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CERTIFICATION

Report #098-303 South Vandenberg Power Plant

As Project Supervisor and director of the compliance testing described in this report, I am responsible for the data contained herein.

James Taplin
Project Supervisor

As Project Manager for Petro Chem Environmental Services, Inc., I attest to the accuracy and authenticity of this report.

Scott A. Davis
Project Manager

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SUMMARY OF SOURCE TEST RESULTS

COMPANY: XONTECH, INC. TEST DATE: 5-11/12-93

LOCATION: SOUTH VANDENBERG POWER PLANT UNIT #: TURBINE A 100 % - GAS

EMISSIONS	gr/scf	ppm @12%CO2	ppm	ppm 15%O2	lb/hr	Permit Limits
NOx (dry)			20.41	24.48	4.21	
			18.91	22.65	3.96	
			19.73	23.57	4.16	
Mean:			19.68	23.57	4.11	4.3 lb/hr
CO			0.78	0.93	0.10	
			0.76	0.92	0.10	
			0.64	0.77	0.08	
Mean:			0.73	0.87	0.09	4.6 lb/hr
ROC			0.00		0.00	
			0.00		0.00	
			0.00		0.00	
Mean:			0.00		0.00	0.8 lb/hr

PROCESS CONDITIONS /1		CEM DATA /1	
MW	3.0	NOx (ppm, wet)	17.59
FUEL RATE (LBS/MIN)	30.8	CO (ppm, wet)	3.46
H2O INJECTION (LBS/MIN)	41.94	O2 (% wet)	13.4
H20 FUEL RATIO	1.36		

/1 Average of 10 runs

SUMMARY OF SOURCE TEST RESULTS

COMPANY: XONTECH, INC. TEST DATE: 5-13/14-93

LOCATION: SOUTH VANDENBERG POWER PLANT UNIT #: TURBINE B 100 % - GAS

EMISSIONS	gr/scf	ppm @12%CO2	ppm	ppm 15%O2	lb/hr	Permit Limits
NOx (dry)			18.96	21.37	3.94	
			18.12	22.41	3.83	
			18.04	21.26	3.81	
Mean:			18.37	21.68	3.86	4.3 lb/hr
CO			0.60	0.67	0.08	
			0.82	1.02	0.11	
			0.67	0.79	0.09	
Mean:			0.70	0.83	0.09	4.6 lb/hr
ROC			0.00		0.00	
			0.00		0.00	
			0.00		0.00	
Mean:			0.00		0.00	0.5 lb/hr

PROCESS CONDITIONS /1		CEM DATA /1	
MW	3.0	NOx (ppm, wet)	17.74
FUEL RATE (LBS/MIN)	30.6	CO (ppm, wet)	0.72
H2O INJECTION (LBS/MIN)	42.6	O2 (% wet)	13.3
H20 FUEL RATIO	1.39		

/1 Average of 10 runs

SUMMARY OF SOURCE TEST RESULTS

COMPANY: XONTECH, INC. TEST DATE: 5-12-93

LOCATION: SOUTH VANDENBERG POWER PLANT UNIT #: TURBINE C 100 % - GAS

EMISSIONS	gr/scf	ppm @12%CO2	ppm	ppm 15%O2	lb/hr	Permit Limits
NOx (dry)			21.23	23.01	4.32	
			21.16	23.87	4.31	
			20.53	22.77	4.18	
Mean:			20.97	23.22	4.27	4.3 lb/hr
CO			0.72	0.78	0.09	
			0.48	0.54	0.06	
			0.11	0.12	0.01	
Mean:			0.44	0.48	0.05	4.6 lb/hr
ROC			0.00		0.00	
			0.00		0.00	
			0.00		0.00	
Mean:			0.00		0.00	0.8 lb/hr

PROCESS CONDITIONS /1		CEM DATA /1	
MW	3.0	NOx (ppm, wet)	17.4
FUEL RATE (LBS/MIN)	31.9	CO (ppm, wet)	2.54
H2O INJECTION (LBS/MIN)	43.8	O2 (% wet)	12.89
H20 FUEL RATIO	1.37		

/1 Average of 10 runs

SUMMARY OF SOURCE TEST RESULTS

COMPANY: XONTECH, INC. TEST DATE: 5-18-93

LOCATION: SOUTH VANDENBERG POWER PLANT UNIT #: TURBINE D 100 % - GAS

EMISSIONS	gr/scf	ppm @12%CO2	ppm	ppm 15%O2	lb/hr	Permit Limits
NOx (dry)			19.41	21.75	4.03	
			20.64	22.45	4.33	
			19.23	21.64	3.95	
Mean:			19.76	21.95	4.10	4.3 lb/hr
CO			0.77	0.87	0.10	
			0.36	0.39	0.05	
			0.40	0.45	0.05	
Mean:			0.51	0.57	0.07	4.6 lb/hr
ROC			0.00		0.00	
			0.00		0.00	
			0.00		0.00	
Mean:			0.00		0.00	0.5 lb/hr

PROCESS CONDITIONS /1		CEM DATA /1	
MW	3.0	NOx (ppm, wet)	17.75
FUEL RATE (LBS/MIN)	31.89	CO (ppm, wet)	5.30
H2O INJECTION (LBS/MIN)	44.5	O2 (% wet)	13.33
H20 FUEL RATIO	1.40		

/1 Average of 10 runs

SUMMARY OF SOURCE TEST RESULTS

COMPANY: XONTECH, INC. TEST DATE: 5-14-93

LOCATION: SOUTH VANDENBERG POWER PLANT UNIT #: TURBINE E 100 % - GAS

EMISSIONS	gr/scf	ppm @12%CO2	ppm	ppm 15%O2	lb/hr	Permit Limits
NOx (dry)			19.16	22.66	3.87	
			19.24	22.23	3.86	
			19.08	22.23	3.84	
Mean:			19.16	22.37	3.86	4.3 lb/hr
CO			0.05	0.06	0.01	
			0.00	0.00	0.00	
			0.00	0.00	0.00	
Mean:			0.02	0.02	0.00	4.6 lb/hr
ROC			0.00		0.00	
			0.00		0.00	
			0.00		0.00	
Mean:			0.00		0.00	0.8 lb/hr

PROCESS CONDITIONS /1		CEM DATA /1	
MW	3.0	NOx (ppm, wet)	17.89
FUEL RATE (LBS/MIN)	30.24	CO (ppm, wet)	0.28
H2O INJECTION (LBS/MIN)	41.7	O2 (% wet)	14.31
H20 FUEL RATIO	1.38		

/1 Average of 7 runs

SUMMARY OF SOURCE TEST RESULTS

COMPANY: XONTECH, INC. TEST DATE: 5-20-93

LOCATION: SOUTH VANDENBERG POWER PLANT UNIT #: TURBINE E 75 % - GAS

EMISSIONS	gr/scf	ppm @12%CO2	ppm	ppm 15%O2	lb/hr	Permit Limits
NOx (dry)			14.46	19.85	2.91	
			14.29	19.64	2.86	
			13.87	19.12	2.83	
Mean:			14.21	19.54	2.87	4.3 lb/hr
CO			0.93	1.27	0.11	
			0.80	1.10	0.10	
			1.17	1.62	0.15	
Mean:			0.97	1.33	0.12	4.6 lb/hr
ROC			0.00		0.00	
			0.00		0.00	
			0.00		0.00	
Mean:			0.00		0.00	0.8 lb/hr

PROCESS CONDITIONS /1		CEM DATA /1	
MW	2.25	NOx (ppm, wet)	13.6
FUEL RATE (LBS/MIN)	25.73	CO (ppm, wet)	2.50
H2O INJECTION (LBS/MIN)	35.6	O2 (% wet)	14.3
H20 FUEL RATIO	1.38		

/1 Average of 3 runs

SUMMARY OF SOURCE TEST RESULTS

COMPANY: XONTECH, INC.

TEST DATE: 5-20-93

LOCATION: SOUTH VANDENBERG POWER PLANT

UNIT #: TURBINE E 50 % - GAS

EMISSIONS	gr/scf	ppm @12%CO2	ppm	ppm 15%O2	lb/hr	Permit Limits
NOx (dry)			10.36	16.98	2.12	
			10.39	17.47	2.11	
			10.41	17.45	2.11	
Mean:			10.39	17.30	2.11	4.3 lb/hr
CO			5.49	8.99	0.68	
			4.93	8.28	0.61	
			4.79	8.02	0.59	
Mean:			5.07	8.43	0.63	4.6 lb/hr
ROC			0.87		0.12	
			0.73		0.10	
			1.18		0.16	
Mean:			0.93		0.13	0.5 lb/hr

PROCESS CONDITIONS /1		CEM DATA /1	
MW	1.5	NOx (ppm, wet)	9.97
FUEL RATE (LBS/MIN)	20.97	CO (ppm, wet)	4.33
H2O INJECTION (LBS/MIN)	28.97	O2 (% wet)	16.0
H20 FUEL RATIO	1.38		

/1 Average of 3 runs

INTRODUCTION

On May 11, 12, 13, 14, 17, 18, 19 & 20, 1993, Petro Chem Environmental Services, Inc. (PCES) conducted emission source testing at the Vandenberg Power Plant located at Vandenberg Air Force Base in Lompoc, California. The units tested were five identical Allison Model 501-KB gas turbine-generators. PCES mobile laboratories were set up on site and remained in place for the duration of the testing.

All turbine outlets were identical, sample ports were located approximately three diameters after and one diameter before disturbances in flow. Cyclonic flow checks were conducted on all turbines. The average angle of deviation was less than five degrees for the turbines. Each turbine had two ports located on the same horizontal plane and positioned 90 degrees apart. Each turbine was tested at eight points per port with a total of 16 points. All velocity testing was performed using a 16 point test matrix. Additionally, field blanks were collected and processed, the data of which can be found in Appendix 'C'.

Instrument monitoring for NOx and O_2 was conducted in accordance with EPA Method 20. Instrument monitoring for CO was conducted by EPA Method 10 modified to EPA Method 20 procedures. For each turbine a 16 point test matrix was used (8-points per port), testing 2.5 minutes at each point, for a total of 40 minutes per run. Quality assurance tests were performed at the beginning of the testing week and consisted of the following: NO/NOx converter efficiency checks; and on site instrument linearity checks. Systems Bias checks were performed at the beginning and end of each day.

All turbines were tested at 100% load, firing on natural gas. Testing Methods used are shown in Table I below.

TABLE I
TESTING METHODS

Parameter	Method	100% Load Gas Fired # Runs per Unit
NOx	EPA Method 20	3
CO	EPA Method 10	3
O_2	EPA Method 20	3
Velocity, ACFM	EPA Method 1 & 2	3
% H_2O	EPA Method 4	3
Fixed Gases	EPA Method 3	3
SO_2	Fuel Analysis ASTM 2622	1
NMHC (ROC)	EPA Method 18	3

In addition Turbiine E was also tested at 75% & 50% loads firing on natural gas for NOx and NMHC emissions, and volume flow rate.

A summary of the South Vandenberg Power Plant compliance testing matrix can be found on Tables II respectively.

TABLE II
TESTING MATRIX

Turbine	% Load	Fuel	NOx	CO	ROC	PM	Fuel S	SO_2
A	100	Gas	X	X	X		X	
B	100	Gas	X	X	X		X	
C	100	Gas	X	X	X		X	
D	100	Gas	X	X	X		X	
E	100	Gas	X	X	X		X	
E	75	Gas	X	X	X		X	
E	50	Gas	X	X	X		X	

All testing was conducted by Petro Chem Environmental Services, Inc. (PCES). Scott Davis as project manager, directed the testing, and was assisted by James Taplin, John Hinkle, Doug Towne and Randall Kastner. Laboratory analysis was performed by Terry Rowles of PCES. David Vener of XonTech, Inc. was on site and supervised the operation of the test units. Vijay Pawar of Santa Barbara County APCD was present during testing.

The following sections include:

Emission Data - Identifies emissions and reports results; Identifies parameters which did not meet permit limits; Presents methods and equations used for emission determination.

Unit Operating Conditions - Provides background information on the operation of the Turbines, and conditions pertinent to testing as supplied by South Vandenberg Power Plant personnel.

Quality Assurance - Provides written documentation of Agency-certified equipment, calibration procedures of instruments and gas calibration certificates.

Appendices - Includes copies of sample calculations, original field data sheets, instrument strip charts and laboratory analysis sheets.

TESTING LOG
South Vandenberg Power Plant

DATE	TIME	UNIT	RUN #
5-11-93	1248-1329 1348-1430	A	1 2
5-12-93	855-939	A	3
5-12-93	1020-1100 1120-1201 1215-1256	C	1 2 3
5-13-93	1538-1620	B	1
5-14-93	818-918 926-1015	B	2 3
5-14-93	845-926 940-1044 1112-1153	E	1 2 3
5-18-93	1108-1151 1210-1253 1326-1408	D	1 2 3
5-20-93	925-1008 1020-1102 1117-1159 1224-1306 1316-1358 1410-1452	E @ 50% E @ 75%	1 2 3 1 2 3

TURBINE A @
100 % LOAD - GAS FIRED

SUMMARY OF SOURCE TEST RESULTS

COMPANY: XONTECH, INC. TEST DATE: 5-11/12-93

LOCATION: SOUTH VANDENBERG POWER PLANT UNIT #: TURBINE A 100 % - GAS

EMISSIONS	gr/scf	ppm @12%CO2	ppm	ppm 15%O2	lb/hr	Permit Limits
NOx (dry)			20.41	24.48	4.21	
			18.91	22.65	3.96	
			19.73	23.57	4.16	
Mean:			19.68	23.57	4.11	4.5 lb/hr
CO			0.78	0.93	0.10	
			0.76	0.92	0.10	
			0.64	0.77	0.08	
Mean:			0.73	0.87	0.09	4.5 lb/hr
ROC			0.00		0.00	
			0.00		0.00	
			0.00		0.00	
Mean:			0.00		0.00	0.5 lb/hr

PROCESS CONDITIONS /1		CEM DATA /1	
MW	3.0	NOx (ppm, wet)	17.59
FUEL RATE (LBS/MIN)	30.8	CO (ppm, wet)	3.46
H2O INJECTION (LBS/MIN)	41.94	O2 (% wet)	13.4
H20 FUEL RATIO	1.36		

/1 Average of 10 runs

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE A 100% GAS
DATE : 5-11/12-93
PROJECT : 098-303

EPA METHOD 1-4
FIELD DATA @ 60° F

RUN #:	1	2	3	AVERAGE
TIME:	1250	1350	900	
Vm (dry gas sampled)	27.05	24.05	24.1	
Y (meter calib. factor)	0.983421	0.983421	0.983421	
P bar (Barometric pressure)	29.78	29.78	29.94	
P static (stack pressure, " H2O)	-1.75	-1.75	-1.75	
Delta H (differential meter press, " H2O)	0.7	0.6	0.65	
Tm (meter temperature, °R)	544	566	531	
Vol H2O mls	53.8	45.5	46.5	
Vm(std),dscf	25.35	21.66	23.26	23.42
Bws-H2O vapor	0.0898	0.0889	0.085	
MF-moisture factor	0.9102	0.9111	0.915	
% CO2	3.7	3.8	3.8	
% O2	15.8	15.9	15.9	
% N2	80.5	80.3	80.3	
Md-MW stk gas,dry	29.22	29.24	29.24	29.23
Ms-MW stk gas,wet	28.21	28.24	28.28	28.24
Cp-pitot tube	0.84	0.84	0.84	
Avg sq rt ^p	1.694	1.721	1.71	
T stack, °R	1293	1298	1279	
Stack area, ft2	8.62	8.62	8.62	
Vs-fps	151.25	153.87	151.25	152.12
Q-acfm	78227	79582	78227	78678
Q-scfh	1870650	1895723	1901331	1889234
K lb/hr	138.87	140.88	141.50	140.42
Qstd-dscfm	28378	28787	28995	28720
Sample time (min)	45	40	40	

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE A 100% GAS
DATE : 5-11-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #1

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
12:48 PM	-	12:58 PM	15.91	19.42	1.02	73.8	49.0	12.0
12:58 PM	-	01:08 PM	15.97	19.89	0.89	73.8	49.5	11.8
01:09 PM	-	01:19 PM	16.00	20.86	0.66	73.7	51.0	11.4
01:19 PM	-	01:29 PM	16.04	21.48	0.53	73.6	51.8	11.2
	Averages:		15.98	20.41	0.78	73.7	50.3	11.6

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	92	87.2
FINAL zero	10	10	10
FINAL span	95	93.8	87
ZERO DRIFT %/ppm	0.00	0.00	0.00
CALIB. DRIFT %/ppm	0.25	0.89	-0.10
ZERO DRIFT %fs	0.00	0.00	0.00
CALIB.DRIFT %fs	1.00	1.80	-0.20
CAL GAS value	20.9	40.6	39.9
FULL SCALE RANGE	25	50	50

DSCFM	28378	NOx wet	18.58
% H20	8.98	O2 wet	14.54

NOx	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.98	20.41	74.30	24.48	4.21

CO	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.98	0.78	2.80	0.93	0.10

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE A 100% GAS
DATE : 5-11-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #2

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
01:48 PM	-	01:58 PM	15.74	19.38	0.78	73.1	49.0	11.5
01:58 PM	-	02:08 PM	15.86	19.13	0.78	73.3	49.0	11.5
02:10 PM	-	02:20 PM	16.09	18.78	0.78	73.9	48.8	11.5
02:20 PM	-	02:30 PM	16.21	18.38	0.73	74.1	48.5	11.4
Averages:			15.97	18.91	0.76	73.6	48.8	11.5

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	91.2	87
FINAL zero	10	10	10
FINAL span	95.2	89.2	87
ZERO DRIFT %/ppm	0.00	0.00	0.00
CALIB. DRIFT %/ppm	0.30	-1.00	0.00
ZERO DRIFT %fs	0.00	0.00	0.00
CALIB.DRIFT %fs	1.20	-2.00	0.00
CAL GAS value	20.9	40.6	39.9
FULL SCALE RANGE	25	50	50

DSCFM	28787	NOx wet	17.23
% H2O	8.89	O2 wet	14.55

NOx	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.97	18.91	68.70	22.65	3.96

CO	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.97	0.76	2.80	0.92	0.10

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE A 100% GAS
DATE : 5-12-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #3

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
08:55 AM	-	09:05 AM	15.91	19.12	0.92	73.9	48.5	12.0
09:05 AM	-	09:15 AM	15.92	19.99	0.70	73.8	50.0	11.8
09:19 AM	-	09:29 AM	15.98	20.06	0.58	73.9	49.9	11.8
09:29 AM	-	09:39 AM	16.03	19.74	0.36	74.0	49.0	11.6
	Averages:		15.96	19.73	0.64	73.9	49.4	11.8

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	92	90.9
FINAL zero	10	10	10
FINAL span	94.5	93	89.9
ZERO DRIFT %/ppm	0.00	0.00	0.00
CALIB. DRIFT %/ppm	0.12	0.50	-0.49
ZERO DRIFT %fs	0.00	0.00	0.00
CALIB.DRIFT %fs	0.50	1.00	-1.00
CAL GAS value	20.9	40.6	39.9
FULL SCALE RANGE	25	50	50

DSCFM	28995	NOx wet	18.05
% H20	8.50	O2 wet	14.60

NOx	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.96	19.73	71.50	23.57	4.16

CO	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.96	0.64	2.30	0.77	0.08

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE A 100 % GAS
DATE : 5-12-93
PROJECT : 098-303

R O C RESULTS

RUN No.: 1
AVG DSCFM 28720

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	1.59	0.12	1.59	0.12
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	1.59	0.12	1.59	0.12
	Total (non methane)	0.00	0.00	0.00	0.00

RUN No.: 2
AVG DSCFM 28720

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	1.15	0.08	1.15	0.08
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	1.15	0.08	1.15	0.08
	Total (non methane)	0.00	0.00	0.00	0.00

RUN No.: 3
AVG DSCFM 28720

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	1.07	0.08	1.07	0.08
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	1.07	0.08	1.07	0.08
	Total (non methane)	0.00	0.00	0.00	0.00

TURBINE B @
100 % LOAD - GAS FIRED

SUMMARY OF SOURCE TEST RESULTS

COMPANY: XONTECH, INC.

TEST DATE: 5-13/14-93

LOCATION: SOUTH VANDENBERG POWER PLANT

UNIT #: TURBINE B 100 % - GAS

EMISSIONS	gr/scf	ppm @12%CO2	ppm	ppm 15%O2	lb/hr	Permit Limits
NOx (dry)			18.96	21.37	3.94	
			18.12	22.41	3.83	
			18.04	21.26	3.81	
Mean:			18.37	21.68	3.86	4.3 lb/hr
CO			0.60	0.67	0.08	
			0.82	1.02	0.11	
			0.67	0.79	0.09	
Mean:			0.70	0.83	0.09	4.6 lb/hr
ROC			0.00		0.00	
			0.00		0.00	
			0.00		0.00	
Mean:			0.00		0.00	0.5 lb/hr

PROCESS CONDITIONS /1		CEM DATA /1	
MW	3.0	NOx (ppm, wet)	17.74
FUEL RATE (LBS/MIN)	30.6	CO (ppm, wet)	0.72
H2O INJECTION (LBS/MIN)	42.6	O2 (% wet)	13.3
H20 FUEL RATIO	1.39		

/1 Average of 10 runs

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE B 100% GAS
DATE : 5-13/14-93
PROJECT : 098-303

EPA METHOD 1-4
FIELD DATA @ 60° F

RUN #:	1	2	3	
TIME:	1538	818	925	AVERAGE
Vm (dry gas sampled)	24.01	24.01	24.01	
Y (meter calib. factor)	0.983421	0.983421	0.983421	
P bar (Barometric pressure)	30.00	29.98	29.98	
P static (stack pressure, " H2O)	-0.95	-0.95	-0.95	
Delta H (differential meter press, " H2O)	0.61	0.64	0.61	
Tm (meter temperature, °R)	542	529	536	
Vol H2O mls	50.9	49.7	50	
Vm(std),dscf	22.75	23.29	22.99	23.01
Bws-H2O vapor	0.0942	0.0902	0.0918	
MF-moisture factor	0.9058	0.9098	0.9082	
% CO2	3.7	3.8	3.8	
% O2	15.7	16.2	15.9	
% N2	80.6	80	80.3	
Md-MW stk gas,dry	29.22	29.26	29.24	29.24
Ms-MW stk gas,wet	28.16	28.24	28.21	28.20
Cp-pitot tube	0.84	0.819	0.819	
Avg sq rt ^p	1.701	1.764	1.762	
T stack, °R	1286	1279	1279	
Stack area, ft2	8.62	8.62	8.62	
Vs-fps	150.89	151.98	151.89	151.59
Q-acfm	78040	78604	78558	78401
Q-scfh	1894000	1916840	1915705	1908848
K lb/hr	140.36	142.45	142.22	141.67
Qstd-dscfm	28593	29066	28997	28885
Sample time (min)	40	40	40	

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE B 100% GAS
DATE : 5-13-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #1

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
03:38 PM	-	03:48 PM	15.67	19.05	0.60	73.0	48.0	11.2
03:48 PM	-	03:58 PM	15.67	19.00	0.60	73.0	47.9	11.2
04:00 PM	-	04:10 PM	15.63	18.90	0.60	72.9	47.7	11.2
04:10 PM	-	04:20 PM	15.69	18.90	0.60	72.9	47.7	11.2
		Averages:	15.67	18.96	0.60	73.0	47.8	11.2

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	91	90
FINAL zero	9.9	10	10
FINAL span	93.8	91	90
ZERO DRIFT %/ppm	-0.02	0.00	0.00
CALIB. DRIFT %/ppm	-0.05	0.00	0.00
ZERO DRIFT %fs	-0.10	0.00	0.00
CALIB.DRIFT %fs	-0.20	0.00	0.00
CAL GAS value	20.9	40.6	39.9
FULL SCALE RANGE	25	50	50

DSCFM	28593	NOx wet	17.17
% H20	9.42	O2 wet	14.19

NOx	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.67	18.96	64.80	21.37	3.94

CO	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.67	0.60	2.00	0.67	0.08

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE B 100% GAS
DATE : 5-14-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #2

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
08:18 AM	-	08:28 AM	15.95	18.23	0.99	74.0	46.5	12.0
08:28 AM	-	08:38 AM	16.07	18.04	0.96	74.2	46.4	12.0
08:58 AM	-	09:08 AM	16.28	18.20	0.69	74.8	47.0	11.5
09:08 AM	-	09:18 AM	16.22	18.01	0.66	74.3	46.9	11.5
	Averages:		16.13	18.12	0.82	74.3	46.7	11.8

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	91	90
FINAL zero	10	10	10.1
FINAL span	95	89.9	89.9
ZERO DRIFT %/ppm	0.00	0.00	0.05
CALIB. DRIFT %/ppm	0.25	-0.55	-0.05
ZERO DRIFT %fs	0.00	0.00	0.10
CALIB.DRIFT %fs	1.00	-1.10	-0.10
CAL GAS value	20.9	40.6	39.9
FULL SCALE RANGE	25	50	50

DSCFM	29066	NOx wet	16.49
% H2O	9.02	O2 wet	14.67

NOx	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	16.13	18.12	68.00	22.41	3.83

CO	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	16.13	0.82	3.10	1.02	0.11

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE B 100% GAS
DATE : 5-14-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #3

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
09:26 AM	-	09:36 AM	15.88	18.23	0.70	73.8	46.5	11.4
09:36 AM	-	09:46 AM	15.93	16.85	0.50	73.9	44.0	11.0
09:55 AM	-	10:05 AM	15.87	18.53	0.75	73.6	47.6	11.5
10:05 AM	-	10:15 AM	15.89	18.56	0.75	73.6	47.9	11.5
		Averages:	15.89	18.04	0.67	73.7	46.5	11.4

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	91	90
FINAL zero	10	10	10
FINAL span	94.3	90	90
ZERO DRIFT %/ppm	0.00	0.00	0.00
CALIB. DRIFT %/ppm	0.07	-0.50	0.00
ZERO DRIFT %fs	0.00	0.00	0.00
CALIB.DRIFT %fs	0.30	-1.00	0.00
CAL GAS value	20.9	40.6	39.9
FULL SCALE RANGE	25	50	50

DSCFM	28997	NOx wet	16.39
% H20	9.18	O2 wet	14.43

	%O2	ppm	@ 3%O2	@15%O2	lb/hr
NOx	15.89	18.04	64.50	21.26	3.81

	%O2	ppm	@ 3%O2	@15%O2	lb/hr
CO	15.89	0.67	2.40	0.79	0.09

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE B 100 % GAS
DATE : 5-14-93
PROJECT : 098-303

R O C RESULTS

RUN No.: 1
AVG DSCFM 28885

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	3.10	0.23	3.10	0.23
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	3.10	0.23	3.10	0.23
	Total (non methane)	0.00	0.00	0.00	0.00

RUN No.: 2
AVG DSCFM 28885

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	1.84	0.13	1.84	0.13
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	1.84	0.13	1.84	0.13
	Total (non methane)	0.00	0.00	0.00	0.00

RUN No.: 3
AVG DSCFM 28885

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	29.22	2.14	29.22	2.14
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	29.22	2.14	29.22	2.14
	Total (non methane)	0.00	0.00	0.00	0.00

TURBINE C @
100 % LOAD - GAS FIRED

SUMMARY OF SOURCE TEST RESULTS

COMPANY: XONTECH, INC.

TEST DATE: 5-12-93

LOCATION: SOUTH VANDENBERG POWER PLANT

UNIT #: TURBINE C 100 % - GAS

EMISSIONS	gr/scf	ppm @12%CO2	ppm	ppm 15%O2	lb/hr	Permit Limits
NOx (dry)			21.23	23.01	4.32	
			21.16	23.87	4.31	
			20.53	22.77	4.18	
Mean:			20.97	23.22	4.27	4.3 lb/hr
CO			0.72	0.78	0.09	
			0.48	0.54	0.06	
			0.11	0.12	0.01	
Mean:			0.44	0.48	0.05	4.6 lb/hr
ROC			0.00		0.00	
			0.00		0.00	
			0.00		0.00	
Mean:			0.00		0.00	0.8 lb/hr

PROCESS CONDITIONS /1		CEM DATA /1	
MW	3.0	NOx (ppm, wet)	17.4
FUEL RATE (LBS/MIN)	31.9	CO (ppm, wet)	2.54
H2O INJECTION (LBS/MIN)	43.8	O2 (% wet)	12.89
H20 FUEL RATIO	1.37		

/1 Average of 10 runs

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE C 100% GAS
DATE : 5-12-93
PROJECT : 098-303

EPA METHOD 1-4
FIELD DATA @ 60° F

RUN #:	1	2	3	
TIME:	930	1120	1215	AVERAGE
Vm (dry gas sampled)	24.09	23.99	23.95	
Y (meter calib. factor)	0.986864	0.986864	0.986864	
P bar (Barometric pressure)	29.94	29.94	29.94	
P static (stack pressure, " H2O)	-1.6	-1.6	-1.6	
Delta H (differential meter press, " H2O)	0.89	0.81	0.81	
Tm (meter temperature, °R)	540	565	568	
Vol H2O mls	42.3	44.3	47.2	
Vm(std),dscf	22.96	21.85	21.70	22.17
Bws-H2O vapor	0.0788	0.0861	0.0918	
MF-moisture factor	0.9212	0.9139	0.9082	
% CO2	3.7	3.6	3.7	
% O2	15.6	15.7	15.7	
% N2	80.7	80.7	80.6	
Md-MW stk gas,dry	29.22	29.2	29.22	29.21
Ms-MW stk gas,wet	28.34	28.24	28.19	28.26
Cp-pitot tube	0.824	0.824	0.824	
Avg sq rt ^p	1.681	1.698	1.705	
T stack, °R	1290	1299	1299	
Stack area, ft2	8.62	8.62	8.62	
Vs-fps	146.3	148.55	149.3	148.05
Q-acfm	75666	76830	77218	76571
Q-scfh	1824097	1839318	1848605	1837340
K lb/hr	136.04	136.69	137.14	136.62
Qstd-dscfm	28006	28016	27982	28001
Sample time (min)	40	40	40	

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE C 100% GAS
DATE : 5-12-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #1

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
10:20 AM	-	10:30 AM	15.47	21.21	0.88	72.2	52.4	11.0
10:30 AM	-	10:40 AM	15.47	21.17	0.56	72.3	52.3	10.4
10:40 AM	-	10:50 AM	15.43	21.23	0.73	72.2	52.4	10.8
10:50 AM	-	11:00 AM	15.46	21.29	0.71	72.4	52.5	10.8
	Averages:		15.46	21.23	0.72	72.3	52.4	10.8

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	9.2
INITIAL span	94	92.2	89.8
FINAL zero	10	10	9.4
FINAL span	93.7	92.3	89.8
ZERO DRIFT %/ppm	0.00	0.00	0.10
CALIB. DRIFT %/ppm	-0.07	0.05	0.00
ZERO DRIFT %fs	0.00	0.00	0.20
CALIB.DRIFT %fs	-0.30	0.10	0.00
CAL GAS value	20.9	41.1	39.9
FULL SCALE RANGE	25	50	50

DSCFM	28006	NOx wet	19.55
% H20	7.88	O2 wet	14.24

NOx	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.46	21.23	69.80	23.01	4.32

CO	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.46	0.72	2.40	0.78	0.09

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE C 100% GAS
DATE : 5-12-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #2

Stack Gas Measurement Data							
TIME INTERVAL			CONCENTRATIONS			% Full Scale	
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
11:20 AM	-	11:30 AM	15.68	21.16	0.34	73.0	52.4	10.6
11:30 AM	-	11:40 AM	15.68	21.19	0.43	73.0	52.5	10.6
11:41 AM	-	11:51 AM	15.68	21.16	0.52	73.0	52.5	10.6
11:51 AM	-	12:01 PM	15.65	21.14	0.61	72.9	52.5	10.6
	Averages:		15.67	21.16	0.48	73.0	52.5	10.6

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	92.3	89.8
FINAL zero	10	10.2	10
FINAL span	94	92.3	90.5
ZERO DRIFT %/ppm	0.00	0.10	0.00
CALIB. DRIFT %/ppm	0.00	0.00	0.35
ZERO DRIFT %fs	0.00	0.20	0.00
CALIB.DRIFT %fs	0.00	0.00	0.70
CAL GAS value	20.9	41.1	39.9
FULL SCALE RANGE	25	50	50

DSCFM	28016	NOx wet	19.34
% H2O	8.61	O2 wet	14.32

	%O2	ppm	@ 3%O2	@15%O2	lb/hr
NOx	15.67	21.16	72.40	23.87	4.31

	%O2	ppm	@ 3%O2	@15%O2	lb/hr
CO	15.67	0.48	1.60	0.54	0.06

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE C 100% GAS
DATE : 5-12-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #3

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
12:15 PM	-	12:25 PM	15.55	20.96	0.21	72.5	52.0	10.5
12:25 PM	-	12:35 PM	15.58	20.92	0.14	72.6	52.0	10.5
12:36 PM	-	12:46 PM	15.59	20.88	0.06	72.6	52.0	10.5
12:46 PM	-	12:56 PM	15.60	19.35	0.04	72.6	49.0	10.6
	Averages:		15.58	20.53	0.11	72.6	51.3	10.5

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	92.3	90.5
FINAL zero	10	10	10
FINAL span	94.1	92	89.9
ZERO DRIFT %/ppm	0.00	0.00	0.00
CALIB. DRIFT %/ppm	0.02	-0.15	-0.30
ZERO DRIFT %fs	0.00	0.00	0.00
CALIB.DRIFT %fs	0.10	-0.30	-0.60
CAL GAS value	20.9	41.1	39.9
FULL SCALE RANGE	25	50	50

DSCFM	27982	NOx wet	18.64
% H20	9.18	O2 wet	14.15

	%O2	ppm	@ 3%O2	@15%O2	lb/hr
NOx	15.58	20.53	69.10	22.77	4.18

	%O2	ppm	@ 3%O2	@15%O2	lb/hr
CO	15.58	0.11	0.40	0.12	0.01

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE C 100 % GAS
DATE : 5-13-93
PROJECT : 098-303

R O C RESULTS

RUN No.: 1
AVG DSCFM 28001

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	2.79	0.20	2.79	0.20
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	2.79	0.20	2.79	0.20
	Total (non methane)	0.00	0.00	0.00	0.00

RUN No.: 2
AVG DSCFM 28001

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	3.13	0.22	3.13	0.22
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	3.13	0.22	3.13	0.22
	Total (non methane)	0.00	0.00	0.00	0.00

RUN No.: 3
AVG DSCFM 28001

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	2.85	0.20	2.85	0.20
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	2.85	0.20	2.85	0.20
	Total (non methane)	0.00	0.00	0.00	0.00

TURBINE D @
100 % LOAD - GAS FIRED

SUMMARY OF SOURCE TEST RESULTS

COMPANY: XONTECH, INC. TEST DATE: 5-18-93

LOCATION: SOUTH VANDENBERG POWER PLANT UNIT #: TURBINE D 100 % - GAS

EMISSIONS	gr/scf	ppm @12%CO2	ppm	ppm 15%O2	lb/hr	Permit Limits
NOx (dry)			19.41	21.75	4.03	
			20.64	22.45	4.33	
			19.48	21.92	4.01	
Mean:			19.84	22.04	4.12	4.3 lb/hr
CO			0.77	0.87	0.10	
			0.36	0.39	0.05	
			0.40	0.45	0.05	
Mean:			0.51	0.57	0.07	4.6 lb/hr
ROC			0.00		0.00	
			0.00		0.00	
			0.00		0.00	
Mean:			0.00		0.00	0.5 lb/hr

PROCESS CONDITIONS /1		CEM DATA /1	
MW	3.0	NOx (ppm, wet)	17.75
FUEL RATE (LBS/MIN)	31.89	CO (ppm, wet)	5.30
H2O INJECTION (LBS/MIN)	44.5	O2 (% wet)	13.33
H20 FUEL RATIO	1.40		

/1 Average of 10 runs

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE D 100% GAS
DATE : 5-18-93
PROJECT : 098-303

EPA METHOD 1-4
FIELD DATA @ 60° F

RUN #:	1	2	3	
TIME:	1108	1210	1326	AVERAGE
Vm (dry gas sampled)	23.99	24.02	23.99	
Y (meter calib. factor)	0.983421	0.983421	0.983421	
P bar (Barometric pressure)	29.89	29.89	29.89	
P static (stack pressure, " H2O)	-2.5	-2.5	-2.5	
Delta H (differential meter press, " H2O)	0.62	0.62	0.62	
Tm (meter temperature, °R)	558	566	567	
Vol H2O mls	48.8	49.2	49.1	
Vm(std),dscf	22.00	21.71	21.65	21.79
Bws-H2O vapor	0.0934	0.0953	0.0953	
MF-moisture factor	0.9066	0.9047	0.9047	
% CO2	3.7	3.8	3.8	
% O2	15.6	15.5	15.6	
% N2	80.7	80.7	80.6	
Md-MW stk gas,dry	29.22	29.23	29.23	29.23
Ms-MW stk gas,wet	28.17	28.16	28.16	28.16
Cp-pitot tube	0.819	0.819	0.819	
Avg sq rt ^p	1.76	1.788	1.747	
T stack, °R	1304	1313	1306	
Stack area, ft2	8.62	8.62	8.62	
Vs-fps	153.83	156.84	152.84	154.50
Q-acfm	79561	81118	79049	79909
Q-scfh	1890000	1913773	1874961	1892911
K lb/hr	140.11	141.82	138.94	140.29
Qstd-dscfm	28558	28857	28271	28562
Sample time (min)	40	40	40	

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE D 100% GAS
DATE : 5-18-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #1

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
11:08 AM	-	11:18 AM	15.65	19.61	0.87	72.9	49.5	11.8
11:18 AM	-	11:28 AM	15.66	19.40	0.80	72.9	49.5	11.8
11:31 AM	-	11:41 AM	15.59	19.34	0.74	72.6	49.8	11.8
11:41 AM	-	11:51 AM	15.64	19.27	0.68	72.5	50.1	11.8
	Averages:		15.64	19.41	0.77	72.7	49.7	11.8

Calibration Data	O2	NOx	CO
INITIAL zero	10	10.3	10
INITIAL span	94	91	90
FINAL zero	9.9	10	10
FINAL span	94	89	89.5
ZERO DRIFT %/ppm	-0.02	-0.15	0.00
CALIB. DRIFT %/ppm	0.00	-1.01	-0.25
ZERO DRIFT %fs	-0.10	-0.30	0.00
CALIB.DRIFT %fs	0.00	-2.00	-0.50
CAL GAS value	20.9	40.6	39.9
FULL SCALE RANGE	25	50	50

DSCFM	28558	NOx wet	17.59
% H20	9.34	O2 wet	14.18

NOx	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.64	19.41	66.00	21.75	4.03

CO	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.64	0.77	2.60	0.87	0.10

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE D 100% GAS
DATE : 5-18-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #2

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
12:10 PM	-	12:20 PM	15.49	20.76	0.44	72.3	51.5	10.9
12:20 PM	-	12:30 PM	15.48	20.69	0.36	72.3	51.5	10.8
12:33 PM	-	12:43 PM	15.47	20.56	0.34	72.3	51.4	10.8
12:43 PM	-	12:53 PM	15.46	20.54	0.31	72.3	51.5	10.8
	Averages:		15.48	20.64	0.36	72.3	51.5	10.8

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	91	90
FINAL zero	10	10.1	10
FINAL span	93.8	90.5	89.8
ZERO DRIFT %/ppm	0.00	0.05	0.00
CALIB. DRIFT %/ppm	-0.05	-0.25	-0.10
ZERO DRIFT %fs	0.00	0.10	0.00
CALIB.DRIFT %fs	-0.20	-0.50	-0.20
CAL GAS value	20.9	40.6	39.9
FULL SCALE RANGE	25	50	50

DSCFM	28857	NOx wet	18.67
% H2O	9.53	O2 wet	14.00

NOx	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.48	20.64	68.10	22.45	4.33

CO	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.48	0.36	1.20	0.39	0.05

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE D 100% GAS
DATE : 5-18-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #3

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
01:26 PM	-	01:36 PM	15.64	19.95	0.44	72.8	49.8	10.9
01:36 PM	-	01:46 PM	15.69	19.49	0.41	72.9	49.4	10.9
01:48 PM	-	01:58 PM	15.64	19.34	0.39	72.6	49.6	10.9
01:58 PM	-	02:08 PM	15.66	19.14	0.36	72.6	49.7	10.9
	Averages:		15.66	19.48	0.40	72.7	49.6	10.9

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	90.5	90
FINAL zero	10	10	10
FINAL span	94.4	88.5	89.8
ZERO DRIFT %/ppm	0.00	0.00	0.00
CALIB. DRIFT %/ppm	0.10	-1.01	-0.10
ZERO DRIFT %fs	0.00	0.00	0.00
CALIB.DRIFT %fs	0.40	-2.00	-0.20
CAL GAS value	20.9	40.6	39.9
FULL SCALE RANGE	25	50	50

DSCFM	28271	NOx wet	17.62
% H20	9.53	O2 wet	14.16

NOx	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.66	19.48	66.50	21.92	4.01

CO	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.66	0.40	1.40	0.45	0.05

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE D 100 % GAS
DATE : 5-19-93
PROJECT : 098-303

R O C RESULTS

RUN No.: 1
AVG DSCFM 28562

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	1.91	0.14	1.91	0.14
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	1.91	0.14	1.91	0.14
	Total (non methane)	0.00	0.00	0.00	0.00

RUN No.: 2
AVG DSCFM 28562

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	1.68	0.12	1.68	0.12
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	1.68	0.12	1.68	0.12
	Total (non methane)	0.00	0.00	0.00	0.00

RUN No.: 3
AVG DSCFM 28562

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	1.26	0.09	1.26	0.09
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	1.26	0.09	1.26	0.09
	Total (non methane)	0.00	0.00	0.00	0.00

TURBINE E @
100 % LOAD - GAS FIRED

SUMMARY OF SOURCE TEST RESULTS

COMPANY: XONTECH, INC.

TEST DATE: 5-14-93

LOCATION: SOUTH VANDENBERG POWER PLANT

UNIT #: TURBINE E 100 % - GAS

EMISSIONS	gr/scf	ppm @12%CO2	ppm	ppm 15%O2	lb/hr	Permit Limits
NOx (dry)			19.16	22.66	3.87	
			19.24	22.23	3.86	
			19.08	22.23	3.84	
Mean:			19.16	22.37	3.86	4.3 lb/hr
CO			0.05	0.06	0.01	
			0.00	0.00	0.00	
			0.00	0.00	0.00	
Mean:			0.02	0.02	0.00	4.8 lb/hr
ROC			0.00		0.00	
			0.00		0.00	
			0.00		0.00	
Mean:			0.00		0.00	0.8 lb/hr

PROCESS CONDITIONS /1		CEM DATA /1	
MW	3.0	NOx (ppm, wet)	17.89
FUEL RATE (LBS/MIN)	30.24	CO (ppm, wet)	0.28
H2O INJECTION (LBS/MIN)	41.7	O2 (% wet)	14.31
H20 FUEL RATIO	1.38		

/1 Average of 7 runs

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE E 100% GAS
DATE : 5-14-93
PROJECT : 098-303

EPA METHOD 1-4
FIELD DATA @ 60° F

RUN #:	1	2	3	
TIME:	845	938	1112	AVERAGE
Vm (dry gas sampled)	23.95	24.15	24.02	
Y (meter calib. factor)	0.986864	0.986864	0.986864	
P bar (Barometric pressure)	29.98	29.98	29.98	
P static (stack pressure, " H2O)	-1.6	-1.6	-1.6	
Delta H (differential meter press, " H2O)	0.83	0.89	0.89	
Tm (meter temperature, °R)	534	541	539	
Vol H2O mls	46.4	49.5	49.8	
Vm(std),dscf	23.11	23	22.96	23.02
Bws-H2O vapor	0.0853	0.0909	0.0915	
MF-moisture factor	0.9147	0.9091	0.9085	
% CO2	3.7	3.8	3.8	
% O2	15.7	15.8	15.8	
% N2	80.6	80.4	80.4	
Md-MW stk gas,dry	29.22	29.24	29.24	29.23
Ms-MW stk gas,wet	28.26	28.22	28.21	28.23
Cp-pitot tube	0.824	0.824	0.824	
Avg sq rt ^p	1.665	1.658	1.671	
T stack, °R	1274	1269	1274	
Stack area, ft2	8.62	8.62	8.62	
Vs-fps	144.11	143.32	144.76	144.06
Q-acfm	74534	74125	74870	74510
Q-scfh	1821798	1818950	1830015	1823588
K lb/hr	135.48	135.08	135.85	135.47
Qstd-dscfm	27773	27560	27709	27681
Sample time (min)	40	40	40	

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE E 100% GAS
DATE : 5-14-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #1

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
08:45 AM	-	08:55 AM	15.91	19.37	0.12	73.9	48.9	10.1
08:55 AM	-	09:05 AM	15.89	19.26	0.07	73.8	49.0	10.1
09:06 AM	-	09:16 AM	15.91	19.09	0.00	73.8	49.0	10.0
09:16 AM	-	09:26 AM	15.94	18.93	0.00	73.9	49.0	10.0
	Averages:		15.91	19.16	0.05	73.9	49.0	10.1

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	9.8
INITIAL span	94	92.2	89.9
FINAL zero	10	10.5	9.9
FINAL span	94.2	91.4	89.6
ZERO DRIFT %/ppm	0.00	0.25	0.05
CALIB. DRIFT %/ppm	0.05	-0.40	-0.15
ZERO DRIFT %fs	0.00	0.50	0.10
CALIB.DRIFT %fs	0.20	-0.80	-0.30
CAL GAS value	20.9	41.1	39.9
FULL SCALE RANGE	25	50	50

DSCFM	27773	NOx wet	17.53
% H20	8.53	O2 wet	14.55

NOx	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.91	19.16	68.80	22.66	3.87

CO	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.91	0.05	0.20	0.06	0.01

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE E 100% GAS
DATE : 5-14-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #2

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
09:40 AM	-	09:50 AM	15.84	19.11	0.00	73.7	48.2	10.0
09:50 AM	-	10:00 AM	15.81	19.27	0.00	73.6	48.5	10.0
10:24 AM	-	10:34 AM	15.77	19.13	0.00	73.5	48.2	10.0
10:34 AM	-	10:44 AM	15.76	19.44	0.00	73.5	48.8	10.0
	Averages:		15.79	19.24	0.00	73.6	48.4	10.0

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	92.2	89.6
FINAL zero	10	10	10
FINAL span	93.8	92.3	89.6
ZERO DRIFT %/ppm	0.00	0.00	0.00
CALIB. DRIFT %/ppm	-0.05	0.05	0.00
ZERO DRIFT %fs	0.00	0.00	0.00
CALIB.DRIFT %fs	-0.20	0.10	0.00
CAL GAS value	20.9	41.1	39.9
FULL SCALE RANGE	25	50	50

DSCFM	27560	NOx wet	17.49
% H2O	9.09	O2 wet	14.36

NOx	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.79	19.24	67.40	22.23	3.86

CO	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.79	0.00	0.00	0.00	0.00

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE E 100% GAS
DATE : 5-14-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #3

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
11:12 AM	-	11:22 AM	15.83	19.34	0.00	73.5	48.8	10.0
11:22 AM	-	11:32 AM	15.85	19.16	0.00	73.6	48.6	10.0
11:33 AM	-	11:43 AM	15.85	18.94	0.00	73.6	48.3	10.1
11:43 AM	-	11:53 AM	15.82	18.86	0.00	73.5	48.3	10.0
	Averages:		15.84	19.08	0.00	73.6	48.5	10.0

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	93.8	92.3	89.4
FINAL zero	10	10.3	10
FINAL span	93.7	92	89.2
ZERO DRIFT %/ppm	0.00	0.15	0.00
CALIB. DRIFT %/ppm	-0.02	-0.15	-0.10
ZERO DRIFT %fs	0.00	0.30	0.00
CALIB.DRIFT %fs	-0.10	-0.30	-0.20
CAL GAS value	20.9	41.1	39.9
FULL SCALE RANGE	25	50	50

DSCFM	27709	NOx wet	17.33
% H20	9.15	O2 wet	14.39

NOx	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.84	19.08	67.40	22.23	3.84

CO	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	15.84	0.00	0.00	0.00	0.00

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE E 100 % GAS
DATE : 5-14-93
PROJECT : 098-303

R O C RESULTS

RUN No.: 1
AVG DSCFM 27681

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	2.72	0.19	2.72	0.19
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	2.72	0.19	2.72	0.19
	Total (non methane)	0.00	0.00	0.00	0.00

RUN No.: 2
AVG DSCFM 27681

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	2.79	0.20	2.79	0.20
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	2.79	0.20	2.79	0.20
	Total (non methane)	0.00	0.00	0.00	0.00

RUN No.: 3
AVG DSCFM 27681

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	2.48	0.17	2.48	0.17
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	2.48	0.17	2.48	0.17
	Total (non methane)	0.00	0.00	0.00	0.00

TURBINE E @
75 % LOAD - GAS FIRED

SUMMARY OF SOURCE TEST RESULTS

COMPANY: XONTECH, INC.

TEST DATE: 5-20-93

LOCATION: SOUTH VANDENBERG POWER PLANT

UNIT #: TURBINE E 75 % - GAS

EMISSIONS	gr/scf	ppm @12%CO2	ppm	ppm 15%O2	lb/hr	Permit Limits
NOx (dry)			14.46	19.85	2.91	
			14.29	19.64	2.86	
			13.87	19.12	2.83	
Mean:			14.21	19.54	2.87	4.3 lb/hr
CO			0.93	1.27	0.11	
			0.80	1.10	0.10	
			1.17	1.62	0.15	
Mean:			0.97	1.33	0.12	4.6 lb/hr
ROC			0.00		0.00	
			0.00		0.00	
			0.00		0.00	
Mean:			0.00		0.00	0.5 lb/hr

PROCESS CONDITIONS /1		CEM DATA /1	
MW	2.25	NOx (ppm, wet)	13.6
FUEL RATE (LBS/MIN)	25.73	CO (ppm, wet)	2.50
H2O INJECTION (LBS/MIN)	35.6	O2 (% wet)	14.3
H20 FUEL RATIO	1.38		

/1 Average of 3 runs

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE E 75% GAS
DATE : 5-20-93
PROJECT : 098-303

EPA METHOD 1-4
FIELD DATA @ 60° F

RUN #:	1	2	3	
TIME:	1224	1316	1410	AVERAGE
Vm (dry gas sampled)	23.98	24.02	24	
Y (meter calib. factor)	0.983421	0.983421	0.983421	
P bar (Barometric pressure)	29.89	29.89	29.89	
P static (stack pressure, " H2O)	-1	-1	-1	
Delta H (differential meter press, " H2O)	0.62	0.62	0.62	
Tm (meter temperature, °R)	551	554	564	
Vol H2O mls	43.6	43.6	43.2	
Vm(std),dscf	22.27	22.18	21.77	22.07
Bws-H2O vapor	0.0834	0.0837	0.0844	
MF-moisture factor	0.9166	0.9163	0.9156	
% CO2	2.3	2.3	2.2	
% O2	16.6	16.6	16.6	
% N2	81.1	81.1	81.2	
Md-MW stk gas,dry	29.03	29.03	29.02	29.03
Ms-MW stk gas,wet	28.11	28.11	28.09	28.10
Cp-pitot tube	0.819	0.819	0.819	
Avg sq rt ^p	1.613	1.609	1.64	
T stack, °R	1202	1205	1205	
Stack area, ft2	8.62	8.62	8.62	
Vs-fps	135.25	135.08	137.73	136.02
Q-acfm	69951	69863	71234	70350
Q-scfh	1809425	1802651	1838016	1816697
K lb/hr	133.85	133.35	135.87	134.36
Qstd-dscfm	27642	27529	28048	27740
Sample time (min)	40	40	40	

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE E 75% GAS
DATE : 5-20-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #1

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
12:24 PM	-	12:34 PM	16.64	14.42	1.15	76.9	38.8	12.4
12:34 PM	-	12:44 PM	16.63	14.50	1.00	76.9	39.0	12.3
12:46 PM	-	12:56 PM	16.59	14.47	0.85	76.8	39.0	12.2
12:56 PM	-	01:06 PM	16.55	14.45	0.70	76.7	39.0	12.1
	Averages:		16.60	14.46	0.93	76.8	39.0	12.3

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	91	89.8
FINAL zero	10	10.2	10
FINAL span	93.8	91	89
ZERO DRIFT %/ppm	0.00	0.10	0.00
CALIB. DRIFT %/ppm	-0.05	0.00	-0.40
ZERO DRIFT %fs	0.00	0.20	0.00
CALIB.DRIFT %fs	-0.20	0.00	-0.80
CAL GAS value	20.9	40.6	39.9
FULL SCALE RANGE	25	50	50

DSCFM	27642	NOx wet	13.25
% H20	8.34	O2 wet	15.22

NOx	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	16.60	14.46	60.20	19.85	2.91

CO	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	16.60	0.93	3.90	1.27	0.11

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE E 75% GAS
DATE : 5-20-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #2

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
01:16 PM	-	01:26 PM	16.62	14.39	0.94	76.8	38.7	12.0
01:26 PM	-	01:36 PM	16.60	14.34	0.83	76.7	38.6	12.0
01:38 PM	-	01:48 PM	16.62	14.18	0.77	76.8	38.3	12.1
01:48 PM	-	01:58 PM	16.60	14.24	0.65	76.7	38.4	12.1
	Averages:		16.61	14.29	0.80	76.8	38.5	12.1

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	91	90
FINAL zero	10	10	10
FINAL span	94	91	89.1
ZERO DRIFT %/ppm	0.00	0.00	0.00
CALIB. DRIFT %/ppm	0.00	0.00	-0.45
ZERO DRIFT %fs	0.00	0.00	0.00
CALIB.DRIFT %fs	0.00	0.00	-0.90
CAL GAS value	20.9	40.6	39.9
FULL SCALE RANGE	25	50	50

DSCFM	27529	NOx wet	13.09
% H2O	8.37	O2 wet	15.22

NOx	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	16.61	14.29	59.60	19.64	2.86

CO	%O2	ppm	@ 3%O2	@15%O2	lb/hr
	16.61	0.80	3.30	1.10	0.10

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE E 75% GAS
DATE : 5-20-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #3

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
02:10 PM	-	02:20 PM	16.62	14.06	1.15	76.8	38.2	12.3
02:20 PM	-	02:30 PM	16.62	13.96	1.15	76.8	38.3	12.3
02:32 PM	-	02:42 PM	16.62	13.81	1.20	76.8	38.3	12.4
02:42 PM	-	02:52 PM	16.62	13.66	1.20	76.8	38.3	12.4
	Averages:		16.62	13.87	1.17	76.8	38.3	12.4

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	91	90
FINAL zero	10	10.2	10
FINAL span	94	90	90
ZERO DRIFT %/ppm	0.00	0.10	0.00
CALIB. DRIFT %/ppm	0.00	-0.50	0.00
ZERO DRIFT %fs	0.00	0.20	0.00
CALIB.DRIFT %fs	0.00	-1.00	0.00
CAL GAS value	20.9	40.6	39.9
FULL SCALE RANGE	25	50	50

DSCFM	28048	NOx wet	12.70
% H20	8.44	O2 wet	15.22

	%O2	ppm	@ 3%O2	@15%O2	lb/hr
NOx	16.62	13.87	58.00	19.12	2.83

	%O2	ppm	@ 3%O2	@15%O2	lb/hr
CO	16.62	1.17	4.90	1.62	0.15

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE E 75 % GAS
DATE : 5-19-93
PROJECT : 098-303

R O C RESULTS

RUN No.: 1
AVG DSCFM 27740

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	3.67	0.26	3.67	0.26
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	3.67	0.26	3.67	0.26
	Total (non methane)	0.00	0.00	0.00	0.00

RUN No.: 2
AVG DSCFM 27740

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	3.73	0.26	3.73	0.26
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	3.73	0.26	3.73	0.26
	Total (non methane)	0.00	0.00	0.00	0.00

RUN No.: 3
AVG DSCFM 27740

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	3.66	0.26	3.66	0.26
Ethane	(C2)	0.00	0.00	0.00	0.00
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	3.66	0.26	3.66	0.26
	Total (non methane)	0.00	0.00	0.00	0.00

TURBINE E @
50 % LOAD - GAS FIRED

SUMMARY OF SOURCE TEST RESULTS

COMPANY: XONTECH, INC. TEST DATE: 5-20-93

LOCATION: SOUTH VANDENBERG POWER PLANT UNIT #: TURBINE E 50 % - GAS

EMISSIONS	gr/scf	ppm @12%CO2	ppm	ppm 15%O2	lb/hr	Permit Limits
NOx (dry)			10.36	16.98	2.12	
			10.39	17.47	2.11	
			10.41	17.45	2.11	
Mean:			10.39	17.30	2.11	4.3 lb/hr
CO			5.49	8.99	0.68	
			4.93	8.28	0.61	
			4.79	8.02	0.59	
Mean:			5.07	8.43	0.63	4.6 lb/hr
ROC			0.87		0.12	
			0.73		0.10	
			1.18		0.16	
Mean:			0.93		0.13	0.8 lb/hr

PROCESS CONDITIONS /1		CEM DATA /1	
MW	1.5	NOx (ppm, wet)	9.97
FUEL RATE (LBS/MIN)	20.97	CO (ppm, wet)	4.33
H2O INJECTION (LBS/MIN)	28.97	O2 (% wet)	16.0
H20 FUEL RATIO	1.38		

/1 Average of 3 runs

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE E 50% GAS
DATE : 5-20-93
PROJECT : 098-303

EPA METHOD 1-4
FIELD DATA @ 60° F

RUN #:	1	2	3	
TIME:	925	1020	1117	AVERAGE
Vm (dry gas sampled)	24	23.99	24	
Y (meter calib. factor)	0.983421	0.983421	0.983421	
P bar (Barometric pressure)	29.89	29.89	29.89	
P static (stack pressure, " H2O)	-0.95	-0.95	-0.95	
Delta H (differential meter press, " H2O)	0.62	0.62	0.62	
Tm (meter temperature, °R)	533	544	546	
Vol H2O mls	36.3	35.9	36.1	
Vm(std),dscf	23.04	22.56	22.49	22.70
Bws-H2O vapor	0.0682	0.0688	0.0694	
MF-moisture factor	0.9318	0.9312	0.9306	
% CO2	1.7	2	1.8	
% O2	17.3	17.4	17.4	
% N2	81	80.6	80.8	
Md-MW stk gas,dry	28.96	29.02	28.98	28.99
Ms-MW stk gas,wet	28.21	28.26	28.22	28.23
Cp-pitot tube	0.819	0.819	0.819	
Avg sq rt ^p	1.564	1.559	1.554	
T stack, °R	1124	1124	1125	
Stack area, ft2	8.62	8.62	8.62	
Vs-fps	126.58	126.06	125.80	126.15
Q-acfm	65467	65198	65064	65243
Q-scfh	1811174	1803733	1798413	1804440
K lb/hr	134.46	134.14	133.56	134.05
Qstd-dscfm	28128	27994	27893	28005
Sample time (min)	40	40	40	

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE E 50% GAS
DATE : 5-20-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #1

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
09:25 AM	-	09:35 AM	17.39	10.39	5.11	80.0	30.8	20.0
09:35 AM	-	09:45 AM	17.35	10.38	5.36	80.0	30.9	20.0
09:48 AM	-	09:58 AM	17.26	10.37	5.61	79.8	31.0	20.0
09:58 AM	-	10:08 AM	17.19	10.31	5.86	79.7	31.0	20.0
	Averages:		17.30	10.36	5.49	79.9	30.9	20.0

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	91	90
FINAL zero	10	10.2	10
FINAL span	93.3	90.7	92
ZERO DRIFT %/ppm	0.00	0.10	0.00
CALIB. DRIFT %/ppm	-0.17	-0.15	1.00
ZERO DRIFT %fs	0.00	0.20	0.00
CALIB.DRIFT %fs	-0.70	-0.30	2.00
CAL GAS value	20.9	40.6	39.9
FULL SCALE RANGE	25	50	50

DSCFM	28128	NOx wet	9.66
% H20	6.82	O2 wet	16.12

	%O2	ppm	@ 3%O2	@15%O2	lb/hr
NOx	17.30	10.36	51.50	16.98	2.12

	%O2	ppm	@ 3%O2	@15%O2	lb/hr
CO	17.30	5.49	27.30	8.99	0.68

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE E 50% GAS
DATE : 5-20-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #2

Stack Gas Measurement Data							
TIME INTERVAL		CONCENTRATIONS			% Full Scale		
BEGIN	- END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
10:20 AM	- 10:30 AM	17.41	10.49	4.94	80.0	31.0	19.9
10:30 AM	- 10:40 AM	17.41	10.43	4.94	80.0	31.0	19.9
10:42 AM	- 10:52 AM	17.38	10.37	4.89	79.9	31.0	19.8
10:52 AM	- 11:02 AM	17.37	10.26	4.94	79.9	30.9	19.9
	Averages:	17.39	10.39	4.93	80.0	31.0	19.9

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	91	90
FINAL zero	10	10	10
FINAL span	93.9	90.5	90
ZERO DRIFT %/ppm	0.00	0.00	0.00
CALIB. DRIFT %/ppm	-0.02	-0.25	0.00
ZERO DRIFT %fs	0.00	0.00	0.00
CALIB.DRIFT %fs	-0.10	-0.50	0.00
CAL GAS value	20.9	40.6	39.9
FULL SCALE RANGE	25	50	50

DSCFM	27994	NOx wet	9.67
% H2O	6.88	O2 wet	16.20

	%O2	ppm	@ 3%O2	@15%O2	lb/hr
NOx	17.39	10.39	53.00	17.47	2.11

	%O2	ppm	@ 3%O2	@15%O2	lb/hr
CO	17.39	4.93	25.10	8.28	0.61

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE E 50% GAS
DATE : 5-20-93
PROJECT : 098-303

NOx/CO/O2 DATA

RUN #3

TIME INTERVAL			Stack Gas Measurement Data CONCENTRATIONS			% Full Scale		
BEGIN	-	END	O2;%	NOx;ppm	CO;ppm	O2%fs	NOx%fs	CO%fs
11:17 AM	-	11:27 AM	17.41	10.47	4.82	80.0	30.9	19.7
11:27 AM	-	11:37 AM	17.40	10.46	4.78	80.0	30.9	19.7
11:39 AM	-	11:49 AM	17.36	10.39	4.79	79.9	30.8	19.8
11:49 AM	-	11:59 AM	17.35	10.33	4.76	79.9	30.7	19.8
	Averages:		17.38	10.41	4.79	80.0	30.8	19.8

Calibration Data	O2	NOx	CO
INITIAL zero	10	10	10
INITIAL span	94	91	90
FINAL zero	10	10.1	10.1
FINAL span	93.8	91	89.8
ZERO DRIFT %/ppm	0.00	0.05	0.05
CALIB. DRIFT %/ppm	-0.05	0.00	-0.10
ZERO DRIFT %fs	0.00	0.10	0.10
CALIB.DRIFT %fs	-0.20	0.00	-0.20
CAL GAS value	20.9	40.6	39.9
FULL SCALE RANGE	25	50	50

DSCFM	27893	NOx wet	9.69
% H20	6.94	O2 wet	16.17

	%O2	ppm	@ 3%O2	@15%O2	lb/hr
NOx	17.38	10.41	52.90	17.45	2.11

	%O2	ppm	@ 3%O2	@15%O2	lb/hr
CO	17.38	4.79	24.30	8.02	0.59

COMPANY : XONTECH, INC.
LOCATION : SOUTH VANDENBERG POWER PLANT
UNIT : TURBINE E 50 % GAS
DATE : 5-19-93
PROJECT : 098-303

R O C RESULTS

RUN No.: 1
AVG DSCFM 28005

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	16.24	1.15	16.24	1.15
Ethane	(C2)	0.87	0.12	1.74	0.12
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	17.11	1.27	17.98	1.27
	Total (non methane)	0.87	0.12	1.74	0.12

RUN No.: 2
AVG DSCFM 28005

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	19.42	1.38	19.42	1.38
Ethane	(C2)	0.73	0.10	1.46	0.10
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	20.15	1.47	20.88	1.48
	Total (non methane)	0.73	0.10	1.46	0.10

RUN No.: 3
AVG DSCFM 28005

		ppm	lb/hr	ppm (as Methane)	lb/hr (as Methane)
Methane	(C1)	18.33	1.30	18.33	1.30
Ethane	(C2)	1.18	0.16	2.36	0.17
Propane	(C3)	0.00	0.00	0.00	0.00
Butane	(C4)	0.00	0.00	0.00	0.00
Pentane	(C5)	0.00	0.00	0.00	0.00
Hexane	(C6)	0.00	0.00	0.00	0.00
	Total	19.51	1.46	20.69	1.47
	Total (non methane)	1.18	0.16	2.36	0.17

DISCUSSION OF RESULTS

The data included in this report shows all tested parameters met Santa Barbara APCD emission permit limits with the following notations:

Turbine C 100 % Gas runs #1 & #2 were combined for the calculations of run #1. The instrument drift for run #1 was greater than 2 % fs. The leak check for the EPA Method 1-4 exceeded .02 cfm for run #2. Therefore, the run #1 Method 1-4 data and the run #2 instrument data and traverse were combined. A second run #2 was performed at 11:20 am.

All other testing was performed without any interruptions or mechanical breakdowns.

SAMPLING AND ANALYTIC PROCEDURES

REF: EPA Code of Federal Regulations, Title 40, Part 60, Appendix A. EPA Method 1, 2, 3, & 4

EPA Method 1: Sampling and Velocity Traverses for Stationary Sources

Prior to the source test a site assessment was performed in order to locate sample points for obtaining the best representative measurements of pollution concentrations and volumetric flow rates. EPA Method 1 takes into account duct area, straight run and cyclonic or stratified flow pattern.

EPA Method 2: Velocity and Volumetric Flow Rates

A computer was used in selection of suitable sample/traverse points. The calibrated pitot tube was connected to a magnehelic gauge and leak checked. A temperature and ΔP was recorded at each traverse point and a duct static pressure was measured and recorded. A volume flow rate was calculated from the measured required traverse points.

EPA Method 3: % CO_2, % O_2, Dry Molecular Weight

Concurrent with each particulate sampling, an integrated gas sample was withdrawn from the summation of the traverse points through the train and collected at the outlet of the meter into a sample bag. The contents of the sample bladder were analyzed by Orsat for fixed gas composition.

EPA Method 4: Percent Water

Tare weights of the charged individual impingers were recorded. After sampling, the final weights were recorded. Percent water was calculated from the weight of water collected and the dry gas volume sampled.

EPA METHOD 2
STACK GAS VELOCITY AND VOLUMETRIC FLOWRATE

Average Stack Gas Velocity
Eq. 2-6 & Eq. 2-9

$$P_g = \frac{\text{Static Pressure, } H_2O}{13.6}$$

$$P_s = P_{bar} + P_g$$

$$V_s = K_p\, C_p \left(\sqrt{\Delta P}\right) avg \sqrt{\frac{T_{s\,(avg)}}{P_s\, M_s}}$$

Average Stack Gas Dry Volumetric Flow Rate
Eq. 2-10

$$Q_{std} = 60\,(1 - B_{ws})\, v_s\, A \left(\frac{T_{std}}{T_{s\,(avg)}}\right) \left(\frac{P_s}{P_{std}}\right)$$

$$\frac{Q_{std}}{MF} = SCFM$$

EPA METHOD 3
DRY MOLECULAR WEIGHT OF STACK GAS
Eq. 3-2

$$M_d = 0.44\,(\%\,CO_2) + 0.320\,(\%\,O_2) + 0.280\,(\%\,N_2 + \%\,CO)$$

Wet Molecular Weight of Stack Gas

$$M_s = M_d\,(1 - B_{ws}) + 18\,(B_{ws})$$

EPA METHOD 4
DETERMINATION OF MOISTURE CONTENT IN STACK GASES

Volume of Water Vapor Condensed
Eq. 4-1

$$V_{wc\ (std)} = \frac{(V_f - V_i)\rho_w\ RT_{std}}{P_{std}\ M_w} = K_1\ (V_f - V_i)$$

Where: $K_1 = 0.04646\ \frac{ft^3}{ml}$ @ 520° R

Volume of Water Vapor Collected in Silica Gel
Eq. 4-2

$$V_{wsg\ (std)} = \frac{(W_f - W_i)\ RT_{std}}{P_{std}\ M_w\ (453.6\ g/lb)}$$

$$= K_2\ (W_f - W_i)$$

Where: $K_2 = 0.04651\ \frac{ft^3}{g}$ @ 520 ° R

Sample Gas Volume
Eq. 4-3

$$V_{m\,(std)} = V_m\ Y \left(\frac{(P_m)\ (T_{std})}{(P_{std})\ (T_m)} \right)$$

$$= K_3\ Y\ \frac{V_m\ \ P_m}{T_m}$$

Where: $K_3 = 17.38\ \frac{°R}{in.\ Hg}$ @ 520 °R

Moisture Content
Eq. 4-4

$$B_{ws} = \frac{V_{wc\ (std)} + V_{wsg\ (std)}}{V_{wc\ (std)} + V_{wsg\ (std)} + V_{m\,(std)}}$$

$$B_{ws} \times 100 = \%\ H_2O\ \ in\ gas\ stream$$

$$MF = 1 - B_{ws}$$

EPA METHOD 20, 10, 6C, AND 7E
CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS)

Reference: State of California, Air Resources Board, Test Methods 100.1, June 1979. EPA CFR Title 40, Pt. 60, Appendix A, Method 20, 10, 6C, and 7E.

Instrument Summary

A constant sample of flue gas was extracted, dried, filtered and delivered to an instrument manifold system for distribution to one or more analyzers. Instrument results are recorded on an analog strip chart recorder. System calibration checks are performed as well as calibration checks at the beginning and end of each test run. Final data reduction includes zero and calibration drift corrections.

Sample Conditioning System

Consists of a borosilicate glass tube or 316 grade stainless steel probe fitted with a cindered stainless steel or pyrex glass wool particulate filter. The probe is fitted with a teflon (TFE) sample line which connects to a water condensation system located at the sources. The condensation system consists of three 500-ml short stem glass impingers connected in a series, immersed in an ice bath. The gas is delivered to the instrument trailer with a teflon line (3/8" O.D.) through an in-line Balston particulate filter drawn by a teflon-coated diaphragm pump. The sample system is leak checked prior to sampling by plugging the end of the sample probe and adjusting the sample pump to its maximum rate (approximately 22" Hg). The manifold is by-passed and the leak rate monitored through a gas meter or low range flow meter.

Manifold System

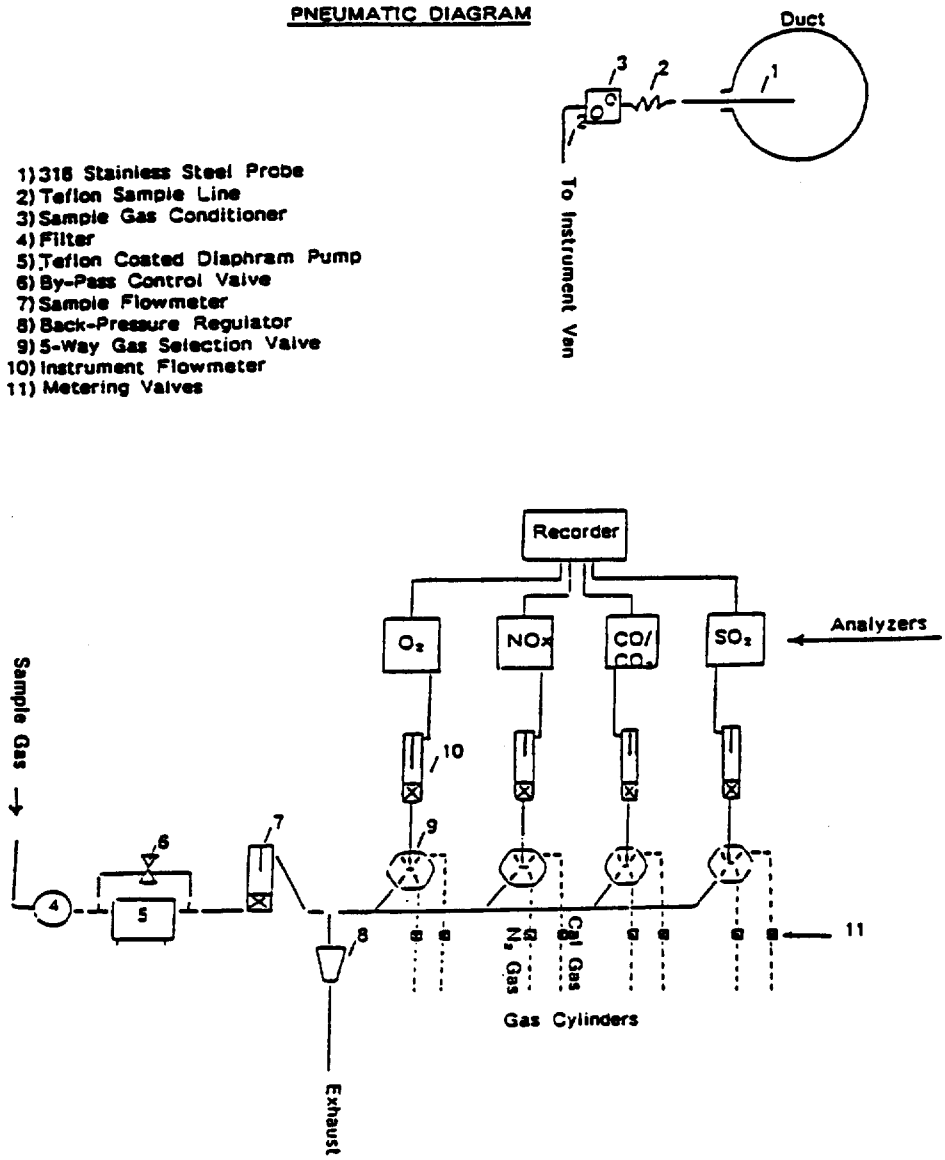
Sample gas is delivered to each analyzer through a five way valve and regulated with a needle valve flow meter. Manifold pressure is controlled by a back pressure regulator which is typically set at three psi. Zero gas (N_2) and calibrated gases are delivered to the analyzers using the same five way valve and flow meter. All manifold parts are glass, stainless steel, or teflon materials.

Analog Strip Chart Data Reduction

Analog recordings consists of averaged time increments as shown on the data pages (typically 5,10, or 20 minute increments). Data for each increment was recorded at an average percent of full scale. The readings were then compared with the zero and calibration readings for calculation of the average concentration for each time increment. Any deviation of the zero and calibration readings from the start to the end of a test period was corrected by calculating

apparent zero and calibration readings for the mid-point of each time increment. The average concentrations were then calculated from the sample readings and the apparent zero and span readings.

Sampling Diagram



EPA METHOD 18
REACTIVE ORGANIC COMPOUNDS

EPA Method 18 Sampling

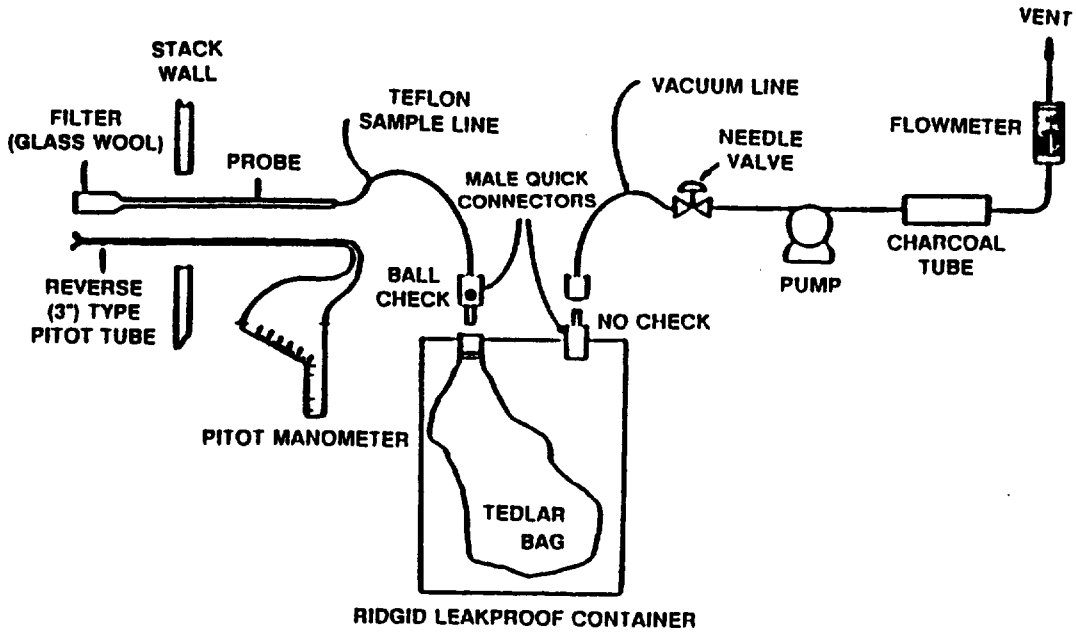
The sampling apparatus consisted of a stainless steel probe, teflon sample line, two liter tedlar bag housed in a rigid air tight container. The container was connected to a vacuum pump/rotameter/dry gas meter assembly.

The sampling apparatus was transported to the sample site, set up, and leak tested by observing a zero reading on the rotameter. The sample probe/teflon line was purged with stack gas and the three-way valve was opened to initiate the sampling. Sampling was conducted over a twenty minute period, a final leak test was performed and the bag recovered from the sample container.

The samples was stored out of sunlight, packaged and sent to the analytical laboratory for analysis of C_1-C_{6+} by flame ionization detector.

A bag blank (zero grade nitrogen) was included with each sample set.

Sampling Diagram



INTEGRATED BAG SAMPLING TRAIN

COMPANY: XONTECH, INC.
PROJECT: 098-303

PROCESS DATA

TURBINE	A	B	C	D	E	E	E
FUEL	GAS	GAS	GAS	GAS	GAS	GAS	GAS
LOAD	100%	100%	100%	100%	100%	75%	50%
DATE TESTED	5-11/12-93	5-13/14-93	5-12-93	5-18-93	5-14-93	5-20-93	5-20-93
MEGAWATTS	3	3	3	3	3	2.25	1.5
FUEL LB/MIN	30.8	30.6	31.9	31.89	30.24	25.73	20.97
H_2O LB/MIN	41.94	42.6	43.8	44.5	41.7	35.6	28.97
H_2O-FUEL RATIO	1.36	1.39	1.37	1.40	1.38	1.38	1.38
NOx (ppm, wet)	17.59	17.74	17.4	17.75	17.89	13.6	9.97
CO (ppm, wet)	3.46	0.72	2.54	5.30	0.28	2.50	4.33
O_2 (% wet)	13.4	13.3	12.89	13.33	14.31	14.3	16.0

RAW EMISSION DATA, TURBINE A
3 MEGAWATT LOAD
05/11/93

	TIME	O2Wet %	NOxWt ppm	COwET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
	11:05	13.3	16.5	00.	822	72	0.0	30.8	40.6
	11:10	13.3	16.5	00.	822	72	0.0	30.8	40.6
	11:15	13.3	16.5	00.	823	72	0.0	30.8	40.6
	11:20	13.3	16.4	00.	821	72	0.0	30.8	40.6
	11:25	13.3	16.4	00.	822	72	0.0	30.8	40.5
	11:30	13.3	16.4	00.	822	72	0.0	30.8	40.6
	11:35	13.3	16.4	00.	822	72	0.0	30.9	40.6
	11:40	13.3	16.4	00.	822	72	0.0	30.9	40.6
	11:45	13.3	16.3	00.	823	72	0.0	30.9	40.6
Turbine A Run #1	11:50	13.3	16.3	00.	822	72	0.0	30.8	40.6
	11:55	13.3	16.3	00.	822	72	0.0	30.8	40.6
	12:00	13.3	16.3	00.	824	72	0.0	30.9	40.6
	12:05	13.3	16.4	00.	824	72	0.0	30.8	40.6
	12:10	13.3 13.5	16.3 16.4	00.	823	72	0.0	30.8 29.97	40.6 38.52
	12:15	13.3	16.4	01.	824	72	0.0	30.8	40.6
	12:20	14.8	16.4	04.	784	69	0.0	23.4	22.0
	12:25	13.7	16.4	04.	748	70	0.0	30.2	39.5
	12:30	13.4	16.4	03.	815	71	0.0	30.5	40.0
	12:35	13.3	16.4	01.	821	72	0.0	30.7	40.1
	12:40	13.3	16.4	01.	825	72	0.0	30.7	40.2
	12:45	13.3	16.4	01.	824	72	0.0	30.7	40.2
Turbine A Run #2	12:50	13.3	16.6	01.	824	72	0.0	30.7	40.2
	12:55	13.3	16.6	01.	824	72	0.0	30.7	40.2
	13:00	13.3	16.6	01.	824	72	0.0	30.7	40.2
	13:05	13.3 13.3	16.4 16.4	00.	820	72	0.0	30.7 30.7	40.2 40.2
	13:10	13.3	16.4	00.	817	72	0.0	30.7	40.2
	13:15	13.4	16.3	00.	814	72	0.0	30.7	40.3
	13:20	13.4	16.2	00.	812	73	0.0	30.7	40.2
	13:25	13.4	16.2	00.	812	73	0.0	30.7	40.3
	13:30	13.4	16.2	00.	813	73	0.0	30.7	40.2
	13:35	13.4	16.3	00.	813	73	0.0	30.7	40.2
	13:40	13.4	16.3	00.	812	73	0.0	30.8	40.2
	13:45	13.4	16.2	00.	812	73	0.0	30.8	40.2
	13:50	13.4	16.2	00.	812	73	0.0	30.8	40.2
	13:55	12.6	16.2	00.	813	73	0.0	30.8	40.1
	14:00	15.4	16.3	00.	813	73	0.0	30.9	40.2

* SVPP Printouts are Not adjusted for Daylight savings

RAW EMISSION DATA, TURBINE A

3 MEGAWATT LOAD

05/12/93

TIME	O2Wet %	NOxWt ppm	COWET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
07:05	20.1	129.0C	00.C	500	00	0.0	0.0	0.0
07:10	20.2	0.0C	01.C	500	00	0.0	0.0	0.0
07:15	20.2	0.0	01.	500	00	0.0	0.0	0.0
07:20	18.8	0.0	01.	500	21	0.0	6.5	0.5
07:25	16.3	30.1	01.	545	65	0.0	21.0	21.6
07:30	15.8	37.7	01.	620	67	0.0	21.4	28.3
07:35	15.9	37.6	01.	631	67	0.0	20.6	26.9
07:40	15.9	15.5	09.	637	67	0.0	20.8	27.2
07:45	15.3	10.0	11.	650	69	0.0	23.9	31.1
07:50	13.8	10.0	11.	766	73	0.0	30.6	40.1
07:55	13.6	16.9	02.	796	73	0.0	30.7	40.2
08:00	13.5	18.7	00.	804	73	0.0	30.8	40.3
08:05	13.6	18.7	00.	802	73	0.0	30.4	40.2
08:10	13.6	18.1	00.	803	73	0.0	30.4	40.2
08:15	13.6	18.0	00.	804	73	0.0	30.6	40.2
08:20	13.5	18.0	00.	807	73	0.0	30.7	40.3
08:25	13.5	18.3	00.	808	73	0.0	30.8	40.6
08:30	13.5	18.4	01.	809	73	0.0	30.8	41.4
08:35	13.5	18.3	01.	807	73	0.0	30.7	41.5
08:40	13.5	18.0	01.	808	73	0.0	30.8	41.5
08:45	13.5	18.0	01.	807	73	0.0	30.8	41.5
08:50	13.5	18.0	01.	807	73	0.0	30.7	41.5
08:55	13.5	17.6	01.	806	73	0.0	30.7	41.5
09:00	13.5	17.5	01.	807	73	0.0	30.7	41.6
09:05	13.5	17.5	01.	807	73	0.0	30.5	41.5
09:10	13.6	17.9	01.	807	73	0.0	30.5	41.4
09:15	13.5	18.0	02.	809	73	0.0	30.6	41.4
09:20	13.5	18.0	02.	810	73	0.0	30.7	41.4
09:25	13.5	18.4	01.	813	73	0.0	30.8	41.4
09:30	13.5	18.5	01.	814	73	0.0	30.9	41.5
09:35	13.5	18.5	01.	814	73	0.0	30.8	41.6
09:40	13.5	18.5	01.	814	73	0.0	30.8	41.6
09:45	13.5	18.6	01.	814	73	0.0	30.8	41.6
09:50	13.5	18.6	01.	814	73	0.0	30.8	41.6
09:55	13.5	18.6	03.	815	73	0.0	30.8	41.6
10:00	13.5	18.6	03.	815	73	0.0	30.9	41.7
10:05	13.5	18.6	03.	815	72	0.0	30.8	41.5
10:10	13.5	18.6	03.	815	72	0.0	30.7	41.6
10:15	13.5	18.6	04.	815	72	0.0	30.8	41.5
10:20	13.5	18.6	04.	814	72	0.0	30.7	41.6
10:25	13.5	18.6	02.	815	73	0.0	30.8	41.6
10:30	13.5	18.7	02.	814	72	0.0	30.8	41.6
10:35	13.5	18.7	02.	816	72	0.0	30.9	41.5
10:40	13.5	18.5	03.	815	72	0.0	30.9	41.6
10:45	13.5	18.5	04.	814	73	0.0	30.8	41.6

Turbine A Run #3: 13.5, 18.3, 30.6, 40.7

Turbine A Run #4: 13.5, 18.1, 30.7, 41.5

Turbine A Run #5: 13.5, 18.6, 30.8, 41.6

Turbine A 100% GAS
5/12/93

	10:50	13.5	18.5	04.	816	72	0.0	30.9	41.6	
	10:55	13.5	18.3	04.	816	72	0.0	31.0	41.6	
	11:00	13.4	18.3	04.	819	72	0.0	31.1	41.6	
	11:05	13.4	18.3	04.	820	72	0.0	31.0	41.6	
	11:10	13.4	18.7	04.	819	72	0.0	31.0	41.6	
	11:15	13.5	18.9	05.	817	72	0.0	30.9	41.6	
	11:20	13.4	18.9	05.	818	72	0.0	31.0	41.6	
	11:25	13.4	18.8	07.	822	72	0.0	31.2	41.6	
	11:30	13.4	18.8	07.	820	72	0.0	31.2	41.7	
	11:35	13.4	18.8	07.	821	72	0.0	31.2	41.8	
	11:40	13.4	18.4	08.	821	72	0.0	31.2	41.8	
	11:45	13.4	18.3	08.	820	72	0.0	31.2	41.8	
	11:50	13.4	18.3	08.	820	72	0.0	31.3	43.9	
	11:55	13.4	17.6	08.	818	72	0.0	31.2	44.2	
	12:00	13.4	17.5	09.	817	72	0.0	31.3	44.2	
	12:05	13.4	17.5	09.	817	72	0.0	31.4	44.2	
	12:10	13.4	17.5	08.	819	72	0.0	31.4	44.3	
	12:15	13.4	17.6	08.	818	72	0.0	31.3	44.2	
	12:20	13.4	17.5	08.	818	72	0.0	31.4	44.2	
	12:25	13.3	17.4	07.	819	72	0.0	31.4	44.3	
	12:30	13.3	17.3	07.	820	72	0.0	31.4	44.3	
	12:35	13.3	17.3	07.	820	72	0.0	31.5	44.3	
	12:40	13.4	17.3	06.	820	72	0.0	31.3	44.3	
	12:45	13.3	17.3	06.	819	72	0.0	31.4	44.3	
	12:50	13.4	17.3	06.	819	72	0.0	31.3	44.3	
	12:55	13.3	17.2	07.	819	72	0.0	31.3	44.3	
	13:00	13.3	17.1	08.	819	72	0.0	31.4	44.3	

Turbine A Run #6: 13.4 / 18.7 / 31.1 / 41.6

Turbine A Run #7: 13.4 / 17.4 / 31.4 / 44.3

RAW EMISSION DATA, TURBINE A
3 MEGAWATT LOAD
05/12/93

TIME	O2Wet %	NOxWt ppm	COwET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
10:50	13.5	18.5	04.	816	72	0.0	30.9	41.6
10:55	13.5	18.3	04.	816	72	0.0	31.0	41.6
11:00	13.4	18.3	04.	819	72	0.0	31.1	41.6
11:05	13.4	18.3	04.	820	72	0.0	31.0	41.6
11:10	13.4	18.7	04.	819	72	0.0	31.0	41.6
11:15	13.5	18.9	05.	817	72	0.0	30.9	41.6
11:20	13.4	18.9	05.	818	72	0.0	31.0	41.6
11:25	13.4	18.8	07.	822	72	0.0	31.2	41.6
11:30	13.4	18.8	07.	820	72	0.0	31.2	41.7
11:35	13.4	18.8	07.	821	72	0.0	31.2	41.8
11:40	13.4	18.4	08.	821	72	0.0	31.2	41.8
11:45	13.4	18.3	08.	820	72	0.0	31.2	41.8
11:50	13.4	18.3	08.	820	72	0.0	31.3	43.9
11:55	13.4	17.6	08.	818	72	0.0	31.2	44.2
12:00	13.4	17.5	09.	817	72	0.0	31.3	44.2
12:05	13.4	17.5	09.	817	72	0.0	31.4	44.2
12:10	13.4	17.5	08.	819	72	0.0	31.4	44.3
12:15	13.4	17.6	08.	818	72	0.0	31.3	44.2
12:20	13.4	17.5	08.	818	72	0.0	31.4	44.2
12:25	13.3	17.4	07.	819	72	0.0	31.4	44.3
12:30	13.3	17.3	07.	820	72	0.0	31.4	44.3
12:35	13.3	17.3	07.	820	72	0.0	31.5	44.3
12:40	13.4	17.3	06.	820	72	0.0	31.3	44.3
12:45	13.3	17.3	06.	819	72	0.0	31.4	44.3
12:50	13.4	17.3	06.	819	72	0.0	31.3	44.3
12:55	13.3	17.2	07.	819	72	0.0	31.3	44.3
13:00	13.3	17.1	08.	819	72	0.0	31.4	44.3
13:05	13.3	17.1	08.	820	72	0.0	31.4	44.3
13:10	13.3	16.9	07.	819	72	0.0	31.4	44.3
13:15	13.3	16.9	07.	819	72	0.0	31.4	44.3
13:20	13.4	16.9	07.	818	72	0.0	31.3	44.3
13:25	13.4	16.9	07.	817	72	0.0	31.4	44.3
13:30	13.3	17.0	08.	818	72	0.0	31.4	44.3
13:35	13.4	17.0	08.	818	72	0.0	31.3	44.3
13:40	13.4	16.7	07.	816	72	0.0	31.1	44.3
13:45	13.4	16.7	07.	817	72	0.0	31.1	44.3
13:50	13.4	16.7	07.	817	72	0.0	31.2	44.3
13:55	13.4	16.8	08.	818	72	0.0	31.1	44.3
14:00	13.4	16.9	08.	817	72	0.0	31.0	44.3

Turbine A Run #8

13.36 16.90 31.3 44.3

RAW EMISSION DATA, TURBINE A
3 MEGAWATT LOAD
05/13/93

Turbine A
Run #9

TIME	O2Wet %	NOxWt ppm	COWET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
07:35	13.4	18.1	04.	804	73	0.0	30.5	42.8
07:40	13.4	17.7	03.	806	73	0.0	30.6	43.0
07:45	13.4	17.6	03.	808	73	0.0	30.6	43.0
07:50	13.4	17.7	03.	808	73	0.0	30.6	43.1
07:55	13.4	17.5	04.	809	73	0.0	30.6	43.0
08:00	13.4	17.4	04.	809	73	0.0	30.6	43.1
08:05	13.4	17.4	04.	810	73	0.0	30.7	43.2
08:10	13.4	17.6	03.	811	73	0.0	30.7	43.3
08:15	13.4	17.6	03.	812	73	0.0	30.8	43.3
08:20	13.4	17.7	03.	813	73	0.0	30.8	43.3
08:25	13.4	17.5	02.	812	73	0.0	30.8	43.3
08:30	13.4	17.5	02.	813	73	0.0	30.9	43.4
08:35	13.4	17.4	02.	813	73	0.0	30.9	43.4
08:40	13.4	17.4	03.	812	73	0.0	30.9	43.5
08:45	13.4	17.5	04.	812	73	0.0	31.0	43.5
08:50	13.4	17.4	04.	813	73	0.0	30.9	43.5
08:55	13.4	17.4	04.	812	73	0.0	31.0	43.5
09:00	13.4	17.4	04.	813	73	0.0	31.0	43.5
09:05	13.4	17.4	04.	812	73	0.0	31.0	43.5
09:10	13.4	17.2	02.	812	73	0.0	31.0	43.6
09:15	13.4	17.2	02.	812	73	0.0	31.0	43.5
09:20	13.4	17.2	02.	812	73	0.0	31.0	43.6
09:25	13.4	17.2	04.	812	73	0.0	30.9	43.5
09:30	13.4	17.2	05.	812	73	0.0	31.0	43.6
09:35	13.4	17.2	05.	812	73	0.0	31.0	43.6
09:40	13.4	17.2	04.	813	73	0.0	31.1	43.6
09:45	13.4	17.2	04.	813	73	0.0	31.0	43.7
09:50	13.4	17.2	04.	813	73	0.0	31.1	43.7
09:55	13.4	17.0	04.	812	73	0.0	31.1	43.6
10:00	13.4	17.0	05.	814	73	0.0	31.1	43.7
10:05	13.4	17.0	05.	814	73	0.0	31.1	43.7
10:10	13.4	17.0	05.	815	73	0.0	31.0	43.7
10:15	13.3	17.1	05.	815	73	0.0	31.0	43.7
10:20	13.3	17.1	05.	815	72	0.0	31.0	43.7
10:25	13.4	17.0	04.	814	44	0.0	31.0	43.7
10:30	13.4	17.0	04.	815	79	0.0	31.0	43.6
10:35	13.3	17.0	04.	815	79	0.0	31.0	43.7
10:40	13.3	17.1	04.	816	80	0.0	31.0	43.7
10:45	13.3	17.1	05.	815	74	0.0	31.0	43.7
10:50	13.4	17.1	05.	815	82	0.0	31.0	43.7
10:55	13.3	17.1	05.	815	82	0.0	31.0	43.7
11:00	13.3	17.1	05.	815	82	0.0	31.0	43.7
11:05	13.3	17.1	05.	815	82	0.0	31.0	43.7
11:10	13.3	17.0	03.	816	82	0.0	31.0	43.7
11:15	13.3	17.1	03.	817	82	0.0	31.0	43.7

13.40 17.60 30.7 43.2

RAW EMISSION DATA, TURBINE A
3 MEGAWATT LOAD
05/13/93

TIME	O2Wet %	NOxWt ppm	COwET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
11:20	13.3	17.0	03.	817	82	0.0	31.0	43.7
11:25	13.3	17.0	05.	818	82	0.0	31.0	43.7
11:30	13.3	17.1	06.	819	82	0.0	31.0	43.7
11:35	13.3	17.1	06.	819	82	0.0	31.0	43.7
11:40	13.3	17.1	06.	820	82	0.0	31.0	43.7
11:45	13.3	17.2	06.	822	82	0.0	31.0	43.7
11:50	13.3	17.2	06.	820	82	0.0	31.0	43.6
11:55	13.3	17.2	05.	820	82	0.0	31.0	43.5
12:00	13.3	17.3	05.	819	82	0.0	31.0	43.5
12:05	13.3	17.3	05.	822	81	0.0	31.0	43.6
12:10	13.3	17.4	05.	821	82	0.0	31.0	43.6
12:15	13.3	17.5	05.	821	81	0.0	31.0	43.6
12:20	13.3	17.5	05.	820	81	0.0	31.0	43.6
12:25	13.3	17.5	05.	820	81	0.0	30.9	43.5
12:30	13.3	17.5	05.	819	81	0.0	30.9	43.5
12:35	13.3	17.5	05.	820	81	0.0	31.0	43.5
12:40	13.3	17.5	05.	819	81	0.0	31.0	43.5
12:45	13.3	17.5	05.	820	81	0.0	30.9	43.5
12:50	13.3	17.5	05.	822	81	0.0	30.9	43.5

Turbine A
Run #10
13.30
17.50
30.9
43.5

RAW EMISSION DATA, TURBINE B
3 MEGAWATT LOAD
05/13/93

Turbine B
RUN #1

TIME	O2Wet %	NOxWt ppm	COWET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
14:35	15.4	0.0	00	577	67	0.0	22.3	27.8
14:40	12.0	3.6	00	770	73	0.0	30.2	42.1
14:45	10.6	18.2	01	812	74	0.0	30.2	42.0
14:50	10.2	18.2	01	822	74	0.0	30.2	42.1
14:55	10.1	18.0	01	827	74	0.0	30.2	42.2
15:00	10.0	16.9	00	830	74	0.0	30.3	42.3
15:05	10.0	16.9	00	832	74	0.0	30.5	42.4
15:10	9.9	16.9	00	833	74	0.0	30.5	42.7
15:15	9.9	16.6	00	832	74	0.0	30.6	42.7
15:20	9.9	16.6	00	832	74	0.0	30.7	42.7
15:25	9.9	16.6	00	833	74	0.0	30.6	42.8
15:30	9.9	16.4	00	833	74	0.0	30.6	42.8
15:35	9.9	16.4	00	834	74	0.0	30.7	42.7

10.1 17.3 30.4 42.4

RAW EMISSION DATA, TURBINE B
3 MEGAWATT LOAD
05/14/93

	TIME	O2Wet %	NOxWt ppm	COwET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
08:05 →	07:05	14.2	18.3	00	826	74	0.0	30.3	42.2
	07:10	14.2	18.3	00	825	74	0.0	30.3	42.3
	07:15	14.2	18.3	00	824	74	0.0	30.3	42.2
	07:20	14.2	18.3	00	823	74	0.0	30.3	42.2
	07:25	14.2	18.3	00	826	74	0.0	30.4	42.4
Turbine B Run #2	07:30	14.1	18.3	00	826	74	0.0	30.5	42.5
	07:35	14.2	18.3	00	826	74	0.0	30.5	42.6
	07:40	14.2	18.3	00	826	74	0.0	30.5	42.6
	07:45	14.1	18.4	00	826	74	0.0	30.5	42.5
	07:50	14.1	18.4	00	827	74	0.0	30.5	42.5
	07:55	14.1	18.3	00	827	74	0.0	30.5	42.5
	08:00	14.1	18.3	00	827	74	0.0	30.5	42.6
	08:05	14.1	18.3	00	827	74	0.0	30.5	42.5
	08:10	14.1	18.3	00	827	74	0.0	30.5	42.5
	08:15	14.2	18.4	00	826	74	0.0	30.5	42.5
	08:20	14.2	18.4	00	826	74	0.0	30.5	42.6
	08:25	14.1	18.4	00	827	74	0.0	30.6	42.5
	08:30	14.2	18.4	00	826	74	0.0	30.5	42.6
Turbine B Run #3	08:35	14.2	18.4	00	826	74	0.0	30.4	42.5
	08:40	14.2	18.4	00	826	74	0.0	30.4	42.4
	08:45	14.2	18.3	00	825	74	0.0	30.4	42.4
	08:50	14.3	18.3	00	824	74	0.0	30.4	42.4
	08:55	14.3	18.2	00	825	74	0.0	30.5	42.4
	09:00	14.2	18.1	00	826	74	0.0	30.5	42.6
	09:05	14.2	18.0	00	826	74	0.0	30.5	42.6
	09:10	14.2	18.1	00	826	74	0.0	30.5	42.5
	09:15	14.2	18.4	00	827	74	0.0	30.5	42.5
	09:20	14.2	18.4	00	827	74	0.0	30.5	42.4
	09:25	14.2	18.3	00	827	75	0.0	30.5	42.4
	09:30	14.2	18.3	00	827	74	0.0	30.5	42.4
Turbine B Run #4	09:35	14.2	18.3	00	826	75	0.0	30.5	42.5
	09:40	14.2	18.2	00	826	74	0.0	30.5	42.4
	09:45	14.2	17.9	00	826	75	0.0	30.4	42.3
	09:50	14.2	17.9	00	826	74	0.0	30.4	42.3
	09:55	14.2	17.9	00	826	74	0.0	30.4	42.3
	10:00	14.2	18.1	00	825	74	0.0	30.4	42.4
	10:05	14.2	18.1	00	826	74	0.0	30.4	42.4
	10:10	14.2	18.1	00	826	74	0.0	30.4	42.4
	10:15	14.2	18.2	00	826	74	0.0	30.4	42.4
	10:20	14.2	18.2	00	826	74	0.0	30.4	42.4
	10:25	14.2	18.1	00	826	74	0.0	30.4	42.4
R#5	10:30	14.2	18.1	00	826	74	0.0	30.4	42.4
	10:35	14.1	18.1	00	828	74	0.0	30.5	42.4
	10:40	14.1	18.0	00	827	74	0.0	30.6	42.6
	10:45	14.1	17.9	01	828	74	0.0	30.6	42.7

Turbine B Run #2: O2 14.1, NOx 18.3, GasFl 30.5, WatFl 42.5
Turbine B Run #3: O2 14.2, NOx 18.3, GasFl 30.5, WatFl 42.5
Turbine B Run #4: O2 14.2, NOx 18.1, GasFl 30.4, WatFl 42.4

RAW EMISSION DATA, TURBINE B
3 MEGAWATT LOAD
05/14/93

	TIME	O2Wet %	NOxWt ppm	COwET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
	10:50	14.1	17.8	01	828	74	0.0	30.6	42.6
RUN #5	10:55	14.1	17.9	00	828	74	0.0	30.5	42.6
	11:00	14.1	18.0	01	829	74	0.0	30.6	42.6
	11:05	14.0	18.0	01	830	74	0.0	30.6	42.6
	11:10	14.0	17.9	00	830	74	0.0	30.6	42.6
	11:15	14.1	17.9	00	828	74	0.0	30.6	42.7
	11:20	14.1	17.9	00	828	74	0.0	30.5	42.6
	11:25	14.1	17.9	00	828	74	0.0	30.5	42.6
	11:30	14.0	18.1	00	829	74	0.0	30.6	42.6
	11:35	14.0	18.1	00	830	74	0.0	30.6	42.7
RUN #6	11:40	14.0	18.0	00	830	74	0.0	30.6	42.6
	11:45	14.0	18.0	00	830	74	0.0	30.6	42.8
	11:50	14.0	18.0	00	831	74	0.0	30.6	42.7
	11:55	14.0	17.9	00	830	74	0.0	30.6	42.6
	12:00	14.0	17.8	00	830	74	0.0	30.7	42.8
	12:05	14.0	17.8	00	831	74	0.0	30.7	42.9
	12:10	14.0	17.7	00	831	74	0.0	30.8	42.9
	12:15	14.0	17.7	00	831	74	0.0	30.8	42.9
	12:20	14.0	17.7	00	831	74	0.0	30.8	43.0
	12:25	14.0	17.7	00	831	74	0.0	30.7	42.8
	12:30	14.0	17.9	00	831	74	0.0	30.8	42.8
RUN #7	12:35	14.0	17.9	00	831	74	0.0	30.8	42.9
	12:40	13.9	17.8	00	832	74	0.0	30.8	42.9
	12:45	13.9	17.8	00	834	74	0.0	30.8	42.9
	12:50	13.9	17.8	00	833	74	0.0	30.8	42.9
	12:55	13.9	17.8	00	832	74	0.0	30.8	42.9
	13:00	13.9	17.8	00	832	74	0.0	30.7	42.9

RUN #5: O2 14.1, NOx 18.0, GasFl 30.5, WatFl 42.5
RUN #6: O2 14.0, NOx 18.0, GasFl 30.6, WatFl 42.7
RUN #7: O2 14.0, NOx 17.8, GasFl 30.8, WatFl 42.9

RAW EMISSION DATA, TURBINE B
3 MEGAWATT LOAD
05/17/93

TIME	O2Wet %	NOxWt ppm	COwET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
12:05	13.9	18.0	00	830	74	0.0	30.9	43.1
12:10	13.9	18.0	00	830	75	0.0	30.9	43.0
12:15	13.9	18.0	00	830	75	0.0	30.9	43.0
12:20	13.9	18.0	00	831	75	0.0	30.9	43.0
12:25	13.9	18.0	00	831	75	0.0	30.9	43.0
12:30	13.9	18.1	00	831	75	0.0	30.9	43.0
12:35	13.9	18.1	00	831	75	0.0	31.0	43.2
12:40	13.9	18.0	00	832	75	0.0	31.0	43.3
12:45	13.9	17.9	00	833	74	0.0	31.0	43.2
12:50	13.8	17.9	00	833	74	0.0	31.1	43.3
12:55	15.0	17.8	00	800	73	0.0	28.4	39.6
13:00	14.1	17.8	01	835	75	0.0	31.2	39.2
13:05	13.9	17.8	01	829	74	0.0	30.6	42.8
13:10	14.0	17.8	01	829	74	0.0	30.7	42.8
13:15	14.0	17.7	01	828	74	0.0	30.7	43.0
13:20	14.0	17.7	01	829	74	0.0	30.8	42.9
13:25	14.0	17.7	00	830	74	0.0	30.8	43.0
13:30	14.1	17.6	00	827	74	0.0	30.6	42.7
13:35	14.2	17.6	00	825	74	0.0	30.5	42.6
13:40	14.2	17.5	00	825	74	0.0	30.5	42.6
13:45	14.2	17.5	00	825	74	0.0	30.5	42.7
13:50	14.2	17.5	00	825	74	0.0	30.6	42.5
13:55	14.2	17.5	00	825	74	0.0	30.6	42.7
14:00	14.2	17.5	01	825	74	0.0	30.6	42.7
14:05	14.2	17.5	01	825	74	0.0	30.6	42.7
14:10	14.1	17.5	01	827	74	0.0	30.7	42.7
14:15	14.1	17.5	01	826	74	0.0	30.7	42.7
14:20	14.1	17.5	01	827	74	0.0	30.6	42.7
14:25	14.1	17.5	00	828	74	0.0	30.6	42.7
14:30	14.0	17.7	01	830	74	0.0	30.7	42.8
14:35	14.0	17.7	00	829	74	0.0	30.6	42.7
14:40	14.0	17.7	00	831	74	0.0	30.8	42.9
14:45	14.0	17.7	00	831	74	0.0	30.8	43.0
14:50	13.9	17.7	00	832	74	0.0	30.8	43.0
14:55	13.9	17.7	01	831	74	0.0	30.9	43.1
15:00	13.9	17.7	01	831	74	0.0	30.9	43.1

Run #8: 14.1, 17.8, 30.6, 42.3

Run #9: 14.1, 17.6, 30.7, 42.7

RAW EMISSION DATA, TURBINE B
3 MEGAWATT LOAD
05/18/93

TIME	O2Wet %	NOxWt ppm	COWET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
07:30	19.4	0.0	00	500	05	0.0	1.8	0.0
07:35	16.9	0.0	00	515	63	0.0	17.5	13.3
07:40	14.4	3.9	01	634	69	0.0	25.7	35.7
07:45	11.6	16.8	03	792	72	0.0	30.7	42.8
07:50	10.7	16.7	03	817	74	0.0	30.7	42.9
07:55	10.4	16.5	03	825	77	0.0	30.8	42.9
08:00	10.3	15.8	03	829	81	0.0	30.8	42.9
08:05	10.2	15.8	03	833	81	0.0	30.9	43.0
08:10	10.2	15.9	03	835	81	0.0	30.9	43.0
08:15	10.2	16.3	02	837	61	0.0	30.9	43.1
08:20	10.1	16.3	02	838	81	0.0	30.9	43.0
08:25	10.1	16.3	03	837	81	0.0	30.9	43.1
08:30	10.1	16.1	04	838	82	0.0	30.9	43.1
08:35	10.1	16.1	04	839	82	0.0	30.9	43.1
08:40	10.1	16.1	04	840	82	0.0	30.9	43.1
08:45	10.1	16.4	02	841	82	0.0	31.0	43.2
08:50	10.0	16.4	02	841	82	0.0	30.9	43.3
08:55	10.1	16.4	02	838	83	0.0	31.0	43.1
09:00	10.1	16.1	04	838	83	0.0	31.0	43.2
09:05	10.1	16.1	04	839	83	0.0	30.9	43.2
09:10	10.1	16.2	03	839	83	0.0	30.9	43.2
09:15	10.1	16.4	03	839	83	0.0	30.9	43.2
09:20	10.1	16.4	03	839	83	0.0	31.0	43.1
09:25	10.1	16.4	03	839	83	0.0	30.8	43.1
09:30	10.1	16.4	04	840	83	0.0	30.8	43.0
09:35	10.1	16.4	04	840	83	0.0	30.8	43.0

RUN #10

10.1 16.2 30.9 43.2

RAW EMISSION DATA, TURBINE C
3 MEGAWATT LOAD
05/12/93

	TIME	O2Wet %	NOxWt ppm	COwET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
	08:05	13.1	18.1	00	832	71	0.0	31.3	41.1
	08:10	13.1	18.1	00	833	71	0.0	31.3	41.0
	08:15	13.1	18.1	00	835	71	0.0	31.5	41.1
	08:20	13.1	18.1	00	839	71	0.0	31.6	41.4
	08:25	13.0	18.1	00	840	72	0.0	31.8	41.4
	08:30	13.0	18.2	00	842	72	0.0	31.7	41.4
	08:35	13.1	18.4	00	841	71	0.0	31.7	41.4
	08:40	13.1	18.4	00	842	72	0.0	31.7	41.3
	08:45	13.1	18.2	00	841	71	0.0	31.7	41.4
Run #1	08:50	13.1	18.2	00	840	71	0.0	31.7	41.2
	08:55	13.1	18.2	00	840	72	0.0	31.7	41.3
	09:00	13.1	18.2	00	841	71	0.0	31.7	41.5
	09:05	13.1	18.2	00	841	72	0.0	31.5	41.0
	09:10	13.1	18.2	00	841	71	0.0	31.5	41.1
	09:15	13.1	18.5	00	843	72	0.0	31.6	41.4
	09:20	13.1	18.7	00	844	72	0.0	31.6	41.4
	09:25	13.0	18.7	00	847	72	0.0	31.8	41.5
	09:30	13.0	18.9	00	849	72	0.0	31.9	41.6
	09:35	13.0	19.0	01	849	72	0.0	31.9	41.6
Run #1 Repeat	09:40	13.0	19.0	01	850	72	0.0	31.8	41.5
	09:45	13.0	18.9	00	849	72	0.0	31.8	41.4
	09:50	13.0	18.8	00	850	72	0.0	31.8	41.5
	09:55	13.0	18.8	00	850	72	0.0	31.8	41.5
	10:00	13.0	18.8	01	850	72	0.0	31.9	41.7
	10:05	13.0	18.9	01	850	72	0.0	31.8	41.6
	10:10	13.0	18.9	01	849	72	0.0	31.6	41.3
	10:15	13.0	19.0	00	849	72	0.0	31.7	41.4
	10:20	13.0	19.2	00	849	72	0.0	31.7	41.4
	10:25	13.0	19.2	00	850	72	0.0	31.8	41.4
	10:30	13.0	19.1	00	849	72	0.0	31.8	41.5
Run #2	10:35	13.0	19.1	00	851	72	0.0	31.9	41.5
	10:40	13.0	19.1	00	850	72	0.0	31.8	41.6
	10:45	13.0	18.9	01	850	72	0.0	31.8	41.5
	10:50	13.0	18.9	02	851	72	0.0	31.9	41.7
	10:55	13.0	18.9	02	851	72	0.0	31.9	41.8
	11:00	12.9	18.9	01	854	72	0.0	32.1	41.8
	11:05	12.9	18.9	01	853	72	0.0	32.0	41.6
	11:10	12.9	18.9	01	853	72	0.0	32.0	41.8
	11:15	13.0	18.7	02	851	72	0.0	31.9	41.7
	11:20	12.9	18.6	02	852	72	0.0	32.0	41.8
	11:25	12.9	18.6	02	856	72	0.0	32.3	42.1
Run #3	11:30	12.9	18.9	02	856	72	0.0	32.2	42.1
	11:35	12.9	19.0	02	855	72	0.0	32.3	42.1
	11:40	12.9	19.0	02	854	72	0.0	32.3	42.0
	11:45	12.9	18.9	02	853	72	0.0	32.1	42.0

RAW EMISSION DATA, TURBINE C
3 MEGAWATT LOAD
05/12/93

#3 CONT

TIME	O2Wet %	NOxWt ppm	COWET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
11:50	12.9	18.9	02	854	72	0.0	32.4	42.7
11:55	12.9	18.9	02	851	72	0.0	32.3	45.5
12:00	12.9	17.9	03	850	72	0.0	32.4	45.5
12:05	12.9	17.2	03	850	72	0.0	32.5	45.7
12:10	12.8	17.2	03	851	72	0.0	32.5	45.7
12:15	12.8	17.2	02	851	72	0.0	32.4	45.6
12:20	12.8	17.3	02	850	72	0.0	32.5	45.6
12:25	12.8	17.2	02	851	72	0.0	32.5	45.7
12:30	12.8	17.2	02	852	72	0.0	32.5	45.6
12:35	12.8	17.2	02	853	72	0.0	32.6	45.8
12:40	12.8	17.3	02	853	72	0.0	32.4	45.5
12:45	12.8	17.2	02	852	72	0.0	32.4	45.6
12:50	12.8	17.2	02	852	72	0.0	32.3	45.5
12:55	12.8	17.2	02	852	72	0.0	32.4	45.7
13:00	12.8	17.1	02	852	72	0.0	32.4	45.5
13:05	12.8	17.0	03	852	72	0.0	32.4	45.6
13:10	12.8	17.0	03	852	72	0.0	32.5	45.5
13:15	12.8	17.0	03	852	72	0.0	32.4	45.6
13:20	12.8	17.0	04	851	72	0.0	32.5	45.6
13:25	12.8	17.0	04	851	72	0.0	32.5	45.5
13:30	12.8	16.9	03	852	72	0.0	32.5	45.6
13:35	12.8	16.9	03	851	72	0.0	32.4	45.6
13:40	12.8	16.9	03	849	72	0.0	32.2	45.1
13:45	12.8	16.9	02	849	72	0.0	32.1	45.1
13:50	12.8	16.9	02	850	72	0.0	32.2	45.4
13:55	12.8	16.9	02	850	72	0.0	32.1	45.1
14:00	12.9	16.9	02	848	72	0.0	31.9	44.8

RUN #4: 12.8, 17.2, 32.5, 45.6

RUN #5: 12.8, 17.0, 32.4, 45.5

RAW EMISSION DATA, TURBINE C
3 MEGAWATT LOAD
05/13/93

	TIME	O2Wet %	NOxWt ppm	COwET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
08:30 →	07:30	13.0	13.7	09	826	71	0.0	31.3	43.9
	07:35	13.0	17.2	03	831	71	0.0	31.4	44.0
	07:40	13.0	17.2	03	834	71	0.0	31.4	44.0
	07:45	13.0	17.1	02	835	71	0.0	31.3	43.9
	07:50	13.0	17.0	02	836	71	0.0	31.3	43.9
Run#6	07:55	13.0	17.0	02	837	71	0.0	31.3	44.0
	08:00	13.0	17.2	02	838	71	0.0	31.3	44.0
	08:05	12.9	17.4	02	838	71	0.0	31.4	44.0
	08:10	12.9	17.4	02	839	71	0.0	31.2	44.2
	08:15	12.9	17.2	02	839	71	0.0	31.4	44.3
	08:20	12.9	17.2	03	840	71	0.0	31.5	44.2
	08:25	12.9	17.2	03	840	71	0.0	31.4	44.3
	08:30	12.9	17.1	03	840	71	0.0	31.4	44.2
	08:35	12.9	17.1	03	841	71	0.0	31.5	44.2
	08:40	12.9	17.1	03	840	71	0.0	31.4	44.4
Run#7	08:45	12.9	17.1	03	840	71	0.0	31.6	44.4
	08:50	12.9	17.1	04	840	71	0.0	31.6	44.4
	08:55	12.9	17.1	04	840	71	0.0	31.6	44.3
	09:00	12.9	17.1	03	840	71	0.0	31.6	44.6
	09:05	12.9	17.1	02	839	71	0.0	31.6	44.4
	09:10	12.9	17.1	02	839	71	0.0	31.6	44.5
	09:15	12.9	17.0	03	839	71	0.0	31.5	44.4
	09:20	12.9	17.0	04	839	72	0.0	31.6	44.4
	09:25	12.9	17.0	04	839	72	0.0	31.6	44.3
	09:30	12.9	16.9	03	839	72	0.0	31.6	44.5
	09:35	12.9	16.8	03	839	72	0.0	31.7	44.5
	09:40	12.9	16.8	03	840	71	0.0	31.7	44.5
	09:45	12.9	16.9	04	839	72	0.0	31.7	44.6
	09:50	12.9	17.0	05	840	71	0.0	31.6	44.4
	09:55	12.9	17.0	05	839	72	0.0	31.7	44.7
	10:00	12.9	16.8	05	840	71	0.0	31.8	44.7
	10:05	12.9	16.8	05	841	72	0.0	31.8	44.6
	10:10	12.9	16.8	05	842	72	0.0	31.7	44.4
	10:15	12.9	16.9	04	842	71	0.0	31.6	44.4
	10:20	12.9	17.0	04	843	71	0.0	31.7	44.5
	10:25	12.9	17.0	04	842	71	0.0	31.6	44.4
	10:30	12.9	16.9	04	842	71	0.0	31.6	44.5
Run#8	10:35	12.9	16.9	04	842	71	0.0	31.6	44.3
	10:40	12.9	16.9	04	843	71	0.0	31.6	44.4
	10:45	12.9	17.0	04	843	71	0.0	31.6	44.4
	10:50	12.9	17.0	04	842	71	0.0	31.6	44.4
	10:55	12.9	17.0	04	842	71	0.0	31.6	44.4
	11:00	12.9	16.9	04	842	71	0.0	31.6	44.5
	11:05	12.9	16.8	04	843	71	0.0	31.6	44.4
	11:10	12.8	16.8	04	843	71	0.0	31.5	44.4

Run#6: O2 13.0; NOx 17.2; GasFl 31.3; WatFl 44.0
Run#7: O2 12.9; NOx 17.1; GasFl 31.6; WatFl 44.3
Run#8: O2 12.9; NOx 16.9; GasFl 31.6; WatFl 44.4

RAW EMISSION DATA, TURBINE C
3 MEGAWATT LOAD
05/13/93

TIME	O2Wet %	NOxWt ppm	COwET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
11:15	12.8	16.9	04	845	71	0.0	31.6	44.4
11:20	12.8	17.0	04	845	71	0.0	31.7	44.5
11:25	12.8	17.0	04	845	71	0.0	31.6	44.5
11:30	12.8	17.0	05	846	71	0.0	31.7	44.5
11:35	12.8	17.0	06	846	71	0.0	31.6	44.4
11:40	12.8	16.9	06	848	71	0.0	31.7	44.5
11:45	12.8	17.0	06	848	71	0.0	31.6	44.4
11:50	12.8	17.1	06	847	71	0.0	31.6	44.5
11:55	12.8	17.1	06	848	71	0.0	31.5	44.4
12:00	12.8	16.9	04	847	71	0.0	31.5	44.5
12:05	12.8	16.9	04	849	71	0.0	31.6	44.4
12:10	12.8	16.9	04	849	71	0.0	31.6	44.4
12:15	12.8	17.0	04	849	71	0.0	31.6	44.2
12:20	12.8	17.2	04	848	71	0.0	31.6	44.5
12:25	12.8	17.2	04	848	71	0.0	31.6	44.4
12:30	12.8	17.2	04	847	71	0.0	31.6	44.3
12:35	12.8	17.2	04	849	71	0.0	31.5	44.2
12:40	12.8	17.2	04	848	71	0.0	31.6	44.3
12:45	12.8	17.2	04	848	71	0.0	31.5	44.3
12:50	12.8	17.2	04	849	71	0.0	31.5	44.4
12:55	12.8	17.2	04	850	71	0.0	31.5	44.3
13:00	12.8	17.2	04	848	71	0.0	31.6	44.3
13:05	13.1	17.2	05	836	70	0.0	29.5	41.8
13:10	12.9	17.2	05	833	71	0.0	31.6	44.6
13:15	12.7	17.1	04	849	71	0.0	31.7	44.6
13:20	12.7	17.0	04	849	71	0.0	31.6	44.6
13:25	12.7	17.0	04	850	71	0.0	31.5	44.5
13:30	12.7	17.0	03	852	71	0.0	31.7	44.5
13:35	12.7	17.0	03	850	71	0.0	31.6	44.5
13:40	12.7	17.0	03	850	71	0.0	31.6	44.5
13:45	12.7	16.9	02	851	71	0.0	31.6	44.6
13:50	12.7	16.9	02	850	71	0.0	31.6	44.4
13:55	12.7	16.9	02	851	77	0.0	31.6	44.3
14:00	12.7	16.9	02	851	80	0.0	31.6	44.5
14:05	12.7	17.0	03	853	80	0.0	31.7	44.4
14:10	12.7	17.0	03	853	80	0.0	31.6	44.4
14:15	12.7	16.9	03	851	80	0.0	31.6	44.4
14:20	12.7	16.9	03	851	80	0.0	31.6	44.4
14:25	12.7	17.0	03	852	80	0.0	31.6	44.3
14:30	12.7	16.9	03	852	80	0.0	31.7	44.4
14:35	12.7	16.8	03	853	81	0.0	31.7	44.7
14:40	12.6	16.8	03	855	81	0.0	31.8	44.8
14:45	12.6	17.0	03	855	81	0.0	31.9	44.9
14:50	12.6	17.0	03	856	81	0.0	31.9	44.8
14:55	12.6	17.0	03	854	81	0.0	31.8	44.5

Run #9: 12.8, 17.0, 31.6, 44.5

Run 10: 12.7, 16.9, 31.7, 44.4

RAW EMISSION DATA, TURBINE D
3 MEGAWATT LOAD
05/18/93

TIME	O2Wet %	NOxWt ppm	COwET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
07:45	13.3	9.4	10	829	80	0.0	31.5	43.4
07:50	13.1	18.2	04	845	80	0.0	31.3	43.1
07:55	13.1	18.2	04	850	80	0.0	31.6	43.4
08:00	13.0	18.2	04	854	80	0.0	31.6	43.5
08:05	13.0	18.3	05	857	80	0.0	31.5	43.8
08:10	13.0	18.3	05	858	80	0.0	31.5	43.6
08:15	13.0	18.3	05	858	80	0.0	31.5	43.7
08:20	13.0	18.3	05	858	80	0.0	31.5	43.7
08:25	13.0	18.3	05	858	80	0.0	31.4	43.4
08:30	13.0	18.3	05	860	80	0.0	31.5	43.6
08:35	13.0	18.5	06	861	80	0.0	31.9	43.6
08:40	13.0	18.5	06	862	80	0.0	31.5	43.5
08:45	13.0	18.5	06	863	80	0.0	31.6	43.5
08:50	13.0	18.6	06	862	80	0.0	31.6	43.4
08:55	13.0	18.6	06	857	80	0.0	31.5	43.2
09:00	13.1	18.5	06	856	80	0.0	31.6	43.1
09:05	13.0	18.2	07	858	80	0.0	31.6	43.6
09:10	13.0	18.2	07	858	80	0.0	31.5	43.2
09:15	13.0	18.2	07	858	81	0.0	31.4	43.4
09:20	13.1	18.3	07	856	81	0.0	31.4	43.3
09:25	13.1	18.3	07	856	81	0.0	31.4	42.8
09:30	13.0	18.3	07	857	81	0.0	31.4	43.3
09:35	13.1	18.6	07	857	81	0.0	31.5	43.2
09:40	13.0	18.7	07	858	81	0.0	31.5	43.2
09:45	13.0	18.6	07	858	80	0.0	31.4	43.0
09:50	13.0	18.6	07	859	81	0.0	31.5	43.5
09:55	13.0	18.6	07	859	80	0.0	31.6	43.8
10:00	13.0	18.5	07	859	80	0.0	31.7	43.5
10:05	13.0	18.5	06	858	81	0.0	31.7	43.4
10:10	13.0	18.5	06	857	81	0.0	31.5	43.5
10:15	13.1	18.5	05	856	80	0.0	31.5	43.5
10:20	13.0	18.4	04	857	80	0.0	31.7	43.5
10:25	13.0	18.4	04	858	81	0.0	31.7	43.7
10:30	13.0	18.4	04	858	81	0.0	31.5	43.5
10:35	13.0	18.4	04	859	81	0.0	31.6	43.7
10:40	13.0	18.4	04	861	80	0.0	31.7	43.8
10:45	13.0	18.4	04	861	81	0.0	31.8	43.7
10:50	13.0	18.4	05	863	80	0.0	31.9	43.7
10:55	13.0	18.3	05	863	80	0.0	31.7	43.8
11:00	13.0	18.4	04	863	80	0.0	31.9	43.9
11:05	12.9	18.4	03	864	80	0.0	32.0	43.8
11:10	12.9	18.4	03	865	80	0.0	32.1	43.8
11:15	12.9	18.4	03	866	80	0.0	32.1	44.3
11:20	12.9	18.5	05	867	80	0.0	31.6	44.3
11:25	12.9	18.5	05	866	80	0.0	32.1	44.2

Run #1

13.0 18.4 4.44 31.6 43.6

RAW EMISSION DATA, TURBINE D
3 MEGAWATT LOAD
05/18/93

	TIME	O2Wet %	NOxWt ppm	COwET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
	11:05	12.9	18.4	03	864	80	0.0	32.0	43.8
	~~11:10~~	~~12.9~~	~~18.4~~	03	865	80	0.0	32.1	43.8
Run #2	11:15	12.9	18.4	03	866	80	0.0	32.1	44.3
	11:20	12.9	18.5	05	867	80	0.0	31.6	44.3
	11:25	12.9	18.5	05	866	80	0.0	32.1	44.2
	11:30	12.9	18.4	05	867	80	0.0	32.2	44.2
	11:35	12.9 12.9	18.4 18.4	05 4.56	866	80	0.0	31.7 32.0	44.1 44.2
	11:40	12.9	18.4	05	866	80	0.0	32.2	44.3
	11:45	12.9	18.4	05	867	80	0.0	32.0	44.2
	11:50	12.9	18.6	05	866	80	0.0	32.0	44.2
	11:55	12.9	18.6	05	867	80	0.0	32.0	44.2
	12:00	12.9	18.6	05	866	80	0.0	31.9	43.9
	12:05	12.9	18.2	05	864	80	0.0	32.0	44.0
	12:10	12.9	18.1	05	864	80	0.0	32.1	43.8
	12:15	12.9	18.2	05	864	80	0.0	31.9	43.7
	12:20	12.9	18.5	06	865	80	0.0	32.0	44.3
	12:25	12.9	18.5	06	863	80	0.0	31.9	44.0
	12:30	12.9	18.4	05	863	81	0.0	32.0	43.9
Run #3	12:35	12.9	18.0	05	862	80	0.0	32.1	44.0
	12:40	12.9	18.0	05	862	81	0.0	31.9	43.9
	12:45	12.9	18.0 18.1	05	862	81	0.0	32.0	44.4
	12:50	12.9 12.9	18.0	05 5.0	862	80	0.0	31.9 32.0	44.2 44.1
	12:55	12.9	18.0	05	862	80	0.0	32.0	44.2
	13:00	12.9	18.0	05	863	80	0.0	32.1	44.4
	13:05	12.9	18.0	04	862	80	0.0	31.9	44.1
	13:10	12.9	18.0	04	863	80	0.0	32.1	44.0
	13:15	12.8	18.0	04	864	80	0.0	32.0	44.2
	13:20	12.9	18.0	05	862	80	0.0	31.9	44.3
	13:25	12.9	18.0	05	862	80	0.0	32.1	45.0
	13:30	12.9	17.9	05	862	80	0.0	32.0	44.8
Run #4	13:35	12.9	17.5	05	861	80	0.0	32.0	44.7
	13:40	12.9	17.5 17.6	05	861	80	0.0	32.0	44.4
	13:45	12.9 12.9	17.5	04 4.5	861	80	0.0	32.0	44.8
	13:50	12.9	17.6	04	861	80	0.0	31.9 32.0	44.9 44.7
	13:55	12.9	17.6	04	861	80	0.0	32.0	44.5
	14:00	12.9	17.5	04	860	80	0.0	32.0	44.6

RAW EMISSION DATA, TURBINE D
3 MEGAWATT LOAD
05/19/93

	TIME	O2Wet %	NOxWt ppm	COwET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
	08:05	15.3	8.6	11	721	75	0.0	27.5	38.2
	08:10	13.8	8.7	11	854	79	0.0	31.9	44.5
	08:15	13.6	9.0	11	870	79	0.0	31.9	44.2
	08:20	13.5	18.1	04	876	79	0.0	31.9	44.5
	08:25	13.5	18.1	04	877	79	0.0	31.9	44.4
	08:30	13.5	18.1	03	880	79	0.0	31.8	44.4
	08:35	13.5	18.0	03	882	79	0.0	32.0	44.8
	08:40	13.5 13.6	18.0	03	882	80	0.0	32.2	44.3
	08:45	13.5	17.9 17.9	03 4.5	882	80	0.0	31.8 31.8	44.6 44.5
	08:50	13.7	17.8	07	867	80	0.0	31.8	44.3
	08:55	13.7	17.8	07	859	81	0.0	31.8	44.3
	09:00	13.8	17.7	07	855	81	0.0	31.7	44.5
	09:05	13.8	16.9	04	853	81	0.0	31.8	44.5
	09:10	13.8	16.9	04	853	81	0.0	31.7	44.6
	09:15	13.8	16.9	03	854	81	0.0	31.5	44.3
	09:20	13.8	16.9	03	855	80	0.0	31.8	44.2
	09:25	13.8	16.9	03	856	80	0.0	31.9	44.7
	09:30	13.7	16.9	03	859	80	0.0	31.9	44.7
	09:35	13.7	17.2	04	862	80	0.0	31.8	44.4
	09:40	13.7	17.2 17.0	04 3.6	861	80	0.0	32.0 31.9	44.7 44.6
	09:45	13.7 13.7	17.1	04	861	80	0.0	31.8	44.6
	09:50	13.7	17.0	04	859	80	0.0	31.9	44.8
	09:55	13.7	17.0	04	861	80	0.0	32.0	44.8
	10:00	13.7	16.9	04	860	80	0.0	32.0	44.7
	10:05	13.7	16.8	04	861	80	0.0	32.0	44.7
	10:10	13.7	16.8	04	862	80	0.0	31.9	44.6
	10:15	13.6	16.8	04	864	80	0.0	32.2	45.1
	10:20	13.6	17.2	04	864	80	0.0	32.0	44.9
	10:25	13.7	17.2	04	862	80	0.0	31.9	44.5
	10:30	13.6	17.2	04	864	80	0.0	32.0	44.8
	10:35	13.6	17.2 17.1	03 4.0	865	80	0.0	32.3	45.0
	10:40	13.7	17.2	03	863	80	0.0	31.9 32.0	44.5 45.0
	10:45	13.6 13.6	17.2	03	864	80	0.0	32.0	45.1
	10:50	13.6	17.0	04	865	80	0.0	32.1	45.5
	10:55	13.6	17.0	04	868	80	0.0	32.1	45.3
	11:00	13.6	17.0	04	866	80	0.0	32.2	45.1
	11:05	13.6	17.2	05	865	80	0.0	32.1	45.1
	11:10	13.6	17.2	05	863	80	0.0	32.1	45.4
	11:15	13.7	17.1	05	862	80	0.0	32.1	44.6
	11:20	13.7	16.9	06	860	80	0.0	32.1	45.2
	11:25	13.7	16.9	06	861	80	0.0	32.0	45.2
	11:30	13.6	16.9	06	863	80	0.0	32.1	45.5
	11:35	13.6	17.0	06	864	80	0.0	32.1	45.2
	11:40	13.6	17.0	06	863	80	0.0	31.9	45.8
	11:45	13.6	17.0	06	864	80	0.0	32.0	44.8

RUN #5

RUN #6

RUN #7

RUN #8

RAW EMISSION DATA, TURBINE D
3 MEGAWATT LOAD
05/19/93

	TIME	O2Wet %	NOxWt ppm	COwET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
	11:50	13.6	17.2	06	863	80	0.0	32.0	45.1
	11:55	13.6	17.2	06	864	80	0.0	31.8	45.0
	12:00	13.6	17.2	06	865	80	0.0	32.1	44.9
	12:05	13.6	17.4	06	866	80	0.0	31.8	44.7
	12:10	13.6	17.4	06	865	80	0.0	31.9	45.1
	12:15	13.6	17.4	06	866	80	0.0	31.8	44.9
	12:20	13.6	17.6	07	866	80	0.0	31.9	44.9
	12:25	13.6	17.6	07	866	80	0.0	31.9	44.9
	12:30	13.7	17.6	07	864	80	0.0	31.8	44.6
	12:35	13.7	17.4	06	862	80	0.0	31.7	44.4
	12:40	13.7	17.4	06	863	80	0.0	31.7	44.7
	12:45	13.6	17.4	06	864	80	0.0	32.0	44.8
	12:50	13.6	17.6	08	865	80	0.0	31.7	44.8
	12:55	13.6	17.6	08	866	80	0.0	31.8	44.9
	13:00	13.6	17.6	08	868	80	0.0	31.7	44.9
	13:05	13.6	17.8	08	870	80	0.0	31.5	44.7
	13:10	13.5	17.7	08	872	80	0.0	31.7	44.4
	13:15	13.5	17.8	08	875	80	0.0	31.7	44.7
	13:20	13.5	18.2	10	877	80	0.0	31.7	44.6
	13:25	13.5	18.2	10	876	80	0.0	31.7	44.8
	13:30	13.5	18.2	10	875	80	0.0	31.6	44.7
	13:35	13.5	18.1	09	876	80	0.0	31.8	44.7
	13:40	13.5	18.1	09	876	80	0.0	31.6	44.8
	13:45	13.5	18.0	09	877	80	0.0	31.7	44.7
	13:50	13.5	17.9	08	876	80	0.0	31.6	44.7
	13:55	13.5	17.9	08	875	80	0.0	31.7	44.6
	14:00	13.5	17.9	08	874	37	0.0	31.6	44.7
	14:05	13.6	17.9	08	870	81	0.0	31.5	44.4
	14:10	13.6	17.9	08	870	70	0.0	31.6	44.6
	14:15	13.5	17.8	08	871	77	0.0	31.5	44.6
	14:20	13.5	17.8	08	873	74	0.0	31.7	44.8
	14:25	13.5	17.8	08	873	81	0.0	31.5	44.7
	14:30	13.5	17.8	08	872	73	0.0	31.7	44.3
	14:35	13.5	17.9	08	872	82	0.0	31.4	44.3
	14:40	13.5	17.9	08	872	82	0.0	31.5	44.3
	14:45	13.5	18.0	08	874	82	0.0	31.6	44.7
	14:50	13.5	18.1	08	873	82	0.0	31.5	44.4
	14:55	13.6	18.1	08	870	82	0.0	31.5	44.2
	15:00	13.5	18.0	08	871	82	0.0	31.6	44.4

Run #8: 13.6, 17.2, 6.2, 31.9, 44.6

Run #9: 13.6, 17.8, 8.2, 31.8, 44.7

Run #10: 13.5, 18.0, 8, 31.6, 44.1

RAW EMISSION DATA, TURBINE E
3 MEGAWATT LOAD
05/14/93

TIME	O2Wet %	NOxWt ppm	COwET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
07:05	14.4	18.6	00	820	72	0.0	30.0	41.2
07:10	14.4	18.5	00	819	72	0.0	29.9	41.3
07:15	14.4	18.5	00	819	72	0.0	29.9	41.4
07:20	14.4	18.5	00	818	72	0.0	30.0	41.3
07:25	14.4C	18.6	00	820	72	0.0	30.0	41.5
07:30	20.8C	18.6	00	821	72	0.0	30.1	41.4
07:35	8.0C	18.6	00	821	72	0.0	30.1	41.6
07:40	14.3<	18.7	00	821	72	0.0	30.1	41.7
07:45	14.3	18.7	00	821	72	0.0	30.2	41.7
07:50	14.3	18.7	00	821	72	0.0	30.2	41.7
07:55	14.3	18.7	00	822	72	0.0	30.2	41.7
08:00	14.3	18.7	00	821	72	0.0	30.2	41.6
08:05	14.3	18.7	00	822	72	0.0	30.2	41.7
08:10	14.3	18.7	00	822	72	0.0	30.2	41.6
08:15	14.3	18.7	00	821	72	0.0	30.2	41.5
08:20	14.3	18.7	00	821	72	0.0	30.2	41.7
08:25	14.3	18.7	00	822	72	0.0	30.2	41.6
08:30	14.4	18.7	00	821	72	0.0	30.1	41.6
08:35	14.4	18.6	00	821	72	0.0	30.1	41.6
08:40	14.4	18.6	00	820	72	0.0	30.1	41.5
08:45	14.4	18.6	00	820	72	0.0	30.1	41.6
08:50	14.4	18.6	00	819	72	0.0	30.1	41.6
08:55	14.4	18.5	00	820	72	0.0	30.1	41.6
09:00	14.4	18.5	00	820	72	0.0	30.2	41.6
09:05	14.4	18.6	00	821	72	0.0	30.2	41.6
09:10	14.4	18.6	00	821	72	0.0	30.2	41.7
09:15	14.3	18.6	00	821	72	0.0	30.2	41.7
09:20	14.3	18.6	00	821	72	0.0	30.2	41.7
09:25	14.4	18.6	00	821	72	0.0	30.2	41.6
09:30	14.4	18.6	00	821	72	0.0	30.1	41.6
09:35	14.4	18.5	00	821	72	0.0	30.2	41.6
09:40	14.4	18.5	00	821	72	0.0	30.1	41.5
09:45	14.4	18.5	00	820	72	0.0	30.1	41.4
09:50	14.4	18.5	00	821	72	0.0	30.0	41.5
09:55	14.4	18.5	00	821	72	0.0	30.1	41.6
10:00	14.4	18.5	00	820	72	0.0	30.1	41.5
10:05	14.4	18.5	00	821	72	0.0	30.1	41.5
10:10	14.4	18.5	00	821	72	0.0	30.1	41.4
10:15	14.4	18.5	00	821	72	0.0	30.1	41.5
10:20	14.4	18.5	00	820	72	0.0	30.0	41.6
10:25	14.4	18.3	00	821	72	0.0	30.1	41.4
10:30	14.4	18.3	00	822	72	0.0	30.1	41.6
10:35	14.3	18.3	00	823	72	0.0	30.2	41.8
10:40	14.3	18.2	00	821	72	0.0	30.3	41.8
10:45	14.3	18.2	00	822	72	0.0	30.2	41.9

Run #1: 14.3 / 18.7 / 30.0 / 41.5
Run #2: 14.4 / 18.6 / 30.2 / 41.6
Run #3: 14.4 / 18.3 / 30.1 / 41.6

RAW EMISSION DATA, TURBINE E
3 MEGAWATT LOAD
05/14/93

	TIME	O2Wet %	NOxWt ppm	COWET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
	10:50	14.3	18.2	00	822	72	0.0	30.3	41.8
	10:55	14.3	18.2	01	821	72	0.0	30.3	41.7
	11:00	14.3	18.2	01	822	72	0.0	30.3	41.7
	11:05	14.3	18.2	00	823	72	0.0	30.3	41.9
	11:10	14.3	18.3	00	823	72	0.0	30.3	42.0
	11:15	14.3	18.3	00	822	72	0.0	30.2	41.7
	11:20	14.3	18.2	00	823	72	0.0	30.2	41.8
Run #4	11:25	14.3	18.1	00	823	72	0.0	30.4	41.9
	11:30	14.3 14.3	18.1	00	823	72	0.0	30.3	41.9
	11:35	14.3	18.1 18.2	01	824	72	0.0	30.4 30.4	41.9 41.8
	11:40	14.3	18.2	01	824	72	0.0	30.4	41.8
	11:45	14.2	18.2	01	824	72	0.0	30.4	42.0
	11:50	14.2	18.2	01	824	72	0.0	30.4	41.9
	11:55	14.2	18.2	02	824	72	0.0	30.4	42.1
	12:00	14.2	18.2	02	824	72	0.0	30.4	42.1
	12:05	14.2	18.1	02	825	72	0.0	30.5	42.2
	12:10	14.2	18.1	02	824	72	0.0	30.5	42.0
Run #5	12:15	14.2 14.2	18.1	02	825	72	0.0	30.4	42.2
	12:20	14.2	18.0 18.1	02	825	72	0.0	30.5 30.5	42.1 42.1
	12:25	14.2	18.0	01	825	72	0.0	30.5	42.0
	12:30	14.2	18.0	01	825	72	0.0	30.6	42.1
	12:35	14.2	18.0	01	826	72	0.0	30.5	42.1
	12:40	14.2	18.1	01	826	72	0.0	30.5	42.1
	12:45	14.2	18.1	01	827	72	0.0	30.5	42.1
	12:50	14.2	18.1	01	827	72	0.0	30.5	42.0
	12:55	14.2	18.1	01	826	72	0.0	30.5	42.1
	13:00	14.2	18.1	01	826	72	0.0	30.3	42.0

RAW EMISSION DATA, TURBINE E
3 MEGAWATT LOAD
05/21/93

TIME	O2Wet %	NOxWt ppm	COWET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
06:05	10.6	17.0	00	825	71	0.0	30.6	42.1
06:10	13.9	17.1	00	827	72	0.0	30.7	42.2
06:15	14.1	17.2	00	827	72	0.0	30.6	42.3
06:20	14.1	17.1	00	827	72	0.0	30.6	42.2
06:25	14.1	17.1	00	827	72	0.0	30.6	42.3
06:30	14.1	17.1	00	826	72	0.0	30.6	42.2
06:35	14.1	17.0	00	826	72	0.0	30.6	42.2
06:40	14.1	16.9	00	827	72	0.0	30.5	42.3
06:45	14.1	16.9	00	826	72	0.0	30.6	42.3
06:50	14.1	16.9	00	827	72	0.0	30.6	42.2
06:55	14.1	17.0	00	826	72	0.0	30.6	42.3
07:00	14.1	17.0	00	826	71	0.0	30.6	42.3
07:05	14.1	16.9	00	826	71	0.0	30.6	42.2
07:10	14.1	16.7	00	826	71	0.0	30.5	42.1
07:15	14.2	16.8	00	821	71	0.0	30.1	41.5
07:20	14.3	16.7	00	820	71	0.0	30.1	41.6
07:25	14.3	16.6	00	819	71	0.0	30.2	41.7
07:30	14.3	16.6	00	820	71	0.0	30.1	41.6
07:35	14.3	16.6	00	820	71	0.0	30.2	41.7
07:40	14.3	16.6	00	820	71	0.0	30.2	41.6
07:45	14.3	16.6	00	820	71	0.0	30.3	41.5
07:50	14.3	16.6	00	820	71	0.0	30.1	41.7
07:55	14.3	16.7	00	820	71	0.0	30.1	41.7
08:00	14.3	16.7	00	820	71	0.0	30.1	41.5
08:05	14.4	16.7	00	819	71	0.0	30.1	41.5
08:10	14.4	16.8	00	819	71	0.0	30.1	41.5
08:15	14.3	16.8	00	820	71	0.0	30.2	41.6
08:20	14.3	16.7	00	820	71	0.0	30.2	41.8
08:25	14.3	16.6	00	821	69	0.0	30.2	41.7
08:30	14.3	16.6	00	821	27	0.0	30.3	41.8
08:35	14.3	16.6	00	821	76	0.0	30.2	41.7
08:40	14.3	16.6	00	821	79	0.0	30.2	41.6
08:45	14.3	16.6	00	821	78	0.0	30.1	41.5
08:50	14.3	16.7	00	822	79	0.0	30.1	41.6
08:55	14.3	16.8	00	822	79	0.0	30.2	41.7
09:00	14.3	16.8	00	823	79	0.0	30.2	41.8
09:05	14.3	16.7	00	823	79	0.0	30.2	41.6
09:10	14.3	16.7	00	822	78	0.0	30.1	41.6
09:15	14.3	16.7	00	822	78	0.0	30.1	41.7
09:20	14.3	16.7	00	823	78	0.0	30.1	41.7
09:25	14.3	16.8	00	824	78	0.0	30.3	41.7
09:30	14.4	16.8	00	820	78	0.0	29.9	41.2
09:35	14.3	16.7	00	822	78	0.0	30.2	41.6
09:40	14.3	16.6	00	822	78	0.0	30.1	41.6
09:45	14.3	16.6	00	822	78	0.0	30.1	41.6

Run #6: 14.3, 16.6, 30.2, 41.6

Run #7: 14.3, 16.7, 30.1, 41.6

RAW EMISSION DATA, TURBINE E
3 MEGAWATT LOAD
05/20/93

	TIME	O2Wet %	NOxWt ppm	COwET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
	08:05	20.9	5.0	04	500	00	0.0	0.0	0.0
	08:10	17.9	0.4	00	535	50	0.0	14.5	9.6
	08:15	16.3	0.4	00	649	65	0.0	21.1	29.1
	08:20	16.0	4.5	01	664	66	0.0	21.0	29.1
	08:25	16.0	9.9	03	667	66	0.0	20.9	28.9
	08:30	16.0	9.9	03	668	66	0.0	20.9	28.7
	08:35	16.0	9.9	04	669	66	0.0	20.9	29.0
	08:40	16.0	9.9	04	670	66	0.0	20.9	29.0
Run #1 50%	08:45	16.0	16.0 9.9 9.9	04	671	66	0.0	20.9	28.8
	08:50	16.0	9.9	04	671	66	0.0	20.9	29.0
	08:55	16.0	10.0	04	671	65	0.0	20.8	29.0
	09:00	16.0	10.0	04	671	66	0.0	20.9	28.9
	09:05	16.0	10.0	04	671	66	0.0	21.0	28.9
	09:10	16.0	10.0	04	671	66	0.0	20.9	29.0
	09:15	16.0	10.0	04	671	65	0.0	20.9	28.9
	09:20	16.0	10.0	04	671	66	0.0	20.9	29.0
	09:25	16.0	9.9	04	671	66	0.0	21.0	29.1
	09:30	16.0	9.9	04	672	65	0.0	21.0	29.0
	09:35	16.0	9.9	04	672	65	0.0	21.0	28.9
Run #2 50%	09:40	16.0	16.0 10.0 10.0	05	672	65	0.0	21.0	29.0
	09:45	16.0	10.0	05	672	65	0.0	21.0	29.1
	09:50	16.0	10.0	04	673	65	0.0	21.0	29.0
	09:55	16.0	10.1	03	673	65	0.0	21.0	28.9
	10:00	16.0	10.1	03	673	66	0.0	21.1	28.9
	10:05	16.0	10.1	03	673	65	0.0	21.0	28.9
	10:10	16.0	10.0	04	673	65	0.0	21.0	29.0
	10:15	16.0	10.0	04	673	66	0.0	21.1	29.1
	10:20	16.0	10.0	04	673	66	0.0	21.1	29.2
	10:25	16.0	10.0	05	673	66	0.0	21.1	28.9
Run #3 50%	10:30	16.0	10.0 10.0	05	673	65	0.0	21.0	28.9
	10:35	16.0 16.0	10.0	04	674	66	0.0	21.1	29.0
	10:40	16.0	10.1	04	673	65	0.0	21.1	29.0
	10:45	16.0	10.0	04	674	65	0.0	21.1	29.1
	10:50	16.0	10.1	04	675	66	0.0	21.1	29.1
	10:55	16.0	10.1	05	675	66	0.0	21.1	29.2
	11:00	16.0	10.1	05	674	66	0.0	21.1	29.1
	11:05	16.0	10.1	05	674	66	0.0	21.1	29.1
	11:10	16.0	10.3	06	674	66	0.0	21.1	29.0
	11:15	16.0	10.2	06	674	66	0.0	21.1	29.1
	11:20	15.4	10.9	04	692	67	0.0	24.0	33.0
	11:25	14.7	11.8	03	738	68	0.0	25.7	35.5
Run #1 75%	11:30	14.4	11.8	03	746	68	0.0	25.7	35.4
	11:35	14.4	12.6	03	749	68	0.0	25.7	35.5
	11:40	14.4	13.7	02	749	68	0.0	25.6	35.4

RAW EMISSION DATA, TURBINE E
3 MEGAWATT LOAD
05/20/93

	TIME	O2Wet %	NOxWt ppm	COwET ppm	TEMP F	ExhFl %	OilFl lbs/m	GasFl lbs/m	WatFl lbs/m
Run #1 75%	11:45	14.4	13.7	02	750	68	0.0	25.6	35.5
	11:50	14.5	13.6	02	748	68	0.0	25.1	34.5
	11:55	14.4	13.5 13.1	02	745	68	0.0	25.8	35.6
	12:00	14.4 14.4	13.5	02	750	68	0.0	25.8	35.4
	12:05	14.3	13.5	02	751	68	0.0	25.7	35.5
	12:10	14.3	13.6	02	752	68	0.0	25.8	35.4
	12:15	14.3	13.6	02	751	68	0.0	25.7	35.5
	12:20	14.3	13.6	02	751	69	0.0	25.7	35.4
	12:25	14.3	13.7	02	751	68	0.0	25.6	35.5
Run #2 75%	12:30	14.3	13.7	02	752	68	0.0	25.7	35.6
	12:35	14.3	13.7 13.6	02	753	69	0.0	25.7	35.6
	12:40	14.3	13.6	03	752	69	0.0	25.8	35.6
	12:45	14.3 14.3	13.7	03	752	69	0.0	25.7	35.6
	12:50	14.3	13.6	03	752	68	0.0	25.7	35.6
	12:55	14.3	13.5	03	754	68	0.0	25.8	35.6
	13:00	14.3	13.5	03	754	68	0.0	25.8	35.6
	13:05	14.3	13.5	03	754	69	0.0	25.9	35.6
	13:10	14.3	13.6	03	752	69	0.0	25.8	35.6
	13:15	14.3	13.6	03	753	69	0.0	25.8	35.5
Run #3 75%	13:20	14.3	13.5	03	752	69	0.0	25.8	35.5
	13:25	14.3	13.5	03	752	69	0.0	25.7	35.5
	13:30	14.3	13.5 13.6	03	752	69	0.0	25.8	35.6
	13:35	14.3 14.3	13.5	03	753	68	0.0	25.8	35.6
	13:40	14.3	13.7	03	754	69	0.0	25.7	35.6
	13:45	14.3	13.7	03	754	68	0.0	25.8	35.6
	13:50	14.3	13.7	02	755	68	0.0	25.8	35.6
	13:55	14.3	13.7	02	756	69	0.0	25.8	35.6
	14:00	14.3	13.7	02	755	69	0.0	25.8	35.6

PETRO CHEM ENVIRONMENTAL SERVICES, INC.
CHAIN OF CUSTODY RECORD

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313 Daniels Lane
Bakersfield, CA 93307
(805) 327-7300 FAX (805) 327-3459

LAB OFFICE
3207 Antonino Avenue
Bakersfield, CA 93308
(805) 631-9332 FAX (805) 327-0860

LABORATORY	LAB ID#
PCES	

COMPANY	LOCATION/UNIT
XONTECH	SVPP

PROJECT	SAMPLED BY
098-303	JAT

METHOD	DELIVER REPORT TO:	PCES PO#
18		

ANALYSIS REQUEST

SAMPLE ID#	SAMPLE DESCRIPTION	SAMPLE DATE	Liq	Filter	Gas	(C_1-C_6+)	$(C_1-C_6+)+(O_2, N_2, CO_2)$			
501	ROC - Turbine D 100% Gas Run 1	5-19-93			✓	✓				
502	ROC - Turbine D 100% Gas Run 2	5-19-93			✓	✓				
503	ROC - Turbine D 100% Gas Run 3	5-19-93			✓	✓				
504	ROC - Blank	5-19-93			✓	✓				
505	ROC - Turbine 'E' 50% Gas Run 1	5-20-93			✓	✓				
506	ROC - Turbine -E- 50% Gas Run 2	5-20-93			✓	✓				
507	ROC - Turbine E 50% Gas Run 3	5-20-93			✓	✓				
508	ROC - Turbine E 75% Gas Run 1	5-20-93			✓	✓				
509	ROC - Turbine E 75% Gas Run 2	5-20-93			✓	✓				
510	ROC - Turbine E 75% Gas Run 3	5-20-93			✓	✓				
511	ROC - Blank	5-20-93			✓	✓				
512	Fuel Gas	5-21-93			✓					

COMMENTS:

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
[signature]	5-21-93	D Smallwood	5/21/93
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

PETRO CHEM ENVIRONMENTAL SERVICES, INC.

CHAIN OF CUSTODY RECORD

MAIN OFFICE
313 Daniels Lane
Bakersfield, CA 93307
(805) 327-7300 FAX (805) 327-3459

LAB OFFICE
3207 Antonino Avenue
Bakersfield, CA 93308
(805) 631-9332 FAX (805) 327-0860

LABORATORY	LAB ID#
PCES	

COMPANY	LOCATION/UNIT
XONTECH	SUPP

PROJECT	SAMPLED BY
098-303	JAT

METHOD	DELIVER REPORT TO:	PCES PO#
18		

ANALYSIS REQUEST

SAMPLE ID#	SAMPLE DESCRIPTION	SAMPLE DATE	Liq	Filter	Gas	ROC Analysis	C_1-C_6 + Fuel Gas Analysis	C_1-C_6 + (O_2, CO_2, N_2)			
101	Turbine 'E' 100% Gas Run 1	5-14-93			✓	✓					
102	Turbine 'E' 100% Gas Run 2	5-14-93			✓	✓					
103	Turbine 'E' 100% Gas Run 3	5-14-93			✓	✓					
104	Turbine 'B' 100% Gas Run 1	5-14-93			✓	✓					
105	Turbine 'B' 100% Gas Run 2	5-14-93			✓	✓					
106	Turbine 'B' 100% Gas Run 3	5-14-93			✓	✓					
107	Turbine 'C' 100% Gas Run 1	5-13-93			✓	✓					
108	Turbine 'C' 100% Gas Run 2	5-13-93			✓	✓					
109	Turbine 'C' 100% Gas Run 3	5-13-93			✓	✓					
110	SUPP ROC Blank	5-13-93			✓	✓					
111	SUPP ROC Blank	5-14-93			✓	✓					
112	SUPP Fuel Gas	5-14-93			✓						

COMMENTS:

RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
J. Tc	5-14-93		
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE
RELINQUISHED BY:	DATE	RECEIVED BY:	DATE

PETRO CHEM ENVIRONMENTAL SERVICES, INC.

DRY GAS METER CALIBRATION

DATE:	4-6-93	AMBIENT TEMP °F:	61
TECH:	BDM	BAROMETRIC Pbar:	29.53
METER I.D.#	1002	TEST METER ID#:	S5M104564
		TEST METER Mcf:	1.023

APPROXIMATE CFM		0.75	0.50	0.30
STD TEST METER VOLUME CF	INITIAL	0.00	0.00	0.00
	FINAL	7.48	10.01	10.01
	TOTAL	7.48	10.01	10.01
FIELD GAS METER VOLUME CF	INITIAL	426.80	435.80	448.70
	FINAL	434.29	446.17	459.44
	TOTAL	7.49	10.37	10.74
STD TEST METER TEMP (°F)		62.5	61.0	60.0
FIELD GAS METER TEMP (°F)	IN	67.5	69.0	68.5
	OUT	51.5	55.0	60.0
	AVERAGE	59.5	62.0	64.3
STD TEST METER PRESSURE ("H2O)		-0.60	-0.30	-0.15
FIELD GAS METER PRESSURE ("H2O)		1.49	0.61	0.24
FIELD GAS METER, Mcf		1.012014	0.987893	0.960685

FIELD AVERAGE Mcf:	0.986864	H@:	1.5023

PETRO CHEM ENVIRONMENTAL SERVICES, INC.

DRY GAS METER CALIBRATION

DATE:	4-15-93	AMBIENT TEMP °F:	68
TECH:	BDM	BAROMETRIC Pbar:	29.51
METER I.D.#	1003	TEST METER ID#:	S5M104564
		TEST METER Mcf:	1.023

APPROXIMATE CFM		0.75	0.50	0.30
STD TEST METER VOLUME CF	INITIAL	0.00	0.00	0.00
	FINAL	7.16	10.01	10.10
	TOTAL	7.16	10.01	10.10
FIELD GAS METER VOLUME CF	INITIAL	246.70	254.90	266.20
	FINAL	254.08	265.47	276.93
	TOTAL	7.38	10.57	10.73
STD TEST METER TEMP (°F)		67.0	70.0	68.0
FIELD GAS METER TEMP (°F)	IN	77.0	79.5	77.0
	OUT	68.0	69.0	71.5
	AVERAGE	72.5	74.3	74.3
STD TEST METER PRESSURE ("H2O)		-0.60	-0.30	-0.15
FIELD GAS METER PRESSURE ("H2O)		0.83	0.41	0.18
FIELD GAS METER, Mcf		1.000793	0.975573	0.973897

FIELD AVERAGE Mcf:	0.983421	H@:	0.9071

PETRO CHEM ENVIRONMENTAL SERVICES, INC.
PITOT TUBE CALIBRATION

PITOT TUBE ID. # P5SS-1
DATE: 5-4-93
CALIBRATED BY: BDM

	"A" SIDE CALIBRATION			
RUN #	▲ Pstd cm H2O (in.H2O)	▲ P(s) cm H2O (in. H2O)	Cp(s)	DEVIATION Cp(s) -Cp(A)
1	0.500	0.725	0.822	0.001
2	0.500	0.725	0.822	0.001
3	0.500	0.730	0.819	-0.002
		Cp (SIDE A)	0.821	

	"B" SIDE CALIBRATION			
RUN #	▲ Pstd cm H2O (in.H2O)	▲ P(s) cm H2O (in. H2O)	Cp(s)	DEVIATION Cp(s) -Cp(B)
1	0.500	0.735	0.817	0.000
2	0.500	0.735	0.817	0.000
3	0.500	0.735	0.817	0.000
		Cp (SIDE B)	0.817	

Cp (SIDE A) - Cp (SIDE B) =	0.004	0.819

Cp=.99 * ▲ Pstd / ▲ P(s)

PETRO CHEM ENVIRONMENTAL SERVICES, INC.
PITOT TUBE CALIBRATION

PITOT TUBE ID. # P5SS-3
DATE: 3-25-93
CALIBRATED BY: RJK

	"A" SIDE CALIBRATION			
RUN #	ΔPstd cm H2O (in.H2O)	ΔP(s) cm H2O (in. H2O)	Cp(s)	DEVIATION Cp(s) -Cp(A)
1	0.270	0.390	0.824	-0.001
2	0.270	0.390	0.824	-0.001
3	0.280	0.400	0.828	0.003
		Cp (SIDE A)	0.825	

	"B" SIDE CALIBRATION			
RUN #	ΔPstd cm H2O (in.H2O)	ΔP(s) cm H2O (in. H2O)	Cp(s)	DEVIATION Cp(s) -Cp(B)
1	0.270	0.390	0.824	0.001
2	0.280	0.400	0.828	0.005
3	0.280	0.410	0.818	-0.005
		Cp (SIDE B)	0.823	

Cp (SIDE A) - Cp (SIDE B) =	0.002	0.824

Cp=.99 * ΔPstd / ΔP(s)

PETRO CHEM ENVIRONMENTAL SERVICES, INC.
PITOT TUBE CALIBRATION

PITOT TUBE ID. # P5SS-1
DATE: 3-25-93
CALIBRATED BY: RJK

	"A" SIDE CALIBRATION			
RUN #	ΔPstd cm H2O (in.H2O)	ΔP(s) cm H2O (in. H2O)	Cp(s)	DEVIATION Cp(s) -Cp(A)
1	0.280	0.390	0.839	0.000
2	0.270	0.380	0.834	-0.005
3	0.290	0.400	0.843	0.004
		Cp (SIDE A)	0.839	

	"B" SIDE CALIBRATION			
RUN #	ΔPstd cm H2O (in.H2O)	ΔP(s) cm H2O (in. H2O)	Cp(s)	DEVIATION Cp(s) -Cp(B)
1	0.280	0.390	0.839	-0.001
2	0.290	0.400	0.843	0.003
3	0.280	0.390	0.839	-0.001
		Cp (SIDE B)	0.840	

Cp (SIDE A) - Cp (SIDE B) =	-0.001	0.840

Cp=.99 * ΔPstd / ΔP(s)

AIRCO

546247

Airco Special Gases
Union Landing & River Roads
P.O. Drawer No. 272
Riverton
New Jersey 08077
Telephones: Marketing: 609-829-7878
Prod. & Admin.: 609-829-7914
International: 609-829-7917

CERTIFICATE OF ANALYSIS - EPA PROTOCOL GAS MIX

CUSTOMER: Bakersfield Welding Supply Bakersfield, Ca
CYLINDER #: CC-14076 CERTIFICATION DATE: 3-29-93
CYLINDER PRESSURE: 1000 psig EXPIRATION DATE: 9-29-93
LABORATORY: Riverton, NJ REFERENCE #: 31380

MIXTURE COMPONENTS	ACTUAL MIXTURE CONCENTRATION	AIRCO INTERMEDIATE STANDARD CYLINDER #	CONC.	NIST SRM#
Nitric Oxide	40.6 ppm	CC-79768	48.4 ppm	1683B
Sulfur Dioxide	39.2 ppm	CC-72396	49.7 ppm	1693A

BALANCE GAS: Carbon Monoxide, Nitrogen

COMPONENT 1 GAS ANALYSIS PROCEDURE Chemiluminescence
MAKE/MODEL/SER#: Beckman, 952, 0100204
LAST MULTIPOINT CALIBRATION DATE: 2-2-93

COMPONENT 2 GAS ANALYSIS PROCEDURE Non-dispersive Infrared
MAKE/MODEL/SER#: Beckman, 865, 0103986
LAST MULTIPOINT CALIBRATION DATE: 2-2-93
R=REFERENCE STANDARD Z=ZERO GAS S=SAMPLE GAS

1ST COMPONENT Nitric Oxide
1ST ANALYSIS: DATE 3-22-93 ANALYST A. Lattanze

1) Z 0000	R 3960	S 3325	CONC (1)	40.6 ppm
2) R 3960	Z 0000	S 3325	CONC (2)	40.6 ppm
3) R 3960	S 3325	Z 0000	CONC (3)	40.6 ppm
			AVE CONC	40.6 ppm

2ND ANALYSIS: DATE 3-29-93 ANALYST A. Lattanze

1) Z 0000	R 3980	S 3335	CONC (1)	40.6 ppm
2) R 3980	Z 0000	S 3335	CONC (2)	40.6 ppm
3) R 3980	S 3335	Z 0000	CONC (3)	40.6 ppm
			AVE CONC	40.6 ppm

2ND COMPONENT Sulfur Dioxide
1ST ANALYSIS: DATE 3-22-93 ANALYST A. Lattanze

1) Z 0000	R 4780	S 3760	CONC (1)	39.1 ppm
2) R 4780	Z 0000	S 3760	CONC (2)	39.1 ppm
3) R 4780	S 3760	Z 0000	CONC (3)	39.1 ppm
			AVE CONC	39.1 ppm

2ND ANALYSIS: DATE 3-29-93 ANALYST A. Lattanze

1) Z 0000	R 4500	S 3560	CONC (1)	39.3 ppm
2) R 4500	Z 0000	S 3560	CONC (2)	39.3 ppm
3) R 4500	S 3560	Z 0000	CONC (3)	39.3 ppm
			AVE CONC	39.3 ppm

THIS CALIBRATION STANDARD HAS BEEN CERTIFIED VERSUS EPA TRACEABILITY PROTOCOL NO. 1, PROCEDURE G1, AND ANALYSES PERFORMED PER SECTION 3.0.4.
CERTIFIED CONCENTRATION: Nitric Oxide = 40.6 ppm, Sulfur Dioxide = 39.2 ppm, Carbon Monoxide = 39.9 ppm, Nitrogen = Balance

APPROVED BY A. Lica
LABORATORY MANAGER

AIRCO

546247

Airco Special Gases
Union Landing & River Roads
P.O. Drawer No. 271
Riverton
New Jersey 08077
Telephones: Marketing: 609-829-7878
Prod. & Admin.: 609-829-7914
International: 609-829-7917

CERTIFICATE OF ANALYSIS - EPA PROTOCOL GAS MIX

CUSTOMER: Bakersfield Welding Supply Bakersfield, Ca
CYLINDER #: CC-2906
CYLINDER PRESSURE: 1000 psig
LABORATORY: Riverton, NJ
CERTIFICATION DATE: 3-29-93
EXPIRATION DATE: 9-29-93
REFERENCE #: 31380

MIXTURE COMPONENTS	ACTUAL MIXTURE CONCENTRATION	AIRCO INTERMEDIATE STANDARD CYLINDER #	CONC.	NIST SRM#
Nitric Oxide	41.1 ppm	CC-79768	48.4 ppm	1683B
Sulfur Dioxide	36.9 ppm	CC-72396	49.7 ppm	1693A

BALANCE GAS: Carbon Monoxide, Nitrogen

COMPONENT 1 GAS ANALYSIS PROCEDURE Chemiluminescence
MAKE/MODEL/SER#: Beckman, 952, 0100204
LAST MULTIPOINT CALIBRATION DATE: 2-2-93

COMPONENT 2 GAS ANALYSIS PROCEDURE Non-dispersive Infrared
MAKE/MODEL/SER#: Beckman, 863, 0103986
LAST MULTIPOINT CALIBRATION DATE: 2-2-93
R=REFERENCE STANDARD Z=ZERO GAS S=SAMPLE GAS

1ST COMPONENT Nitric Oxide
1ST ANALYSIS: DATE 3-22-93 ANALYST A. Lattanze

1) Z 0000	R 3960	S 3370	CONC (1)	41.2 ppm
2) R 3960	Z 0000	S 3370	CONC (2)	41.2 ppm
3) R 3960	S 3370	Z 0000	CONC (3)	41.2 ppm
			AVE CONC	41.2 ppm

2ND ANALYSIS: DATE 3-29-93 ANALYST A. Lattanze

1) Z 0000	R 3980	S 3370	CONC (1)	41.0 ppm
2) R 3980	Z 0000	S 3370	CONC (2)	41.0 ppm
3) R 3980	S 3370	Z 0000	CONC (3)	41.0 ppm
			AVE CONC	41.0 ppm

2ND COMPONENT Sulfur Dioxide
1ST ANALYSIS: DATE 3-22-93 ANALYST A. Lattanze

1) Z 0000	R 4780	S 3570	CONC (1)	37.1 ppm
2) R 4780	Z 0000	S 3570	CONC (2)	37.1 ppm
3) R 4780	S 3570	Z 0000	CONC (3)	37.1 ppm
			AVE CONC	37.1 ppm

2ND ANALYSIS: DATE 3-29-93 ANALYST A. Lattanze

1) Z 0000	R 4440	S 3280	CONC (1)	36.7 ppm
2) R 4440	Z 0000	S 3280	CONC (2)	36.7 ppm
3) R 4440	S 3280	Z 0000	CONC (3)	36.7 ppm
			AVE CONC	36.7 ppm

THIS CALIBRATION STANDARD HAS BEEN CERTIFIED VERSUS EPA TRACEABILITY PROTOCOL NO. 1, PROCEDURE G1, AND ANALYSES PERFORMED PER SECTION 3.0.4.
CERTIFIED CONCENTRATION: Nitric Oxide = 41.1 ppm, Sulfur Dioxide = 36.9 ppm, Carbon Monoxide = 39.9 ppm, Nitrogen = Balance

APPROVED BY [signature]
LABORATORY MANAGER

A member of The BOC Group

AIRCO

546247

Airco Special Gases
Union Landing & River Roads
P.O. Drawer No. 272
Riverton
New Jersey 08077
Telephones: Marketing: 609-829-7878
Prod. & Admin.: 609-829-7914
International: 609-829-7917

CERTIFICATE OF ANALYSIS - EPA PROTOCOL GAS MIXTURE

CUSTOMER: Bakersfield Welding Supply Bakersfield, Ca

CYLINDER #: CC-14076
CYLINDER PRESSURE: 1000 psig
LABORATORY: Riverton, NJ

CERTIFICATION DATE: 3-29-93
EXPIRATION DATE: 9-29-93
REFERENCE #: 31380

MIXTURE COMPONENT	ACTUAL MIXTURE CONCENTRATION	AIRCO INTERMEDIATE STANDARD CYLINDER #	CONC.	NIST SRM#
Carbon Monoxide	39.9 ppm	CC-43310	49.8 ppm	1678C

BALANCE GAS: Nitric Oxide, Sulfur Dioxide, Nitrogen

GAS ANALYZER:
MAKE: Beckman MODEL: 866 SERIAL#: 1000049
PRINCIPAL: Non-dispersive Infrared
LAST MULTIPOINT CALIBRATION DATE: 1-3-93

R=REFERENCE STANDARD Z=ZERO GAS S=SAMPLE GAS

1ST ANALYSIS: DATE 3-22-93 ANALYST A. Lattanze

1) Z 000	R 495	S 396		CONC (1)	39.8 ppm
2) R 495	Z 000	S 396		CONC (2)	39.8 ppm
3) R 495	S 396	Z 000		CONC (3)	39.8 ppm
			AVE	CONC	39.8 ppm

2ND ANALYSIS: DATE 3-29-93 ANALYST A. Lattanze

1) Z 000	R 491	S 393		CONC (1)	39.9 ppm
2) R 491	Z 000	S 393		CONC (2)	39.9 ppm
3) R 491	S 393	Z 000		CONC (3)	39.9 ppm
			AVE	CONC	39.9 ppm

THIS CALIBRATION STANDARD HAS BEEN CERTIFIED VERSUS EPA TRACEABILITY PROTOCOL NO. 1, PROCEDURE G1, AND ANALYSES PERFORMED PER SECTION 3.0.4.

CERTIFIED CONCENTRATION: Carbon Monoxide = 39.9 ppm, Nitric Oxide = 40.6 ppm, Sulfur Dioxide = 39.2 ppm, Nitrogen = Balance

APPROVED BY J. Long
LABORATORY MANAGER

AIRCO

542234

Airco Special Gases
Union Landing & River Roads
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Riverton
New Jersey 08077
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Prod. & Admin.: 609-829-7914
International: 609-829-7917

CERTIFICATE OF ANALYSIS - EPA PROTOCOL GAS MIX

CUSTOMER: Bakersfield Welding Supply Saugus CA
CYLINDER #: CC:69805
CYLINDER PRESSURE: 1000 psig
LABORATORY: Riverton NJ
CERTIFICATION DATE: 3/5/93
EXPIRATION DATE: 9/5/93
REFERENCE #: 30963

MIXTURE COMPONENTS	ACTUAL MIXTURE CONCENTRATION	AIRCO INTERMEDIATE STANDARD CYLINDER #	CONC.	NIST SRM#
Nitric Oxide	20.6 ppm	CC:95054	18.7 ppm	2629A
Sulfur Dioxide	20.0 ppm	CC:15382	25.8 ppm	1693A

BALANCE GAS: Carbon Monoxide, Nitrogen

COMPONENT 1 GAS ANALYSIS PROCEDURE Chemiluminescence
MAKE/MODEL/SER#: Beckman, 952, 0100204
LAST MULTIPOINT CALIBRATION DATE: 2/2/93

COMPONENT 2 GAS ANALYSIS PROCEDURE Non-Dispersive Infrared
MAKE/MODEL/SER#: Beckman, 865, 0103986
LAST MULTIPOINT CALIBRATION DATE: 2/2/93
R=REFERENCE STANDARD Z=ZERO GAS S=SAMPLE GAS

1ST COMPONENT Nitric Oxide
1ST ANALYSIS: DATE 2/26/93 ANALYST A.Lattanze

1) Z 0000	R 1535	S 1680	CONC (1)	20.5 ppm
2) R 1535	Z 0000	S 1680	CONC (2)	20.5 ppm
3) R 1535	S 1680	Z 0000	CONC (3)	20.5 ppm
			AVE CONC	20.5 ppm

2ND ANALYSIS: DATE 3/5/93 ANALYST A.Lattanze

1) Z 0000	R 1500	S 1650	CONC (1)	20.6 ppm
2) R 1500	Z 0000	S 1650	CONC (2)	20.6 ppm
3) R 1500	S 1650	Z 0000	CONC (3)	20.6 ppm
			AVE CONC	20.6 ppm

2ND COMPONENT Sulfur Dioxide
1ST ANALYSIS: DATE 2/26/93 ANALYST A.Lattanze

1) Z 0000	R 2520	S 1950	CONC (1)	20.0 ppm
2) R 2520	Z 0000	S 1950	CONC (2)	20.0 ppm
3) R 2520	S 1950	Z 0000	CONC (3)	20.0 ppm
			AVE CONC	20.0 ppm

2ND ANALYSIS: DATE 3/5/93 ANALYST A.Lattanze

1) Z 0000	R 2410	S 1870	CONC (1)	20.0 ppm
2) R 2410	Z 0000	S 1870	CONC (2)	20.0 ppm
3) R 2410	S 1870	Z 0000	CONC (3)	20.0 ppm
			AVE CONC	20.0 ppm

THIS CALIBRATION STANDARD HAS BEEN CERTIFIED VERSUS EPA TRACEABILITY PROTOCOL NO. 1, PROCEDURE G1, AND ANALYSES PERFORMED PER SECTION 3.0.4.
CERTIFIED CONCENTRATION: Nitric Oxide=20.6ppm, Sulfur Dioxide=20.0ppm, Carbon Monoxide=20.1pp
Nitrogen=Balance

APPROVED BY [signature]
LABORATORY MANAGER

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Petro Chem Environmental Services, Inc.

AIRCO

542234

Airco Special Gases
Union Landing & River Roads
P.O. Drawer No. 272
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New Jersey 08077
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Prod. & Admin.: 609-829-7914
International: 609-829-7917

CERTIFICATE OF ANALYSIS - EPA PROTOCOL GAS MIXTURE

CUSTOMER: Bakersfield Welding Supply Saugus CA

CYLINDER #: CC:69805
CYLINDER PRESSURE: 1000 psig
LABORATORY: Riverton NJ

CERTIFICATION DATE: 3/5/93
EXPIRATION DATE: 9/5/93
REFERENCE #: 30963

MIXTURE COMPONENT	ACTUAL MIXTURE CONCENTRATION	AIRCO INTERMEDIATE STANDARD CYLINDER #	CONC.	NIST SRM#
Carbon Monoxide	20.1 ppm	CC:62780	24.7 ppm	1678C

BALANCE GAS: Nitric Oxide, Sulfur Dioxide, Nitrogen

GAS ANALYZER:
MAKE: Beckman MODEL: 866 SERIAL#: 1000049
PRINCIPAL: Non-Dispersive Infrared
LAST MULTIPOINT CALIBRATION DATE: 11/3/92

R=REFERENCE STANDARD Z=ZERO GAS S=SAMPLE GAS

1ST ANALYSIS: DATE 2/26/93 ANALYST A. Lattanze

1) Z 000	R 243	S 197	CONC (1)	20.0 ppm
2) R 243	Z 000	S 197	CONC (2)	20.0 ppm
3) R 243	S 197	Z 000	CONC (3)	20.0 ppm
			AVE CONC	20.0 ppm

2ND ANALYSIS: DATE 3/5/93 ANALYST A. Lattanze

1) Z 000	R 240	S 195	CONC (1)	20.1 ppm
2) R 240	Z 000	S 195	CONC (2)	20.1 ppm
3) R 240	S 195	Z 000	CONC (3)	20.1 ppm
			AVE CONC	20.1 ppm

THIS CALIBRATION STANDARD HAS BEEN CERTIFIED VERSUS EPA TRACEABILITY PROTOCOL NO. 1, PROCEDURE G1, AND ANALYSES PERFORMED PER SECTION 3.0.4.

CERTIFIED CONCENTRATION: Carbon Monoxide==20.1ppm, Nitric Oxide=20.6ppm, Sulfur Dioxide=20.0 pp
Nitrogen=Balance

APPROVED BY J. Lore
LABORATORY MANAGER

smd

AIRCO

546242

Airco Special Gases
Union Landing & River Roads
P.O. Drawer No. 272
Riverton
New Jersey 08077
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CERTIFICATE OF ANALYSIS - EPA PROTOCOL GAS MIX

CUSTOMER: Bakersfield Welding Supply Bakersfield, CA
CYLINDER #: CC-19071
CYLINDER PRESSURE: 1000 psig
LABORATORY: Riverton, NJ
CERTIFICATION DATE: 3-29-93
EXPIRATION DATE: 9-29-93
REFERENCE #: 31381

MIXTURE COMPONENTS	ACTUAL MIXTURE CONCENTRATION	AIRCO INTERMEDIATE STANDARD CYLINDER #	CONC.	NIST SRM#
Nitric Oxide	20.1 ppm	CC-95054	18.7 ppm	2629A
Sulfur Dioxide	20.9 ppm	CC-15382	25.8 ppm	1693A

BALANCE GAS: Carbon Monoxide, Nitrogen

COMPONENT 1 GAS ANALYSIS PROCEDURE Chemiluminescence
MAKE/MODEL/SER#: Beckman, 952, 0100204
LAST MULTIPOINT CALIBRATION DATE: 2-2-93

COMPONENT 2 GAS ANALYSIS PROCEDURE Non-dispersive Infrared
MAKE/MODEL/SER#: Beckman, 865, 0103986
LAST MULTIPOINT CALIBRATION DATE: 2-2-93
R=REFERENCE STANDARD Z=ZERO GAS S=SAMPLE GAS

1ST COMPONENT Nitric Oxide
1ST ANALYSIS: DATE 3-22-93 ANALYST A. Lattanze

1) Z 0000	R 1500	S 1620	CONC (1)	20.2 ppm
2) R 1500	Z 0000	S 1620	CONC (2)	20.2 ppm
3) R 1500	S 1620	Z 0000	CONC (3)	20.2 ppm
			AVE CONC	20.2 ppm

2ND ANALYSIS: DATE 3-29-93 ANALYST A. Lattanze

1) Z 0000	R 1490	S 1590	CONC (1)	20.0 ppm
2) R 1490	Z 0000	S 1590	CONC (2)	20.0 ppm
3) R 1490	S 1590	Z 0000	CONC (3)	20.0 ppm
			AVE CONC	20.0 ppm

2ND COMPONENT Sulfur Dioxide
1ST ANALYSIS: DATE 3-22-93 ANALYST A. Lattanze

1) Z 0000	R 2465	S 2000	CONC (1)	20.9 ppm
2) R 2465	Z 0000	S 2000	CONC (2)	20.9 ppm
3) R 2465	S 2000	Z 0000	CONC (3)	20.9 ppm
			AVE CONC	20.9 ppm

2ND ANALYSIS: DATE 3-29-93 ANALYST A. Lattanze

1) Z 0000	R 2400	S 1940	CONC (1)	20.9 ppm
2) R 2400	Z 0000	S 1940	CONC (2)	20.9 ppm
3) R 2400	S 1940	Z 0000	CONC (3)	20.9 ppm
			AVE CONC	20.9 ppm

THIS CALIBRATION STANDARD HAS BEEN CERTIFIED VERSUS EPA TRACEABILITY PROTOCOL NO. 1, PROCEDURE G1, AND ANALYSES PERFORMED PER SECTION 3.0.4.
CERTIFIED CONCENTRATION: Nitric Oxide = 20.1 ppm, Sulfur Dioxide = 20.9 ppm, Carbon Monoxide = 20.0 ppm, Nitrogen = Balance

APPROVED BY _____
LABORATORY MANAGER

AIRCO

546242

Airco Special Gases
Union Landing & River Roads
P.O. Drawer No. 272
Riverton
New Jersey 08077
Telephones: Marketing: 609-829-7878
Prod. & Admin.: 609-829-7914
International: 609-829-7917

CERTIFICATE OF ANALYSIS - EPA PROTOCOL GAS MIXTURE

CUSTOMER: Bakersfield Welding Supply Bakersfield, Ca

CYLINDER #: CC-19071
CYLINDER PRESSURE: 1000 psig
LABORATORY: Riverton, NJ

CERTIFICATION DATE: 3-29-93
EXPIRATION DATE: 9-29-93
REFERENCE #: 31381

MIXTURE COMPONENT	ACTUAL MIXTURE CONCENTRATION	AIRCO INTERMEDIATE STANDARD CYLINDER #	CONC.	NIST SRM#
Carbon Monoxide	20.0 ppm	CC-62780	24.7 ppm	1678C

BALANCE GAS: Nitric Oxide, Sulfur Dioxide, Nitrogen

GAS ANALYZER:
MAKE: Beckman MODEL: 866 SERIAL#: 1000049
PRINCIPAL: Non-dispersive Infrared
LAST MULTIPOINT CALIBRATION DATE: 1-3-93

R=REFERENCE STANDARD Z=ZERO GAS S=SAMPLE GAS

1ST ANALYSIS: DATE 3-22-93 ANALYST A. Lattanze

1) Z 000	R 245	S 199	CONC (1)	20.1 ppm
2) R 245	Z 000	S 199	CONC (2)	20.1 ppm
3) R 245	S 199	Z 000	CONC (3)	20.1 ppm
			AVE CONC	20.1 ppm

2ND ANALYSIS: DATE 3-29-93 ANALYST A. Lattanze

1) Z 000	R 243	S 196	CONC (1)	19.9 ppm
2) R 243	Z 000	S 196	CONC (2)	19.9 ppm
3) R 243	S 196	Z 000	CONC (3)	19.9 ppm
			AVE CONC	19.9 ppm

THIS CALIBRATION STANDARD HAS BEEN CERTIFIED VERSUS EPA TRACEABILITY PROTOCOL NO. 1, PROCEDURE G1, AND ANALYSES PERFORMED PER SECTION 3.0.4.

CERTIFIED CONCENTRATION: Carbon Monoxide = 20.0 ppm, Nitric Oxide = 20.1 ppm, Sulfur Dioxide = 20.9 ppm, Nitrogen = Balance

APPROVED BY J. Lua
LABORATORY MANAGER

AIRCO

546228

Airco Special Gases
Union Landing & River Roads
P.O. Drawer No. 272
Riverton
New Jersey 08077
Telephones: Marketing: 609-829-7878
Prod. & Admin.: 609-829-7914
International: 609-829-7917

CERTIFICATE OF ANALYSIS - EPA PROTOCOL GAS MIXTURE

CUSTOMER: Bakersfield Welding Supply Bakersfield, CA

CYLINDER #: CC-65055
CYLINDER PRESSURE: 2000 psig
LABORATORY: Riverton, NJ

CERTIFICATION DATE: 3-29-93
EXPIRATION DATE: 9-29-93
REFERENCE #: 31214

MIXTURE COMPONENT	ACTUAL MIXTURE CONCENTRATION	AIRCO INTERMEDIATE STANDARD CYLINDER #	CONC.	NIST SRM#
Nitric Oxide	7.36 ppm	CC-104774	9.40 ppm	2628A

BALANCE GAS: Nitrogen

GAS ANALYZER:
MAKE: Beckman MODEL: 952 SERIAL#: 0100204
PRINCIPAL: Chemiluminescence
LAST MULTIPOINT CALIBRATION DATE: 2-2-93

R=REFERENCE STANDARD Z=ZERO GAS S=SAMPLE GAS

1ST ANALYSIS: DATE 3-22-93 ANALYST A. Lattanze

1) Z 0000	R 3130	S 2450	CONC (1)	7.36 ppm
2) R 3130	Z 0000	S 2450	CONC (2)	7.36 ppm
3) R 3130	S 2450	Z 0000	CONC (3)	7.36 ppm
			AVE CONC	7.36 ppm

2ND ANALYSIS: DATE 3-29-93 ANALYST A. Lattanze

1) Z 0000	R 3220	S 2520	CONC (1)	7.36 ppm
2) R 3220	Z 0000	S 2520	CONC (2)	7.36 ppm
3) R 3220	S 2520	Z 0000	CONC (3)	7.36 ppm
			AVE CONC	7.36 ppm

THIS CALIBRATION STANDARD HAS BEEN CERTIFIED VERSUS EPA TRACEABILITY PROTOCOL NO. 1, PROCEDURE G1, AND ANALYSES PERFORMED PER SECTION 3.0.4.

CERTIFIED CONCENTRATION: Nitric Oxide = 7.36 ppm, Nitrogen = Balance

APPROVED BY J. Long
LABORATORY MANAGER

AIRCO

518649

Airco Electronic Gases
Union Landing & River Roads
P.O. Drawer No. 272
Riverton
New Jersey 08077
Telephones: Marketing: 609-829-7878
Prod. & Admin.: 609-829-7914
International: 609-829-7917

CERTIFICATE OF ANALYSIS - EPA PROTOCOL GAS MIXTURE

CUSTOMER: Bakersfield Welding Supply

CYLINDER #: CC-107556
CYLINDER PRESSURE: 1000 psig
LABORATORY: Riverton, NJ

CERTIFICATION DATE: 11/2/92
EXPIRATION DATE: 5/2/93
REFERENCE #: 24283

MIXTURE COMPONENT	ACTUAL MIXTURE CONCENTRATION	AIRCO INTERMEDIATE STANDARD CYLINDER #	CONC.	NIST SRM#
Nitric Oxide	77.0 ppm	CC-69954	100 ppm	1684B

BALANCE GAS: Sulfur Dioxide; Carbon Monoxide; Nitrogen

GAS ANALYZER:
MAKE: Beckman MODEL: 952 SERIAL#: 0100204
PRINCIPAL: Chemiluminescence
LAST MULTIPOINT CALIBRATION DATE: 8/3/92

R=REFERENCE STANDARD Z=ZERO GAS S=SAMPLE GAS

1ST ANALYSIS: DATE 10/26/92 ANALYST A. Lattanze

1) Z 0000	R 3680	S 2850	CONC (1)	77.4 ppm
2) R 3655	Z 0000	S 2820	CONC (2)	77.2 ppm
3) R 3680	S 2820	Z 0000	CONC (3)	76.6 ppm
			AVE CONC	77.1 ppm

2ND ANALYSIS: DATE 11/2/92 ANALYST A. Lattanze

1) Z 0000	R 3580	S 2750	CONC (1)	76.8 ppm
2) R 3590	Z 0000	S 2755	CONC (2)	76.7 ppm
3) R 3580	S 2750	Z 0000	CONC (3)	76.8 ppm
			AVE CONC	76.8 ppm

THIS CALIBRATION STANDARD HAS BEEN CERTIFIED VERSUS EPA TRACEABILITY PROTOCOL NO. 1, PROCEDURE G1, AND ANALYSES PERFORMED PER SECTION 3.0.4.

CERTIFIED CONCENTRATION: Nitric Oxide = 77.0ppm; Sulfur Dioxide = 78.7ppm; Carbon Monoxide 79.0ppm; Nitrogen = Balance

APPROVED BY _____
LABORATORY MANAGER

A member of The BOC Group

Petro Chem Environmental Services, Inc.

AIRCO

518649

Airco Electronic Gases
Union Landing & River Roads
P.O. Drawer No. 272
Riverton
New Jersey 08077
Telephones: Marketing: 609-829-7878
Prod. & Admin.: 609-829-7914
International: 609-829-7917

CERTIFICATE OF ANALYSIS - EPA PROTOCOL GAS MIX

CUSTOMER: Bakersfield Welding Supply
CYLINDER #: CC-107556
CYLINDER PRESSURE: 1000 psig
LABORATORY: Riverton, NJ

CERTIFICATION DATE: 11/2/92
EXPIRATION DATE: 5/2/93
REFERENCE #: 24283

MIXTURE COMPONENTS	ACTUAL MIXTURE CONCENTRATION	AIRCO INTERMEDIATE STANDARD CYLINDER #	CONC.	NIST SRM#
Sulfur Dioxide	78.7 ppm	CC-10444	101 ppm	1694A
Carbon Monoxide	79.0 ppm	CC-3138	112 ppm	1679C

BALANCE GAS: Nitric Oxide; Nitrogen

COMPONENT 1 GAS ANALYSIS PROCEDURE Non-Dispersive Infrared
MAKE/MODEL/SER#: Beckman, 865, 0103986
LAST MULTIPOINT CALIBRATION DATE: 8/3/92

COMPONENT 2 GAS ANALYSIS PROCEDURE Non-Dispersive Infrared
MAKE/MODEL/SER#: Beckman, 866, 1000049
LAST MULTIPOINT CALIBRATION DATE: 8/3/92

R=REFERENCE STANDARD Z=ZERO GAS S=SAMPLE GAS

1ST COMPONENT Sulfur Dioxide

1ST ANALYSIS: DATE 10/26/92 ANALYST A. Lattanze

1) Z 0000	R 3230	S 2520	CONC (1)	78.8 ppm
2) R 3230	Z 0000	S 2520	CONC (2)	78.8 ppm
3) R 3230	S 2520	Z 0000	CONC (3)	78.8 ppm
			AVE CONC	78.8 ppm

2ND ANALYSIS: DATE 11/2/92 ANALYST A. Lattanze

1) Z 0000	R 3250	S 2530	CONC (1)	78.6 ppm
2) R 3250	Z 0000	S 2530	CONC (2)	78.6 ppm
3) R 3250	S 2530	Z 0000	CONC (3)	78.6 ppm
			AVE CONC	78.6 ppm

2ND COMPONENT Carbon Monoxide

1ST ANALYSIS: DATE 10/26/92 ANALYST A. Lattanze

1) Z 000	R 230	S 163	CONC (1)	79.4 ppm
2) R 232	Z 000	S 164	CONC (2)	79.2 ppm
3) R 232	S 164	Z 0000	CONC (3)	79.2 ppm
			AVE CONC	79.3 ppm

2ND ANALYSIS: DATE 11/2/92 ANALYST A. Lattanze

1) Z 000	R 232	S 163	CONC (1)	78.7 ppm
2) R 232	Z 000	S 163	CONC (2)	78.7 ppm
3) R 232	S 163	Z 000	CONC (3)	78.7 ppm
			AVE CONC	78.7 ppm

THIS CALIBRATION STANDARD HAS BEEN CERTIFIED VERSUS EPA TRACEABILITY PROTOCOL NO. 1, PROCEDURE G1, AND ANALYSES PERFORMED PER SECTION 3.0.4.
CERTIFIED CONCENTRATION: Sulfur Dioxide = 78.7ppm; Carbon Monoxide = 79.0 ppm Nitric Oxide = 77.0ppm; Nitrogen = Balance

APPROVED BY [signature]
LABORATORY MANAGER

AIRCO

512041

Airco Electronic Gases
Union Landing & River Roads
P.O. Drawer No. 272
Riverton
New Jersey 08077
Telephones: Marketing: 609-829-7878
Prod. & Admin.: 609-829-7914
International: 609-829-7917

CERTIFICATE OF ANALYSIS - EPA PROTOCOL GAS MIX

CUSTOMER: Bakersfield Welding (Saugas, CA)
CYLINDER #: CC-77462
CYLINDER PRESSURE: 1650 psig
LABORATORY: Riverton, NJ
CERTIFICATION DATE: 10/12/92
EXPIRATION DATE: 4/12/93
REFERENCE #: 23698

MIXTURE COMPONENTS	ACTUAL MIXTURE CONCENTRATION	AIRCO INTERMEDIATE STANDARD CYLINDER #	CONC.	NIST SRM#
Nitric Oxide	78.2 ppm	CC-69954	100 ppm	1684B
Carbon Monoxide	81.4 ppm	CC-3138	112 ppm	1679C

BALANCE GAS: Nitrogen

COMPONENT 1 GAS ANALYSIS PROCEDURE Chemiluminescence
MAKE/MODEL/SER#: Beckman, 952, 0100204
LAST MULTIPOINT CALIBRATION DATE: 8/3/92

COMPONENT 2 GAS ANALYSIS PROCEDURE Non-Dispersive Infrared
MAKE/MODEL/SER#: Beckman; 866; 1000049
LAST MULTIPOINT CALIBRATION DATE: 8/3/92

R=REFERENCE STANDARD Z=ZERO GAS S=SAMPLE GAS

1ST COMPONENT Nitric Oxide

1ST ANALYSIS: DATE 10/5/92 ANALYST A. Lattanze

1) Z 0000	R 3690	S 2880	CONC (1)	78.0 ppm
2) R 3690	Z 0000	S 2880	CONC (2)	78.0 ppm
3) R 3690	S 2880	Z 0000	CONC (3)	78.0 ppm
			AVE CONC	78.0 ppm

2ND ANALYSIS: DATE 10/12/92 ANALYST A. Lattanze

1) Z 0000	R 3700	S 2900	CONC (1)	78.4 ppm
2) R 3700	Z 0000	S 2900	CONC (2)	78.4 ppm
3) R 3700	S 2900	Z 0000	CONC (3)	78.4 ppm
			AVE CONC	78.4 ppm

2ND COMPONENT Carbon Monoxide

1ST ANALYSIS: DATE 10/5/92 ANALYST A. Lattanze

1) Z 000	R 222	S 163	CONC (1)	82.2 ppm
2) R 222	Z 000	S 161	CONC (2)	81.2 ppm
3) R 222	S 163	Z 000	CONC (3)	82.2 ppm
			AVE CONC	81.9 ppm

2ND ANALYSIS: DATE 10/12/92 ANALYST A. Lattanze

1) Z 000	R 221	S 160	CONC (1)	81.1 ppm
2) R 222	Z 000	S 160	CONC (2)	80.7 ppm
3) R 222	S 160	Z 000	CONC (3)	80.7 ppm
			AVE CONC	80.8 ppm

THIS CALIBRATION STANDARD HAS BEEN CERTIFIED VERSUS EPA TRACEABILITY PROTOCOL NO. 1, PROCEDURE G1, AND ANALYSES PERFORMED PER SECTION 3.0.4.

CERTIFIED CONCENTRATION: Nitric Oxide = 78.2 ppm; Carbon Monoxide = 81.4 ppm; Nitrogen = Balance

APPROVED BY J. Lucas
LABORATORY MANAGER

A member of The BOC Group
Petro Chem Environmental Services, Inc.

PETRO
CHEM
ENVIRONMENTAL
SERVICES, INC.

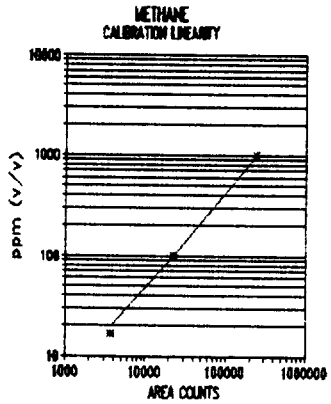
3207 Antonino Avenue
Bakersfield, California 93308
(805) 327-7300
FAX (805) 327-3459

COMPANY	: XONTECH INC.	DATE RECEIVED :	5-13-93
DATE	: 5-12-93	DATE ANALYZED :	5-14-93
PROJECT	: 098-303	DATE REPORTED:	5-17-93

EPA METHOD 18
HYDROCARBON ANALYSIS
CALIBRATION DATA AND STATISTICS

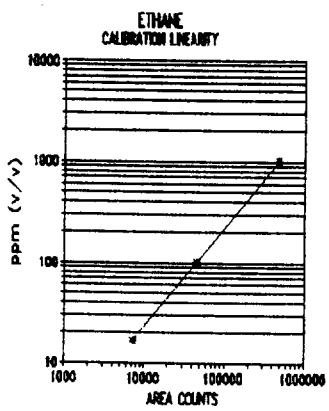
METHANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
16.5	2764	5.97E-03
101	17293	5.84E-03
1000	175893	5.69E-03
	AVERAGE RF	5.83E-03
	STD. DEVIATION	1.16E-04
	RSD%	1.99%



ETHANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
16.5	5406	3.05E-03
101	34853	2.90E-03
1030	355242	2.90E-03
	AVERAGE RF	2.95E-03
	STD. DEVIATION	7.24E-05
	RSD%	2.45%



PETRO
CHEM
ENVIRONMENTAL
SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93308
(805) 327-7300
FAX (805) 327-3459

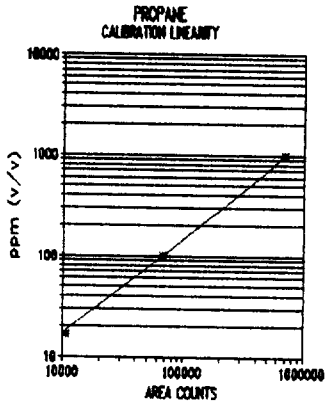
COMPANY: XONTECH INC.
DATE : 5-12-93
PROJECT : 098-303

DATE RECEIVED : 5-13-93
DATE ANALYZED : 5-14-93
DATE REPORTED: 5-17-93

EPA METHOD 18
HYDROCARBON ANALYSIS
CALIBRATION DATA AND STATISTICS

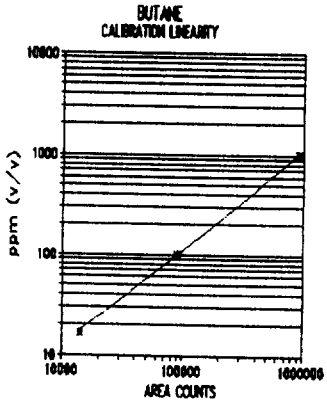
PROPANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
16.5	8060	2.05E-03
100	51851	1.93E-03
1000	530075	1.89E-03
	AVERAGE RF	1.95E-03
	STD. DEVIATION	6.80E-05
	RSD%	3.48%



BUTANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
16.5	10808	1.53E-03
101	68582	1.47E-03
1010	700605	1.44E-03
	AVERAGE RF	1.48E-03
	STD. DEVIATION	3.51E-05
	RSD%	2.37%



PETRO
CHEM
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SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93308
(805) 327-7300
FAX (805) 327-3459

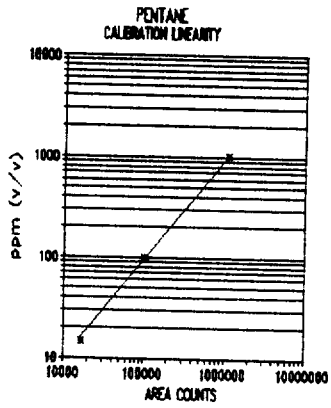
COMPANY: XONTECH INC.
DATE : 5-12-93
PROJECT : 098-303

DATE RECEIVED : 5-13-93
DATE ANALYZED : 5-14-93
DATE REPORTED: 5-17-93

EPA METHOD 18
HYDROCARBON ANALYSIS
CALIBRATION DATA AND STATISTICS

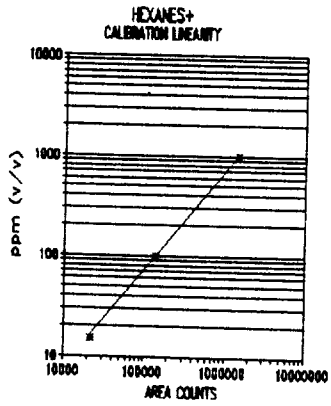
PENTANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
14.8	12224	1.21E-03
99.1	82607	1.20E-03
1020	860593	1.19E-03
	AVERAGE RF	1.20E-03
	STD. DEVIATION	1.04E-05
	RSD%	0.87%



HEXANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
15.2	15616	9.73E-04
100	105210	9.50E-04
1005	1087224	9.24E-04
	AVERAGE RF	9.49E-04
	STD. DEVIATION	2.00E-05
	RSD%	2.11%



PETRO
CHEM
ENVIRONMENTAL
SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93308
(805) 327-7300
FAX (805) 327-3459

COMPANY: XONTECH INC.
DATE : 5-12-93
REPORT : 098-303

DATE RECEIVED : 5-13-93
DATE ANALYZED : 5-14-93
DATE REPORTED: 5-17-93

EPA METHOD 18
CALIBRATION DRIFT ANALYSIS

POST ANALYSIS CALIBRATION CHECK (15ppm STD.)

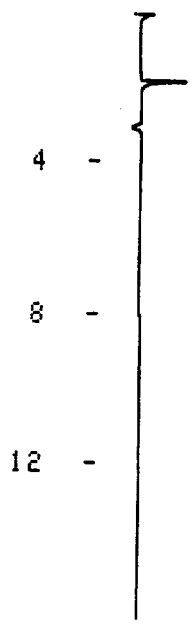
CONSTITUENT	INITIAL RF	POST RF	%DIFF.
METHANE	5.97E-03	5.90E-03	1.11%
ETHANE	3.05E-03	2.97E-03	2.75%
PROPANE	2.05E-03	2.00E-03	2.18%
BUTANE	1.53E-03	1.49E-03	2.45%
PENTANE	1.21E-03	1.17E-03	3.08%
HEXANES+	9.73E-04	9.52E-04	2.17%

POST ANALYSIS CALIBRATION CHECK (100ppm STD.)

CONSTITUENT	INITIAL RF	POST RF	%DIFF.
METHANE	5.84E-03	5.74E-03	1.64%
ETHANE	2.90E-03	2.86E-03	1.40%
PROPANE	1.93E-03	1.90E-03	1.69%
BUTANE	1.47E-03	1.45E-03	1.84%
PENTANE	1.20E-03	1.18E-03	1.94%
HEXANES+	9.50E-04	9.32E-04	1.96%

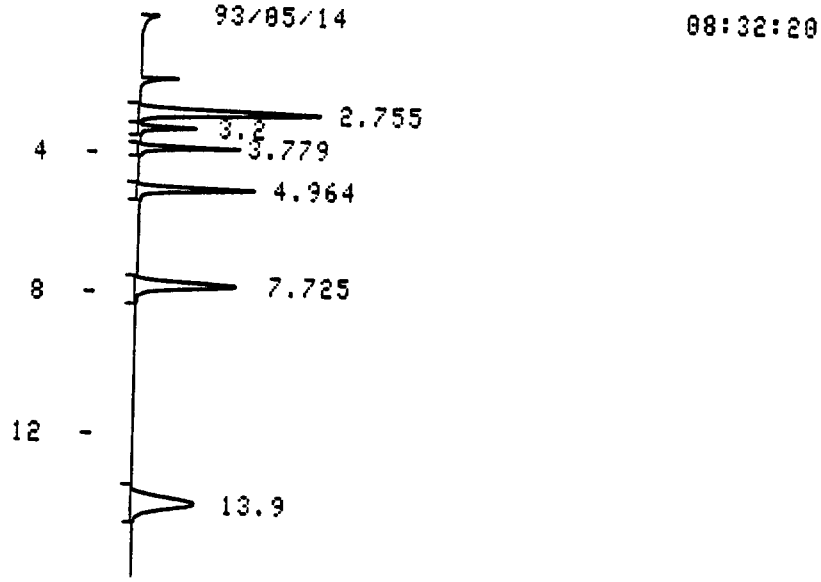
SYSTEM BLANK
UHP HELIUM

93/05/14 08:03:25



CHROMATOGRAM 31 MEMORIZED
WARNING NO PEAK

15PPm HYDROCARBON STANDARD
SCOTTY CAN MIX 1



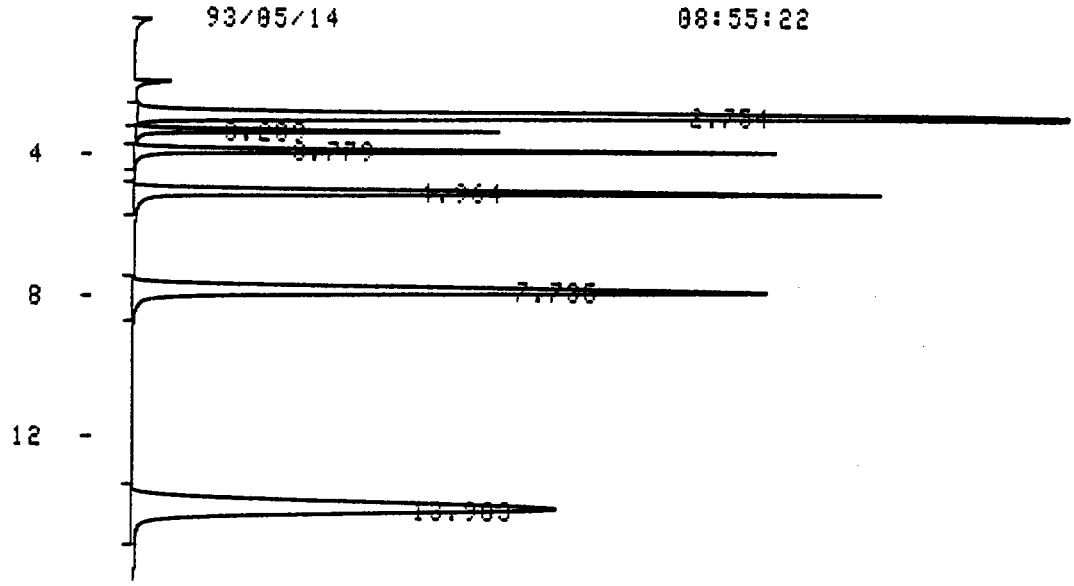
CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.755	15616		6		C-6+
2	3.2	2764		1		C-1
3	3.779	5406		2		C-2
4	4.964	8060		3		C-3
5	7.725	10808		4		C-4
6	13.9	12224		5		C-5
	TOTAL	54878				

IDENTIFICATION FILE 0
MODE$ 101 WINDOW 3

IDNO	NAME	TIME	FACTOR	CONC
1	C-1	3.2	0.00596982	16.5
2	C-2	3.77	0.00305233	16.5
3	C-3	4.96	0.00204725	16.5
4	C-4	7.73	0.00152658	16.5
5	C-5	13.9	0.00121071	14.8
6	C-6+	2.75	0.000973385	15.2
7	C-2	3.81	0.00305233	16.5
8	C-3	4.3	0.00204725	16.5
9	C-4	5.7	0.00152658	16.5
10	C-4	6.65	0.00152658	16.5
11	C-5	10.24	0.00121071	14.8
12	C-5	10.59	0.00121071	14.8
13	C-5	12.73	0.00121071	14.8
14	C-5	11.3	0.00121071	14.8
15	C-5	15.43	0.00121071	14.8
16	C-5	8.79	0.00121071	14.8
17	C-5	11.82	0.00121071	14.8

100PPm HYDROCARBON STANDARD
SCOTTY CAN MIX 220



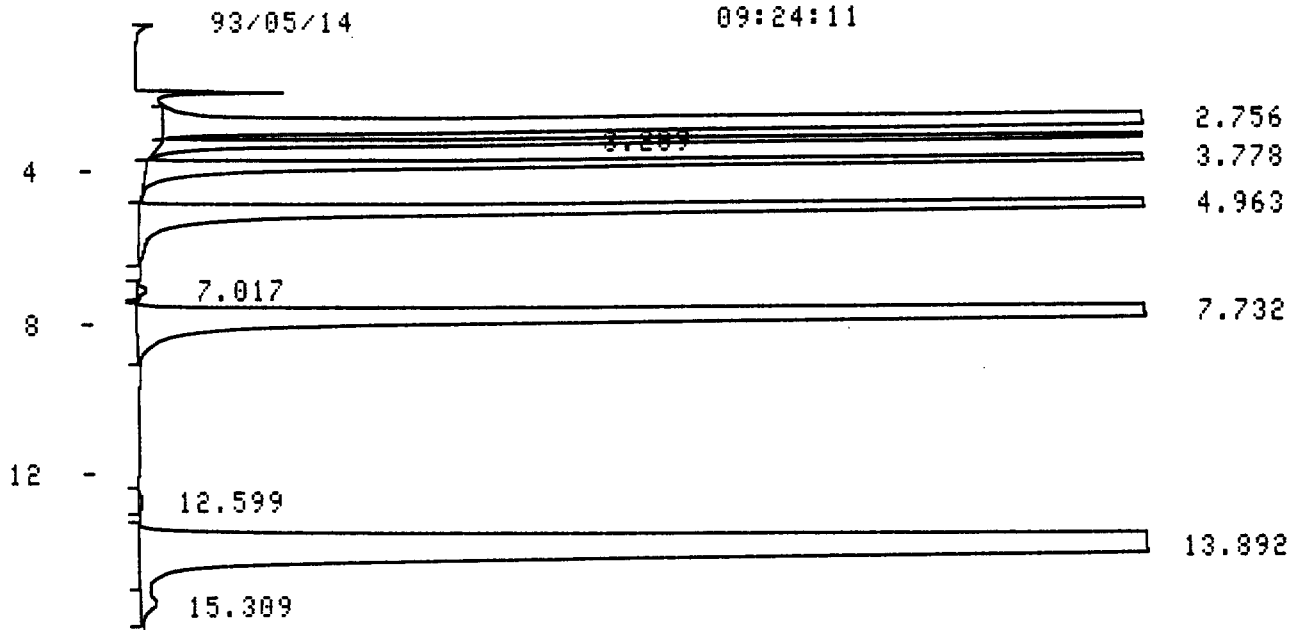
CHROMATOGRAM 2 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.754	105210		6		C-6+
2	3.209	17293		1		C-1
3	3.779	34853		2		C-2
4	4.964	51851		3		C-3
5	7.735	68582		4		C-4
6	13.903	82607		5		C-5
	TOTAL	360396				

IDENTIFICATION FILE 1
MODE$ 101 WINDOW 3

IDNO	NAME	TIME	FACTOR	CONC
1	C-1	3.2	0.00584068	101
2	C-2	3.77	0.00289785	101
3	C-3	4.96	0.00192859	100
4	C-4	7.73	0.0014727	101
5	C-5	13.9	0.00119965	99.1
6	C-6+	2.75	0.000950481	100
7	C-2	4.18	0.00289785	101
8	C-3	4.58	0.00192859	100
9	C-4	6.05	0.0014727	101
10	C-4	7.04	0.0014727	101
11	C-5	10.21	0.00119965	99.1
12	C-5	10.59	0.00119965	99.1
13	C-5	12.71	0.00119965	99.1
14	C-5	11.3	0.00119965	99.1
15	C-5	15.27	0.00119965	99.1
16	C-5	12.19	0.00119965	99.1
17	C-5	11.61	0.00119965	99.1

1000PPm HYDROCARBON STANDARD
SCOTTY CAN MIX 224



CHROMATOGRAM 3 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.756	1087224		6		C-6+
2	3.209	175893		1		C-1
3	3.778	355242		2		C-2
4	4.963	530075		3		C-3
5	7.017	780				
6	7.732	700605		4		C-4
7	12.599	598		14		C-5
8	13.892	860593		5		C-5
9	15.309	3147	V			

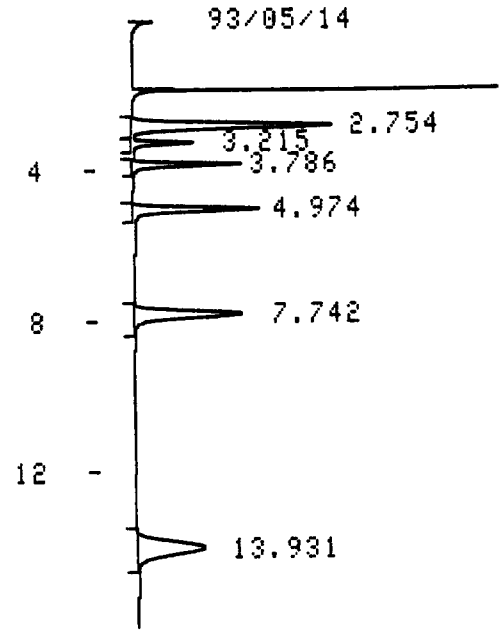
	TOTAL	3714156				

IDENTIFICATION FILE 2
MODE$ 101 WINDOW 3

IDNO	NAME	TIME	FACTOR	CONC
1	C-1	3.2	0.00568527	1000
2	C-2	3.77	0.00289943	1030
3	C-3	4.96	0.00188653	1000
4	C-4	7.73	0.00144161	1010
5	C-5	13.89	0.00118523	1020
6	C-6+	2.75	0.000924373	1005
7	C-2	3.9	0.00289943	1030
8	C-3	4.52	0.00188653	1000
9	C-4	5.94	0.00144161	1010
10	C-4	6.73	0.00144161	1010
11	C-5	10.21	0.00118523	1020
12	C-5	10.59	0.00118523	1020
13	C-5	12.73	0.00118523	1020
14	C-5	12.59	0.00118523	1020
15	C-5	14.73	0.00118523	1020

POST ANALYSIS CALIBRATION CHECK
15PPm HYDROCARBON STANDARD
SCOTTY CAN MIX 1

93/05/14 16:32:51

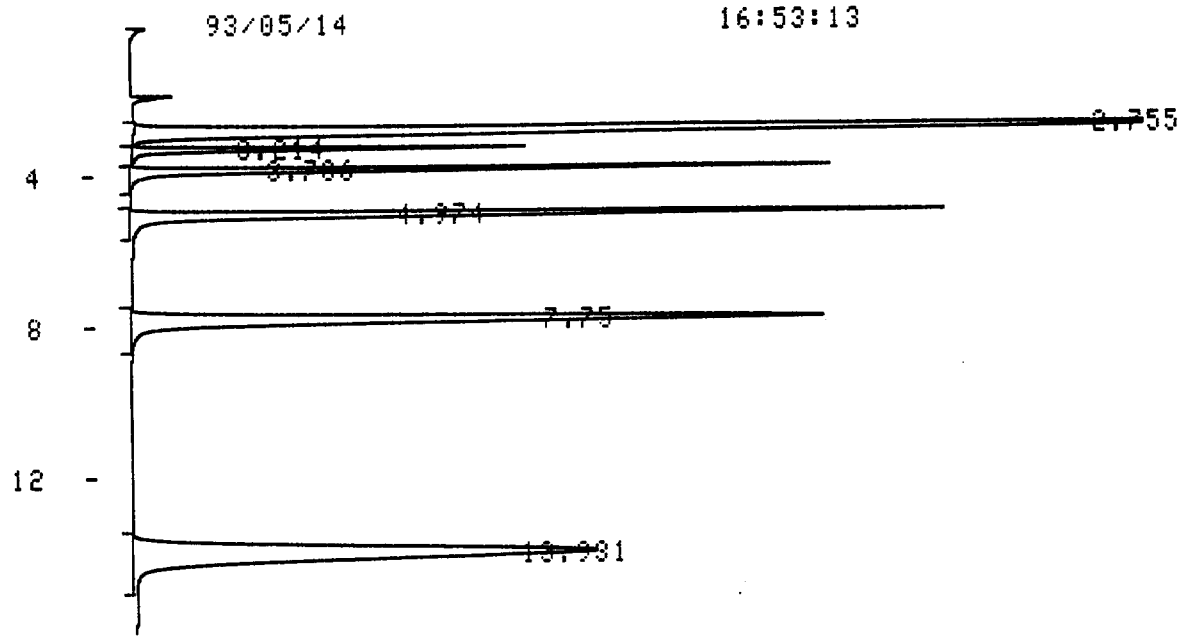


CHROMATOGRAM 12 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.754	15962		6	15.1718	C-6+
2	3.215	2795		1	16.3267	C-1
3	3.786	5559		2	16.1102	C-2
4	4.974	8240		3	15.892	C-3
5	7.742	11080		4	16.3173	C-4
6	13.931	12612		5	15.1305	C-5
	TOTAL	56249			94.9485	

GROUP(NAME)	CONC
C-1	16.3267
C-2	16.1102
C-3	15.892
C-4	16.3173
C-5	15.1305
C-6+	15.1718

POST ANALYSIS CALIBRATION CHECK
100PPm HYDROCARBON STANDARD
SCOTTY CAN MIX 220



CHROMATOGRAM 13 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.755	107318		6	102.0042	C-6+
2	3.214	17581		1	102.6868	C-1
3	3.786	35349		2	102.4359	C-2
4	4.974	52745		3	101.7235	C-3
5	7.75	69866		4	102.8912	C-4
6	13.931	84244		5	101.0636	C-5
	TOTAL	367104			612.8049	

GROUP(NAME)	CONC
C-1	102.6868
C-2	102.4359
C-3	101.7235
C-4	102.8912
C-5	101.0636
C-6+	102.0042

PETRO
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3207 Antonino Avenue
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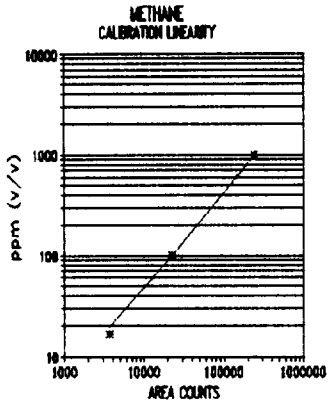
COMPANY	: XONTECH INC.	DATE RECEIVED :	5-14-93
DATE	: 5-13,14-93	DATE ANALYZED :	5-15-93
PROJECT	: 098-303	DATE REPORTED:	5-18-93

EPA METHOD 18
HYDROCARBON ANALYSIS
CALIBRATION DATA AND STATISTICS

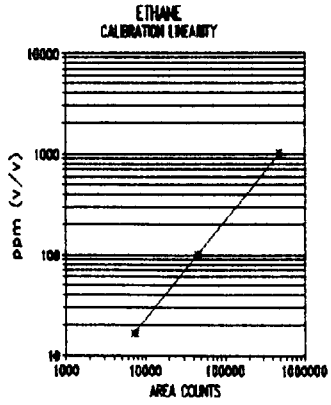
METHANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
16.5	2796	5.90E-03
101	17633	5.73E-03
1000	175950	5.68E-03
	AVERAGE RF	5.77E-03
	STD. DEVIATION	9.40E-05
	RSD%	1.63%



ETHANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
16.5	5500	3.00E-03
101	35579	2.84E-03
1030	360463	2.86E-03
	AVERAGE RF	2.90E-03
	STD. DEVIATION	7.20E-05
	RSD%	2.48%



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FAX (805) 327-3459

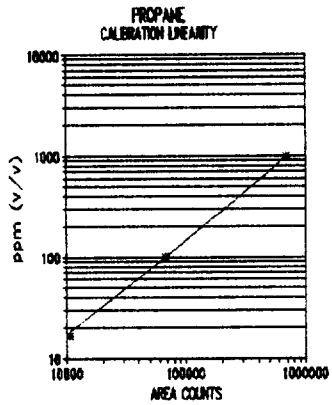
COMPANY: XONTECH INC.
DATE : 5-13,14-93
PROJECT : 098-303

DATE RECEIVED : 5-14-93
DATE ANALYZED : 5-15-93
DATE REPORTED: 5-18-93

EPA METHOD 18
HYDROCARBON ANALYSIS
CALIBRATION DATA AND STATISTICS

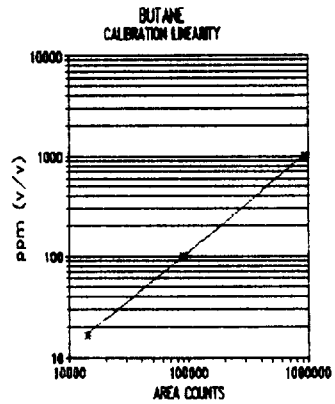
PROPANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
16.5	8256	2.00E-03
100	52774	1.89E-03
1000	540289	1.85E-03
	AVERAGE RF	1.91E-03
	STD. DEVIATION	6.19E-05
	RSD%	3.23%



BUTANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
16.5	11104	1.49E-03
101	69869	1.45E-03
1010	714016	1.41E-03
	AVERAGE RF	1.45E-03
	STD. DEVIATION	2.92E-05
	RSD%	2.02%



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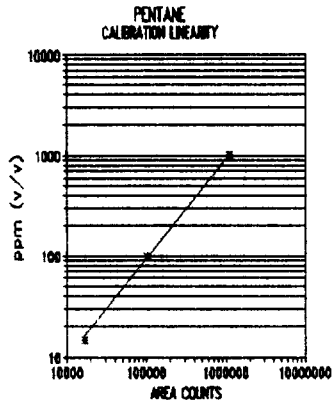
COMPANY: XONTECH INC.
DATE : 5-13,14-93
PROJECT : 098-303

DATE RECEIVED : 5-14-93
DATE ANALYZED : 5-15-93
DATE REPORTED: 5-18-93

EPA METHOD 18
HYDROCARBON ANALYSIS
CALIBRATION DATA AND STATISTICS

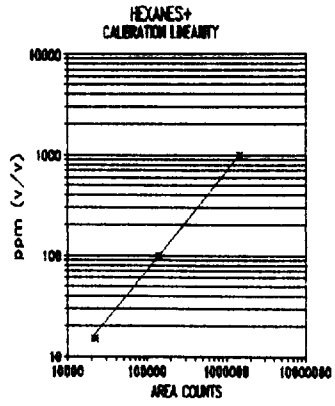
PENTANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
14.8	12712	1.16E-03
99.1	84409	1.17E-03
1020	875381	1.17E-03
	AVERAGE RF	1.17E-03
	STD. DEVIATION	4.41E-06
	RSD%	0.38%



HEXANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
15.2	15846	9.59E-04
100	108117	9.25E-04
1005	1104902	9.10E-04
	AVERAGE RF	9.31E-04
	STD. DEVIATION	2.08E-05
	RSD%	2.23%



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COMPANY: XONTECH INC.
DATE : 5-13,14-93
REPORT : 098-303

DATE RECEIVED : 5-14-93
DATE ANALYZED : 5-15-93
DATE REPORTED: 5-18-93

EPA METHOD 18
CALIBRATION DRIFT ANALYSIS

POST ANALYSIS CALIBRATION CHECK (15ppm STD.)

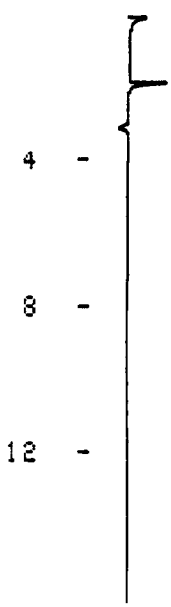
CONSTITUENT	INITIAL RF	POST RF	%DIFF.
METHANE	5.90E-03	6.02E-03	-2.04%
ETHANE	3.00E-03	2.96E-03	1.20%
PROPANE	2.00E-03	1.99E-03	0.60%
BUTANE	1.49E-03	1.51E-03	-1.58%
PENTANE	1.16E-03	1.19E-03	-2.10%
HEXANES+	9.59E-04	9.64E-04	-0.46%

POST ANALYSIS CALIBRATION CHECK (100ppm STD.)

CONSTITUENT	INITIAL RF	POST RF	%DIFF.
METHANE	5.73E-03	5.88E-03	-2.59%
ETHANE	2.84E-03	2.85E-03	-0.45%
PROPANE	1.89E-03	1.90E-03	-0.48%
BUTANE	1.45E-03	1.45E-03	-0.56%
PENTANE	1.17E-03	1.18E-03	-0.55%
HEXANES+	9.25E-04	9.36E-04	-1.22%

SYSTEM BLANK
UHP HELIUM

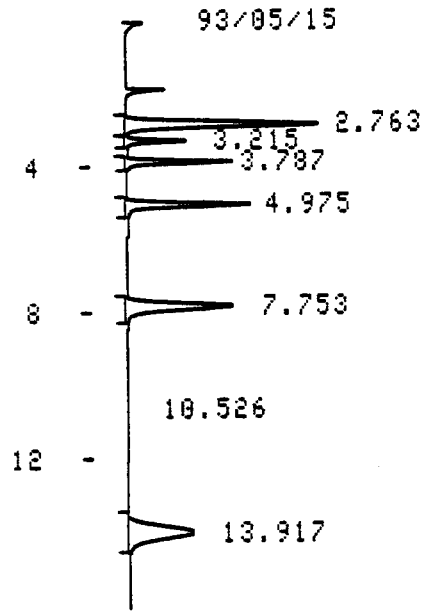
93/05/15 09:00:00



CHROMATOGRAM 1 MEMORIZED
WARNING NO PEAK

15PPm HYDROCARBON STANDARD
SCOTTY CAN MIX 1

93/05/15 11:53:06



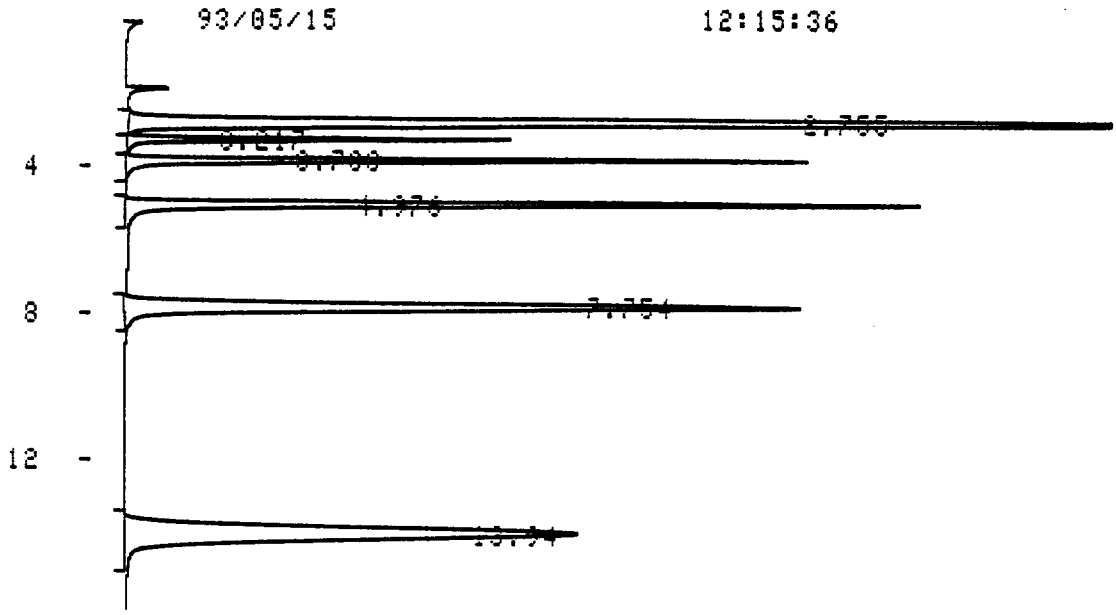
CHROMATOGRAM 2 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.763	15846		6		C-6+
2	3.215	2796		1		C-1
3	3.787	5500		2		C-2
4	4.975	8256		3		C-3
5	7.753	11104		4		C-4
6	13.917	12712		5		C-5
	TOTAL	56214				

IDENTIFICATION FILE 0
MODE# 101 WINDOW 3

IDNO	NAME	TIME	FACTOR	CONC
1	C-1	3.2	0.00590034	16.5
2	C-2	3.77	0.00300011	16.5
3	C-3	4.96	0.00199861	16.5
4	C-4	7.74	0.00148589	16.5
5	C-5	13.9	0.00116425	14.8
6	C-6+	2.75	0.000959245	15.2
7	C-2	3.81	0.00300011	16.5
8	C-3	4.3	0.00199861	16.5
9	C-4	5.7	0.00148589	16.5
10	C-4	6.65	0.00148589	16.5
11	C-5	10.24	0.00116425	14.8
12	C-5	10.59	0.00116425	14.8
13	C-5	12.73	0.00116425	14.8
14	C-5	11.3	0.00116425	14.8
15	C-5	15.43	0.00116425	14.8
16	C-5	8.79	0.00116425	14.8
17	C-5	11.82	0.00116425	14.8

100PPm HYDROCARBON STANDARD
SCOTTY CAN MIX 220



CHROMATOGRAM 3 MEMORIZED

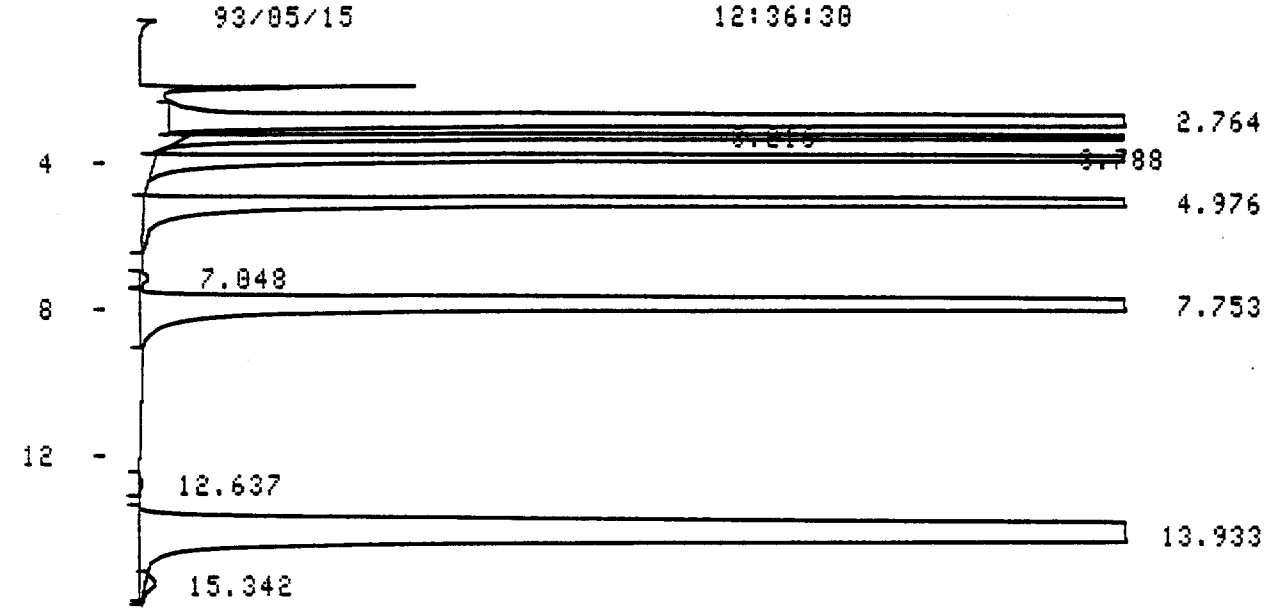
PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.755	108117		6		C-6+
2	3.217	17633		1		C-1
3	3.788	35579		2		C-2
4	4.976	52774		3		C-3
5	7.754	69869		4		C-4
6	13.94	84409		5		C-5

	TOTAL	368380				

IDENTIFICATION FILE 1
MODE$ 101 WINDOW 3

IDNO	NAME	TIME	FACTOR	CONC
1	C-1	3.2	0.00572806	101
2	C-2	3.77	0.00283877	101
3	C-3	4.96	0.00189489	100
4	C-4	7.74	0.00144556	101
5	C-5	13.92	0.00117404	99.1
6	C-6+	2.75	0.000924928	100
7	C-2	4.18	0.00283877	101
8	C-3	4.58	0.00189489	100
9	C-4	6.05	0.00144556	101
10	C-4	7.04	0.00144556	101
11	C-5	10.21	0.00117404	99.1
12	C-5	10.59	0.00117404	99.1
13	C-5	12.71	0.00117404	99.1
14	C-5	11.3	0.00117404	99.1
15	C-5	15.27	0.00117404	99.1
16	C-5	12.19	0.00117404	99.1
17	C-5	11.61	0.00117404	99.1

1000Ppm HYDROCARBON STANDARD
SCOTTY CAN MIX 224



CHROMATOGRAM 4 MEMORIZED

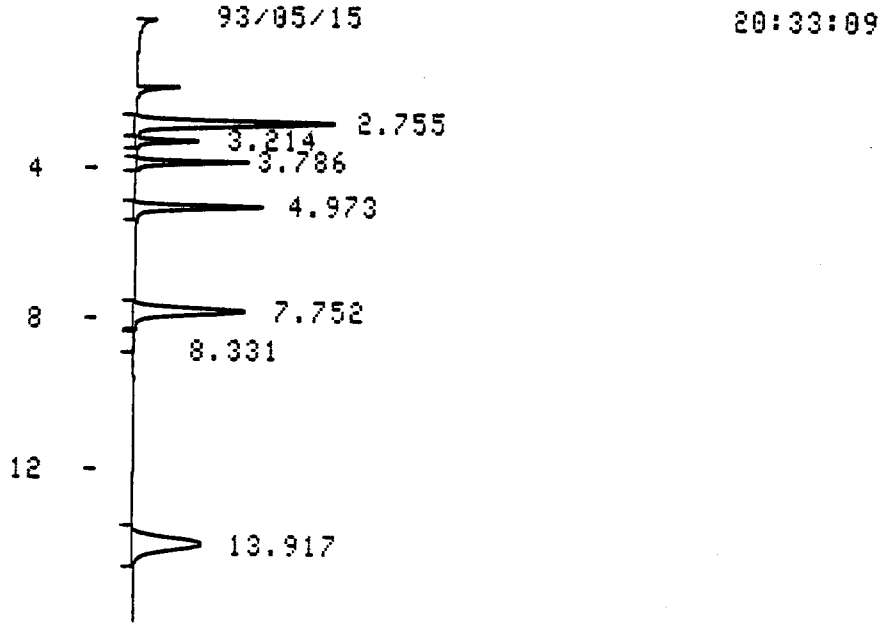
PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.764	1104902		6		C-6+
2	3.216	175950		1		C-1
3	3.788	360463		2		C-2
4	4.976	540289		3		C-3
5	7.048	790				
6	7.753	714016		4		C-4
7	12.637	599		14		C-5
8	13.933	875381	S	5		C-5
9	15.342	1789	T			

	TOTAL	3774177				

IDENTIFICATION FILE 2
MODE$ 101 WINDOW 3

IDNO	NAME	TIME	FACTOR	CONC
1	C-1	3.2	0.00568345	1000
2	C-2	3.77	0.00285744	1030
3	C-3	4.96	0.00185086	1000
4	C-4	7.74	0.00141453	1010
5	C-5	13.91	0.00116521	1020
6	C-6+	2.75	0.000909583	1005
7	C-2	3.9	0.00285744	1030
8	C-3	4.52	0.00185086	1000
9	C-4	5.94	0.00141453	1010
10	C-4	6.73	0.00141453	1010
11	C-5	10.21	0.00116521	1020
12	C-5	10.59	0.00116521	1020
13	C-5	12.73	0.00116521	1020
14	C-5	12.61	0.00116521	1020
15	C-5	14.73	0.00116521	1020

POST ANALYSIS CALIBRATION CHECK
15PPm HYDROCARBON STANDARD
SCOTTY CAN MIX 1

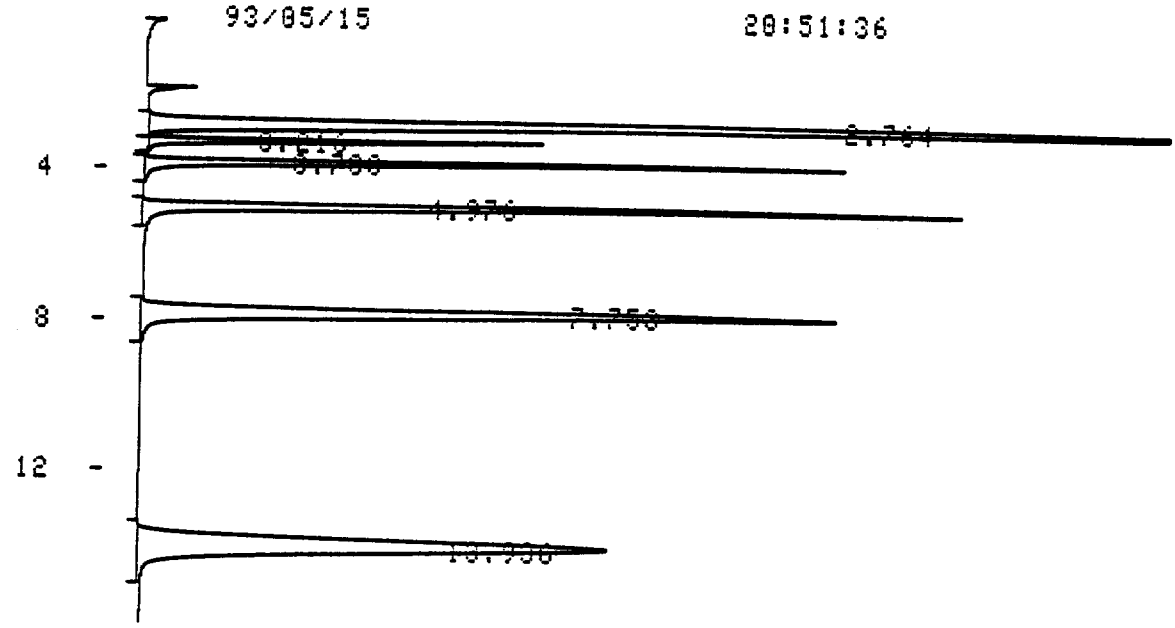


CHROMATOGRAM 28 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.755	15774		6	14.5895	C-6+
2	3.214	2740		1	15.6937	C-1
3	3.786	5567		2	15.8047	C-2
4	4.973	8306		3	15.7389	C-3
5	7.752	10931		4	15.8016	C-4
6	8.331	264				
7	13.917	12450		5	14.6165	C-5
	TOTAL	56032			92.2449	

GROUP(NAME)	CONC
C-1	15.6937
C-2	15.8047
C-3	15.7389
C-4	15.8016
C-5	14.6165
C-6+	14.5895

POST ANALYSIS CALIBRATION CHECK
100PPm HYDROCARBON STANDARD
SCOTTY CAN MIX 220



CHROMATOGRAM 29 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.764	106818		6	98.7994	C-6+
2	3.216	17188		1	98.4544	C-1
3	3.788	35418		2	100.5425	C-2
4	4.976	52521		3	99.5221	C-3
5	7.753	69483		4	100.4428	C-4
6	13.936	83950		5	98.5602	C-5
	TOTAL	365379			596.3213	

GROUP(NAME)	CONC
C-1	98.4544
C-2	100.5425
C-3	99.5221
C-4	100.4428
C-5	98.5602
C-6+	98.7994

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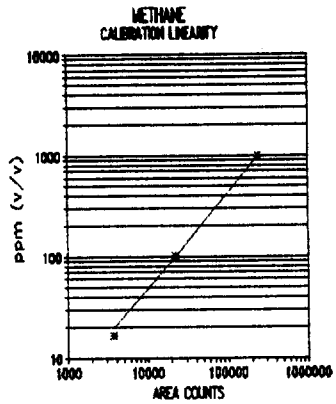
COMPANY	: XONTECH	DATE RECEIVED :	5-21-93
DATE	: 5-19,20-93	DATE ANALYZED :	5-22-93
PROJECT	: 098-303	DATE REPORTED:	5-26-93

EPA METHOD 18
HYDROCARBON ANALYSIS
CALIBRATION DATA AND STATISTICS

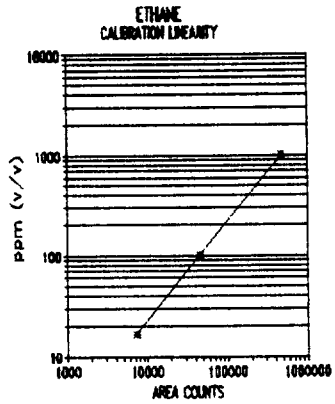
METHANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
16.5	2803	5.89E-03
101	18003	5.61E-03
1000	181833	5.50E-03
	AVERAGE RF	5.67E-03
	STD. DEVIATION	1.63E-04
	RSD%	2.87%



ETHANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
16.5	5602	2.95E-03
101	36178	2.79E-03
1030	366084	2.81E-03
	AVERAGE RF	2.85E-03
	STD. DEVIATION	6.79E-05
	RSD%	2.38%



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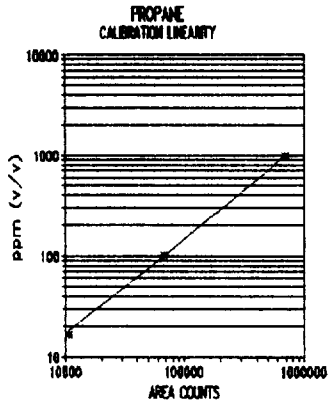
COMPANY: XONTECH
DATE : 5-19,20-93
PROJECT : 098-303

DATE RECEIVED : 5-21-93
DATE ANALYZED : 5-22-93
DATE REPORTED: 5-26-93

EPA METHOD 18
HYDROCARBON ANALYSIS
CALIBRATION DATA AND STATISTICS

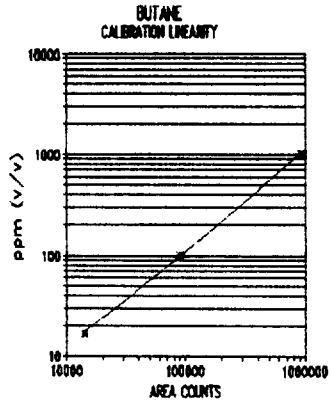
PROPANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
16.5	8329	1.98E-03
100	53666	1.86E-03
1000	545807	1.83E-03
	AVERAGE RF	1.89E-03
	STD. DEVIATION	6.41E-05
	RSD%	3.39%



BUTANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
16.5	10999	1.50E-03
101	70945	1.42E-03
1010	722655	1.40E-03
	AVERAGE RF	1.44E-03
	STD. DEVIATION	4.35E-05
	RSD%	3.02%



PETRO CHEM ENVIRONMENTAL SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93308
(805) 327-7300
FAX (805) 327-3459

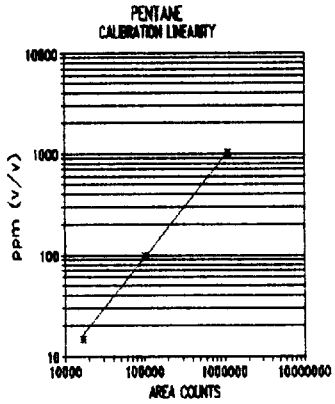
COMPANY: XONTECH
DATE : 5-19,20-93
PROJECT : 098-303

DATE RECEIVED : 5-21-93
DATE ANALYZED : 5-22-93
DATE REPORTED: 5-26-93

EPA METHOD 18
HYDROCARBON ANALYSIS
CALIBRATION DATA AND STATISTICS

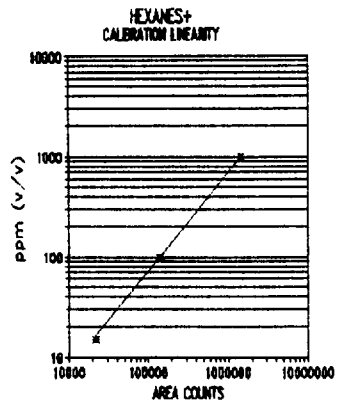
PENTANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
14.8	12588	1.18E-03
99.1	85275	1.16E-03
1020	880844	1.16E-03
	AVERAGE RF	1.17E-03
	STD. DEVIATION	7.58E-06
	RSD%	0.65%



HEXANE

CONC. (ppmv)	AREA COUNTS	RESPONSE FACTOR ppmv/AC
15.2	15954	9.53E-04
100	107299	9.32E-04
1005	1103864	9.10E-04
	AVERAGE RF	9.32E-04
	STD. DEVIATION	1.73E-05
	RSD%	1.85%



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COMPANY: XONTECH
DATE : 5-19,20-93
REPORT : 098-303

DATE RECEIVED : 5-21-93
DATE ANALYZED : 5-22-93
DATE REPORTED: 5-26-93

EPA METHOD 18
CALIBRATION DRIFT ANALYSIS

POST ANALYSIS CALIBRATION CHECK (15ppm STD.)

CONSTITUENT	INITIAL RF	POST RF	%DIFF.
METHANE	5.89E-03	5.81E-03	1.30%
ETHANE	2.95E-03	2.79E-03	5.39%
PROPANE	1.98E-03	1.95E-03	1.35%
BUTANE	1.50E-03	1.50E-03	0.07%
PENTANE	1.18E-03	1.14E-03	2.89%
HEXANES+	9.53E-04	9.41E-04	1.28%

POST ANALYSIS CALIBRATION CHECK (100ppm STD.)

CONSTITUENT	INITIAL RF	POST RF	%DIFF.
METHANE	5.61E-03	5.62E-03	-0.10%
ETHANE	2.79E-03	2.77E-03	0.63%
PROPANE	1.86E-03	1.85E-03	0.72%
BUTANE	1.42E-03	1.42E-03	-0.03%
PENTANE	1.16E-03	1.16E-03	-0.08%
HEXANES+	9.32E-04	9.24E-04	0.87%

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UHP HELIUM

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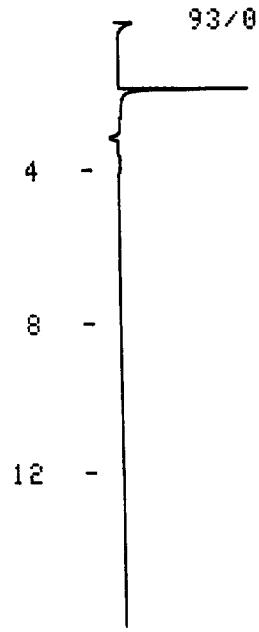
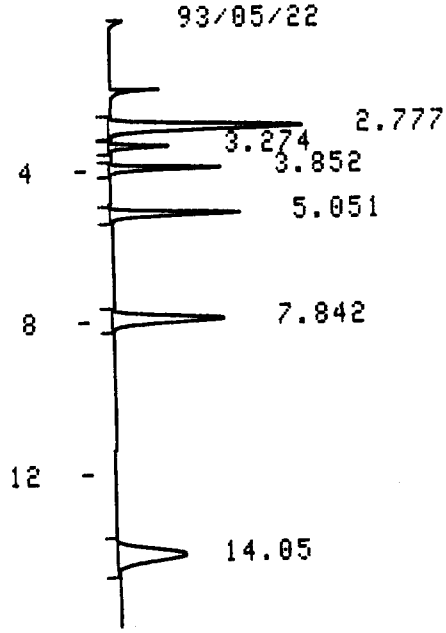


CHROMATOGRAM 29 MEMORIZED
WARNING NO PEAK

15PPm HYDROCARBON STANDARD
SCOTTY CAN MIX 1

93/05/22 10:06:11



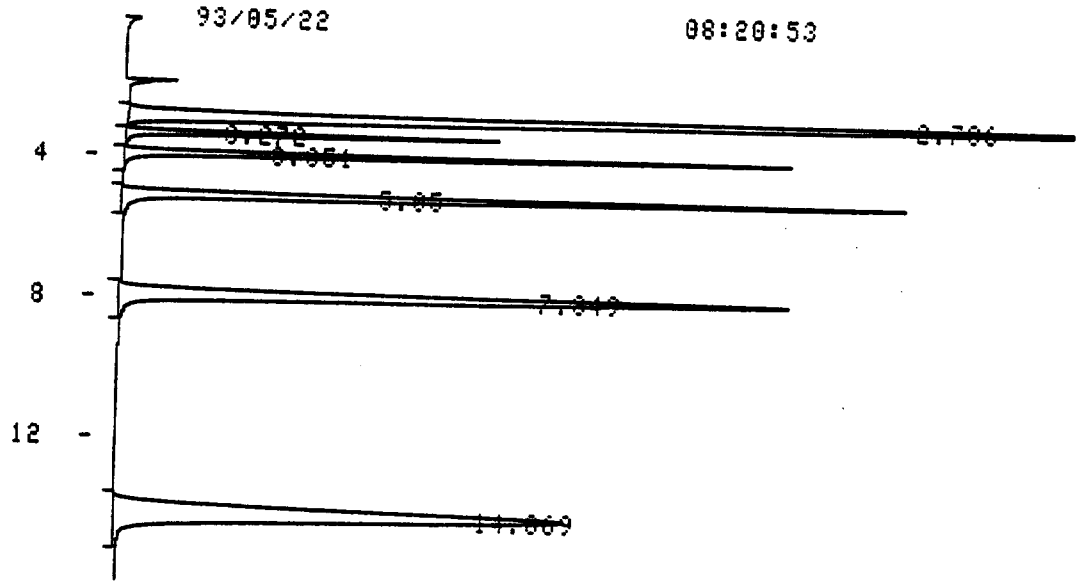
PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.777	15954		6		C-6+
2	3.274	2803		1		C-1
3	3.852	5602		2		C-2
4	5.051	8329		3		C-3
5	7.842	10999		4		C-4
6	14.05	12588		5		C-5

	TOTAL	56275				

IDENTIFICATION FILE 0
MODE$ 101 WINDOW 3

IDNO	NAME	TIME	FACTOR	CONC
1	C-1	3.25	0.00588655	16.5
2	C-2	3.85	0.00294559	16.5
3	C-3	5.02	0.00198096	16.5
4	C-4	7.81	0.0015002	16.5
5	C-5	14.01	0.00117572	14.8
6	C-6+	2.76	0.00095273	15.2
7	C-2	3.9	0.00294559	16.5
8	C-3	4.3	0.00198096	16.5
9	C-4	5.7	0.0015002	16.5
10	C-4	6.65	0.0015002	16.5
11	C-5	10.24	0.00117572	14.8
12	C-5	10.59	0.00117572	14.8
13	C-5	12.73	0.00117572	14.8
14	C-5	11.3	0.00117572	14.8
15	C-5	15.43	0.00117572	14.8
16	C-5	8.79	0.00117572	14.8
17	C-5	11.82	0.00117572	14.8

100PPm HYDROCARBON STANDARD
SCOTTY CAN MIX 220



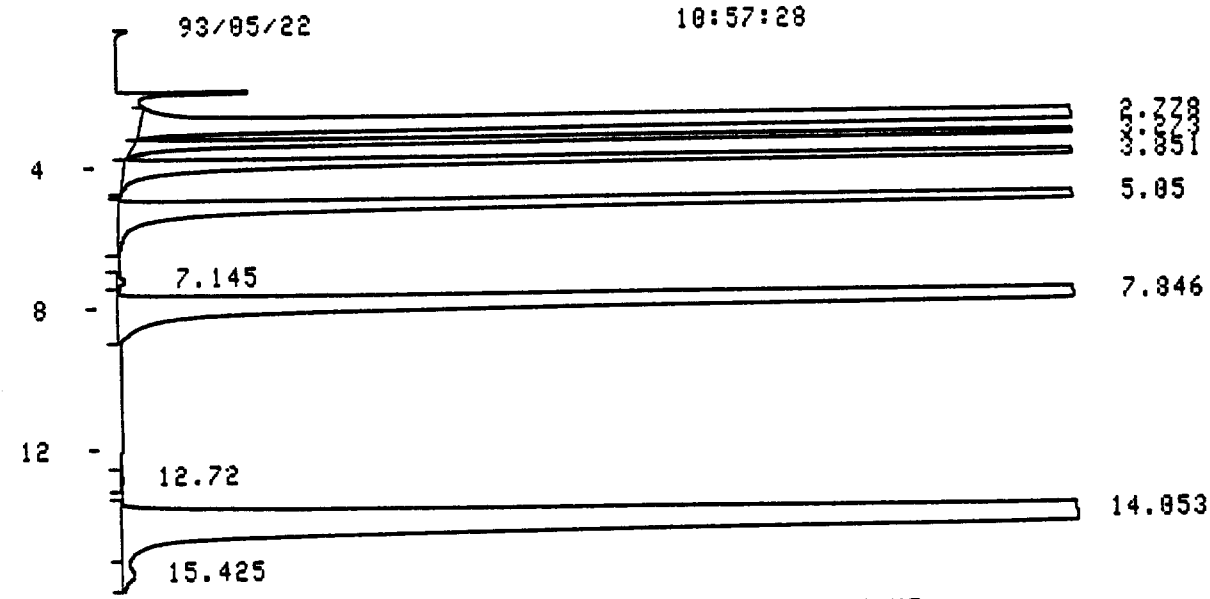
CHROMATOGRAM 1 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.786	107299		6		C-6+
2	3.272	18003		1		C-1
3	3.851	36178		2		C-2
4	5.05	53666		3		C-3
5	7.849	70945		4		C-4
6	14.069	85275		5		C-5
	TOTAL	371367				

IDENTIFICATION FILE 1
MODE$ 101 WINDOW 3

IDNO	NAME	TIME	FACTOR	CONC
1	C-1	3.23	0.00561005	101
2	C-2	3.81	0.00279173	101
3	C-3	5	0.00186336	100
4	C-4	7.79	0.00142364	101
5	C-5	13.99	0.00116212	99.1
6	C-6+	2.76	0.000931978	100
7	C-2	4.18	0.00279173	101
8	C-3	4.58	0.00186336	100
9	C-4	6.05	0.00142364	101
10	C-4	7.04	0.00142364	101
11	C-5	10.21	0.00116212	99.1
12	C-5	10.59	0.00116212	99.1
13	C-5	12.71	0.00116212	99.1
14	C-5	11.3	0.00116212	99.1
15	C-5	15.27	0.00116212	99.1
16	C-5	12.19	0.00116212	99.1
17	C-5	11.61	0.00116212	99.1

1000PPm HYDROCARBON STANDARD
SCOTTY CAN MIX 224



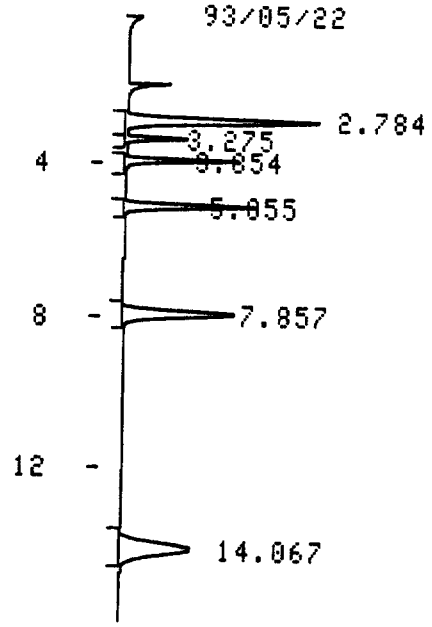
PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.778	1103864		6		C-6+
2	3.273	181833		1		C-1
3	3.851	366084		2		C-2
4	5.05	545807		3		C-3
5	7.145	900				
6	7.846	722655	V	4		C-4
7	12.72	590		13		C-5
8	14.053	880844		5		C-5
9	15.425	2501	V			
	TOTAL	3805077				

IDENTIFICATION FILE 2
MODE$ 101 WINDOW 3

IDNO	NAME	TIME	FACTOR	CONC
1	C-1	3.25	0.00549955	1000
2	C-2	3.85	0.00281356	1030
3	C-3	5.02	0.00183215	1000
4	C-4	7.81	0.00139762	1010
5	C-5	14.01	0.00115798	1020
6	C-6+	2.76	0.000910438	1005
7	C-2	3.9	0.00281356	1030
8	C-3	4.52	0.00183215	1000
9	C-4	5.94	0.00139762	1010
10	C-4	6.73	0.00139762	1010
11	C-5	10.21	0.00115798	1020
12	C-5	10.59	0.00115798	1020
13	C-5	12.71	0.00115798	1020
14	C-5	12.61	0.00115798	1020
15	C-5	14.73	0.00115798	1020

POST ANALYSIS CALIBRATION CHECK
15PPm HYDROCARBON STANDARD
SCOTTY CAN MIX 1

93/05/22 21:47:56

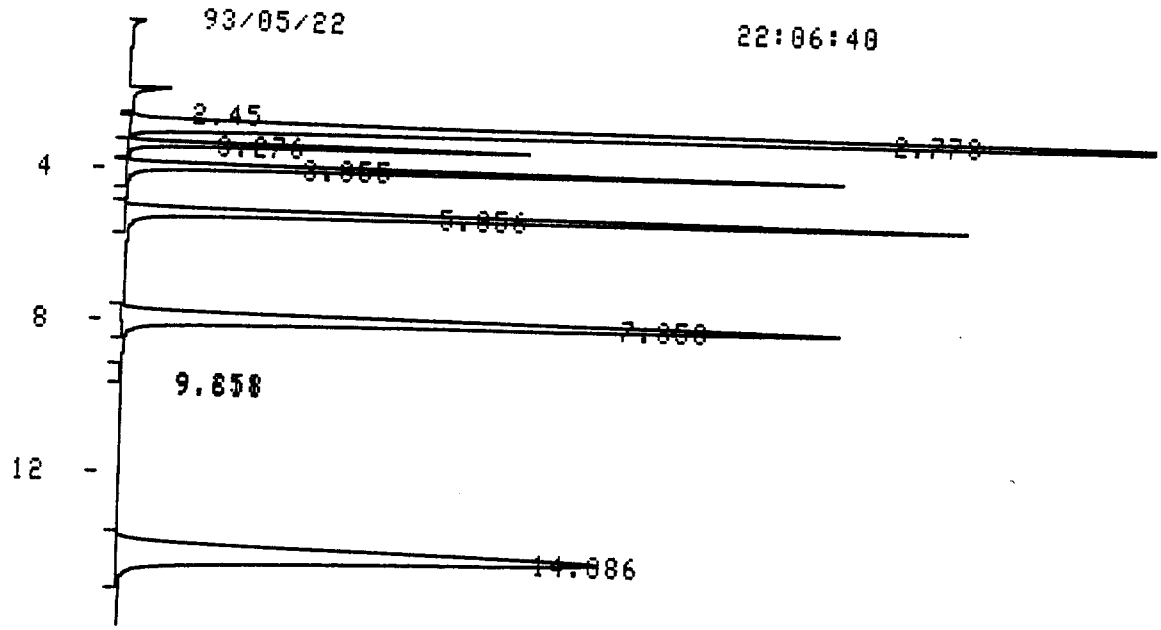


CHROMATOGRAM 36 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.784	16161		6	15.0618	C-6+
2	3.275	2840		1	15.9325	C-1
3	3.854	5921		2	16.5309	C-2
4	5.055	8443		3	15.7331	C-3
5	7.857	11007		4	15.6698	C-4
6	14.067	12962		5	15.0639	C-5
	TOTAL	57335			93.9921	

GROUP(NAME)	CONC
C-1	15.9325
C-2	16.5309
C-3	15.7331
C-4	15.6698
C-5	15.0639
C-6+	15.0618

POST ANALYSIS CALIBRATION CHECK
100PPm HYDROCARBON STANDARD
SCOTTY CAN MIX 220



CHROMATOGRAM 37 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.45	66				
2	2.778	108242	V	6	100.8795	C-6+
3	3.276	17985		1	100.8993	C-1
4	3.855	36408		2	101.6408	C-2
5	5.056	54057		3	100.7276	C-3
6	7.858	70921		4	100.9655	C-4
7	9.258	260				
8	14.086	85206		5	99.0194	C-5
	TOTAL	373145			604.1321	

GROUP(NAME)	CONC
C-1	100.8993
C-2	101.6408
C-3	100.7276
C-4	100.9655
C-5	99.0194
C-6+	100.8795

COMPANY: XONYTECH
UNIT : SVPP Turbine A
DATE : 5-11-93
PROJECT : 098-303

ON-SITE DATA

		RUN #1	RUN #2	RUN #3
	TIME:	1250-1335	1350-1431	900-941
Vm,	Dry sampled gas volume, dcf	27.05	24.05	24.10
Y,	Meter calibration factor (Met# 1003 , 1003 , 1003)	.983421	.983421	.983421
Pbar,	Barometric Pressure, "Hg	29.78	29.78	29.94
Pstatic	Stack static pressure, "Hg	-1.75	-1.75	-1.75
ΔH,	Differential meter pressure, "H2O	0.7	0.6	0.65
Tm,	Meter temperature, °F	84	106	71

CONTENTS	RUN #1 Train 1 FINAL	TARE	NET	RUN #2 2 FINAL	TARE	NET	RUN #3 1 FINAL	TARE	NET
H_2O	622.5	579.0	43.5	618.7	579.5	39.2	686.8	647.7	39.1
H_2O	608.7	603.4	5.3	567.1	565.5	1.6	613.3	609.4	3.9
KO	469.7	469.3	0.4	497.0	496.9	0.1	470.0	469.7	0.3
SILICA	850.3	845.7	4.6	843.5	838.9	4.6	855.6	852.4	3.2
Vlc, volume of H2O, gms			53.8			45.5			46.5

		RUN #1	RUN #2	RUN #3
CO2,	% Dry Volume	3.7	3.4	3.8
O2,	% Dry Volume	15.8	15.8	15.9
N2,	% Dry Volume	—	—	—
Cp,	Pitot Tube Coefficient (# PS5-1 , PS5-1 , PS5-1)	0.840	0.840	0.84
Δp,	Avg P, "H2O	2.869	2.963	2.924
Ts,	Stack temperature, °F	833	836	819
As,	Stack Area, sq.ft.			
Ds,	Stack diameter, inches	39.75	39.75	39.75
Dn,	Nozzle diameter, inches	—	—	—
Dur,	Sampling time, min	45	40	40
% ISO	Mini iso	—	—	
	Filter #	5/11	5/11	5/12
	Filter tare weights, gms			

Additional Comments:

METHOD 4 RUN # 1

COMPANY: XONTECH
UNIT: SVPP 'A' 100% Gas
DATE: 5-11-93
PROJECT: 098-303
TECH: JAT
PUMP #: Gast
METER BOX#: 1003
METER COEFF: .983421 (1.028 ΔH)
PROBE #: — Cp: —

PRE / POST TEST LEAK CHECK

LEAK RATE: <.001 / <.002 cfm
VACUUM: 10 / 15 "Hg

Vlc 53.8

AMBIENT TEMP, °F: ~60°
Pbar: 29.78
STATIC PRESSURE ("Hg): -1.75
ASSUMED MOISTURE,%: —
NOZZLE ID#: —
AVG. CALIB. NOZZLE DIAM.("): —
PROBE LINER MATERIAL: —
FILTER #: —
DUCT DIAM ("): 39.75

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
Start	12:50	2.5	829	2.5	.6	.7	279.00	77	77			
	:55	2.5	829	2.5	.6	.7	282.00	84	78			
	13:00	2.5	837	2.65	.6	.7	285.01	84	78			
	:05	2.5	841	2.5	.6	.7	288.02	87	80			
	:10	2.5	841	2.8	.6	.7	291.02	87	81			
	:15	2.5	841	3.5	.6	.7	294.03	87	81			
	:20	2.5	836	3.2	.6	.7	297.04	88	81			
	:25	2.5	830	2.85	.6	.7	300.04	94	84			
	:30	2.5	833	2.65	.6	.7	303.05	96	86			
END	13:35		834	2.65			306.05					
			820	2.3								
			829	3.0								
			842	3.5								
			844	3.5								
			838	3.0								
			800	3.0								
AVG	45		833	2.869		0.7	27.05		84			

SAMPLE CALCULATIONS
APPENDIX # I

UNIT TURBINE A

TEST RUN 1

P_{bar} 29.78	pg	T_s 833	pg	O_2 15.8	vd	pg
P_{static} -1.75	pg	C_p .840	pg	CO_2 3.7	vd	pg
Δp_{avg} 2.869	pg	A 8.62 ft^2	pg	N_2 80.5	vd	pg
M_s 28.21	pg			H_2O .0898	vd	pg

STACK GAS PRESSURE
Eq. 2-6

Page_____

$$P_s = P_{bar} + \frac{P_{static}}{13.6} = \underline{29.78} + \frac{-1.75}{13.6} = \underline{29.65}$$

AVERAGE STACK VELOCITY
Eq. 2-9

$$V_s = K_p \; C_p \times \sqrt{\Delta P_{avg}} \times \sqrt{\frac{T_s(avg)}{P_s \, M_s}}$$

Page_____

$$= 85.49 \times .840 \times \sqrt{2.869} \times \sqrt{\frac{(460 + 833)}{(29.65 \times 28.21)}}$$

$$= \underline{151.232} \text{ fps}$$

SAMPLE CALCULATIONS
APPENDIX # I

UNIT TURBINE A

TEST RUN 1

AVERAGE STACK Q_{std} DSCFM
Eq. 2-10

Page____

$$= 60 \times (1 - Bws) \times V_s \times A \left(\frac{T_{std}}{T_s\ (°R)}\right)\left(\frac{P_s}{P_{std}}\right)$$

$$= 60 \times (1 - .0898) \times 151.23 \times 8.62 \times \left(\frac{520}{1293}\right)\left(\frac{29.65}{29.92}\right)$$

$$= 28372.7 \text{ DSCFM}$$

WET MOLECULAR WEIGHT, M_s

Eq. 3-2

Page____

$$\left[\{(0.44 \times \%\ CO_2) + (0.32 \times \%\ O_2) + (0.28 \times \%\ N_2)\} \times (1 - Bws)\right] + 18 \times Bws$$

$$= \left[\{(0.44 \times 3.7) + (0.32 \times 15.8) + (0.28 \times 80.5)\} \times (1 - .0898)\right] + 18 \times .0898$$

$$= 28.216$$

SAMPLE CALCULATIONS
APPENDIX # I

UNIT TURBINE A

TEST RUN 1

gms H_2O 53.8	pg	Y .983421	pg	T_m 84	pg
V_m 27.05	pg	ΔH 0.7 "H_2O	pg		

VOLUME H_2O COLLECTED AS GAS @ STP, Vwc
Eq. 4-1., 4-2

Page _____

$$V_{wc} = gms\ H_2O \times 0.04646 = \underline{53.8} \times 0.04646$$

$$= \underline{2.4995}\ SCF$$

SAMPLE GAS VOLUME
Eq. 4-3

Page _____

$$V_{m\,(std)} = V_m\,Y \times \frac{Pbar + \frac{\Delta H}{13.6}}{P_{std}} \times \frac{T_{std}}{T_m} =$$

$$\underline{27.05} \times \underline{.983421} \times \frac{\underline{29.78} + \frac{0.7}{13.6}}{29.92} \times \frac{520}{460 + \underline{84}}$$

$$= \underline{25.36}\ DSCF$$

MOISTURE CONTENT, % H_2O
OR Bws AND MF
Eq. 4-4

Page_____

$$= \frac{V_{wc}}{V_{m\,(std)} + V_{wc}} =$$

$$\frac{2.4995}{\underline{25.36} + \underline{2.4995}} = \underline{.08973}$$

and

$$MF = 1 - B_{ws} = 1 - \underline{.0898} = \underline{.9102}$$

CONTINUOUS MONITORING CALCULATIONS
POLLUTANT, PPM @ 15% O2 AND LBS/HR

$$ppm \text{ @ } 15\% \ O_2$$

$$ppm \times \frac{(20.9 - 15)}{(20.9 - ACTUAL\ O_2)}$$

$$\frac{lbs}{hr} = ppm \times MW \times 1.581 \times 10^{-7} \times DSCFM$$

$MW\ NOx = 46$
$MW\ CO = 28$
$MW\ SO_2 = 64$

SAMPLE CALCULATIONS
RUN # 1
TURBINE A

DATA INPUT:

NOx, ppm 20.41 pg ____ DSCFM 28378 pg ____
%O2 15.98 pg ____

Pg_____

NOx
$ppm \text{ @ } 15\% \ O_2$

$$20.41 \times \frac{(20.9 - 15)}{(20.9 - 15.98)} = 24.475$$

$\frac{LBS}{HR}$, POLLUTANT

$$20.41 \times 46 \times 1.581 \times 10^{-7} \times 28378 = 4.21$$

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METHOD 4 RUN # 2

COMPANY:	XONTECH
UNIT:	SVPD unit 'A' 100% GAS
DATE:	5-11-93
PROJECT:	098-303
TECH:	JAT
PUMP #:	Gast
METER BOX#:	1003
METER COEFF:	.983421 (ΔH 1.028)
PROBE #:	PS5-1 Cp: .840

PRE / POST TEST LEAK CHECK

LEAK RATE: <.012 / <.010 cfm

VACUUM: 10 / 8 "Hg

VLC 45.5

AMBIENT TEMP, °F:	
Pbar:	29.98
STATIC PRESSURE ("Hg):	-1.75
ASSUMED MOISTURE,%:	
NOZZLE ID#:	
AVG. CALIB. NOZZLE DIAM.("):	
PROBE LINER MATERIAL:	
FILTER #:	
DUCT DIAM ("):	39.75

TRAVERSE PT. NUMBER	TIME (e) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
Start 8	13:50	2.5	833	2.7	.6	.6	306.40	110	109			
7		2.5	835	2.7								
6	:55	2.5	838	2.9	.6	.6	309.41	109	108			
5		2.5	838	2.85								
4	14:00	2.5	843	3.2	.6	.6	312.42	110	109			
3		2.5	843	3.5								
2	:05	2.5	835	3.5	.6	.6	315.43	108	109			
1		2.5	830	3.2								
Start 8	14:11	2.5	820	2.65	.6	.6	318.44	106	109			
7		2.5	824	2.5								
6	:16	2.5	827	2.65	.6	.6	321.44	100	108			
5		2.5	832	2.55								
4	:21	2.5	840	3.2	.6	.6	324.45	97	106			
3		2.5	838	3.3								
2	:26	2.5	830	3.2	.6	.6	327.46	95	105			
1		2.5	820	2.95								
AVG	14:31		836	2.963		0.6	330.45		106			

24.05

METHOD 4 RUN # 3

COMPANY: XONTECH
UNIT: SVPP Unit 'A' 100% Gas
DATE: 5-12-93
PROJECT: 098-303
TECH: JAT
PUMP #: Gast
METER BOX#: 1003
METER COEFF: .983421 (ΔH 1.028)
PROBE #: PS5-1 Cp: .840

PRE / POST TEST LEAK CHECK
LEAK RATE: <.001 / <.001 cfm
VACUUM: 10 / 12 "Hg
VLC 46.5

AMBIENT TEMP, °F:
Pbar: 29.94
STATIC PRESSURE ("Hg): -1.75
ASSUMED MOISTURE,%:
NOZZLE ID#:
AVG. CALIB. NOZZLE DIAM.("):
PROBE LINER MATERIAL:
FILTER #:
DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	9:00	2	810	2.7	.6	.65	345.50	67	63			
7			813	2.7								
6	:05	2	816	2.9	.6	.65	348.49	69	65			
5			819	2.75								
4	:10	2	828	3.1	.6	.65	351.50	71	66			
3			829	3.5								
2	:15	2	824	3.5	.6	.65	354.51	73	68			
1			800	3.1								
8	:21	2	817	2.55	.6	.65	357.53	75	70			
7			818	2.6								
6	:26	2	819	2.6	.6	.65	360.55	76	73			
5			823	2.55								
4	:31	2	831	2.65	.6	.65	363.56	77	75			
3			832	3.5								
2	:36	2	831	3.45	.6	.65	366.57	78	76			
1			800	2.8								
~~AVG~~ END	9:41						369.60					
	40		819	2.924		0.65	24.10	71				

COMPANY: Xon Tech
UNIT: "Turbine B"
DATE: 5/13/93 + 5/14/93
PROJECT: 098-303

ON-SITE DATA

	RUN #1	RUN #2	RUN #3
TIME:	1538-1620	818-900	925-1006
Vm, Dry sampled gas volume, dcf	24.01	24.01	24.01
Y, Meter calibration factor (Met# 1003, 1003, 1003)	.983421	.983421	.983421
Pbar, Barometric Pressure, "Hg	30.00	29.98	29.98
Pstatic Stack static pressure, "Hg	-0.95	-0.95	-0.95
ΔH, Differential meter pressure, "H2O	.61	.64	.61
Tm, Meter temperature, °F	82	69	76

CONTENTS	5/13/93 Train #1 RUN #1 FINAL	TARE	NET	5/14/93 Train #2 RUN #2 FINAL	TARE	NET	Train #1 RUN #3 FINAL	TARE	NET
H_2O	851.8	811.8	40.0	813.6	772.5	41.1	887.0	851.8	35.2
H_2O	627.1	621.1	6.0	586.4	582.3	4.1	636.9	627.1	9.8
K_2O_4	472.0	471.0	1.0	523.2	522.6	0.6	472.6	472.0	0.6
Silica	870.4	866.5	3.9	862.6	858.7	3.9	874.8	870.4	4.4
Vlc, volume of H2O, gms			50.90			49.7			50.0

	RUN #1	RUN #2	RUN #3
CO2, % Dry Volume	3.7	3.8	3.8
O2, % Dry Volume	15.65	16.22	15.88
N2, % Dry Volume	—	—	—
Cp, Pitot Tube Coefficient (# PS5-1, PS-55-4, PS55-4)	.840	.819	.819
Δp, Avg P, "H2O	2.895	3.113	3.106
Ts, Stack temperature, °F	826	819	819
As, Stack Area, sq.ft.	—	—	—
Ds, Stack diameter, inches	39.75	39.75	39.75
Dn, Nozzle diameter, inches	—	—	—
Dur, Sampling time, min	40	40	40
% ISO Mini iso			

Filter #	5/13	5/14	5/14
Filter tare weights, gms			

Additional Comments:

METHOD 4 RUN # 1

COMPANY: Xontech	
UNIT: SVPP Unit "B" 100% GAS	
DATE: 5-13-93	
PROJECT: 098-303	
TECH: DCD	
PUMP #: GAST	
METER BOX#: 1003	
METER COEFF: .983421 (1.028)	
PROBE #: PSS-1 Cp: .840	

PRE / POST TEST LEAK CHECK

LEAK RATE: <.002 / <.002 cfm

VACUUM: 10 / 5 "Hg

AMBIENT TEMP, °F:	
Pbar:	30.0
STATIC PRESSURE ("Hg):	-0.95
ASSUMED MOISTURE,%:	
NOZZLE ID#:	
AVG. CALIB. NOZZLE DIAM.("):	
PROBE LINER MATERIAL:	
FILTER #:	
DUCT DIAM ("):	

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (▲Ps) in. H20	PRESSURE DIFFERENTIAL, "H2O RATE	PRESSURE DIFFERENTIAL, "H2O ▲H	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET, °F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	15:38.0	2	808	2.24	.6	.62	546.10	79	81			
7	40.5		814	2.36								
6	43	2	824	2.70	.6	.65	549.08	81	81			
5	45.5		830	3.25								
4	48	2	837	3.80	.6	.60	552.14	82	82			
3	50.5		835	3.50								
2	53	2	825	3.10	.6	.58	555.17	83	82			
1	15:55.5/15:58		800	2.60								
PC 8	16:00.0	2	831	2.35	.6	.60	558.10	82	82			
7	2.5		832	2.49								
6	5	2	837	2.70	.6	.60	561.08	83	82			
5	7.5		839	3.30								
4	10	2	842	3.60	.6	.62	564.09	84	82			
3	12.5		838	3.35								
2	15	2	829	2.85	.6	.60	567.15	85	82			
1	17.5		800	2.45								
AVG END	16:20.0						570.11					
		2	826.3	2.895	.6	0.61	VM = 24.01		82.1			

METHOD 4 RUN # 2

COMPANY: Xoutech
UNIT: SVPP Unit 'B' 100% Gas
DATE: 5-14-93
PROJECT: 098-303
TECH: DCD
PUMP #: GAST
METER BOX#: 1003
METER COEFF: .983421 (1.028)
PROBE #: P555-4 Cp: 0.819

PRE / POST TEST LEAK CHECK

LEAK RATE: <.003 / <.004 cfm
VACUUM: 11 / 5 "Hg

H_2O_{Gas} = 49.7

AMBIENT TEMP, °F:
Pbar: ~~29.87~~ 29.98 P
STATIC PRESSURE ("Hg): -0.95
ASSUMED MOISTURE,%:
NOZZLE ID#:
AVG. CALIB. NOZZLE DIAM.("):
PROBE LINER MATERIAL:
FILTER #:
DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps) in. H20	PRESSURE DIFFERENTIAL, "H2O RATE	PRESSURE DIFFERENTIAL, "H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET, °F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	8:18.5	2	811	2.08	.6	.62	570.30	67	65			
7	21		819	2.60								
6	23.5	2	824	3.10	.6	.62	573.31	68	66			
5	26		827	3.60								
4	28.5	2	828	4.15	.6	.65	576.28	68	66			
3	31		823	3.75								
2	33.5	2	811	3.30	.6	.67	579.27	69	66			
1	8:36/8:38.5		800	2.84								
PC 8	8:40.0	2	815	2.45	.6	.65	582.31	72	68			
7	42.5		822	2.55								
6	45	2	827	2.86	.6	.65	585.29	73	68			
5	47.5		830	3.40								
4	50	2	830	3.90	.6	.65	588.32	73	69			
3	52.5		824	3.70								
2	55	2	814	3.30	.6	.60	591.35	74	69			
1	57.5		800	2.65								
END	9:00.0											
		2	819.1	3.113	.6	0.639	594.305		68.8			

Vm = 24.01

O_2 - 16.22
H_2O - 9.05

METHOD 4 RUN # 3

COMPANY: Xontech
UNIT: SVPP Unit 'B' 100% GAS
DATE: 5-14-93
PROJECT: 098-303
TECH: DCD
PUMP #: GAST
METER BOX#: 1003
METER COEFF: .983421 (1.028)
PROBE #: P555-4 Cp: 0.819

PRE / POST TEST LEAK CHECK

LEAK RATE: <.005 / <.003 cfm
VACUUM: 10 / 5 "Hg

H_2O_{gms} = 50.0

AMBIENT TEMP, °F:
Pbar: ~~29.87~~ 29.98
STATIC PRESSURE ("Hg): -0.95
ASSUMED MOISTURE,%:
NOZZLE ID#:
AVG. CALIB. NOZZLE DIAM.("):
PROBE LINER MATERIAL:
FILTER #:
DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	9:25.0	2	813	2.14	.6	.65	594.50	74	72			
7	27.5		821	2.46								
6	30	2	825	2.86	.6	.64	597.54	76	73			
5	32.5		828	3.45								
4	35	2	828	4.10	.6	.60	600.58	76	73			
3	37.5		822	3.75								
2	40	2	811	3.40	.6	.62	603.52	76	74			
1	9:42.5/9:45.0		800	2.67								
PC 8	9:46.5	2	817	2.55	.6	.60	606.56	78	76			
7	49		822	2.62								
6	51.5	2	825	3.10	.6	.60	609.54	78	76			
5	54		829	3.50								
4	56.5	2	828	3.90	.6	.60	612.53	79	77			
3	59		821	3.70								
2	10:01.5	2	811	3.30	.6	.60	615.52	80	77			
1	04		800	2.62								
END ~~AVG~~	10:06.5						618.510					
		2	818.8	3.106	.6	0.614	Vm= 24.01		75.9			

COMPANY: XONTECH
UNIT : SVPP Turbine C
DATE : 5-12-93
PROJECT : 093-303

ON-SITE DATA

		RUN #1	RUN #2	RUN #2
TIME:		930-1018		1120-1201
Vm,	Dry sampled gas volume, dcf	24.09		23.99
Y,	Meter calibration factor (Met# 1002 , , 1002)	.986864		.986864
Pbar,	Barometric Pressure, "Hg	29.94		29.94
Pstatic	Stack static pressure, "Hg	-1.6		-1.6
ΔH,	Differential meter pressure, "H2O	.89		.81
Tm,	Meter temperature, °F	80		105

CONTENTS	RUN #1 Train 3 FINAL	TARE	NET	RUN # TRAIN 4 FINAL	TARE	NET	RUN # TRAIN #3 FINAL	TARE	NET
H_2O	630.1	594.9	35.2	616.8	574.2	42.6	660.1	630.1	30.0
H_2O	606.0	603.9	2.1	592.7	590.1	2.6	613.3	606.0	7.3
KO	474.5	474.4	0.1	482.3	481.6	0.7	475.5	474.5	1.0
SILICA	804.5	799.6	4.9	828.8	824.1	4.7	810.5	804.5	6.0
Vlc, volume of H2O, gms			42.3			50.6			44.3

		RUN #1	RUN #2	RUN #3
CO2,	% Dry Volume	3.7		3.6
O2,	% Dry Volume	15.6		15.7
N2,	% Dry Volume			
Cp,	Pitot Tube Coefficient (# PSS-3 , PSS-3 , PSS-3)	.824	.824	.824
Δp,	Avg P, "H2O	2.826		2.854
Ts,	Stack temperature, °F	830		839
As,	Stack Area, sq.ft.			
Ds,	Stack diameter, inches	39.75	39.75	39.75
Dn,	Nozzle diameter, inches			
Dur,	Sampling time, min	40	40	40
% ISO	Mini iso			

Filter #			
Filter tare weights, gms			

Additional Comments:
RUN #2 INVALID LK CHK > .02
-RERAN - at 1120 - 1201

COMPANY: XON TECH
UNIT : TURBINE C
DATE : 5-12-93
PROJECT : 093-303

ON-SITE DATA

		RUN # 3	RUN # 4	RUN # 5
	TIME:	1215-1256	1305-1350	1400-1440
Vm,	Dry sampled gas volume, dcf	23.95	24.05	23.7
Y,	Meter calibration factor (Met# 1002, 1002, 1002)	.986864	.986864	.986864
Pbar,	Barometric Pressure, "Hg	29.94	29.94	29.94
Pstatic	Stack static pressure, "Hg	-1.6	-1.6	-1.6
ΔH,	Differential meter pressure, "H2O	0.81	0.89	0.83
Tm,	Meter temperature, °F	108	109	108

CONTENTS	TRAIN #4 RUN # 3 FINAL	TARE	NET	TRAIN #3 RUN # 4 FINAL	TARE	NET	TRAIN #4 RUN # 5 FINAL	TARE	NET
H_2O	654.1	616.8	37.3	699.4	660.1	39.3	692.3	654.1	38.2
H_2O	596.9	592.7	4.2	619.8	613.3	6.5	599.7	596.9	2.8
K.O.	483.3	482.3	1.0	475.8	475.5	0.3	483.9	483.3	0.6
SILICA	833.5	828.8	4.7	815.2	810.5	4.7	836.0	833.5	2.5
Vlc, volume of H2O, gms			47.2			50.8			44.1

		RUN #1	RUN #2	RUN #3
CO2,	% Dry Volume	3.7	3.7	3.9
O2,	% Dry Volume	15.68	15.68	15.68
N2,	% Dry Volume			
Cp,	Pitot Tube Coefficient (#PS5-3, PS5-3, PS5-3)	.824	.824	.824
Δp,	Avg P, "H2O	2.906	2.938	2.907
Ts,	Stack temperature, °F	839	837	836
As,	Stack Area, sq.ft.			
Ds,	Stack diameter, inches	35.75	35.75	35.75
Dn,	Nozzle diameter, inches			
Dur,	Sampling time, min	~40	40	40
% ISO	Mini iso			

Filter #	5/12	5/12	5/12
Filter tare weights, gms			

Additional Comments:

METHOD 4 RUN # 1

COMPANY: XONTECH
UNIT: SUPP TURBINE C 100% GAS
DATE: 5-12-93
PROJECT: 098-303
TECH: JH
PUMP #: GAST
METER BOX#: 1002
METER COEFF: .986864 ΔH: .85
PROBE #: DSS-3 Cp: .824

PRE / POST TEST LEAK CHECK
LEAK RATE: 0.001 / cfm
VACUUM: 10 / "Hg

AMBIENT TEMP, °F:
Pbar: 29.94
STATIC PRESSURE ("Hg):
ASSUMED MOISTURE,%:
NOZZLE ID#:
AVG. CALIB. NOZZLE DIAM.("):
PROBE LINER MATERIAL:
FILTER #:
DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps) in. H20	PRESSURE DIFFERENTIAL, "H2O RATE	PRESSURE DIFFERENTIAL, "H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET, °F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	9:30	2.5	830	2.50	.6	.89	549.11	66	62			
7		2.5	835	2.85	.6	.89	550.6	75	62			
6	9:35	2.5	842	2.82	.6	.83	552.1	82	64			
5		2.75	845	2.69	.6	.89	553.6	92	64			
4	9:40	3.0	851	3.31	.6	.89	555.1	85	66			
3		3.0	847	3.31	.6	.89	556.6	86	66			
2	9:45	3.0	841	3.11	.6	.89	558.1	86	67			
1		3.0	765	2.71	.6	.89	559.6	87	67			
0	9:50						561.1					
AVG												

42.3 GRAMS

METHOD 4 RUN # 1 (CONT.)

COMPANY: XONTECH
UNIT: SUPP TUBBLE C 100% GAS
DATE: 5-12-93
PROJECT: 098-303
TECH: JH
PUMP #: GAST
METER BOX#: 1002
METER COEFF: .9986864 ΔH=.85
PROBE #: PSS-3 Cp: .824

PRE (POST) TEST LEAK CHECK
LEAK RATE: /.001 cfm
VACUUM: /5 "Hg

AMBIENT TEMP, °F:
Pbar: 29.94
STATIC PRESSURE ("Hg): -1.6
ASSUMED MOISTURE,%:
NOZZLE ID#:
AVG. CALIB. NOZZLE DIAM.("):
PROBE LINER MATERIAL:
FILTER #:
DUCT DIAM ("): 549.11

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	958	3	812	2.19	.6	.89	561.1	92	76			
7		3	833	2.61	.6	.89	562.6	94	78			
6	10:03	3	836	2.74	.6	.89	564.1	96	78			
5		3	844	2.83	.6	.89	565.6	96	79			
4	10:08	3	847	3.00	.6	.89	567.1	96	78			
3		3	847	3.15	.6	.89	568.6	97	80			
2	10:13	3	839	2.90	.6	.89	570.1	99	82			
1		3	763	2.61	.6	.89	571.6	98	82			
EOT 0	10:18						573.2					
							24.1'					
AVG			829.92	2.886	.6	.89		80.25				

METHOD 4 RUN # 2

COMPANY: Xontech	PRE / POST TEST LEAK CHECK	AMBIENT TEMP, °F:
UNIT: SUPP TURBINE C 100% GAS		Pbar:
DATE: 5-12-93		STATIC PRESSURE ("Hg):
PROJECT: 098-303		ASSUMED MOISTURE,%:
TECH: JH	LEAK RATE: cfm	NOZZLE ID#:
PUMP #: GAST	VACUUM: "Hg	AVG. CALIB. NOZZLE DIAM.("):
METER BOX#: 1002		PROBE LINER MATERIAL:
METER COEFF: .986864		FILTER #:
PROBE #: PSS-3 Cp: .824		DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps) in. H20	PRESSURE DIFFERENTIAL, "H2O RATE	PRESSURE DIFFERENTIAL, "H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET, °F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	1120	2	832	2.45	.6	.81	606.31	96	102			
7		2	841	2.72	.6	.81	607.8	99	101			
6	1125	2	845	2.80	.6	.81	609.3	102	100			
5		2	851	2.70	.6	.81	610.8	103	100			
4	1130	2	858	3.25	.6	.81	612.3	105	100			
3		2	851	3.27	.6	.81	613.8	106	100			
2	1135	2	843	3.04	.6	.81	615.3	107	100			
1		2	781	2.80	.6	.81	616.8	107	100			
PC 0	1140						618.3					
AVG												

METHOD 4 RUN # 2 contd

COMPANY: Xontech
UNIT: SUPP TURBINE @ 100% GAS
DATE: 5-12-93
PROJECT: 098-303
TECH: JH
PUMP #: GAST
METER BOX#: 1002
METER COEFF: .986864
PROBE #: PSS-3 Cp: .824

PRE / POST TEST LEAK CHECK
LEAK RATE: .002 cfm
VACUUM: 5 "Hg

44.3 = H_2O GAS.

AMBIENT TEMP, °F:
Pbar:
STATIC PRESSURE ("Hg):
ASSUMED MOISTURE,%:
NOZZLE ID#:
AVG. CALIB. NOZZLE DIAM.("):
PROBE LINER MATERIAL:
FILTER #:
DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	11:41	2.5	830	2.41	.6	.81	618.3	109	101			
7		2.5	839	2.69	.6	.81	619.8	111	102			
6	11:46	2.5	842	2.73	.6	.81	621.3	111	102			
5		2.5	852	2.90	.6	.81	622.8	112	103			
4	11:51	2.5	855	3.16	.6	.81	624.3	113	104			
3		2.5	857	3.41	.6	.81	625.8	114	104			
2	11:56	2.5	852	3.11	.6	.81	627.3	114	105			
1		2.5	790	2.81	.6	.81	628.8	114	105			
EOT 0	12:01						630.3					
AVG			839	2.884		0.81	23.99	105				

METHOD 4 RUN # 3

COMPANY: Yontech
UNIT: SUPP TURBINE C 100% GAS
DATE: 5-12-93
PROJECT: 098-303
TECH: JT
PUMP #: GAST
METER BOX#: 1002
METER COEFF: 1.06864
PROBE #: PSS-3 Cp: .824

PRE / POST TEST LEAK CHECK

LEAK RATE: cfm
VACUUM: "Hg

AMBIENT TEMP, °F:
Pbar:
STATIC PRESSURE ("Hg):
ASSUMED MOISTURE,%:
NOZZLE ID#:
AVG. CALIB. NOZZLE DIAM.("):
PROBE LINER MATERIAL:
FILTER #:
DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps) in. H20	PRESSURE DIFFERENTIAL, "H2O RATE	PRESSURE DIFFERENTIAL, "H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET, °F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	1215	2.75	823	2.19	.6	.81	630.45	104	105			
7		2.75	843	2.70	.6	.81	631.9	108	105			
6	1220	2.80	847	2.90	.6	.81	633.4	109	105			
5		2.80	852	2.89	.6	.81	634.9	109	105			
4	1225	2.80	856	3.18	.6	.81	636.4	110	105			
3		2.80	853	3.16	.6	.81	637.9	112	105			
2	1230	3.0	847	3.04	.6	.81	639.4	111	105			
1		3.0	808	2.69	.6	.81	640.9	112	105			
PC	1235						642.4					
AVG												

METHOD 4 RUN # 3 cont'd

COMPANY: Yontech	PRE / POST TEST LEAK CHECK		AMBIENT TEMP, °F:
UNIT: SVPP			Pbar:
DATE: 5-12-93			STATIC PRESSURE ("Hg):
PROJECT: 098-303			ASSUMED MOISTURE,%:
TECH: JH	LEAK RATE: .001 cfm		NOZZLE ID#:
PUMP #: GAST	VACUUM: 5 "Hg		AVG. CALIB. NOZZLE DIAM.("):
METER BOX#: 1012			PROBE LINER MATERIAL:
METER COEFF: .986864			FILTER #:
PROBE #: PSS-3 Cp: .824	H_2O_{grams} = 47.2		DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	1236	3	828	2.44	.6	.81	642.4	110	105			
7		3	842	2.99	.6	.81	643.9	111	105			
6	1241	3	843	2.86	.6	.81	645.4	114	106			
5		3	845	2.81	.6	.81	646.9	113	106			
4	1246	3	850	3.32	.6	.81	648.4	114	106			
3		3	847	3.39	.6	.81	649.9	114	106			
2	1251	3	837	3.15	.6	.81	651.4	114	107			
1		3	795	2.92	.6	.81	652.9	113	107			
EOT	1256						654.4					
			839	2.906		.81	23.95'		108			
AVG												

COMPANY: Yankee H
UNIT : Turbine D 100% Gas
DATE : 5-18-93
PROJECT : 098-303

ON-SITE DATA

		RUN #1	RUN #2	RUN #3
	TIME:	1108-1151	1210-1253	1326-1408
Vm,	Dry sampled gas volume, dcf	23.99	24.02	23.99
Y,	Meter calibration factor (Met# 1003 , 1003 , 1003)	.983421	.983421	.983421
Pbar,	Barometric Pressure, "Hg	29.89	29.89	29.89
Pstatic	Stack static pressure, "Hg	-2.50	-2.50	-2.50
ΔH,	Differential meter pressure, "H2O	.62	.62	.62
Tm,	Meter temperature, °F	98	106	107

	TRAIN #3 RUN #1			Train 1 RUN #2			Train 3 RUN #3		
CONTENTS	FINAL	TARE	NET	FINAL	TARE	NET	FINAL	TARE	NET
H_2O	797.2	758.6	38.6	781.7	742.1	39.6	837.2	797.2	40.0
H_2O	643.1	637.3	5.8	712.4	708.4	4.0	648.6	643.1	5.5
K.O.	476.0	475.9	.1	475.9	475.2	.7	476.2	476.0	.2
SILICA	756.1	757.8	4.3	820.0	815.1	4.9	759.5	756.1	3.4
Vlc, volume of H2O, gms			48.8			49.2			49.1

		RUN #1	RUN #2	RUN #3
CO2,	% Dry Volume	3.7	3.8	3.8
O2,	% Dry Volume	15.6	15.5	15.6
N2,	% Dry Volume	—	—	—
Cp,	Pitot Tube Coefficient (# PSS-4 , PSS-4 , PSS-4)	.819	.819	.819
Δp,	Avg P, "H2O	3.097	3.196	3.051
Ts,	Stack temperature, °F	844	853	846
As,	Stack Area, sq.ft.	—	—	—
Ds,	Stack diameter, inches	39.75	39.75	39.75
Dn,	Nozzle diameter, inches	—	—	—
Dur,	Sampling time, min	40	40	40
% ISO	Mini iso			

Filter #	5/18	5/18	5/16
Filter tare weights, gms			

Additional Comments:

METHOD 4 RUN # 1

COMPANY: XON TECH
UNIT: TURBINE "D"
DATE: 5-18-93
PROJECT: 098-303
TECH: RJK
PUMP #: GAST.
METER BOX#: CB1003 (1.028)
METER COEFF: 0.983421
PROBE #: P555-4 Cp: 0.819

PRE / POST TEST LEAK CHECK
LEAK RATE: <0.003 / <0.002 cfm
VACUUM: 9 / 12 "Hg

AMBIENT TEMP, °F:
Pbar: 29.89
STATIC PRESSURE ("Hg): ~~-0.96~~ -2.50
ASSUMED MOISTURE,%:
NOZZLE ID#:
AVG. CALIB. NOZZLE DIAM.("):
PROBE LINER MATERIAL:
FILTER #:
DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps) in. H20	PRESSURE DIFFERENTIAL, "H2O RATE	PRESSURE DIFFERENTIAL, "H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. (AT DRY GAS METER) INLET, °F	GAS SAMPLE TEMP. (AT DRY GAS METER) OUTLET, °F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	11:08	2	830	2.30	0.600	0.62	790.80	99	98	—	—	
7		2	841	2.80	0.60	0.62	792.3	96	97	—	—	
6	11:13	2	846	3.30	0.60	0.62	793.8	96	97	—	—	
5		2	851	3.70	0.60	0.62	795.3	96	97	—	—	
4	11:18	2	850	3.90	0.60	0.62	796.8	96	97	—	—	
3		2	845	3.70	0.60	0.62	798.3	97	97	—	—	
2	11:23	2	842	3.30	0.60	0.62	799.8	97	97	—	—	
1	11:28	2	830	2.65	0.60	0.62	801.3	97	97	—	—	
8	11:31	2	838	2.00	0.60	0.62	802.8	99	97	—	—	
7		2	845	2.25	0.60	0.62	804.3	100	97	—	—	
6	11:36	2	848	2.55	0.60	0.62	805.8	100	97	—	—	
5		2	850	2.85	0.60	0.62	807.3	101	98	—	—	
4	11:41	2	855	3.90	0.60	0.62	808.8	102	98	—	—	
3		2	854	4.00	0.60	0.62	810.3	103	98	—	—	
2	11:46	2	848	3.70	0.60	0.62	811.8	103	98	—	—	
1		2	831	3.20	0.60	0.62	813.3	103	98	—	—	
END ~~AVG~~	11:51						814.79					
AVE.			844.0	3.097	0.60	0.62	23.99	98.2				

METHOD 4 RUN # 2

COMPANY:	XON TECH
UNIT:	TURBINE "D"
DATE:	5-18-93
PROJECT:	098-303
TECH:	RJK
PUMP #:	GAST.
METER BOX#:	CB 1003 (1.028)
METER COEFF:	0.983421
PROBE #:	P555-4 Cp: ~~0.918~~ 0.819

PRE / POST TEST LEAK CHECK

LEAK RATE: <0.002 / <0.001 cfm

VACUUM: 10 / 10 "Hg

AMBIENT TEMP, °F:	
Pbar:	29.89
STATIC PRESSURE ("Hg):	-2.50
ASSUMED MOISTURE,%:	
NOZZLE ID#:	
AVG. CALIB. NOZZLE DIAM.("):	
PROBE LINER MATERIAL:	
FILTER #:	
DUCT DIAM ("):	

TRAVERSE PT. NUMBER	TIME (e) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. (AT DRY GAS METER) INLET, °F	GAS SAMPLE TEMP. (AT DRY GAS METER) OUTLET, °F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	12:10	2	845	2.35	0.600	0.62	815.50	106	106	—	—	
7		2	850	2.75	0.60	0.62	817.0	105	106	—	—	
6	12:15	2	857	3.30	0.60	0.62	818.5	104	105	—	—	
5		2	861	3.50	0.60	0.62	820.0	104	105	—	—	
4	12:20	2	862	4.00	0.60	0.62	821.5	105	106	—	—	
3		2	858	3.60	0.60	0.62	823.0	105	105	—	—	
2	12:25	2	845	3.30	0.60	0.62	824.5	105	105	—	—	
1	12:30	2	837	2.60	0.60	0.61	826.0	105	105	—	—	
8	12:33	2	848	1.80	0.60	0.62	827.5	105	105	—	—	
7		2	851	2.20	0.60	0.62	829.0	106	106	—	—	
6	12:38	2	856	2.45	0.60	0.62	830.5	105	105	—	—	
5		2	859	2.85	0.60	0.62	832.0	107	105	—	—	
4	12:43	2	864	4.10	0.60	0.62	833.5	107	106	—	—	
3		2	862	4.00	0.60	0.62	835.0	108	106	—	—	
2	12:48	2	849	3.60	0.60	0.62	836.5	109	105	—	—	
1	.	2	845	2.95	0.60	0.62	838.0	110	106	—	—	
END ~~AVG~~	12:53						839.52					
AVE.			853.1	3.196		0.62	24.02	105.7				

METHOD 4 RUN # 3

COMPANY: XON TECH
UNIT: TURBINE "D"
DATE: 5-18-93
PROJECT: 098-303
TECH: RJK
PUMP #: GAST.
METER BOX#: CB1003 (1.028)
METER COEFF: 0.983421
PROBE #: P5SS-4 Cp: 0.819

PRE / POST TEST LEAK CHECK

LEAK RATE: <0.002 / <0.001 cfm
VACUUM: 10 / 9 "Hg

AMBIENT TEMP, °F:
Pbar: 29.89
STATIC PRESSURE ("Hg): -2.50
ASSUMED MOISTURE,%:
NOZZLE ID#:
AVG. CALIB. NOZZLE DIAM.("):
PROBE LINER MATERIAL:
FILTER #:
DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps) in. H20	PRESSURE DIFFERENTIAL, "H2O RATE	PRESSURE DIFFERENTIAL, "H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. (AT DRY GAS METER) INLET, °F	GAS SAMPLE TEMP. (AT DRY GAS METER) OUTLET, °F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	13:26	2	833	1.85	0.600	0.62	840.20	108	107	—	—	
7		2	841	2.25	0.60	0.62	841.7	106	106	—	—	
6	13:31	2	847	2.45	0.60	0.62	843.2	104	106	—	—	
5		2	852	2.90	0.60	0.62	844.7	105	106	—	—	
4	13:36	2	857	4.00	0.60	0.62	846.2	106	106	—	—	
3		2	856	3.90	0.60	0.62	847.7	106	107	—	—	
2	13:41	2	849	3.70	0.60	0.62	849.2	107	107	—	—	
1	13:46	2	830	2.90	0.60	0.62	850.7	107	107	—	—	
8	13:48	2	843	2.30	0.60	0.62	852.2	111	107	—	—	
7		2	846	2.70	0.60	0.62	853.7	110	108	—	—	
6	13:53	2	855	3.30	0.60	0.62	855.2	109	108	—	—	
5		2	858	3.60	0.60	0.62	856.7	108	108	—	—	
4	13:58	2	860	3.90	0.60	0.62	858.2	108	109	—	—	
3		2	857	3.60	0.60	0.62	859.7	108	109	—	—	
2	14:03	2	843	3.40	0.60	0.62	861.2	108	109	—	—	
1		2	811	2.65	0.60	0.62	862.7	108	109	—	—	
END	14:08						864.19					
AVG AVE.			846.1	3.051		0.62	23.99	107.4				

COMPANY: Xon Tech
UNIT: Turbine E
DATE: 5-14-93
PROJECT: 098-303

ON-SITE DATA

		RUN #1	RUN #2	RUN #3
	TIME:	845-928	939-1030	1112-1155
Vm,	Dry sampled gas volume, dcf	23.95	24.15	24.02
Y,	Meter calibration factor (Met# 1002, 1002, 1002)	.986864	.986864	.986864
Pbar,	Barometric Pressure, "Hg	29.98	29.98	29.98
Pstatic	Stack static pressure, "Hg	-1.6	-1.6	-1.6
ΔH,	Differential meter pressure, "H2O	.83	.89	.89
Tm,	Meter temperature, °F	74	81	79

CONTENTS	TRAIN #3 RUN #1 FINAL	TARE	NET	TRAIN 4 RUN #2 FINAL	TARE	NET	TRAIN 3 RUN #3 FINAL	TARE	NET
H_2O	871.5	830.2	41.3	864.7	823.3	41.4	913.1	871.5	41.6
H_2O	628.3	626.8	1.5	609.4	606.5	2.9	631.3	628.3	3.0
K.O.	476.2	476.2	0.0	484.3	483.7	0.6	476.2	476.2	0.0
Silica	829.9	826.3	3.6	857.5	846.9	4.6	744.5	739.3	5.2
Vlc, volume of H2O, gms			46.4			49.5			49.8

		RUN #1	RUN #2	RUN #3
CO2,	% Dry Volume	3.7	3.8	3.8
O2,	% Dry Volume	15.68	15.77	15.84
N2,	% Dry Volume	—	—	—
Cp,	Pitot Tube Coefficient (# 055-3, 055-3, 055-3)	.824	.824	.824
Δp,	Avg P, "H2O	2.771	2.748	2.793
Ts,	Stack temperature, °F	814	809	814
As,	Stack Area, sq.ft.	—	—	—
Ds,	Stack diameter, inches	39.75	39.75	39.75
Dn,	Nozzle diameter, inches	—	—	—
Dur,	Sampling time, min	40	40	40
% ISO	Mini iso			

	RUN #1	RUN #2	RUN #3
Filter #	5/14	5/14	5/14
Filter tare weights, gms			

Additional Comments:

METHOD 4 RUN # 1

COMPANY: Vontech	PRE / POST TEST LEAK CHECK	AMBIENT TEMP, °F:
UNIT: SUPP TURBINE E 100% GAS		Pbar: 29.87
DATE: 5-14-93		STATIC PRESSURE ("Hg):
PROJECT: 098-303		ASSUMED MOISTURE,%:
TECH: JH	LEAK RATE: cfm	NOZZLE ID#:
PUMP #: GAST	VACUUM: "Hg	AVG. CALIB. NOZZLE DIAM.("):
METER BOX#: 1042		PROBE LINER MATERIAL:
METER COEFF: .9865861		FILTER #:
PROBE #: PSS-3 Cp: .8281	H_2O_{gas} = 46.4	DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	8:45	3	816	2.70	.6	.83	848.85	77	67			
7		3	817	2.86	.6	.83	850.3	77	68			
6	850	3	820	3.04	.6	.83	851.8	75	68			
5		3	822	2.97	.6	.83	853.3	77	68			
4	855	3	825	2.98	.6	.83	854.8	77	68			
3		3	823	3.02	.6	.83	856.3	77	66			
2	900	3	809	2.96	.6	.83	857.8	77	67			
1		3	790	2.69	.6	.83	859.3	77	69			
PC	905						860.8					
AVG												

METHOD 4 RUN # 1 cntd

COMPANY: Xantech
UNIT: SUPP TURBINE E 100% GAS
DATE: 5-11-93
PROJECT: 098-303
TECH: H
PUMP #: GAST
METER BOX#: 1002
METER COEFF: .986864
PROBE #: PS5-3 Cp: .824

PRE / POST TEST LEAK CHECK

LEAK RATE: .001 cfm
VACUUM: 6 "Hg

AMBIENT TEMP, °F:
Pbar:
STATIC PRESSURE ("Hg):
ASSUMED MOISTURE,%:
NOZZLE ID#:
AVG. CALIB. NOZZLE DIAM.("):
PROBE LINER MATERIAL:
FILTER #:
DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (e) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	908	3	812	2.21	.6	.83	860.8	77	71			
7		3	814	2.50	.6	.83	862.3	78	72			
6	913	3	821	2.70	.6	.83	863.8	78	72			
5		3	822	2.82	.6	.83	865.3	79	72			
4	918	3	824	2.86	.6	.83	868.8	79	72			
3		3	822	2.81	.6	.83	868.3	79	73			
2	923	3	808	2.79	.6	.83	869.8	80	73			
1		3	782	2.50	.6	.83	871.3	80	73			
EDTD	928						872.8					
			814	2.771		.83	23.95		74			
AVG												

METHOD 4 RUN # 2

COMPANY: Xontech
UNIT: SUPP TURBINE E 100% GAS
DATE: 5-14-93
PROJECT: 098-303
TECH: JH
PUMP #: LAST
METER BOX#: 1002
METER COEFF: .98696H
PROBE #: PS5-3 Cp: .824

PRE / POST TEST LEAK CHECK

LEAK RATE: cfm
VACUUM: "Hg

H_2O_{gas} = 49.5

AMBIENT TEMP, °F:
Pbar:
STATIC PRESSURE ("Hg):
ASSUMED MOISTURE,%:
NOZZLE ID#:
AVG. CALIB. NOZZLE DIAM.("):
PROBE LINER MATERIAL:
FILTER #:
DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (e) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (▲ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ▲H	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	938	3	812	2.20	.6	.89	873.95	84	79			
7		3	812	2.59	.6	.89	874.4	84	78			
6	943	3	817	2.79	.6	.89	876.9	84	79			
5		3	820	2.89	.6	.89	878.4	84	78			
4	948	3	822	3.0	.6	.89	879.9	84	79			
3		3	820	2.89	.6	.89	881.4	84	78			
2	953	3	806	2.69	.6	.89	882.9	84	79			
1		3	755	2.39	.6	.89	884.4	84	79			
PCU	958	-					885.9					
AVG												

METHOD 4 RUN # Zondek

COMPANY:	Yontech
UNIT:	SUPP TURBINE @ 50% GAS
DATE:	5-14-93
PROJECT:	098-303
TECH:	JH
PUMP #:	GAST
METER BOX#:	1002
METER COEFF:	986864
PROBE #:	PS5-3 Cp: .824

PRE / POST TEST LEAK CHECK

LEAK RATE: .002 cfm

VACUUM: 6 "Hg

AMBIENT TEMP, °F:	
Pbar:	
STATIC PRESSURE ("Hg):	
ASSUMED MOISTURE,%:	
NOZZLE ID#:	
AVG. CALIB. NOZZLE DIAM.("):	
PROBE LINER MATERIAL:	
FILTER #:	
DUCT DIAM ("):	

TRAVERSE PT. NUMBER	TIME (e) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	10:00	3.0	813	2.47	.6	.83	885.9	82	80			
7		3.1	815	2.80	.6	.89	887.4	81	80			
6	1005	3.1	817	3.00	.6	.89	888.9	81	80			
5		3.1	821	2.85	.6	.89	890.4	81	80			
4	1010	3.1	822	3.09	.6	.89	891.9	81	80			
3		3.1	819	3.00	.6	.89	893.4	81	80			
2	1015	3.1	798	2.79	.6	.89	894.9	81	81			
1		3.1	772	2.62	.6	.89	896.4	81	80			
EOT	1020						898.1					
			809	2.748		.89	24.15		81			
AVG												

METHOD 4 RUN # 3

COMPANY: Xontech
UNIT: SUPP TURBINE E 100% GAS
DATE: 5-14-93
PROJECT: 098-303
TECH: JA
PUMP #: GAST
METER BOX#: 1002
METER COEFF: .986864
PROBE #: PSS3 Cp: .824

PRE / POST TEST LEAK CHECK

LEAK RATE: cfm
VACUUM: "Hg

H_2O_{GAS} = 49.8

AMBIENT TEMP, °F:
Pbar:
STATIC PRESSURE ("Hg):
ASSUMED MOISTURE,%:
NOZZLE ID#:
AVG. CALIB. NOZZLE DIAM.("):
PROBE LINER MATERIAL:
FILTER #:
DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (e) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (▲ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ▲H	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	1112	3	815	2.52	.6	.89	898.1	78	74			
7		3	818	2.79	.6	.89	899.6	78	74			
6	1117	3	822	3.02	.6	.89	901.1	79	74			
5		3	823	3.03	.6	.89	902.6	79	74			
4	1122	3	825	2.99	.6	.89	904.1	79	74			
3		3	823	3.07	.6	.89	905.6	79	74			
2	1127	3	805	2.95	.6	.87	907.1	80	75			
1		3	795	2.71	.6	.89	908.6	80	75			
PLO	1132						910.1					
AVG												

METHOD 4 RUN # 3 contd

COMPANY: Xontech	PRE / POST TEST LEAK CHECK	AMBIENT TEMP, °F:
UNIT: SUPP TURBINE E 100% GAS		Pbar:
DATE: 5-14-93		STATIC PRESSURE ("Hg):
PROJECT: 098-303		ASSUMED MOISTURE,%:
TECH: JH	LEAK RATE: .003 cfm	NOZZLE ID#:
PUMP #: GAST	VACUUM: 6 "Hg	AVG. CALIB. NOZZLE DIAM.("):
METER BOX#: 1002		PROBE LINER MATERIAL:
METER COEFF: .986864		FILTER #:
PROBE #: PSS-3 Cp: .824		DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	1135	3	812	2.32	.6	.89	910.1	85	77			
7		3	814	2.49	.6	.89	911.6	86	78			
6	1140	3	818	2.90	.6	.89	913.1	86	78			
5		3	821	3.09	.6	.89	914.6	87	78			
4	1145	3	823	2.83	.6	.89	916.1	87	78			
3		3	822	2.92	.6	.89	917.6	87	78			
2	1150	3	809	2.62	.6	.89	919.1	86	78			
1		3	782	2.52	.6	.89	920.6	86	78			
END	1155						922.12					
AVG			814	2.793		.89	24.02		79			

COMPANY: XONTECH
UNIT : Turbine 'E' 75% Gas
DATE : 5-20-93
PROJECT : 093-303

ON-SITE DATA

		RUN #1	RUN #2	RUN #3
	TIME:	1224-1306	1316-1358	1410-1452
Vm,	Dry sampled gas volume, dcf	23.98	24.02	24.00
Y,	Meter calibration factor (Met# 1003, 1003, 1003)	.983421	.983421	.983421
Pbar,	Barometric Pressure, "Hg	29.89	29.89	29.89
Pstatic	Stack static pressure, "Hg	-1.00	-1.00	-1.00
ΔH,	Differential meter pressure, "H2O	.62	.62	.62
Tm,	Meter temperature, °F	91	94	104

CONTENTS	RUN #1 FINAL	RUN #1 TARE	RUN #1 NET	RUN #2 FINAL	RUN #2 TARE	RUN #2 NET	RUN #3 FINAL	RUN #3 TARE	RUN #3 NET
H_2O	678.7	643.3	35.4	689.2	654.1	35.1	713.0	678.7	34.3
H_2O	586.7	583.1	3.6	603.5	599.6	3.9	591.3	586.7	4.6
Dry	479.5	479.5	0	477.5	477.2	.3	480.1	479.5	0.6
Silica	835.2	830.6	4.6	776.2	771.9	4.3	838.9	835.2	3.7
Vlc, volume of H2O, gms			43.6			43.6			43.2

		RUN #1	RUN #2	RUN #3
CO2,	% Dry Volume	2.3	2.3	2.2
O2,	% Dry Volume	16.62	16.61	16.62
N2,	% Dry Volume	—	—	—
Cp,	Pitot Tube Coefficient (# P555-4, P555-4, P555-4)	0.819	0.819	0.819
Δp,	Avg P, "H2O	2.603	2.589	2.628
Ts,	Stack temperature, °F	742	745	745
As,	Stack Area, sq.ft.	—	—	—
Ds,	Stack diameter, inches	39.75	39.75	39.75
Dn,	Nozzle diameter, inches	—	—	—
Dur,	Sampling time, min	40	40	40
% ISO	Mini iso			

	RUN #1	RUN #2	RUN #3
Filter #	5/20	5/20	5/20
Filter tare weights, gms			

Additional Comments:

METHOD 4 RUN # 1

COMPANY: XON TECH
UNIT: TURBINE "E" 75%
DATE: 5-20-93
PROJECT: 098-303
TECH: RJK
PUMP #: GAST (PD-08)
METER BOX#: CB1003 (1.028)
METER COEFF: 0.983421
PROBE #: P555-4 Cp: 0.819

PRE / POST TEST LEAK CHECK
LEAK RATE: <0.002 / <0.002 cfm
VACUUM: 10 / 10 "Hg

AMBIENT TEMP, °F:
Pbar: 29.89
STATIC PRESSURE ("Hg): -1.00
ASSUMED MOISTURE,%:
NOZZLE ID#:
AVG. CALIB. NOZZLE DIAM.("):
PROBE LINER MATERIAL:
FILTER #:
DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps) in. H2O	PRESSURE DIFFERENTIAL, "H2O RATE	PRESSURE DIFFERENTIAL, "H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. (AT DRY GAS METER) INLET, °F	GAS SAMPLE TEMP. (AT DRY GAS METER) OUTLET, °F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	12:24	2	729	1.95	0.600	0.62	110.20	90	91	—	—	
7		2	736	2.40	0.60	0.62	111.7	90	90	—	—	
6	12:29	2	744	2.70	0.60	0.62	113.2	90	90	—	—	
5		2	746	2.70	0.60	0.62	114.7	90	90	—	—	
4	12:34	2	750	2.75	0.60	0.62	116.2	91	90	—	—	
3		2	747	2.65	0.60	0.62	117.7	91	90	—	—	
2	12:39	2	743	2.50	0.60	0.62	119.2	91	91	—	—	
1	12:44	2	735	2.30	0.60	0.62	120.7	92	91	—	—	
8	12:46	2	733	2.35	0.60	0.62	122.2	93	92	—	—	
7		2	741	2.70	0.60	0.62	123.7	92	91	—	—	
6	12:51	2	743	2.80	0.60	0.62	125.2	91	91	—	—	
5		2	746	2.85	0.60	0.62	126.7	92	92	—	—	
4	12:56	2	751	2.95	0.60	0.62	128.2	91	92	—	—	
3		2	749	2.95	0.60	0.62	129.7	91	92	—	—	
2	13:01	2	740	2.75	0.60	0.62	131.2	92	92	—	—	
1		2	736	2.45	0.60	0.62	132.7	92	92	—	—	
END ~~AVG~~	13:06						134.18					
AVE			741.8	2.603		0.62	23.98	91.1				

METHOD 4 RUN # 2

COMPANY: XON TECH
UNIT: TURBINE "E" 75%
DATE: 5-20-93
PROJECT: 098-303
TECH: RJK
PUMP #: GAST (PD-08)
METER BOX#: CB1003 (1.028)
METER COEFF: 0.983421
PROBE #: P5SS-4 Cp: 0.819

PRE / POST TEST LEAK CHECK
LEAK RATE: <0.002 / <0.003 cfm
VACUUM: 10 / 14 "Hg

AMBIENT TEMP, °F:
Pbar: 29.89
STATIC PRESSURE ("Hg): -1.00
ASSUMED MOISTURE,%:
NOZZLE ID#:
AVG. CALIB. NOZZLE DIAM.("):
PROBE LINER MATERIAL:
FILTER #:
DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. (AT DRY GAS METER) INLET, °F	GAS SAMPLE TEMP. (AT DRY GAS METER) OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	13:16	2	739	2.30	0.600	0.62	134.60	90	91	—	—	
7		2	743	2.25	0.60	0.62	136.1	91	91	—	—	
6	13:21	2	746	2.85	0.60	0.62	137.6	91	91	—	—	
5		2	748	2.80	0.60	0.62	139.1	92	91	—	—	
4	13:26	2	752	3.00	0.60	0.62	140.6	93	91	—	—	
3		2	751	2.95	0.60	0.62	142.1	93	91	—	—	
2	13:31	2	744	2.70	0.60	0.62	143.6	94	91	—	—	
1	13:36	2	738	2.40	0.60	0.62	145.1	96	91	—	—	
8	13:38	2	734	2.00	0.60	0.62	146.6	96	92	—	—	
7		2	741	2.50	0.60	0.62	148.1	97	93	—	—	
6	13:43	2	746	2.65	0.60	0.62	149.6	98	93	—	—	
5		2	749	2.70	0.60	0.62	151.1	99	94	—	—	
4	13:48	2	753	2.85	0.60	0.62	152.6	100	95	—	—	
3		2	752	2.70	0.60	0.62	154.1	101	96	—	—	
2	13:53	2	745	2.60	0.60	0.62	155.6	102	97	—	—	
1		2	737	2.30	0.60	0.62	157.1	103	98	—	—	
END AVG	13:58						158.62					
AVE			744.9	2.589		0.62	24.02		94.4			

METHOD 4 RUN # 3

COMPANY:	XON TECH
UNIT:	TURBINE "E" 75%
DATE:	5-20-93
PROJECT:	098-303
TECH:	RJK
PUMP #:	GAST. (PD-08)
METER BOX#:	CB1003 (1.028)
METER COEFF:	0.983421
PROBE #:	P5SS-4 Cp: 0.819

PRE / POST TEST LEAK CHECK

LEAK RATE: <0.002 / <0.002 cfm

VACUUM: 10 / 12 "Hg

AMBIENT TEMP, °F:	
Pbar:	29.89
STATIC PRESSURE ("Hg):	-1.00
ASSUMED MOISTURE,%:	
NOZZLE ID#:	
AVG. CALIB. NOZZLE DIAM.("):	
PROBE LINER MATERIAL:	
FILTER #:	
DUCT DIAM ("):	

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	14:10	2	727	2.25	0.600	0.62	159.10	105	102	—	—	
7		2	737	2.65	0.60	0.62	160.6	103	101	—	—	
6	14:15	2	741	2.70	0.60	0.62	162.1	101	100	—	—	
5		2	749	2.75	0.60	0.62	163.6	102	102	—	—	
4	14:20	2	752	2.85	0.60	0.62	165.1	103	102	—	—	
3		2	751	2.80	0.60	0.62	166.6	103	102	—	—	
2	14:25	2	746	2.60	0.60	0.62	168.1	104	103	—	—	
1	14:30	2	731	2.30	0.60	0.62	169.6	104	103	—	—	
8	14:32	2	738	2.30	0.60	0.62	171.1	107	105	—	—	
7		2	741	2.75	0.60	0.62	172.6	106	104	—	—	
6	14:37	2	749	2.95	0.60	0.62	174.1	106	104	—	—	
5		2	752	2.80	0.60	0.62	175.6	106	105	—	—	
4	14:42	2	755	3.10	0.60	0.62	177.1	106	105	—	—	
3		2	754	2.90	0.60	0.62	178.6	106	106	—	—	
2	14:47	2	750	2.90	0.60	0.62	180.1	107	107	—	—	
1		2	741	2.50	0.60	0.62	181.6	107	107	—	—	
END ~~AVG~~	14:52						183.10					
AVE.			744.6	2.688		0.62	24.00	104.2				

COMPANY: XONTECH
UNIT : Turbine E 50% Gas
DATE : 5-20-93
PROJECT : 098-303

ON-SITE DATA

		RUN #1	RUN #2	RUN #3
	TIME:	925-1008	1020-1102	117-1159
Vm,	Dry sampled gas volume, dcf	24.00	23.99	24.00
Y,	Meter calibration factor (Met# 1003 , 1003 , 1003)	.983421	.983421	.983421
Pbar,	Barometric Pressure, "Hg	29.83	29.84	29.89
Pstatic	Stack static pressure, "Hg	-0.75	-0.95	-0.95
ΔH,	Differential meter pressure, "H2O	.62	.62	.62
Tm,	Meter temperature, °F	73	84	86

CONTENTS	Train 3 RUN #1 FINAL	TARE	NET	RUN #2 FINAL	TARE	NET	RUN #3 FINAL	TARE	NET
H_2O	625.2	596.7	28.5	643.3	614.9	28.4	654.1	625.2	28.9
H_2O	596.0	592.6	3.4	583.1	580.2	2.9	599.6	596.0	3.6
Dry	477.2	472.0	.2	479.5	479.1	0.4	477.2	477.2	—
Silica	767.1	762.9	4.2	840.9	837.0	3.9	770.7	767.1	3.6
Vlc, volume of H2O, gms			36.3			35.9			36.1

		RUN #1	RUN #2	RUN #3
CO2,	% Dry Volume	1.7	2.0	1.8
O2,	% Dry Volume	17.33	17.38	17.39
N2,	% Dry Volume	—	—	—
Cp,	Pitot Tube Coefficient (# P555-4 , P555-4 , P555-4)	.819	.819	.819
Δp,	Avg P, "H2O	2.455	2.431	2.414
Ts,	Stack temperature, °F	664	664	665
As,	Stack Area, sq.ft.	—	—	—
Ds,	Stack diameter, inches	39.75	39.75	39.75
Dn,	Nozzle diameter, inches	—	—	—
Dur,	Sampling time, min	40	40	40
% ISO	Mini iso			

Filter #	5/20	5/20	5/20
Filter tare weights, gms			

Additional Comments:

METHOD 4 RUN # 1

COMPANY:	XON TECH
UNIT:	TURBINE "E" 50%
DATE:	5-20-93
PROJECT:	098-303
TECH:	RJK
PUMP #:	GAST. (PD-08)
METER BOX#:	CB1003 (1.028)
METER COEFF:	0.983421
PROBE #:	P555-4 Cp: 0.819

PRE / POST TEST LEAK CHECK

LEAK RATE: <0.002 / <0.004 cfm

VACUUM: 10 / 14 "Hg

AMBIENT TEMP, °F:	
Pbar:	29.89
STATIC PRESSURE ("Hg):	-0.95
ASSUMED MOISTURE,%:	
NOZZLE ID#:	
AVG. CALIB. NOZZLE DIAM.("):	
PROBE LINER MATERIAL:	
FILTER #:	
DUCT DIAM ("):	

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	9:25	2	662	2.25	0.600	0.62	36.50	68	69	—	—	
7		2	663	2.50	0.60	0.62	38.0	69	68	—	—	
6	9:30	2	665	2.60	0.60	0.62	39.5	69	68	—	—	
5		2	667	2.55	0.60	0.62	41.0	70	68	—	—	
4	9:35	2	669	2.80	0.60	0.62	42.5	71	68	—	—	
3		2	666	2.65	0.60	0.62	44.0	72	68	—	—	
2	9:40	2	660	2.55	0.60	0.62	45.5	73	69	—	—	
1	9:45	2	653	2.20	0.60	0.62	47.0	74	70	—	—	
8	9:48	2	660	2.00	0.60	0.62	48.5	75	70	—	—	
7		2	663	2.40	0.60	0.62	50.0	76	71	—	—	
6	9:53	2	667	2.50	0.60	0.62	51.5	78	71	—	—	
5		2	669	2.55	0.60	0.62	53.0	78	72	—	—	
4	9:58	2	672	2.55	0.60	0.62	54.5	79	73	—	—	
3		2	670	2.60	0.60	0.62	56.0	80	75	—	—	
2	10:03	2	665	2.45	0.60	0.62	57.5	81	75	—	—	
1		2	660	2.20	0.60	0.62	59.0	81	75	—	—	
END. AVG	10:08						60.50					
AVE.			664.4	2.455		0.62	24.00		72.6			

METHOD 4 RUN # 2

COMPANY:	Xon Tech		AMBIENT TEMP, °F:
UNIT:	Turbine "E" 50%		Pbar: 29.89
DATE:	5-20-93	PRE / POST TEST LEAK CHECK	STATIC PRESSURE ("Hg): -0.95
PROJECT:	098-303		ASSUMED MOISTURE,%: —
TECH:	RJK	LEAK RATE: <0.004 / <0.001 cfm	NOZZLE ID#:
PUMP #:	GAST. (PD-08)	VACUUM: 10 / 10 "Hg	AVG. CALIB. NOZZLE DIAM.("):
METER BOX#:	CB1003 (1.028)		PROBE LINER MATERIAL:
METER COEFF:	0.983421		FILTER #:
PROBE #:	P555-4 Cp: 0.819		DUCT DIAM ("):

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps) in. H20	PRESSURE DIFFERENTIAL, "H2O RATE	PRESSURE DIFFERENTIAL, "H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. (AT DRY GAS METER) INLET, °F	GAS SAMPLE TEMP. (AT DRY GAS METER) OUTLET, °F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	10:20	2	651	1.85	0.600	0.62	61.00	82	82	—	—	
7		2	660	2.30	0.60	0.62	62.5	83	82	—	—	
6	10:25	2	665	2.50	0.60	0.62	64.0	84	83	—	—	
5		2	669	2.55	0.60	0.62	65.5	84	83	—	—	
4	10:30	2	673	2.55	0.60	0.62	67.0	84	83	—	—	
3		2	671	2.50	0.60	0.62	68.5	84	83	—	—	
2	10:35	2	662	2.45	0.60	0.62	70.0	83	82	—	—	
1	10:40	2	645	2.15	0.60	0.62	71.5	84	83	—	—	
8	10:42	2	653	2.05	0.60	0.62	73.0	85	84	—	—	
7		2	668	2.55	0.60	0.62	74.5	85	85	—	—	
6	10:47	2	670	2.70	0.60	0.62	76.0	85	85	—	—	
5		2	672	2.55	0.60	0.62	77.5	85	84	—	—	
4	10:52	2	674	2.70	0.60	0.62	79.0	85	85	—	—	
3		2	673	2.75	0.60	0.62	80.5	85	84	—	—	
2	10:57	2	667	2.55	0.60	0.62	82.0	85	84	—	—	
1		2	651	2.30	0.60	0.62	83.5	85	84	—	—	
END ~~AVG~~	11:02						84.99					
AVE.			664.0	2.431		0.62	23.99	83.9				

METHOD 4 RUN # 3

COMPANY:	XON TECH
UNIT:	TURBINE "E" 50%
DATE:	5-20-93
PROJECT:	098-303
TECH:	RJR
PUMP #:	GAST (PD-08)
METER BOX#:	CB1003 (1.028)
METER COEFF:	0.983421
PROBE #:	P5SS-4 Cp: 0.819

PRE / POST TEST LEAK CHECK

LEAK RATE: <0.003 / <0.001 cfm

VACUUM: 9 / 7 "Hg

AMBIENT TEMP, °F:	
Pbar:	29.89
STATIC PRESSURE ("Hg):	-0.95
ASSUMED MOISTURE,%:	
NOZZLE ID#:	
AVG. CALIB. NOZZLE DIAM.("):	
PROBE LINER MATERIAL:	
FILTER #:	
DUCT DIAM ("):	

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ Ps)in. H20	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O ΔH	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET,°F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
8	11:17	2	654	2.25	0.600	0.62	85.6	85	85	—	—	
7		2	664	2.50	0.60	0.62	87.1	84	85	—	—	
6	11:22	2	668	2.65	0.60	0.62	88.6	84	85	—	—	
5		2	670	2.55	0.60	0.62	90.1	85	85	—	—	
4	11:27	2	673	2.70	0.60	0.62	91.6	85	84	—	—	
3		2	672	2.75	0.60	0.62	93.1	85	84	—	—	
2	11:32	2	665	2.50	0.60	0.62	94.6	86	84	—	—	
1	11:37	2	648	2.20	0.60	0.62	96.1	86	84	—	—	
8	11:39	2	649	2.00	0.60	0.62	97.6	85	85	—	—	
7		2	666	2.25	0.60	0.62	99.1	86	85	—	—	
6	11:44	2	669	2.50	0.60	0.62	100.6	86	85	—	—	
5		2	672	2.50	0.60	0.62	102.1	87	85	—	—	
4	11:49	2	675	2.45	0.60	0.62	103.6	88	84	—	—	
3		2	673	2.50	0.60	0.62	105.1	89	86	—	—	
2	11:54	2	666	2.35	0.60	0.62	106.6	91	86	—	—	
1		2	649	2.05	0.60	0.62	108.1	91	87	—	—	
END ~~AVG~~	11:59						109.60					
AVE.			664.6	2.414		0.62	24.00	85.7				

LABORATORY ANALYSIS

PETRO
CHEM
ENVIRONMENTAL
SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93308
(805) 327-7300
FAX (805) 327-3459

COMPANY	: XONTECH INC.	DATE RECEIVED :	5-13-93
DATE	: 5-12-93	DATE ANALYZED :	5-14-93
REPORT	: 098-303	DATE REPORTED:	5-17-93

EPA METHOD 18
HYDROCARBON ANALYSIS REPORT

UNIT : SVPP TURBINE A

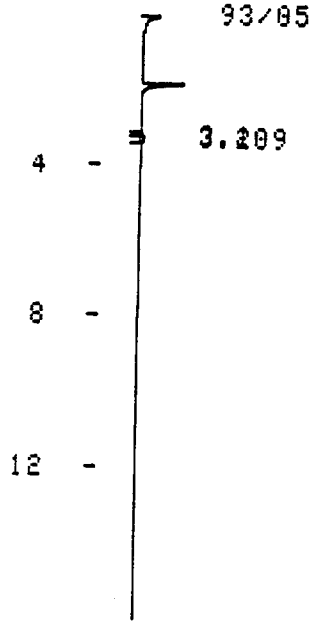
CONSTITUENT	RUN # 1 ppm(v/v)	RUN # 2 ppm(v/v)	RUN # 3 ppm(v/v)
METHANE	1.59	1.15	1.07
ETHANE	ND	ND	ND
PROPANE	ND	ND	ND
BUTANE	ND	ND	ND
PENTANE	ND	ND	ND
HEXANES+	ND	ND	ND
TOTAL	1.59	1.15	1.07
NON-METHANE	0.00	0.00	0.00

UNIT : HYDROCARBON SAMPLE BLANK

CONSTITUENT	ppm(v/v)
METHANE	ND
ETHANE	ND
PROPANE	ND
BUTANE	ND
PENTANE	ND
HEXANES+	ND
TOTAL	0.00
NON-METHANE	0.00

XONTECH UNIT: SVPP TURBINE A
5-12-93 PROJECT: 098-303
HC SAMPLE # 1 100% GAS

93/05/14 13:34:07

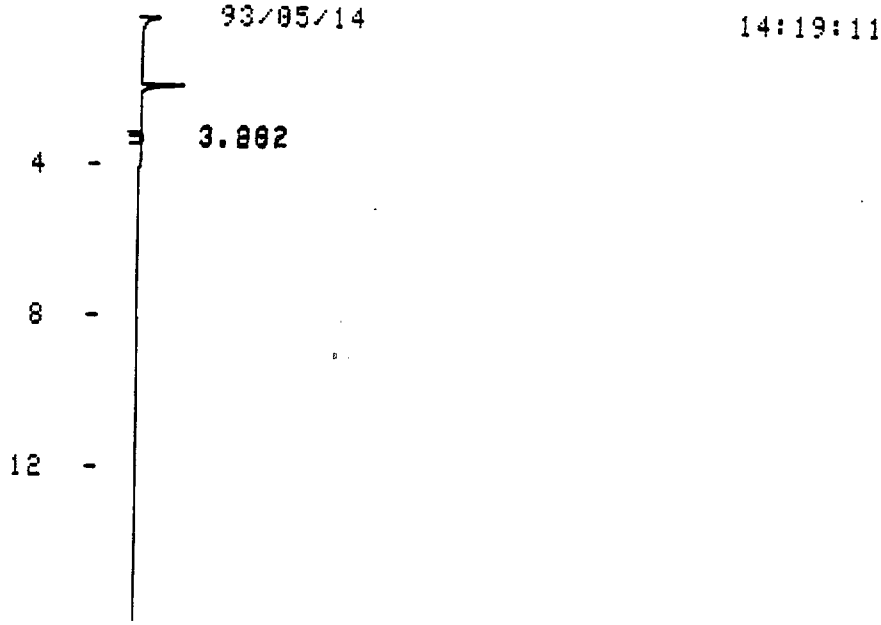


CHROMATOGRAM 9 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.1	75		1	0.4368	C-1
2	3.209	197	V	1	1.1501	C-1
	TOTAL	272			1.5869	

GROUP(NAME)	CONC
C-1	1.5869
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE A
5-12-93 PROJECT: 098-303
HC SAMPLE # 2 100% GAS

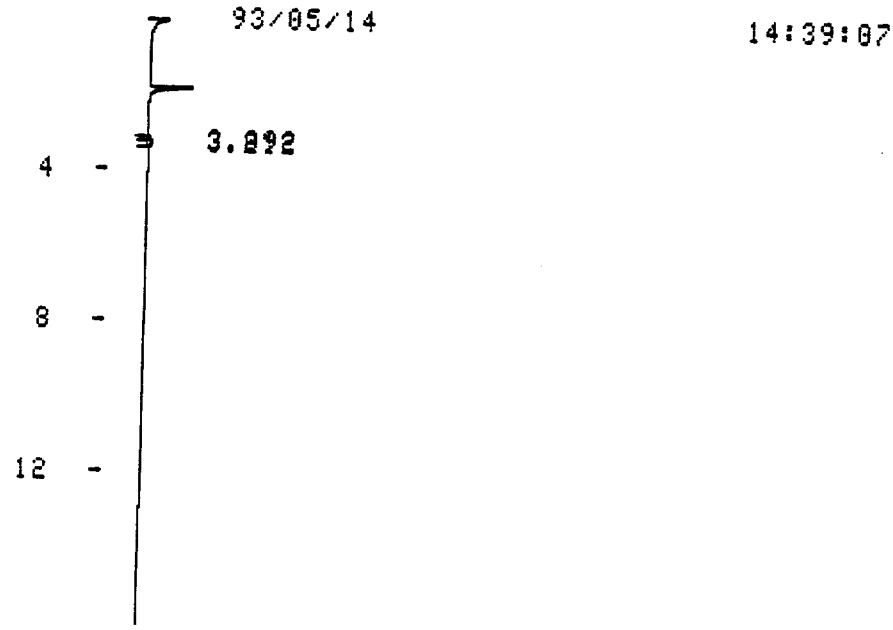


CHROMATOGRAM 10 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.092	81				
2	3.207	197	V	1	1.1478	C-1
	TOTAL	278			1.1478	

GROUP(NAME)	CONC
C-1	1.1478
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE A
5-12-93 PROJECT: 098-303
HC SAMPLE # 3



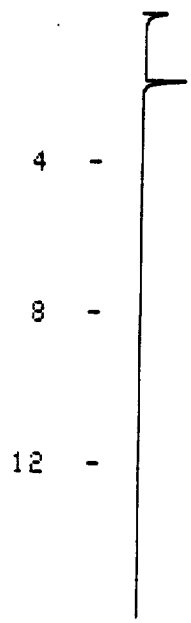
CHROMATOGRAM 11 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.092	85				
2	3.212	183	V	1	1.0686	C-1
	TOTAL	268			1.0686	

GROUP(NAME)	CONC
C-1	1.0686
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

KONTECH UNIT: SVPP TURBINE A
5-12-93 PROJECT: 098-303
HC SAMPLE BLANK

93/05/14 12:59:18



CHROMATOGRAM 8 MEMORIZED
WARNING NO PEAK

PETRO
CHEM
ENVIRONMENTAL
SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93308
(805) 327-7300
FAX (805) 327-3459

COMPANY	: XONTECH INC.	DATE RECEIVED :	5-14-93
DATE	: 5-13,14-93	DATE ANALYZED :	5-15-93
REPORT	: 098-303	DATE REPORTED:	5-18-93

EPA METHOD 18
HYDROCARBON ANALYSIS REPORT

UNIT : SVPP TURBINE C

CONSTITUENT	RUN # 1 ppm(v/v)	RUN # 2 ppm(v/v)	RUN # 3 ppm(v/v)
METHANE	2.79	3.13	2.85
ETHANE	ND	ND	ND
PROPANE	ND	ND	ND
BUTANE	ND	ND	ND
PENTANE	ND	ND	ND
HEXANES+	ND	ND	ND
TOTAL	2.79	3.13	2.85
NON-METHANE	0.00	0.00	0.00

UNIT : SVPP TURBINE B

CONSTITUENT	RUN # 1 ppm(v/v)	RUN # 2 ppm(v/v)	RUN # 3 ppm(v/v)
METHANE	3.10	1.84	29.22
ETHANE	ND	ND	1.02
PROPANE	ND	ND	ND
BUTANE	ND	ND	ND
PENTANE	ND	ND	ND
HEXANES+	ND	ND	ND
TOTAL	3.10	1.84	30.24
NON-METHANE	0.00	0.00	1.02

PETRO
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ENVIRONMENTAL
SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93308
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FAX (805) 327-3459

COMPANY : XONTECH INC.
DATE : 5-13,14-93
REPORT : 098-303

DATE RECEIVED : 5-14-93
DATE ANALYZED : 5-15-93
DATE REPORTED: 5-18-93

EPA METHOD 18
HYDROCARBON ANALYSIS REPORT

UNIT : SVPP TURBINE E

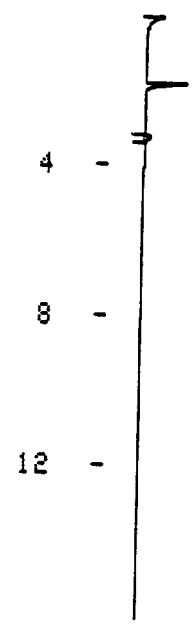
CONSTITUENT	RUN # 1 ppm(v/v)	RUN # 2 ppm(v/v)	RUN # 3 ppm(v/v)
METHANE	2.72	2.79	2.48
ETHANE	ND	ND	ND
PROPANE	ND	ND	ND
BUTANE	ND	ND	ND
PENTANE	ND	ND	ND
HEXANES+	ND	ND	ND
TOTAL	2.72	2.79	2.48
NON-METHANE	0.00	0.00	0.00

UNIT : HYDROCARBON SAMPLE BLANKS

CONSTITUENT	5-13-94 ppm(v/v)	5-14-94 ppm(v/v)
METHANE	1.37	1.38
ETHANE	ND	ND
PROPANE	ND	ND
BUTANE	ND	ND
PENTANE	ND	ND
HEXANES+	ND	ND
TOTAL	1.37	1.38
NON-METHANE	0.00	0.00

XONTECH UNIT: SVPP
5-13-93 PROJECT: 098-303
HC SAMPLE BLANK

93/05/15 12:57:49

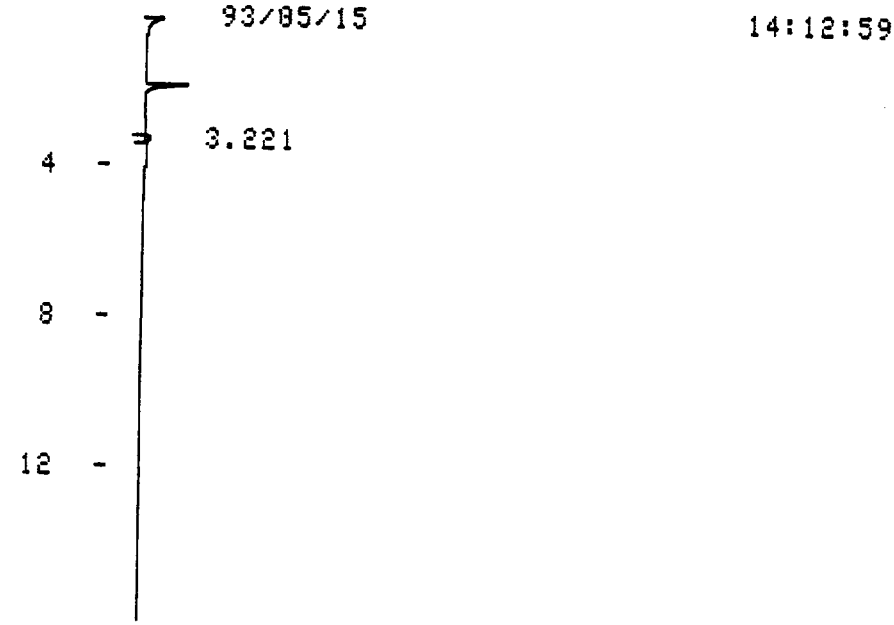


CHROMATOGRAM 5 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.208	238		1	1.365	C-1
	TOTAL	238			1.365	

GROUP(NAME)	CONC
C-1	1.365
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP
5-14-93 PROJECT: 098-303
HC SAMPLE BLANK

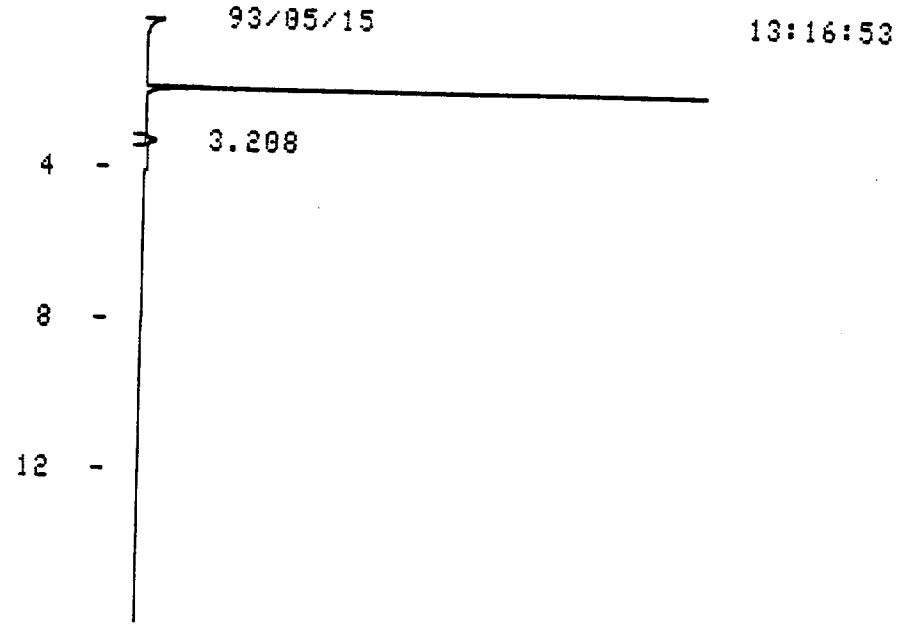


CHROMATOGRAM 9 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.221	241		1	1.3799	C-1
	TOTAL	241			1.3799	

GROUP(NAME)	CONC
C-1	1.3799
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE C
5-13-93 PROJECT: 098-303
HC SAMPLE # 1 100% GAS

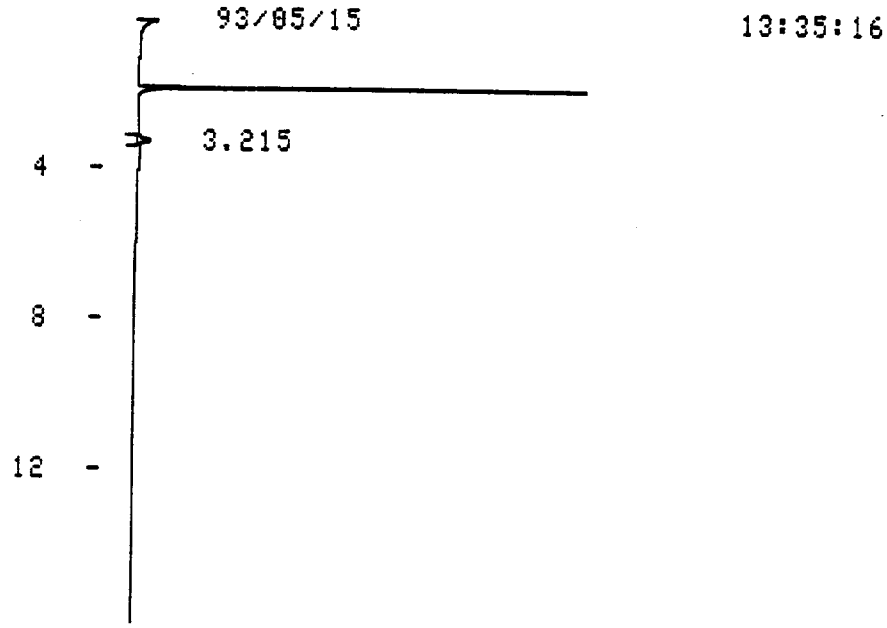


CHROMATOGRAM 6 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.208	488		1	2.7936	C-1
	TOTAL	488			2.7936	

GROUP(NAME)	CONC
C-1	2.7936
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE C
5-13-93 PROJECT: 098-303
HC SAMPLE # 2 100% GAS



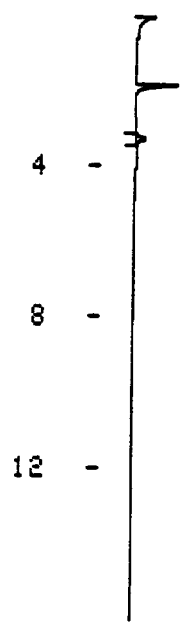
CHROMATOGRAM 7 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.215	546		1	3.1298	C-1
	TOTAL	546			3.1298	

GROUP(NAME)	CONC
C-1	3.1298
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE C
5-13-93 PROJECT: 098-303
HC SAMPLE # 3 100% GAS

93/05/15 13:54:39

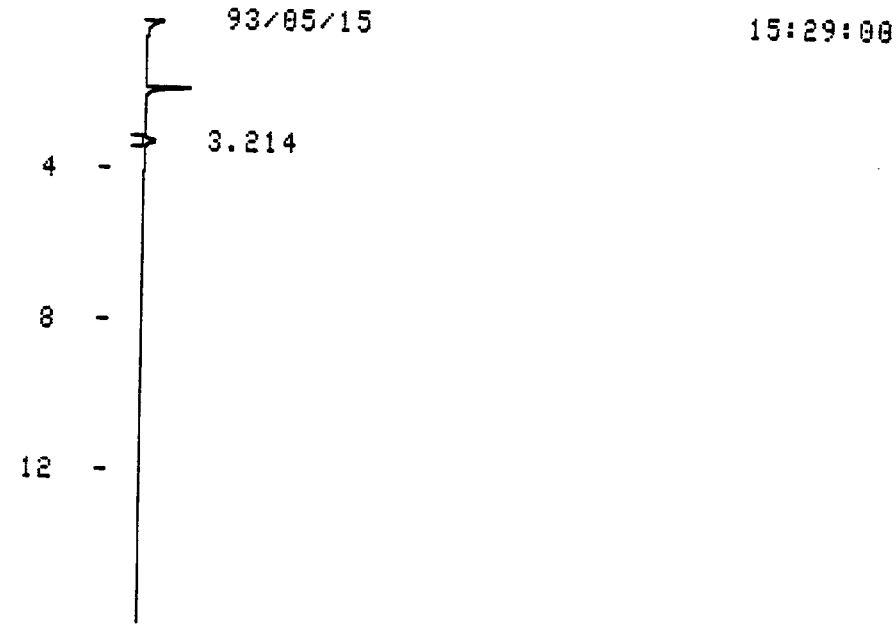


CHROMATOGRAM 8 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.215	498		1	2.852	C-1
	TOTAL	498			2.852	

GROUP(NAME)	CONC
C-1	2.852
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE B
5-14-93 PROJECT: 098-303
HC SAMPLE # 1

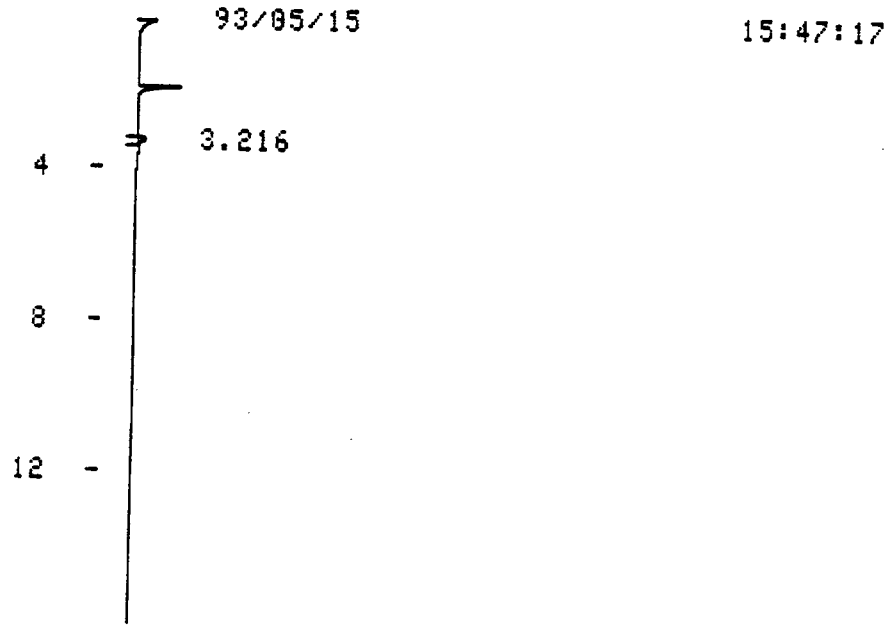


CHROMATOGRAM 13 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.214	541		1	3.1006	C-1
	TOTAL	541			3.1006	

GROUP(NAME)	CONC
C-1	3.1006
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE B
5-14-93 PROJECT: 098-303
HC SAMPLE # 2



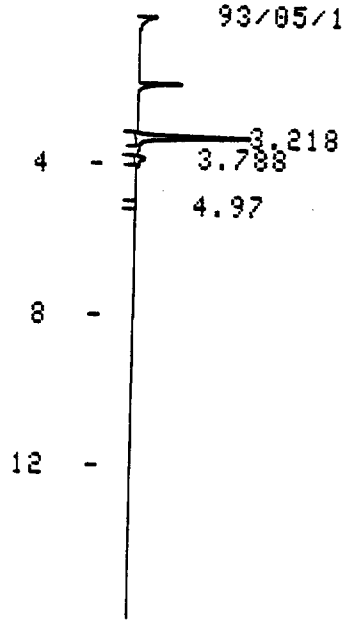
CHROMATOGRAM 14 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.216	322		1	1.8416	C-1
	TOTAL	322			1.8416	

GROUP(NAME)	CONC
C-1	1.8416
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE B
5-14-93 PROJECT: 098-303
HC SAMPLE # 3

93/05/15 16:06:17



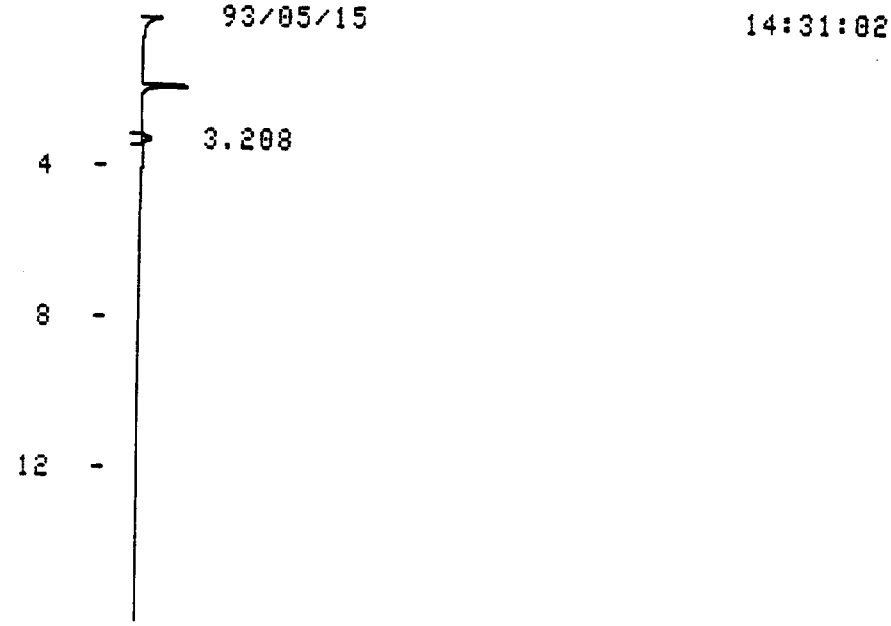
CHROMATOGRAM 15 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.218	5101		1	29.2205	C-1
2	3.788	360		2	1.0208	C-2
3	4.97	143		3	~~0.27~~	C-3
	TOTAL	5603			30.5114	

< 1 ppm
Trace

GROUP(NAME)	CONC
C-1	29.2205
C-2	1.0208
C-3	0.27
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE E
5-14-93 PROJECT: 098-303
HC SAMPLE # 1

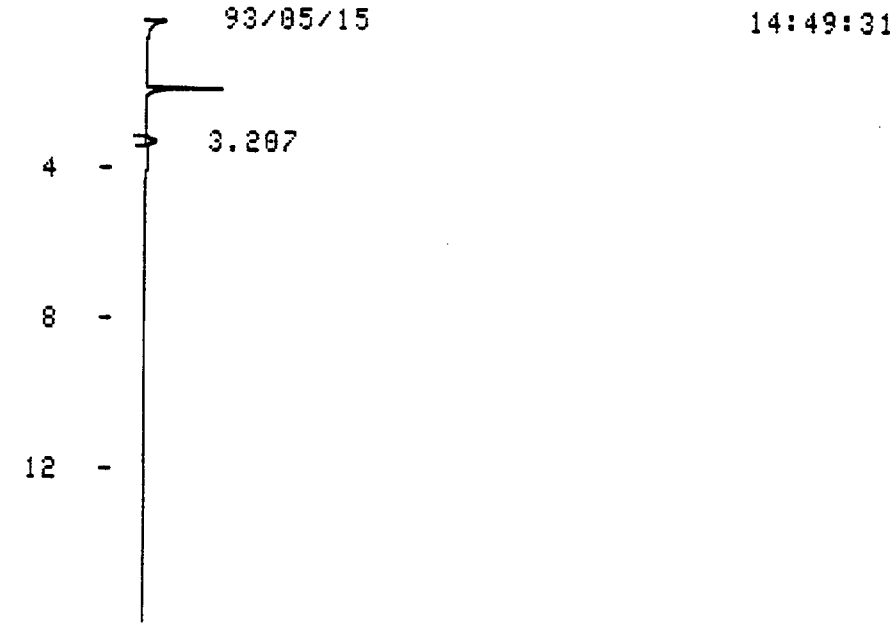


CHROMATOGRAM 10 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.208	475		1	2.718	C-1
	TOTAL	475			2.718	

GROUP(NAME)	CONC
C-1	2.718
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE E
5-14-93 PROJECT: 898-303
HC SAMPLE # 2 100% GAS



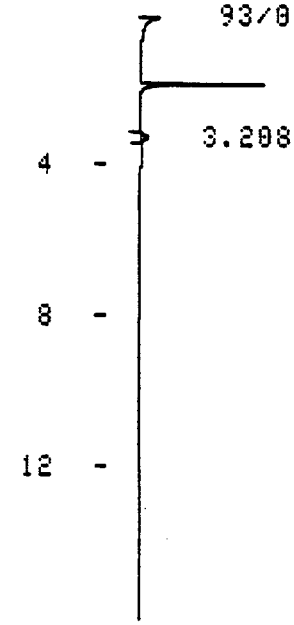
CHROMATOGRAM 11 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.207	487		1	2.7884	C-1
	TOTAL	487			2.7884	

GROUP(NAME)	CONC
C-1	2.7884
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE E
5-14-93 PROJECT: 098-303
HC SAMPLE # 3 100% GAS

93/05/15 15:08:01



CHROMATOGRAM 12 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.208	433		1	2.4825	C-1
	TOTAL	433			2.4825	

GROUP(NAME)	CONC
C-1	2.4825
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

PETRO
CHEM
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3207 Antonino Avenue
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COMPANY	: XONTECH	DATE RECEIVED :	5-21-93
DATE	: 5-19,20-93	DATE ANALYZED :	5-22-93
REPORT	: 098-303	DATE REPORTED:	5-26-93

EPA METHOD 18
HYDROCARBON ANALYSIS REPORT

UNIT : TURBINE D

CONSTITUENT	RUN # 1 ppm(v/v)	RUN # 2 ppm(v/v)	RUN # 3 ppm(v/v)
METHANE	1.91	1.68	1.26
ETHANE	ND	ND	ND
PROPANE	ND	ND	ND
BUTANE	ND	ND	ND
PENTANE	ND	ND	ND
HEXANES+	ND	ND	ND
TOTAL	1.91	1.68	1.26
NON-METHANE	0.00	0.00	0.00

UNIT : HYDROCARBON SAMPLE BLANKS

CONSTITUENT	5-19-93 ppm(v/v)	5-20-93 ppm(v/v)
METHANE	ND	ND
ETHANE	ND	ND
PROPANE	ND	ND
BUTANE	ND	ND
PENTANE	ND	ND
HEXANES+	ND	ND
TOTAL	0.00	0.00
NON-METHANE	0.00	0.00

PETRO
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COMPANY	: XONTECH	DATE RECEIVED :	5-21-93
DATE	: 5-19,20-93	DATE ANALYZED :	5-22-93
REPORT	: 098-303	DATE REPORTED:	5-26-93

EPA METHOD 18
HYDROCARBON ANALYSIS REPORT

UNIT : TURBINE E 50% GAS

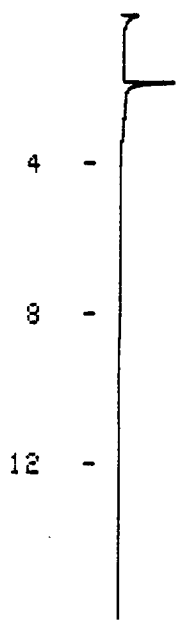
CONSTITUENT	RUN # 1 ppm(v/v)	RUN # 2 ppm(v/v)	RUN # 3 ppm(v/v)
METHANE	16.24	19.42	18.33
ETHANE	0.87	0.73	1.18
PROPANE	ND	ND	ND
BUTANE	ND	ND	ND
PENTANE	ND	ND	ND
HEXANES+	ND	ND	ND
TOTAL	17.11	20.15	19.51
NON-METHANE	0.87	0.73	1.18

UNIT : TURBINE E 75% GAS

CONSTITUENT	RUN # 1 ppm(v/v)	RUN # 2 ppm(v/v)	RUN # 3 ppm(v/v)
METHANE	3.67	3.73	3.66
ETHANE	ND	ND	ND
PROPANE	ND	ND	ND
BUTANE	ND	ND	ND
PENTANE	ND	ND	ND
HEXANES+	ND	ND	ND
TOTAL	3.67	3.73	3.66
NON-METHANE	0.00	0.00	0.00

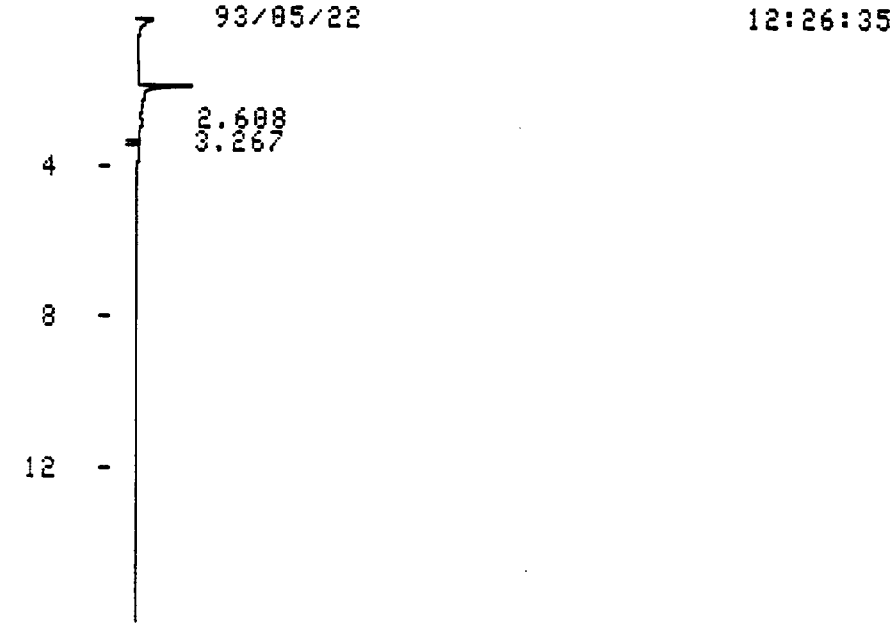
KONTECH UNIT: SVPP
5-20-93 PROJECT: 098-303
HC SAMPLE BLANK

93/05/22 14:28:02



CHROMATOGRAM 15 MEMORIZED
WARNING NO PEAK

XONTECH UNIT: SVPP
5-19-93 PROJECT: 098-303
HC SAMPLE BLANK

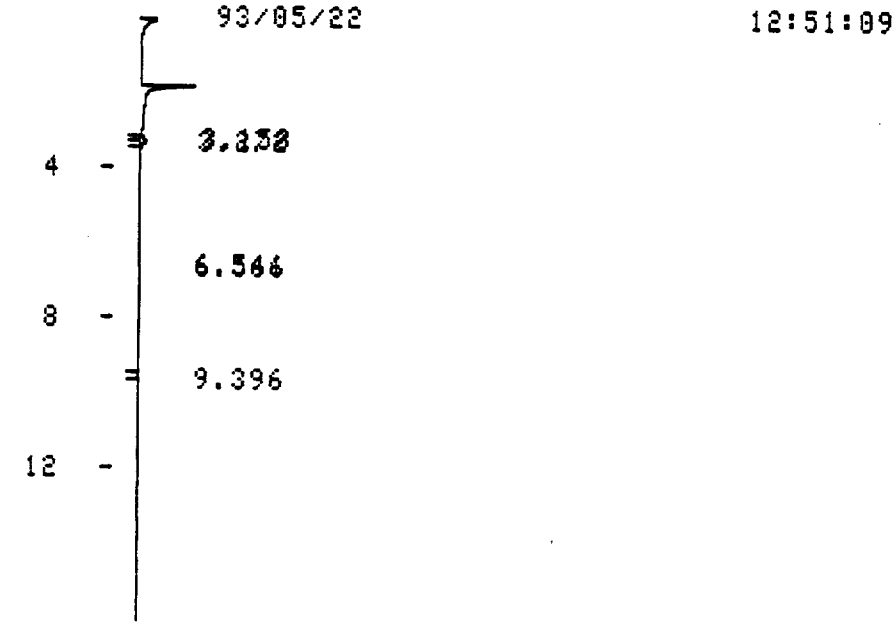


CHROMATOGRAM 11 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.267	85		1	0.478	C-1
	TOTAL	85			0.478	

GROUP(NAME)	CONC
C-1	0.~~478~~ ND <1 ppm
C-2	0 mL
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE D
5-19-93 PROJECT: 098-303
HC SAMPLE # 1

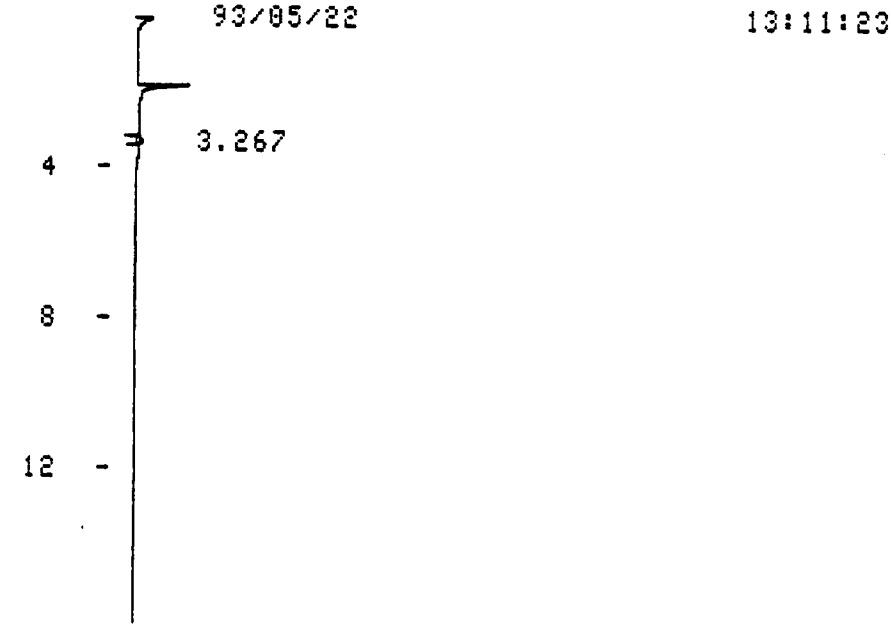


CHROMATOGRAM 12 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.158	127		1	0.7132	C-1
2	3.272	213	V	1	1.1965	C-1
3	9.396	130				
	TOTAL	471			1.9097	

GROUP(NAME)	CONC
C-1	1.9097
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE D
5-19-93 PROJECT: 098-303
HC SAMPLE # 2

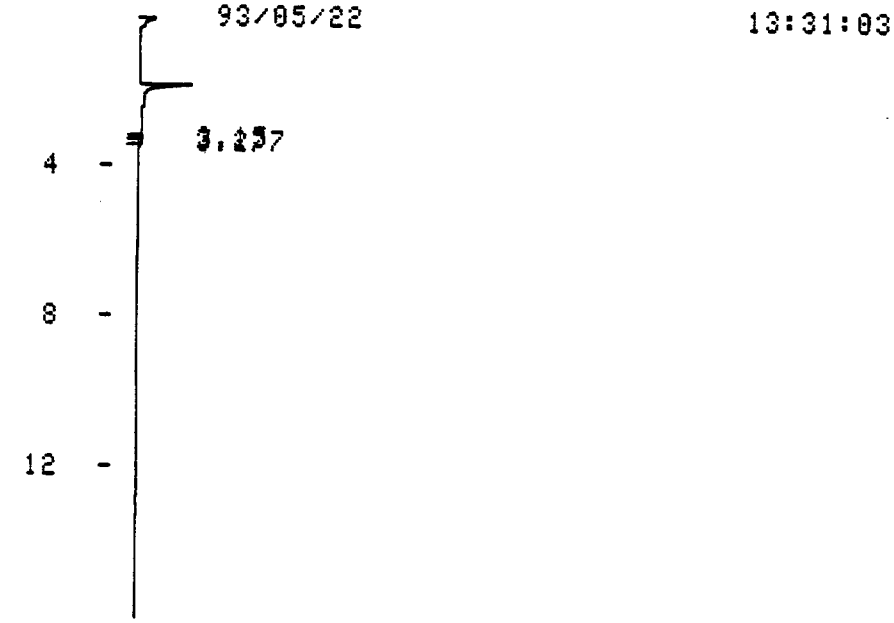


CHROMATOGRAM 13 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.267	299		1	1.6791	C-1
	TOTAL	299			1.6791	

GROUP(NAME)	CONC
C-1	1.6791
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE D
5-19-93 PROJECT: 098-303
HC SAMPLE # 3

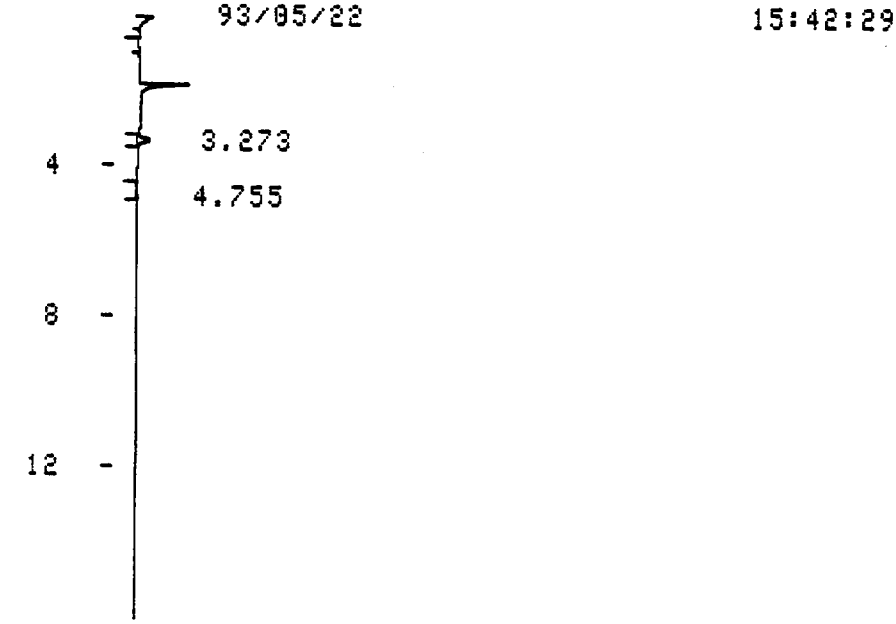


CHROMATOGRAM 14 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.15	73		1	0.4087	C-1
2	3.277	152	V	1	0.8502	C-1
	TOTAL	224			1.2589	

GROUP(NAME)	CONC
C-1	1.2589
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE E
5-20-93 PROJECT: 098-303
HC SAMPLE # 1 75% GAS

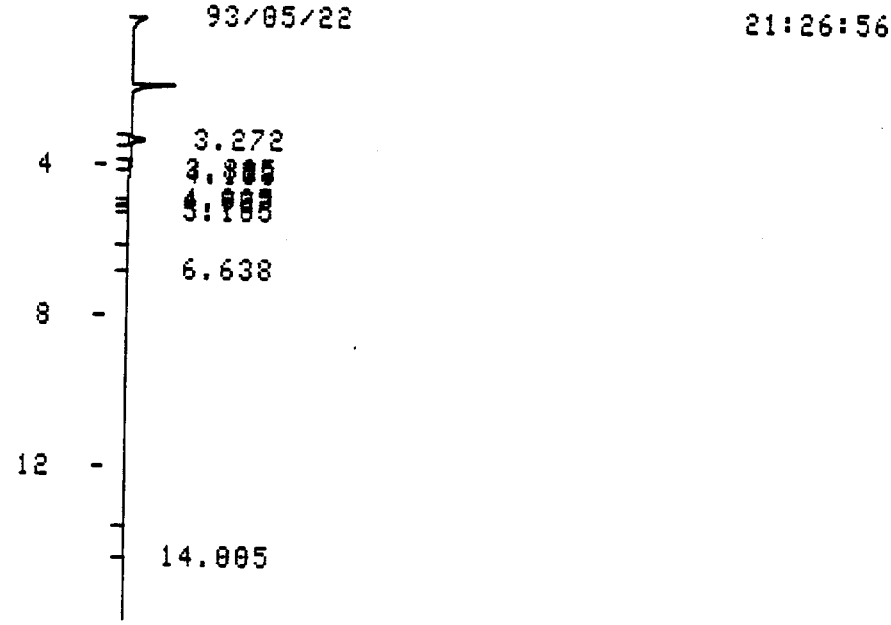


CHROMATOGRAM 19 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.273	655		1	3.6723	C-1
2	4.755	191				
	TOTAL	845			3.6723	

GROUP(NAME)	CONC
C-1	3.6723
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE E
5-20-93 PROJECT: 098-303
HC SAMPLE # 2 75% GAS



CHROMATOGRAM 35 MEMORIZED

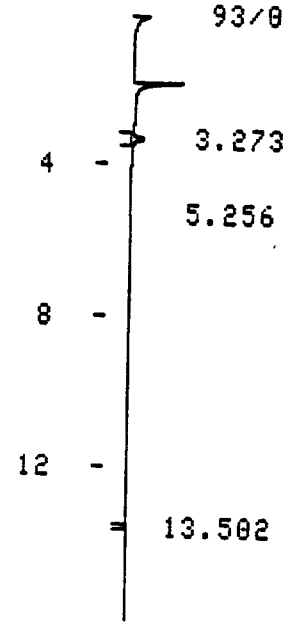
PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.272	665		1	3.7329	C-1
2	3.825	159		2	0.4439	C-2
3	4.907	83		3	0.1544	C-3
4	5.105	90		3	0.1668	C-3
5	6.638	410				
6	14.005	714		5	0.8298	C-5
	TOTAL	2120			5.3277	

GROUP(NAME)	CONC
C-1	3.7329
C-2	0.~~4439~~ ND
C-3	0.~~3212~~ ND
C-4	0
C-5	0.~~8298~~ ND
C-6+	0

Liquor
FMR

XONTECH UNIT: SVPP TURBINE E
5-20-93 PROJECT: 098-303
HC SAMPLE # 3 75% GAS

93/05/22 16:21:16

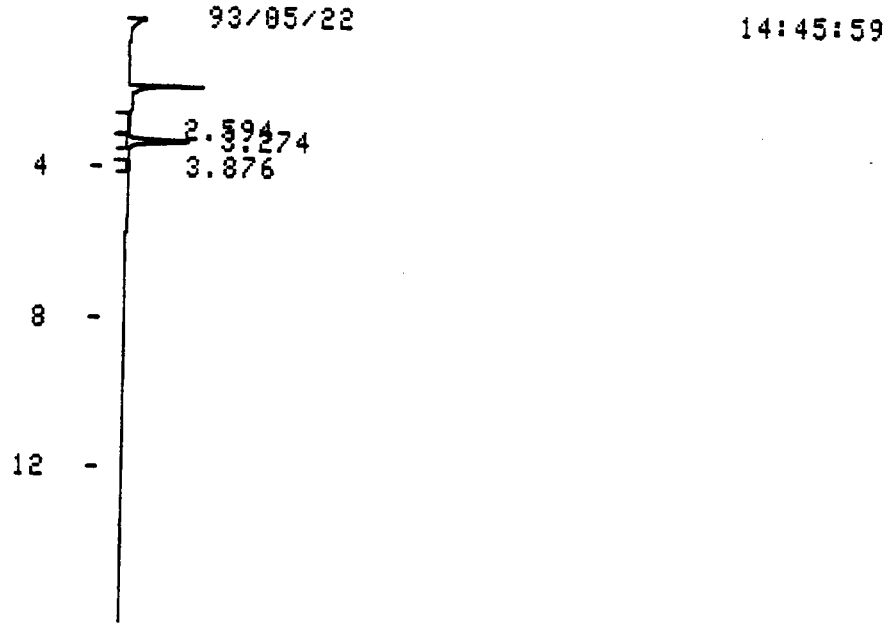


CHROMATOGRAM 21 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.273	652		1	3.6555	C-1
2	13.502	68				
	TOTAL	720			3.6555	

GROUP(NAME)	CONC
C-1	3.6555
C-2	0
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE E
5-20-93 PROJECT: 098-303
HC SAMPLE # 1 50% GAS

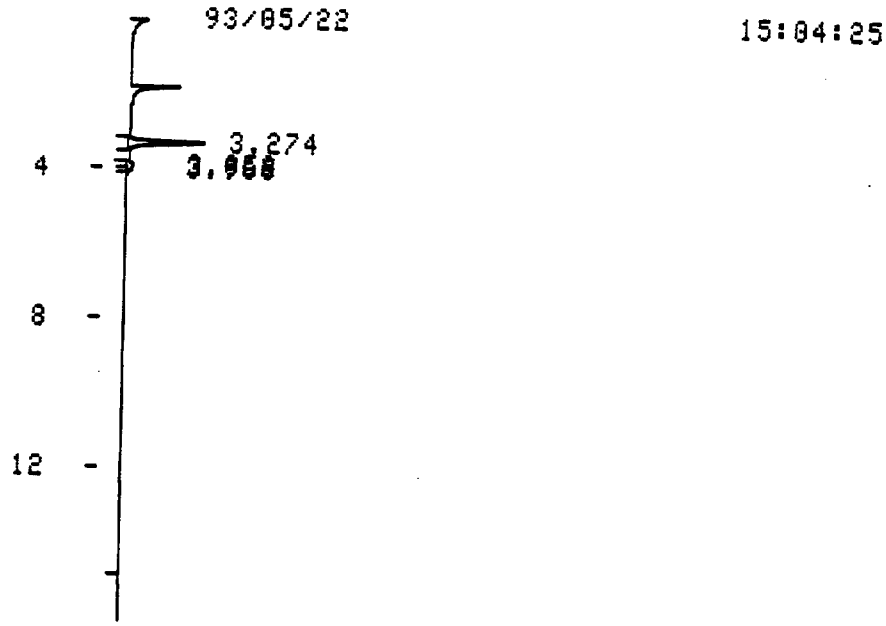


CHROMATOGRAM 16 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	2.594	320				
2	3.274	2895		1	16.2405	C-1
3	3.876	310		2	0.8652	C-2
	TOTAL	3525			17.1057	

GROUP(NAME)	CONC
C-1	16.2405
C-2	0.8652
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE E
5-20-93 PROJECT: 098-303
HC SAMPLE # 2 50% GAS



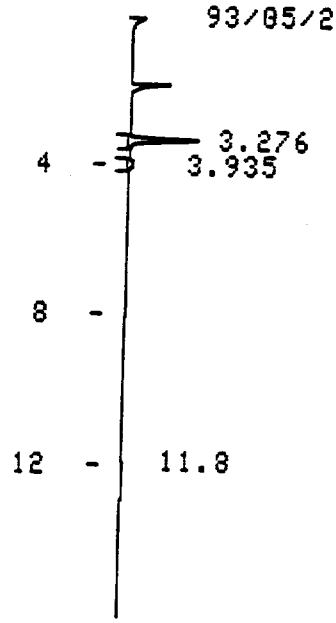
CHROMATOGRAM 17 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.274	3462		1	19.424	C-1
2	3.859	262		2	0.7322	C-2
3	3.966	144	V			
	TOTAL	3869			20.1562	

GROUP(NAME)	CONC
C-1	19.424
C-2	0.7322
C-3	0
C-4	0
C-5	0
C-6+	0

XONTECH UNIT: SVPP TURBINE E
5-20-93 PROJECT: 098-303
HC SAMPLE # 3 50% GAS

93/05/22 21:07:49



CHROMATOGRAM 34 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.276	3267		1	18.3264	C-1
2	3.935	422		2	1.1789	C-2
	TOTAL	3689			19.5053	

GROUP(NAME)	CONC
C-1	18.3264
C-2	1.1789
C-3	0
C-4	0
C-5	0
C-6+	0

PETRO
CHEM
ENVIRONMENTAL
SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93308
(805) 327-7300
FAX (805) 327-3459

COMPANY : XONTECH INC.
UNIT : VARIOUS
DATE : 5-14-93
PROJECT : 098-303

DATE RECEIVED : MAY 17,1993
DATE ANALYZED : MAY 17,1993
DATE REPORTED: MAY 20,1993

FUEL GAS ANALYSIS

CONSTITUENT	MOLE %	WT. %
CARBON DIOXIDE	0.000	0.000
OXYGEN	0.379	0.649
NITROGEN	1.386	2.078
CARBON MONOXIDE	0.000	0.000
METHANE	86.942	74.655
ETHANE	6.441	10.367
PROPANE	3.917	9.246
ISOBUTANE	0.308	0.957
N-BUTANE	0.511	1.589
ISOPENTANE	0.063	0.244
N-PENTANE	0.042	0.161
HEXANES+	0.012	0.055
TOTALS :	100.000	100.000

CHONS Wt.%	
CARBON	74.22
HYDROGEN	23.06
OXYGEN	0.65
NITROGEN	2.08
SULFUR	0.00
H/C	0.311

SPECIFIC GRAVITY (AIR = 1)	0.6451
SPECIFIC VOLUME, cu.ft./lb.	20.31
GROSS CALORIFIC VALUE (DRY), BTU/cu.ft.	1125.12
GROSS CALORIFIC VALUE (WET), BTU/cu.ft.	1102.53
GROSS CALORIFIC VALUE (DRY), BTU/lb.	22854.98
NET CALORIFIC VALUE (DRY), BTU/cu.ft.	1017.34
NET CALORIFIC VALUE (WET), BTU/cu.ft.	996.92
COMPRESSABILITY FACTOR "Z" @ 60° F, 1 ATM	0.9973
EXPANSION FACTOR (DSCF/CF)	9.58
EPA "F" FACTOR @ 68° F (DSCF/MM BTU)	8640
EPA "F" FACTOR @ 60° F (DSCF/MM BTU)	8511

ASTM METHODS D-1945-81 & D-3588-91

Terry Rowles
Laboratory Manager

PETRO
CHEM
ENVIRONMENTAL
SERVICES, INC.

3207 Antonino Avenue
Bakersfield, California 93308
(805) 327-7300
FAX (805) 327-3459

COMPANY : XONTECH, INC.
UNIT : SVPP
DATE : 5-21-93
PROJECT : 098-303

DATE RECEIVED : MAY 22,1993
DATE ANALYZED : MAY 22,1993
DATE REPORTED: MAY 25,1993

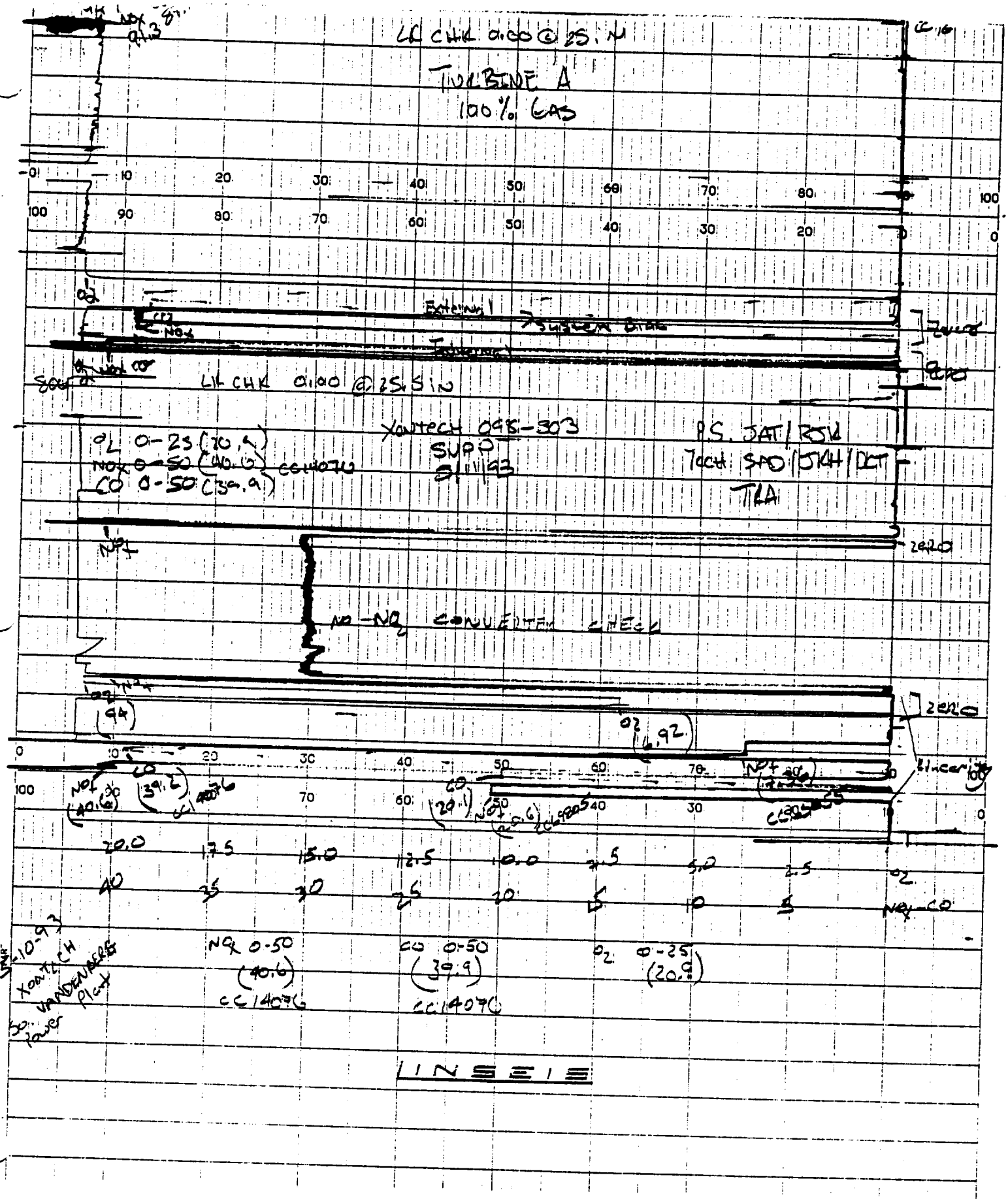
FUEL GAS ANALYSIS

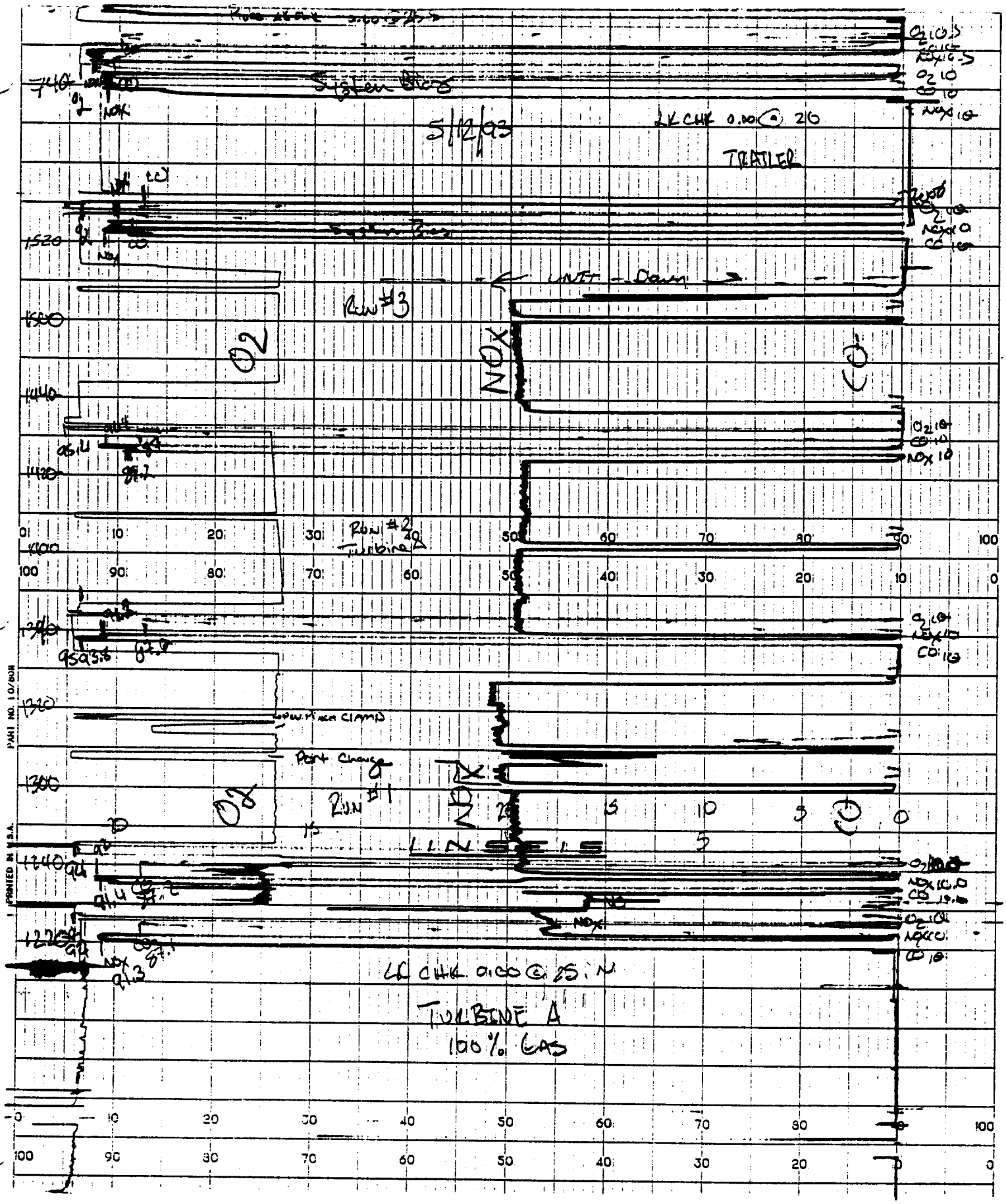
CONSTITUENT	MOLE %	WT. %	CHONS Wt.%	
CARBON DIOXIDE	0.835	1.955	CARBON	73.81
OXYGEN	0.254	0.433	HYDROGEN	22.80
NITROGEN	1.032	1.539	OXYGEN	1.85
CARBON MONOXIDE	0.000	0.000	NITROGEN	1.54
			SULFUR	0.00
METHANE	86.394	73.733	H/C	0.309
ETHANE	7.036	11.256		
PROPANE	3.671	8.610		
ISOBUTANE	0.268	0.830		
N-BUTANE	0.422	1.305		
ISOPENTANE	0.048	0.182		
N-PENTANE	0.030	0.117		
HEXANES+	0.009	0.040		
TOTALS:	100.000	100.000		

SPECIFIC GRAVITY (AIR = 1)	0.6490
SPECIFIC VOLUME, cu.ft./lb.	20.19
GROSS CALORIFIC VALUE (DRY), BTU/cu.ft.	1118.52
GROSS CALORIFIC VALUE (WET), BTU/cu.ft.	1096.04
GROSS CALORIFIC VALUE (DRY), BTU/lb.	22582.55
NET CALORIFIC VALUE (DRY), BTU/cu.ft.	1011.31
NET CALORIFIC VALUE (WET), BTU/cu.ft.	990.98
COMPRESSABILITY FACTOR "Z" @ 60° F, 1 ATM	0.9973
EXPANSION FACTOR (DSCF/CF)	9.53
EPA "F" FACTOR @ 68° F (DSCF/MM BTU)	8647
EPA "F" FACTOR @ 60° F (DSCF/MM BTU)	8517

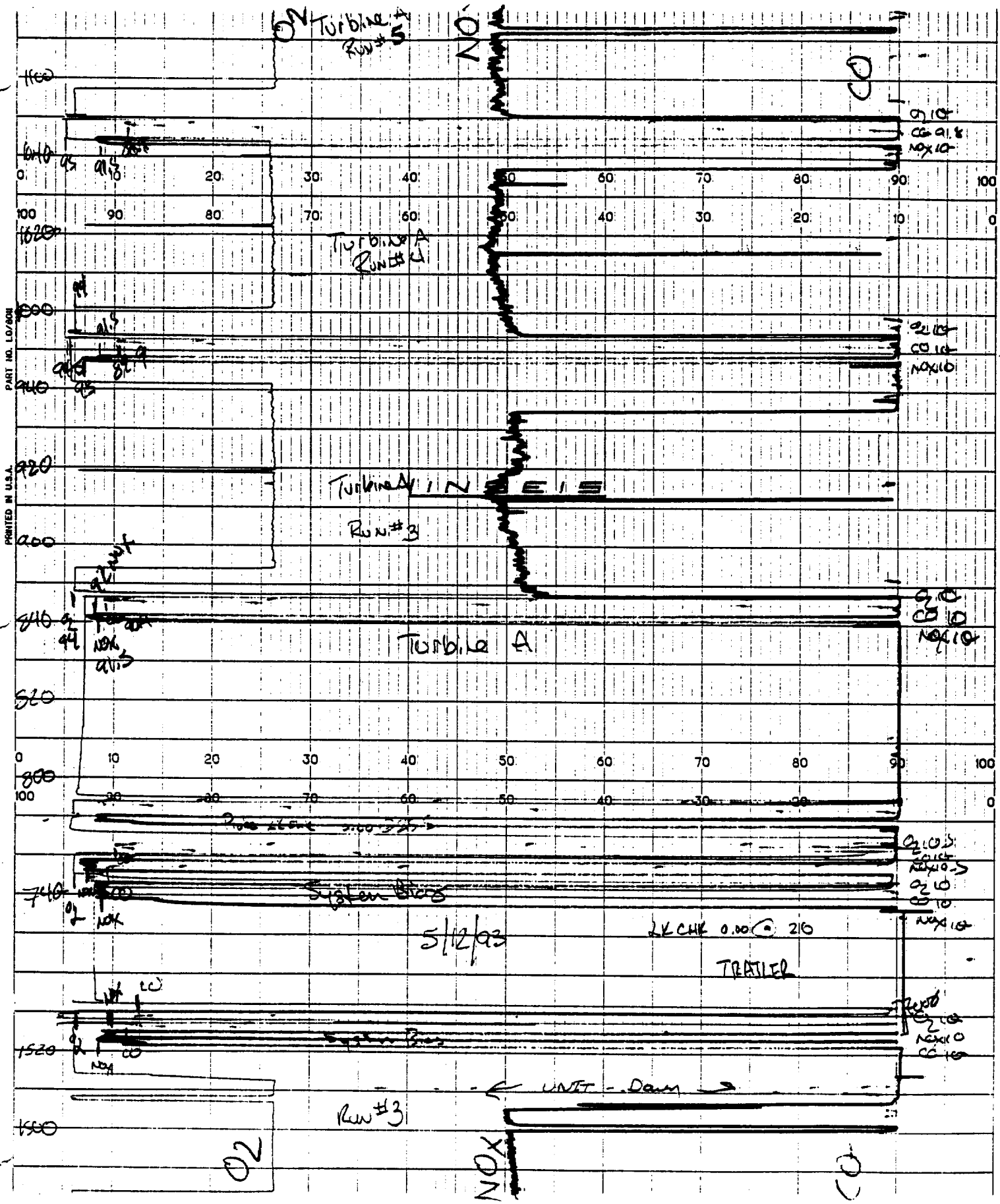
ASTM METHODS D-1945-81 & D-3588-91

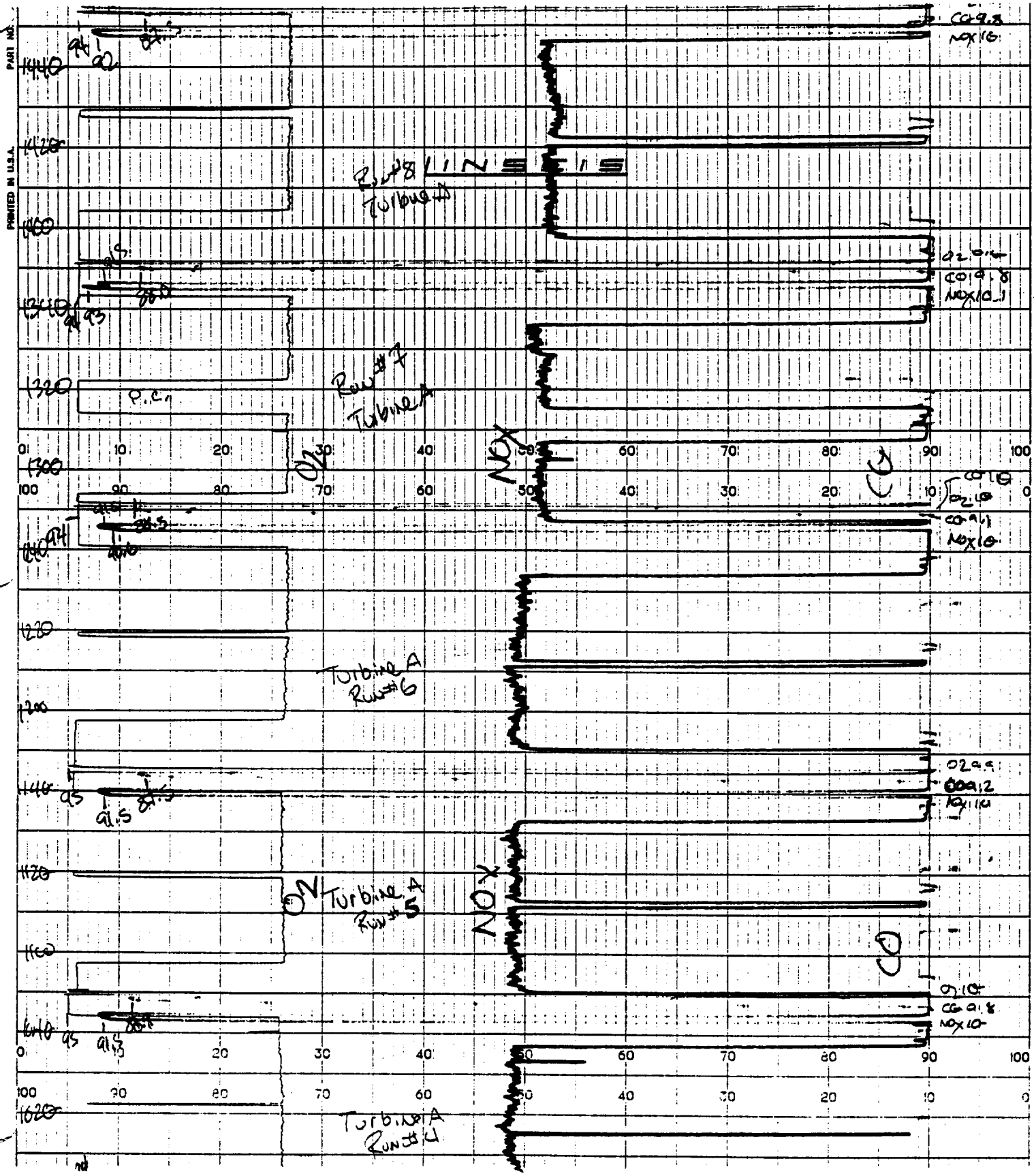
Terry Rowlee
Laboratory Manager


LK CHK 0.00 @ 25 IN
TURBINE A
100% GAS
External
System Bias
Internal
LK CHK 0.00 @ 25.5 IN
XONTECH 098-303
SUPP
5/11/93
P.S. JAT/RJK
7CCH SAD/JKH/DCT
TRA
O2 0-25 (20.9)
NOx 0-50 (40.6) CC14076
CO 0-50 (39.9)
NO-NO2 CONVERTER CHECK
O2 (94)
O2 (6.92)
Linearity
NOx 0-50 (40.6) CC14076
CO 0-50 (39.9) CC14076
O2 0-25 (20.9)
LINSEIS

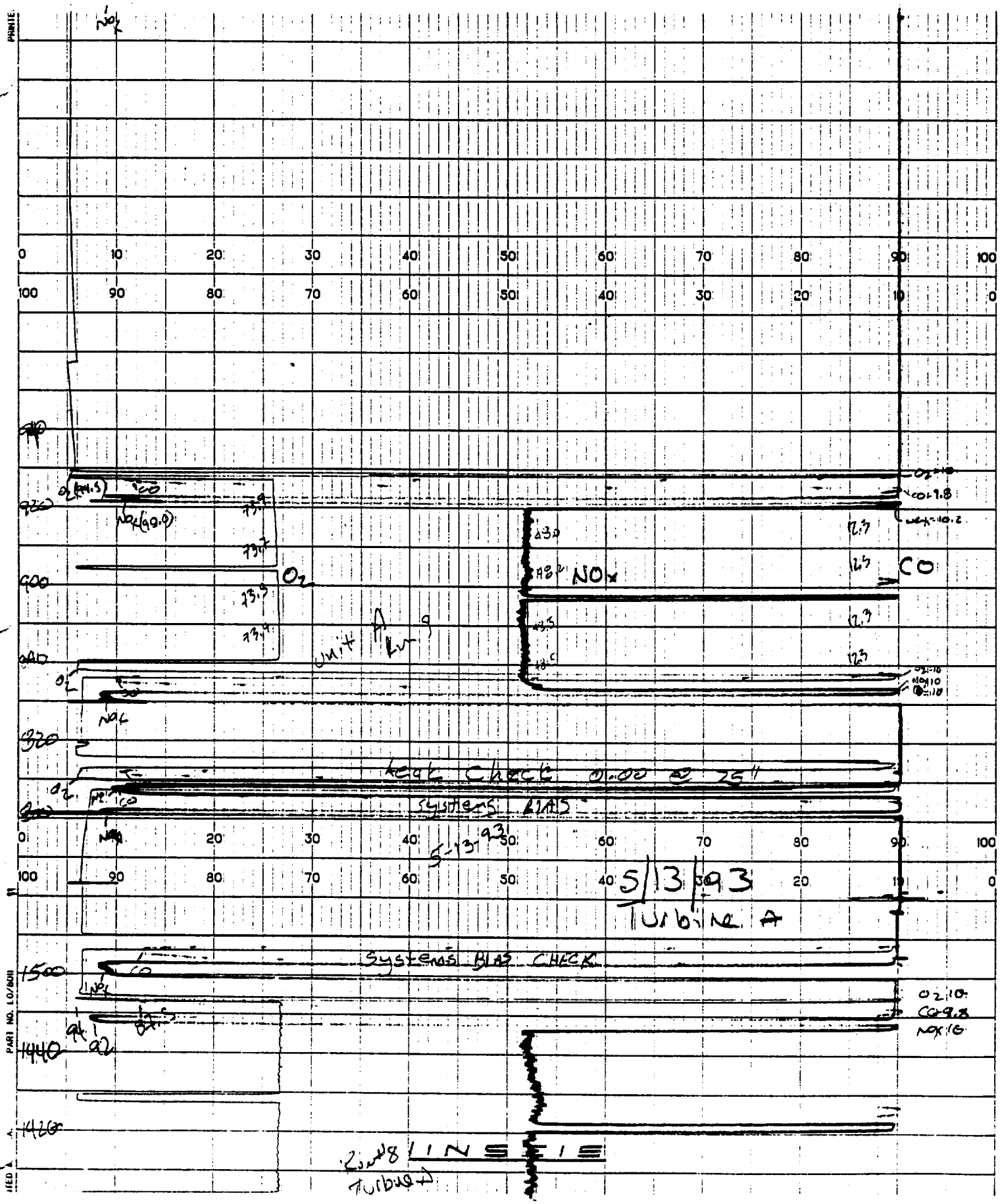


System Bias
5/12/93
LK CHK 0.00 @ 20
TRAILER
UNIT - Down
Run #3
O2
NOX
CO
Run #2
Turbine A
Port Change
Run #1
O2
NOX
CO
LK CHK 0.00 @ 25 IN
TURBINE A
100% GAS
PART NO. 10/80H
PRINTED IN U.S.A.

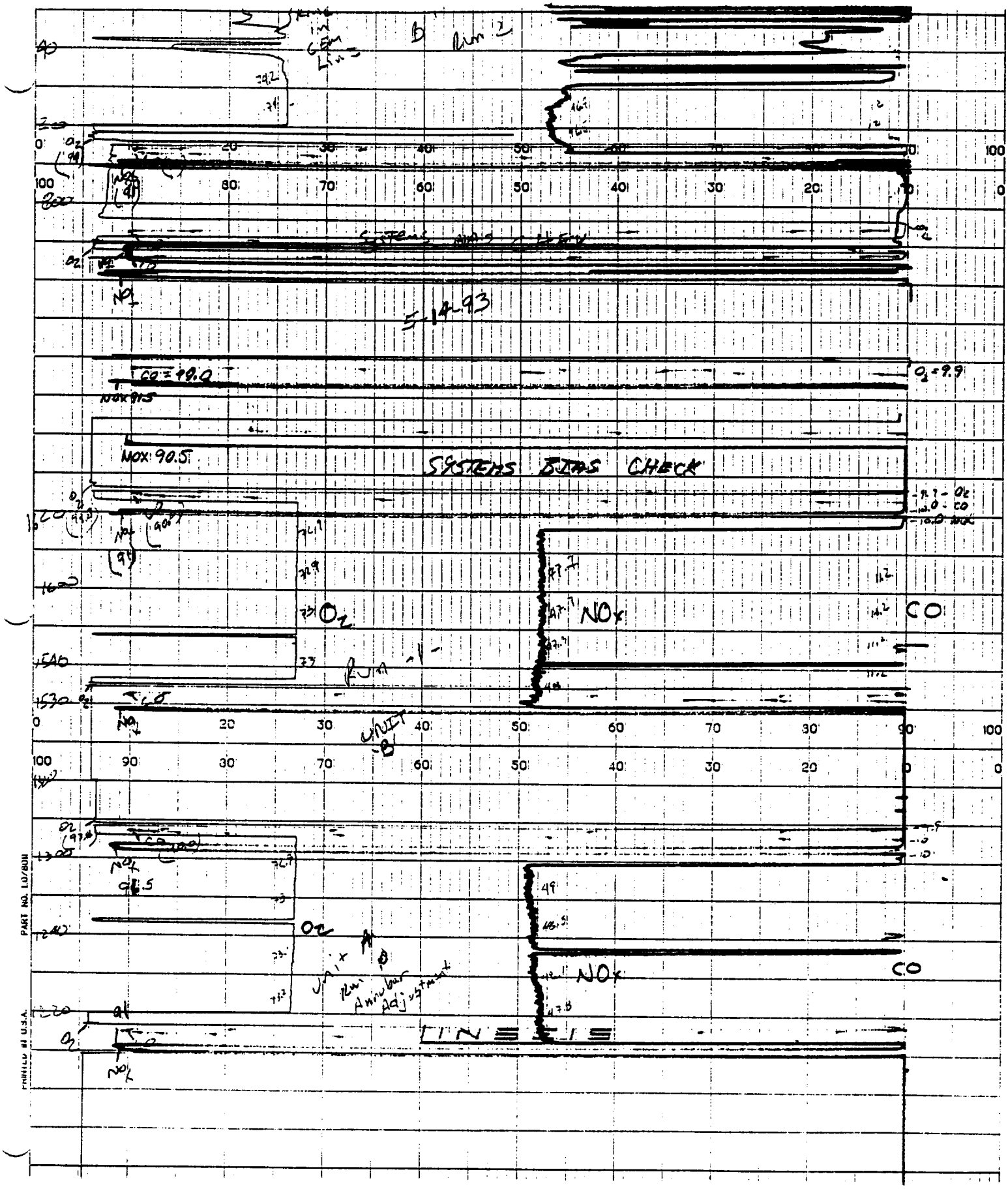

Turbine A
Run #5
Turbine A
Run #4
Turbine A
Run #3
Turbine A
System Bias
5/12/93
TRAILER
System Bias
UNIT - Down
Run #3
O2
NOX
CO



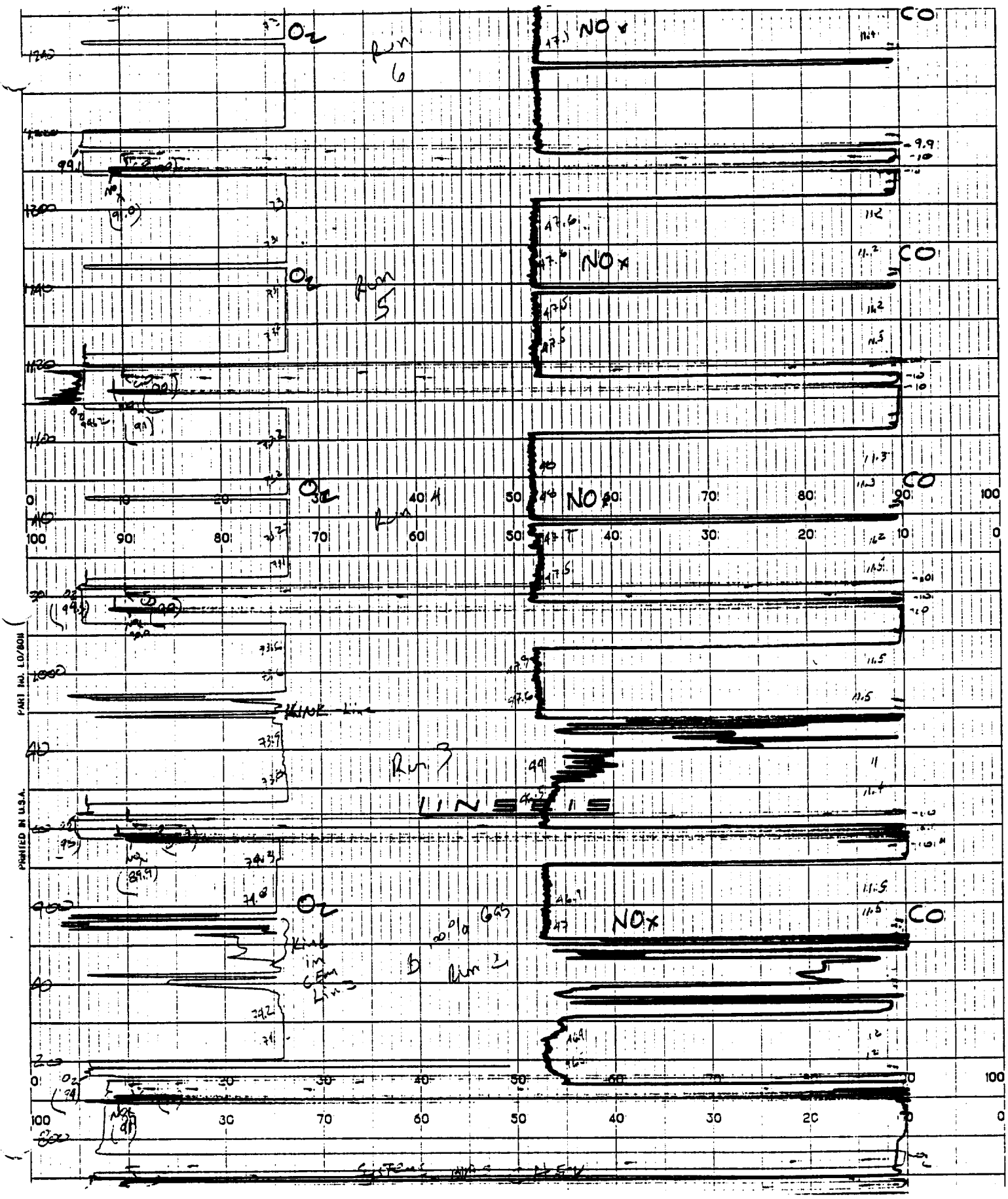
PART NO.
PRINTED IN U.S.A.
Run #8
Turbine A
Run #7
Turbine A
Turbine A
Run #6
Turbine A
Run #5
Turbine A
Run #4
NOX
CO

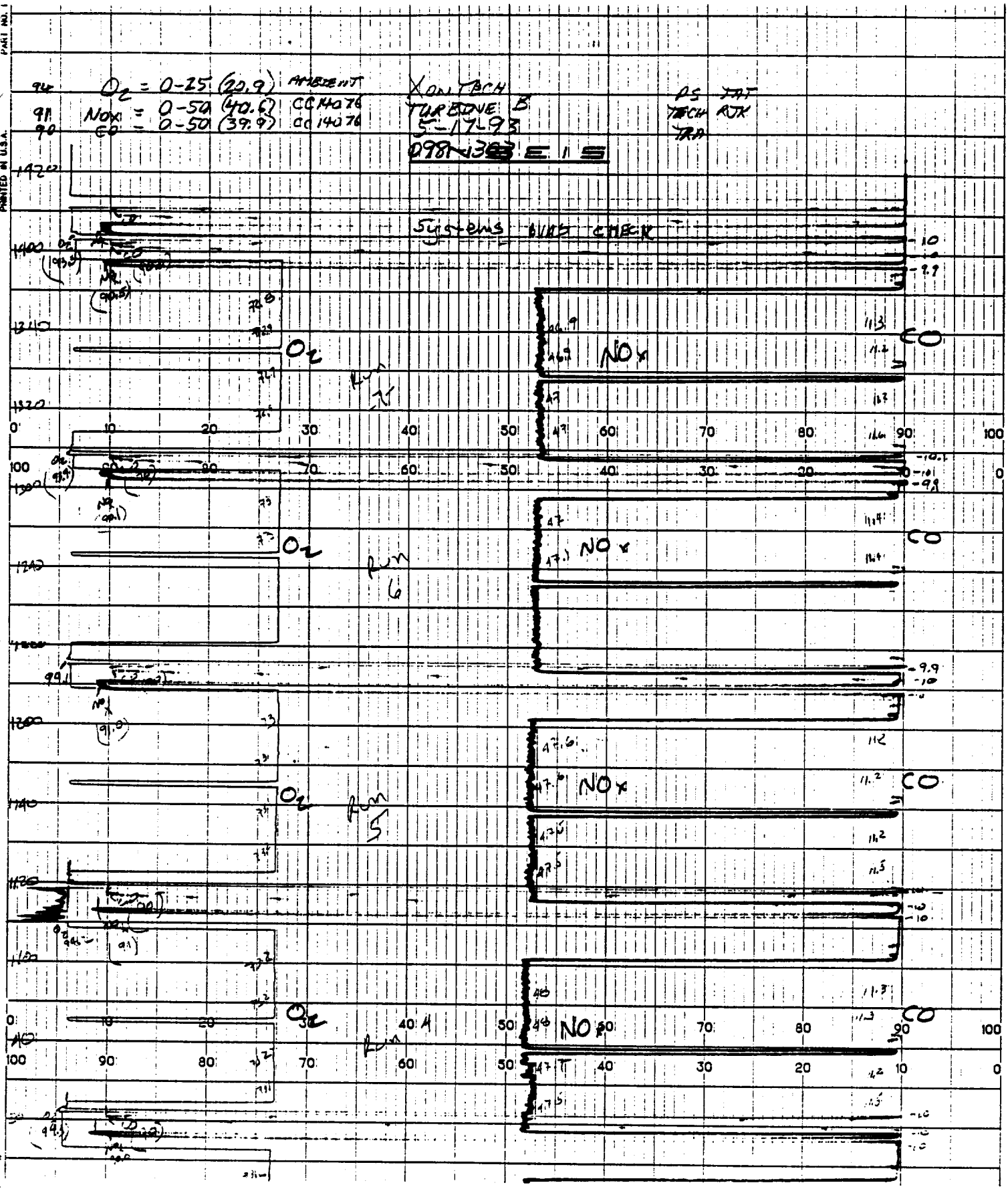


NOx
O2
CO
NOx
Unit A Run 9
Leak Check 0.00 @ 25"
Systems BIAS
5-13-93
5/13/93
Turbine A
Systems BIAS CHECK
O2 10
CO 9.8
NOx 10
Run 8
Turbine A

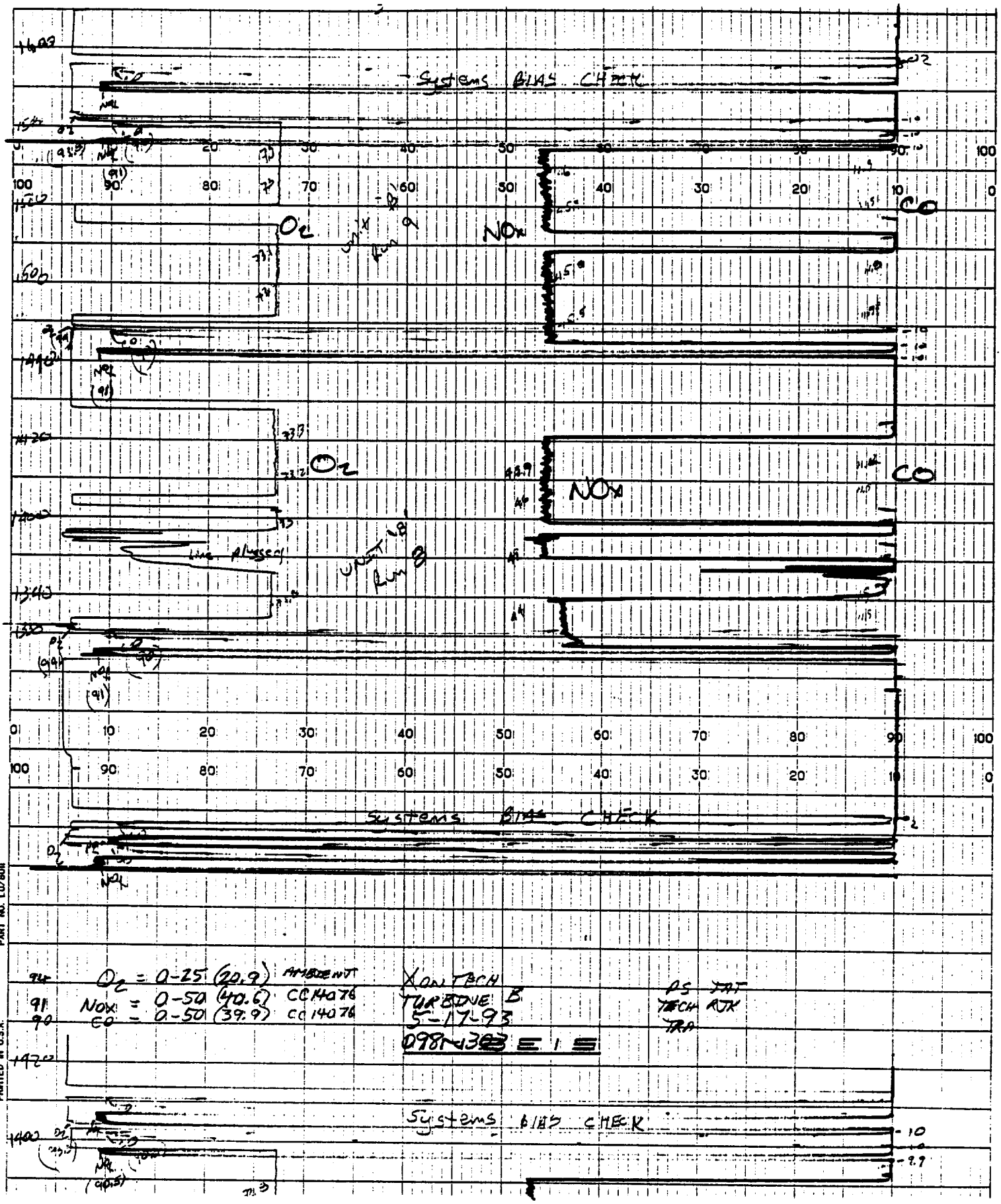


Run 2
5-14-93
CO = 99.0
NOx 91.5
NOx 90.5
SYSTEMS BIAS CHECK
O2
NOx
CO
Run -1-
UNIT -B
Unit A
Run Annubar Adjustment
LINE
PART NO. LO/80II
PRINTED IN U.S.A.

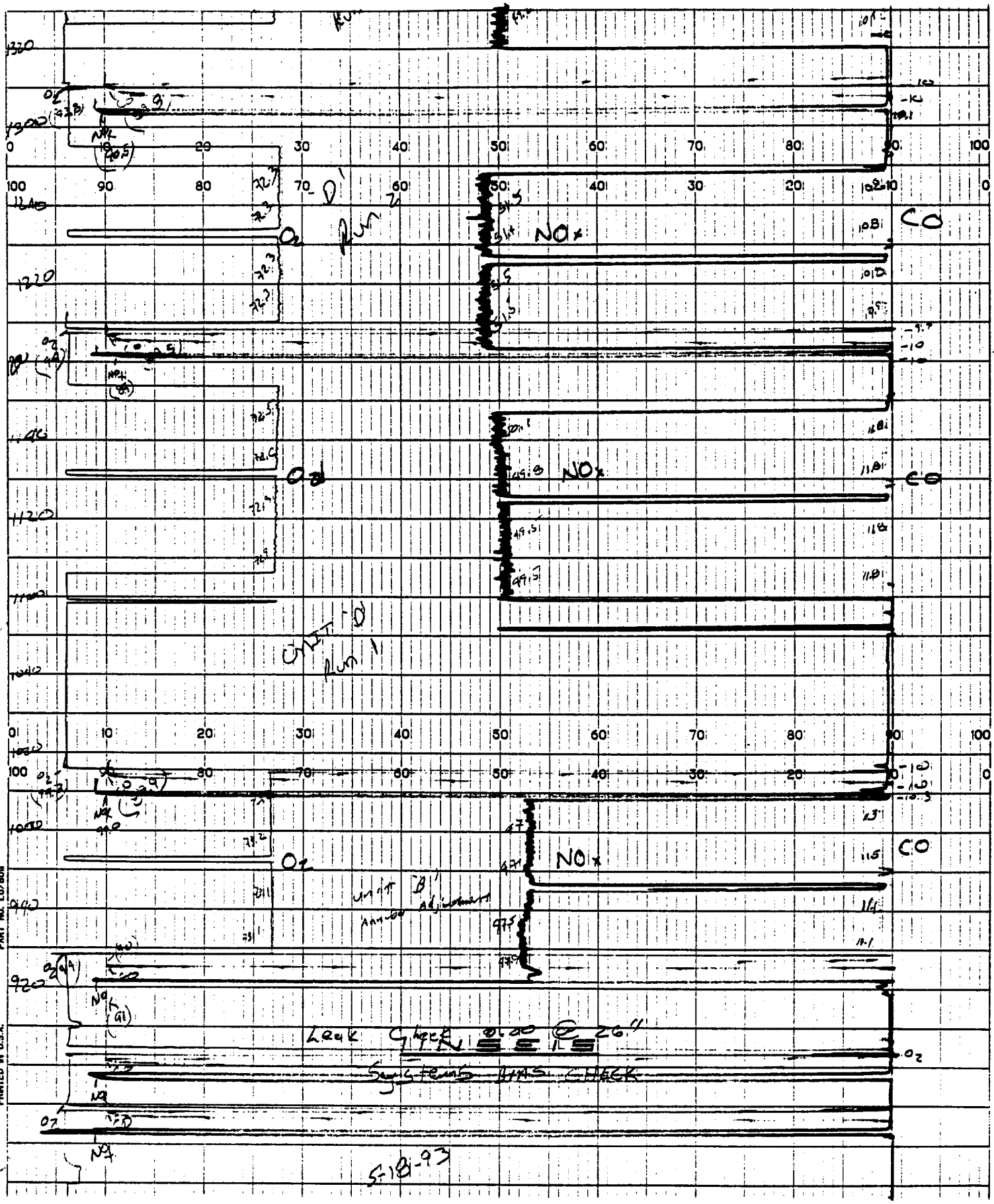

O2
NOx
CO
Run 6
Run 5
Run 4
Run 3
Run 2
KINK Line
LINSEIS
PART NO. LO/80II
PRINTED IN U.S.A.

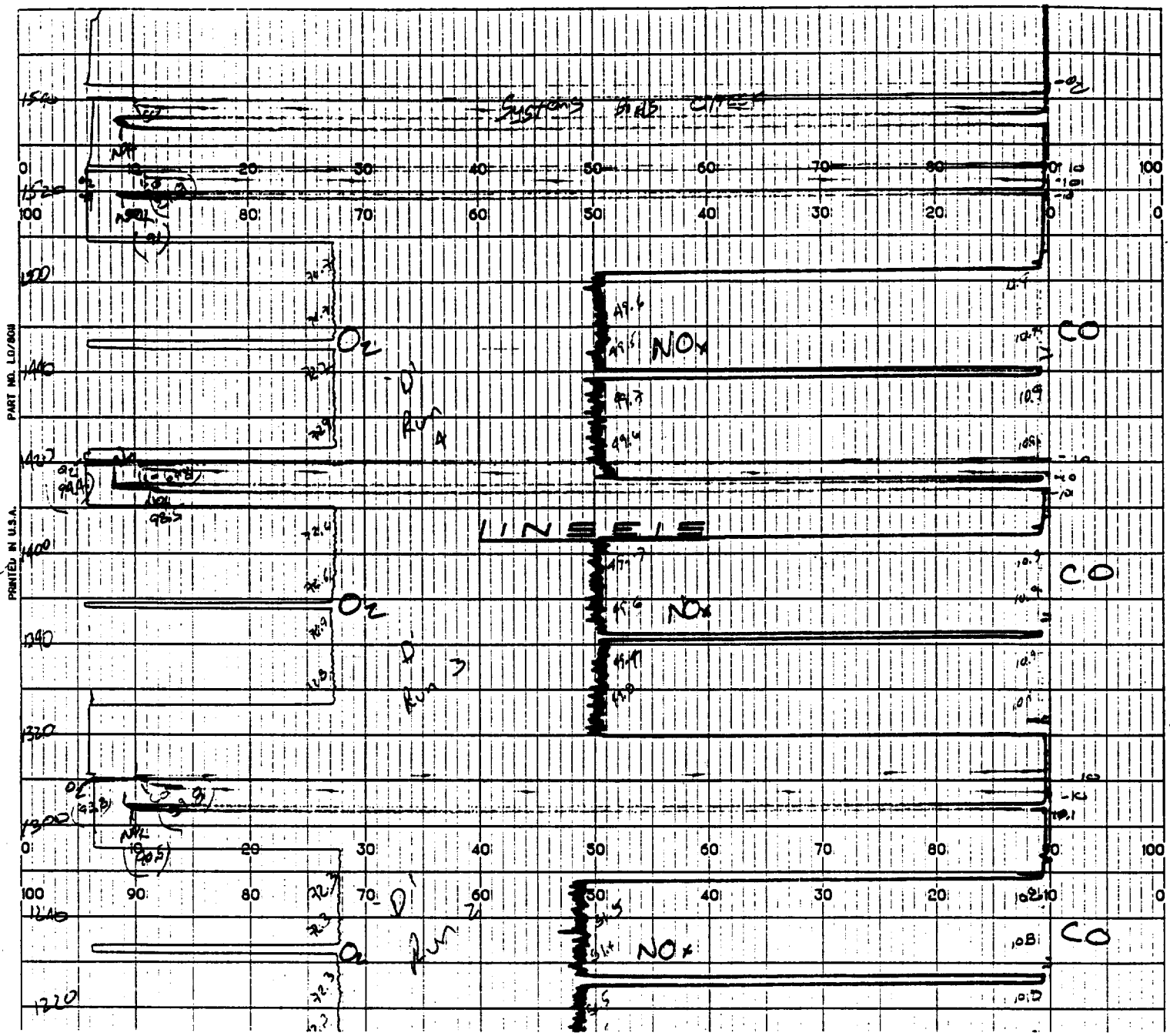


O2 = 0-25 (20.9) AMBIENT
NOx = 0-50 (40.6) CC14076
CO = 0-50 (39.9) CC14076
XONTECH
TURBINE B
5-17-93
PS TAT
TECH RJK
TRA
Systems BIAS CHECK
O2
NOx
CO
Run 7
Run 6
Run 5
Run 4

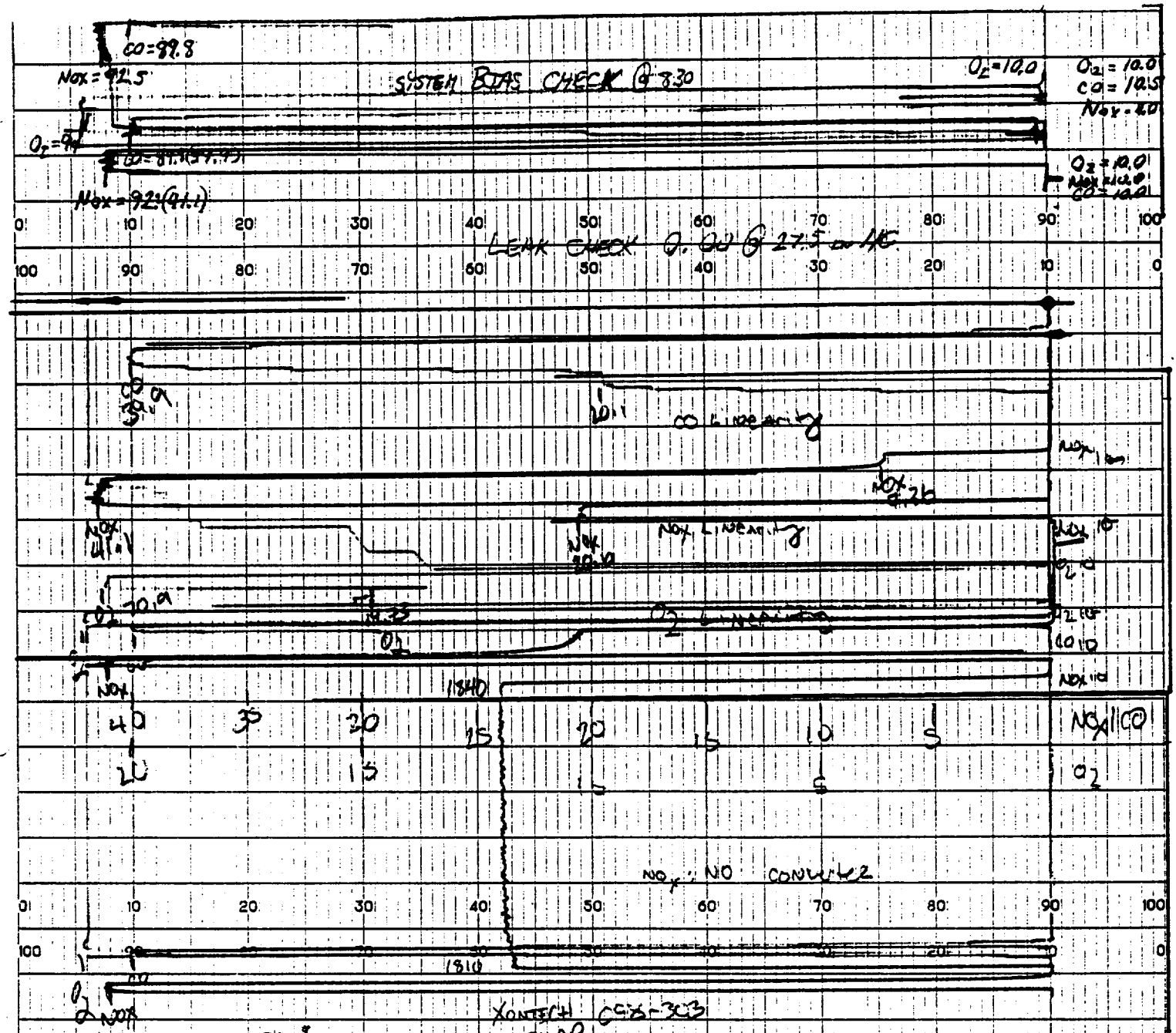


PRINTED IN U.S.A. PART NO. LO/80H


O2
NOx
CO
Run 2
Run 1
Unit 'B' Adjustment
Leak Check @ 26"
Systems Bias Check
5-18-93



PART NO. LO/8011
PRINTED IN U.S.A.



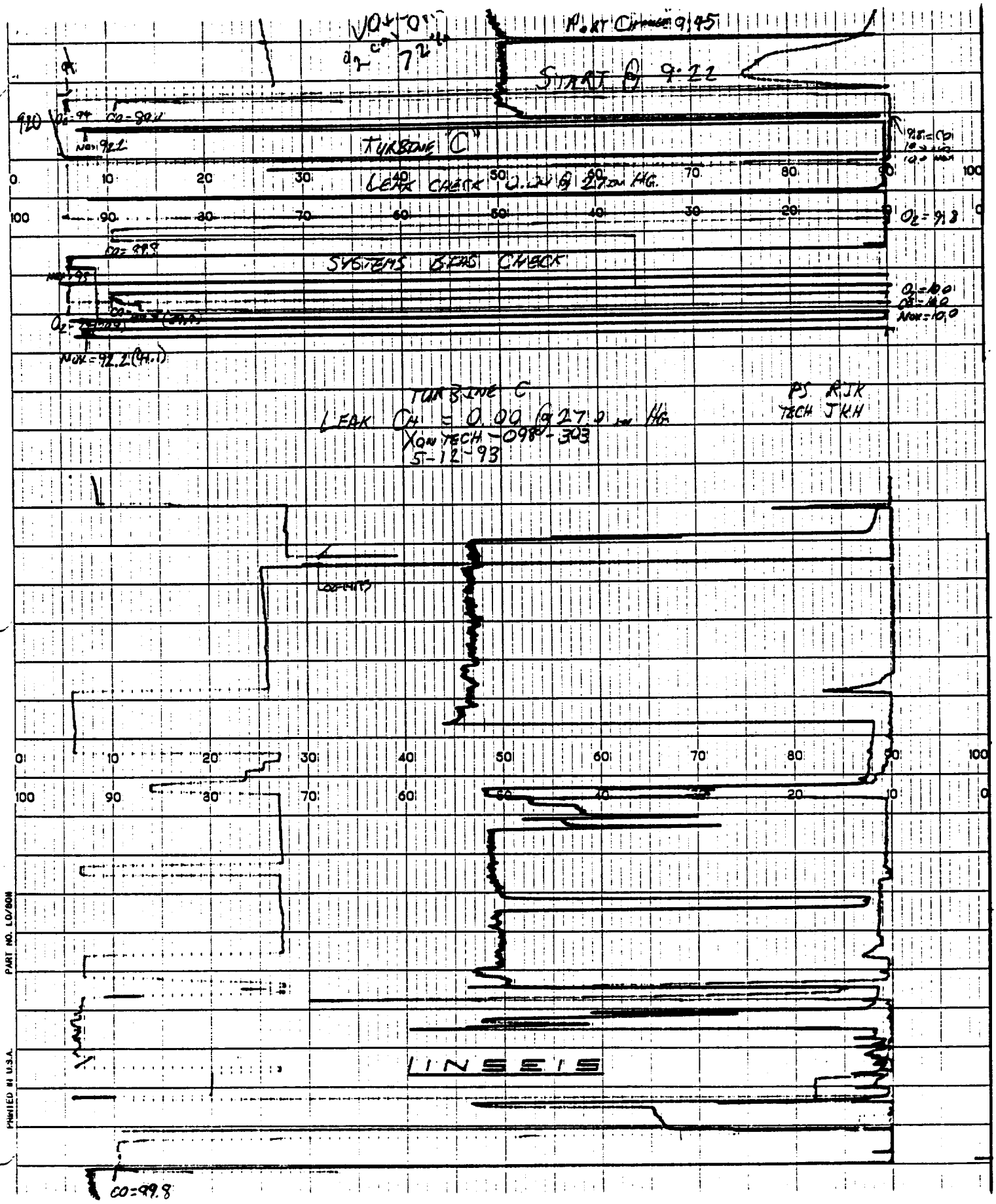
O2 0-25 (20.9) CYL.
NOx 0-50 (41.1) CC 2906
CO 0-50 (39.9) CC 2906
NOx (20.6) CC 69805
CO (20.1) CC 69805
O2 (14.73) 100987
NOx (7.36) CC 6545

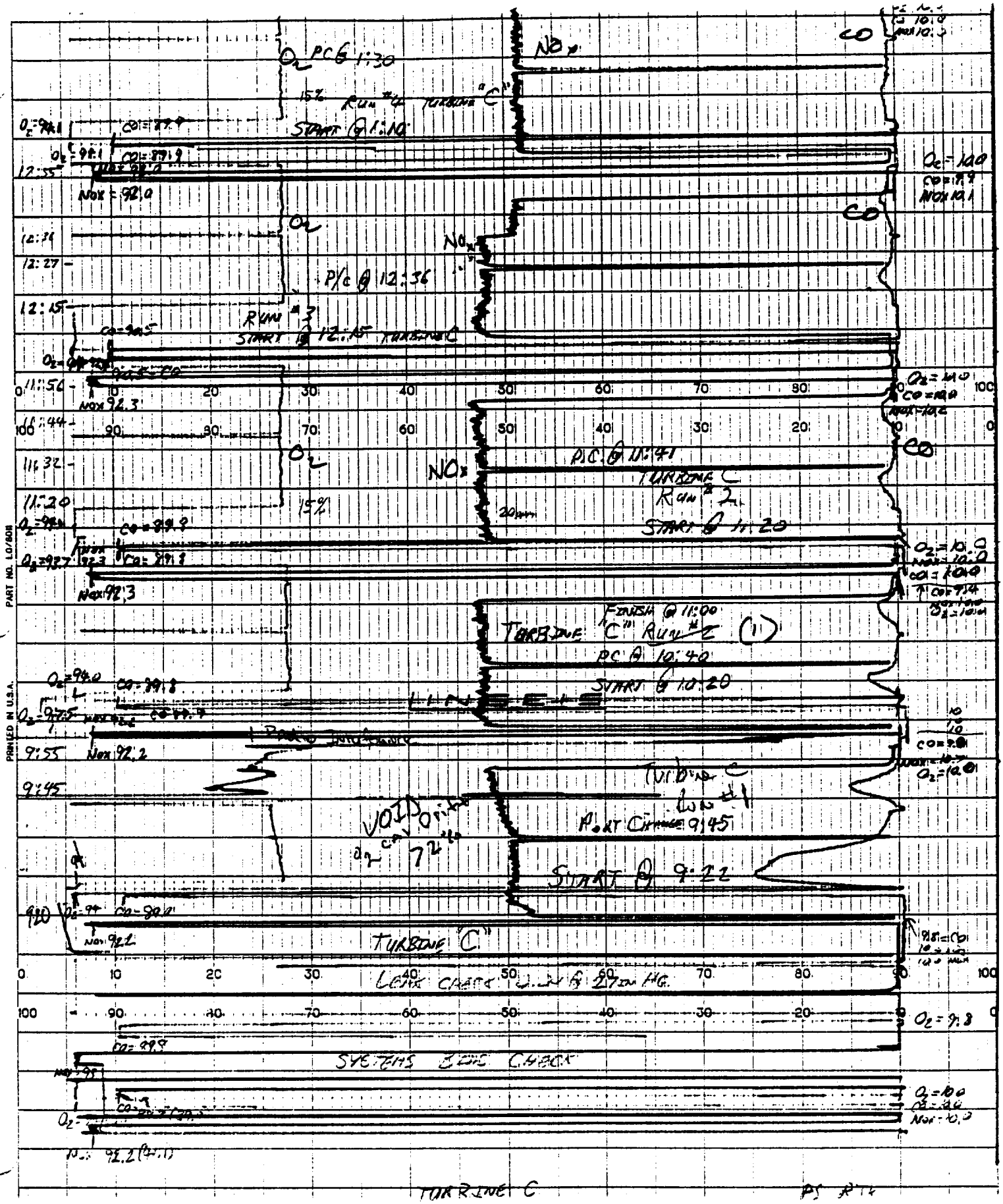
P.S. JAT/RJK
TECHS. SAD/JKH/DCT

Chart speed @ 5 cm/hr

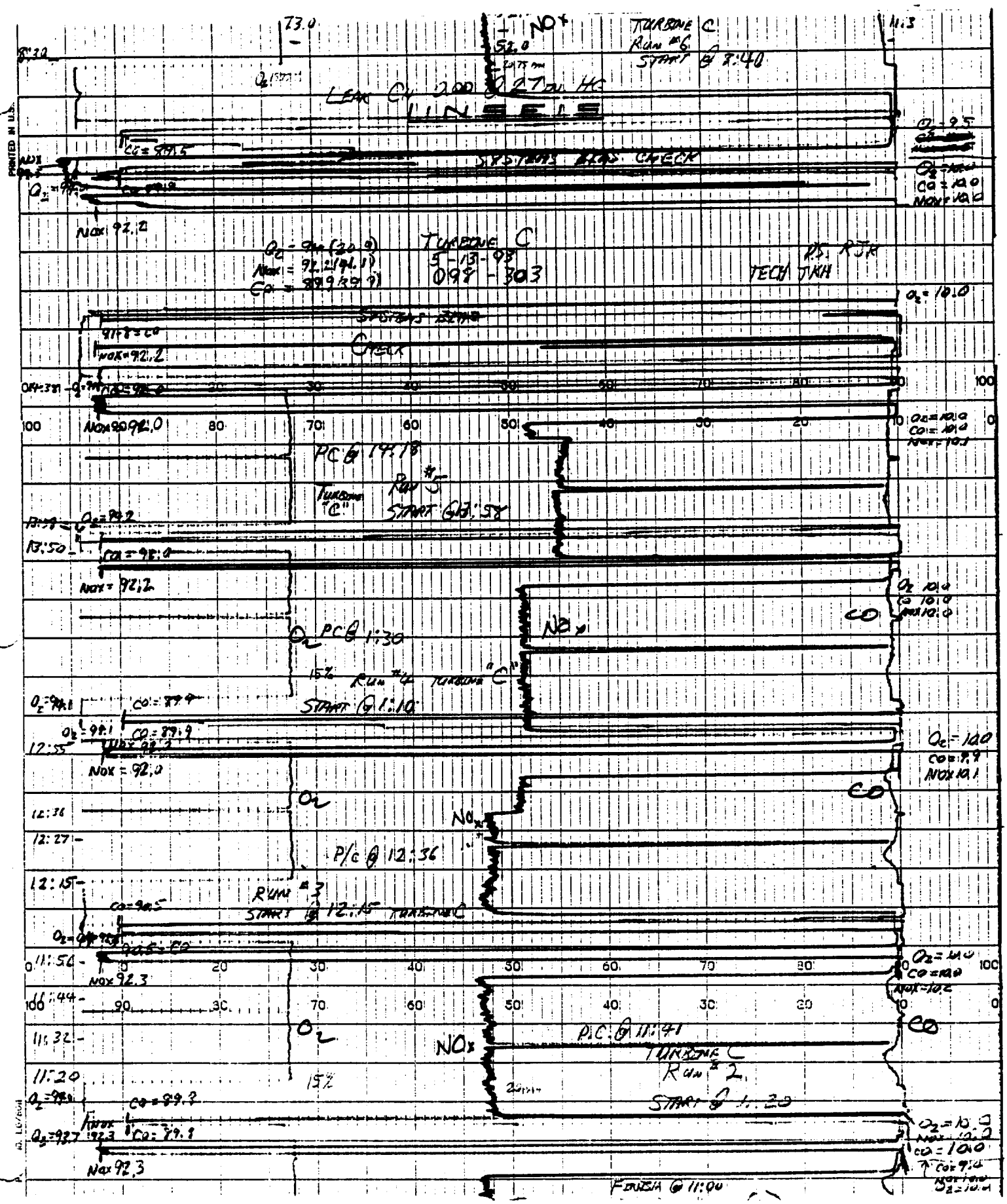
LINSEIS

PART NO. LO/80M
PRINTED IN U.S.A.


START @ 9:22
TURBINE "C"
LEAK CHECK 0.00 @ 27 in HG.
SYSTEMS BIAS CHECK
TURBINE C
LEAK CH = 0.00 @ 27.0 in HG
XON TECH - 098-303
5-12-93
PS RJK
TECH JKH
LINSEIS
CO=99.8
PART NO. LO/80N
PRINTED IN U.S.A.



Petro Chem Environmental Services, Inc.



TURBINE C
Run #6
START @ 8:40
LINSEIS
SYSTEMS BIAS CHECK
TURBINE C
5-13-93
098-303
TECH JKH
SYSTEMS BIAS
CHECK
PC @ 14:18
TURBINE "C"
Run #5
START @ 13:58
PC @ 1:30
15% Run #4 TURBINE "C"
START @ 1:10
P/C @ 12:36
RUN #3
START @ 12:15 TURBINE C
P.C. @ 11:41
TURBINE C
Run #2
START @ 11:20
FINISH @ 11:00
NOx
CO
O2

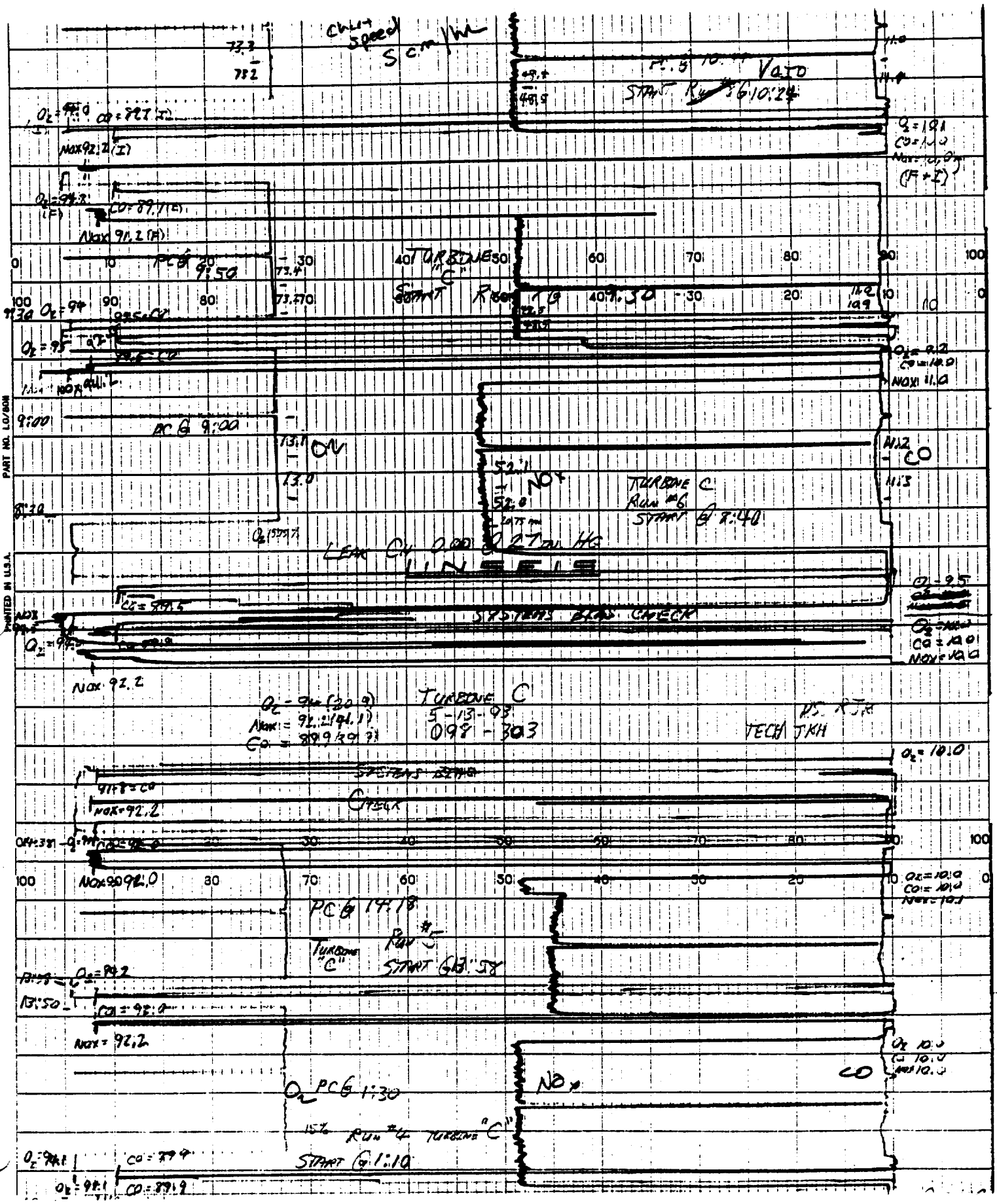
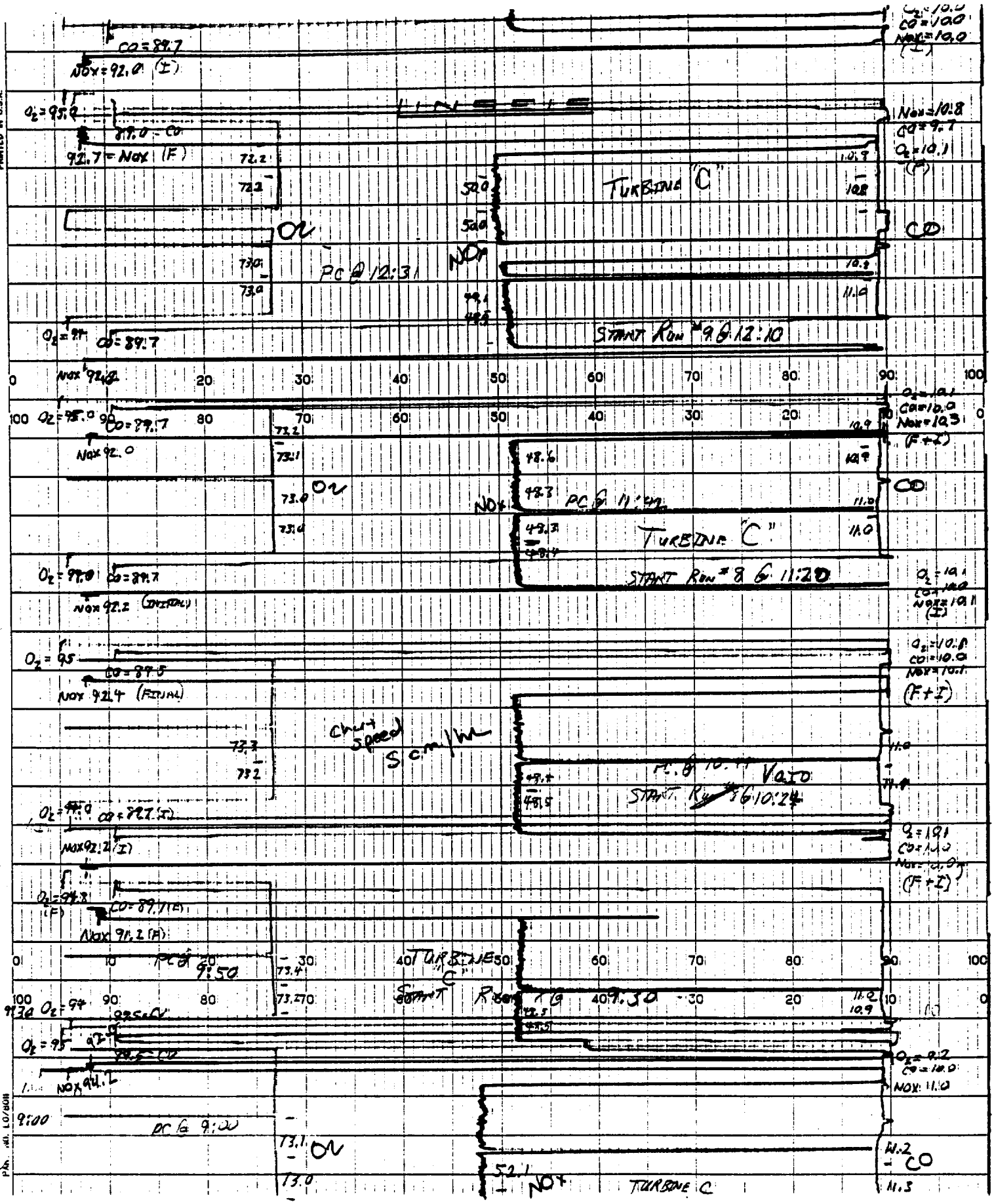
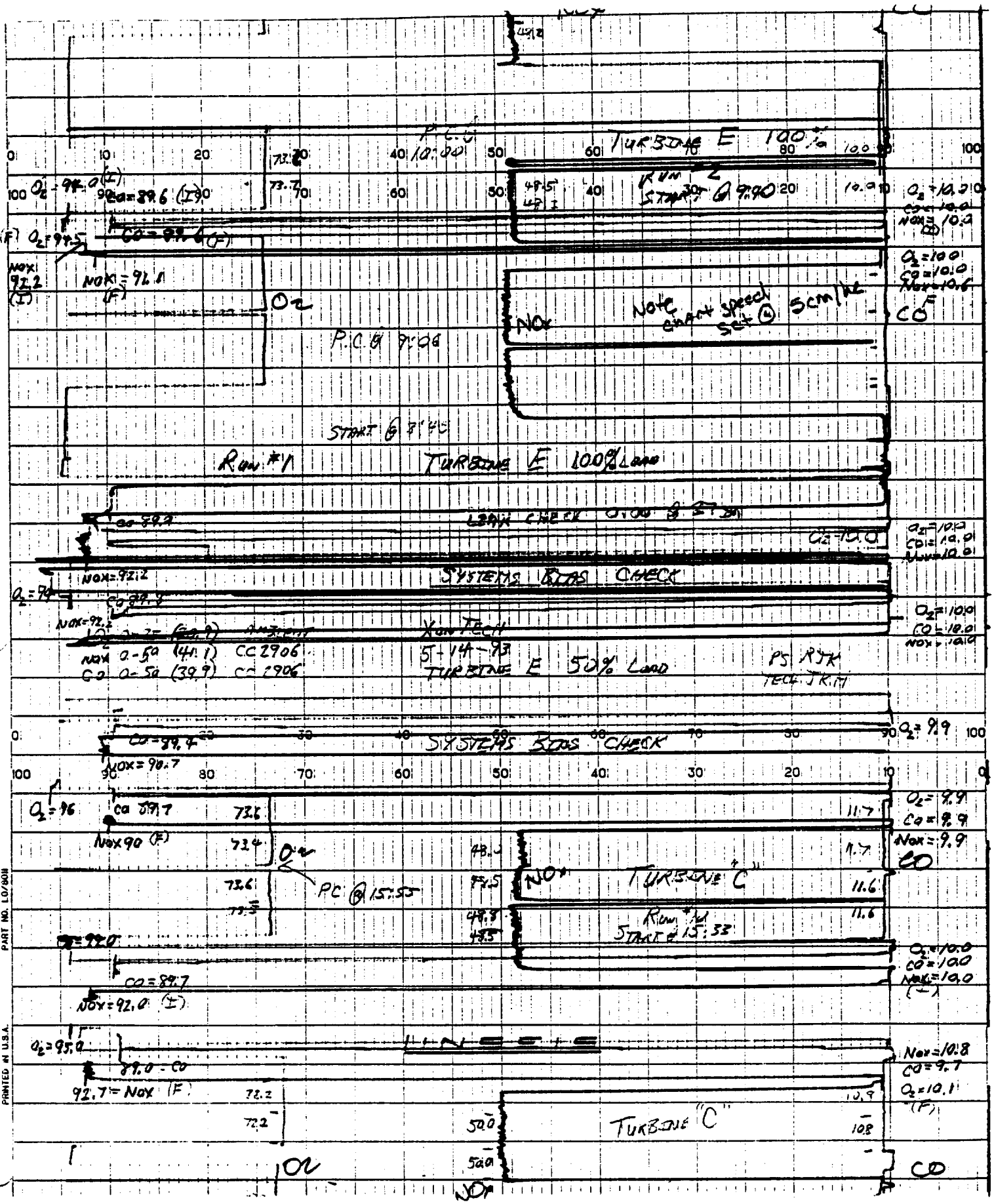
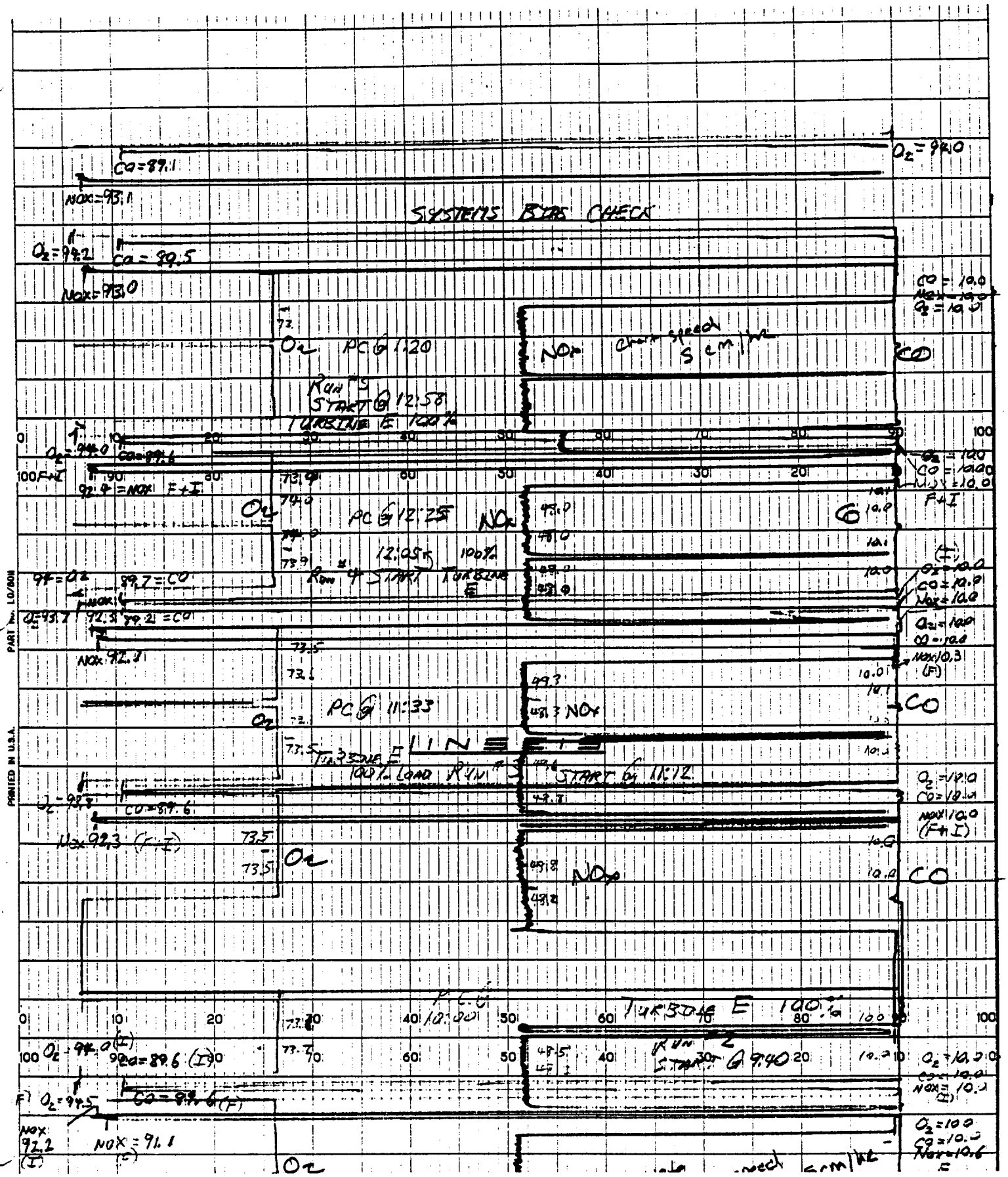


Chart speed
Vaio
TURBINE "C"
PC @ 9:50
PC @ 9:00
NOx
CO
TURBINE C
Run #6
START @ 8:40
LEAK CH 0.00 @ 27 in HG
SYSTEMS BLAS CHECK
TURBINE C
5-13-93
098-303
TECH JKH
SYSTEMS BLAS
CHECK
PC @ 14:18
Run #5
TURBINE "C"
START @ 13:58
PC @ 1:30
15% Run #4 TURBINE "C"
START @ 1:10



CO=89.7
NOx=92.0 (I)
O2=95.0
89.0 - CO
92.7 = NOx (F)
TURBINE "C"
PC @ 12:31
START RUN #9 @ 12:10
NOx=10.8
CO=9.7
O2=10.1
(F)
CO=89.7
NOx 92.0
O2=95.0
CO=89.7
NOx 92.0
PC @ 11:42
TURBINE "C"
START RUN #8 @ 11:20
NOx=10.3
(F+I)
O2=99.0
CO=89.7
NOx 92.2 (INITIAL)
O2=95
CO=89.5
NOx 92.4 (FINAL)
Chart speed 5 cm/hr
START RUN #6 @ 10:24
NOx 92.2 (I)
O2=94.8 (F)
CO=89.7 (F)
NOx 91.2 (F)
PC @ 9:50
TURBINE "C"
START RUN #7 @ 9:30
O2=94
O2=95
NOx 94.2
9:00
PC @ 9:00
NOx 11.0
TURBINE C


TURBINE E 100%
RUN #2
START @ 9:40
P.C.@ 10:00
Note chart speed set @ 5cm/hr
P.C.@ 9:06
START @ 8:40
RUN #1
TURBINE E 100% LOAD
LEAK CHECK
SYSTEMS BIAS CHECK
XON TECH
5-14-93
TURBINE E 50% LOAD
PS RJK
TECH JKM
SYSTEMS BIAS CHECK
PC @ 15:55
TURBINE "C"
RUN #1
START @ 15:33
TURBINE "C"
PART NO. LO/80II
PRINTED IN U.S.A.



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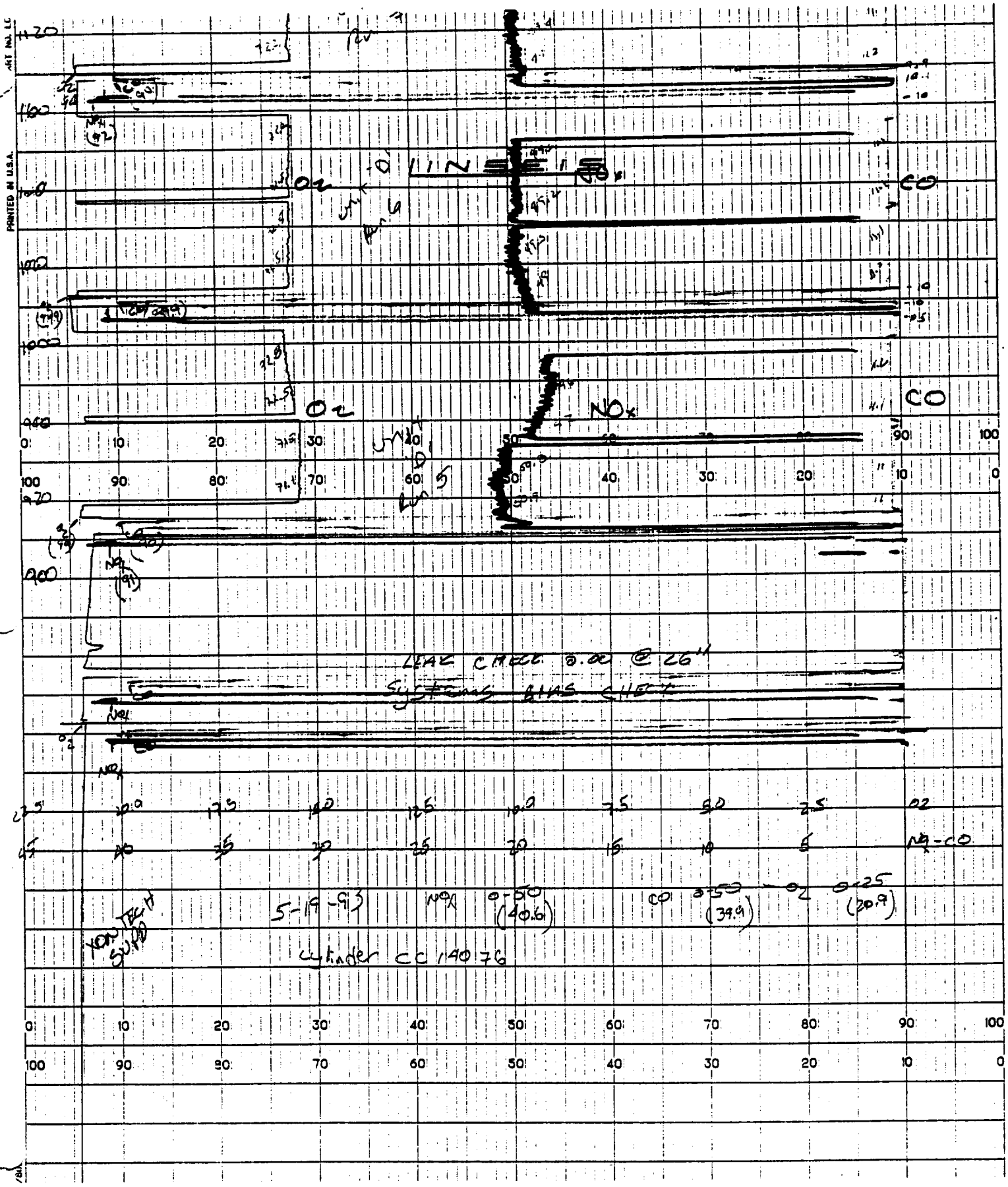
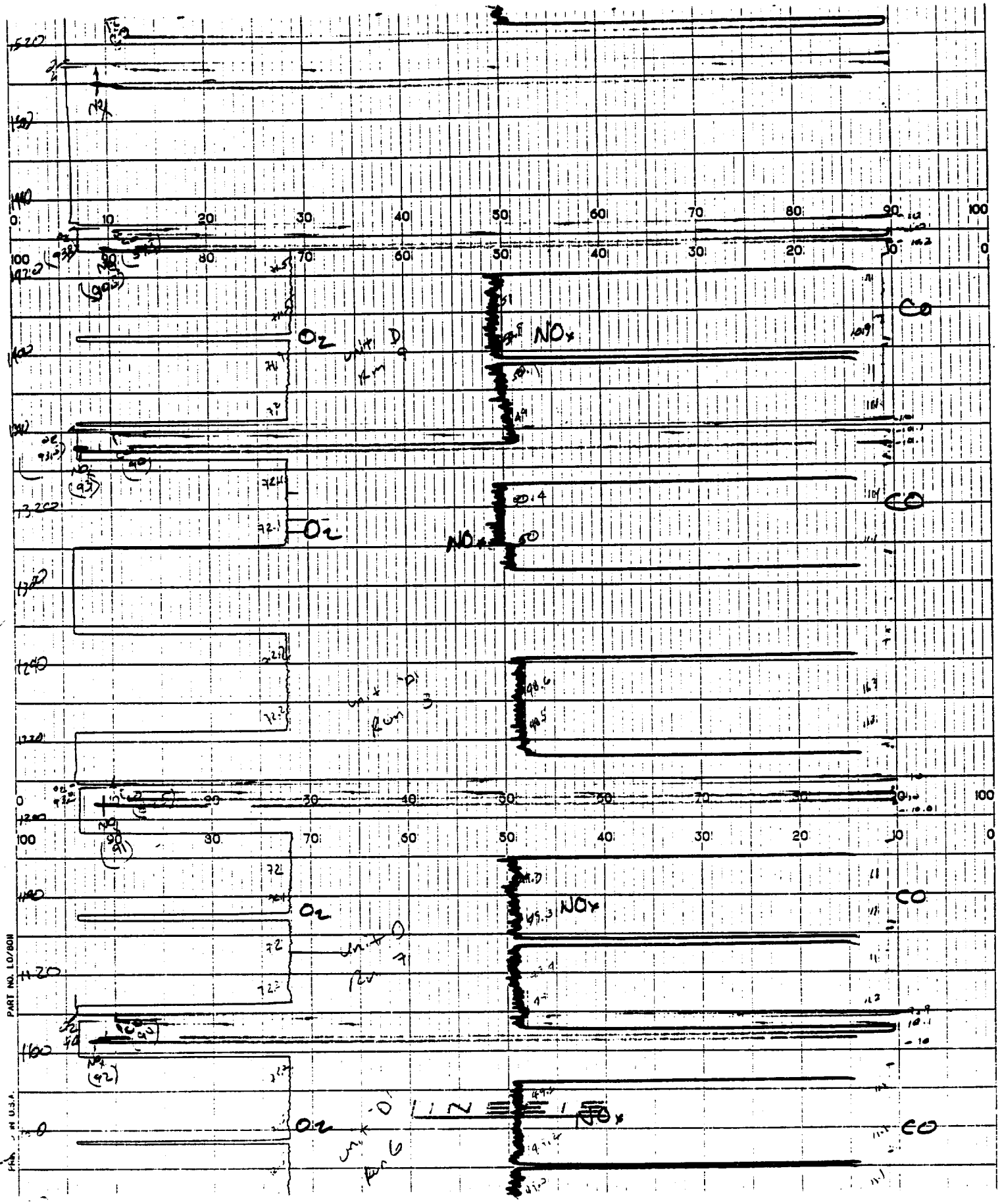
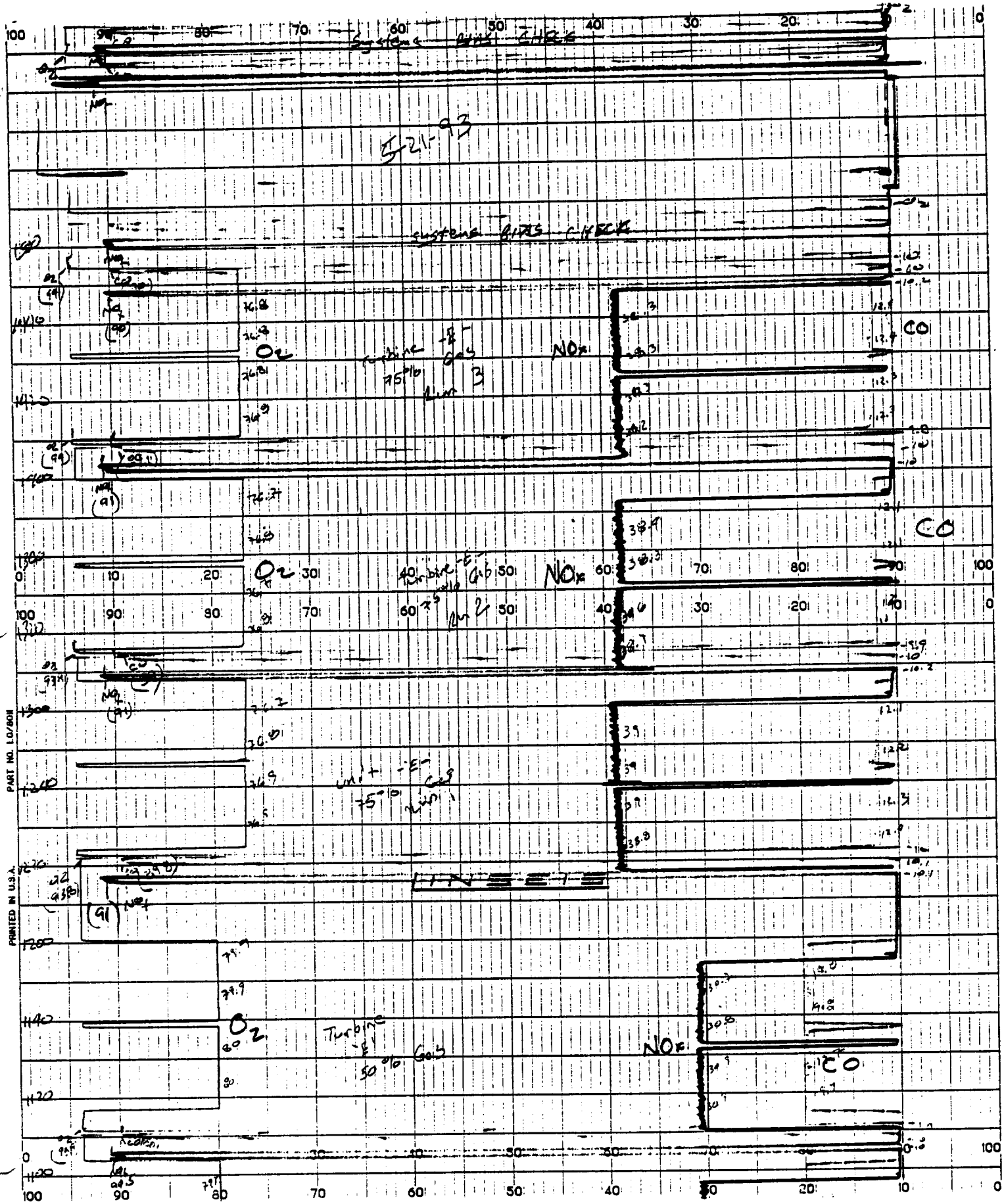

O2
CO
NOx
LEAK CHECK 0.00 @ 26"
SYSTEMS BIAS CHECK
5-19-93
NOx 0-50 (40.6)
CO 0-50 (39.9)
O2 0-25 (20.9)
cylinder CC 140776


O2
NOx
CO
O2
NOx
CO
O2
NOx
CO
O2
NOx
CO



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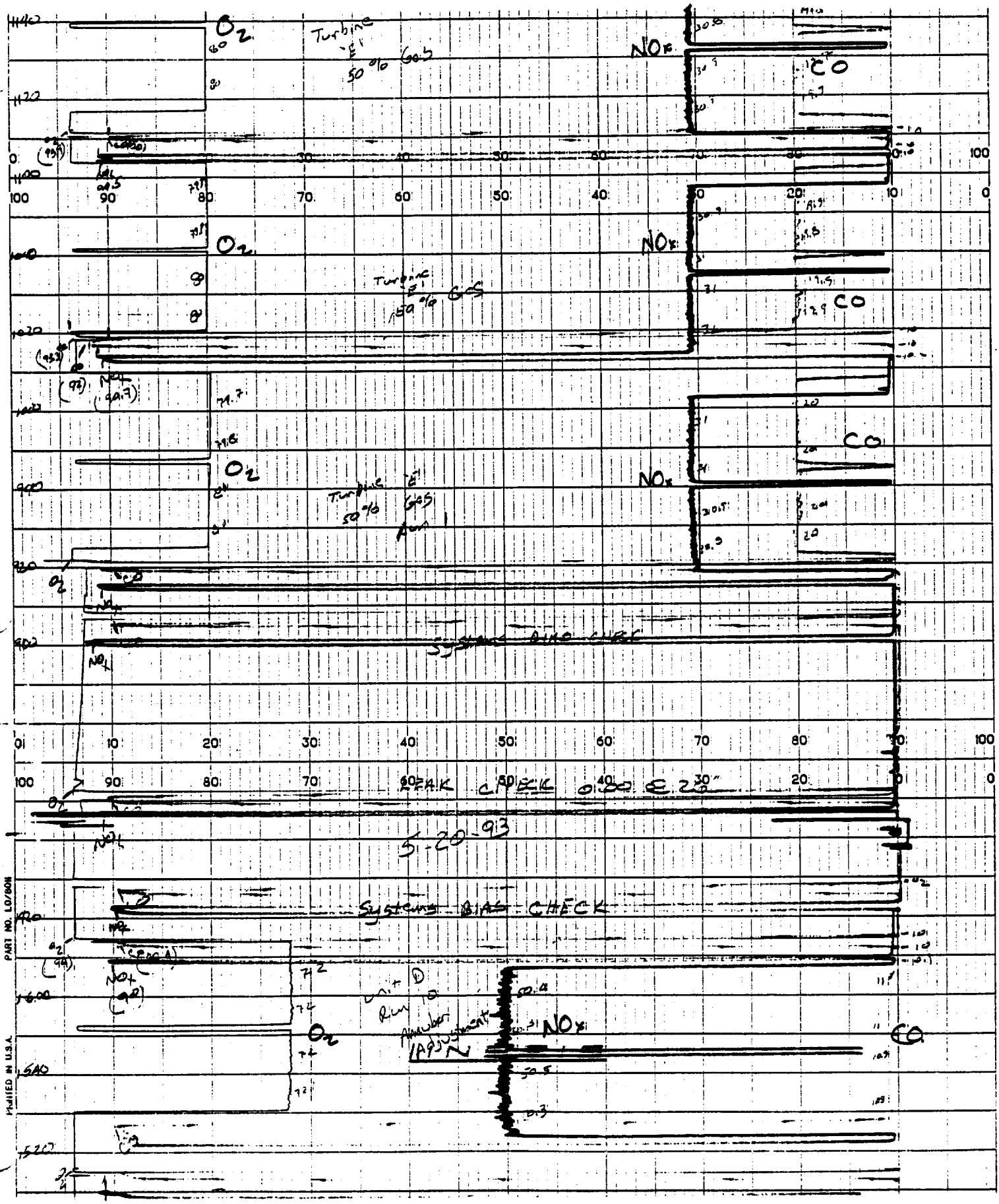
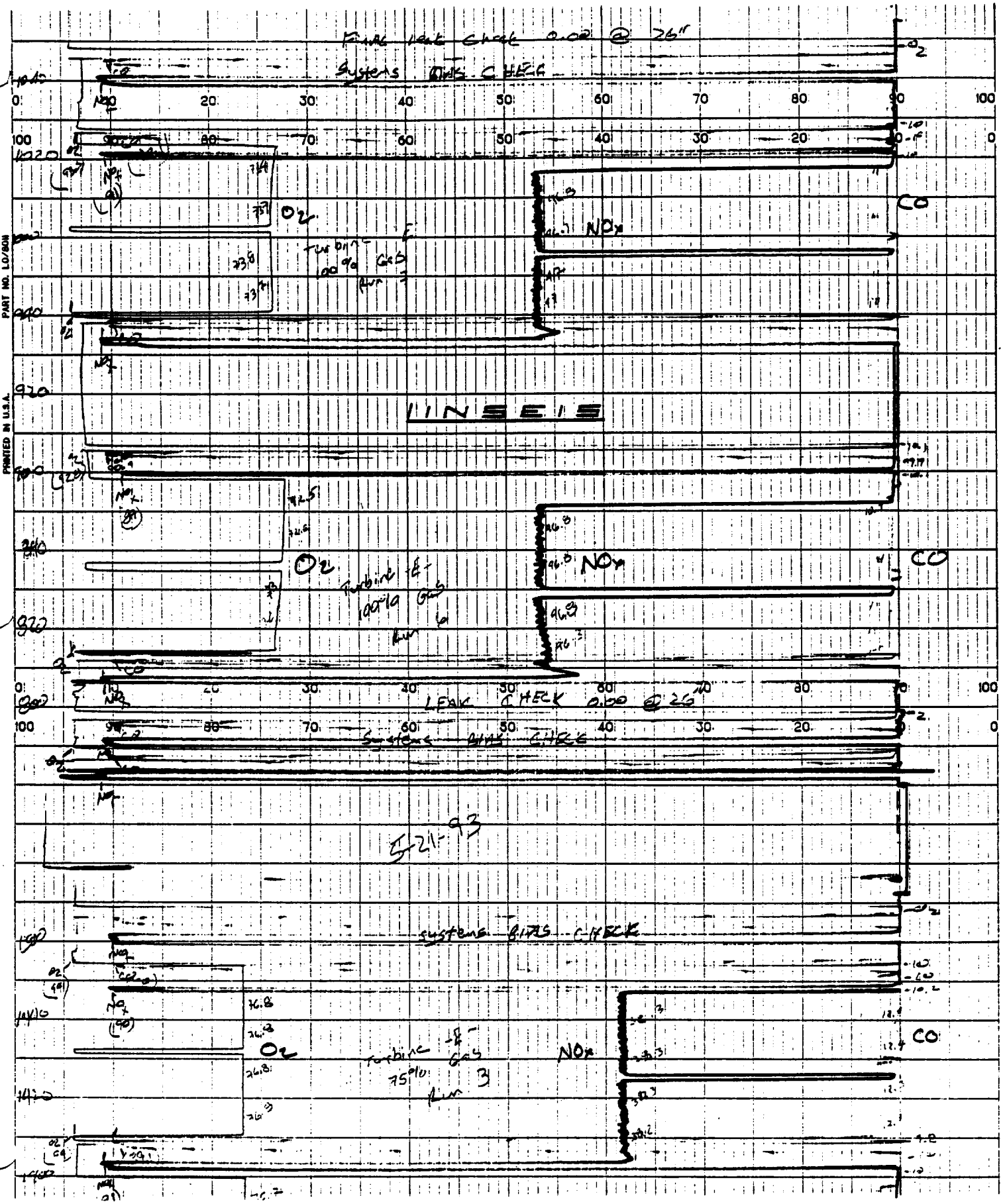

O2
Turbine 'E' 50% Gas
NOx
CO
Turbine 'E' 50% Gas
Turbine 'E' 50% Gas Run 1
Systems Bias Check
Leak Check 0.80 & 20"
5-20-93
Systems Bias Check
Unit D Run 10 Amber Adjustment
PART NO. LO/80H
PRINTED IN U.S.A.


Final leak check 0.00 @ 26"
Systems Bias Check
O2
NOx
CO
Turbine -E- 100% Gas Run 3
LINSEIS
Turbine -E- 100% Gas Run 6
LEAK CHECK 0.00 @ 26"
Systems Bias Check
5-21-93
Systems Bias Check
Turbine -E- 75% Gas Run 3
PART NO. LO/80H
PRINTED IN U.S.A.