes may be taken and combined to give a C7-C16 mixture.

7.2.3 **Procedure for retention time calibration:** This calibration is performed at the start of an analytical program; the mixture is chromatographed at the start of each day. To attain the required retention time precision, both the carrier gas flow rate and the temperature program specifications must be observed. Details of the procedure depend on the instrument being used. The general procedure is as follows:

7.2.3.1 Set the programmer upper limit at 250°C. If this setting does not produce a column temperature of 250°C, find the correct setting.

7.2.3.2 Set the programmer lower limit at 30°C.

7.2.3.3 Verify that the instrument and samples are at room temperature.

7.2.3.4 Inject 1 uL of the n-alkane mixture.

7.2.3.5 Start the integrator and recorder.

7.2.3.6 Allow the instrument to run isothermally at room temperature for five min.

7.2.3.7 Shut the oven door.

7.2.3.8 Change the mode to Automatic and start the temperature program.

7.2.3.9 Repeat Steps 1-9 a sufficient number of times so that the relative standard deviation of the retention times for each peak is <5%.

7.3 Response calibration:

7.3.1 For the purposes of a Level 1 analysis, response-quantity calibration with n-decane is adequate. A 10-uL volume of n-decane is injected into a tared 10 mL volumetric flask. The weight injected is obtained and the flask is diluted to the mark with n-pentane. This standard contains about 730 ng n-decane per uL n-pentane. The exact concentration depends on temperature, so that a weight is required. Two serial tenfold dilutions are made from this standard, giving standards at about 730, 73, and 7.3 ng n-decane per uL n-pentane, respectively.

7.3.2 **Procedure for response calibration:** This calibration is performed at the start of an analytical program and monthly thereafter. The most concentrated standard is injected once each day. Any change in calibration necessitates a full calibration with new standards. Standards are stored in the refrigerator locker and are made up monthly.

7.3.2.1 Verify that the instrument is set up properly.

7.3.2.2 Set electrometer at 1×10^{-10} A/mV.

7.3.2.3 Inject 1 uL of the highest concentration standard.

7.3.2.4 Run standard temperature program as specified above.

7.3.2.5 Clean syringe.

7.3.2.6 Make repeated injections of all three standards until the relative standard deviations of the areas of each standard are ≤5%.

7.4 Sample analysis procedure:

7.4.1 The following apparatus is required:

7.4.1.1 **Gas chromatograph** set up and working.

7.4.1.2 **Recorder, integrator** working.

7.4.1.3 **Syringe and syringe cleaning apparatus.**

7.4.1.4 **Parameters:** Electrometer setting is 1×10^{-10} A/mV; recorder is set at 0.5 in./min and 1 mV full-scale.

7.4.2 Steps in the procedure are:

7.4.2.1 Label chromatogram with the data, sample number, etc.

7.4.2.2 Inject sample.

7.4.2.3 Start integrator and recorder.

7.4.2.4 After isothermal operation for 5 min, begin temperature program.

7.4.2.5 Clean syringe.

7.4.2.6 Return sample; obtain new sample.

7.4.2.7 When analysis is finished, allow instrument to cool. Turn chromatogram and integrator output and data sheet over to data analyst.

7.5 Syringe cleaning procedure:

7.5.1 Remove plunger from syringe.

7.5.2 Insert syringe into cleaner; turn on aspirator.

7.5.3 Fill pipet with pentane; run pentane through syringe.

7.5.4 Repeat with methylene chloride from a separate pipet.

7.5.5 Flush plunger with pentane followed by methylene chloride.

7.5.6 Repeat with methylene chloride.

7.6 Sample analysis decision criterion: The data from the TCO analyses of organic extract and rinse concentrates are first used to calculate the total concentration of C7-C16 hydrocarbon-equivalents (Paragraph 7.7.3) in the sample with respect to the volume of air actually sampled, i.e., ug/m^3. On this basis, a decision is made both on whether to calculate the quantity of each n-alkane equivalent present and on which analytical procedural pathway will be followed. If the total organic content is great enough to warrant continuing the analysis -- >500 ug/m^3 -- a TCO of less than 75 ug/m^3 will require only LC fractionation and gravimetric determinations and IR spectra to be obtained on each fraction. If the TCO is greater than 75 ug/m^3, then the first seven LC fractions of each sample will be reanalyzed using this same gas chromatographic technique.

7.7 Calculations:

7.7.1 **Boiling Point - Retention Time Calibration:** The required data for this calibration are on the chromatogram and on the data sheet. The data reduction is performed as follows:

7.7.1.1 Average the retention times and calculate relative standard deviations for each n-hydrocarbon.

7.7.1.2 Plot average retention times as abscissae versus normal boiling points as ordinates.

7.7.1.3 Draw in calibration curve.

7.7.1.4 Locate and record retention times corresonding to boiling ranges 90-100, 110-140, 140-160, 160-180, 180-200, 200-220, 220-240, 240-260, 260-280, 280-300°C.

7.7.2 **Response-amount calibration:** The required data for this calibration are on the chromatogram and on the data sheet. The data reduction is performed as follows:

7.7.2.1 Average the area responses of each standard and calculate relative standard deviations.

7.7.2.2 Plot response (uv·sec) as ordinate versus ng/uL as abscissa.

7.7.2.3 Draw in the curve. Perform least squares regression and obtain slope (uV·sec·uL/ng).

7.7.3 **Total C7-C16 hydrocarbons analysis:** The required data for this calculation are on the chromatogram and on the data sheet. The data reduction is performed as follows:

7.7.3.1 Sum the areas of all peaks within the retention time range of interest.

7.7.3.2 Convert this area (uV·sec) to ng/uL by dividing by the weight response for n-decane (uV·sec.uL/ng).

7.7.3.3 Multiply this weight by the total concentrate volume (10 mL) to get the weight of the C7-C16 hydrocarbons in the sample.

7.7.3.4 Using the volume of gas sampled or the total weight of sample acquired, convert the result of Step 7.7.3.3 above to ug/m^3.

7.7.3.5 If the value of total C7-C16 hydrocarbons from Step 7.7.3.4 above exceeds 75 ug/m^3, calculate individual hydrocarbon concentrations in accordance with the instructions in Paragraph 7.7.5.5 below.

7.7.4 **Individual C7-C16 n-Alkane Equivalent Analysis:** The required data from the analyses are on the chromatogram and on the data sheet. The data reduction is performed as follows:

7.7.4.1 Sum the areas of peaks in the proper retention time ranges.

7.7.4.2 Convert areas (uV·sec) to ng/uL by dividing by the proper weight response (uV·sec·uL/ng).

7.7.4.3 Multiply each weight by total concentrate volume (10 mL) to get weight of species in each range of the sample.

7.7.4.4 Using the volume of gas sampled on the total weight of sample acquired, convert the result of Step 7.7.4.3 above to ug/m^3.

8.0 QUALITY CONTROL

8.1 Appropriate QC is found in the pertinent procedures throughout the method.

9.0 METHOD PERFORMANCE

9.1 Even relatively comprehensive error propagation analysis is beyond the scope of this procedure. With reasonable care, peak area reproducibility of a standard should be of the order of 1% RSD. The relative standard deviation of the sum of all peaks in a fairly complex waste might be of the order of 5-10%. Accuracy is more difficult to assess. With good analytical technique, accuracy and precision should be of the order of 10-20%.

10.0 REFERENCES

1. Emissions Assessment of Conventional Stationary Combustion Systems: Methods and Procedure Manual for Sampling and Analysis, Interagency Energy/Environmental R&D Program, Industrial Environmental Research Laboratory, Research Triangle Park, NC 27711, EPA-600/7-79-029a, January 1979.

Method 0030: VOST Sampling

METHOD 0030

VOLATILE ORGANIC SAMPLING TRAIN

1.0 PRINCIPLE AND APPLICATION

1.1 Principle

1.1.1 This method describes the collection of volatile principal organic hazardous constituents (POHCs) from the stack gas effluents of hazardous waste incinerators. For the purpose of definition, volatile POHCs are those POHCs with boiling points less than 100°C. If the boiling point of a POHC of interest is less than 30°C, the POHC may break through the sorbent under the conditions of the sample collection procedure.

1.1.2 Field application for POHCs of this type should be supported by laboratory data which demonstrate the efficiency of a volatile organic sampling train (VOST) to collect POHCs with boiling points less than 30°C. This may require using reduced sample volumes collected at flow rates between 250 and 500 mL/min. Many compounds which boil above 100°C (e.g., chlorobenzene) may also be efficiently collected and analyzed using this method. VOST collection efficiency for these compounds should be demonstrated, where necessary, by laboratory data of the type described above.

1.1.3 This method employs a 20-liter sample of effluent gas containing volatile POHCs which is withdrawn from a gaseous effluent source at a flow rate of 1 L/min, using a glass-lined probe and a volatile organic sampling train (VOST). (Operation of the VOST under these conditions has been called FAST-VOST.) The gas stream is cooled to 20°C by passage through a water-cooled condenser and volatile POHCs are collected on a pair of sorbent resin traps. Liquid condensate is collected in an impinger placed between the two resin traps. The first resin trap (front trap) contains approximately 1.6 g Tenax and the second trap (back trap) contains approximately 1 g each of Tenax and petroleum-based charcoal (SKC Lot 104 or equivalent), 3:1 by volume. A total of six pairs of sorbent traps may be used to collect volatile POHCs from the effluent gas stream.

1.1.4 An alternative set of conditions for sample collection has been used. This method involves collecting sample volume of 20 liters or less at reduced flow rate. (Operation of the VOST under these conditions has been referred to as SLO-VOST.) This method has been used to collect 5 liters of sample (0.25 L/min for 20 min) or 20 liters of sample (0.5 L/min for 40 min) on each pair of sorbent cartridges. Smaller sample volumes collected at lower flow rates should be considered when the boiling points of the POHCs of interest are below 35°C. A total of six pairs of sorbent traps may be used to collect volatile POHCs from the effluent gas stream.

1.1.5 Analysis of the traps is carried out by thermal desorption purge-and-trap by gas chromatography/mass spectrometry (see Method 5040). The VOST is designed to be operated at 1 L/min with traps being replaced every 20 min for a total sampling time of 2 hr. Traps may be analyzed separately or combined onto one trap to improve detection limit. However, additional flow rates and sampling times are acceptable. Recent experience has shown that when less than maximum detection ability is required, it is acceptable and probably preferable to operate the VOST at 0.5 L/min for a total of three 40-min periods. This preserves the 2-hr sampling period, but reduces the number of cartridge changes in the field as well as the number of analyses required.

1.2 Application

1.2.1 This method is applicable to the determination of volatile POHCs in the stack gas effluent of hazardous waste incinerators. This method is designed for use in calculating destruction and removal efficiency (DRE) for the volatile POHCs and to enable a determination that DRE values for removal of the volatile POHCs are equal to or greater than 99.99%.

1.2.2 The sensitivity of this method is dependent upon the level of interferences in the sample and the presence of detectable levels of volatile POHCs in blanks. The target detection limit of this method is 0.1 ug/m^3 (ng/L) of flue gas, to permit calculation of a DRE equal to or greater than 99.99% for volatile POHCs which may be present in the waste stream at 100 ppm. The upper end of the range of applicability of this method is limited by breakthrough of the volatile POHCs on the sorbent traps used to collect the sample. Laboratory development data have demonstrated a range of 0.1 to 100 ug/m^3 (ng/L) for selected volatile POHCs collected on a pair of sorbent traps using a total sample volume of 20 liters or less (see Paragraph 1.1.4).

1.2.3 This method is recommended for use only by experienced sampling personnel and analytical chemists or under close supervision by such qualified persons.

1.2.4 Interferences arise primarily from background contamination of sorbent traps prior to or after use in sample collection. Many potential interferences can be due to exposure of the sorbent materials to solvent vapors prior to assembly and exposure to significant concentrations of volatile POHCs in the ambient air at hazardous waste incinerator sites.

1.2.5 To avoid or minimize the low-level contamination of train components with volatile POHCs, care should be taken to avoid contact of all interior surface or train components with synthetic organic materials (e.g., organic solvents, lubricating and sealing greases), and train components should be carefully cleaned and conditioned according to the procedures described in this protocol.

2.0 APPARATUS

2.1 Volatile Organic Sampling Train: A schematic diagram of the principal components of the VOST is shown in Figure 1 and a diagram of one acceptable version of the VOST is shown in Figure 2. The VOST consists of a glass-lined probe followed by an isolation valve, a water-cooled glass condenser, a sorbent cartridge containing Tenax (1.6 g), an empty impinger for condensate removal, a second water-cooled glass condenser, a second sorbent cartridge containing Tenax and petroleum-based charcoal (3:1 by volume; approximately 1 g of each), a silica gel drying tube, a calibrated rotameter, a sampling pump, and a dry gas meter. The gas pressure during sampling and for leak-checking is monitored by pressure gauges which are in line and downstream of the silica gel drying tube. The components of the sampling train are described below.

2.1.1 **Probe:** The probe should be made of stainless steel with a borosilicate or quartz glass liner. The temperature of the probe is to be maintained above 130°C but low enough to ensure a resin temperature of 20°C. A water-cooled probe may be required at elevated stack temperatures to protect the probe and meet the above requirements. Isokinetic sample collection is not a requirement for the use of VOST since the compounds of interest are in the vapor phase at the point of sample collection.

2.1.2 **Isolation valve:** The isolation valve should be a greaseless stopcock with a glass bore and sliding Teflon plug with Teflon wipers (Ace 8193 or equivalent).

2.1.3 **Condensers:** The condensers (Ace 5979-14 or equivalent) should be of sufficient capacity to cool the gas stream to 20°C or less prior to passage through the first sorbent cartridge. The top connection of the condenser should be able to form a leak-free, vacuum-tight seal without using sealing greases.

2.1.4 **Sorbent cartridges:**

2.1.4.1 The sorbent cartridges used for the VOST may be used in either of two configurations: the inside-outside (I/O) configuration in which the cartridge is held within an outer glass tube and in a metal carrier, and the inside-inside (I/I) configuration in which only a single glass tube is used, with or without a metal carrier. In either case, the sorbent packing will be the same.

2.1.4.1.1 The first of a pair of sorbent cartridges shall be packed with approximately 1.6 g Tenax GC resin and the second cartridge of a pair shall be packed with Tenax GC and petroleum-based charcoal (3:1 by volume; approximately 1 g of each).

2.1.4.1.2 The second sorbent cartridge shall be packed so that the sample gas stream passes through the Tenax layer first and then through the charcoal layer.

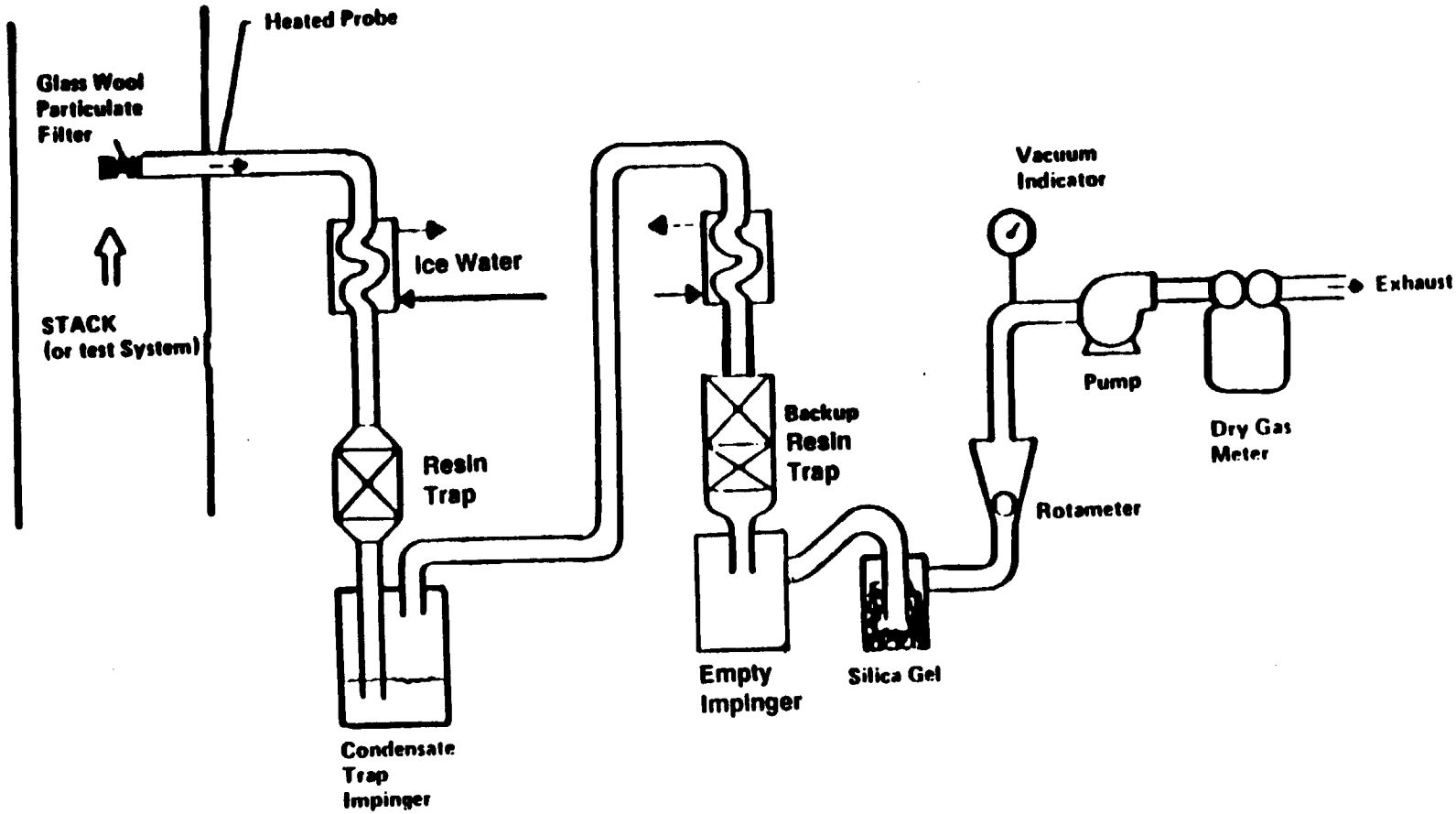


Figure 1. Schematic of Volatile Organic Sampling Train (VOST).

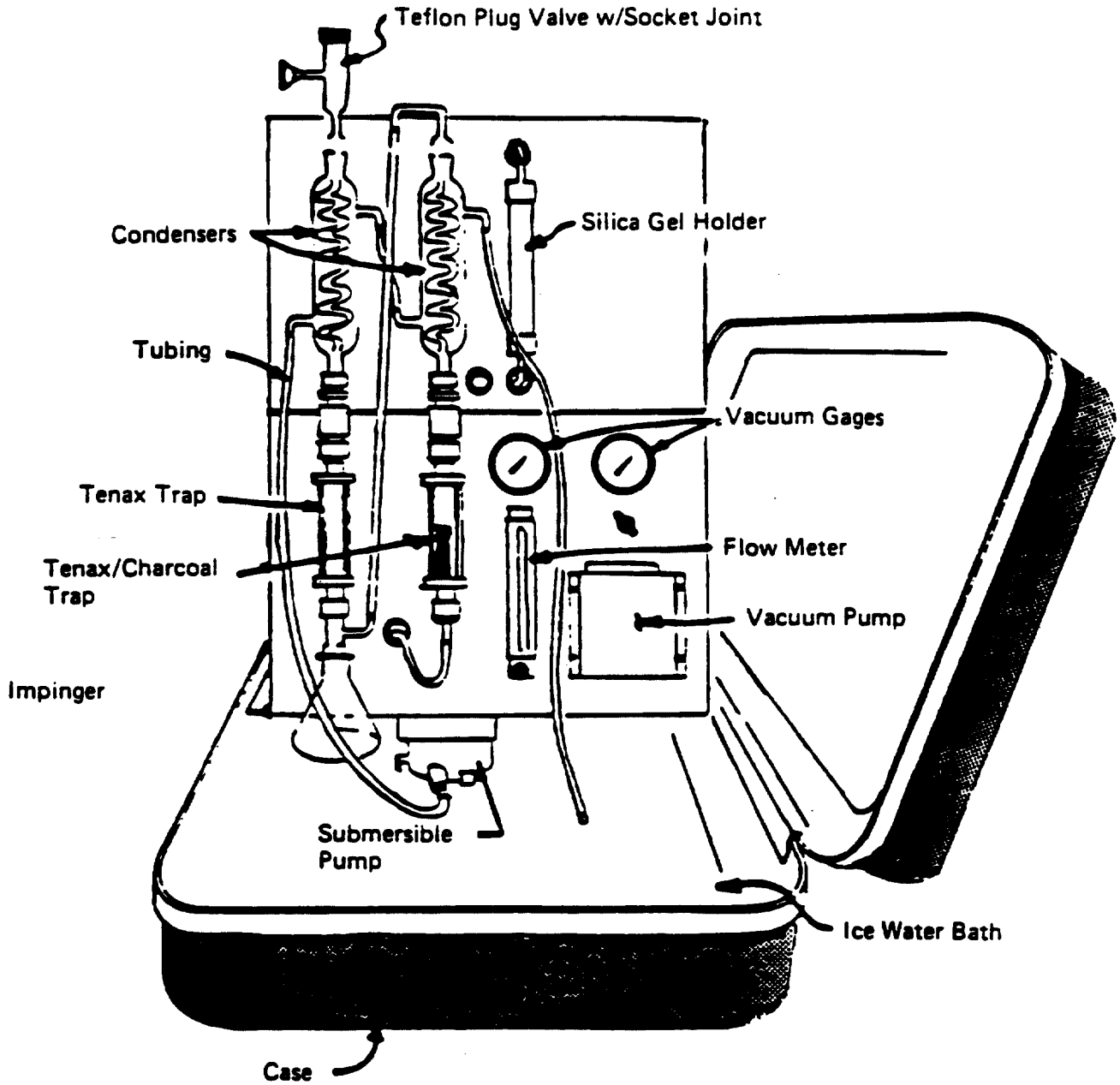


Figure 2. Volatile Organic Sampling Train (VOST).

2.1.4.2 The sorbent cartridges shall be glass tubes with approximate dimensions of 10 cm by 1.6 cm I.D. The two acceptable designs (I/O, I/I) for the sorbent cartridge are described in further detail below.

2.1.4.2.1 **Inside/Inside sorbent cartridge:** A diagram of an I/I sorbent cartridge is shown in Figure 3. This cartridge is a single glass tube (10 cm by 1.6 cm I.D.) which has the ends reduced in size to accommodate a 1/4- or 3/8-in. Swagelok or Cajon gas fitting. The resin is held in place by glass wool at each end of the resin layer. The amounts of each type of sorbent material used in the I/I design are the same as for the I/O design. Threaded end caps are placed on the sorbent cartridge after packing with sorbent to protect the sorbent from contamination during storage and transport.

2.1.4.2.2 **Inside/Outside type sorbent cartridge:** A diagram of an I/O sorbent cartridge is shown in Figure 4. In this design the sorbent materials are held in the glass tube with a fine mesh stainless steel screen and a C-clip. The glass tube is then placed within a larger diameter glass tube and held in place using Viton O-rings. The purpose of the outer glass tube is to protect the exterior of the resin-containing tube from contamination. The two glass tubes are held in a stainless steel cartridge holder, where the ends of the glass tubes are held in place by Viton O-rings placed in machine grooves in each metal end piece. The three cylindrical rods are secured in one of the metal end pieces and fastened to the other end piece using knurled nuts, thus sealing the glass tubes into the cartridge holder. The end pieces are fitted with a threaded nut onto which a threaded end cap is fitted with a Viton O-ring seal, to protect the resin from contamination during transport and storage.

2.1.5 **Metering system:** The metering system for VOST shall consist of vacuum gauges, a leak-free pump (Thomas Model 107 or equivalent, Thomas Industries, Sheboygan, Wisconsin), a calibrated rotameter (Linde Model 150, Linde Division of Union Carbide, Keasbey, New Jersey) for monitoring the gas flow rate, a dry gas meter with 2% accuracy at the required sampling rate, and related valves and equipment. Provisions should be made for monitoring the temperature of the sample gas stream between the first condenser and first sorbent cartridge. This can be done by placing a thermocouple on the exterior glass surface of the outlet from the first condenser. The temperature at that point should be less than 20°C. If it is not, an alternative condenser providing the required cooling capacity must be used.

2.1.6 **Sample transfer lines:** All sample transfer lines to connect the probe to the VOST shall be less than 5 ft in length, and shall be heat-traced Teflon with connecting fittings which are capable of forming leak-free, vacuum-tight connections without the use of sealing grease.

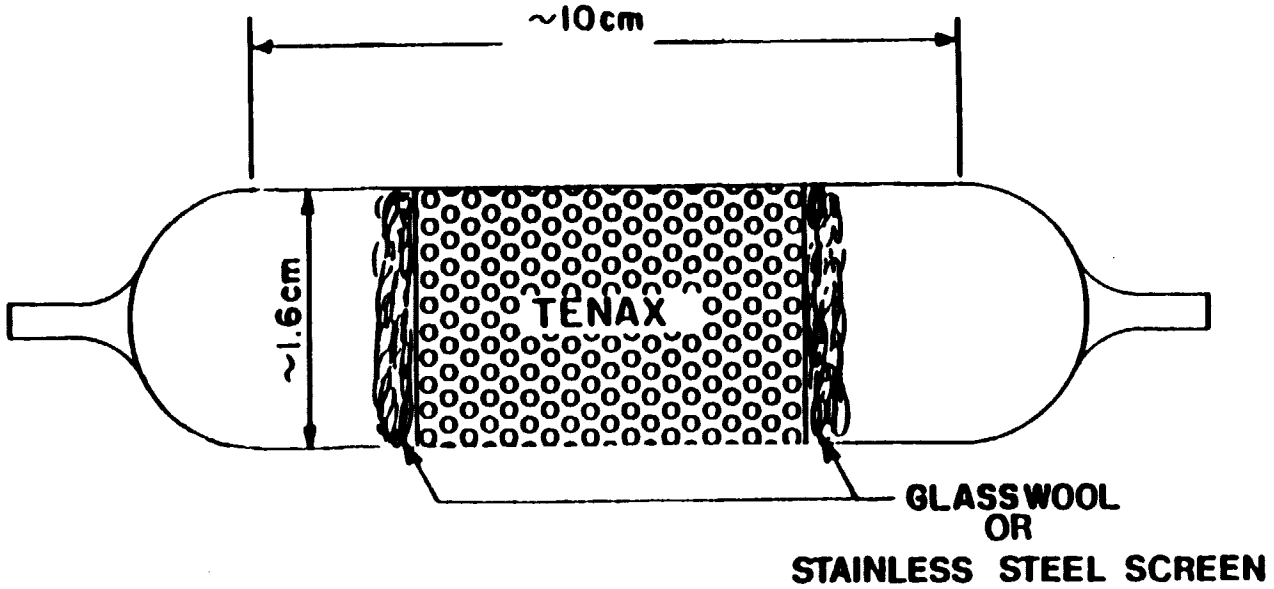
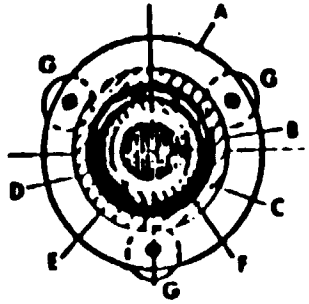


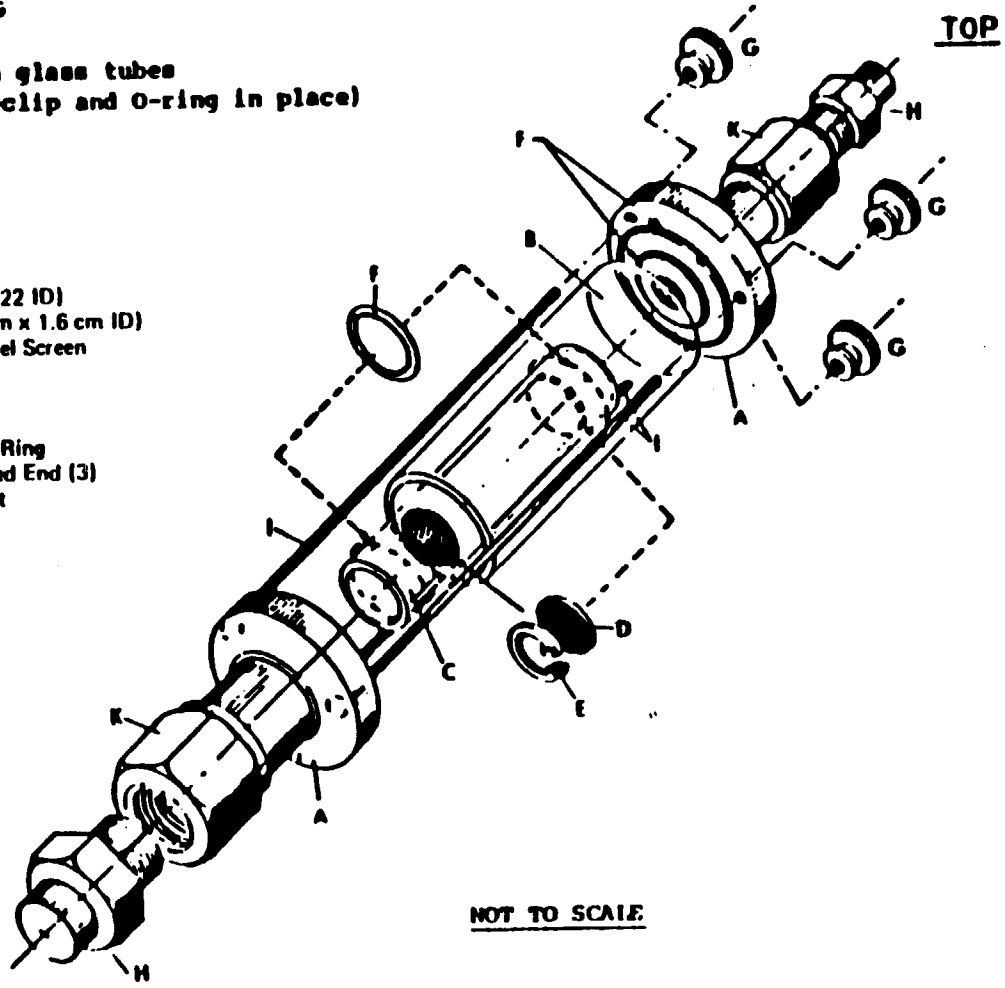
Figure 3. Inside-inside vost cartridge

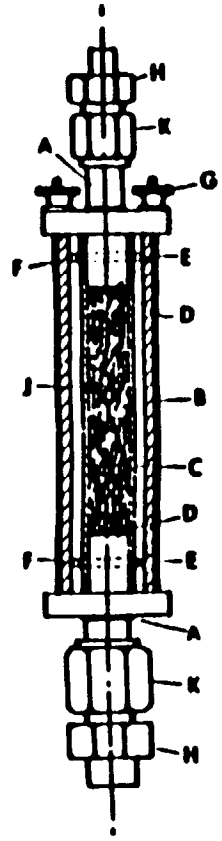


Section cut through glass tubes
(showing screen, C-clip and O-ring in place)

LEGEND

A - Stainless Steel Carrier
B - Glass Tube (9.84 L x 2.22 ID)
C - Small Glass Tube (10 cm x 1.6 cm ID)
D - Fine Mesh Stainless Steel Screen
E - Stainless Steel C-Clip
F - O Ring (Viton)
G - Nuts (4)
H - End Cap with Viton O-Ring
I - Metal Rod with Threaded End (3)
J - Tenax/Charcoal Sorbent
K - Cajon Fitting





Assembled Trap
NTS

Figure 4. Sorbent Trap Assembly (I/O)
Volatile Organic Sampling Train (VOST)

All other sample transfer lines used with the VOST shall be Teflon with connecting fittings that are capable of forming leak-free, vacuum-tight connections without the use of sealing grease.

3.0 REAGENTS AND MATERIALS

3.1 2,6-Diphenylene oxide polymer (Tenax, 35/60 mesh):

3.1.1 The new Tenax is Soxhlet extracted for 24 hr with methanol (Burdick & Jackson, pesticide grade or equivalent). The Tenax is dried for 6 hr in a vacuum oven at 50°C before use. Users of I/O and I/I sorbent cartridges have used slightly different thermal conditioning procedures. I/O sorbent cartridges packed with Tenax are thermally conditioned by flowing organic-free nitrogen (30 mL/min) through the resin while heating to 190°C. Some users have extracted new Tenax and charcoal with pentane to remove nonpolar impurities. However, these users have experienced problems with residual pentane in the sorbents during analysis.

3.1.2 If very high concentrations of volatile POHCs have been collected on the resin (e.g., micrograms of analytes), the sorbent may require Soxhlet extraction as described above. Previously used Tenax cartridges are thermally reconditioned by the method described above.

3.2 Charcoal (SKC petroleum-base or equivalent): New charcoal is prepared and charcoal is reconditioned as described in Paragraph 4.4. New charcoal does not require treatment prior to assembly into sorbent cartridges. Users of VOST have restricted the types of charcoal used in sorbent cartridges to only petroleum-based types. Criteria for other types of charcoal are acceptable if recovery of POHC in laboratory evaluations meet the criteria of 50 to 150%.

3.3 Viton-O-Ring: All O-rings used in VOST shall be Viton. Prior to use, these O-rings should be thermally conditioned at 200°C for 48 hr. O-rings should be stored in clean, screw-capped glass containers prior to use.

3.4 Glass tubes/Condensers: The glass resin tubes and condensers should be cleaned with a nonionic detergent in an ultrasonic bath, rinsed well with organic-free water, and dried at 110°C. Resin tubes of the I/O design should be assembled prior to storage as described in Paragraph 4.1. Resin tubes of the I/I design can be stored in glass culture tube containers with cotton cushioning and Teflon-lined screw caps. Condensers can be capped with appropriate end caps prior to use.

3.5 Metal parts: The stainless steel carriers, C-clips, end plugs, and screens used in the I/O VOST design are cleaned by ultrasonication in a warm nonionic detergent solution, rinsed with distilled water, air-dried, and heated in a muffle furnace for 2 hr at 400°C. Resin tubes of the I/I design require Swagelok or equivalent end caps with Supelco M-1 ferrules. These should be heated at 190°C along with the assembled cartridges.

3.6 Silica gel (Indicating type, 6-16 mesh): New silica gel may be used as received. Silica gel which has been previously used should be dried for 2 hr at 175°C (350°F).

3.7 Cold packs: Any commercially available reusable liquids or gels that can be repeatedly frozen are acceptable. They are typically sold in plastic containers as "Blue Ice" or "Ice-Packs." Enough should be used to keep cartridges at or near 4°C.

3.8 Water: Water used for cooling train components in the field may be tap water; and water used for rinsing glassware should be organic-free.

3.9 Glass wool: Glass wool should be Soxhlet extracted for 8 to 16 hr, using methanol, and oven dried at 110°C before use.

4.0 SAMPLE HANDLING AND PROCEDURE

4.1 Assembly:

4.1.1 The assembly and packing of the sorbent cartridges should be carried out in an area free of volatile organic material, preferably a laboratory in which no organic solvents are handled or stored and in which the laboratory air is charcoal filtered. Alternatively, the assembly procedures can be conducted in a glove box which can be purged with organic-free nitrogen.

4.2 Tenax cartridges:

4.2.1 The Tenax, glass tubes, and metal cartridge parts are cleaned and stored (see Section 3.0). Approximately 1.6 g of Tenax is weighed and packed into the sorbent tube which has a stainless steel screen and C-clip (I/O design) or glass wool (I/I design) in the downstream end. The Tenax is held in place by inserting a stainless steel screen and C-clips in the upstream end (I/O design) or glass wool (I/I design). Each cartridge should be marked, using an engraving tool, with an arrow to indicate the direction of sample flow, and a serial number.

4.2.2 Conditioned resin tubes of the I/O design are then assembled into the metal carriers according to the previously described inside/inside or inside/outside procedures (with end caps) and are placed on cold packs for storage and transport. Conditioned resin tubes of the I/I design are capped and placed on cold packs for storage and transport.

4.3 Tenax/Charcoal tubes

4.3.1 The Tenax, charcoal, and metal cartridge parts are cleaned and stored as previously described (see Section 3.0). The tubes are packed with approximately a 3:1 volume ratio of Tenax and charcoal (approximately 1 g each). The Tenax and charcoal are held in place by the stainless steel screens and C-clips (I/O design) or by glass wool (I/I design). The glass tubes containing the Tenax and charcoal are then

conditioned as described below (see Paragraph 4.4). Place the I/O glass tubes in the metal carriers (see Paragraph 2.1.4.2.2), put end caps on the assembled cartridges, mark direction of sample flow and serial number, and place the assembled cartridges on cold packs for storage and transport.

4.3.2 Glass tubes of the I/I design are conditioned, and stored in the same manner as the I/O tubes.

4.4 Trap Conditioning - QC

4.4.1 Following assembly and leak-checking, the traps are connected in reverse direction to sampling to a source of organic-free nitrogen, and nitrogen is passed through each trap at a flow rate of 40 mL/min, while the traps are heated to 190°C for 12-28 hr. The actual conditioning period may be determined based on adequacy of the resulting blank checks.

4.4.2 The following procedure is used to blank check each set of sampling cartridges prior to sampling to ensure cleanliness. The procedure provides semi-quantitative data for organic compounds with boiling points below 110°C on Tenax and Tenax/Charcoal cartridges. It is not intended as a substitute for Method 5040.

4.4.2.1 The procedure is based on thermal desorption of each set of two cartridges, cryofocusing with liquid nitrogen onto a trap packed with glass beads, followed by thermal desorption from the trap and analysis by GC/FID.

4.4.2.2 The detection limit is based on the analysis of Tenax cartridges spiked with benzene and toluene and is around 2 ng for each compound.

4.4.2.3 The results of analyzing spiked cartridges on a daily basis should not vary by more than 20 percent. If the results are outside this range, the analytical system must be evaluated for the probable cause and a second spiked cartridge analyzed.

4.4.2.4 The GC operating conditions are as follows:

GC Operating Conditions

Column: Packed column 6 ft x 1/8" stainless steel 1.0 percent SP-1000 on Carbopack B 60/80, or equivalent.
Temperature program: 50°C for 5 min, 20°C/min increase to 190°C, hold 13 min.
Injector: 200°C.
Detector: F.I.D. 250°C.
Carrier Gas: Helium at 25 mL/min.
Sample valve: Valco 6-port with 40" x 1/16" stainless steel trap packed with 60/80 mesh glass beads.
Cryogen: Liquid nitrogen.
Trap heater: Boiling water, hot oil, or electrically heated.

Desorption heater: Supelco "clam shell" (high capacity carrier gas purifier) heater and Variac, adjusted to 180°C to 200°C.

4.4.2.5 Calibration is accomplished by preparing a spiked Tenax cartridge with benzene and toluene and analyzing according to the standard operating procedure. A standard of benzene, toluene and bromofluorobenzene (BFB) is prepared by injecting 2.0 uL of benzene and toluene and 1.0 uL of BFB into 10 mL of methanol. The concentration of this stock is 175 ng/uL of benzene and toluene, and 150 ng/uL BFB. One microliter of the stock standard is injected onto a Tenax cartridge through a heated injection port set at 150°C. A GC oven can be used for this with the oven at room temperature. Helium carrier gas is set at 50 mL/min. The solvent flush technique should be used. After two min, remove the Tenax cartridge and place in the desorption heater for analysis. BFB is also used as an internal standard spike for GC/MS analysis which provides a good comparison between GC/FID and GC/MS. The results of this spike analysis should not vary more than 20 percent day to day. Initially and then periodically this spiked Tenax should be reanalyzed a second time to verify that the 10 min desorption time and 180-200°C temperature are adequate to remove all of the spiked components. It should be noted that only one spiked Tenax cartridge need be prepared and analyzed daily unless otherwise needed to ensure proper instrument operation.

An acceptable blank level is left to the discretion of the method analyst. An acceptable level is one that allows adequate determination of expected components emitted from the waste being burned.

4.4.3 After conditioning, traps are sealed and placed on cold packs until sampling is accomplished. Conditioned traps should be held for a minimum amount of time to prevent the possibility of contamination.

4.4.4 It may be useful to spike the Tenax and Tenax/charcoal traps with the compounds of interest to ensure that they can be thermally desorbed under laboratory conditions. After spiked traps are analyzed they may be reconditioned and packed for sampling.

4.5 Pretest preparation:

4.5.1 All train components shall be cleaned and assembled as previously described. A dry gas meter shall have been calibrated within 30 days prior to use, using an EPA-supplied standard orifice.

4.5.2 The VOST is assembled according to the schematic diagram in Figure 1. The cartridges should be positioned so that sample flow is

through the Tenax first and then the Tenax/charcoal. Cooling water should be circulated to the condensers and the temperature of the cooling water should be maintained near 0°C. The end caps of the sorbent cartridges should be placed in a clean screw-capped glass container during sample collection.

4.6 Leak-checking:

4.6.1 The train is leak-checked by closing the valve at the inlet to the first condenser and pulling a vacuum of 250 mm (10 in. Hg) above the normal operating pressure. The traps and condensers are isolated from the pump and the leak rate noted. The leak rate should be less than 2.5 mm Hg after 1 min. The train is then returned to atmospheric pressure by attaching a charcoal-filled tube to the train inlet and admitting ambient air filtered through the charcoal. This procedure will minimize contamination of the VOST components by excessive exposure to the fugitive emissions at hazardous waste incinerator sites.

4.7 Sample Collection

4.7.1 After leak-checking, sample collection is accomplished by opening the valve at the inlet to the first condenser, turning on the pump, and sampling at a rate of 1 liter/min for 20 min. The volume of sample for any pair of traps should not exceed 20 liters.

4.7.2 Following collection of 20 liters of sample, the train is leak-checked a second time at the highest pressure drop encountered during the run to minimize the chance of vacuum desorption of organics from the Tenax. The train is returned to atmospheric pressure, using the method discussed in Paragraph 4.1 and the two sorbent cartridges are removed. The end caps are replaced and the cartridges shall be placed in a suitable environment for storage and transport until analysis. The sample is considered invalid if the leak test does not meet specification.

4.7.3 A new pair of cartridges is placed in the VOST, the VOST leak-checked, and the sample collection process repeated as described above. Sample collection continues until six pairs of traps have been used.

4.7.4 All sample cartridges should be kept on cold packs until they are ready for analysis.

4.8 Blanks

4.8.1 **Field blanks/trip blanks:** Blank Tenax and Tenax/charcoal cartridges are taken to the sampling site and the end caps removed for the period of time required to exchange two pairs of traps on VOST. After the two VOST traps have been exchanged, the end caps are replaced on the blank Tenax and Tenax/charcoal tubes and these are returned to the cold packs and analyzed with the sample traps. At least one pair of field blanks (one Tenax, one Tenax/charcoal) shall be included with each

six pairs of sample cartridges collected (or for each field trial using VOST to collect volatile POHCs).

4.8.2 **Trip blanks:** At least one pair of blank cartridges (one Tenax, one Tenax/charcoal) shall be included with shipment of cartridges to a hazardous waste incinerator site. These "field blanks" will be treated like any other cartridges except that the end caps will not be removed during storage at the site. This pair of traps will be analyzed to monitor potential contamination which may occur during storage and shipment.

4.8.3 **Laboratory blanks:** One pair of blank cartridges (one Tenax, one Tenax/charcoal) will remain in the laboratory using the method of storage which is used for field samples. If the field and trip blanks contain high concentrations of contaminants (e.g., greater than 2 ng of a particular POHC), the laboratory blank shall be analyzed in order to identify the source of contamination.

5.0 CALCULATIONS (for sample volume)

5.1 The following nomenclature are used in the calculation of sample volume:

P_{bar} = Barometric pressure at the exit orifice of the dry gas meter, mm (in.) Hg.

P_{std} = Standard absolute pressure, 760 mm (29.92 in.) Hg.

T_m = Dry gas meter average absolute temperature, K (°R).

T_{std} = Standard absolute temperature, 293K (528°R).

V_m = Dry gas volume measured by dry gas meter, dcm (dcf).

$V_{m(std)}$ = Dry gas volume measured by dry gas meter, corrected to standard conditions, dscm (dscf).

γ = Dry gas meter calibration factor.

5.2 The volume of gas sampled is calculated as follows:

$$V_{m(std)} = V_m \gamma \frac{T_{std}\, P_{bar}}{T_m\, P_{std}} = K_1 \gamma \frac{V_m\, P_{bar}}{T_m}$$

where:

K_1 = 0.3858 K/mm Hg for metric units, or

K_1 = 17.64 °R/in. Hg for English units.

6.0 ANALYTICAL PROCEDURE

See Method 5040.

7.0 PRECISION AND ACCURACY REQUIREMENTS

7.1 Method Performance Check

Prior to field operation of the VOST at a hazardous waste incinerator, a method performance check should be conducted using either selected volatile POHCs of interest or two or more of the volatile POHCs for which data are available. This check may be conducted on the entire system (VOST/GC/MS) by analysis of a gas cylinder containing POHCs of interest or on only the analytical system by spiking of the POHCs onto the traps. The results of this check for replicate pairs of traps should demonstrate that recovery of the analytes fall within 50% to 150% of the expected values.

7.2 Performance Audit

During a trial burn a performance audit must be completed. The audit results should agree within 50% to 150% of the expected value for each specific target compound. This audit consists of collecting a gas sample containing one or more POHCs in the VOST from an EPA ppb gas cylinder. Collection of the audit sample in the VOST may be conducted either in the laboratory or at the trial burn site. Anaysis of the VOST audit sample must be by the same person, at the same time, and with the same analytical procedure as used for the regular VOST trail burn samples. EPA ppb gas cylinders currently available for VOST Audit are shown in Table 1 below.

The audit procedure, audit equipment and audit cylinder may be obtained by writing:

Audit Cylinder Gas Coordinator (MD-77B)
Quality Assurance Division
Environmental Monitoring Systems Laboratory
U.S. Environmental Protection Agency
Research Triangle Park, NC 27711

or by calling the Audit Cylinder Gas Coordinator at (919) 541-4531.

The request for the audit must be made at least 30 days prior to the scheduled trial burn. If a POHC is selected for which EPA does not have an audit cylinder, this audit is not required.

8.0 REFERENCES

1. Protocol for the Collection and Analysis of Volatile POHCs Using VOST. EPA/600/8-84/007, March 1984.

2. Sykes, A.L., Standard Operating Procedure for Blanking Tenax and Tenax/Charcoal Sampling Cartridges for Volatile Organic Sampling Train (VOST), Radion Corporation, P.O. Box 13000, Research Triangle Park, NC 27709.

3. Validation of the Volatile Organic Sampling Train (VOST) Protocol, Vols. I and II, EPA/600/4-86/014a, January 1986.

TABLE 1: Organic Gases in the ppb Audit Repository

Group I	Ranges of cylinders currently available:
5 Organics in N_2:	7 - 90 ppb
Carbon tetrachloride	90 - 430 ppb
Chloroform	430 - 10,000 ppb
Perchloroethylene	
Vinyl chloride	
Benzene	

Group II	Ranges of cylinders currently available:
9 Organics in N_2	7 - 90 ppb
Trichloroethylene	90 - 430 ppb
1,2-Dichloroethane	
1,2-Dibromoethane	
F-12	
F-11	
Bromomethane	
Methyl ethyl ketone	
1,1,1-Trichloroethane	
Acetronitrile	

TABLE 1: Organic Gases in the ppb Audit Repository (Continued)

Group III	Ranges of cylinders currently available:
7 Organics in N_2:	7 - 90 ppb
Vinylidene chloride	90 - 430 ppb
F-113	
F-114	
Acetone	
1,4-Dioxane	
Toluene	
Chlorobenzene	

Group IV	Ranges of cylinders currently available:
6 Organics in N_2:	7 - 90 ppb
Acrylonitrile	430 - 10,000
1,3-Butadiene	
Ethylene oxide	
Methylene chloride	
Propylene oxide	
Ortho-xylene	

Method 8240: VOST Analysis

GAS CHROMATOGRAPHY/MASS SPECTROMETRY FOR VOLATILE ORGANICS

1.0 SCOPE AND APPLICATION

1.1 Method 8240 is used to determine volatile organic compounds in a variety of solid waste matrices. This method is applicable to nearly all types of samples, regardless of water content, including ground water, aqueous sludges, caustic liquors, acid liquors, waste solvents, oily wastes, mousses, tars, fibrous wastes, polymeric emulsions, filter cakes, spent carbons, spent catalysts, soils, and sediments.

1.2 Method 8240 can be used to quantify most volatile organic compounds that have boiling points below 200°C [vapor pressure is approximately equal to mm Hg @ 25°C] and that are insoluble or slightly soluble in water. Volatile water-soluble compounds can be included in this analytical technique, however, for the more soluble compounds, quantitation limits are approximately ten times higher because of poor purging efficiency. The method is also limited to compounds that elute as sharp peaks from a GC column packed with graphitized carbon lightly coated with a carbowax. Such compounds include low-molecular-weight halogenated hydrocarbons, aromatics, ketones, nitriles, acetates, acrylates, ethers, and sulfides. See Table 1 for a list of compounds, retention times, and their characteristic ions that have been evaluated on a purge-and-trap GC/MS system.

1.3 The practical quantitation limit (PQL) of Method 8240 for an individual compound is approximately 5 ug/kg (wet weight) for soil/sediment samples, 0.5 mg/kg (wet weight) for wastes, and 5 ug/L for ground water (see Table 2). PQLs will be proportionately higher for sample extracts and samples that require dilution or reduced sample size to avoid saturation of the detector.

1.4 Method 8240 is based upon a purge-and-trap, gas chromatographic/mass spectrometric (GC/MS) procedure. This method is restricted to use by, or under the supervision of, analysts experienced in the use of purge-and-trap systems and gas chromatograph/mass spectrometers, and skilled in the interpretation of mass spectra and their use as a quantitative tool.

1.5 To increase purging efficiencies of acrylonitrile and acrolein, refer to Methods 5030 and 8030 for proper purge-and-trap conditions.

2.0 SUMMARY OF METHOD

2.1 The volatile compounds are introduced into the gas chromatograph by the purge-and-trap method or by direct injection (in limited applications). The components are separated via the gas chromatograph and detected using a mass spectrometer, which is used to provide both qualitative and quantitative information. The chromatographic conditions, as well as typical mass spectrometer operating parameters, are given.

TABLE 1. RETENTION TIMES AND CHARACTERISTIC IONS FOR VOLATILE COMPOUNDS

Compound	Retention Time (min)	Primary Ion	Secondary Ion(s)
Acetone	--	43	58
Acrolein	--	56	55, 58
Acrylonitrile	--	53	52, 51
Benzene	17.0	78	52, 77
Bromochloromethane (I.S.)	9.3	128	49, 130, 51
Bromodichloromethane	14.3	83	85, 129
4-Bromofluorobenzene (surr.)	28.3	95	174, 176
Bromoform	19.8	173	171, 175, 252
Bromomethane	3.1	94	96, 79
2-Butanone	--	72	57, 43
Carbon disulfide	--	76	78
Carbon tetrachloride	13.7	117	119, 121
Chlorobenzene	24.6	112	114, 77
Chlorobenzene-d_5 (I.S.)	--	117	82, 119
Chlorodibromomethane	--	129	208, 206
Chloroethane	4.6	64	66, 49
2-Chloroethyl vinyl ether	18.6	63	65, 106
Chloroform	11.4	83	85, 47
Chloromethane	2.3	50	52, 49
Dibromomethane	--	93	174, 95
1,4-Dichloro-2-butane	--	75	53, 89
Dichlorodifluoromethane	--	85	87, 50, 101
1,1-Dichloroethane	--	63	65, 83
1,2-Dichloroethane	10.1	62	64, 98
1,2-Dichloroethane-d_4 (surr.)	12.1	65	102
1,1-Dichloroethene	9.0	96	61, 98
trans-1,2-Dichloroethene	10.0	96	61, 98
1,2-Dichloropropane	15.7	63	62, 41
cis-1,3-Dichloropropene	15.9	75	77, 39
trans-1,3-Dichloropropene	17.2	75	77, 39
1,4-Difluorobenzene (I.S.)	19.6	114	63, 88
Ethanol	--	31	45, 27, 46
Ethylbenzene	26.4	106	91
Ethyl methacrylate	--	69	41, 39, 99
2-Hexanone	--	43	58, 57, 100
Iodomethane	--	142	127, 141
Methylene chloride	6.4	84	49, 51, 86
4-Methyl-2-pentanone	--	43	58, 100
Styrene	--	104	78, 103
1,1,2,2-Tetrachloroethane	22.1	83	85, 131, 133
Tetrachloroethene	22.2	164	129, 131, 166
Toluene	23.5	92	91, 65
Toluene-d_8 (surr.)	--	98	70, 100

TABLE 1. - Continued.

Compound	Retention Time (min)	Primary Ion	Secondary Ion(s)
1,1,1-Trichloroethane	13.4	97	99, 117
1,1,2-Trichloroethane	17.2	97	83, 85, 99
Trichloroethene	16.5	130	95, 97, 132
Trichlorofluoromethane	8.3	101	103, 66
1,2,3-Trichloropropane	--	75	110, 77, 61
Vinyl acetate	--	43	86
Vinyl chloride	3.8	62	64, 61
Xylene	--	106	91

TABLE 2. PRACTICAL QUANTITATION LIMITS (PQL) FOR VOLATILE ORGANICS[a]

Volatiles	CAS Number	Practical Quantitation Limits[b] Ground water ug/L	Low Soil/Sediment ug/Kg
1. Chloromethane	74-87-3	10	10
2. Bromomethane	74-83-9	10	10
3. Vinyl Chloride	75-01-4	10	10
4. Chloroethane	75-00-3	10	10
5. Methylene Chloride	75-09-2	5	5
6. Acetone	67-64-1	100	100
7. Carbon Disulfide	75-15-0	5	5
8. 1,1-Dichloroethene	75-35-4	5	5
9. 1,1-Dichloroethane	75-35-3	5	5
10. trans-1,2-Dichloroethene	156-60-5	5	5
11. Chloroform	67-66-3	5	5
12. 1,2-Dichloroethane	107-06-2	5	5
13. 2-Butanone	78-93-3	100	100
14. 1,1,1-Trichloroethane	71-55-6	5	5
15. Carbon Tetrachloride	56-23-5	5	5
16. Vinyl Acetate	108-05-4	50	50
17. Bromodichloromethane	75-27-4	5	5
18. 1,1,2,2-Tetrachloroethane	79-34-5	5	5
19. 1,2-Dichloropropane	78-87-5	5	5
20. trans-1,3-Dichloropropene	10061-02-6	5	5
21. Trichloroethene	79-01-6	5	5
22. Dibromochloromethane	124-48-1	5	5
23. 1,1,2-Trichloroethane	79-00-5	5	5
24. Benzene	71-43-2	5	5
25. cis-1,3-Dichloropropene	10061-01-5	5	5
26. 2-Chloroethyl Vinyl Ether	110-75-8	10	10
27. Bromoform	75-25-2	5	5
28. 2-Hexanone	591-78-6	50	50
29. 4-Methyl-2-pentanone	108-10-1	50	50
30. Tetrachloroethene	127-18-4	5	5

TABLE 2. - Continued

Volatiles	CAS Number	Practical Quantitation Limits[b] Ground water ug/L	Practical Quantitation Limits[b] Low Soil/Sediment ug/Kg
31. Toluene	108-88-3	5	5
32. Chlorobenzene	108-90-7	5	5
33. Ethyl Benzene	100-41-4	5	5
34. Styrene	100-42-5	5	5
35. Total Xylenes		5	5

[a]Sample PQLs are highly matrix-dependent. The PQLs listed herein are provided for guidance and may not always be achieveable. See the following information for further guidance on matrix-dependent PQLs.

[b]PQLs listed for soil/sediment are based on wet weight. Normally data is reported on a dry weight basis; therefore, PQLs will be higher, based on the % moisture in each sample.

Other Matrices:	Factor[1]
Water miscible liquid waste	50
High-level soil & sludges	125
Non-water miscible waste	500

[1]PQL = [PQL for ground water (Table 2)] X [Factor]. For non-aqueous samples, the factor is on a wet-weight basis.

2.2 If the above sample introduction techniques are not applicable, a portion of the sample is dispersed in methanol to dissolve the volatile organic constituents. A portion of the methanolic solution is combined with water in a specially designed purging chamber. It is then analyzed by purge-and-trap GC/MS following the normal water method.

2.3 The purge-and-trap process: An inert gas is bubbled through the solution at ambient temperature, and the volatile components are efficiently transferred from the aqueous phase to the vapor phase. The vapor is swept through a sorbent column where the volatile components are trapped. After purging is completed, the sorbent column is heated and backflushed with inert gas to desorb the components onto a gas chromatographic column. The gas chromatographic column is heated to elute the components, which are detected with a mass spectrometer.

3.0 INTERFERENCES

3.1 Interferences purged or coextracted from the samples will vary considerably from source to source, depending upon the particular sample or extract being tested. The analytical system, however, should be checked to ensure freedom from interferences, under the analysis conditions, by analyzing method blanks.

3.2 Samples can be contaminated by diffusion of volatile organics (particularly methylene chloride and fluorocarbons) through the septum seal into the sample during shipment and storage. A field blank prepared from reagent water and carried through the sampling and handling protocol can serve as a check on such contamination.

3.3 Cross-contamination can occur whenever high-level and low-level samples are analyzed sequentially. Whenever an unusually concentrated sample is analyzed, it should be followed by the analysis of reagent water to check for cross-contamination. The purge-and-trap system may require extensive bake-out and cleaning after a high-level sample.

3.4 The laboratory where volatile analysis is performed should be completely free of solvents.

3.5 Impurities in the purge gas and from organic compounds out-gasing from the plumbing ahead of the trap account for the majority of contamination problems. The analytical system must be demonstrated to be free from contamination under the conditions of the analysis by running laboratory reagent blanks. The use of non-TFE plastic coating, non-TFE thread sealants, or flow controllers with rubber components in the purging device should be avoided.

4.0 APPARATUS AND MATERIALS

4.1 Microsyringes: 10-uL, 25-uL, 100-uL, 250-uL, 500-uL, and 1,000 uL. These syringes should be equipped with a 20-gauge (0.006-in I.D.) needle

having a length sufficient to extend from the sample inlet to within 1 cm of the glass frit in the purging device. The needle length will depend upon the dimensions of the purging device employed.

4.2 Syringe valve: Two-way, with Luer ends (three each), if applicable to the purging device.

4.3 Syringe: 5-mL, gas-tight with shutoff valve.

4.4 Balance: Analytical, capable of accurately weighing 0.0001 g, and a top-loading balance capable of weighing 0.1 g.

4.5 Glass scintillation vials: 20-mL, with screw caps and Teflon liners or glass culture tubes with a screw cap and Teflon liner.

4.6 Volumetric flasks: 10-mL and 100-mL, class A with ground-glass stoppers.

4.7 Vials: 2-mL, for GC autosampler.

4.8 Spatula: Stainless steel.

4.9 Disposable pipets: Pasteur.

4.10 Heater or heated oil bath: Should be capable of maintaining the purging chamber to within 1°C over the temperature range of ambient to 100°C.

4.11 Purge-and-trap device: The purge-and-trap device consists of three separate pieces of equipment: the sample purger, the trap, and the desorber. Several complete devices are commercially available.

4.11.1 The recommended purging chamber is designed to accept 5-mL samples with a water column at least 3 cm deep. The gaseous headspace between the water column and the trap must have a total volume of less than 15 mL. The purge gas must pass through the water column as finely divided bubbles with a diameter of less than 3-mm at the origin. The purge gas must be introduced no more than 5 mm from the base of the water column. The sample purger, illustrated in Figure 1, meets these design criteria. Alternate sample purge devices may be utilized, provided equivalent performance is demonstrated.

4.11.2 The trap must be at least 25 cm long and have an inside diameter of at least 0.105 in. Starting from the inlet, the trap must contain the following amounts of adsorbents: 1/3 of 2,6-diphenylene oxide polymer, 1/3 of silica gel, and 1/3 of coconut charcoal. It is recommended that 1.0 cm of methyl silicone-coated packing be inserted at the inlet to extend the life of the trap (see Figure 2). If it is not necessary to analyze for dichlorodifluoromethane or other fluorocarbons of similar volatility, the charcoal can be eliminated and the polymer increased to fill 2/3 of the trap. If only compounds boiling above 35°C are to be analyzed, both the silica gel and charcoal can be eliminated

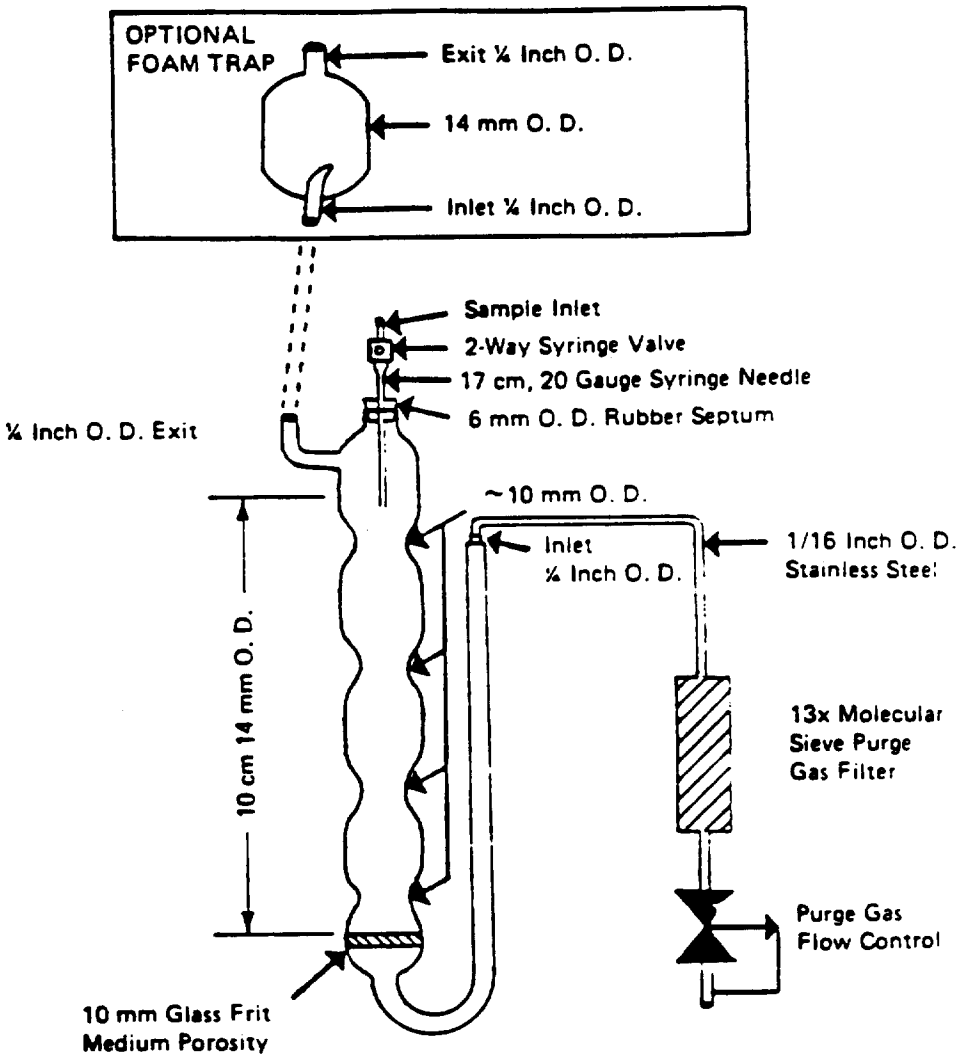


Figure 1. Purging chamber.

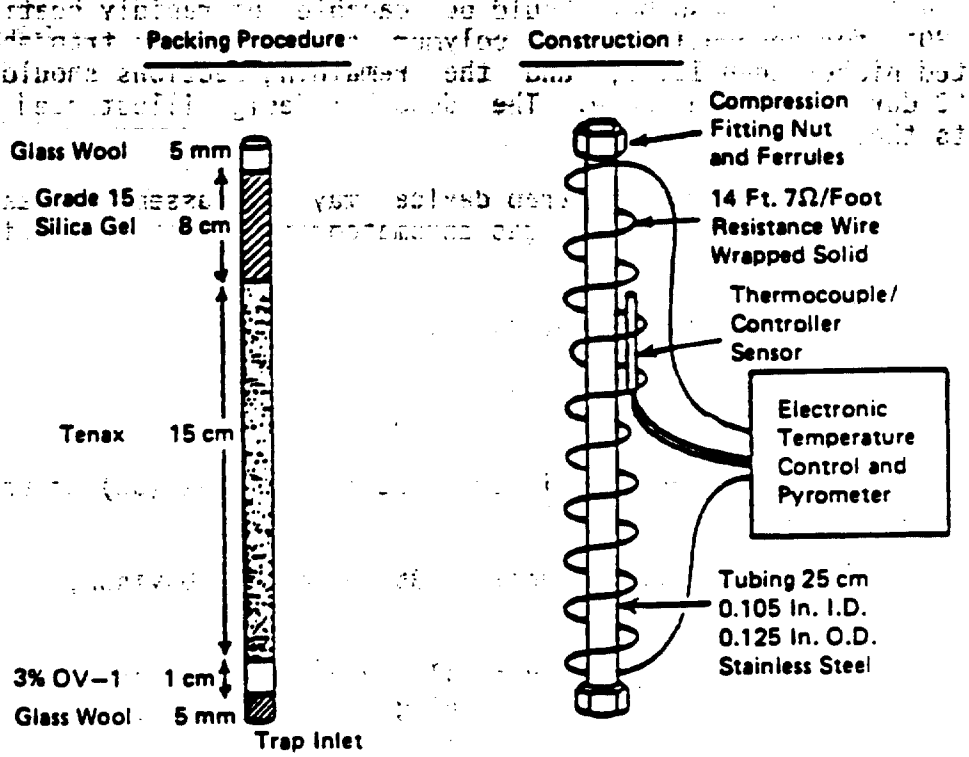


Figure 2. Trap packings and construction to include desorb capability for Method 8240.

and the polymer increased to fill the entire trap. Before initial use, the trap should be conditioned overnight at 180°C by backflushing with an inert gas flow of at least 20 mL/min. Vent the trap effluent to the room, not to the analytical column. Prior to daily use, the trap should be conditioned for 10 min at 180°C with backflushing. The trap may be vented to the analytical column during daily conditioning; however, the column must be run through the temperature program prior to analysis of samples.

4.11.3 The desorber should be capable of rapidly heating the trap to 180°C for desorption. The polymer section of the trap should not be heated higher than 180°C, and the remaining sections should not exceed 220°C during bake-out mode. The desorber design illustrated in Figure 2 meets these criteria.

4.11.4 The purge-and-trap device may be assembled as a separate unit or may be coupled to a gas chromatograph, as shown in Figures 3 and 4.

4.11.5 **Trap Packing Materials:**

4.11.5.1 2,6-Diphenylene oxide polymer: 60/80 mesh, chromatographic grade (Tenax GC or equivalent).

4.11.5.2 Methyl silicone packing: OV-1 (3%) on Chromosorb-W, 60/80 mesh or equivalent.

4.11.5.3 Silica gel: 35/60 mesh, Davison, grade 15 or equivalent.

4.11.5.4 Coconut charcoal: Prepare from Barnebey Cheney, CA-580-26 lot #M-2649 by crushing through 26 mesh screen.

4.12 Gas chromatograph/mass spectrometer system:

4.12.1 **Gas chromatograph:** An analytical system complete with a temperature-programmable gas chromatograph and all required accessories including syringes, analytical columns, and gases.

4.12.2 **Column:** 6-ft x 0.1-in. I.D. glass, packed with 1% SP-1000 on Carbopack-B (60/80 mesh) or equivalent.

4.12.3 **Mass spectrometer:** Capable of scanning from 35-260 amu every 3 sec or less, using 70 volts (nominal) electron energy in the electron impact mode and producing a mass spectrum that meets all the criteria in Table 3 when 50 ng of 4-bromofluorobenzene (BFB) are injected through the gas chromatograph inlet.

4.12.4 **GC/MS interface:** Any GC-to-MS interface that gives acceptable calibration points at 50 ng or less per injection for each of the analytes and achieves all acceptable performance criteria (see Table 3) may be used. GC-to-MS interfaces constructed entirely of glass or of

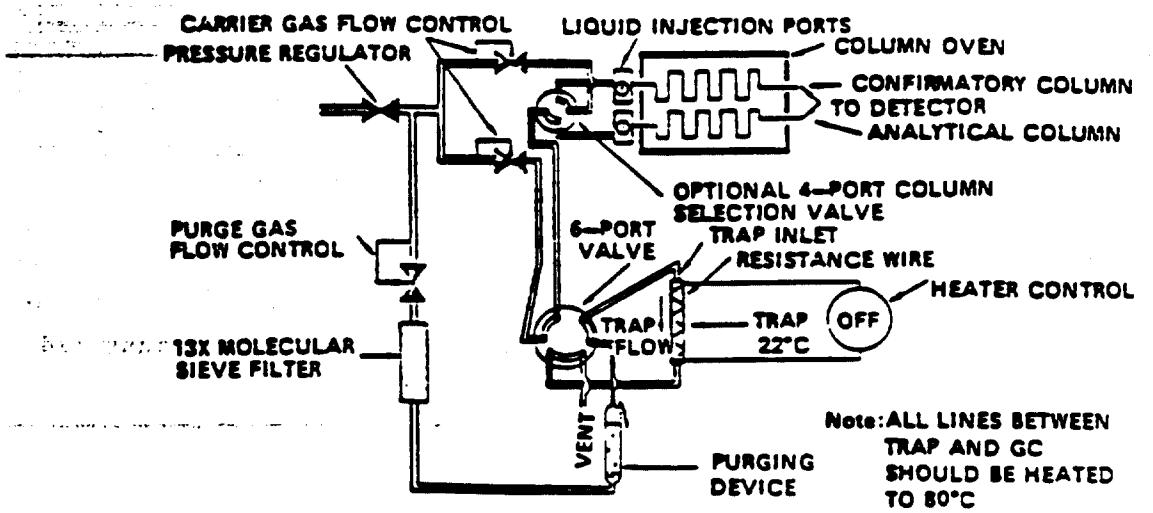


Figure 3. Schematic of purge-and-trap device — purge mode for Method 8240.

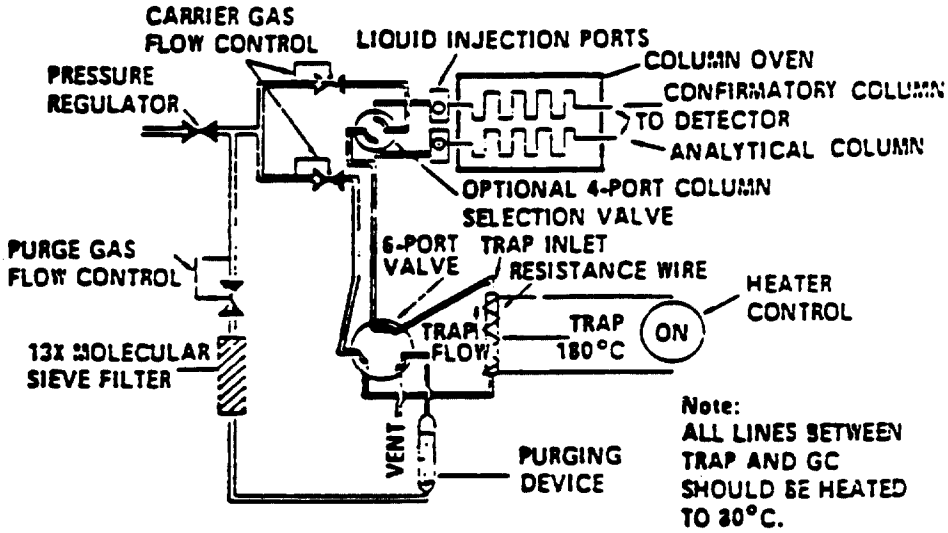


Figure 4. Schematic of purge-and-trap device — desorb mode for Method 8240.

TABLE 3. BFB KEY ION ABUNDANCE CRITERIA

Mass	Ion Abundance Criteria
50	15 to 40% of mass 95
75	30 to 60% of mass 95
95	base peak, 100% relative abundance
96	5 to 9% of mass 95
173	less than 2% of mass 174
174	greater than 50% of mass 95
175	5 to 9% of mass 174
176	greater than 95% but less than 101% of mass 174
177	5 to 9% of mass 176

glass-lined materials are recommended. Glass can be deactivated by silanizing with dichlorodimethylsilane.

4.12.5 **Data system:** A computer system that allows the continuous acquisition and storage on machine-readable media of all mass spectra obtained throughout the duration of the chromatographic program must be interfaced to the mass spectrometer. The computer must have software that allows searching any GC/MS data file for ions of a specified mass and plotting such ion abundances versus time or scan number. This type of plot is defined as an Extracted Ion Current Profile (EICP). Software must also be available that allows integrating the abundances in any EICP between specified time or scan-number limits. The most recent version of the EPA/NIH Mass Spectral Library should also be available.

5.0 REAGENTS

5.1 Stock solutions: Stock solutions may be prepared from pure standard materials or purchased as certified solutions. Prepare stock standard solutions in methanol, using assayed liquids or gases, as appropriate.

5.1.1 Place about 9.8 mL of methanol in a 10-mL tared ground-glass-stoppered volumetric flask. Allow the flask to stand, unstoppered, for about 10 min or until all alcohol-wetted surfaces have dried. Weigh the flask to the nearest 0.1 mg.

5.1.2 Add the assayed reference material, as described below.

5.1.2.1 Liquids: Using a 100-uL syringe, immediately add two or more drops of assayed reference material to the flask; then reweigh. The liquid must fall directly into the alcohol without contacting the neck of the flask.

5.1.2.2 Gases: To prepare standards for any compounds that boil below 30°C (e.g., bromomethane, chloroethane, chloromethane, or vinyl chloride), fill a 5-mL valved gas-tight syringe with the reference standard to the 5.0-mL mark. Lower the needle to 5 mm above the methanol meniscus. Slowly introduce the reference standard above the surface of the liquid. The heavy gas will rapidly dissolve in the methanol. Standards may also be prepared by using a lecture bottle equipped with a Hamilton Lecture Bottle Septum (#86600). Attach Teflon tubing to the side-arm relief valve and direct a gentle stream of gas into the methanol meniscus.

5.1.3 Reweigh, dilute to volume, stopper, and then mix by inverting the flask several times. Calculate the concentration in micrograms per microliter (ug/uL) from the net gain in weight. When compound purity is assayed to be 96% or greater, the weight may be used without correction to calculate the concentration of the stock standard. Commercially prepared stock standards may be used at any concentration if they are certified by the manufacturer or by an independent source.

5.1.4 Transfer the stock standard solution into a Teflon-sealed screw cap bottle. Store, with minimal headspace, at -10°C to -20°C and protect from light.

5.1.5 Prepare fresh standards every two months for gases. Reactive compounds such as 2-chloroethylvinyl ether and styrene may need to be prepared more frequently. All other standards must be replaced after six months, or sooner if comparison with check standards indicates a problem.

5.2 Secondary dilution standards: Using stock standard solutions, prepare in methanol secondary dilution standards containing the compounds of interest, either singly or mixed together. Secondary dilution standards must be stored with minimal headspace and should be checked frequently for signs of degradation or evaporation, especially just prior to preparing calibration standards from them.

5.3 Surrogate standards: The surrogates recommended are toluene-d_8, 4-bromofluorobenzene, and 1,2-dichloroethane-d_4. Other compounds may be used as surrogates, depending upon the analysis requirements. A stock surrogate solution in methanol should be prepared as described in Section 5.1, and a surrogate standard spiking solution should be prepared from the stock at a concentration of 250 ug/10 mL in methanol. Each sample undergoing GC/MS analysis must be spiked with 10 uL of the surrogate spiking solution prior to analysis.

5.4 Internal standards: The recommended internal standards are bromochloromethane, 1,4-difluorobenzene, and chlorobenzene-d_5. Other compounds may be used as internal standards as long as they have retention times similar to the compounds being detected by GC/MS. Prepare internal standard stock and secondary dilution standards in methanol using the procedures described in Sections 5.1 and 5.2. It is recommended that the secondary dilution standard should be prepared at a concentration of 25 ug/mL of each internal standard compound. Addition of 10 uL of this standard to 5.0 mL of sample or calibration standard would be the equivalent of 50 ug/L.

5.5 4-Bromofluorobenzene (BFB) standard: A standard solution containing 25 ng/uL of BFB in methanol should be prepared.

5.6 Calibration standards: Calibration standards at a minimum of five concentration levels should be prepared from the secondary dilution of stock standards (see Sections 5.1 and 5.2). Prepare these solutions in reagent water. One of the concentration levels should be at a concentration near, but above, the method detection limit. The remaining concentration levels should correspond to the expected range of concentrations found in real samples or should not exceed the working range of the GC/MS system. Each standard should contain each analyte for detection by this method (e.g., some or all of the compounds listed in Table 1 may be included). Store for one week only in a vial with no headspace.

5.7 Matrix spiking standards: Matrix spiking standards should be prepared from volatile organic compounds which will be representative of the compounds being investigated. The suggested compounds are 1,1-dichloroethene,

trichloroethene, chlorobenzene, toluene, and benzene. The standard should be prepared in methanol, with each compound present at a concentration of 250 ug/10.0 mL.

5.8 Great care must be taken to maintain the integrity of all standard solutions. It is recommended that all standards be stored at -10°C to -20°C in screw-cap amber bottles with Teflon liners.

5.9 Reagent water: Reagent water is defined as water in which an interferent is not observed at the method detection limit (MDL) of the parameters of interest.

5.9.1 Reagent water may be generated by passing tap water through a carbon filter bed containing about 453 g of activated carbon (Calgon Corp., Filtrasorb-300 or equivalent).

5.9.2 A water purification system (Millipore Super-Q or equivalent) may be used to generate reagent water.

5.9.3 Reagent water may also be prepared by boiling water for 15 min. Subsequently, while maintaining the temperature at 90°C, bubble a contaminant-free inert gas through the water for 1 hr. While it is still hot, transfer the water to a narrow-mouth screw-cap bottle and seal with a Teflon-lined septum and cap.

5.10 Methanol: Pesticide quality or equivalent. Store apart from other solvents.

6.0 SAMPLE COLLECTION, PRESERVATION, AND HANDLING

6.1 See the introductory material to this chapter, Organic Analytes, Section 4.1.

7.0 PROCEDURE

7.1 Direct injection: In very limited applications (e.g., aqueous process wastes), direct injection of the sample into the GC/MS system with a 10 uL syringe may be appropriate. One such application is for verification of the alcohol content of an aqueous sample prior to determining if the sample is ignitable (Methods 1010 or 1020). In this case, it is suggested that direct injection be used. The detection limit is very high (approximately 10,000 ug/L); therefore, it is only permitted when concentrations in excess of 10,000 ug/L are expected or for water-soluble compounds that do not purge. The system must be calibrated by direct injection (bypassing the purge-and-trap device).

7.2 Initial calibration for purge-and-trap procedure:

7.2.1 Recommended GC/MS operating conditions:

Electron energy:	70 volts (nominal).
Mass range:	35-260 amu.
Scan time:	To give 5 scans/peak but not to exceed 7 sec/scan.
Initial column temperature:	45°C.
Initial column holding time:	3 min.
Column temperature program:	8°C/min.
Final column temperature:	220°C.
Final column holding time:	15 min.
Injector temperature:	200-225°C.
Source temperature:	According to manufacturer's specifications.
Transfer line temperature:	250-300°C.
Carrier gas:	Hydrogen at 50 cm/sec or helium at 30 cm/sec.

7.2.2 Each GC/MS system must be hardware-tuned to meet the criteria in Table 3 for a 50-ng injection or purging of 4-bromofluorobenzene (2-uL injection of the BFB standard). Analyses must not begin until these criteria are met.

7.2.3 Assemble a purge-and-trap device that meets the specification in Section 4.11. Condition the trap overnight at 180°C in the purge mode with an inert gas flow of at least 20 mL/min. Prior to use, condition the trap daily for 10 min while backflushing at 180°C with the column at 220°C.

7.2.4 Connect the purge-and-trap device to a gas chromatograph.

7.2.5 Prepare the final solutions containing the required concentrations of calibration standards, including surrogate standards, directly in the purging device. Add 5.0 mL of reagent water to the purging device. The reagent water is added to the purging device using a 5-mL glass syringe fitted with a 15-cm 20-gauge needle. The needle is inserted through the sample inlet shown in Figure 1. The internal diameter of the 14-gauge needle that forms the sample inlet will permit insertion of the 20-gauge needle. Next, using a 10-uL or 25-uL micro-syringe equipped with a long needle (Paragraph 4.1), take a volume of the secondary dilution solution containing appropriate concentrations of the calibration standards (Paragraph 5.6). Add the aliquot of calibration solution directly to the reagent water in the purging device by inserting the needle through the sample inlet. When discharging the contents of the micro-syringe, be sure that the end of the syringe needle is well beneath the surface of the reagent water. Similarly, add 10 uL of the internal standard solution (Paragraph 5.4). Close the 2-way syringe valve at the sample inlet.

7.2.6 Carry out the purge-and-trap analysis procedure as described in Section 7.4.1.

7.2.7 Tabulate the area response of the characteristic ions (see Table 1) against concentration for each compound and each internal standard. Calculate response factors (RF) for each compound relative to one of the internal standards. The internal standard selected for the calculation of the RF for a compound should be the internal standard that has a retention time closest to the compound being measured (Section 7.5.2). The RF is calculated as follows:

$$RF = (A_x C_{is})/(A_{is} C_x)$$

where:

A_x = Area of the characteristic ion for the compound being measured.

A_{is} = Area of the characteristic ion for the specific internal standard.

C_{is} = Concentration of the specific internal standard.

C_x = Concentration of the compound being measured.

7.2.8 The average RF must be calculated for each compound. A system performance check should be made before this calibration curve is used. Five compounds (the System Performance Check Compounds, or SPCCs) are checked for a minimum average response factor. These compounds are chloromethane, 1,1-dichloroethane, bromoform, 1,1,2,2-tetrachloroethane, and chlorobenzene. The minimum acceptable average RF for these compounds should be 0.300 (0.250 for bromoform). These compounds typically have RFs of 0.4-0.6 and are used to check compound instability and check for degradation caused by contaminated lines or active sites in the system. Examples of these occurrences are:

7.2.8.1 Chloromethane: This compound is the most likely compound to be lost if the purge flow is too fast.

7.2.8.2 Bromoform: This compound is one of the compounds most likely to be purged very poorly if the purge flow is too slow. Cold spots and/or active sites in the transfer lines may adversely affect response. Response of the quantitation ion (m/z 173) is directly affected by the tuning of BFB at ions m/z 174/176. Increasing the m/z 174/176 ratio may improve bromoform response.

7.2.8.3 Tetrachloroethane and 1,1-dichloroethane: These compounds are degraded by contaminated transfer lines in purge-and-trap systems and/or active sites in trapping materials.

7.2.9 Using the RFs from the initial calibration, calculate the percent relative standard deviation (%RSD) for Calibration Check Compounds (CCCs).

$$\%RSD = \frac{SD}{\bar{x}} \times 100$$

where:

RSD = relative standard deviation.

$\bar{x}$ = mean of 5 initial RFs for a compound.

SD = standard deviation of average RFs for a compound.

$$SD = \sqrt{\frac{\sum_{i=1}^{N} (x_i - \bar{x})^2}{N - 1}}$$

The %RSD for each individual CCC should be less than 30 percent. This criterion must be met in order for the individual calibration to be valid. The CCCs are:

1,1-Dichloroethene,
Chloroform,
1,2-Dichloropropane,
Toluene,
Ethylbenzene, and
Vinyl chloride.

7.3 Daily GC/MS calibration:

7.3.1 Prior to the analysis of samples, inject or purge 50-ng of the 4-bromofluorobenzene standard. The resultant mass spectra for the BFB must meet all of the criteria given in Table 3 before sample analysis begins. These criteria must be demonstrated each 12-hr shift.

7.3.2 The initial calibration curve (Section 7.2) for each compound of interest must be checked and verified once every 12 hr of analysis time. This is accomplished by analyzing a calibration standard that is at a concentration near the midpoint concentration for the working range of the GC/MS by checking the SPCC (Paragraph 7.3.3) and CCC (Paragraph 7.3.4).

7.3.3 **System Performance Check Compounds** (SPCCs): A system performance check must be made each 12 hr. If the SPCC criteria are met, a comparison of response factors is made for all compounds. This is the same check that is applied during the initial calibration. If the minimum response factors are not met, the system must be evaluated, and corrective action must be taken before sample analysis begins. The minimum response factor for volatile SPCCs is 0.300 (0.250 for Bromoform). Some possible problems are standard mixture degradation, injection port inlet contamination, contamination at the front end of the analytical column, and active sites in the column or chromatographic system.

7.3.4 **Calibration Check Compounds** (CCCs): After the system performance check is met, CCCs listed in Paragraph 7.2.9 are used to check the validity of the initial calibration. Calculate the percent difference using:

$$\% \text{ Difference} = \frac{\overline{RF}_I - RF_C}{\overline{RF}_I} \times 100$$

where:

$\overline{RF}_I$ = average response factor from initial calibration.

RF_C = response factor from current verification check standard.

If the percent difference for any compound is greater than 20, the laboratory should consider this a warning limit. If the percent difference for each CCC is less than 25%, the initial calibration is assumed to be valid. If the criterion is not met (>25% difference), for any one CCC, corrective action MUST be taken. Problems similar to those listed under SPCCs could affect this criterion. If no source of the problem can be determined after corrective action has been taken, a new five-point calibration MUST be generated. This criterion MUST be met before quantitative sample analysis begins.

7.3.5 The internal standard responses and retention times in the check calibration standard must be evaluated immediately after or during data acquisition. If the retention time for any internal standard changes by more than 30 sec from the last check calibration (12 hr), the chromatographic system must be inspected for malfunctions and corrections must be made, as required. If the EICP area for any of the internal standards changes by a factor of two (-50% to +100%) from the last daily calibration standard check, the mass spectrometer must be inspected for malfunctions and corrections must be made, as appropriate. When corrections are made, reanalysis of samples analyzed while the system was malfunctioning are necessary.

7.4 GC/MS analysis:

7.4.1 **Water samples:**

7.4.1.1 Screening of the sample prior to purge-and-trap analysis will provide guidance on whether sample dilution is necessary and will prevent contamination of the purge-and-trap system. Two screening techniques that can be used are: the headspace sampler (Method 3810) using a gas chromatograph (GC) equipped with a photo ionization detector (PID) in series with an electrolytic conductivity detector (ECD); and extraction of the sample with hexadecane and analysis of the extract on a GC with a FID and/or an ECD (Method 3820).

7.4.1.2 All samples and standard solutions must be allowed to warm to ambient temperature before analysis.

7.4.1.3 Set up the GC/MS system as outlined in Paragraph 7.2.1.

7.4.1.4 BFB tuning criteria and daily GC/MS calibration criteria must be met (Section 7.3) before analyzing samples.

7.4.1.5 Adjust the purge gas (helium) flow rate to 25-40 mL/min on the purge-and-trap device. Optimize the flow rate to provide the best response for chloromethane and bromoform, if these compounds are analytes. Excessive flow rate reduces chloromethane response, whereas insufficient flow reduces bromoform response (see Section 7.2.8).

7.4.1.6 Remove the plunger from a 5-mL syringe and attach a closed syringe valve. Open the sample or standard bottle, which has been allowed to come to ambient temperature, and carefully pour the sample into the syringe barrel to just short of overflowing. Replace the syringe plunger and compress the sample. Open the syringe valve and vent any residual air while adjusting the sample volume to 5.0 mL. This process of taking an aliquot destroys the validity of the liquid sample for future analysis; therefore, if there is only one VOA vial, the analyst should fill a second syringe at this time to protect against possible loss of sample integrity. This second sample is maintained only until such time when the analyst has determined that the first sample has been analyzed properly. Filling one 20-mL syringe would allow the use of only one syringe. If a second analysis is needed from a syringe, it must be analyzed within 24 hr. Care must be taken to prevent air from leaking into the syringe.

7.4.1.7 The following procedure is appropriate for diluting purgeable samples. All steps must be performed without delays until the diluted sample is in a gas-tight syringe.

7.4.1.7.1 Dilutions may be made in volumetric flasks (10-to 100-mL). Select the volumetric flask that will allow for the necessary dilution. Intermediate dilutions may be necessary for extremely large dilutions.

7.4.1.7.2 Calculate the approximate volume of reagent water to be added to the volumetric flask selected and add slightly less than this quantity of reagent water to the flask.

7.4.1.7.3 Inject the proper aliquot of samples from the syringe prepared in Paragraph 7.4.1.6 into the flask. Aliquots of less than 1-mL are not recommended. Dilute the sample to the mark with reagent water. Cap the flask, invert, and shake three times. Repeat above procedure for additional dilutions.

7.4.1.7.4 Fill a 5-mL syringe with the diluted sample as in Paragraph 7.4.1.6.

7.4.1.8 Add 10.0 uL of surrogate spiking solution (Paragraph 5.3) and 10 uL of internal standard spiking solution (Paragraph 5.4) through the valve bore of the syringe; then close the valve. The surrogate and internal standards may be mixed and added as a single spiking solution. The addition of 10 uL of the surrogate spiking solution to 5 mL of sample is equivalent to a concentration of 50 ug/L of each surrogate standard.

7.4.1.9 Attach the syringe-syringe valve assembly to the syringe valve on the purging device. Open the syringe valves and inject the sample into the purging chamber.

7.4.1.10 Close both valves and purge the sample for 11.0 ± 0.1 min at ambient temperature.

7.4.1.11 At the conclusion of the purge time, attach the trap to the chromatograph, adjust the device to the desorb mode, and begin the gas chromatographic temperature program and GC/MS data acquisition. Concurrently, introduce the trapped materials to the gas chromatographic column by rapidly heating the trap to 180°C while backflushing the trap with inert gas between 20 and 60 mL/min for 4 min. If this rapid heating requirement cannot be met, the gas chromatographic column must be used as a secondary trap by cooling it to 30°C (or subambient, if problems persist) instead of the recommended initial program temperature of 45°C.

7.4.1.12 While the trap is being desorbed into the gas chromatograph, empty the purging chamber. Wash the chamber with a minimum of two 5-mL flushes of reagent water (or methanol followed by reagent water) to avoid carryover of pollutant compounds into subsequent analyses.

7.4.1.13 After desorbing the sample for 4 min, recondition the trap by returning the purge-and-trap device to the purge mode. Wait 15 sec; then close the syringe valve on the purging device to begin gas flow through the trap. The trap temperature should be maintained at 180°C. Trap temperatures up to 220°C may be employed; however, the higher temperature will shorten the useful life of the trap. After approximately 7 min, turn off the trap heater and open the syringe valve to stop the gas flow through the trap. When cool, the trap is ready for the next sample.

7.4.1.14 If the initial analysis of a sample or a dilution of the sample has a concentration of analytes that exceeds the initial calibration range, the sample must be reanalyzed at a higher dilution. Secondary ion quantitation is allowed <u>only</u> when there are sample interferences with the primary ion. When a sample is analyzed that has saturated ions from a compound, this analysis must be followed by a blank reagent water analysis. If the blank

analysis is not free of interferences, the system must be decontaminated. Sample analysis may not resume until a blank can be analyzed that is free of interferences.

7.4.1.15 For matrix spike analysis, add 10 uL of the matrix spike solution (Paragraph 5.7) to the 5 mL of sample purged. Disregarding any dilutions, this is equivalent to a concentration of 50 ug/L of each matrix spike standard.

7.4.1.16 All dilutions should keep the response of the major constituents (previously saturated peaks) in the upper half of the linear range of the curve. Proceed to Sections 7.5.1 and 7.5.2 for qualitative and quantitative analysis.

7.4.2 **Water-miscible liquids:**

7.4.2.1 Water-miscible liquids are analyzed as water samples after first diluting them at least 50-fold with reagent water.

7.4.2.2 Initial and serial dilutions can be prepared by pipetting 2 mL of the sample to a 100-mL volumetric flask and diluting to volume with reagent water. Transfer immediately to a 5-mL gas-tight syringe.

7.4.2.3 Alternatively, prepare dilutions directly in a 5-mL syringe filled with reagent water by adding at least 20 uL, but not more than 100-uL of liquid sample. The sample is ready for addition of internal and surrogate standards.

7.4.3 **Sediment/soil and waste samples:** It is highly recommended that all samples of this type be screened prior to the purge-and-trap GC/MS analysis. The headspace method (Method 3810) or the hexadecane extraction and screening method (Method 3820) may used for this purpose. These samples may contain percent quantities of purgeable organics that will contaminate the purge-and-trap system, and require extensive cleanup and instrument downtime. Use the screening data to determine whether to use the low-level method (0.005-1 mg/kg) or the high-level method (>1 mg/kg).

7.4.3.1 Low-level method: This is designed for samples containing individual purgeable compounds of <1 mg/kg. It is limited to sediment/soil samples and waste that is of a similar consistency (granular and porous). The low-level method is based on purging a heated sediment/soil sample mixed with reagent water containing the surrogate and internal standards. Analyze all reagent blanks and standards under the same conditions as the samples. See Figure 5 for an illustration of a low soils impinger.

7.4.3.1.1 Use a 5-g sample if the expected concentration is <0.1 mg/kg or a 1-g sample for expected concentrations between 0.1 and 1 mg/kg.

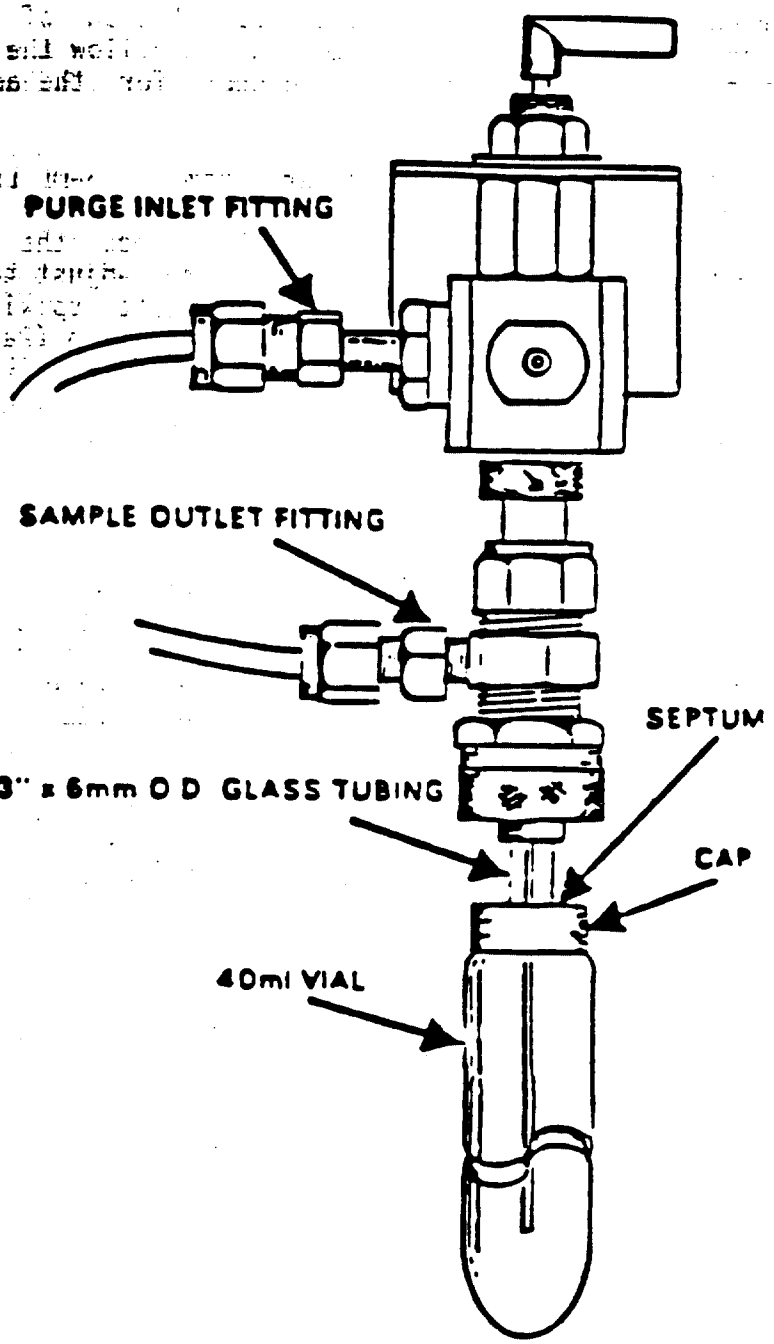


Figure 5. Low Soils Impinger

7.4.3.1.2 The GC/MS system should be set up as in Paragraphs 7.4.1.2-7.4.1.4. This should be done prior to the preparation of the sample to avoid loss of volatiles from standards and samples. A heated purge calibration curve must be prepared and used for the quantitation of all samples analyzed with the low-level method. Follow the initial and daily calibration instructions, except for the addition of a 40°C purge temperature.

7.4.3.1.3 Remove the plunger from a 5-mL Luerlock type syringe equipped with a syringe valve and fill until overflowing with reagent water. Replace the plunger and compress the water to vent trapped air. Adjust the volume to 5.0 mL. Add 10 uL each of surrogate spiking solution (Paragraph 5.3) and internal standard solution (Paragraph 5.4) to the syringe through the valve. (Surrogate spiking solution and internal standard solution may be mixed together.) The addition of 10 uL of the surrogate spiking solution to 5 g of sediment/soil is equivalent to 50 ug/kg of each surrogate standard.

7.4.3.1.4 The sample (for volatile organics) consists of the entire contents of the sample container. Do not discard any supernatant liquids. Mix the contents of the sample container with a narrow metal spatula. Weigh the amount determined in Paragraph 7.4.3.1.1 into a tared purge device. Note and record the actual weight to the nearest 0.1 g.

7.4.3.1.5 Determine the percent moisture of the soil/sediment sample. This includes waste samples that are amenable to moisture determination. Other wastes should be reported on a wet-weight basis. Immediately after weighing the sample, weigh (to 0.1 g) 5-10 g of additional sediment/soil into a tared crucible. Dry the contents of the crucibles overnight at 105°C. Allow to cool in a desiccator and reweigh the dried contents. Concentrations of individual analytes will be reported relative to the dry weight of sediment.

$$\% \text{ moisture} = \frac{\text{grams of sample} - \text{grams of dry sample}}{\text{grams of sample}} \times 100$$

7.4.3.1.6 Add the spiked reagent water to the purge device, which contains the weighed amount of sample, and connect the device to the purge-and-trap system.

NOTE: Prior to the attachment of the purge device, the procedures in Paragraphs 7.4.3.1.4 and 7.4.3.1.6 must be performed rapidly and without interruption to avoid loss of volatile organics. These steps must be performed in a laboratory free of solvent fumes.

7.4.3.1.7 Heat the sample to 40°C ± 1°C and purge the sample for 11.0 ± 0.1 min.

7.4.3.1.8 Proceed with the analysis as outlined in Paragraphs 7.4.1.11-7.4.1.16. Use 5 mL of the same reagent water as in the reagent blank. If saturated peaks occurred or would occur if a 1-g sample were analyzed, the medium-level method must be followed.

7.4.3.1.9 For low-level sediment/soils add 10 uL of the matrix spike solution (Paragraph 5.7) to the 5 mL of water (Paragraph 7.4.3.1.3). The concentration for a 5-g sample would be equivalent to 50 ug/kg of each matrix spike standard.

7.4.3.2 High-level method: The method is based on extracting the sediment/soil with methanol. A waste sample is either extracted or diluted, depending on its solubility in methanol. An aliquot of the extract is added to reagent water containing surrogate and internal standards. This is purged at ambient temperature. All samples with an expected concentration of >1.0 mg/kg should be analyzed by this method.

7.4.3.2.1 The sample (for volatile organics) consists of the entire contents of the sample container. Do not discard any supernatant liquids. Mix the contents of the sample container with a narrow metal spatula. For sediment/soil and waste that are insoluble in methanol weigh 4 g (wet weight) of sample into a tared 20-mL vial. Use a top-loading balance. Note and record the actual weight to 0.1 gram and determine the percent moisture of the sample using the procedure in Paragraph 7.4.3.1.5. For waste that is soluble in methanol, weigh 1 g (wet weight) into a tared scintillation vial or culture tube or a 10-mL volumetric flask. (If a vial or tube is used, it must be calibrated prior to use. Pipet 10.0 mL of methanol into the vial and mark the bottom of the meniscus. Discard this solvent.)

7.4.3.2.2 Quickly add 9.0 mL of methanol; then add 1.0 mL of the surrogate spiking solution to the vial. Cap and shake for 2 min.

NOTE: Steps 7.4.3.2.1 and 7.4.3.2.2 must be performed rapidly and without interruption to avoid loss of volatile organics. These steps must be performed in a laboratory free from solvent fumes.

7.4.3.2.3 Pipet approximately 1 mL of the extract to a GC vial for storage, using a disposable pipet. The remainder may be disposed of. Transfer approximately 1 mL of reagent methanol to a separate GC vial for use as the method blank for each set of samples. These extracts may be stored at 4°C in the dark, prior to analysis. The addition of a 100-uL aliquot of each of these extracts in Paragraph 7.4.3.2.6 will give a concentration equivalent to 6,200 ug/kg of each surrogate standard.

7.4.3.2.4 The GC/MS system should be set up as in Paragraphs 7.4.1.2-7.4.1.4. This should be done prior to the addition of the methanol extract to reagent water.

7.4.3.2.5 Table 4 can be used to determine the volume of methanol extract to add to the 5 mL of reagent water for analysis. If a screening procedure was followed (Method 3810 or 3820), use the estimated concentration to determine the appropriate volume. Otherwise, estimate the concentration range of the sample from the low-level analysis to determine the appropriate volume. If the sample was submitted as a medium-level sample, start with 100 uL. All dilutions must keep the response of the major constituents (previously saturated peaks) in the upper half of the linear range of the curve.

7.4.3.2.6 Remove the plunger from a 5.0-mL Luerlock type syringe equipped with a syringe valve and fill until overflowing with reagent water. Replace the plunger and compress the water to vent trapped air. Adjust the volume to 4.9 mL. Pull the plunger back to 5.0 mL to allow volume for the addition of the sample extract and of standards. Add 10 uL of internal standard solution. Also add the volume of methanol extract determined in Paragraph 7.4.3.2.5 and a volume of methanol solvent to total 100 uL (excluding methanol in standards).

7.4.3.2.7 Attach the syringe-syringe valve assembly to the syringe valve on the purging device. Open the syringe valve and inject the water/methanol sample into the purging chamber.

7.4.3.2.8 Proceed with the analysis as outlined in Paragraphs 7.4.1.11-7.4.1.16. Analyze all reagent blanks on the same instrument as that use for the samples. The standards and blanks should also contain 100 uL of methanol to simulate the sample conditions.

7.4.3.2.9 For a matrix spike in the medium-level sediment/soil samples, add 8.0 mL of methanol, 1.0 mL of surrogate spike solution (Paragraph 5.3), and 1.0 mL of matrix spike solution (Paragraph 5.7) as in Paragraph 7.4.3.2.2. This results in a 6,200 ug/kg concentration of each matrix spike standard when added to a 4-g sample. Add a 100-uL aliquot of this extract to 5 mL of water for purging (as per Paragraph 7.4.3.2.6).

TABLE 4. QUANTITY OF METHANOL EXTRACT REQUIRED FOR ANALYSIS OF MEDIUM-LEVEL SOILS/SEDIMENTS

Approximate Concentration Range	Volume of Methanol Extract[a]
500-10,000 ug/kg	100 uL
1,000-20,000 ug/kg	50 uL
5,000-100,000 ug/kg	10 uL
25,000-500,000 ug/kg	100 uL of 1/50 dilution [b]

Calculate appropriate dilution factor for concentrations exceeding this table.

[a]The volume of methanol added to 5 mL of water being purged should be kept constant. Therefore, add to the 5-mL syringe whatever volume of methanol is necessary to maintain a volume of 100 uL added to the syringe.

[b]Dilute an aliquot of the methanol extract and then take 100 uL for analysis.

7.5 Data interpretation:

7.5.1 Qualitative analysis:

7.5.1.1 An analyte (e.g., those listed in Table 1) is identified by comparison of the sample mass spectrum with the mass spectrum of a standard of the suspected compound (standard reference spectrum). Mass spectra for standard reference should be obtained on the user's GC/MS within the same 12 hours as the sample analysis. These standard reference spectra may be obtained through analysis of the calibration standards. Two criteria must be satisfied to verify identification: (1) elution of sample component at the same GC relative retention time (RRT) as those of the standard component; and (2) correspondence of the sample component and the standard component mass spectrum.

7.5.1.1.1 The sample component RRT must compare within ± 0.06 RRT units of the RRT of the standard component. For reference, the standard must be run within the same 12 hr as the sample. If coelution of interfering components prohibits accurate assignment of the sample component RRT from the total ion chromatogram, the RRT should be assigned by using extracted ion current profiles for ions unique to the component of interest.

7.5.1.1.2 (1) All ions present in the standard mass spectra at a relative intensity greater than 10% (most abundant ion in the spectrum equals 100% must be present in the sample spectrum). (2) The relative intensities of ions specified in (1) must agree within plus or minus 20% between the standard and sample spectra. (Example: For an ion with an abundance of 50% in the standard spectra, the corresponding sample abundance must be between 30 and 70 percent.

7.5.1.2 For samples containing components not associated with the calibration standards, a library search may be made for the purpose of tentative identification. The necessity to perform this type of identification will be determined by the type of analyses being conducted. Guidelines for making tentative identification are:

(1) Relative intensities of major ions in the reference spectrum (ions >10% of the most abundant ion) should be present in the sample spectrum.

(2) The relative intensities of the major ions should agree within ±20%. (Example: For an ion with an abundance of 50% in the standard spectrum, the corresponding sample ion abundance must be between 30 and 70%).

(3) Molecular ions present in the reference spectrum should be present in the sample spectrum.

(4) Ions present in the sample spectrum but not in the reference spectrum should be reviewed for possible background contamination or presence of coeluting compounds.

(5) Ions present in the reference spectrum but not in the sample spectrum should be reviewed for possible subtraction from the sample spectrum because of background contamination or coeluting peaks. Data system library reduction programs can sometimes create these discrepancies.

Computer generated library search routines should not use normalization routines that would misrepresent the library or unknown spectra when compared to each other. Only after visual comparison of sample with the nearest library searches will the mass spectral interpretation specialist assign a tentative identification.

7.5.2 **Quantitative analysis:**

7.5.2.1 When a compound has been identified, the quantification of that compound will be based on the integrated abundance from the EICP of the primary characteristic ion. Quantification will take place using the internal standard technique. The internal standard used shall be the one nearest the retention time of that of a given analyte (e.g., see Table 5).

7.5.2.2 Calculate the concentration of each identified analyte in the sample as follows:

<u>Water and Water-Miscible Waste</u>:

$$\text{concentration (ug/L)} = \frac{(A_x)(I_s)}{(A_{is})(RF)(V_o)}$$

where:

A_x = Area of characteristic ion for compound being measured.

I_s = Amount of internal standard injected (ng).

A_{is} = Area of characteristic ion for the internal standard.

RF = Response factor for compound being measured (Paragraph 7.2.7).

V_o = Volume of water purged (mL), taking into consideration any dilutions made.

TABLE 5. VOLATILE INTERNAL STANDARDS WITH CORRESPONDING ANALYTES ASSIGNED FOR QUANTITATION

Bromochloromethane	1,4-Difluorobenzene
Acetone	Benzene
Acrolein	Bromodichloromethane
Acrylonitrile	Bromoform
Bromomethane	2-Butanone
Carbon disulfide	Carbon tetrachloride
Chloroethane	Chlorodibromomethane
Chloroform	2-Chloroethyl vinyl ether
Chloromethane	Dibromomethane
Dichlorodifluoromethane	1,4-Dichloro-2-butene
1,1-Dichloroethane	1,2-Dichloropropane
1,2-Dichloroethane	cis-1,3-Dichloropropene
1,2-Dichloroethane-d_4 (surrogate)	trans-1,3-Dichloropropene
1,1-Dichloroethene	1,1,1-Trichloroethane
trans-1,2-Dichloroethene	1,1,2-Trichloroethane
Iodomethane	Trichloroethene
Methylene chloride	Vinyl acetate
Trichlorofluoromethane	
Vinyl chloride	

Chlorobenzene-d_5
Bromofluorobenzene (surrogate)
Chlorobenzene
Ethylbenzene
Ethyl methacrylate
2-Hexanone
4-Methyl-2-pentanone
Styrene
1,1,2,2-Tetrachloroethane
Tetrachloroethene
Toluene
Toluene-d_8 (surrogate)
1,2,3-Trichloropropane
Xylene

Sediment/Soil, Sludge, and Waste:

High-level:

$$\text{concentration (ug/kg)} = \frac{(A_x)(I_s)(V_t)}{(A_{is})(RF)(V_i)(W_s)}$$

Low-level:

$$\text{concentration (ug/kg)} = \frac{(A_x)(I_s)}{(A_{is})(RF)(W_s)}$$

where:

A_x, I_s, A_{is}, RF = same as for water.

V_t = volume of total extract (uL) (use 10,000 uL or a factor of this when dilutions are made).

V_i = volume of extract added (uL) for purging.

W_s = weight of sample extracted or purged (g). The wet weight or dry weight may be used, depending upon the specific applications of the data.

7.5.2.3 Sediment/soil samples are generally reported on a dry weight basis, while sludges and wastes are reported on a wet weight basis. The % moisture of the sample (as calculated in Paragraph 7.4.3.1.5) should be reported along with the data in either instance.

7.5.2.4 Where applicable, an estimate of concentration for noncalibrated components in the sample should be made. The formulas given above should be used with the following modifications: The areas A_x and A_{is} should be from the total ion chromatograms, and the RF for the compound should be assumed to be 1. The concentration obtained should be reported indicating (1) that the value is an estimate and (2) which internal standard was used to determine concentration. Use the nearest internal standard free of interferences.

7.5.2.5 Report results without correction for recovery data. When duplicates and spiked samples are analyzed, report all data obtained with the sample results.

8.0 QUALITY CONTROL

8.1 Each laboratory that uses these methods is required to operate a formal quality control program. The minimum requirements of this program consist of an initial demonstration of laboratory capability and an ongoing

analysis of spiked samples to evaluate and document quality data. The laboratory must maintain records to document the quality of the data generated. Ongoing data quality checks are compared with established performance criteria to determine if the results of analyses meet the performance characteristics of the method. When results of sample spikes indicate atypical method performance, a quality control check standard must be analyzed to confirm that the measurements were performed in an in-control mode of operation.

8.2 Before processing any samples, the analyst should demonstrate, through the analysis of a reagent water blank, that interferences from the analytical system, glassware, and reagents are under control. Each time a set of samples is extracted or there is a change in reagents, a reagent water blank should be processed as a safeguard against chronic laboratory contamination. The blank samples should be carried through all stages of the sample preparation and measurement steps.

8.3 The experience of the analyst performing GC/MS analyses is invaluable to the success of the methods. Each day that analysis is performed, the daily calibration standard should be evaluated to determine if the chromatographic system is operating properly. Questions that should be asked are: Do the peaks look normal?; Is the response obtained comparable to the response from previous calibrations? Careful examination of the standard chromatogram can indicate whether the column is still useable, the injector is leaking, the injector septum needs replacing, etc. If any changes are made to the system (e.g, column changed), recalibration of the system must take place.

8.4 Required instrument QC is found in the following section:

8.4.1 The GC/MS system must be tuned to meet the BFB specifications in Section 7.2.2.

8.4.2 There must be an initial calibration of the GC/MS system as specified in 7.2.

8.4.3 The GC/MS system must meet the SPCC criteria specified in 7.3.3 and the CCC criteria in 7.3.4, each 12 hr.

8.5 To establish the ability to generate acceptable accuracy and precision, the analyst must perform the following operations.

8.5.1 A quality (QC) check sample concentrate is required containing each analyte at a concentration of 10 ug/mL in methanol. The QC check sample concentrate may be prepared from pure standard materials or purchased as certified solutions. If prepared by the laboratory, the QC check sample concentrate must be made using stock standards prepared independently from those used for calibration.

8.5.2 Prepare a QC check sample to contain 20 ug/L of each analyte by adding 200 uL of QC check sample concentrate to 100 mL of reagent water.

8.5.3 Four 5-mL aliquots of the well-mixed QC check sample are analyzed according to the method beginning in Section 7.4.1.

8.5.4 Calculate the average recovery ($\bar{X}$) in ug/L, and the standard deviation of the recovery (s) in ug/L, for each analyte using the four results.

8.5.5 For each analyte compare s and $\bar{X}$ with the corresponding acceptance criteria for precision and accuracy, respectively, found in Table 6. If s and $\bar{X}$ for all analytes meet the acceptance criteria, the system performance is acceptable and analysis of actual samples can begin. If any individual s exceeds the precision limit or any individual $\bar{X}$ falls outside the range for accuracy, then the system performance is unacceptable for that analyte.

NOTE: The large number of analytes in Table 6 present a substantial probability that one or more will fail at least one of the acceptance criteria when all analytes of a given method are determined.

8.5.6 When one or more of the analytes tested fail at least one of the acceptance criteria, the analyst must proceed according to Paragraph 8.5.6.1 or 8.5.6.2.

8.5.6.1 Locate and correct the source of the problem and repeat the test for all analytes beginning with Section 8.5.2.

8.5.6.2 Beginning with Section 8.5.2, repeat the test only for those analytes that failed to meet criteria. Repeated failure, however, will confirm a general problem with the measurement system. If this occurs, locate and correct the source of the problem and repeat the test for all compounds of interest beginning with Section 8.5.2.

8.6 The laboratory must, on an ongoing basis, analyze a reagent blank, a matrix spike, and a matrix spike duplicate/duplicate for each analytical batch (up to a maximum of 20 samples/batch) to assess accuracy. For laboratories analyzing one to ten samples per month, at least one spiked sample per month is required.

8.6.1 The concentration of the spike in the sample should be determined as follows:

8.6.1.1 If, as in compliance monitoring, the concentration of a specific analyte in the sample is being checked against a regulatory concentration limit, the spike should be at that limit or 1 to 5 times higher than the background concentration determined in Section 8.6.2, whichever concentration would be larger.

8.6.1.2 If the concentration of a specific analyte in the sample is not being checked against a specific limit, the spike should be at 20 ug/L or 1 to 5 times higher than the background concentration determined in Section 8.6.2, whichever concentration would be larger.

TABLE 6. CALIBRATION AND QC ACCEPTANCE CRITERIA[a]

Parameter	Range for Q (ug/L)	Limit for s (ug/L)	Range for $\bar{X}$ (ug/L)	Range p, p_s (%)
Benzene	12.8-27.2	6.9	15.2-26.0	37-151
Bromodichloromethane	13.1-26.9	6.4	10.1-28.0	35-155
Bromoform	14.2-25.8	5.4	11.4-31.1	45-169
Bromomethane	2.8-37.2	17.9	D-41.2	D-242
Carbon tetrachloride	14.6-25.4	5.2	17.2-23.5	70-140
Chlorobenzene	13.2-26.8	6.3	16.4-27.4	37-160
2-Chloroethylvinyl ether	D-44.8	25.9	D-50.4	D-305
Chloroform	13.5-26.5	6.1	13.7-24.2	51-138
Chloromethane	D-40.8	19.8	D-45.9	D-273
Dibromochloromethane	13.5-26.5	6.1	13.8-26.6	53-149
1,2-Dichlorobenzene	12.6-27.4	7.1	11.8-34.7	18-190
1,3-Dichlorobenzene	14.6-25.4	5.5	17.0-28.8	59-156
1,4-Dichlorobenzene	12.6-27.4	7.1	11.8-34.7	18-190
1,1-Dichloroethane	14.5-25.5	5.1	14.2-28.4	59-155
1,2-Dichloroethane	13.6-26.4	6.0	14.3-27.4	49-155
1,1-Dichloroethene	10.1-29.9	9.1	3.7-42.3	D-234
trans-1,2-Dichloroethene	13.9-26.1	5.7	13.6-28.4	54-156
1,2-Dichloropropane	6.8-33.2	13.8	3.8-36.2	D-210
cis-1,3-Dichloropropene	4.8-35.2	15.8	1.0-39.0	D-227
trans-1,3-Dichloropropene	10.0-30.0	10.4	7.6-32.4	17-183
Ethyl benzene	11.8-28.2	7.5	17.4-26.7	37-162
Methylene chloride	12.1-27.9	7.4	D-41.0	D-221
1,1,2,2-Tetrachloroethane	12.1-27.9	7.4	13.5-27.2	46-157
Tetrachloroethene	14.7-25.3	5.0	17.0-26.6	64-148
Toluene	14.9-25.1	4.8	16.6-26.7	47-150
1,1,1-Trichloroethane	15.0-25.0	4.6	13.7-30.1	52-162
1,1,2-Trichloroethane	14.2-25.8	5.5	14.3-27.1	52-150
Trichloroethene	13.3-26.7	6.6	18.5-27.6	71-157
Trichlorofluoromethane	9.6-30.4	10.0	8.9-31.5	17-181
Vinyl chloride	0.8-39.2	20.0	D-43.5	D-251

Q = Concentration measured in QC check sample, in ug/L.
s = Standard deviation of four recovery measurements, in ug/L.
$\bar{X}$ = Average recovery for four recovery measurements, in ug/L.
p, p_s = Percent recovery measured.
D = Detected; result must be greater than zero.

[a]Criteria from 40 CFR Part 136 for Method 624 and were calculated assuming a QC check sample concentration of 20 ug/L. These criteria are based directly upon the method performance data in Table 7. Where necessary, the limits for recovery have been broadened to assure applicability of the limits to concentrations below those used to develop Table 7.

8.6.2 Analyze one 5-mL sample aliquot to determine the background concentration (B) of each analyte. If necessary, prepare a new QC check sample concentrate (Section 8.5.1) appropriate for the background concentration in the sample. Spike a second 5-mL sample aliquot with 10 uL of the QC check sample concentrate and analyze it to determine the concentration after spiking (A) of each analyte. Calculate each percent recovery (p) as 100(A-B)%/T, where T is the known true value of the spike.

8.6.3 Compare the percent recovery (p) for each analyte with the corresponding QC acceptance criteria found in Table 6. These acceptance criteria were calculated to include an allowance for error in measurement of both the background and spike concentrations, assuming a spike to background ratio of 5:1. This error will be acounted for to the extent that the analyst's spike to background ratio approaches 5:1. If spiking was performed at a concentration lower than 20 ug/L, the analyst must use either the QC acceptance criteria presented in Table 6, or optional QC acceptance criteria calculated for the specific spike concentration. To calculate optional acceptance criteria for the recovery of an analyte: (1) Calculate accuracy (x') using the equation found in Table 7, substituting the spike concentration (T) for C; (2) calculate overall precision (S') using the equation in Table 7, substituting x' for $\bar{x}$; (3) calculate the range for recovery at the spike concentration as (100x'/T) $\pm$ 2.44(100S'/T)%.

8.6.4 If any individual p falls outside the designated range for recovery, that analyte has failed the acceptance criteria. A check standard containing each analyte that failed the criteria must be analyzed as described in Section 8.7.

8.7 If any analyte fails the acceptance criteria for recovery in Sectin 8.6, a QC check standard containing each analyte that failed must be prepared and analyzed.

NOTE: The frequency for the required analysis of a QC check standard will depend upon the number of analytes being simultaneously tested, the complexity of the sample matrix, and the performance of the laboratory. If the entire list of analytes in Table 6 must be measured in the sample in Section 8.6, the probability that the analysis of a QC check standard will be required is high. In this case the QC check standard should be routinely analyzed with the spiked sample.

8.7.1 Prepare the QC check standard by adding 10 uL of the QC check sample concentrate (Section 8.5.1 or 8.6.2) to 5 mL of reagent water. The QC check standard needs only to contain the analytes that failed criteria in the test in Section 8.6.

8.7.2 Analyze the QC check standard to determine the concentration measured (A) of each analyte. Calculate each precent recovery (p_s) as 100 (A/T)%, where T is the true value of the standard concentration.

TABLE 7. METHOD ACCURACY AND PRECISION AS FUNCTIONS OF CONCENTRATION[a]

Parameter	Accuracy, as recovery, x' (ug/L)	Single analyst precision, s_r' (ug/L)	Overall precision, S' (ug/L)
Benzene	0.93C+2.00	0.26$\bar{X}$-1.74	0.25$\bar{X}$-1.33
Bromodichloromethane	1.03C-1.58	0.15$\bar{X}$+0.59	0.20$\bar{X}$+1.13
Bromoform	1.18C-2.35	0.12$\bar{X}$+0.34	0.17$\bar{X}$+1.38
Bromomethane	1.00C	0.43$\bar{X}$	0.58$\bar{X}$
Carbon tetrachloride	1.10C-1.68	0.12$\bar{X}$+0.25	0.11$\bar{X}$+0.37
Chlorobenzene	0.98C+2.28	0.16$\bar{X}$-0.09	0.26$\bar{X}$-1.92
Chloroethane	1.18C+0.81	0.14$\bar{X}$+2.78	0.29$\bar{X}$+1.75
2-Chloroethylvinyl ether[a]	1.00C	0.62$\bar{X}$	0.84$\bar{X}$
Chloroform	0.93C+0.33	0.16$\bar{X}$+0.22	0.18$\bar{X}$+0.16
Chloromethane	1.03C-1.81	0.37$\bar{X}$+2.14	0.58$\bar{X}$+0.43
Dibromochloromethane	1.01C-0.03	0.17$\bar{X}$-0.18	0.17$\bar{X}$+0.49
1,2-Dichlorobenzene[b]	0.94C+4.47	0.22$\bar{X}$-1.45	0.30$\bar{X}$-1.20
1,3-Dichlorobenzene	1.06C+1.68	0.14$\bar{X}$-0.48	0.18$\bar{X}$-0.82
1,4-Dichlorobenzene[b]	0.94C+4.47	0.22$\bar{X}$-1.45	0.30$\bar{X}$-1.20
1,1-Dichloroethane	1.05C+0.36	0.13$\bar{X}$-0.05	0.16$\bar{X}$+0.47
1,2-Dichloroethane	1.02C+0.45	0.17$\bar{X}$-0.32	0.21$\bar{X}$-0.38
1,1-Dichloroethene	1.12C+0.61	0.17$\bar{X}$+1.06	0.43$\bar{X}$-0.22
trans-1,2,-Dichloroethene	1.05C+0.03	0.14$\bar{X}$+0.09	0.19$\bar{X}$+0.17
1,2-Dichloropropane[a]	1.00C	0.33$\bar{X}$	0.45$\bar{X}$
cis-1,3-Dichloropropene[a]	1.00C	0.38$\bar{X}$	0.52$\bar{X}$
trans-1,3-Dichloropropene[a]	1.00C	0.25$\bar{X}$	0.34$\bar{X}$
Ethyl benzene	0.98C+2.48	0.14$\bar{X}$+1.00	0.26$\bar{X}$-1.72
Methylene chloride	0.87C+1.88	0.15$\bar{X}$+1.07	0.32$\bar{X}$+4.00
1,1,2,2-Tetrachloroethane	0.93C+1.76	0.16$\bar{X}$+0.69	0.20$\bar{X}$+0.41
Tetrachloroethene	1.06C+0.60	0.13$\bar{X}$-0.18	0.16$\bar{X}$-0.45
Toluene	0.98C+2.03	0.15$\bar{X}$-0.71	0.22$\bar{X}$-1.71
1,1,1-Trichloroethane	1.06C+0.73	0.12$\bar{X}$-0.15	0.21$\bar{X}$-0.39
1,1,2-Trichloroethane	0.95C+1.71	0.14$\bar{X}$+0.02	0.18$\bar{X}$+0.00
Trichloroethene	1.04C+2.27	0.13$\bar{X}$+0.36	0.12$\bar{X}$+0.59
Trichlorofluoromethane	0.99C+0.39	0.33$\bar{X}$-1.48	0.34$\bar{X}$-0.39
Vinyl chloride	1.00C	0.48$\bar{X}$	0.65$\bar{X}$

x' = Expected recovery for one or more measurements of a sample containing a concentration of C, in ug/L.
s_r' = Expected single analyst standard deviation of measurements at an average concentration of $\bar{X}$, in ug/L.
S' = Expected interlaboratory standard deviation of measurements at an average concentration found of $\bar{X}$, in ug/L.
C = True value for the concentration, in ug/L.
$\bar{X}$ = Average recovery found for measurements of samples containing a concentration of C, in ug/L.

[a]Estimates based upon the performance in a single laboratory.
[b]Due to chromatographic resolution problems, performance statements for these isomers are based upon the sums of their concentrations.

8.7.3 Compare the percent recovery (p_s) for each analyte with the corresponding QC acceptance criteria found in Table 6. Only analytes that failed the test in Section 8.6 need to be compared with these criteria. If the recovery of any such analyte falls outside the designated range, the laboratory performance for that analyte is judged to be out of control, and the problem must be immediately identified and corrected. The result for that analyte in the unspiked sample is suspect and may not be reported for regulatory compliance purposes.

8.8 As part of the QC program for the laboratory, method accuracy for each matrix studied must be assessed and records must be maintained. After the analysis of five spiked samples (of the same matrix) as in Section 8.6, calculate the average percent recovery ($\bar{p}$) and the standard deviation of the percent recovery (s_p). Express the accuracy assessment as a percent recovery interval from $\bar{p} - 2s_p$ to $\bar{p} + 2s_p$. If $\bar{p}$ = 90% and s_p = 10%, for example, the accuracy interval is expressed as 70-110%. Update the accuracy assessment for each analyte on a regular basis (e.g. after each five to ten new accuracy measurements).

8.9 To determine acceptable accuracy and precision limits for surrogate standards the following procedure should be performed.

8.9.1 For each sample analyzed, calculate the percent recovery of each surrogate in the sample.

8.9.2 Once a minimum of thirty samples of the same matrix have been analyzed, calculate the average percent recovery (p) and standard deviation of the percent recovery (s) for each of the surrogates.

8.9.3 For a given matrix, calculate the upper and lower control limit for method performance for each surrogate standard. This should be done as follows:

Upper Control Limit (UCL) = p + 3s
Lower Control Limit (LCL) = p - 3s

8.9.4 For aqueous and soil matrices, these laboratory established surrogate control limits should, if applicable, be compared with the control limits listed in Table 8. The limits given in Table 8 are multi-laboratory performance based limits for soil and aqueous samples, and therefore, the single-laboratory limits established in Paragraph 8.9.3 must fall within those given in Table 8 for these matrices.

8.9.5 If recovery is not within limits, the following procedures are required.

- Check to be sure there are no errors in calculations, surrogate solutions and internal standards. Also, check instrument performance.

- Recalculate the data and/or reanalyze the extract if any of the above checks reveal a problem.

TABLE 8. SURROGATE SPIKE RECOVERY LIMITS FOR WATER AND SOIL/SEDIMENT SAMPLES

Surrogate Compound	Low/Medium Water	Low/Medium Soil/Sediment
4-Bromofluorobenzene	86-115	74-121
1,2-Dichloroethane-d_4	76-114	70-121
Toluene-d_8	88-110	81-117

- Reextract and reanalyze the sample if none of the above are a problem or flag the data as "estimated concentration."

8.9.6 At a minimum, each laboratory should update surrogate recovery limits on a matrix-by-matrix basis, annually.

8.10 It is recommended that the laboratory adopt additional quality assurance practices for use with this method. The specific practices that are most productive depend upon the needs of the laboratory and the nature of the samples. Field duplicates may be analyzed to assess the precision of the environmental measurements. When doubt exists over the identification of a peak on the chromatogram, confirmatory techniques such as gas chromatography with a dissimilar column or a different ionization mode using a mass spectrometer must be used. Whenever possible, the laboratory should analyze standard reference materials and participate in relevant performance evaluation studies.

9.0 METHOD PERFORMANCE

9.1 The method detection limit (MDL) is defined as the minimum concentration of a substance that can be measured and reported with 99% confidence that the value is above zero. The MDL concentrations listed in Table 1 were obtained using reagent water. Similar results were achieved using representative wastewaters. The MDL actually achieved in a given analysis will vary depending on instrument sensitivity and matrix effects.

9.2 This method was tested by 15 laboratories using reagent water, drinking water, surface water, and industrial wastewaters spiked at six concentrations over the range 5-600 ug/L. Single operator precision, overall precision, and method accuracy were found to be directly related to the concentration of the analyte and essentially independent of the sample matrix. Linear equations to describe these relationships are presented in Table 7.

10.0 REFERENCES

1. U.S. EPA 40 CFR Part 136, "Guidelines Establishing Test Procedures for the Analysis of Pollutants Under the Clean Water Act, Method 624," October 26, 1984.

2. U.S. EPA Contract Laboratory Program, Statement of Work for Organic Analysis, July 1985, Revision.

3. Bellar, T.A., and J.J. Lichtenberg, J. Amer. Water Works Assoc., 66(12), 739-744, 1974.

4. Bellar, T.A., and J.J. Lichtenberg, "Semi-Automated Headspace Analysis of Drinking Waters and Industrial Waters for Purgeable Volatile Organic Compounds," in Van Hall, ed., Measurement of Organic Pollutants in Water and Wastewater, ASTM STP 686, pp. 108-129, 1979.

5. Budde, W.L. and J.W. Eichelberger, "Performance Tests for the Evaluation of Computerized Gas Chromatography/Mass Spectrometry Equipment and Laboratories," EPA-600/4-79-020, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268, April 1980.

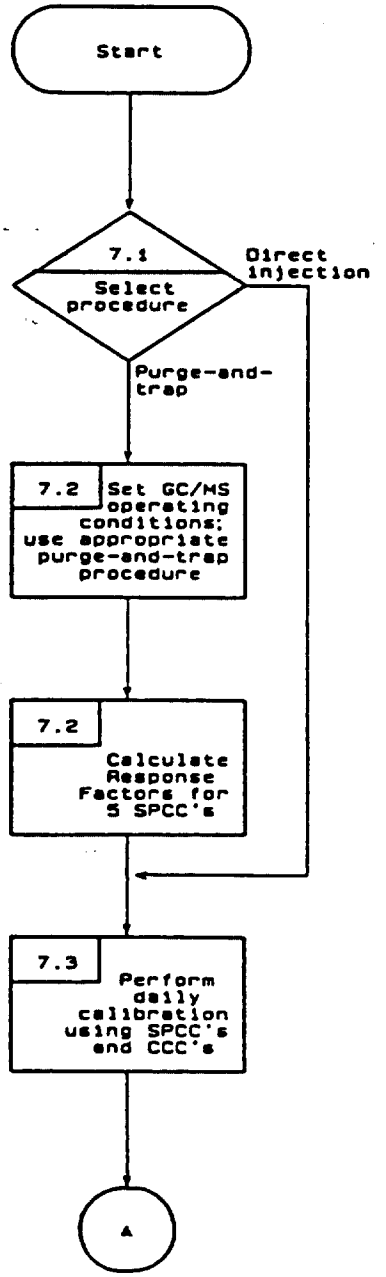
6. Eichelberger, J.W., L.E. Harris, and W.L. Budde, "Reference Compound to Calibrate Ion Abundance Measurement in Gas Chromatography-Mass Spectrometry Systems," Analytical Chemistry, 47, 995-1000, 1975.

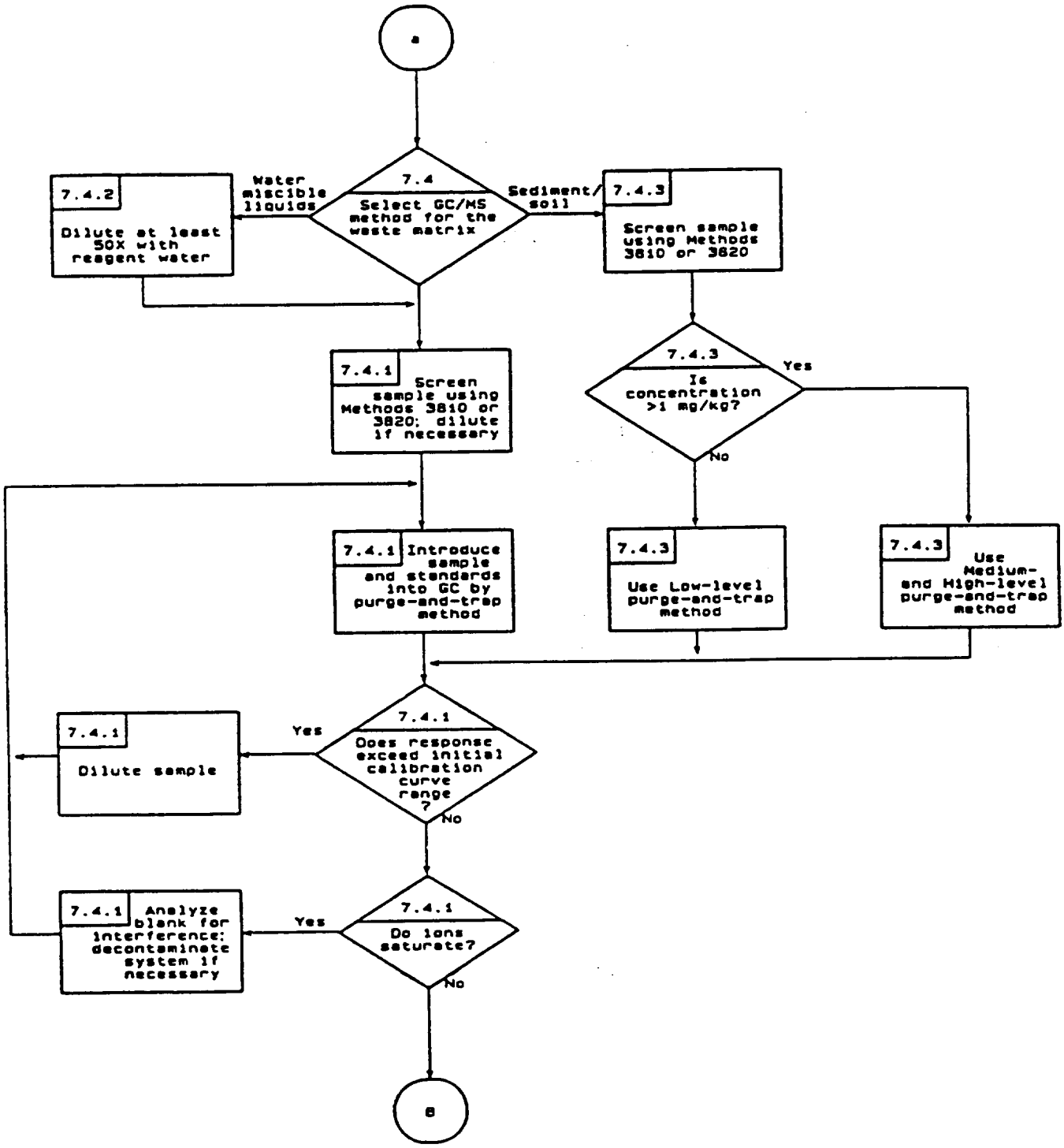
7. "Method Detection Limit for Methods 624 and 625," Olynyk, P., W.L. Budde, and J.W. Eichelberger, Unpublished report, October 1980.

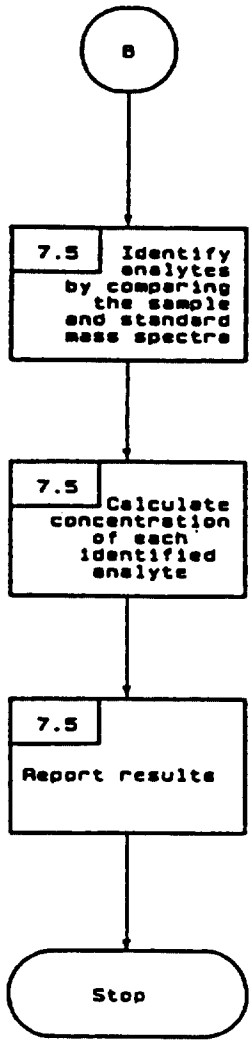
8. Provost, L.P. and R.S. Elder, "Interpretation of Percent Recovery Data," American Laboratory, 15, pp. 58-63, 1983.

9. "Interlaboratory Method Study for EPA Method 624-Purgeables," Final Report for EPA Contract 68-03-3102.

10. "Method Performance Data for Method 624," Memorandum from R. Slater and T. Pressley, U.S. Environmental Protection Agency, Environmental Monitoring and Support Laboratory, Cincinnati, Ohio 45268, January 17, 1984.


Start
7.1
Select procedure
Direct injection
Purge-and-trap
7.2
Set GC/MS operating conditions; use appropriate purge-and-trap procedure
7.2
Calculate Response Factors for 5 SPCC's
7.3
Perform daily calibration using SPCC's and CCC's
A


a
7.4
Select GC/MS method for the waste matrix
Water miscible liquids
Sediment/ soil
7.4.2
Dilute at least 50X with reagent water
7.4.3
Screen sample using Methods 3810 or 3820
7.4.3
Is concentration >1 mg/kg?
Yes
No
7.4.1
Screen sample using Methods 3810 or 3820; dilute if necessary
7.4.1
Introduce sample and standards into GC by purge-and-trap method
7.4.3
Use Low-level purge-and-trap method
7.4.3
Use Medium- and High-level purge-and-trap method
7.4.1
Does response exceed initial calibration curve range ?
Yes
No
7.4.1
Dilute sample
7.4.1
Do ions saturate?
Yes
No
7.4.1
Analyze blank for interference; decontaminate system if necessary
b


B
7.5
Identify analytes by comparing the sample and standard mass spectra
7.5
Calculate concentration of each identified analyte
7.5
Report results
Stop

Method 5040A: VOST Analysis

METHOD 5040A

ANALYSIS OF SORBENT CARTRIDGES FROM VOLATILE ORGANIC SAMPLING TRAIN (VOST): GAS CHROMATOGRAPHY/MASS SPECTROMETRY TECHNIQUE

1.0 SCOPE AND APPLICATION

1.1 Method 5040 was formerly Method 3720 in the Second Edition of this manual.

1.2 This method covers the determination of volatile principal organic hazardous constituents (POHCs), collected on Tenax and Tenax/charcoal sorbent cartridges using a volatile organic sampling train, VOST (1). Much of the description for purge-and-trap GC/MS analysis is described in Method 8240 of this chapter. Because the majority of gas streams sampled using VOST will contain a high concentration of water, the analytical method is based on the quantitative thermal desorption of volatile POHCs from the Tenax and Tenax/charcoal traps and analysis by purge-and-trap GC/MS. For the purposes of definition, volatile POHCs are those POHCs with boiling points less than 100°C.

1.3 This method is applicable to the analysis of Tenax and Tenax/ charcoal cartridges used to collect volatile POHCs from wet stack gas effluents from hazardous waste incinerators.

1.4 The sensitivity of the analytical method for a particular volatile POHC depends on the level of interferences and the presence of detectable levels of volatile POHCs in blanks. The desired target detection limit of the analytical method is 0.1 ng/L (20 ng on a single pair of traps) for a particular volatile POHC desorbed from either a single pair of Tenax and Tenax/charcoal cartridges or by thermal desorption of up to six pairs of traps onto a single pair of Tenax and Tenax/charcoal traps. The resulting single pair of traps is then thermally desorbed and analyzed by purge-and-trap GC/MS.

1.5 This method is recommended for use only by experienced mass spectroscopists or under the close supervision of such qualified persons.

2.0 SUMMARY OF METHOD

2.1 A schematic diagram of the analytical system is shown in Figure 1. The contents of the sorbent cartridges are spiked with an internal standard and thermally desorbed for 10 min at 180°C with organic-free nitrogen or helium gas (at a flow rate of 40 mL/min), bubbled through 5 mL of organic-free reagent water, and trapped on an analytical adsorbent trap. After the 10 min. desorption, the analytical adsorbent trap is rapidly heated to 180°C, with the carrier gas flow reversed so that the effluent flow from the analytical trap is directed into the GC/MS. The volatile POHCs are separated by temperature programmed gas chromatography and detected by low-resolution mass spectrometry. The concentrations of volatile POHCs are calculated using the internal standard technique.

3.0 INTERFERENCES

3.1 Refer to Methods 3500 and 8240.

4.0 APPARATUS AND MATERIALS

4.1 Thermal desorption unit:

4.1.1 The thermal desorption unit (for Inside/Inside VOST cartridges, use Supelco "clamshell" heater; for Inside/Outside VOST cartridges, user-fabricated unit is required) should be capable of thermally desorbing the sorbent resin tubes. It should also be capable of heating the tubes to 180 ± 10°C with flow of organic-free nitrogen or helium through the tubes.

4.2 Purge-and-trap unit:

4.2.1 The purge-and-trap unit consists of three separate pieces of equipment: the sample purger, trap, and the desorber. It should be capable of meeting all requirements of Method 5030 for analysis of purgeable organic compounds from water.

4.3 GC/MS system: As described in Method 8240.

5.0 REAGENTS

5.1 Organic-free reagent water. All references to water in this method refer to organic-free reagent water, as defined in Chapter One.

5.2 Methanol, CH_3OH - Pesticide grade, or equivalent.

5.3 Analytical trap reagents:

5.3.1 2,6-Diphenylene oxide polymer: Tenax (60/80 mesh), chromatographic grade or equivalent.

5.3.2 Methyl silicone packing: 3% OV-1 on Chromosorb W (60/80 mesh) or equivalent.

5.3.3 Silica gel: Davison Chemical (35/00 mesh), Grade 15, or equivalent.

5.3.4 Charcoal: Petroleum-based (SKC Lot 104 or equivalent).

5.4 Stock standard solution:

5.4.1 Stock standard solutions will be prepared from pure standard materials or purchased as certified solutions. The stock standards should be prepared in methanol using assayed liquids or gases, as appropriate. Because of the toxicity of some of the organohalides, primary dilutions of these materials should be prepared in a hood. A NIOSH/MESA approved

toxic gas respirator should be used when the analyst handles high concentrations of such materials.

5.4.2 Fresh stock standards should be prepared weekly for volatile POHCs with boiling points of <35°C. All other standards must be replaced monthly, or sooner if comparison with check standards indicates a problem.

5.5 Secondary dilution standards:

5.5.1 Using stock standard solutions, prepare, in methanol, secondary dilution standards that contain the compounds of interest, either singly or mixed together. The secondary dilution standards should be prepared at concentrations such that the desorbed calibration standards will bracket the working range of the analytical system.

5.6 4-Bromofluorobenzene (BFB) standard:

5.6.1 Prepare a 25 ng/μL solution of BFB in methanol.

5.7 Deuterated benzene:

5.7.1 Prepare a 25 ng/μL solution of benzene-d_6 in methanol.

6.0 SAMPLE COLLECTION, PRESERVATION, AND HANDLING

6.1 Refer to Method 0030, Chapter Ten.

6.2 Sample trains obtained from the VOST should be analyzed within 2-6 weeks of sample collection.

7.0 PROCEDURE

7.1 Assembly of PTD device:

7.1.1 Assemble a purge-and-trap desorption device (PTD) that meets all the requirements of Method 5030 (refer to Figure 1).

7.1.2 Connect the thermal desorption device to the PTD device. Calibrate the PTD-GC/MS system using the internal standard technique.

7.2 Internal standard calibration procedure:

7.2.1 This approach requires the use of deuterated benzene as the internal standard for these analyses. Other internal standards may be proposed for use in certain situations. The important criteria for choosing a particular compound as an internal standard are that it be similar in analytical behavior to the compounds of interest and that it can be demonstrated that the measurement of the internal standard be unaffected by method or matrix interferences. Other internal standards that have been used are d_{10}-ethylbenzene and d_4-1,2-dichloroethane. One adds 50 ng of BFB to all sorbent cartridges (in addition to one or more

internal standards) to provide continuous monitoring of the GC/MS performance relative to BFB.

7.2.2 Prepare calibration standards at a minimum of three concentration levels for each analyte of interest.

7.2.3 The calibration standards are prepared by spiking a blank Tenax or Tenax/charcoal trap with a methanolic solution of the calibration standards (including 50 ng of the internal standard, such as deuterated benzene), using the flash evaporation technique. The flash evaporation technique requires filling the needle of a 5.0 µL syringe with clean methanol and drawing air into the syringe to the 1.0 µL mark. This is followed by drawing a methanolic solution of the calibration standards (containing 25 µg/µL of the internal standard) to the 2.0 µL mark. The glass traps should be attached to the injection port of a gas chromatograph while maintaining the injector temperature at 160°C. The carrier gas flow through the traps should be maintained at about 50 mL/min.

7.2.4 After directing the gas flow through the trap, the contents of the syringe should be slowly expelled through the gas chromatograph injection port over about 15 sec. After 25 sec have elapsed, the gas flow through the trap should be shut off, the syringe removed, and the trap analyzed by the PTD-GC/MS procedure outlined in Method 8240. The total flow of gas through the traps during addition of calibration standards to blank cartridges, or internal standards to sample cartridges, should be 25 mL or less.

7.2.5 Analyze each calibration standard for both Tenax and Tenax/charcoal cartridges according to Section 7.3. Tabulate the area response of the characteristic ions of each analyte against the concentration of the internal standard and calculate the response factor (RF) for each compound, using Equation 1.

$$RF = A_s C_{is} / A_{is} C_s \qquad (1)$$

where:

A_s = Area of the characteristic ion for the analyte to be measured.

A_{is} = Area of the characteristic ion for the internal standard.

C_{is} = Amount (ng) of the internal standard.

C_s = Amount (ng) of the volatile POHC in calibration standard.

If the RF value over the working range is a constant (<10% RSD), the RF can be assumed to be invariant, and the average RF can be used for calculations. Alternatively, the results can be used to plot a calibration curve of response ratios, A_s/A_{is} versus RF.

7.2.6 The working calibration curve or RF must be verified on each working day by the measurement of one or more of the calibration standards.

If the response varies by more than ±25% for any analyte, a new calibration standard must be prepared and analyzed for that analyte.

7.3 The schematic of the PTD-GC/MS system is shown in Figure 1. The sample cartridge is placed in the thermal desorption apparatus (for Inside/Inside VOST cartridges, use Supelco "clamshell" heater; for Inside/Outside VOST cartridges, user fabricated unit is required) and desorbed in the purge-and-trap system by heating to 180°C for 10 min at a flow rate of 40 mL/min. The desorbed components pass into the bottom of the water column, are purged from the water, and collected on the analytical adsorbent trap. After the 10 min desorption period, the compounds are desorbed from the analytical adsorbent trap into the GC/MS system according to the procedures described in Method 8240.

7.4 Qualitative analysis

7.4.1 The qualitative identification of compounds determined by this method is based on retention time, and on comparison of the sample mass spectrum, after background correction, with characteristic ions in a reference mass spectrum. The reference mass spectrum must be generated by the laboratory using the conditions of this method. The characteristic ions from the reference mass spectrum are defined to be the three ions of greatest relative intensity, or any ions over 30% relative intensity if less than three such ions occur in the reference spectrum. Compounds should be identified as present when the criteria below are met.

7.4.1.1 The intensities of the characteristic ions of a compound maximize in the same scan or within one scan of each other. Selection of a peak by a data system target compound search routine, where the search is based on the presence of a target chromatographic peak containing ions specific for the target compound at a compound-specific retention time, will be accepted as meeting this criterion.

7.4.1.2 The RRT of the sample component is within ± 0.06 RRT units of the RRT of the standard component.

7.4.1.3 The relative intensities of the characteristic ions agree within 30% of the relative intensities of these ions in the reference spectrum. (Example: For an ion with an abundance of 50% in the reference spectrum, the corresponding abundance in a sample spectrum can range between 20% and 80%.)

7.4.1.4 Structural isomers that produce very similar mass spectra should be identified as individual isomers if they have sufficiently different GC retention times. Sufficient GC resolution is achieved if the height of the valley between two isomer peaks is less than 25% of the sum of the two peak heights. Otherwise, structural isomers are identified as isomeric pairs.

7.4.1.5 Identification is hampered when sample components are not resolved chromatographically and produce mass spectra containing ions contributed by more than one analyte. When gas chromatographic peaks obviously represent more than one sample component (i.e., a broadened peak with shoulder(s) or a valley between two or more maxima), appropriate selection of analyte spectra

and background spectra is important. Examination of extracted ion current profiles of appropriate ions can aid in the selection of spectra, and in qualitative identification of compounds. When analytes coelute (i.e., only one chromatographic peak is apparent), the identification criteria can be met, but each analyte spectrum will contain extraneous ions contributed by the coeluting compound.

7.4.2 For samples containing components not associated with the calibration standards, a library search may be made for the purpose of tentative identification. The necessity to perform this type of identification will be determined by the type of analyses being conducted. Guidelines for making tentative identification are:

(1) Relative intensities of major ions in the reference spectrum (ions > 10% of the most abundant ion) should be present in the sample spectrum.

(2) The relative intensities of the major ions should agree within ± 20%. (Example: For an ion with an abundance of 50% in the standard spectrum, the corresponding sample ion abundance must be between 30 and 70%).

(3) Molecular ions present in the reference spectrum should be present in the sample spectrum.

(4) Ions present in the sample spectrum but not in the reference spectrum should be reviewed for possible background contamination or presence of coeluting compounds.

(5) Ions present in the reference spectrum but not in the sample spectrum should be reviewed for possible subtraction from the sample spectrum because of background contamination or coeluting peaks. Data system library reduction programs can sometimes create these discrepancies.

Computer generated library search routines should not use normalization routines that would misrepresent the library or unknown spectra when compared to each other. Only after visual comparison of the sample with the nearest library searches will the mass spectral interpretation specialist assign a tentative identification.

7.5 Quantitative analysis

7.5.1 When an analyte has been qualitatively identified, quantitation should be based on the integrated abundance from the EICP of the primary characteristic ion chosen for that analyte. If the sample produces an interference for the primary characteristic ion, a secondary characteristic ion should be used.

7.5.1.1 Using the internal standard calibration procedure, the amount of analyte in the sample cartridge is calculated using the response factor (RF) determined in Section 7.2.5 and Equation 2.

$$\text{Amount of POHC} = A_s C_{is} / A_{is} RF \qquad (2)$$

where:

A_s = Area of the characteristic ion for the analyte to be measured.

A_{is} = Area for the characteristic ion of the internal standard.

C_{is} = Amount (ng) of internal standard.

7.5.1.2 The choice of methods for evaluating data collected using VOST for incinerator trial burns is a regulatory decision. The procedures used extensively by one user are outlined below.

7.5.1.3 The total amount of the POHCs of interest collected on a pair of traps should be summed.

7.5.1.4 The observation of high concentrations of POHCs of interest in blank cartridges indicates possible residual contamination of the sorbent cartridges prior to shipment to and use at the site. Data that fall in this category (especially data indicating high concentrations of POHCs in blank sorbent cartridges) should be qualified with regard to validity, and blank data should be reported separately. The applicability of data of this type to the determination of DRE is a regulatory decision. Continued observation of high concentrations of POHCs in blank sorbent cartridges indicates that procedures for cleanup, monitoring, shipment, and storage of sorbent cartridges by a particular user be investigated to eliminate this problem.

7.5.1.5 If any internal standard recoveries fall outside the control limits established in Section 8.4, data for all analytes determined for that cartridge(s) must be qualified with the observation.

8.0 QUALITY CONTROL

8.1 Refer to Chapter One for specific quality control procedures and Method 0030 for sample preparation procedures.

8.2 Before performing any analyses, the analyst must demonstrate the ability to generate acceptable precision and accuracy with this method. This ability is established as described in Section 7.2.

8.3 The laboratory must spike all Tenax and Tenax/charcoal cartridges with the internal standard(s) to monitor continuing laboratory performance. This procedure is described in Section 7.2.

8.4 To establish the ability to generate acceptable accuracy and precision, the analyst must spike blank Tenax and Tenax/charcoal cartridges with the analytes of interest at two concentrations in the working range.

8.4.1 The average response factor (R) and the standard deviation (S) for each must be calculated.

8.4.2 The average recovery and standard deviation must fall within the expected range for determination of volatile POHCs using this method. The expected range for recovery of volatile POHCs using this method is 50-150%.

8.5 Each day, the analyst must demonstrate through analysis of blank Tenax and Tenax/charcoal cartridges and organic-free reagent water that interferences from the analytical system are under control.

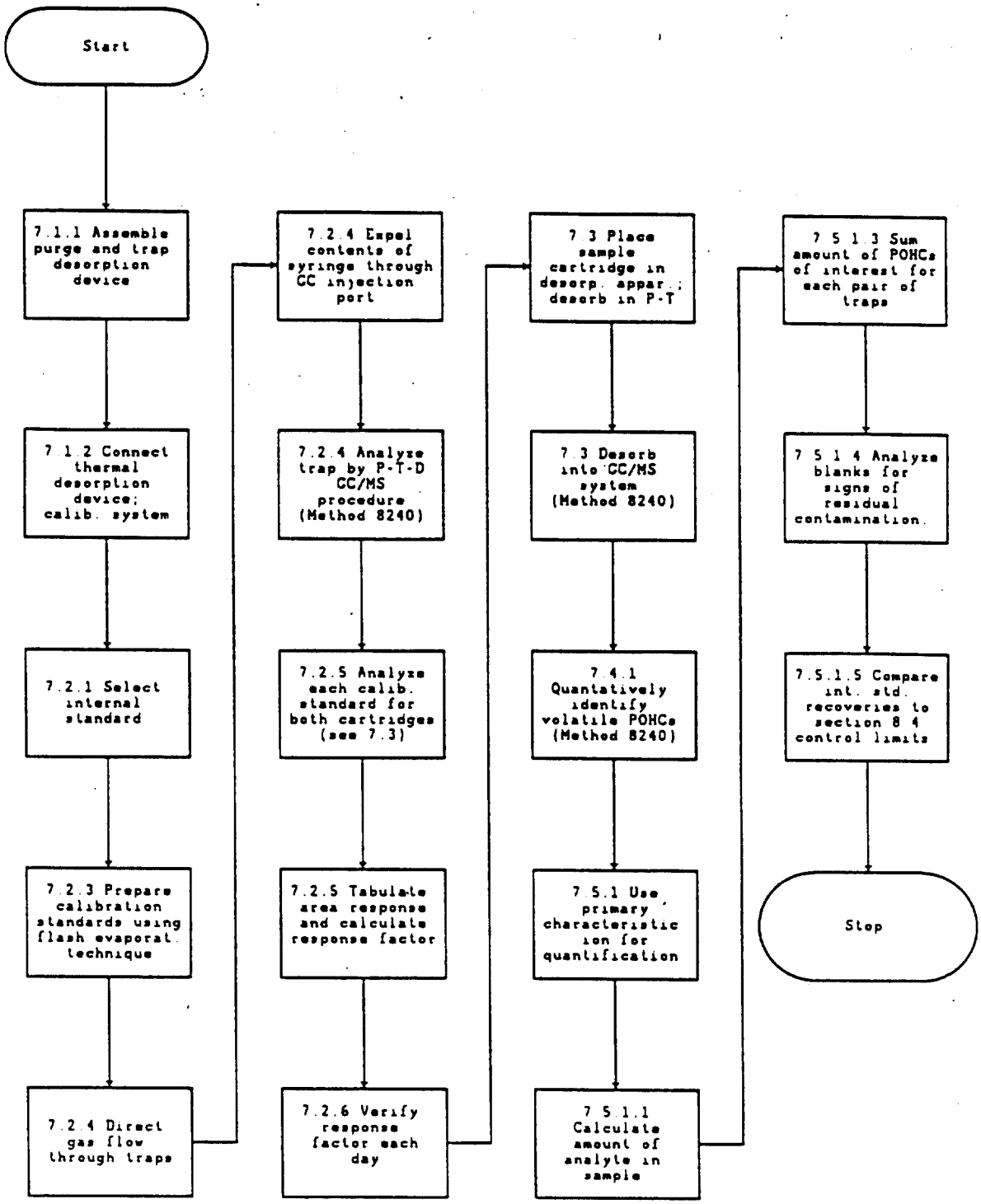
8.6 The daily GC/MS performance tests required for this method are described in Method 8240.

9.0 METHOD PERFORMANCE

9.1 Refer to the determinative methods for performance data.

10.0 REFERENCES

1. Protocol for Collection and Analysis of Volatile POHC's Using VOST. EPA/600/8-84-007, March 1984.

2. Validation of the Volatile Organic Sampling Train (VOST) Protocol. Volumes I and II. EPA/600/4-86-014a, January 1986.

METHOD 5040A
ANALYSIS OF SORBENT CARTRIDGES FROM VOLATILE ORGANIC SAMPLING TRAIN (VOST): GAS CHROMATOGRAPHY/MASS SPECTROMETRY TECHNIQUE