Calculations

Equation 1a - Dry Molecular Weight:

$$MWd = 0.440(\%CO2) + 0.320(\%O2) + 0.280(\%N2 + \%CO)$$

Equation 1b - Wet Molecular Weight:

$$MWw = MWd(1-Bws) + 18.0(Bws)$$

Equation 2a - Meter Volume at Standard Conditions:

$$Vm(std) = VmY \frac{(Tstd)(Pbar + \Delta H/13.6)}{(Tm)(Pstd)}$$

Equation 2b - Volume of Water Vapor Condensed:

$$Vwc(std) = K1(Wf-Wi)$$

Equation 2c - Moisture Content:

$$Bws = Vwc(std)/(Vwc(std) + Vm(std))$$

Equation 3a - Velocity at a Traverse Point:

$$Vd = KpCp(Ts\Delta P/PsMWw)^{1/2}$$

Equation 3b - Volumetric Flow Rate (Actual Basis):

$$Q = Vd(avg)Ad\,60$$

Equation 3c - Volumetric Flow Rate (Standard Basis):

$$Qstd = Q \frac{(Tstd)(Ps)}{(Ts)(Pstd)}$$

Equation 3d - Volumetric Flow Rate (Standard Dry Basis):

$$Qstd(dry) = Qstd(1-Bws)$$

Equation 4a - Isokinetic Sampling Nozzle Inside Diameter:

$$D_n = \left[\frac{(0.0358)QmPm}{TmCp(1-Bws)} \left[\frac{(TsMWw)}{(Ps\Delta P)}\right]^{0.5}\right]^{0.5}$$

Equation 4b - Isokinetic Sampling "X" Factor:

$$X = 846.72 \times Dn^4 \times \Delta H@i \times Cp^2 \times (1-Bws)^2 \times \frac{(MWd \times Ps)}{(MWw \times Pm)}$$

Equation 4c - Orifice Pressure Drop at Isokinetic Sampling Rate:

$$\Delta H = X \times \Delta P \times \frac{(Tm)}{(Ts)}$$

Equation 4d - Sample Percentage of Isokinetic:

$$\%ISO = \frac{(TsavgVmstdPstd100)}{(TstdVdavg\theta AnPs60(1-Bws))}$$

Equation 4e - Concentration of Mercury Species (μg/dscm):

$$C = \frac{(Ms - Mb)}{(Vmstd \times 0.0283)}$$

Equation 4f - Mercury Species Emission Rate (gram/hr):

$$ER = \frac{(Ms - Mb)}{Vmstd} \times Qstd(dry) \times 60$$

Symbol Identification

An	=	Nozzle area (ft^2)
Ad	=	Area of duct (ft^2)
Bws	=	Water vapor in gas stream, proportional by volume
C	=	Mercury species concentration (μg /dscm)
Cp	=	Pitot tube calibration factor (unitless)
Dn	=	Inside diameter of sample nozzle (inches)
ER	=	Mercury species emission rate (gram/hr)
K1	=	Constant (0.04715 ft^3/g)
Kp	=	Constant (85.49)
Mb	=	Mass of mercury species in blank (μg - as defined in Section 15.1 of the Ontario-Hydro Method)
Ms	=	Mass of mercury species in sample (μg)
MWd	=	Duct gas dry molecular weight (lb/lb-mole)
MWw	=	Duct gas wet molecular weight (lb/lb-mole)
Pbar	=	Barometric pressure ("Hg)
Pm	=	Meter pressure (assumed to be 30"Hg)
Ps	=	Absolute stack pressure ("Hg)
Pstd	=	Standard pressure (29.92"Hg)
Q	=	Duct volumetric flow rate (actual cfm)
Qm	=	Assumed sampling rate (cfm)

Symbol Identification (continued)

Qstd	=	Duct volumetric flow rate (scfm)
Qstd(dry)	=	Duct volumetric flow rate (dscfm)
Tm	=	Absolute temperature at meter (°R)
Ts	=	Absolute temperature of duct gas (°R)
Tstd	=	Standard temperature (528°R)
Vd	=	Duct velocity at a traverse point (ft/s)
Vm	=	Dry test meter volume (cf)
Vm(std)	=	Dry test meter volume at standard conditions (scf)
Vwc(std)	=	Volume of water vapor condensed at standard conditions (scf)
Wf	=	Final weight of impinger/absorbertrain (g)
Wi	=	Initial weight of impinger/absorbertrain (g)
X	=	Isokinetic orifice pressure drop sampling coefficient
Y	=	Dry test meter calibration factor (unitless)
%CO2	=	Duct gas carbon dioxide content (%volume)
%CO	=	Duct gas carbon monoxide content (%volume)
%ISO	=	Sample percentage of isokinetic (must be 100±10%)
%N2	=	Duct gas nitrogen content (%volume)
%O2	=	Duct gas oxygen content (%volume)
θ	=	Total sample time (minutes)
ΔH	=	Pressure drop across orifice ("H2O)
$\Delta H@i$	=	Orifice calibration coefficient ("H2O)
ΔP	=	Pressure drop across pitot tube ("H2O)

Appendix B

Raw Field Data Sheets

RAUN INTERTEC

Field Data Sheet
EPA Methods 1-4
Project Number:_____

Facility: Basin AVS

ample Location: Inlet

Run #: Initial H2O train

ate:

Ambient T (°F):

bar ("Hg): 28.87

Pstatic ("H2O):

Ps ("H2O):

Meter Box #:

ΔH@i:

Gamma:

Pitot #:

Cp:

POINT	DUCT DATA		METER DATA			DRY TEST METER VOL
	Temp	ΔP	Tempi	Tempo	ΔH	
9.18			79	79	2.0	608.265
.23			79	78	2.0	
9.28			80	78	2.0	
.33			81	78	2.0	
9.38			83	78	2.0	
			85	79	2.0	
						631.275

Impinger#	Tare Weight	Final Weight	Net Weight
1	748.1	689.2	
2	657.5	647.8	
3	457.1	455.0	
4	702.0	698.6	

Total Net weight: 8.14

Orsat Analysis

	CO2	O2	N2
RUN 1			
RUN 2			
RUN 3			
AVERAG			
AIR			

BRAUN INTERTEC

Field Data Sheet
EPA Methods 1-4
Project Number:_____

Facility:	AVS	Pstatic ("H2O):	-14.5"
Sample Location:	Scrubber Inlet	Ps ("H2O):	
Run #:	Initials	Meter Box #:	21 231
Date:		ΔH@i:	1.829
Ambient T (°F):		Gamma:	1.003
Pbar ("Hg):		Pitot #:	0.84
		Cp:	

POINT	DUCT DATA		METER DATA			DRY TEST METER VOL
	Temp	ΔP	Tempi	Tempo	ΔH	
	296	1.00		301	1.10	
	297	1.00		301	0.94	
	297	0.85		299	0.88	
	297	0.88		298	0.92	
	297	0.90		297	0.87	
	296	0.78		295	0.71	
	295	0.57		294	0.47	
	305 ~~294~~	0.71				
	305	1.10				
	305	1.25				
	304	1.25				
	303	1.15				
	302	1.05				
	300	0.87				
	308	0.44				
	309	0.54				
	308	0.72				
	306	0.79				
	304	0.82				

Impinger#	Tare Weight	Final Weight	Net Weight
1			
2			
3			
4			
Total Net weight:			

Orsat Analysis

	CO2	O2	N2
RUN 1			
RUN 2			
RUN 3			
AVERAG			
AIR			

0.178
0.230

PARTICULATE FIELD DATA
PROJECT NUMBER: CMXX - 99 - 0304

Plant: Basin Electric AVS
Sample Location: Inlet
Run #: #1
Date: 7-13-99
Ambient Temp.(oF):
Pbar ("Hg): 28.87
Pstatic ("H2O): -14.5
Pitot leak check o.k.
Pre-test Leak Rate: 0.0029 15" 8 mm/pt

Bws (assumed): 0.14
MWwet (assumed): 28.87
Ps ("Hg): 27.80
Probe Material: Teflon
Probe Heater Setting: 200
Filter Heater Setting: N/A
Nozzle #: #8
Post-test Leak Rate: 0.0063 11"

Meter Box #: 81231
ΔH@i: 1.829
Y: 1.003
Pitot #: Hg-1
Cp: 0.84
Nozzle Material: Teflon Coated SS
Nozzle Diameter: 0.238
X-Factor: 2.551 8 mm/pt

POINT	TIME	DUCT DATA Temp (oF)	DUCT DATA ΔP ("H20)	METER DATA Temp i (oF)	METER DATA Temp o (oF)	METER DATA ΔH ("H2O)	METER DATA Vac ("Hg)	HEATER DATA Probe (oF)	HEATER DATA Sample Line (oF)	Impinger Outlet (oF)	Dry Test Meter Vol. (CF)
A 3	12:54	307	0.92	98	97	1.71	5	238	249	65	631.566
2	13:02	314	0.43	98	96	0.79	4	229	238	56	
1	13:10	320	1.10	100	96	2.01	6	226	245	60	
	13:18										648.594
B 3	13:24	299	1.05	99	98	1.97	6	227	247	64	
2	13:32	316	0.56	102	98	1.03	5	228	244	64	
1	13:40	322	0.98	103	98	1.80	6	226	244	62	
	13:48										664.221
C 3	13:52	297	0.90	101	99	1.70	6	230	247	65	
2	14:00	313	0.82	104	99	1.53	6	227	244	54	
1	14:08	320	0.94	107	100	1.74	7	228	244	57	
~~D 3~~	14:16										681.313
D 3	14:23	295	0.86	103	101	1.64	6	230	247	64	
2	14:31	308	1.10	107	101	2.07	7	228	244	59	
1	14:39	310	0.51	108	102	1.52	7	228	244	60	
	14:47										698.836
E 3	14:48	308	0.80	108	102	1.51	7	227	245	65	
2	14:56	305	1.10	110	103	2.09	8	226	245	65	
1	15:04	295	0.82	111	104	1.58	5	225	245	66	
	15:12										716.775

Comments:

PARTICULATE FIELD DATA
PROJECT NUMBER: CMXX - 99 - 0304

Plant: Basin Electric AVS Date: 7-13-99

Sample Location: Inlet Run #: 1

Run Time:

Absorber Type	Contents	Final Weight (grams)	Tare Weight (grams)	Net Water (grams)
Mod. G.S. 1	100 ml 1N KCl	947.3	729.6	
Mod. G.S. 2	100 ml 1N KCl	765.9	723.1	
G.S. 3	100 ml 1N KCl	744.9	734.1	
Mod. G.S. 4	100 ml 5%HNO3/~~10~~ 10%H2O2	744.2	735.2	
Mod. G.S. 5	100 ml 4%KMnO4/10%H2SO4	738.5	738.3	
Mod. G.S. 6	100 ml 4%KMnO4/10%H2SO4	754.2	751.9	
G.S. 7	100 ml 4%KMnO4/10%H2SO4	739.9	740.1	
Mod. G.S. 8	Silica Gel	682.6	664.9	
			TOTAL	

ORSAT ANALYSIS

	O_2	CO_2	N_2
Run 1	5.4	14.4	
Run 2	5.4	14.4	
Run 3			
Average			
Air Audit	20.9		

Comments :

PARTICULATE FIELD DATA
PROJECT NUMBER: CMXX - 99 - 0309

Plant: Basin AVS
Sample Location: Inlet
Run #: 2
Date: 7-14-99
Ambient Temp.(oF):
Pbar ("Hg): 28.91
Pstatic ("H2O): -14.5
pitot leak check o.k.
Pre-test Leak Rate: 0.002@15

Bws (assumed): 0.14
MWwet (assumed):
Ps ("Hg):
Probe Material: Teflon
Probe Heater Setting: 250
Filter Heater Setting: N/A
Nozzle #: #8

Meter Box #: 81231
ΔH@i: 1.829
Y: 1.003
Pitot #: Hg-1
Cp: 0.84
Nozzle Material: Teflon coated SS
Nozzle Diameter: 0.238 8mm/A
X-Factor: 2.551

POINT	TIME	DUCT DATA		METER DATA				HEATER DATA		Impinger Outlet (oF)	Dry Test Meter Vol. (CF)
		Temp (oF)	ΔP ("H20)	Temp i (oF)	Temp o (oF)	ΔH ("H2O)	Vac ("Hg)	Probe 230(oF)	Sample Line (oF)		
A3	7:56	297	0.81	68	67	1.44	5	~~247~~ 236	247	63	717.423
2	8:04	308	0.44	70	68	0.77	4	238	245	47	
1	8:12	314	1.05	72	68	1.84	6	239	244	51	
	8:20										732.746
B3	8:24	291	0.96	71	68	1.73	6	236	246	57	
2	8:32	308	0.47	75	69	0.84	5	236	244	50	
1	8:40	317	1.00	77	69	1.76	7	240	244	52	
	8:48										748.262
C3	8:52	297	1.25	74	~~125~~ 71	2.25	7	238	247	57	
2	9:00	308	0.76	79	72	1.36	6	241	244	52	
1	9:08	314	0.78	80	73	1.39	7	238	244	53	
	9:16			Change-out filter							764.946
D3	9:27	298	0.94	77	75	1.70	4	233	247	66	765.054
2	9:35	302	1.05	81	75	1.90	5	241	244	54	
1	9:43	307	0.68	83	75	1.23	5	241	244	57	
	9:51										781.765
E3	9:52	305	0.64	83	77	1.16	4	236	245	60	
2	10:00	297	1.00	85	78	1.84	5	241	245	58	
1	10:08	290	0.94	87	80	1.75	5	240	244	59	
	10:16										798.386

Comments:

PARTICULATE FIELD DATA
PROJECT NUMBER: CMXX -99 - 0304

Plant: Basin AVS Date: 7-14-99

Sample Location: Inlet Run #: 2

Run Time:

Absorber Type	Contents	Final Weight (grams)	Tare Weight (grams)	Net Water (grams)
Mod. G.S. 1	100 ml 1N KCl	898.1	748.1	
Mod. G.S. 2	100 ml 1N KCl	837.2	734.6	
G.S. 3	100 ml 1N KCl	752.6	739.2	
Mod. G.S. 4	100 ml 5%HNO3/~~15~~%H2O2 10 BR	738.7	729.8	
Mod. G.S. 5	100 ml 4%KMnO4/10%H2SO4	742.1	740.6	
Mod. G.S. 6	100 ml 4%KMnO4/10%H2SO4	733.6	733.5	
G.S. 7	100 ml 4%KMnO4/10%H2SO4	616.8	616.4	
Mod. G.S. 8	Silica Gel	873.0	859.6	
			TOTAL	

ORSAT ANALYSIS

	O_2	CO_2	N_2
Run 1	5.4	14.5	
Run 2			
Run 3			
Average			
Air Audit			

Comments :

PARTICULATE FIELD DATA
PROJECT NUMBER: CMXX - 59[illegible]0304

Plant: Bostn AVS
Sample Location: Inlet
Run #: 3
Date: 7-14-99
Ambient Temp.(oF):
Pbar ("Hg): 28.91
Pstatic ("H2O): -14.5
P.tot leak check o.k.
Pre-test Leak Rate: 0.002@15

Bws (assumed): 0.14
MWwet (assumed): 28.87
Ps ("Hg):
Probe Material: Teflon
Probe Heater Setting: 250
Filter Heater Setting: N/A
Nozzle #: [illegible]
Post-test Leak Rate: 0.002 @13"

Meter Box #: 81231
ΔH@i: 1.829
Y: 1.003
Pitot #: Std-1
Cp: 0.84
Nozzle Material: Teflon/SS
Nozzle Diameter: 0.232 2mm/pt
X-Factor: 2.551

POINT	TIME	DUCT DATA Temp (oF)	DUCT DATA ΔP ("H20)	METER DATA Temp i (oF)	METER DATA Temp o (oF)	METER DATA ΔH ("H2O)	METER DATA Vac ("Hg)	HEATER DATA Probe (oF)	HEATER DATA Sample Line (oF)	Impinger Outlet (oF)	Dry Test Meter Vol. (CF)
A3	11:20	300	0.94	84	86	1.72	5	235	248	64	798.675
2	11:28	314	0.42	89	86	0.76	4	240	245	58	
1	11:36	321	0.96	90	86	1.72	6	247	246	61	
	11:44										814.161
B3	11:49	297	0.81	89	87	1.50	5	244	247	63	
2	11:57	313	0.27	94	87	0.49	4	243	245	59	
1	12:05	323	0.79	93	89	1.42	6	242	245	63	
	12:13										828.229
C3	12:16	301	1.10	92	89	2.04	6	240	247	63	
2	12:24	312	0.69	97	90	1.27	6	245	245	61	
1	12:32	319	0.82	98	90	1.50	6	243	246	61	
	12:40				92	Change out		Filter			845.064
D3	12:51	303	1.00	93	~~1.58~~ KH	1.85	5	235	247	64	845.188
2	12:59	310	0.97	98	92	1.79	6	246	245	60	
1	13:07	314	0.82	99	92	1.51	6	243	245	60	
	13:15										862.611
E3	13:16	312	0.76	98	92	1.40	6	243	246	64	
2	13:24	306	1.05	99	92	1.95	7	246	246	63	
1	13:32	302	1.00	100	93	1.87	7	239	245	65	
	13:40										880.231

Comments:

PARTICULATE FIELD DATA
PROJECT NUMBER: CMXX - 99 - 0304

Plant: Basin AVS
Date: 7-14-99
Sample Location: Inlet
Run #: 3
Run Time:

Absorber Type	Contents	Final Weight (grams)	Tare Weight (grams)	Net Water (grams)
Mod. G.S. 1	100 ml 1N KCl	937.6	732.8	
Mod. G.S. 2	100 ml 1N KCl	787.5	745.5	
G.S. 3	100 ml 1N KCl	762.2	751.1	
Mod. G.S. 4	100 ml 5%HNO_3/15%H_2O_2	741.0	731.2	
Mod. G.S. 5	100 ml 4%$KMnO_4$/10%H_2SO_4	736.4	737.2	
Mod. G.S. 6	100 ml 4%$KMnO_4$/10%H_2SO_4	740.0	739.4	
G.S. 7	100 ml 4%$KMnO_4$/10%H_2SO_4	745.7	744.8	
Mod. G.S. 8	Silica Gel	849.7	838.5	
			TOTAL	

ORSAT ANALYSIS

	O_2	CO_2	N_2
Run 1	5.4	14.4	
Run 2	6.4	14.4	
Run 3			
Average			
Air Audit	20.9	—	

Comments :

PARTICULATE FIELD DATA
PROJECT NUMBER: CMXX - 99 - 0304

Plant: Aus (Basin Electric) Bws (assumed): _____ Meter Box #: _____

Sample Location: Inlet MWwet (assumed): _____ ΔH@i: _____

Run #: Blank Train Ps ("Hg): _____ Y: _____

Date: 7-13-99 Probe Material: _____ Pitot #: _____

Ambient Temp.(oF): _____ Probe Heater Setting: _____ Cp: _____

Pbar ("Hg): _____ Filter Heater Setting: _____ Nozzle Material: _____

Pstatic ("H2O): _____ Nozzle #: _____ Nozzle Diameter: _____

Pre-test Leak Rate: 0.002@15 Post-test Leak Rate: _____ X-Factor: _____

POINT	TIME	DUCT DATA		METER DATA				HEATER DATA		Impinger Outlet (oF)	Dry Test Meter Vol. (CF)
		Temp (oF)	ΔP ("H20)	Temp i (oF)	Temp o (oF)	ΔH ("H2O)	Vac ("Hg)	Probe (oF)	Sample Line (oF)		

Comments: _____

PARTICULATE FIELD DATA
PROJECT NUMBER: CMXX - 99 - 0304

Plant: Basin Electric AUS Date: 7-13-99

Sample Location: Inlet Run #: Blank

Run Time: _____

Absorber Type	Contents	Final Weight (grams)	Tare Weight (grams)	Net Water (grams)
Mod. G.S. 1	100 ml 1N KCl	740.1	739.9	
Mod. G.S. 2	100 ml 1N KCl	733.4	733.3	
G.S. 3	100 ml 1N KCl	745.9	745.8	
Mod. G.S. 4	100 ml 5%HNO_3/~~15~~ 10 %H_2O_2	731.4	731.3	
Mod. G.S. 5	100 ml 4%$KMnO_4$/10%H_2SO_4	614.1	614.1	
Mod. G.S. 6	100 ml 4%$KMnO_4$/10%H_2SO_4	740.8	740.8	
G.S. 7	100 ml 4%$KMnO_4$/10%H_2SO_4	738.3	738.3	
Mod. G.S. 8	Silica Gel	859.6	859.4	
			TOTAL	

ORSAT ANALYSIS

	O_2	CO_2	N_2
Run 1			
Run 2			
Run 3			
Average			
Air Audit			

Comments : _____

PARTICULATE FIELD DAT
PROJECT NUMBER: CMXX - 99

Plant: Basin Electric AUS
Sample Location: Main Stack
Run #: 1
Date: 7-13-99
Ambient Temp.(oF):
Pbar ("Hg): 28.87
Pstatic ("H2O): -0.91
Pre-test Leak Rate: 0.006 @ 8

Bws (assumed): 0.18
MWwet (assumed): 28.21
Ps ("Hg): 28.80
Probe Material: Glass
Probe Heater Setting: 250
Filter Heater Setting: 250
Nozzle #:
Post-test Leak Rate: 0.004 @ 8

Pw: 8.85
ΔI: 1.811
Y: 1.005
Pitot #: 3-33-2BR
Cp: 0.813
Nozzle Material: Glass
Nozzle Diameter: 0.215
X-Factor: 10mm/pt 1.569

POINT	TIME	DUCT DATA Temp (oF)	DUCT DATA ΔP ("H20)	METER DATA Temp i (oF)	METER DATA Temp o (oF)	METER DATA ΔH ("H2O)	METER DATA Vac ("Hg)	HEATER DATA Probe (oF)	HEATER DATA Filter (oF)	HEATER DATA Sample Line (oF)	Impinger Outlet (oF)	Dry Test Meter Vol. (CF)
A 3	12:54	184	0.89	76	76	1.12	4	251	248	246	54	651.988
2	13:04	184	0.85	77	77	1.06	4	249	242	246	53	
1	13:14	184	0.76	80	77	0.96	4	271	238	248	57	
	13:24											669.118
B 3	13:30	184	0.89	80	79	1.12	4	258	272	257	66	
2	13:40	186	0.87	86	80	1.10	4	248	250	252	61	
1	13:50	186	0.73	89	81	0.93	4	253	257	251	62	686.145
	14:00											~~686~~
C 3	13:03	184	0.83	85	83	1.06	4	254	269	254	64	
2	13:13	187	0.88	90	84	1.12	4	249	245	250	58	
1	13:23	187	0.81	93	85	1.04	4	250	252	247	58	
	13:33											703.564
D 3	14:43	188	0.88	89	87	1.12	4	255	249	249	65	
2	14:53	189	0.86	92	87	1.10	4	251	250	248	58	
1	15:03	190	0.79	94	87	1.01	4	248	246	249	58	
	15:13											721.009

Comments: Pitot Leak checks: Pre: OK
Post: OK

Transducers: 130.45 0.91.0

BRAUN INTERTEC ENVIRONMEN
PARTICULATE FIELD DAT.
PROJECT NUMBER: CMXX - 99 - 304

Plant: Bosn Electric AUS Date: 7-13-99

Sample Location: Main Stack Run #: 1

Run Time:

Absorber Type	Contents	Final Weight (grams)	Tare Weight (grams)	Net Water (grams)
Mod. G.S. 1	100 ml 1N KCl	1005.8	726.9	
Mod. G.S. 2	100 ml 1N KCl	754.6	731.8	
G.S. 3	100 ml 1N KCl	738.1	732.6	
Mod. G.S. 4	100 ml 5%HNO3/10%H2O2	755.7	751.8	
Mod. G.S. 5	100 ml 4%KMnO4/10%H2SO4	756.7	757.0	
Mod. G.S. 6	100 ml 4%KMnO4/10%H2SO4	735.3	735.0	
G.S. 7	100 ml 4%KMnO4/10%H2SO4	737.3	736.6	
Mod. G.S. 8	Silica Gel	838.7	828.7	
			TOTAL	

ORSAT ANALYSIS

	O_2	CO_2	N_2
Run 1	6.0	13.8	
Run 2	6.0	13.0	
Run 3			
Average			
Air Audit	20.9		

Comments :

PARTICULATE FIELD DATA
PROJECT NUMBER: CMXX - 99 - 0304

Plant: Basin AVS
Sample Location: Main Stack
Run #: 2
Date: 7-14-99
Ambient Temp.(oF):
Pbar ("Hg): 28.91
Pstatic ("H2O): -0.90
Pre-test Leak Rate: 0.002 @ 7

Bws (assumed): 0.18
MWwet (assumed): 28.81
Ps ("Hg):
Probe Material: Glass
Probe Heater Setting: 250
Filter Heater Setting: 250
Nozzle #:
Post-test Leak Rate: 0.002 @ 8

Meter Box #: 38758
ΔH@i: 1.811
Y: 1.005
Pitot #: 3-2
Cp: 0.84
Nozzle Material: Glass
Nozzle Diameter: 0.215
X-Factor: 10 min/pt 1.509

POINT	TIME	DUCT DATA Temp (oF)	DUCT DATA ΔP ("H20)	METER DATA Temp i (oF)	METER DATA Temp o (oF)	METER DATA ΔH ("H2O)	METER DATA Vac ("Hg)	HEATER DATA Probe (oF)	HEATER DATA Filter (oF)	HEATER DATA Sample Line (oF)	Impinger Outlet (oF)	Dry Test Meter Vol. (CF)
A5	07:56	180	0.89	78	78	1.12	5	244	241	247	67	721.399
2	08:06	180	0.87	80	79	1.11	5	249	242	247	54	
1	08:16	174	0.84	84	80	1.08	6	253	246	248	55	
	08:26											738.870
B3	08:39	180	0.86	84	81	1.10	5	257	232	250	60	
2	08:49	180	0.87	87	81	1.12	5	251	236	250	52	
1	08:59	180	0.77	89	82	1.00	5	247	240	251	52	
	09:09											756.138
C3	09:02	180	0.82	85	83	1.05	5	245	277	249	62	
2	09:12	180	0.84	89	83	1.08	4	249	242	250	52	
1	09:22	180	0.80	91	83	1.03	4	243	255	250	52	
	09:32	~~180~~	~~0.85~~	~~87~~	~~84~~							773.314
D3	09:45	180	0.85	87	84	1.09	4	251	261	248	65	
2	09:55	180	0.84	87	84	1.08	4	246	248	249	54	
1	10:05	180	0.76	89	84	0.98	4	241	254	249	55	
	10:15											790.660

Comments:

BRAUN INTERTEC ENVIRONMENTAL, INC.
PARTICULATE FIELD DATA
PROJECT NUMBER: CMXX - 99 ~~0340~~ 0304

Plant: Bostn AVS Date: 7-14-99

Sample Location: Main Stack Run #: 2

Run Time:

Absorber Type	Contents	Final Weight (grams)	Tare Weight (grams)	Net Water (grams)
Mod. G.S. 1	100 ml 1N KCl	1007.5	~~6~~ 731.5	
Mod. G.S. 2	100 ml 1N KCl	751.5	736.5	
G.S. 3	100 ml 1N KCl	742.6	739.7	
Mod. G.S. 4	100 ml 5%HNO_3/~~15~~ 10%H_2O_2	747.2	744.8	
Mod. G.S. 5	100 ml 4%$KMnO_4$/10%H_2SO_4	739.3	739.0	
Mod. G.S. 6	100 ml 4%$KMnO_4$/10%H_2SO_4	748.2	748.0	
G.S. 7	100 ml 4%$KMnO_4$/10%H_2SO_4	730.4	730.4	
Mod. G.S. 8	Silica Gel	650.4	648.0	
			TOTAL	

ORSAT ANALYSIS

	O_2	CO_2	N_2
Run 1	6.0	13.9	
Run 2	6.0	13.9	
Run 3			
Average			
Air Audit	20.9		

Comments :

PARTICULATE FIELD DATA
PROJECT NUMBER: CMXX - 99 - 0304

Plant: Basin AVS
Sample Location: Main Stack
Run #: 3
Date: 7/14/99
Ambient Temp.(°F):
Pbar ("Hg): 28.91
Pstatic ("H2O): -0.89

Bws (assumed): 0.18
MWwet (assumed): 28.21
Ps ("Hg): 28.80
Probe Material: Glass
Probe Heater Setting: 250
Filter Heater Setting: 250
Nozzle #:

Meter Box #: 38758
ΔH@i: 1.811
Y: 1.005
Pitot #: 3-2
Cp: 0.813
Nozzle Material: Glass
Nozzle Diameter: 0.215
10mm/pt
X-Factor: 1.509

Pre-test Leak Rate: 0.006 @ 8
Post-test Leak Rate: 0.004 @ 7

POINT	TIME	DUCT DATA		METER DATA				HEATER DATA			Impinger Outlet (°F)	Dry Test Meter Vol. (CF)
		Temp (°F)	ΔP ("H20)	Temp i (°F)	Temp o (°F)	ΔH ("H2O)	Vac ("Hg)	Probe (°F)	Filter (°F)	Sample Line (°F)		
D 3	11:20	182	0.86	81	81	1.09	4	251	237		68	791.361
2	11:30	184	0.86	78	78	1.08	4	251	261		56	
1	11:40	183	0.75	80	78	0.95	4	241	258		52	
	11:50											808.511
C 3	11:53	181	0.76	82	78	0.96	4	252	268		60	
2	12:03	182	0.78	83	78	0.98	4	249	257		55	
1	12:13	183	0.73	86	79	0.93	4	242	246		56	
	12:23											825.253
B 3	12:28	183	0.82	81	80	1.04	4	251	265		68	
2	12:38	183	0.84	84	80	1.07	4	251	254		63	
1	12:48	184	0.72	87	80	0.92	4	246	248		66	
	12:58	~~185~~		~~81~~								842.357
A 3	13:09	185	0.84	81	80	1.06	4	252	246		68	
2	13:19	186	0.81	83	80	1.02	4	250	247		58	
1	13:29	186	0.71	84	80	0.90	4	250	244		63	
	13:39											859.270

Comments:

BRAUN INTERTEC ENVIRONMENTAL, INC.
PARTICULATE FIELD DATA
PROJECT NUMBER: CMXX - 99 - 0304

Plant: Basra AVS Date: 7-14-99

Sample Location: Main Stack Run #: 3

Run Time:

Absorber Type	Contents	Final Weight (grams)	Tare Weight (grams)	Net Water (grams)
Mod. G.S. 1	100 ml 1N KCl	998.9	736.8	
Mod. G.S. 2	100 ml 1N KCl	763.2	738.9	
G.S. 3	100 ml 1N KCl	744.1	737.1	
Mod. G.S. 4	100 ml 5%HNO3/~~15~~ 10%H2O2	758.9	754.4	
Mod. G.S. 5	100 ml 4%KMnO4/10%H2SO4	739.0	739.2	
Mod. G.S. 6	100 ml 4%KMnO4/10%H2SO4	738.2	738.6	
G.S. 7	100 ml 4%KMnO4/10%H2SO4	736.5	736.4	
Mod. G.S. 8	Silica Gel	887.7	875.3	
			TOTAL	

ORSAT ANALYSIS

	O_2	CO_2	N_2
Run 1	5.6	14.2	
Run 2	5.4	14.2	
Run 3			
Average			
Air Audit			

Comments :

PARTICULATE FIELD DATA
PROJECT NUMBER: CMXX - 99 - 0304

Plant: Basin Electric NS
Bws (assumed): _____
Meter Box #: 37750

Sample Location: ~~Inlet~~ Stack BR
MWwet (assumed): _____
ΔH@i: _____

Run #: Blank train
Ps ("Hg): _____
Y: _____

Date: 7-13-99
Probe Material: _____
Pitot #: _____

Ambient Temp.(°F): _____
Probe Heater Setting: _____
Cp: _____

Pbar ("Hg): _____
Filter Heater Setting: _____
Nozzle Material: _____

Pstatic ("H2O): _____
Nozzle #: _____
Nozzle Diameter: _____

Pre-test Leak Rate: 0.004@8
Post-test Leak Rate: _____
X-Factor: _____

POINT	TIME	DUCT DATA		METER DATA				HEATER DATA			Impinger Outlet (°F)	Dry Test Meter Vol. (CF)
		Temp (°F)	ΔP ("H20)	Temp i (°F)	Temp o (°F)	ΔH ("H2O)	Vac ("Hg)	Probe (°F)	Filter (°F)	Sample Line (°F)		

Comments: _____

BRAUN INTERTEC ENVIRONMENTAL, INC.
PARTICULATE FIELD DATA
PROJECT NUMBER: CMXX - 99 - 0304

Plant: Basin Electric AVS Date: 7-13-99

Sample Location: ~~Inlet~~ Main Stack Run #: Blank train

Run Time:

Absorber Type	Contents	Final Weight (grams)	Tare Weight (grams)	Net Water (grams)
Mod. G.S. 1	100 ml 1N KCl	723.1	723.1	
Mod. G.S. 2	100 ml 1N KCl	725.2	725.1	
G.S. 3	100 ml 1N KCl	726.9	726.8	
Mod. G.S. 4	100 ml 5%HNO3/~~15~~ 10%H2O2	731.9	731.8	
Mod. G.S. 5	100 ml 4%KMnO4/10%H2SO4	743.5	743.5	
Mod. G.S. 6	100 ml 4%KMnO4/10%H2SO4	741.2	741.3	
G.S. 7	100 ml 4%KMnO4/10%H2SO4	737.5	737.5	
Mod. G.S. 8	Silica Gel	836.6	835.5	
			TOTAL	

ORSAT ANALYSIS

	O_2	CO_2	N_2
Run 1			
Run 2			
Run 3			
Average			
Air Audit			

Comments :

Appendix C

Calibration Data Sheets

DRY GAS METER CALIBRATIONS

DATE: 6/16/99 Meter box: 81231

Barometric press: 30.39 Calibrated by KH

Orifice setting (dH) in. H2O		Gas volume Wet test meter (Vw) L	Gas volume Wet test meter (Vw) ft^3		Gas volume Dry gas meter (Vd) ft^3	Temperatures Wet test meter average (tw) C	Temperatures Wet test meter average (tw) F	Temperatures Dry gas meter average (td) F	Time min.	Yi	dH@i in. H2O
0.5	initial	345.63	5.106	initial	314.490	22.2	71	74	13.0	1.003	1.785
	final	490.23		final	319.601						
1	initial	171.63	5.507	initial	308.367	22.2	71	74	10.0	1.006	1.816
	final	327.60		final	313.860						
2	initial	988.90	6.159	initial	301.962	22.2	71	72	8.0	1.002	1.865
	final	1163.33		final	308.089						
3	initial	848.07	4.737	initial	297.017	22.2	71	72	5.0	1.000	1.848
	final	982.21		final	301.727						

Average:	1.003	1.829
Deviation:	0.003	0.043

Meter Yi must be +-.01 of Yavg and .98< Yavg <1.02 for each run.
The Yavg of this meter is acceptable.

Meter dH@ should be +- 0.15 of dH@avg for each run.
Recommended range of dH@avg is 1.69< dH@avg <2.09 (not required).
The d@Havg of this meter is acceptable.

DRY GAS METER CALIBRATIONS

DATE: 7/6/99 Meter box: 38758

Barometric press: 30.16 Calibrated by KH

Orifice setting (dH) in. H2O		Gas volume Wet test meter (Vw) L	Wet test meter (Vw) ft^3		Dry gas meter (Vd) ft^3	Temperatures Wet test meter average (tw) C	Wet test meter average (tw) F	Dry gas meter average (td) F	Time min.	Yi	dH@i in. H2O
0.5	initial	138.78	5.315	initial	645.916	24.4	76	77	13.0	1.002	1.682
	final	289.31		final	651.226						
1	initial	976.26	5.619	initial	640.219	24.4	76	77	10.0	1.007	1.781
	final	1135.38		final	645.798						
2	initial	793.70	6.120	initial	633.827	24.4	76	77	8.0	1.006	1.922
	final	967.02		final	639.890						
3	initial	651.06	4.772	initial	628.866	24.4	76	75	5.0	1.007	1.859
	final	786.21		final	633.563						

Average: 1.005 1.811
Deviation: 0.004 0.129

Meter Yi must be +-.01 of Yavg and .98< Yavg <1.02 for each run.
The Yavg of this meter is acceptable.

Meter dH@ should be +- 0.15 of dH@avg for each run.
Recommended range of dH@avg is 1.69< dH@avg <2.09 (not required).
The d@Havg of this meter is acceptable.

PITOT TUBE CALIBRATION

UNIT: 3-2 CALIBRATED BY: SN
DATE: 6/17/99

A SIDE CALIBRATION

RUN No.	dPstd "H20	dP(s) "H20	CP(s)	DEVIATION Cp(s)-Cp(A)
1	0.60	0.89	0.813	0.003
2	0.59	0.88	0.811	0.005
3	0.61	0.88	0.824	0.008
		Cp(A)	0.816	

B SIDE CALIBRATION

RUN No.	dPstd "H20	dP(s) "H20	CP(s)	DEVIATION Cp(s)-Cp(B)
1	0.61	0.90	0.815	0.004
2	0.60	0.90	0.808	0.002
3	0.60	0.90	0.808	0.002
		Cp(B)	0.811	

Cp(A)-Cp(B)| must be less than or equal to 0.01. This pitot is acceptable
Avg Deviation (A) must be less than or equal to 0.01 This pitot acceptable
Avg Deviation (B) must be less than or equal to 0.01 This pitot acceptable

AVG DEVIATION (A)	0.01	Cp(A)-Cp(B)	0.01
AVG DEVIATION (B)	0.00	**Cp**	**0.813**

PITOT TUBE CALIBRATION

UNIT: Hg-1 CALIBRATED BY: SN
DATE: 6/17/99

A SIDE CALIBRATION

RUN No.	dPstd "H20	dP(s) "H20	CP(s)	DEVIATION Cp(s)-Cp(A)
1	0.60	0.83	0.842	0.002
2	0.59	0.82	0.840	0.004
3	0.61	0.83	0.849	0.005
		Cp(A)	0.843	

B SIDE CALIBRATION

RUN No.	dPstd "H20	dP(s) "H20	CP(s)	DEVIATION Cp(s)-Cp(B)
1	0.61	0.84	0.844	0.001
2	0.60	0.83	0.842	0.001
3	0.60	0.83	0.842	0.001
		Cp(B)	0.842	

Cp(A)-Cp(B)| must be less than or equal to 0.01. This pitot is acceptable
Avg Deviation (A) must be less than or equal to 0.01 This pitot acceptable
Avg Deviation (B) must be less than or equal to 0.01 This pitot acceptable

AVG DEVIATION (A)	0.00	Cp(A)-Cp(B)	0.00
AVG DEVIATION (B)	0.00	**Cp**	**0.843**

Reduced Isokinetic Field Data (page 1 of 2)

Plant:	Antelope Valley Station	Bws(assumed):	0.14	Meter Box #:	81231
Sample Loc:	Unit B1 Inlet	MWs(assumed):	28.87	dH@i:	1.829
Run #:	1	MWd(assumed):	27.8	Gamma:	1.003
Date:	7/13/99	Pstatic ("H2O):	-14.5	Pitot #:	Hg1
Pbar ("Hg):	28.87	Probe Mat:	Teflon	Cp:	0.84
Ps ("Hg):	27.80	Nozzle Mat:	Teflo/SS	X-Factor:	2.551
Sample time/pt:	8.0	Dn (in.):	0.238	# of Ports:	5

PORT:	A		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	12	54	307	0.92	98	97	5.0	238	N/A	65	631.566	1.71	
2	13	2	314	0.43	98	96	4.0	229	N/A	56		0.79	
1	13	10	320	1.10	100	96	6.0	226	N/A	60		2.01	
	13	18									647.594		
Run Time:		24	314	0.82	99	96	5.0	231	0	60	16.028	1.50	93.4

PORT:	B		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	13	24	299	1.05	99	98	6.0	227	N/A	64	647.594	1.97	
2	13	32	316	0.56	102	98	5.0	228	N/A	64		1.03	
1	13	40	322	0.98	103	98	6.0	226	N/A	62		1.80	
	13	48									664.221		
Run Time:		24	312	0.86	101	98	5.7	227	0	63	16.627	1.60	92.9

PORT:	C		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	13	52	297	0.90	101	99	6.0	230	N/A	65	664.221	1.70	
2	14	0	313	0.82	104	99	6.0	227	N/A	54		1.53	
1	14	8	320	0.94	107	100	7.0	228	N/A	57		1.74	
	14	16									681.313		
Run Time:		24	310	0.89	104	99	6.3	228	0	59	17.092	1.66	92.9

PORT:	D		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	14	23	295	0.86	103	101	6.0	230	N/A	64	681.313	1.64	
2	14	31	308	1.10	107	101	7.0	228	N/A	59		2.07	
1	14	39	310	0.81	108	102	7.0	228	N/A	60		1.52	
	14	47									698.836		
Run Time:		24	304	0.92	106	101	6.7	229	0	61	17.523	1.74	92.8

Reduced Isokinetic Field Data (page 2 of 2)

Plant:	Antelope Valley Station	Bws(assumed):	0.14	Meter Box #:	81231
Sample Loc:	Unit B1 Inlet	MWs(assumed):	28.87	dH@i:	1.829
Run #:	1	MWd(assumed):	27.8	Gamma:	1.003
Date:	7/13/99	Pstatic ("H2O):	-14.5	Pitot #:	Hg1
Pbar ("Hg):	28.87	Probe Mat:	Teflon	Cp:	0.84
Ps ("Hg):	27.8	Nozzle Mat:	Teflo/SS	X-Factor:	2.551
Sample time/pt:	8	Dn (in.):	0.238	# of Ports:	5

PORT:	E		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	14	48	308	0.80	108	102	7.0	227	N/A	65	698.836	1.51	
2	14	56	305	1.10	110	103	8.0	226	N/A	65		2.09	
1	15	4	295	0.82	111	104	5.0	225	N/A	66		1.58	
	15	12									716.775		
Run Time:		24	303	0.91	110	103	6.7	226	0	65	17.939	1.73	95.2

Post Test Leak Rate: 0.002 CFM @ 11 "Hg

Summary	120	309	104	100	6.1	228	N/A	62	85.209	1.65	93.45

Analytical Results

Plant:	Antelope Valley Station	Tstd:	68	MWw:	28.60
Sample Loc:	Unit B1 Inlet	Pstd:	29.92	An:	0.0003 sq. ft.
Date:	7/13/99	Vmstd:	77.834	%ISO:	98.5
Run #:	1				

IMPINGER ANALYSIS

TYPE	CONTENTS	W (g	Wi (g)	Net (g)
Modified Greenberg Smith	100 ml 0.1N KCl	947.3	729.6	217.7
Modified Greenberg Smith	100 ml 0.1N KCl	765.9	723.7	42.2
Greenberg Smith	100 ml 0.1N KCl	744.9	734.1	10.8
Modified Greenberg Smith	100ml 5%HNO3/10%H2O2	744.2	735.2	9.0
Modified Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	738.5	738.3	0.2
Modified Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	754.2	751.9	2.3
Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	739.9	740.1	-0.2
Modified Greenberg Smith	Silica Gel	682.6	664.9	17.7
			TOTAL	299.7

Fixed Gas Analysi	
%CO2:	14.4
%O2:	5.4
%C0:	0.0
%N2	80.2
Fo	1.076
Bws:	0.154
DSCFM	1506686

Concentration and Emission Rate Data

Particle-Bound Mercury

Sample Front-Half:	0.30	ug
Blank Front-Half:	ND	ug
Net Front-Half:	0.300	ug
Detection Limit:	0.010	ug

Oxidized Mercury

Sample KC	1.60	ug
Blank KC	0.030	ug
Net KCl:	1.570	ug
D.L:	0.030	ug

Elemental Hg

Sample HNO3/H2O	0.25	ug
Blank HNO3/H2O2:	0.250	ug
Net HNO3/H2O2:	0.225	ug
Detection Limit:	0.010	ug
Sample KMnO4:	33	ug
Blank KMnO4:	0.030	ug
Net KMnO4:	32.970	ug
Detection Limit:	0.030	ug
Total Elemental:	33.195	ug

Total Mercury: 35.07 ug

	Concent on (ug/dscm)	Mass Flow Rate (gram/hr)	Mass Flow Rate* (lb/year)
Particle-Bound Hg	0.136	0.295	5.7
Oxidized Hg	0.713	1.543	29.8
Elemental Hg	15.070	32.631	630.2
HNO3	0.102	0.221	
H2SO4	14.968	32.410	
Total Hg	15.919	34.469	665.7

* Assumes operation 24 hr/day, 365 day/year

VELOCITY TRAVERSE AND VOLUME FLOW RATE DATA

Plant:	Antelope Valley Station	Sample Time:	12:54-15:12
Sample Location:	Unit B1 Inlet		
Test Date:	7/13/99	Run #:	1

DUCT DIMENSIONS

Width:	312	inches
Depth:	276	inches
Area:	598.00	sq. feet

Pbar:	28.87	"Hg
Ps:	27.80	"Hg
Bws:	0.15	
MWw:	28.60	g/g-mole
Tstd:	68	"deg F
Pstd:	29.92	"Hg
Cp:	0.84	

Traverse Data

Traverse Point #	In. From Edge	Td (deg. F)	dP ("H2O)	Vd (ft/sec)
A3	192.0	307	0.92	67.7
A2	115.2	314	0.43	46.5
A1	38.4	320	1.10	74.6
B3	192.0	299	1.05	71.9
B2	115.2	316	0.56	53.1
B1	38.4	322	0.98	70.5
C3	192.0	297	0.90	66.5
C2	115.2	313	0.82	64.1
C1	38.4	320	0.94	69.0
D3	192.0	295	0.86	64.9
D2	115.2	308	1.10	74.0
D1	38.4	310	0.81	63.6
E3	192.0	308	0.80	63.1
E2	115.2	305	1.10	73.9
E1	38.4	295	0.82	63.4
Average		309	0.88	65.8

Results:

Average Velocity: 65.78 fps @ 309 deg. F 27.80 "Hg

Q:	2360.19	x 100	ACFM	141611.2	KACFH
Q (std):	1506.69	x 100	SCFM	90401.2	KSCFH
Q (std dry):	1275.18	x 100	DSCFM	76510.9	KDSCFH

Reduced Isokinetic Field Data (page 1 of 2)

Plant:	Antelope Valley Station	Bws(assumed):	0.14	Meter Box #:	81231
Sample Loc:	Unit B1 Inlet	MWs(assumed):	28.87	dH@i:	1.829
Run #:	2	MWd(assumed):	27.8	Gamma:	1.003
Date:	7/14/99	Pstatic ("H2O):	-14.5	Pitot #:	Hg1
Pbar ("Hg):	28.91	Probe Mat:	Teflon	Cp:	0.84
Ps ("Hg):	27.84	Nozzle Mat:	Teflo/SS	X-Factor:	2.551
Sample time/pt:	8.0	Dn (in.):	0.238	# of Ports:	5

PORT:	A		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	7	56	297	0.81	68	67	5.0	230	N/A	63	717.423	1.44	
2	8	4	308	0.44	70	68	4.0	238	N/A	47		0.77	
1	8	12	314	1.05	72	68	6.0	239	N/A	51		1.84	
	8	20									732.746		
Run Time:		24	306	0.77	70	68	5.0	236	0	54	15.323	1.35	96.5

PORT:	B		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	8	24	291	0.96	71	68	6.0	236	N/A	57	732.746	1.73	
2	8	32	308	0.47	75	69	5.0	236	N/A	50		0.84	
1	8	40	317	1.00	77	69	7.0	240	N/A	52		1.76	
	8	48									748.262		
Run Time:		24	305	0.81	74	69	6.0	237	0	53	15.516	1.44	94.1

PORT:	C		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	8	52	297	0.94	74	71	7.0	238	N/A	57	748.262	1.69	
2	9	0	302	1.05	79	72	6.0	241	N/A	52		1.89	
1	9	8	307	0.78	80	73	7.0	238	N/A	53		1.40	
	9	16									764.946		
Run Time:		24	302	0.92	78	72	6.7	239	0	54	16.684	1.66	92.9

PORT:	D		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	9	27	298	0.94	77	75	4.0	233	N/A	66	765.054	1.70-	
2	9	35	302	1.05	81	75	5.0	241	N/A	54		1.90	
1	9	43	307	0.68	83	75	5.0	241	N/A	57		1.23	
	9	51									781.765		
Run Time:		24	302	0.89	80	75	4.7	238	0	59	16.711	1.61	94.5

Reduced Isokinetic Field Data (page 2 of 2)

Plant:	Antelope Valley Station	Bws(assumed):	0.14	Meter Box #:	81231
Sample Loc:	Unit B1 Inlet	MWs(assumed):	28.87	dH@i:	1.829
Run #:	2	MWd(assumed):	27.8	Gamma:	1.003
Date:	7/14/99	Pstatic ("H2O):	-14.5	Pitot #:	Hg1
Pbar ("Hg):	28.91	Probe Mat:	Teflon	Cp:	0.84
Ps ("Hg):	27.84	Nozzle Mat:	Teflo/SS	X-Factor:	2.551
Sample time/pt:	8	Dn (in.):	0.238	# of Ports:	5

PORT:	E		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	9	52	305	0.64	83	77	4.0	236	N/A	60	781.765	1.16	
2	10	0	297	1.00	85	78	5.0	241	N/A	58		1.84	
1	10	8	290	0.94	87	80	5.0	240	N/A	59		1.75	
	10	16									798.386		
Run Time:		24	297	0.86	85	78	4.7	239	0	59	16.621	1.58	94.5

Post Test Leak Rate: 0.002 CFM @ 15 "Hg

Summary	120	303	77	72	5.4	238	N/A	56	80.855	1.53	94.47

Analytical Results

Plant:	Antelope Valley Station	Tstd:	68	MWw:	28.66	
Sample Loc:	Unit B1 Inlet	Pstd:	29.92	An:	0.0003	sq. ft.
Date:	7/14/99	Vmstd:	77.650	%ISO:	99.3	
Run #:	2					

IMPINGER ANALYSIS

TYPE	CONTENTS	W (g	Wi (g)	Net (g)
Modified Greenberg Smith	100 ml 0.1N KCl	898.1	748.1	150.0
Modified Greenberg Smith	100 ml 0.1N KCl	837.2	734.6	102.6
Greenberg Smith	100 ml 0.1N KCl	752.6	739.2	13.4
Modified Greenberg Smith	100ml 5%HNO3/10%H2O2	738.7	729.8	8.9
Modified Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	742.1	740.6	1.5
Modified Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	733.6	733.5	0.1
Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	616.8	616.4	0.4
Modified Greenberg Smith	Silica Gel	873.0	859.6	13.4
			TOTAL	290.3

Fixed Gas Analy	
%CO2:	14.5
%O2:	5.4
%C0:	0.0
%N2	80.1
Fo	1.069
Bws:	0.150
DSCFM*******	

Concentration and Emission Rate Data

Particle-Bound Mercury

Sample Front-Half:	0.40	ug
Blank Front-Half:	ND	ug
Net Front-Half:	0.40	ug
Detection Limit:	0.010	ug

Oxidized Mercury

Sample KC	1.80	ug
Blank KC	0.030	ug
Net KCl:	1.770	ug
D.L:	0.030	ug

Elemental Hg

Sample HNO3/H2O2:	0.36	ug
Blank HNO3/H2O2:	0.250	ug
Net HNO3/H2O2:	0.335	ug
Detection Limit:	0.010	ug
Sample KMnO4:	34	ug
Blank KMnO4:	0.030	ug
Net KMnO4:	33.970	ug
Detection Limit:	0.030	ug
Total Elemental:	34.305	ug

Total Mercury: 36.48 ug

	Concent on (ug/dscm)	Mass Flow Rate (gram/hr)	Mass Flow Rate* (lb/year)
Particle-Bound Hg	0.182	0.390	7.5
Oxidized Hg	0.805	1.726	33.3
Elemental Hg	15.611	33.444	645.9
HNO3	0.152	0.327	
H2SO4	15.458	33.117	
Total Hg	16.598	35.559	686.7

VELOCITY TRAVERSE AND VOLUME FLOW RATE DATA

Plant:	Antelope Valley Station	Sample Time:	7:56-10:16
Sample Location:	Unit B1 Inlet		
Test Date:	7/14/99	Run #:	2

DUCT DIMENSIONS

Width:	312	inches
Depth:	276	inches
Area:	598.00	sq. feet

Pbar:	28.91	"Hg
Ps:	27.84	"Hg
Bws:	0.15	
MWw:	28.66	g/g-mole
Tstd:	68	"deg F
Pstd:	29.92	"Hg
Cp:	0.84	

Traverse Data

Traverse Point #	In. From Edge	Td (deg. F)	dP ("H2O)	Vd (ft/sec)
A3	192.0	297	0.81	63.0
A2	115.2	308	0.44	46.7
A1	38.4	314	1.05	72.5
B3	192.0	291	0.96	68.3
B2	115.2	308	0.47	48.3
B1	38.4	317	1.00	70.9
C3	192.0	297	0.94	67.8
C2	115.2	302	1.05	71.9
C1	38.4	307	0.78	62.2
D3	192.0	298	0.94	67.9
D2	115.2	302	1.05	71.9
D1	38.4	307	0.68	58.1
E3	192.0	305	0.64	56.3
E2	115.2	297	1.00	70.0
E1	38.4	290	0.94	67.5
Average		303	0.85	64.2

Results:

Average Velocity: 64.20 fps @ 303 deg. F 27.84 "Hg

Q:	2303.50	x 100	ACFM	138209.8	KACFH
Q (std):	1484.07	x 100	SCFM	89044.1	KSCFH
Q (std dry):	1261.67	x 100	DSCFM	75700.2	KDSCFH

Reduced Isokinetic Field Data (page 1 of 2)

Plant:	Antelope Valley Station	Bws(assumed):	0.14	Meter Box #:	81231
Sample Loc:	Unit B1 Inlet	MWs(assumed):	28.87	dH@i:	1.829
Run #:	3	MWd(assumed):	27.8	Gamma:	1.003
Date:	7/14/99	Pstatic ("H2O):	-14.5	Pitot #:	Hg1
Pbar ("Hg):	28.91	Probe Mat:	Teflon	Cp:	0.84
Ps ("Hg):	27.84	Nozzle Mat:	Teflo/SS	X-Factor:	2.551
Sample time/pt:	8.0	Dn (in.):	0.238	# of Ports:	5

PORT:	A		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	11	20	300	0.94	84	86	5.0	235	N/A	64	798.675	1.72	
2	11	28	314	0.42	89	86	4.0	240	N/A	58		0.76	
1	11	36	321	0.96	90	86	6.0	247	N/A	61		1.72	
	11	44									814.161		
Run Time:		24	312	0.77	88	86	5.0	241	0	61	15.486	1.40	94.4

PORT:	B		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	11	49	297	0.81	89	87	5.0	244	N/A	63	814.161	1.50	
2	11	57	313	0.27	94	87	4.0	243	N/A	59		0.49	
1	12	5	323	0.79	93	89	6.0	242	N/A	63		1.42	
	12	13									828.229		
Run Time:		24	311	0.62	92	88	5.0	243	0	62	14.068	1.14	95.7

PORT:	C		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	12	16	301	1.10	92	89	6.0	240	N/A	63	828.229	2.04	
2	12	24	312	0.69	97	90	6.0	245	N/A	61		1.27	
1	12	32	319	0.82	98	90	6.0	243	N/A	61		1.50	
	12	40									845.164		
Run Time:		24	311	0.87	96	90	6.0	243	0	62	16.935	1.60	94.8

PORT:	D		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	12	51	303	1.00	93	92	5.0	235	N/A	64	845.188	1.85	
2	12	59	310	0.97	98	92	6.0	234	N/A	60		1.79	
1	13	7	314	0.82	99	92	6.0	231	N/A	60		1.51	
	13	15									862.611		
Run Time:		24	309	0.93	97	92	5.7	233	0	61	17.423	1.72	93.7

Reduced Isokinetic Field Data (page 2 of 2)

Plant:	Antelope Valley Station	Bws(assumed):	0.14	Meter Box #:	81231
Sample Loc:	Unit B1 Inlet	MWs(assumed):	28.87	dH@i:	1.829
Run #:	3	MWd(assumed):	27.8	Gamma:	1.003
Date:	7/14/99	Pstatic ("H2O):	-14.5	Pitot #:	Hg1
Pbar ("Hg):	28.91	Probe Mat:	Teflon	Cp:	0.84
Ps ("Hg):	27.84	Nozzle Mat:	Teflo/SS	X-Factor:	2.551
Sample time/pt:	8	Dn (in.):	0.238	# of Ports:	5

PORT:	E		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo..	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	13	16	312	0.76	98	92	6.0	243	N/A	64	862.611	1.40	
2	13	24	306	1.05	99	92	7.0	246	N/A	63		1.95	
1	13	32	302	1.00	100	93	7.0	239	N/A	65		1.87	
	13	40									880.231		
Run Time:		24	307	0.94	99	92	6.7	243	0	64	17.620	1.74	94.0

Post Test Leak Rate: 0.002 CFM @ 15 "Hg

Summary	120	310		94	90	5.7	240	N/A	62	81.532	1.52	94.47

Analytical Results

Plant:	Antelope Valley Station	Tstd:	68	MWw:	28.67	
Sample Loc:	Unit B1 Inlet	Pstd:	29.92	An:	0.0003	sq. ft.
Date:	7/14/99	Vmstd:	75.891	%ISO:	99.0	
Run #:	3					

IMPINGER ANALYSIS

TYPE	CONTENTS	W (g	Wi (g)	Net (g)	Fixed Gas Analy	
					%CO2:	14.4
Modified Greenberg Smith	100 ml 0.1N KCl	937.6	732.8	204.8	%O2:	5.4
Modified Greenberg Smith	100 ml 0.1N KCl	787.5	745.5	42.0	%C0:	0.0
Greenberg Smith	100 ml 0.1N KCl	762.2	751.7	10.5	%N2	80.2
Modified Greenberg Smith	100ml 5%HNO3/10%H2O2	741.0	731.2	9.8	Fo	1.076
Modified Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	736.4	737.2	-0.8	Bws:	0.148
Modified Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	740.0	739.4	0.6		
Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	745.7	744.8	0.9	DSCFM*******	
Modified Greenberg Smith	Silica Gel	849.7	838.5	11.2		
			TOTAL	279		

Concentration and Emission Rate Data

Particle-Bound Mercury

Sample Front-Half:	0.30	ug
Blank Front-Half:	ND	ug
Net Front-Half:	0.30	ug
Detection Limit:	0.010	ug

Oxidized Mercury

Sample KC	0.69	ug
Blank KC	0.030	ug
Net KCl:	0.660	ug
D.L:	0.030	ug

Elemental Hg

Sample HNO3/H2O2:	0.33	ug
Blank HNO3/H2O2:	0.250	ug
Net HNO3/H2O2:	0.305	ug
Detection Limit:	0.010	ug
Sample KMnO4:	32	ug
Blank KMnO4:	0.030	ug
Net KMnO4:	31.970	ug
Detection Limit:	0.030	ug
Total Elemental:	32.275	ug

Total Mercury: 33.24 ug

	Concent on (ug/dscm)	Mass Flow Rate (gram/hr)	Mass Flow Rate* (lb/year)
Particle-Bound Hg	0.140	0.293	5.7
Oxidized Hg	0.307	0.645	12.5
Elemental Hg	15.028	31.547	609.2
HNO3	0.142	0.298	
H2SO4	14.886	31.249	
Total Hg	15.475	32.485	627.4

VELOCITY TRAVERSE AND VOLUME FLOW RATE DATA

Plant:	Antelope Valley Station	Sample Time:	11:20-13:40
Sample Location:	Unit B1 Inlet		
Test Date:	7/14/99	Run #:	3

DUCT DIMENSIONS

Width:	312	inches
Depth:	276	inches
Area:	598.00	sq. feet

Pbar:	28.91	"Hg
Ps:	27.84	"Hg
Bws:	0.15	
MWw:	28.67	g/g-mole
Tstd:	68	"deg F
Pstd:	29.92	"Hg
Cp:	0.84	

Traverse Data

Traverse Point #	In. From Edge	Td (deg. F)	dP ("H2O)	Vd (ft/sec)
A3	192.0	300	0.94	67.9
A2	115.2	314	0.42	45.8
A1	38.4	321	0.96	69.6
B3	192.0	297	0.81	62.9
B2	115.2	313	0.27	36.7
B1	38.4	323	0.79	63.2
C3	192.0	301	1.10	73.5
C2	115.2	312	0.69	58.7
C1	38.4	319	0.82	64.2
D3	192.0	303	1.00	70.2
D2	115.2	310	0.97	69.5
D1	38.4	314	0.82	64.0
E3	192.0	312	0.76	61.6
E2	115.2	306	1.05	72.1
E1	38.4	302	1.00	70.2
Average		310	0.83	63.3

Results:

Average Velocity: 63.34 fps @ 310 deg. F 27.84 "Hg

Q:	2272.64	x 100	ACFM	136358.4	KACFH
Q (std):	1450.62	x 100	SCFM	87037.2	KSCFH
Q (std dry):	1236.32	x 100	DSCFM	74179.1	KDSCFH

Reduced Isokinetic Field Data

Plant:	Basin Electric AVS	Bws(assumed):	0.18	Meter Box #:	38758
Sample Loc:	Main Stack	MWs(assumed):	28.21	dH@i:	1.811
Run #:	1	MWd(assumed):	28.8	Gamma:	1.005
Date:	7/13/99	Pstatic ("H2O):	-0.91	Pitot #:	3-2
Pbar ("Hg):	28.87	Probe Mat:	Glass	Cp:	0.813
Ps ("Hg):	28.80	Nozzle Mat:	Glass	X-Factor:	1.509
Sample time/pt:	10.0	Dn (in.):	0.215	# of Ports:	4

PORT:	A		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	12	54	184	0.89	76	76	4.0	251	248	54	651.995	1.12	
2	13	4	184	0.85	77	77	4.0	249	242	53		1.07	
1	13	14	184	0.76	80	77	4.0	271	238	57		0.96	
	13	24									669.118		
Run Time:		30	184	0.83	78	77	4.0	257	243	55	17.123	1.05	97.0

PORT:	B		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	13	30	184	0.89	80	79	4.0	258	272	66	669.118	1.13	
2	13	40	186	0.87	86	80	4.0	248	250	61		1.11	
1	13	50	186	0.73	89	81	4.0	253	257	62		0.94	
	14	0									686.145		
Run Time:		30	185	0.83	85	80	4.0	253	260	63	17.027	1.06	95.5

PORT:	C		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	13	3	184	0.83	85	83	4.0	254	269	64	686.145	1.06	
2	13	13	187	0.88	90	84	4.0	249	245	58		1.13	
1	13	23	187	0.81	93	85	4.0	250	252	58		1.04	
	13	33									703.564		
Run Time:		30	186	0.84	89	84	4.0	251	255	60	17.419	1.08	96.3

PORT:	D		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	14	43	188	0.88	89	87	4.0	255	249	65	703.564	1.13	
2	14	53	189	0.86	92	87	4.0	251	250	58		1.10	
1	15	3	190	0.79	94	87	4.0	248	246	58		1.02	
	15	13									721.009		
Run Time:		30	189	0.84	92	87	4.0	251	248	60	17.445	1.08	96.1
Post Test Leak Rate:				0.004	CFM @	8	"Hg						
Summary		120	186		86	82	4	253	252	60	69.014	1.07	

Analytical Results

Plant:	Basin Electric AVS	Tstd:	68	MWw:	28.10	
Sample Loc:	Main Stack	Pstd:	29.92	An:	0.0003	sq. ft.
Date:	7/13/99	Vmstd:	65.143	%ISO:	99.1	
Run #:	1					

IMPINGER ANALYSIS

TYPE	CONTENTS	W (g	Wi (g)	Net (g)
Modified Greenberg Smith	100 ml 0.1N KCl	1005.8	726.9	278.9
Modified Greenberg Smith	100 ml 0.1N KCl	754.6	731.8	22.8
Greenberg Smith	100 ml 0.1N KCl	738.1	732.6	5.5
Modified Greenberg Smith	100ml 5%HNO3/10%H2O2	755.7	751.8	3.9
Modified Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	756.7	757.0	-0.3
Modified Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	735.3	735.0	0.3
Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	737.3	736.6	0.7
Modified Greenberg Smith	Silica Gel	838.7	828.7	10.0
			TOTAL	321.8

Fixed Gas Analysis	
%CO2:	13.8
%O2:	6.0
%C0:	0.0
%N2	80.2
Fo	1.080
Bws:	0.189
DSCFM	1767169

Concentration and Emission Rate Data

Particle-Bound Mercury

Sample Front-Half:	0.010	ug
Blank Front-Half:	0.010	ug
Net Front-Half:	0.000	ug
Detection Limit:	0.010	ug

Oxidized Mercury

Sample KC	0.88	ug
Blank KC	0.030	ug
Net KCl:	0.850	ug
D.L:	0.030	ug

Elemental Hg

Sample HNO3/H2O	0.025	ug
Blank HNO3/H2O2:	0.250	ug
Net HNO3/H2O2:	0.000	ug
Detection Limit:	0.010	ug
Sample KMnO4:	0.65	ug
Blank KMnO4:	0.030	ug
Net KMnO4:	0.620	ug
Detection Limit:	0.030	ug
Total Elemental:	0.620	ug

Total Mercury: 1.47 ug

	Concent on (ug/dscm)	Mass Flow Rate (gram/hr)	Mass Flow Rate* (lb/year)
Particle-Bound Hg	0.000	0.000	0.0
Oxidized Hg	0.461	0.883	17.0
Elemental Hg	0.336	0.644	12.4
Total Hg	0.797	1.527	29.5

VELOCITY TRAVERSE AND VOLUME FLOW RATE DATA

Plant:	Basin Electric AVS	Time:	12:54-15:13
Sample Location:	Main Stack		
Date:	7/13/99	Run #:	1

Duct Diameter (in.):	308.4	Ps ("Hg):	28.80
Rectangular Duct:	0.0	Bws:	0.189
Area (sq.ft.):	519	MWw:	28.10
		Tstd (F):	68
		Pstd ("Hg):	29.92
		Cp:	0.81

		Port: A			Port: B			Port: C			Port: D		
Point #	In. From Edge	dP ("H2O)	Ts (F)	Vd (ft/s)	dP ("H2O)	Ts (F)	Vd (ft/s)	dP ("H2O)	Ts (F)	Vd (ft/s)	dP ("H2O)	Ts (F)	Vd (ft/s)
3	91.3	0.89	184	58.5	0.89	184	58.5	0.83	184	56.5	0.88	188	58.3
2	45.0	0.85	184	57.2	0.87	186	57.9	0.88	187	58.3	0.86	189	57.7
1	13.6	0.76	184	54.1	0.73	186	53.1	0.81	187	55.9	0.79	190	55.4

RESULTS:

Average Duct Velocity = 56.8 at 186 deg. F and 28.80 "Hg

Q	=	1767.2	x1000	ACFM
Qstd	=	1390.3	x1000	SCFM
Qstd(dry)	=	1127.6	x1000	DSCFM

Reduced Isokinetic Field Data

Plant:	Basin Electric AVS	Bws(assumed):	0.18	Meter Box #:	38758
Sample Loc:	Main Stack	MWs(assumed):	28.21	dH@i:	1.811
Run #:	2	MWd(assumed):	28.8	Gamma:	1.005
Date:	7/14/99	Pstatic ("H2O):	-0.91	Pitot #:	3-2
Pbar ("Hg):	28.91	Probe Mat:	Glass	Cp:	0.813
Ps ("Hg):	28.84	Nozzle Mat:	Glass	X-Factor:	1.509
Sample time/pt:	10.0	Dn (in.):	0.215	# of Ports:	4

PORT:	A		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	7	56	180	0.89	78	78	5.0	244	241	67	721.399	1.13	
2	8	6	180	0.87	80	79	5.0	249	242	54		1.11	
1	8	16	179	0.84	84	80	5.0	253	246	55		1.08	
	8	26									738.870		
Run Time:		30	180	0.87	81	79	5.0	249	243	59	17.471	1.11	96.2

PORT:	B		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	8	29	180	0.86	84	81	5.0	252	232	60	738.870	1.10	
2	8	39	180	0.87	87	81	5.0	251	236	52		1.12	
1	8	49	180	0.77	89	82	5.0	247	240	52		1.00	
	8	59								52	756.138		
Run Time:		30	180	0.83	87	81	5.0	250	236	54	17.268	1.07	96.0

PORT:	C		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	9	2	180	0.82	85	83	5.0	249	277	62	756.138	1.05	
2	9	12	180	0.84	89	83	4.0	249	242	52		1.09	
1	9	22	180	0.80	91	83	4.0	243	255	52		1.04	
	9	32									773.314		
Run Time:		30	180	0.82	88	83	4.3	247	258	55	17.176	1.06	95.9

PORT:	D		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	9	45	180	0.85	87	84	4.0	251	261	65	773.314	1.10	
2	9	55	180	0.84	87	84	4.0	246	248	54		1.08	
1	10	5	180	0.76	89	84	4.0	241	254	55		0.98	
	10	15									790.660		
Run Time:		30	180	0.82	88	84	4.0	246	254	58	17.346	1.05	97.2
Post Test Leak Rate:				0.002	CFM @	8	"Hg						
Summary		120	180		86	82	5	248	248	57	69.261	1.07	

Analytical Results

Plant:	Basin Electric AVS	Tstd:	68	MWw:	28.17	
Sample Loc:	Main Stack	Pstd:	29.92	An:	0.0003	sq. ft.
Date:	7/14/99	Vmstd:	65.478	%ISO:	98.7	
Run #:	2					

IMPINGER ANALYSIS

TYPE	CONTENTS	W (g	Wi (g)	Net (g)
Modified Greenberg Smith	100 ml 0.1N KCl	1007.5	731.5	276.0
Modified Greenberg Smith	100 ml 0.1N KCl	751.5	730.5	21.0
Greenberg Smith	100 ml 0.1N KCl	742.6	739.7	2.9
Modified Greenberg Smith	100ml 5%HNO3/10%H2O2	747.2	744.8	2.4
Modified Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	739.3	739.0	0.3
Modified Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	748.2	748.0	0.2
Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	730.4	730.4	0.0
Modified Greenberg Smith	Silica Gel	658.4	648.0	10.4
			TOTAL	313.2

Fixed Gas Analy	
%CO2:	13.9
%O2:	6.0
%C0:	0.0
%N2	80.1
Fo	1.072
Bws:	0.184
DSCFM*******	

Concentration and Emission Rate Data

Particle-Bound Mercury

Sample Front-Half:	0.037	ug
Blank Front-Half:	0.010	ug
Net Front-Half:	0.027	ug
Detection Limit:	0.010	ug

Oxidized Mercury

Sample KC	2.7	ug
Blank KC	0.030	ug
Net KCl:	2.670	ug
D.L:	0.030	ug

Elemental Hg

Sample HNO3/H2O	0.25	ug
Blank HNO3/H2O2:	0.250	ug
Net HNO3/H2O2:	0.225	ug
Detection Limit:	0.010	ug
Sample KMnO4:	28	ug
Blank KMnO4:	0.030	ug
Net KMnO4:	27.970	ug
Detection Limit:	0.030	ug
Total Elemental:	28.195	ug

Total Mercury: 30.89 ug

	Concent on (ug/dscm)	Mass Flow Rate (gram/hr)	Mass Flow Rate* (lb/year)
Particle-Bound Hg	0.015	0.028	0.5
Oxidized Hg	1.441	2.784	53.8
Elemental Hg	15.216	29.394	567.7
Total Hg	16.671	32.206	622.0

VELOCITY TRAVERSE AND VOLUME FLOW RATE DATA

Plant:	Basin Electric AVS	Time:	07:56-10:15
Sample Location:	Main Stack		
Date:	7/14/99	Run #:	2

Duct Diameter (in.):	308.4	Ps ("Hg):	28.84
Rectangular Duct:	0.0	Bws:	0.184
Area (sq.ft.):	519	MWw:	28.17
		Tstd (F):	68
		Pstd ("Hg):	29.92
		Cp:	0.81

		Port: A			Port: B			Port: C			Port: D		
Point #	In. From Edge	dP ("H2O)	Ts (F)	Vd (ft/s)	dP ("H2O)	Ts (F)	Vd (ft/s)	dP ("H2O)	Ts (F)	Vd (ft/s)	dP ("H2O)	Ts (F)	Vd (ft/s)
3	91.3	0.89	180	58.2	0.86	180	57.2	0.82	180	55.9	0.85	180	56.9
2	45.0	0.87	180	57.5	0.87	180	57.5	0.84	180	56.5	0.84	180	56.5
1	13.6	0.84	179	56.5	0.77	180	54.1	0.80	180	55.2	0.76	180	53.8

RESULTS:

Average Duct Velocity = 56.3 at 180 deg. F and 28.84 "Hg

Q	=	1752.9	x1000	ACFM
Qstd	=	1394.3	x1000	SCFM
Qstd(dry)	=	1137.7	x1000	DSCFM

Reduced Isokinetic Field Data

Plant:	Basin Electric AVS	Bws(assumed):	0.18	Meter Box #:	38758
Sample Loc:	Main Stack	MWs(assumed):	28.21	dH@i:	1.811
Run #:	3	MWd(assumed):	28.8	Gamma:	1.005
Date:	7/14/99	Pstatic ("H2O):	-0.89	Pitot #:	3-2
Pbar ("Hg):	28.91	Probe Mat:	Glass	Cp:	0.813
Ps ("Hg):	28.84	Nozzle Mat:	Glass	X-Factor:	1.509
Sample time/pt:	10.0	Dn (in.):	0.215	# of Ports:	4

PORT:	A		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	11	20	182	0.86	81	81	4.0	251	237	68	791.361	1.09	
2	11	30	184	0.86	78	78	4.0	251	261	56		1.08	
1	11	40	183	0.75	80	78	4.0	241	258	52		0.95	
	11	50									808.511		
Run Time:		30	183	0.82	80	79	4.0	248	252	59	17.150	1.04	97.4

PORT:	B		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	11	53	181	0.76	82	78	4.0	252	268	60	808.511	0.97	
2	12	3	182	0.78	83	78	4.0	249	257	55		1.00	
1	12	13	183	0.73	86	79	4.0	242	246	56		0.94	
	12	23									825.253		
Run Time:		30	182	0.76	84	78	4.0	248	257	57	16.742	0.97	98.3

PORT:	C		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	12	28	183	0.82	81	80	4.0	251	265	62	825.253	1.04	
2	12	38	183	0.84	84	80	4.0	251	254	52		1.07	
1	12	48	184	0.72	87	80	4.0	246	248	52		0.92	
	12	58									842.357		
Run Time:		30	183	0.79	84	80	4.0	249	256	55	17.104	1.01	98.2

PORT:	D		Duct Data			Meter Data		Heater Data		Impinge	Meter	Theo.	Quick
Point	Time		Td	dP	Tmi	Tmo	Vac.	Probe	Filter	Outlet	Volume	dH	
#	hr	min	(F)	("H2O)	(F)	(F)	("Hg)	(F)	(F)	(F)	(CF)	("H2O	%iso
3	13	9	185	0.84	81	80	4.0	252	246	68	842.357	1.06	
2	13	19	186	0.81	83	80	4.0	250	247	58		1.03	
1	13	29	186	0.71	84	80	4.0	246	244	63		0.90	
	13	39									859.270		
Run Time:		30	186	0.79	83	80	4.0	249	246	63	16.913	1.00	97.9
Post Test Leak Rate:				0.004	CFM @	7	"Hg						
Summary		120	184		83	79	4	249	253	59	67.909	1.00	

Analytical Results

Plant:	Basin Electric AVS	Tstd:	68	MWw:	28.19	
Sample Loc:	Main Stack	Pstd:	29.92	An:	0.0003	sq. ft.
Date:	7/14/99	Vmstd:	64.535	%ISO:	100.3	
Run #:	3					

IMPINGER ANALYSIS

TYPE	CONTENTS	W (g	Wi (g)	Net (g)
Modified Greenberg Smith	100 ml 0.1N KCl	998.9	736.8	262.1
Modified Greenberg Smith	100 ml 0.1N KCl	763.2	738.9	24.3
Greenberg Smith	100 ml 0.1N KCl	744.4	737.7	6.7
Modified Greenberg Smith	100ml 5%HNO3/10%H2O2	758.9	754.4	4.5
Modified Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	739.0	739.2	-0.2
Modified Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	738.2	738.6	-0.4
Greenberg Smith	100 ml 4% KMnO4/10% H2SO4	736.5	736.4	0.1
Modified Greenberg Smith	Silica Gel	887.7	875.3	12.4
			TOTAL	309.5

Fixed Gas Analysis	
%CO2:	14.2
%O2:	5.6
%C0:	0.0
%N2	80.2
Fo	1.077
Bws:	0.184
DSCFM	1709478

Concentration and Emission Rate Data

Particle-Bound Mercury			**Oxidized Mercury**			**Elemental Hg**		
Sample Front-Half:	0.037	ug	Sample KC	1.1	ug	Sample HNO3/H2O	0.25	ug
Blank Front-Half:	0.010	ug	Blank KC	0.030	ug	Blank HNO3/H2O2:	0.250	ug
Net Front-Half:	0.027	ug	Net KCl:	1.070	ug	Net HNO3/H2O2:	0.000	ug
Detection Limit:	0.010	ug	D.L:	0.030	ug	Detection Limit:	0.010	ug
						Sample KMnO4:	25	ug
						Blank KMnO4:	0.030	ug
						Net KMnO4:	24.970	ug
						Detection Limit:	0.030	ug
Total Mercury:	26.07	ug				Total Elemental:	24.970	ug

	Concent on (ug/dscm)	Mass Flow Rate (gram/hr)	Mass Flow Rate* (lb/year)
Particle-Bound Hg	0.015	0.028	0.5
Oxidized Hg	0.586	1.097	21.2
Elemental Hg	13.672	25.603	494.5
Total Hg	14.273	26.728	516.2

VELOCITY TRAVERSE AND VOLUME FLOW RATE DATA

Plant:	Basin Electric AVS	Time:	11:20-13:39
Sample Location:	Main Stack		
Date:	7/14/99	Run #:	3

Duct Diameter (in.):	308.4	Ps ("Hg):	28.84
Rectangular Duct:	0.0	Bws:	0.184
Area (sq.ft.):	519	MWw:	28.19
		Tstd (F):	68
		Pstd ("Hg):	29.92
		Cp:	0.81

		Port: A			Port: B			Port: C			Port: D		
Point #	In. From Edge	dP ("H2O)	Ts (F)	Vd (ft/s)	dP ("H2O)	Ts (F)	Vd (ft/s)	dP ("H2O)	Ts (F)	Vd (ft/s)	dP ("H2O)	Ts (F)	Vd (ft/s)
3	91.3	0.86	182	57.3	0.76	181	53.8	0.82	183	56.0	0.84	185	56.7
2	45.0	0.86	184	57.4	0.78	182	54.5	0.84	183	56.6	0.81	186	55.8
1	13.6	0.75	183	53.5	0.73	183	52.8	0.72	184	52.5	0.71	186	52.2

RESULTS:

Average Duct Velocity = 54.9 at 184 deg. F and 28.84 "Hg

Q	=	1709.5	x1000	ACFM
Qstd	=	1352.2	x1000	SCFM
Qstd(dry)	=	1102.8	x1000	DSCFM

Appendix D

Sampling Log

BRAUN INTERTEC

Description: AUS Project Log

Project No: CMXX-99-0304

Date: By: B. Randall

7-12-99

JT, DH, KH, GS On site @ 1500 to begin set-up.
off site @ 1730

7-13-99
JT, DH, KH, GJ onsite @ 0730
BR on site @ 0830

Pbar = 28.87

- finish set up at inlet & main stack
  make up chemicals
  Prepare trains
- Chain of custody & sample lables to Cris Miller for coal samples.

Inlet Initials
Pstatic = -14.5" H_2O
Average temp = 304
ΔP_{min} = 0.44
ΔP_{max} = 1.25
ΔP_{avg} = 0.90
Bws = 0.14
Assume 15% CO_2
5.9% O_2
meter # 81231 $\Delta H@$ = 1.829 γ = 1.003
Pitot # Hg-1 cp = 0.84

Stack Initials
Pstatic = -0.91
Avg temp = 180
ΔP_{avg} = 0.9
Bws = 0.18
14% CO_2
6.1% O_2
meter # 38758
$\Delta H@$ = 1.811 γ = 1.005
Pitot # 3-2 cp = 0.813

Due to duct & man-walk limits on inlet, can only reach 5 ports. will still do 3 points per port, but at 8 min/pt rather than 5

@ 1230, leak checks OK both locations, heating up.

Start Run #1 @ 1254

Make up Hydroxylamine Sulfate. Modify Section 8.6.3 by adding 100g NaCl (pesticide grade)

Sample Recovery - necessary to add HAS to both stack & inlet $KMnO_4$ samples to remove stains.

Blank Lots

BRAUN INTERTEC

Description:
Project No:
Date: By:

For stack R1, need to split CØ3 into 2 containers.
Stack R1 filter clear
For inlet R1, need to split CØ3 into 2 containers (A+B)
Heavy loading on filter + rinse of housing
~~KMnO4~~ KCl impingers turned cloudy after adding KMnO4
Both blank trains leak checked OK
Blank recovery OK - no need to split CØ3 for either location.
Crew offsite @ 1715
BR charge 2 trains for each location for 7/14 sampling
BR offsite @ 1810.

7/14/99

Onsite 0655 Pbar = 28.91
R1 Stack %ISO = 99.3
R1 Inlet %ISO = 98.5
Start Run #2 @ 0756
Change filter @ inlet after port #3
Leak checks OK
~~R2~~ complete 1015

Start Run #3 @ 1120
Recovery - 1st KMnO4/H2SO4 impinger @ inlet murky-purple.
End Run #3 @ 1340
When recovering inlet #3 KMnO4, one of the impingers was again murky

BRAUN INTERTEC

Description: AVS Sample log

Project No.:

Date: By:

Sample ID	Date Collected	Date stored
Inlet		
IR1-CØ1	7-13	7-14
IR1-CØ2	7-13	7-14
IR1-CØ3 A&B	7-13	7-14
IR1-CØ4	7-13	7-14
IR1-CØ5	7-13	7-14
	~~7-~~	
IR2-CØ1	7-14	7-14
IR2-CØ2	7-14	7-14
IR2-CØ3 A&B	7-14	7-14
IR2-CØ4	7-14	7-14
IR2-CØ5	7-14	7-14
IR3-CØ1	7-14	7-14
IR3-CØ2	7-14	7-14
IR3-CØ3 A&B	7-14	7-14
IR3-CØ4	7-14	7-14
IR3-CØ5		
IB-CØ1	7-13	7-14
IB-CØ2	7-13	7-14
IB-CØ3	7-13	7-14
IB-CØ4	7-13	7-14
IB-CØ5	7-13	7-14
Outlet		
SR1-CØ1	7-13	7-14
SR1-CØ2	7-13	7-14
SR1-CØ3 A&B	7-13	7-14
SR1-CØ4	7-13	7-14
SR1-CØ5	7-13	7-14
SB-CØ1	7-13	7-14
SB-CØ2	7-13	~~7-14~~ 7-14
SB-CØ3	7-13	7-14
SB-CØ4	7-13	7-14
SB-CØ5	7-13	
SR2-CØ1	7-14	7-14
SR2-CØ2	7-14	7-14
SR3-CØ3 A&B	7-14	7-14

BRAUN INTERTEC

Description: AVS Sample log

Project No:

Date: By:

SAMPLE ID	DATE COLLECTED	DATE STORED
SR3-CØ1	7-14	7-14
SR3-CØ2	7-14	7-14
SR3-CØ3A&B	7-14	7-14
SR3-CØ4	7-14	7-14
SR3-CØ5	7-14	7-14
C7	7-14	7-14
C8	7-14	7-14
C9	7-14	7-14
C10	7-14	7-14
C11	7-14	7-14
C12	7-14	7-14

Appendix D

Chain of Custody Sheets

BRAUN INTERTEC℠
Braun Intertec Corporation
6875 Washington Ave. S.
Edina, MN 55439-0108

Bottle orders and sampling inquires:
labservices@brauncorp.com
Phone: 612-942-4930 Fax: 612-942-4844

REQUEST FOR LABORATORY ANALYTICAL SERVICES

IMPORTANT
Date Results Requested: _____
Time _____
Rush Charges Authorized? ____ Yes ____ No
Rush / Quote # _____

For Braun Intertec Use Only
Braun Intertec Project No.

REPORT RESULTS TO

Contact Name	Bruce Rendall
Company	Braun Intertec Corp
Mailing Address	P.O. Box 39168
City, State, Zip	Minneapolis, MN 55439
Telephone #	(612) 933-4653
Fax #	(612) 946-1001
Project ID/Project Name	CMXY-09-03Cd
P.O. #	

SEND INVOICE TO

Contact Name	B. Rendall
Company	
Address	
City, State, Zip	
Telephone #	
Fax #	

Special Instructions and/or Specific Regulatory Requirements:
(method, limit of detection, petrofund, reporting units)

Circle metals that require low detection limits

Ag	As	Be	Cd	Cr	Pb	Ni	Sb	Se	Tl	V	Other			

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request)

	CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	Metals Field Filtered Y/N	Hg-Cr-Cd-Pb-Ni-Zn-Cu										FOR LAB USE ONLY
1	SP1-Cd1	7-13		filter				X										
2	SP2-~~Cd2~~Cd1	7-14		↓				X										
3	SP3-Cd1	7-14						X										
4	SB-Cd1 (Blank)	7-13		↓				X										
5	SP1-Cd2	7-13		liq.				X										
6	SP2-Cd2	7-14		↓				X										
7	SP3-Cd2	7-14						X										
8	SB-Cd2 (Blank)	7-13						X										
9	SP1-Cd3A → combine	7-13						X										
10	SP1-Cd3B	"						X										
11	SP2-Cd3A → combine	7-14						X										
12	SP2-Cd3B	"						X										
13	SP3-Cd3A → combine	"						X										
14	SP3-Cd3B	"						X										
15	SB-Cd3 (Blank)	7-13		↓				X										

CHAIN OF CUSTODY

Collected by: *(Print)*	Bruce Rendall	Collector's Signature:	
Relinquished by:		Date/Time	Received by:	Date/Time
Relinquished by:		Date/Time	Received Contents Not Verified:	Date/Time
			Received Contents Verified:	Date/Time

Evidence Tape Intact ☐ Yes ☐ No ☐ N/A

Sample Condition Upon Receipt: ☐ Acceptable ☐ Other _____

Temperature _____ °C ☐ Received on Ice

Comments:

Matrix Spike Samples Received: ☐ Yes ☐ No ☐ N/A

BRAUN INTERTEC[SM]
Braun Intertec Corporation
6875 Washington Ave. S.
Edina, MN 55439-0108

Bottle orders and sampling inquires:
labservices@brauncorp.com
Phone: 612-942-4930 Fax: 612-942-4844

REQUEST FOR LABORATORY ANALYTICAL SERVICES

IMPORTANT
Date Results Requested: _____
Time _____
Rush Charges Authorized? ____ Yes ____ No
Rush / Quote # _____

For Braun Intertec Use Only
Braun Intertec Project No. _____

REPORT RESULTS TO

Contact Name	Dwyer Randall	Project ID/Project Name	[illegible]
Company	Braun Intertec Corp		
Mailing Address	PO Box 3012		
City, State, Zip	Minneapolis, MN 55439		
Telephone #	(612) 833-4653	Fax #	(612) 996-6001

SEND INVOICE TO

Contact Name	D. Randall	Company	
Address			
City, State, Zip			
Telephone #		Fax #	

P.O. #

Special Instructions and/or Specific Regulatory Requirements:
(method, limit of detection, petrofund, reporting units)

Circle metals that require low detection limits

Ag	As	Be	Cd	Cr	Pb	Ni	Sb	Se	Tl	V	Other			

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request)

	CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	Metals Field Filtered Y/N	Cd, Cu, Ni, Zn										FOR LAB USE ONLY
1	SP1-cd4			Liq.				X										
2	SP2-cd4							X										
3	SP3-cd4							X										
4	SB-cd4 (Blank)							X										
5	SP1-cd5							X										
6	SP2-cd5							X										
7	SP3-cd5							X										
8	SB-cd5 (Blank)							X										
9	C9 (reagent blank)							X										
10	C10 "							X										
11	C11 "							X										
12	C12 "																	
13	Nothing below this line																	
14																		
15																		

CHAIN OF CUSTODY

Collected by: *(Print)*	Dwyer Randall	Collector's Signature:	
Relinquished by:		Date/Time 7/22-1400	Received by:	Date/Time
Relinquished by:		Date/Time	Received Contents Not Verified:	Date/Time
Evidence Tape Intact	☐ Yes ☐ No ☐ N/A		Received Contents Verified:	Date/Time
Sample Condition Upon Receipt:	☐ Acceptable ☐ Other _____		Comments:	
Temperature _____ °C	☐ Received on Ice			
Matrix Spike Samples Received:	☐ Yes ☐ No ☐ N/A			

BRAUN INTERTECSM

Braun Intertec Corporation
6875 Washington Ave. S.
Edina, MN 55439-0108

Bottle orders and sampling inquires:
labservices@brauncorp.com
Phone: 612-942-4930 Fax: 612-942-4844

REQUEST FOR LABORATORY ANALYTICAL SERVICES

IMPORTANT
Date Results Requested: _____
Time _____
Rush Charges Authorized? ____ Yes ____ No
Rush / Quote # _____

For Braun Intertec Use Only
Braun Intertec Project No.

REPORT RESULTS TO

Contact Name	Bruce Rendall	Project ID/Project Name	CMXY-99-C304
Company	Braun Intertec Corp.		
Mailing Address	P.O. Box 39168		
City, State, Zip	Minneapolis, MN 55439		
Telephone #	(612) 833-4653	Fax #	(612) 946-6001

SEND INVOICE TO

Contact Name	B. Rendall	Company	
Address			
City, State, Zip			
Telephone #		Fax #	

Special Instructions and/or Specific Regulatory Requirements:
(method, limit of detection, petrofund, reporting units)

Circle metals that require low detection limits

Ag	As	Be	Cd	Cr	Pb	Ni	Sb	Se	Tl	V	Other			

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request)

	CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	Metals Field Filtered Y/N	Hg Ontario Hydro										FOR LAB USE ONLY
1	1R1-Cd1	7/15		Liq				X										
2	1R2-Cd1	7-14		↓				X										
3	1R3-Cd1	7-14						X										
4	~~1B-Cd1 (Blank)~~	~~7/13~~		↓				X							Not found			Indicated blank BK
5	1R1-Cd2	7-13		Liquid				X										
6	1R2-Cd2	7-14						X										
7	1R3-Cd2	7-14						X										
8	1B-Cd2 (Blank)	7-13						X										
9	1R1-Cd3A > combine	7-13						X										
10	1R1-Cd3B	7-13						X										
11	1R2-Cd3A > combine	7-14						X										
12	1R2-Cd3B	7-14						X										
13	1R3-Cd3A > combine	7-14						X										
14	1R3-Cd3B	7-14		↓				X										
15																		

CHAIN OF CUSTODY

Collected by: *(Print)* Bruce Rendall — Collector's Signature: [signature]
Relinquished by: [signature] — Date/Time 7/14 1400 — Received by: — Date/Time
Relinquished by: — Date/Time — Received Contents Not Verified: — Date/Time
Received Contents Verified: — Date/Time

Evidence Tape Intact ☐ Yes ☐ No ☐ N/A
Sample Condition Upon Receipt: ☐ Acceptable ☐ Other _____
Temperature _____ °C ☐ Received on Ice
Matrix Spike Samples Received: ☐ Yes ☐ No ☐ N/A

Comments:

BRAUN INTERTEC℠
Braun Intertec Corporation
6875 Washington Ave. S.
Edina, MN 55439-0108

Bottle orders and sampling inquires:
labservices@brauncorp.com
Phone: 612-942-4930 Fax: 612-942-4844

REQUEST FOR LABORATORY ANALYTICAL SERVICES

IMPORTANT
Date Results Requested: _____
Time _____
Rush Charges Authorized? ____ Yes ____ No
Rush / Quote # _____

For Braun Intertec Use Only
Braun Intertec Project No.

REPORT RESULTS TO
Contact Name: Bruce Rardall
Company: Braun Intertec Corp
Mailing Address: P.O. Box 2108
City, State, Zip: Minneapolis, MN
Telephone #: (612) 703-4653 Fax #: (612) 701-0001

Project ID/Project Name: IW XX-09-0204
P.O. #

SEND INVOICE TO
Contact Name: C. Rardall
Company:
Address:
City, State, Zip:
Telephone #:
Fax #:

Special Instructions and/or Specific Regulatory Requirements:
(method, limit of detection, petrofund, reporting units)

Circle metals that require low detection limits
Ag | As | Be | Cd | Cr | Pb | Ni | Sb | Se | Tl | V | Other

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request)

	CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	Metals Field Filtered Y/N	Hg-Cd-Pb-Hg-Pb										FOR LAB USE ONLY
1	1BCd3 (blank)	7-13						Y										
2	1R1-Cd4	7-13						Y										
3	1R2-Cd4	7-14						Y										
4	1R3-Cd4	7-14						Y										
5	1B-Cd4 (blank)	7-13						Y										
6	1R1-Cd5	7-13						Y										
7	1R2-Cd5	7-14						Y										
8	1R3-Cd5	7-14						Y										
9	1B-Cd5 (blank)	7-13						Y										
10	C7 reagent blank							Y										
11	C8 reagent blank							Y										
12																		
13																		
14																		
15																		

CHAIN OF CUSTODY
Collected by: *(Print)* Bruce Rardall
Collector's Signature: [signature]
Relinquished by: [signature] Date/Time [illegible]
Relinquished by: Date/Time
Received by: Date/Time
Received Contents Not Verified: Date/Time
Received Contents Verified: Date/Time

Evidence Tape Intact ☐ Yes ☐ No ☐ N/A
Sample Condition Upon Receipt: ☐ Acceptable ☐ Other _____
Temperature _____ °C ☐ Received on Ice
Matrix Spike Samples Received: ☐ Yes ☐ No ☐ N/A

Comments:

Appendix E

Analytical Data Sheets for Speciated Mercury

PHILIP SERVICES

INORGANIC DATA PACKAGE
FOR
BRAUN INTERTEC

Project #: ***CMXX-99-0304***

Philip Analytical Services Corporation
5555 North Service Road
Burlington, Ontario L7L 5H7

Submission #9H0144

Prepared by: Janice Joseph - CSR Initial : _____

Approved by : Dr. Ron McLeod - Principal Scientist Initial : _____

1. CASE NARRATIVE

PROJECT NARRATIVE

PHILIP Analytical Services (Burlington ON)
Philip Project: AN990809
Philip Submission #:9H0144

Client: Braun Intertec
Client Project: CMXX-99-0304

I. SAMPLE RECEIPT/ANALYSIS

a) Sample Listing

Philip ID	Client Sample ID	Date Sampled	Date Received	Date Prepped	Run Date
Draft ASTM Mercury Speciation Method (September1, 1999 Revision)- Front Half					
042245 99	Method Blank	99/07/13	99/08/03	99/10/09	99/10/09
042246 99	F.H. Blank C7/C12	99/07/13	99/08/03	99/10/09	99/10/09
042264 99	SB-C01/C02 Blank	99/07/13	99/08/03	99/10/10	99/10/10
042265 99	SR1-C01/C02	99/07/13	99/08/03	99/10/09	99/10/09
042266 99	SR2-C01/C02	99/07/14	99/08/03	99/10/09	99/10/09
042267 99	SR3-C01/C02	99/07/14	99/08/03	99/10/09	99/10/09
042245 99	Method Blank	99/07/13	99/08/03	99/10/11	99/10/11
042248 99	1Blank-C01/C02	99/07/13	99/08/03	99/10/11	99/10/11
042249 99	1R1-C01/C02	99/07/13	99/08/03	99/10/11	99/10/11
042250 99	1R2-C01/C02	99/07/14	99/08/03	99/10/11	99/10/11
042251 99	1R3-C01/C02	99/07/14	99/08/03	99/10/11	99/10/11
Draft ASTM Mercury Speciation Method (September1, 1999 Revision)- Hydroxylamine					
042282 99	Reagent Blank C11	99/07/14	99/08/03	99/10/01	99/10/01
Draft ASTM Mercury Speciation Method (September1, 1999 Revision)- KCl Impingers/Rinses					
042245 99	Method Blank	99/07/13	99/08/03	99/10/03	99/10/03
042247 99	Reagent Blank C8	99/07/13	99/08/03	99/10/03	99/10/03
042252 99	1BC03 Blank	99/07/13	99/08/03	99/10/03	99/10/03
042253 99	1R1-C03A/B	99/07/13	99/08/03	99/10/03	99/10/03
042254 99	1R2-C03A/B	99/07/14	99/08/03	99/10/03	99/10/03
042255 99	1R3-C03A/B	99/07/14	99/08/03	99/10/03	99/10/03
042268 99	SB-C03 Blank	99/07/13	99/08/03	99/10/03	99/10/03
042269 99	SR1-C03A/B	99/07/13	99/08/03	99/10/03	99/10/03
042270 99	SR2-C03A/B	99/07/14	99/08/03	99/10/03	99/10/03
042271 99	SR3-C03A/B	99/07/14	99/08/03	99/10/03	99/10/03
Draft ASTM Mercury Speciation Method (September1, 1999 Revision)- KMNO4 Impingers/Rinses					
042245 99	Method Blank	99/07/13	99/08/03	99/10/05	99/10/05
042260 99	1B-C05 Blank	99/07/13	99/08/03	99/10/05	99/10/05

042261 99	1R1-C05	99/07/13	99/08/03	99/10/05	99/10/05
042262 99	1R2-C05	99/07/14	99/08/03	99/10/05	99/10/05
042263 99	1R3-C05	99/07/14	99/08/03	99/10/05	99/10/05
042276 99	SB-C05 Blank	99/07/13	99/08/03	99/10/05	99/10/05
042277 99	SR1-05	99/07/13	99/08/03	99/10/05	99/10/05
042278 99	SR2-05	99/07/14	99/08/03	99/10/05	99/10/05
042279 99	SR3-05	99/07/14	99/08/03	99/10/05	99/10/05
042281 99	Reagent Blank C10	99/07/14	99/08/03	99/10/05	99/10/05

Draft ASTM Mercury Speciation Method (September1, 1999 Revision)- HNO3/H202 Impingers/Rinses

042245 99	Method Blank	99/07/13	99/08/03	99/10/01	99/10/01
042256 99	1B-C04 Blank	99/07/13	99/08/03	99/10/01	99/10/01
042257 99	1R1-C04	99/07/13	99/08/03	99/10/01	99/10/01
042258 99	1R2-C04	99/07/14	99/08/03	99/10/01	99/10/01
042259 99	1R3-C04	99/07/14	99/08/03	99/10/01	99/10/01
042272 99	SB-C04 Blank	99/07/13	99/08/03	99/10/01	99/10/01
042273 99	SR1-C04	99/07/13	99/08/03	99/10/01	99/10/01
042274 99	SR2-C04	99/07/14	99/08/03	99/10/01	99/10/01
042275 99	SR3-C04	99/07/14	99/08/03	99/10/01	99/10/01
042280 99	Reagent Blank C9	99/07/14	99/08/03	99/10/01	99/10/01

Run Date is defined as the date of injection of the last calibration standard (12 hour or less) prior to the samples analyzed within that run sequence. Therefore the time of calibration injection that defines the run date is always within 12 hours of the time of sample injection.

b) Shipping Problems: none encountered

c) Documentation Problems: none encountered

II. SAMPLE PREP:

The were significant unexpected problems with the samples as received. It took time for us to adapt in-house protocols to be able the successfully analyze the samples (see notes to follow the narrative).

III. SAMPLE ANALYSIS:

See also comments within the appropriate Certificate of Analysis.

a) Hold Times: all analyses were over the method recommended hold times of 45 days. The hold times were exceeded because the sample arrived several weeks following sampling and because of process problems with the samples from the field (see notes to follow the narrative).
It is worth noting that the authors of the method do not have data to determine the actual hold times of samples via this method. They do have data to demonstrate that samples are stable for 45 days.

b) Instrument Calibration: all within control limits

I certify that this data package is in compliance with the terms and conditions of the contract, both technically and for completeness, for other than the conditions detailed above.
In addition, I certify, that to the best of my knowledge and belief, the data as reported are true and accurate.
Release of the data contained in this data package has been authorized by the cognizant laboratory official or his/her designee, as verified by this signature.

Ronald A. McLeod, Principal Sci., Ph.D.,C.Chem.

Date

Summary of how we (PASC) are handling submissions from the field:

KCl Impinger Contents and Rinses:

Initially we were trying to reduce the permanganate and MnO2 with hydroxylamine to just colorless and the re-add a one or so drops of permanganate to just pink color. In general, we found this impractical. It was very difficult to obtain a persistent pink color.

We had consulted Keith Curtis on this and he was concerned about losses of elemental Hg after addition of excess hydroxyamine. I think that this comment slowed us from reaching our final approach. I believe that Keilth's concern was unfounded since hydroxylamine is not a strong enough reducing agent to take Hg all the way to zero oxidation state.

Now we are not taking such care to avoid excesses of hydroxylamine. This speeds the reduction to colorless. Once reduced to colorless and on the same day, we take a subsample for final Hg processing and analysis. The remaining unused sample is retreated with permanganate (to purple) for long term sample archiving.

KMnO4 Iminger Contents and Rinses:

Similar changes in processing have occurred here too. Initially we were trying to cautiously titrate to just colorless. Now we are no longer so concerned about the addition of excess hydroxylamine and we analyze the reduced solutions on the same day as the reduction step. For long term storage of samples, the archived samples are preserved with permanganate.

I feel compelled to provide comments and suggestions relating to the Draft ASTM method (Ontario Hydro Method) for mercury speciation. Although significant and valiant effort has been made to develop and define this method, I suggest a few improvements and changes as follows.

I do not suggest that the data obtained from the method as written is compromised. I do not have data to suggest this. I do have enough experience to suggest that recovery protocols could be improved which should ease the analytical processes.

Before I continue, I would point out that Keith Curtis - who developed that use of the KCl impinger for effective capture of HgCl2 - recovers and processes his Hg speciation trains in the field significantly differently than the approach presented in the existing draft method. I am aware that are good reasons for the changes relative to Keith's approach, but those changes have a significant impact on the ultimate handling of the samples. We have had the luxury of having received samples into our laboratory that were treated in the manner that Keith's team handles them in the field. Indeed, we have seen the difference.

In part these comments are derived from discussions with Keith in regards to the intention of the recovery processes that he designed for his field staff. According to Keith, the recovered impinger solutions are supposed to be homogeneous. The KCl and permanganate impinger samples coming in from field derived from the draft ASTM method are in general the farthest possible from this description.

Re KCl Recoveries:

1) Firstly, I would suggest to use some other rinse solution than KMnO4 to rinse out the KCl impingers after transferring the KCl solution to the recovery bottle. Instead, use more KCl solution, or water or 0.1N HNO3 but **NOT** KMnO4. Once the permanganate is used, then the impingers are rinsed with hydroxylamine to remove the inevitable brown staining. It is this combination of rinses that causes

problems analytically. Please eliminate the KMnO4 and hydroxylamine rinses. Replace these rinses with one of the others suggested above.

We commonly receive these KCl impingers and rinses in the lab with large amounts of MnO2 precipitates. This is because of the presence of significant permanganate and hydroxylamine rinses. [The resulting copious amounts of MnO2 precipitates can be resolublized in the lab, but this is time consuming and unnecessary. Furthermore, we cannot easily stabilize these solutions. If we do not analyze them immediately then the MnO2 precipitates again.]

If no KMnO4 is used in the impinger rinsing and no hydroylamine has subsequently been used, I believe that the field staff will find it easier, in general, to obtain a 'just pink' solution using only a very few drops of permangate . [This premise has been confirmed by discussions with a field sampling team]

2) Secondly once the impinger solutions have been treated to just pink with permanganate, then add dichromate as preservative.

Ii is our experience that all solutions so treated have remained homogeneous. The dichromate is an additional preservative process that Keith Cutis's field staff include for KCl impingers.

Re KMnO4 Recoveries:

3) Here I suggest one of two approaches... either use Keith Curtis's field approach entirely or adopt the method 29 approach with HCl rinses.

The Curtis approach is to reduce the permanganate solutions all the way to colorless in the field with cautious addition of hydroxylamine, then preservation with dichromate. This provides a stable and homogenous solution. [re this approach: I understand there is some concern from the ASTM method writers with the severity of this reaction being done by non-chemists in the field. I share some of these concerns.]

The method 29 approach is to recover the brown stains with 8 N HCl and place these in a separate bottle. We are all familiar with the disadvantages of handling the strong hydrochloric acid. However, it is a devil that is known to all field staff. It is also a recovery process well accepted and I presume well validated.

The problem with the draft ASTM method as currently written is that the addition of hydroxylamine in the field (not enough to reduce all the way to a colorless solution) provides an unstable mixture which creates large amounts of MnO2 precipitate upon standing. If the solution was taken all the way to colorless in the field then copious amounts of precipitate would not likely occur and certainly not occur after treatment with hydroxylamine .

[We occasionally observe high amounts of MnO2 precipitation in method 29 permanganate submissions. I suspect that this occurs for sources with high organic emissions that have been oxidized by the permanganate. Usually for method 29 samples, the precipitation of MnO2 is minor in amount - unlike almost all of the permanganates coming from the ASTM mercury speciation trains. I conclude that the 'small' amounts of hydroxylamine added in the field is causing the problems (i.e. the reason for copious amounts of precipitate).]

ASTM Draft Method for Mecury Speciation (Ontario Hydro Method): - Suggested Changes

I feel compelled to provide comments and suggestions relating to the Draft ASTM method (Ontario Hydro Method) for mercury speciation. Although significant and valiant effort has been made to develop and define this method, I suggest a few improvements and changes as follows.

I do not suggest that the data obtained from the method as written is compromised. I do not have data to suggest this. I do have enough experience to suggest that recovery protocols could be improved which should ease the analytical processes.

Before I continue, I would point out that Keith Curtis - who developed that use of the KCl impinger for effective capture of HgCl2 - recovers and processes his Hg speciation trains in the field significantly differently than the approach presented in the existing draft method. I am aware that are good reasons for the changes relative to Keith's approach, but those changes have a significant impact on the ultimate handling of the samples. We have had the luxury of having received samples into our laboratory that were treated in the manner that Keith's team handles them in the field. Indeed, we have seen the difference.

In part these comments are derived from discussions with Keith in regards to the intention of the recovery processes that he designed for his field staff. According to Keith, the recovered impinger solutions are supposed to be homogeneous. The KCl and permanganate impinger samples coming in from field derived from the draft ASTM method are in general the farthest possible from this description.

Re KCl Recoveries:

1) Firstly, I would suggest to use some other oxidant than KMnO4 to treat/preserve the KCl impingers after sampling. Perhaps use dichromate instead. Once the permanganate is used, then the impingers are rinsed with hydroxylamine to remove the inevitable brown staining. It seems to be this combination of permanganate and hyrdoxylamine that causes problems creating large amounts of MnO2 on standing. Please eliminate the KMnO4 and hydroxylamine rinses.

We commonly receive these KCl impingers and rinses in the lab with large amounts of MnO2 precipitates. This appears to be because of the presence of significant permanganate and hydroxylamine rinses. [The resulting copious amounts of MnO2 precipitates can be resolublized in the lab, but this is time consuming and unnecessary. Furthermore, we cannot easily stabilize these solutions. If we do not analyze them immediately then the MnO2 precipitates again.]

It is worth noting that samples treated via Keith Curtis's approach have been easy to process. These had been treated with permanganate and dichromate and remain homogeneous.

It is our experience that all solutions so treated have remained homogeneous. The dichromate is an additional preservative process that Keith Cutis's field staff include for KCl impingers.

Re KMnO4 Recoveries:

2) Here I suggest one of two approaches... either use Keith Curtis's field approach entirely or adopt the method 29 approach with HCl rinses.

The Curtis approach is to reduce the permanganate solutions all the way to colorless in the field with cautious addition of hydroxylamine, then preservation with dichromate. This provides a stable and homogenous solution. [re this approach: I understand there is some concern from the ASTM method writers with the severity of this reaction being done by non-chemists in the field. I share some of these concerns.]

The method 29 approach is to recover the brown stains with 8 N HCl and place these in a separate bottle. We are all familiar with the disadvantages of handling the strong hydrochloric acid. However, it is a devil that is known to all field staff. It is also a recovery process well accepted and I presume well validated.

The problem with the draft ASTM method as currently written is that the addition of hydroxylamine in the field (not enough to reduce all the way to a colorless solution) appears to provide an unstable mixture which creates large amounts of MnO2 precipitate upon standing. If the solution was taken all the way to colorless in the field then copious amounts of precipitate would not likely occur and certainly not occur after treatment with hydroxylamine .

[We occasionally observe high amounts of MnO2 precipitation in method 29 permanganate submissions. I suspect that this occurs for sources with high organic emissions that have been oxidized by the permanganate. Usually for method 29 samples, the precipitation of MnO2 is minor in amount - unlike almost all of the permanganates coming from the ASTM mercury speciation trains. I conclude that the 'small' amounts of hydroxylamine added in the field is causing the problems (i.e. the reason for copious amounts of precipitate).]

2. ANALYTICAL DATA REPORT

PHILIP SERVICES

Certificate of Analysis

CLIENT INFORMATION		LABORATORY INFORMATION	
Attention:	Bruce Randall	**Contact:**	Ron McLeod
Client Name:	Braun Intertec	**Project:**	AN990809
Project:	CMXX-99-0304	**Date Received:**	99/08/03
Project Desc:	Stack Emissions	**Date Reported:**	99/10/12
Address:	P.O. Box 39108 Minneapolis, MN 55439	**Submission No.:**	9H0144
		Sample No.:	042245-042282
Fax Number:	612-946-6001		
Phone Number:	612-833-4653		

NOTES: ***"-" = not analysed '<' = less than Method Detection Limit (MDL) 'NA' = no data available***
LOQ can by determined for all analytes by multiplying the appropriate MDL X 3.33
Solids data is based on dry weight except for biota analyses.
Organic analyses are not corrected for extraction recovery standards except for isotope dilution methods, (i.e. CARB 429 PAH, all PCDD/F and DBD/DBF analyses)

Methods used by PASC are based upon those found in 'Standard Methods for the Examination of Water and Wastewater', Nineteenth Edition. Other methods are based on the principles of MISA or EPA methodologies. New York State: ELAP Identification Number 10756.

All work recorded herein has been done in accordance with normal professional standards using accepted testing methodologies, quality assurance and quality control procedures except where otherwise agreed to by the client and testing company in writing. Any and all use of these test results shall be limited to the actual cost of the pertinent analysis done. There is no other warranty expressed or implied. Your samples will be retained at PASC for a period of three weeks from receipt of data or as per contract.

COMMENTS: **Revised Report: 99/12/06**

Certified by: _____

PASC - Certificate of Analysis

			Method	Blank	Blank	Blank	Blank	F.H. Blank	1Blank	1R1	1R2	1R3
	Client ID:		Blank	Spike#1	Spike#1	Spike#2	Spike#2	C7/C12	C01/C02	C01/C02	C01/C02	C01/C02
	Lab No.:		042245 99	042245 99	042245 99	042245 99	042245 99	042246 99	042248 99	042249 99	042250 99	042251 99
	Date Sampled:		-	-	-	-	-	99/07/13	99/07/13	99/07/13	99/07/14	99/07/14
Component	**MDL**	**Units**			% Recoveries		% Recoveries					
Mercury - FH (Outlet)	0.010	ug	<	0.095	95	0.094	94	<	-	-	-	-
Mercury - FH (Inlet)	0.010	"	<	0.10	100	0.10	100	-	<0.040	<0.30	<0.40	<0.30

PASC - Certificate of Analysis

			SB-C01/C02	SR1	SR2	SR2	SR2	SR2	SR2	SR2	SR3
Client ID:			Blank	C01/C02	C01/C02	C01/C02	C01/C02	C01/C02	C01/C02	C01/C02	C01/C02
Lab No.:			042264 99	042265 99	042266 99	042266 99	042266 99	042266 99	042266 99	042266 99	042267 99
Date Sampled:			99/07/13	99/07/13	99/07/14	99/07/14	99/07/14	99/07/14	99/07/14	99/07/14	99/07/14
Component	**MDL**	**Units**				Duplicate	M. Spike	MS % Rec.	MS Dup	MSD % Rec.	
Mercury - FH (Outlet)	0.010	ug	<	<	0.037	0.037	0.13	97	0.13	97	0.037
Mercury - FH (Inlet)	0.010	"	-	-	-	-	-	-	-	-	-

PASC - Certificate of Analysis

			Method	Blank	Blank	Blank	Blank	Reagent	1BC03	1R1	1R1
	Client ID:		Blank	Spike#1	Spike#1	Spike#2	Spike#2	Blank C8	Blank	C03A/B	C03A/B
	Lab No.:		042245 99	042245 99	042245 99	042245 99	042245 99	042247 99	042252 99	042253 99	042253 99
	Date Sampled:		-	-	-	-	-	99/07/13	99/07/13	99/07/13	99/07/13
Component	**MDL**	**Units**			% Recoveries		% Recoveries				Duplicate
Mercury - KCl	0.030	ug	<	0.28	95	0.28	94	<	0.085	0.73	0.73

PASC - Certificate of Analysis

			1R1	1R1	1R1	1R1	1R2	1R3	SB-C03	SR1	SR2	SR3
	Client ID:		C03A/B	C03A/B	C03A/B	C03A/B	C03A/B	C03A/B	Blank	C03A/B	C03A/B	C03A/B
	Lab No.:		042253 99	042253 99	042253 99	042253 99	042254 99	042255 99	042268 99	042269 99	042270 99	042271 99
	Date Sampled:		99/07/13	99/07/13	99/07/13	99/07/13	99/07/14	99/07/14	99/07/13	99/07/13	99/07/14	99/07/14
Component	**MDL**	**Units**	M. Spike	MS % Rec.	MS Dup	MSD % Rec.						
Mercury - KCl	0.030	ug	1.39	100	1.40	100	0.79	0.30	<	0.39	1.22	0.50

PASC - Certificate of Analysis

			Method	Blank	Blank	Blank	Blank	1B-C05			
	Client ID:		Blank	Spike#1	Spike#1	Spike#2	Spike#2	Blank	1R1-C05	1R2-C05	1R3-C05
	Lab No.:		042245 99	042245 99	042245 99	042245 99	042245 99	042260 99	042261 99	042262 99	042263 99
	Date Sampled:		-	-	-	-	-	99/07/13	99/07/13	99/07/14	99/07/14
Component	**MDL**	**Units**			% Recoveries		% Recoveries				
Mercury - KMnO4	0.030	ug	<	0.13	99	0.13	99	<	14.9	14.9	14.3

PASC - Certificate of Analysis

			SB-C05									Reagent
	Client ID:		Blank	SR1-05	SR1-05	SR1-05	SR1-05	SR1-05	SR1-05	SR2-05	SR3-05	Blank C10
	Lab No.:		042276 99	042277 99	042277 99	042277 99	042277 99	042277 99	042277 99	042278 99	042279 99	042281 99
	Date Sampled:		99/07/13	99/07/13	99/07/13	99/07/13	99/07/13	99/07/13	99/07/13	99/07/14	99/07/14	99/07/14
Component	**MDL**	**Units**			Duplicate	M. Spike	MS % Rec.	MS Dup	MSD % Rec.			
Mercury - KMnO4	0.030	ug	<	0.29	0.29	0.60	93	0.60	93	12.6	10.9	<

PASC - Certificate of Analysis

			Method	Blank	Blank	Blank	Blank	1B-C04						
Client ID:			Blank	Spike#1	Spike#1	Spike#2	Spike#2	Blank	1R1-C04	1R1-C04	1R1-C04	1R1-C04	1R1-C04	1R1-C04
Lab No.:			042245 99	042245 99	042245 99	042245 99	042245 99	042256 99	042257 99	042257 99	042257 99	042257 99	042257 99	042257 99
Date Sampled:			-	-	-	-	-	99/07/13	99/07/13	99/07/13	99/07/13	99/07/13	99/07/13	99/07/13
Component	**MDL**	**Units**			% Recoveries		% Recoveries			Duplicate	M. Spike	MS % Rec.	MS Dup	SD % Rec.
Mercury - H202	0.010	ug	<	0.051	100	0.050	100	<0.25	<0.25	<0.25	2.9	110	2.8	100

PASC - Certificate of Analysis

					SB-C04				Reagent
Client ID:			1R2-C04	1R3-C04	Blank	SR1-C04	SR2-C04	SR3-C04	Blank C9
Lab No.:			042258 99	042259 99	042272 99	042273 99	042274 99	042275 99	042280 99
Date Sampled:			99/07/14	99/07/14	99/07/13	99/07/13	99/07/14	99/07/14	99/07/14
Component	**MDL**	**Units**							
Mercury - H202	0.010	ug	0.36	0.33	<0.25	<0.025	<0.25	<0.25	<0.25

PASC - Certificate of Analysis

	Client ID:		Reagent Blank C11
	Lab No.:		042282 99
	Date Sampled:		99/07/14
Component	**MDL**	**Units**	
Impinger volume - hydroxylamine		ml	90
Mercury - hydroxalamine	0.010	ug	<

PASC - Summary of Analysis Pre. Dates

Batch Code:	**10093GFL**	**10101GFT**	**10094GFL**
Mercury - FH (Outlet)	042245 99	042264 99	042266 99
	042246 99		042267 99
	042265 99		
Run Date:	99/10/09	99/10/10	99/10/09
Date of Sample Prep:	99/10/09	99/10/10	99/10/09

Batch Code:	**10111GFB**
Mercury - FH (Inlet)	042245 99
	042248 99
	042249 99
	042250 99
	042251 99
Run Date:	99/10/11
Date of Sample Prep:	99/10/11

Batch Code:	**1001MGHY**
Mercury - hydroxalamine	042282 99
Run Date:	99/10/01
Date of Sample Prep:	99/10/01

Batch Code:	**10031BKC**
Mercury - KCl	042245 99
	042247 99
	042252 99
	042253 99
	042254 99
	042255 99
	042268 99
	042269 99
	042270 99
	042271 99
Run Date:	99/10/03
Date of Sample Prep:	99/10/03

Batch Code:	**10051GMN**	**10052GMN**
Mercury - KMnO4	042245 99	042281 99
	042260 99	
	042261 99	
	042262 99	
	042263 99	
	042276 99	
	042277 99	
	042278 99	
	042279 99	
Run Date:	99/10/05	99/10/05
Date of Sample Prep:	99/10/05	99/10/05

Batch Code:	**10011N2B**

Mercury - H202	042245 99
	042256 99
	042257 99
	042258 99
	042259 99
	042272 99
	042273 99
	042274 99
	042275 99
	042280 99
Run Date:	99/10/01
Date of Sample Prep:	99/10/01

3. RAW DATA

ion ber	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
266	BRAUN-MN	SR2-C01/C02	Mercury -	PV	0.037	0.037	0.134	97.	0.134	97.	99/10/09	4GFL	99/10/09	MG01	87.	67.	*PDS*
267	BRAUN-MN	SR3-C01/C02	Mercury -	PV	0.037						99/10/09	4GFL	99/10/09	MG01	87.	67.	
724	BRAUN-MN	MB R456	Mercury -	PV	-0.010	-99999.0	0.098	98.	0.097	97.	99/10/09	4GFL	99/10/09	MG01	86.	65.	
730	BRAUN-MN	SB-C01/C02	Mercury -	PV	-0.010						99/10/09	4GFL	99/10/09	MG01	86.	65.	
731	BRAUN-MN	SR1-C01/C02	Mercury -	PV	-0.010						99/10/09	4GFL	99/10/09	MG01	86.	65.	
732	BRAUN-MN	SR2-C01/C02	Mercury -	PV	-0.010						99/10/09	4GFL	99/10/09	MG01	85.	65.	
733	BRAUN-MN	SR3-C01/C02	Mercury -	PV	-0.010						99/10/09	4GFL	99/10/09	MG01	85.	65.	
188	BRAUN-MN	MB R456	Mercury -	PV	-0.010	-99999.0	0.098	98.	0.097	97.	99/10/09	4GFL	99/10/09	MG01	82.	60.	
189	BRAUN-MN	Reagent Blank C7/C12	Mercury -	PV	-0.010						99/10/09	4GFL	99/10/09	MG01	82.	60.	
194	BRAUN-MN	SR1-C01/C02	Mercury -	PV	0.189						99/10/09	4GFL	99/10/09	MG01	82.	60.	
195	BRAUN-MN	SR2-C01/C02	Mercury -	PV	0.123						99/10/09	4GFL	99/10/09	MG01	81.	60.	
196	BRAUN-MN	SR3-C01/C02	Mercury -	PV	0.089						99/10/09	4GFL	99/10/09	MG01	81.	60.	
225	BRAUN-MN	SB-C01/C02	Mercury -	PV	0.016						99/10/09	4GFL	99/10/09	MG01	82.	60.	
1009	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.098	98.	0.097	97.	99/10/09	4GFL	99/10/09	MG01	$$$	$$$	

14 Tests for OHFLT with an MDL of 0.010 ug Validated By CMH Control Chart Updated N/A IO Requirements met N/A

00024

LDC AUTOSAMPLER RUN LOG (MERCURY)

(1)

Date: 99.10.09(WA) Run Code: MG01 Matrix: IMP.

Analyst: MG Units: µg (see comments) MDL: 0.01

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12			BL1009	16 FL		
13			"			
14			BL1009 S			
15			"			
16			BL1009 DS			
17			"			
18			53139			
19			"			
20			53139 D			
21			"			
22			53139 S			
23			"			
24			53139 DS			
25			"			
26		1/10	51662			
27			"			
28			51663			
29			"			
30			51664			
31			"			
32			CCV			
33			B			
34			D4			
35			53129 a			
36			"			
37			53129 b			
38			"			
39			53129 c			
40			"			
41			53130			
42			"			
43			53138			
44			"			
45			53140			
46			"			
47			53141			
48			"			
49			53142			
50			"			
51			BL1009	2G FL		
52			"			
53			BL1009 S			
54			"			
55			CCV			
56			B			
57			D4			
58			BL1009 DS			
59			"			
60			53164			
61			"			
62			53164 D			
63			"			
64			53164 S			
65			"			
66			53164 DS			
67			"			
68			53143 a			
69			"			
70			53143 b			
71			"			
72			53143 c			
73			"			
74			53144			
75			"			
76			53149			
77			"			
78			CCV			
79			B			
80			D4			

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

[illegible] mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.09 Run Code: MG01 Matrix: IMP.

Analyst: MG Units: µg (see comments) MDL: 0.01

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21		1/10	53150			
22			"			
23			53151			
24			"			
25			53165			
26			"			
27			53685 a			
28			"			
29			53685 b			
30			"			
31			53685 c			
32			"			
33			53690			
34			"			
35			53691			
36			"			
37			BL1009	3GFL		
38			"			
39			BL1009 S			
40			"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41			CCV			
42			B			
43			D4			
44			BL1009 DS			
45			"			
46			53693			
47			"			
48			53693 D			
49			"			
50			53693 S			
51			"			
52			53693 DS			
53			"			
54			53692			
55			"			
56			47503			
57			"			
58			51449 a			
59			"			
60			51449 b			
61			"			
62			51449 c			
63			"			
64			CCV			
65			B			
66			D4			
67			51450			
68			" 51459 "			
69		1/10	51460			
70			"			
71			51461			
72			"			
73			42246 a			
74			"			
75			42246 b			
76			"			
77			42246 c			
78			"			
79			42265			
80			"			

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

Blank Spike = 1.0 mg/kg for solid samples.

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.09 Run Code: MG01 Matrix: IMP.

Analyst: MG Units: µg (see comments) MDL: 0.01

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.6		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.6		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.6		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21			BL1009	4GFL		
22			"			
23			BL1009 S			
24			"			
25			BL1009 DS			
26			"			
27			CCV			
28			B			
29			D4			
30			42266			
31			"			
32			42266 D			
33			"			
34			42266 S			
35			"			
36			42266 DS			
37			"			
38			42267			
39			"			
40			42730			

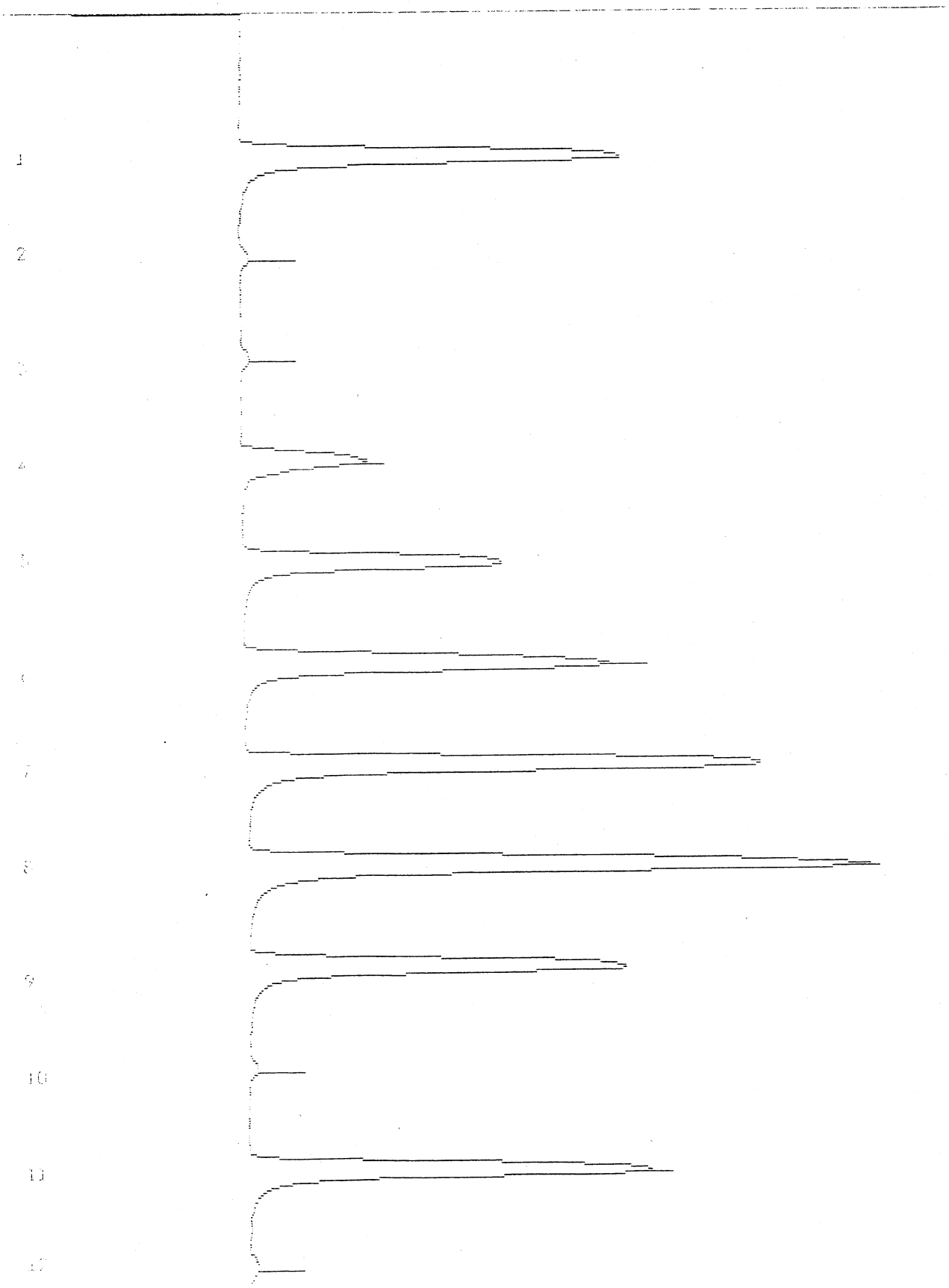
Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41			42730			
42			42731			
43			"			
44			42732			
45			"			
46			42733			
47			"			
48			43189 a			
49			"			
50			CCV			
51			B			
52			D4			
53			43189 b			
54			"			
55			43189 c			
56			"			
57			43194			
58			"			
59			43195			
60			"			
61			43196			
62			"			
63			43225			
64			"			
65			47489 a			
66			"			
67			CCV			
68			B			
69			D4			
70						
71						
72						
73						
74						
75						
76						
77						
78						
79						
80						

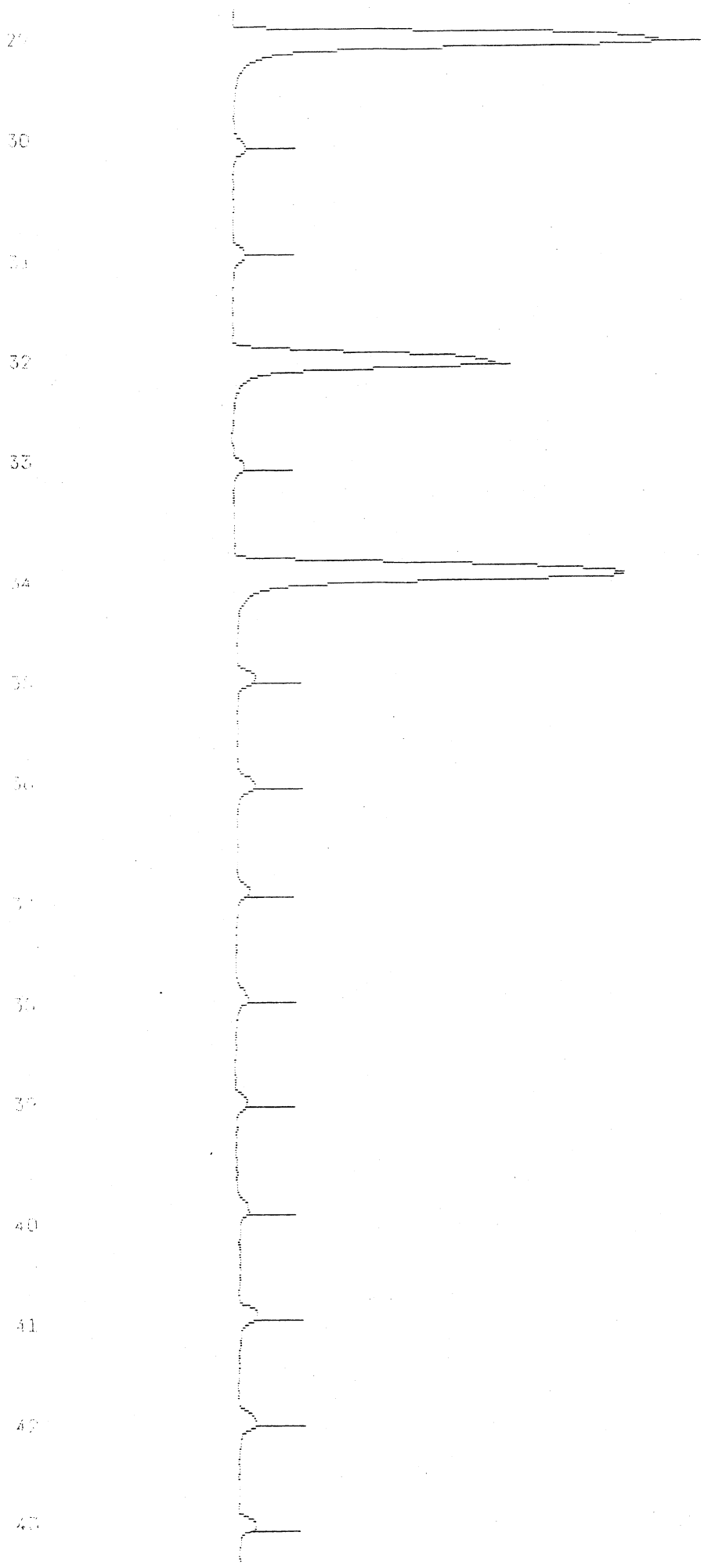
Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L; CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

[illegible] ug/kg Blank Spike = 1.0 mg/kg for solid samples.

RUN DATE: 10-09-1999 CHART DATE: 10-10-1999
CHART SPEED: 30
DATA FILE NAME: C:\DP4\DATA\991009WA.DAT

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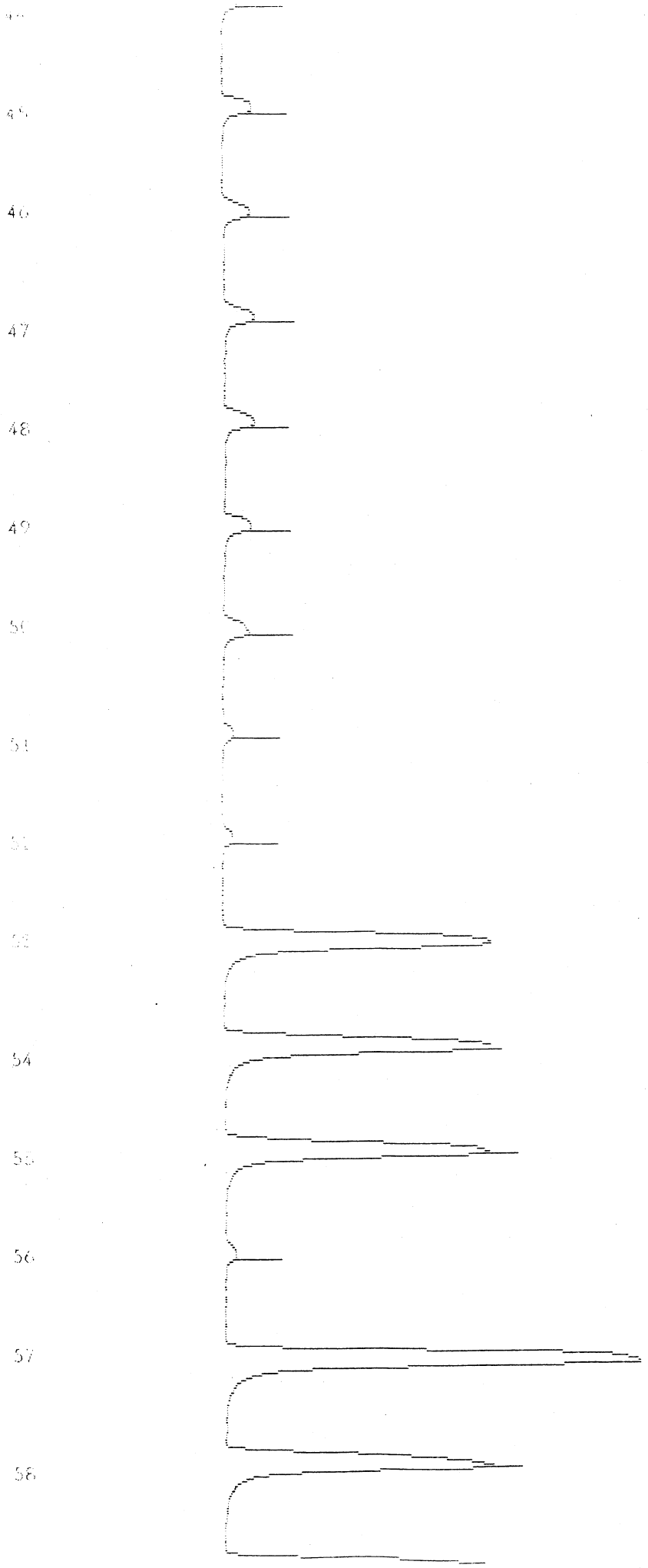
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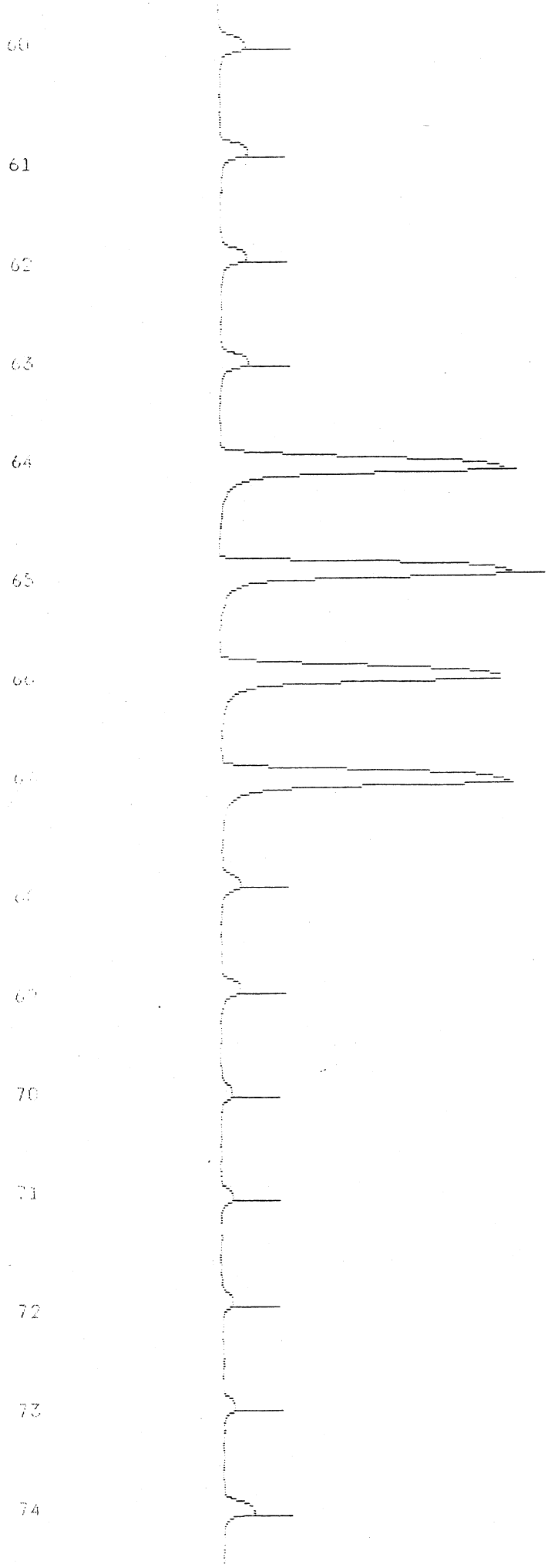
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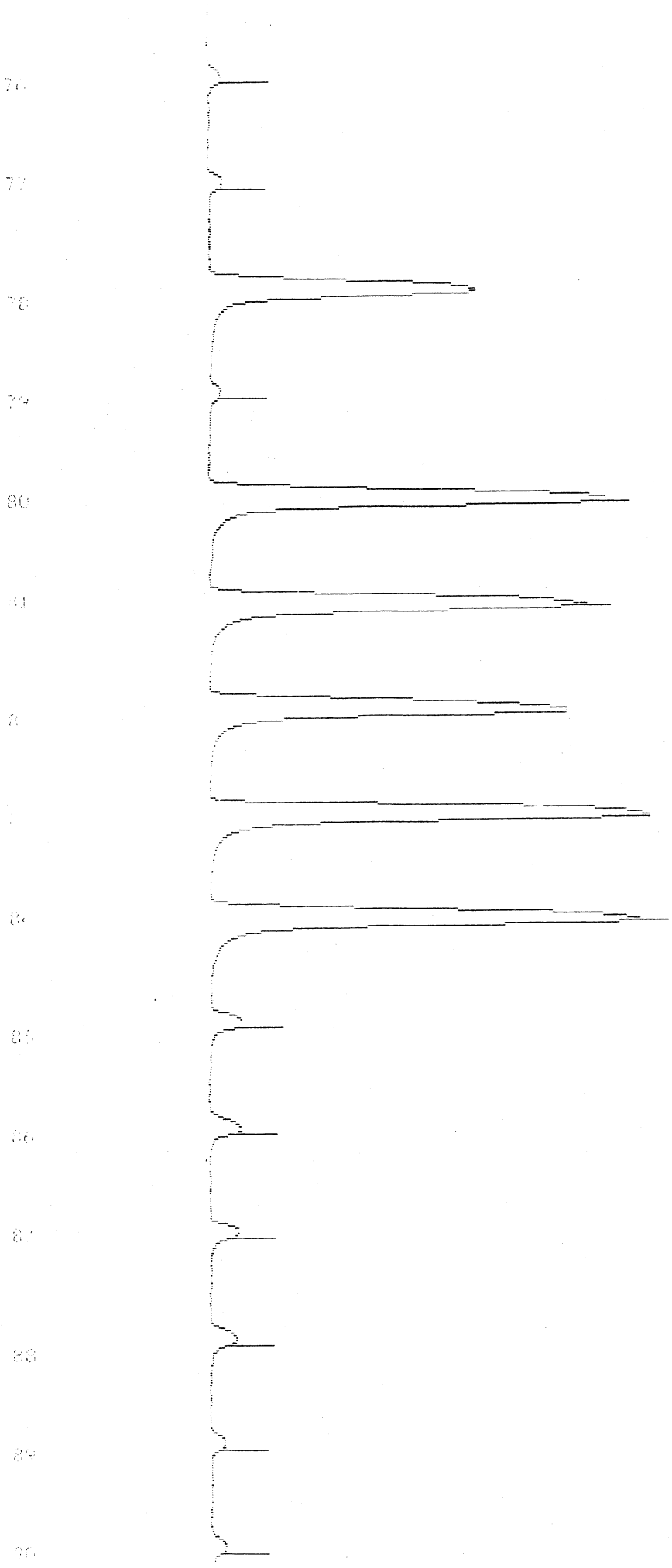
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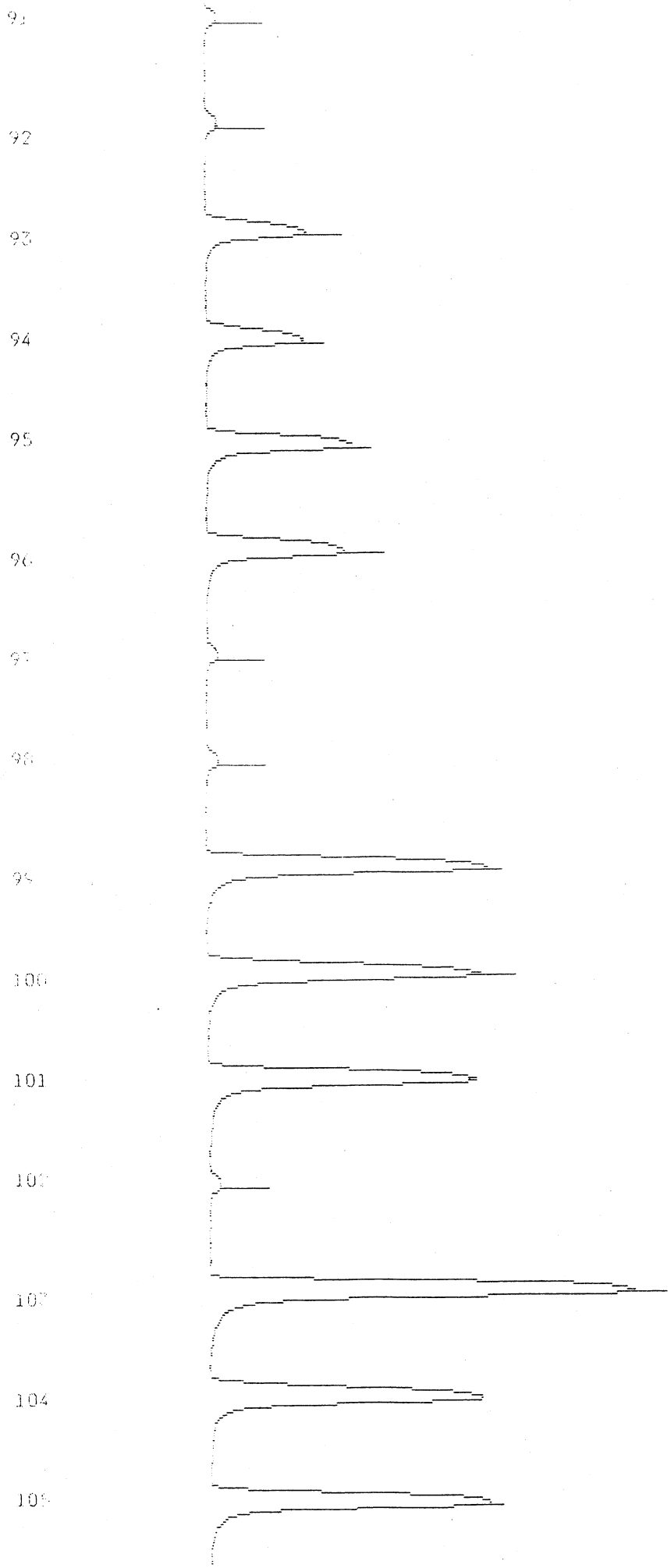
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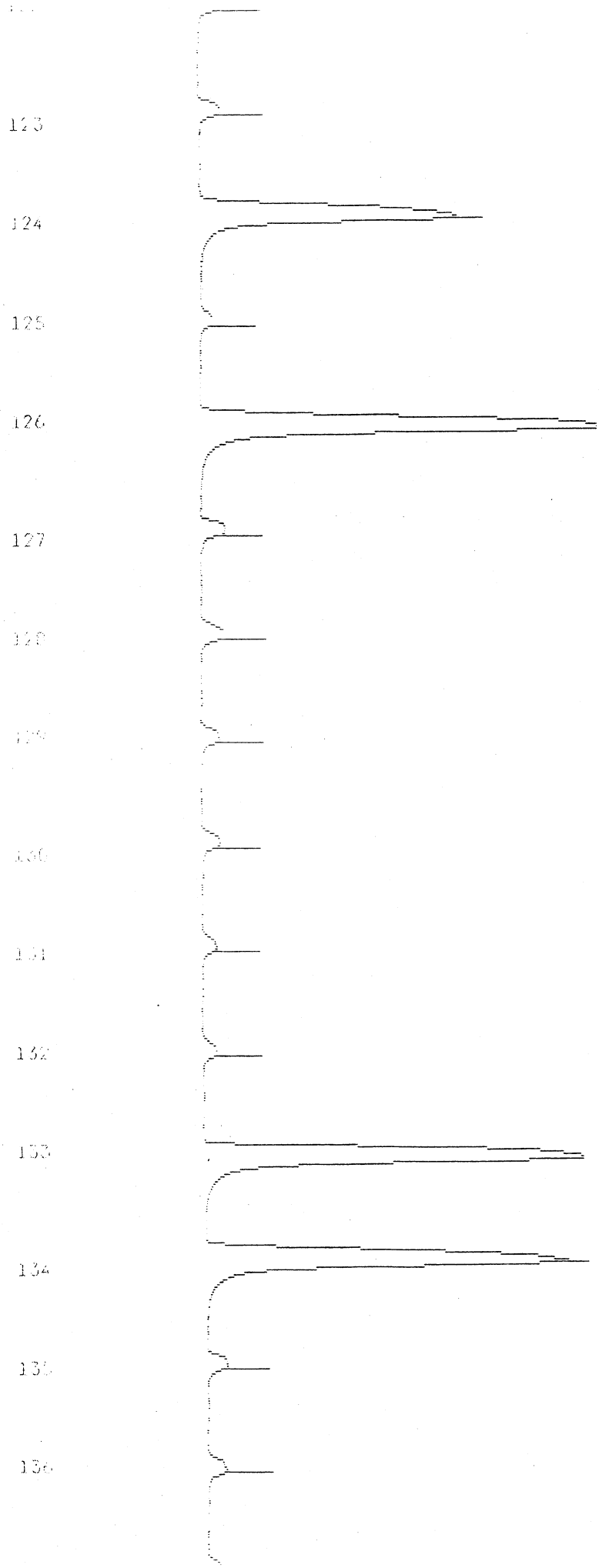
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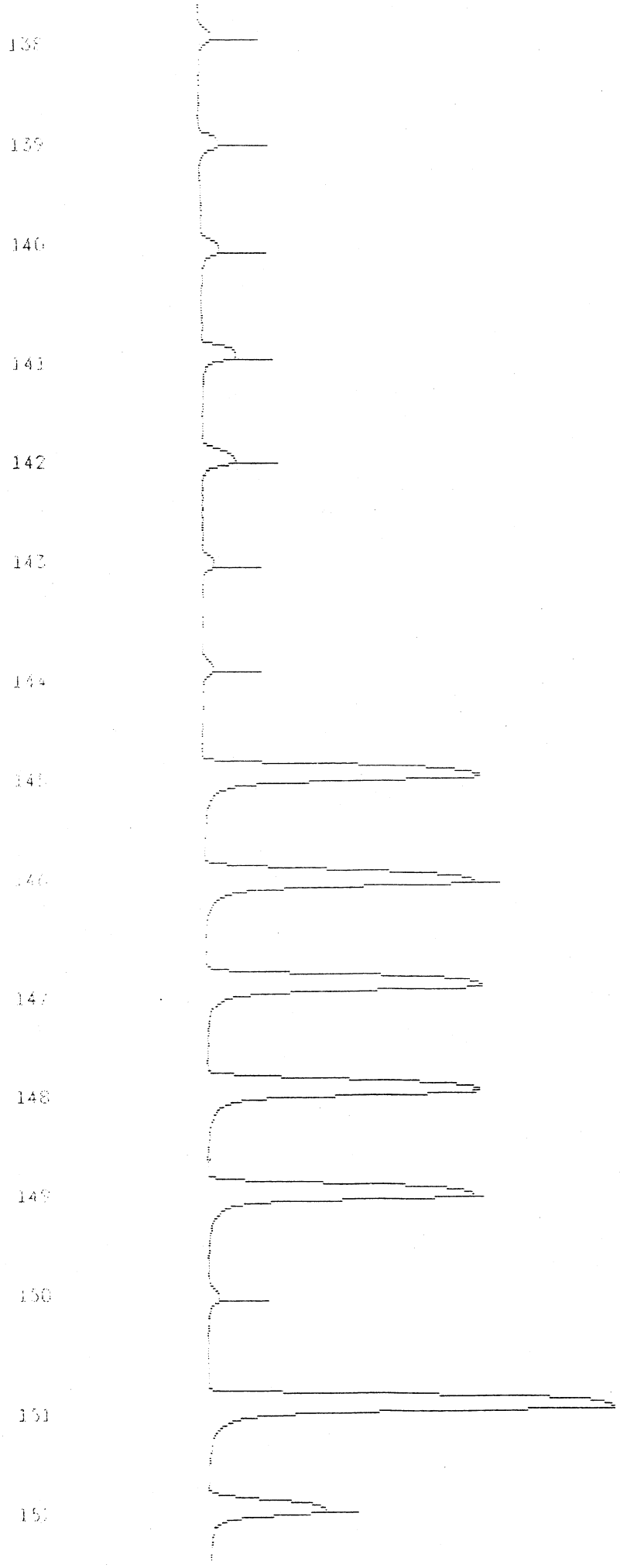
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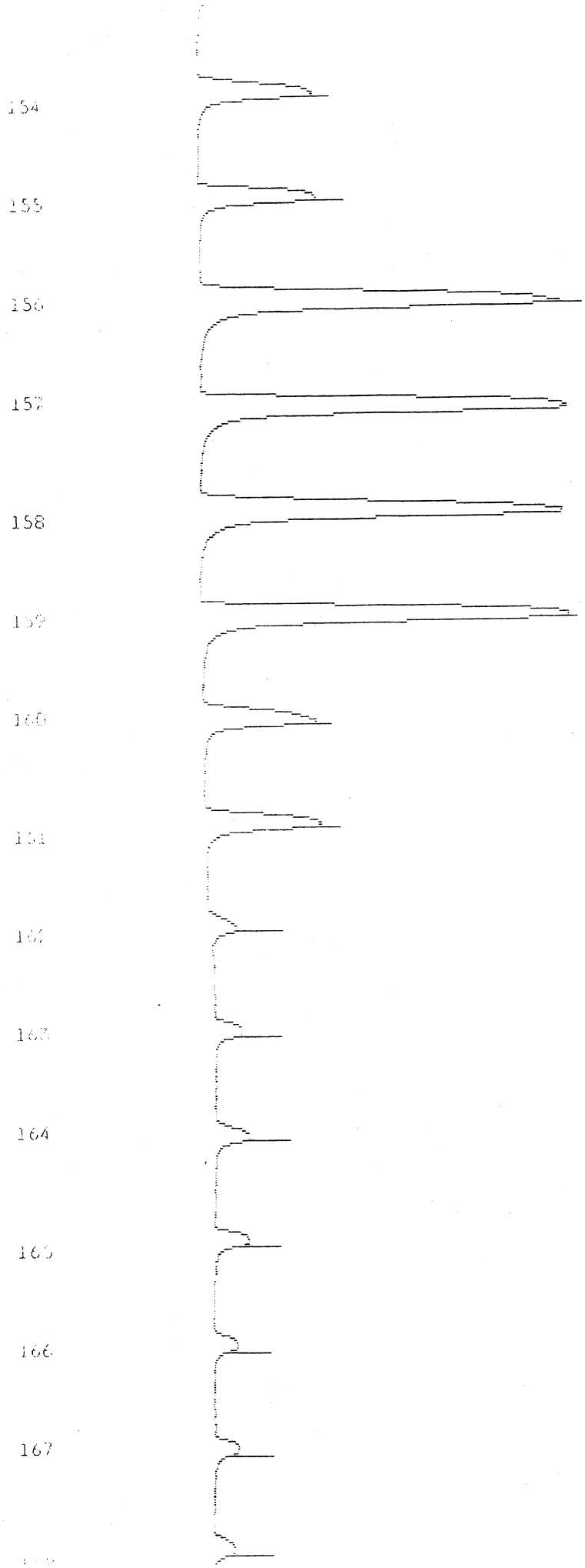
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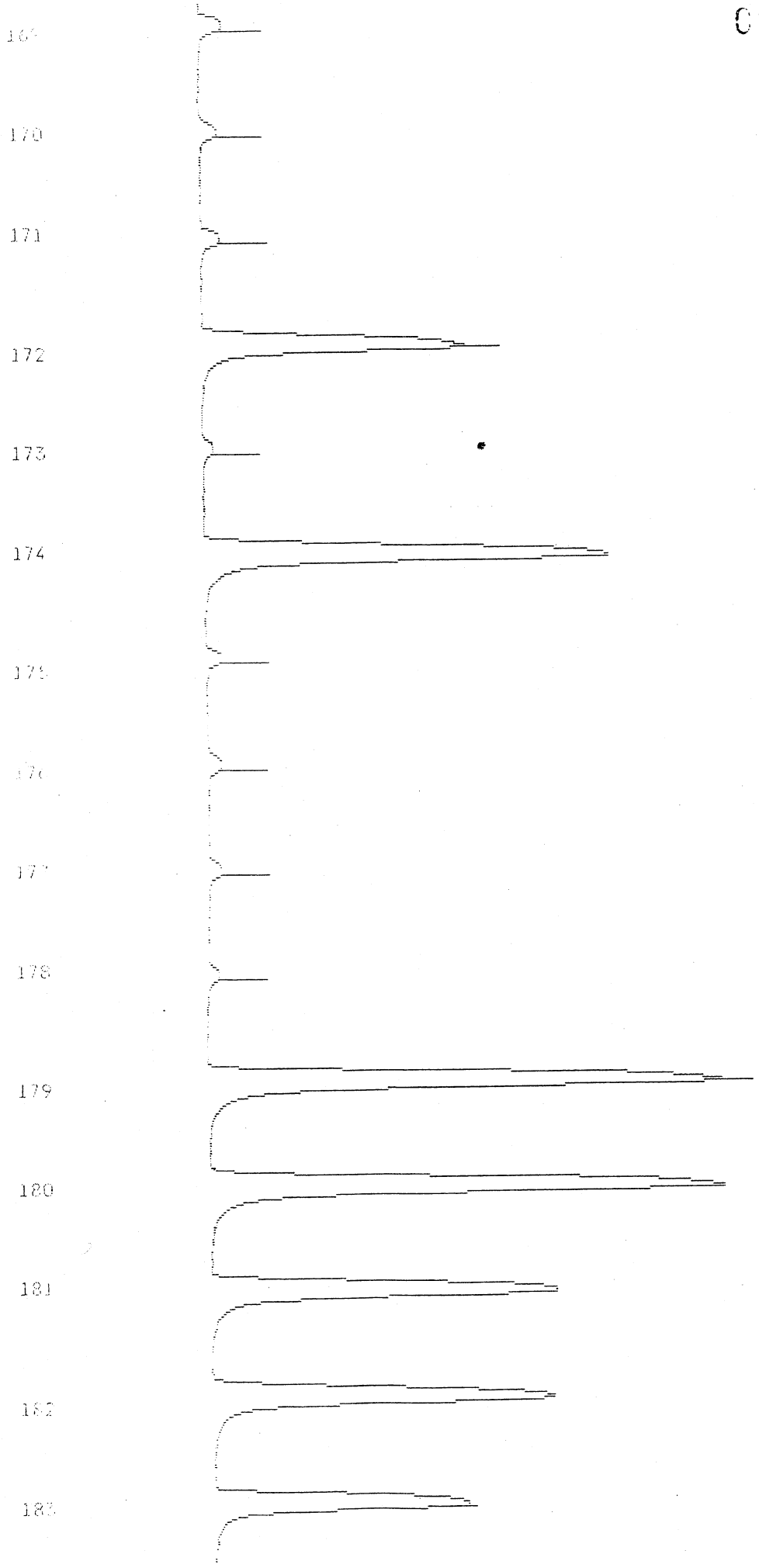
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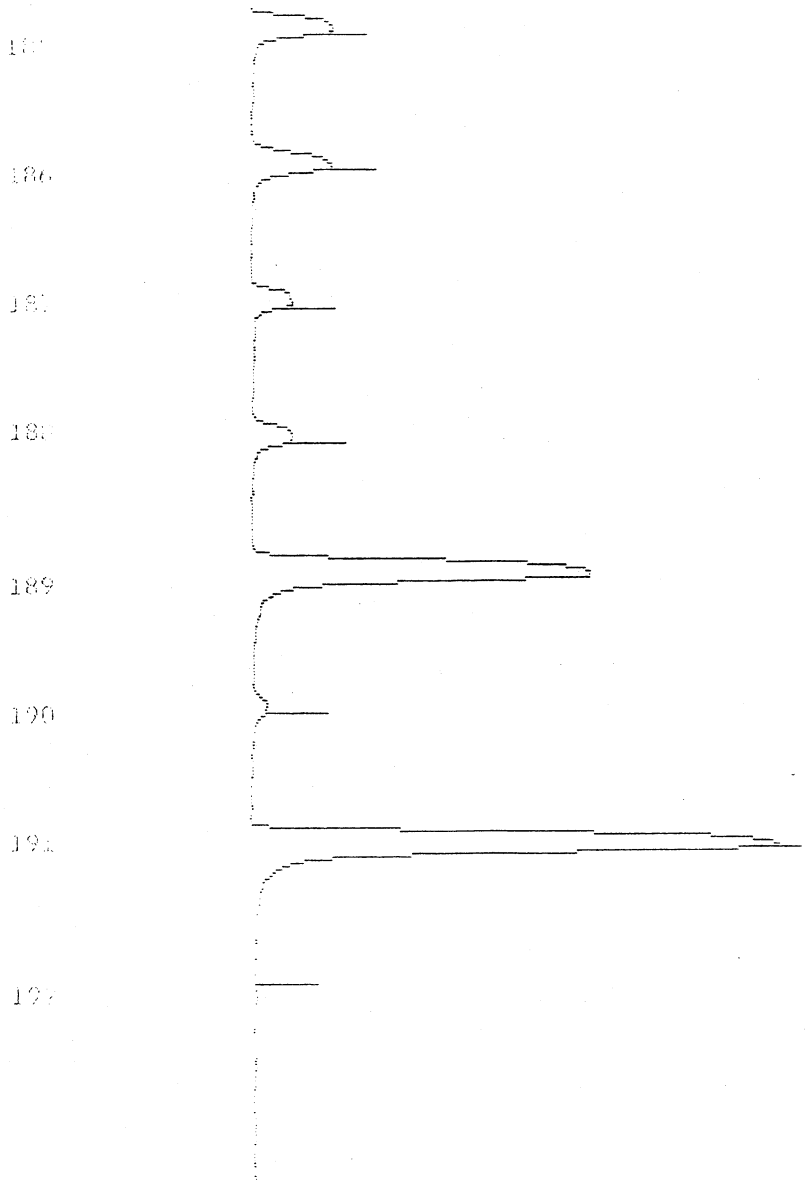
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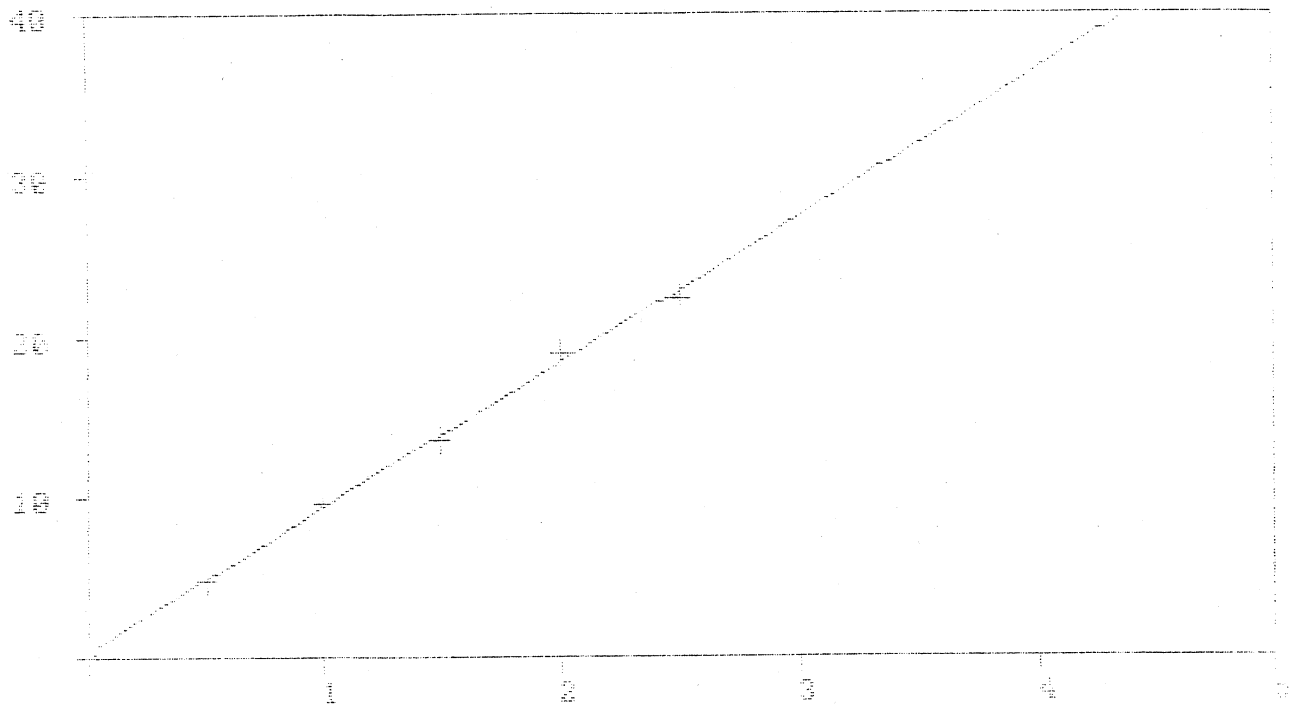
CHANNEL NAME: LDC
RUN NAME: 991002WA



DATA TYPE: FIG
INTERCEPT = 0.33
CALIBRATION ORDER: 1
SLOPE = 9.024245

CORRELATION .9991148

CHANNEL NAME: LDC
RUN DATE: 10-05-1999
SAMPLE TABLE NAME: 991002WA
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA		CONCENTRATION	F
						ppb	
1	PRIMER	1	1	14.5		1.571	a
2	DUMMY	1	1	0.2		-0.015	I
3	S1: 0	1	1	0.2		-0.015	I
4	S2: .5	1	1	4.7		0.486	
5	S3: 1	1	1	9.7		1.038	
6	S4: 1.5	1	1	13.7		1.481	
7	S5: 2	1	1	18.9		2.058	
8	S6: 2.5	1	1	22.5		2.453	
9	ICV	1	1	13.4	TUG	1.446	96%
10	B	1	1	0.0		-0.037	b
11	04	1	1	13.7		1.481	d
12	BL1009-1GFL 53128	1	1	0.0	<0.01	-0.037	I
13	BL1009-1GFL	1	1	0.0		-0.037	I
14	BL1009S	1	1	8.8	0.095	0.935	95%
15	BL1009S	1	1	9.0		0.956	
16	BL1009DS	1	1	8.8	0.095	0.940	95%
17	BL1009DS	1	1	8.9		0.954	
18	53139	1	1	0.5	<0.01	0.020	I
19	53139	1	1	0.6		0.026	I
20	53139D	1	1	0.5	<0.01	0.015	
21	53139D	1	1	0.4		0.012	
22	53139S	1	1	9.6	0.104	1.024	102%

26	51662	10	1	14.2	1.585	15.824		
27	51662	10	1	14.3		15.917		
28	51663	10	1	13.4	1.532	14.439		
29	51663	10	1	14.9		16.140		
30	51664	1	1	0.0	<0.01	-0.034	I	
31	51664	1	1	0.0		-0.034	s	
32	CCV	1	1	9.3		0.989	99%	
33	B	1	1	0.0		-0.037	b	
34	D4	1	1	13.7		1.481	d	
35	53129 A	1	1	0.2	<0.01	-0.015	I	
36	53129 A	1	1	0.2		-0.010	I	
37	53129 B	1	1	0.0	<0.01	-0.034	I	
38	53129 B	1	1	0.1		-0.026	I	
39	53129 C	1	1	0.0	<0.01	-0.031	I	
40	53129 C	1	1	0.0		-0.037	I	
41	53130	1	1	0.2	<0.01	-0.010	I	
42	53130	1	1	0.2		-0.012	I	
43	53138	1	1	0.2	<0.01	-0.015	I	
44	53138	1	1	0.2		-0.018	I	
45	53140	1	1	0.7	<0.01	0.039		
46	53140	1	1	0.6		0.028	s	
47	53141	1	1	0.7	<0.01	0.039		
48	53141	1	1	0.6		0.034		
49	53142	1	1	0.5	<0.01	0.023		
50	53142	1	1	0.5		0.020	I	
51	BL1009-2GFL 53684	1	1	0.0	<0.01	-0.037	I	
52	BL1009-2GFL	1	1	0.0		-0.037	I	
53	BL1009S	1	1	8.9	0.094	0.948	94%	
54	BL1009S	1	1	8.8		0.935		
55	CCV	1	1	8.6		0.921	92%	
56	B	1	1	0.0		-0.037	b	
57	D4	1	1	13.7		1.481	d	
58	BL1009DS	1	1	8.8	0.095	0.937	95%	
59	BL1009DS	1	1	8.9		0.954		
60	53164	1	1	0.6	<0.01	0.028	I	
61	53164	1	1	0.6		0.034	s	
62	53164D	1	1	0.5	<0.01	0.020		
63	53164D	1	1	0.6		0.031		
64	53164S	1	1	9.5	0.103	1.013	100%	
65	53164S	1	1	9.8		1.046		
66	53164DS	1	1	9.5	0.103	1.016	100%	
67	53164DS	1	1	9.7		1.038		
68	53143 A	1	1	0.3	<0.01	0.001	I	
69	53143 A	1	1	0.3		-0.002	I	
70	53143 B	1	1	0.0	<0.01	-0.031	I	
71	53143 B	1	1	0.1		-0.026	I	
72	53143 C	1	1	0.0	<0.01	-0.031	I	
73	53143 C	1	1	0.0		-0.031	I	
74	53144	1	1	0.7	<0.01	0.044		
75	53144	1	1	0.7		0.042		
76	53149	1	1	0.1	<0.01	-0.026	s	
77	53149	1	1	0.1		-0.023	I	
78	CCV	1	1	9.1		0.970	97%	
79	B	1	1	0.0		-0.037	b	
80	D4	1	1	13.7		1.481	d	
81	53150	10	1	13.1	1.370	14.110		
82	53150	10	1	12.3		13.298		
83	53151	10	1	15.1	1.613	16.410		
84	53151	10	1	14.6		15.842		
85	53165	1	1	0.7	<0.01	0.042		
86	53165	1	1	0.7		0.042	I	
87	53685 A	1	1	0.6	<0.01	0.031		
88	53685 A	1	1	0.6		0.028		
[illegible]	[illegible]	1	1	0.1		-0.027		

92	53690	1	1	0.0		0.001		
93	53690	1	1	3.0	0.029	0.199		
94	53690	1	1	2.9		0.288		
95	53691	1	1	4.6	0.0460	0.472		
96	53691	1	1	4.3		0.440		
97	BL1009-3GFL 42245,	1	1	0.0	<0.01	-0.031	I	
98	BL1009-3GFL 51448	1	1	0.0		-0.034	I	
99	BL1009S	1	1	9.0	0.095	0.965	95%	
100	BL1009S	1	1	8.7		0.929		
101	CCV	1	1	8.5		0.910	91%	
102	B	1	1	0.0		-0.037	b	
103	D4	1	1	13.7		1.481	d	
104	BL1009DS	1	1	8.6	0.094	0.921	93%	
105	BL1009DS	1	1	8.9		0.948		
106	53693	1	1	4.2	0.0433	0.431	s	
107	53693	1	1	4.2		0.434		
108	536930	1	1	4.1	0.0424	0.418		
109	536930	1	1	4.2		0.429		
110	53693S	1	1	12.7	0.138	1.373	95%	
111	53693S	1	1	12.9		1.395		
112	536930S	1	1	12.6	0.139	1.365	96%	
113	536930S	1	1	13.1		1.419		
114	53692	1	1	8.3	0.089	0.881		
115	53692	1	1	8.4		0.900		
116	47503	1	1	11.6	0.128	1.254		
117	47503	1	1	12.1		1.305		
118	51449 A	1	1	0.6	<0.01	0.028	I	
119	51449 A	1	1	0.7		0.036		
120	51449 B	1	1	0.2	<0.01	-0.015	I	
121	51449 B	1	1	0.3		-0.007	s	
122	51449 C	1	1	0.3	<0.01	0.001	I	
123	51449 C	1	1	0.4		0.004		
124	CCV	1	1	8.6		0.921	92%	
125	B	1	1	0.0		-0.037	b	
126	D4	1	1	13.7		1.481	d	
127	51450	1	1	0.4	<0.01	0.012		
128	51450	1	1	0.4		0.012	I	
129	51450	1	1	0.3	<0.01	-0.007	I	
130	51450	1	1	0.3		-0.010	I	
131	51460 VOID	10	1	0.1		-0.205		RERUN ON 1x DIL.
132	51460	10	1	0.1		-0.232		ON 99/10/11.
133	51461	10	1	12.9	1.358	13.921		
134	51461	10	1	12.3		13.244		
135	42246 A	1	1	0.3	<0.01	0.001	I	
136	42246 A	1	1	0.2		-0.012	s	
137	42246 B	1	1	0.0	<0.01	-0.037	I	
138	42246 B	1	1	0.1		-0.029	I	
139	42246 C	1	1	0.3	<0.01	-0.007	R	
140	42246 C	1	1	0.2		-0.012	I	
141	42265	1	1	0.8	<0.01	0.055		
142	42265	1	1	0.8		0.050		
143	BL1009-4GFL 42724,	1	1	0.0	<0.01	-0.031	I	
144	BL1009-4GFL 43188	1	1	0.0		-0.034	I	
145	BL1009S	1	1	9.3	0.098	0.992	98%	
146	BL1009S	1	1	9.0		0.959		
147	BL1009DS	1	1	9.2	0.097	0.978	97%	
148	BL1009DS	1	1	9.1		0.970		
149	CCV	1	1	8.9		0.946	95%	
150	B	1	1	0.0		-0.037	b	
151	D4	1	1	13.7		1.481	s	
152	42266	1	1	3.6	0.037	0.364		
153	42266	1	1	3.7		0.372		
154	42266	1	1	3.6	0.037	0.361		

158	42266B3	1	1	12.6	0.1[illegible]	[illegible]	97%
159	42266B3	1	1	12.5		1.343	
160	42267	1	1	3.6	0.037	0.366	
161	42267	1	1	3.7		0.369	
162	42730	1	1	0.5	<0.01	0.020	I
163	42730	1	1	0.6		0.028	
164	42731	1	1	0.8	<0.01	0.050	
165	42731	1	1	0.8		0.047	
166	42732	1	1	0.4	<0.01	0.009	s
167	42732	1	1	0.5		0.017	
168	42733	1	1	0.3	<0.01	0.001	I
169	42733	1	1	0.4		0.007	I
170	43189 A	1	1	0.2	<0.01	-0.010	I
171	43189 A	1	1	0.2		-0.010	I
172	CCV	1	1	8.8		0.943	94%
173	B	1	1	0.0		-0.037	b
174	D4	1	1	13.7		1.481	d
175	43189 B	1	1	0.1	<0.01	-0.023	I
176	43189 B	1	1	0.0		-0.031	I
177	43189 C	1	1	0.0	<0.01	-0.031	I
178	43189 C	1	1	0.0		-0.037	I
179	43194	1	1	17.4	0.189	1.887	
180	43194	1	1	17.3		1.885	
181	43195	1	1	11.5	0.123	1.238	s
182	43195	1	1	11.4		1.230	
183	43196	1	1	8.4	0.089	0.889	
184	43196	1	1	8.3		0.883	
185	43225	1	1	1.8	0.016	0.161	
186	43225	1	1	1.7		0.153	
187	47489 A	1	1	0.6	<0.01	0.034	
188	47489 A	1	1	0.6		0.031	
189	CCV	1	1	8.6		0.91[illegible]	92%
190	B	1	1	0.0		-0.037	b
191	D4	1	1	13.7		1.481	d

INTERCEPT: 0.55 LINEAR COEF: 0.024245
CORRELATION COEF: .9991148

ion nber	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
2264	BRAUN-MN	SB-C01/C02 Blank	Mercury -	PV	-0.010						99/10/10	1GFT	99/10/10	MG02	89.	68.	
1010	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.100	100.	0.100	100.	99/10/10	1GFT	99/10/10	MG02	$$$	$$$	

2 Tests for OHFLT with an MDL of 0.010 ug Validated By CMB Control Chart Updated N/A IO Requirements met N/A

00043

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.10(WA) Run Code: MG02 Matrix: IMP.

Analyst: MG Units: µg (see comments) MDL: 0.01

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.6		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.6		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.6		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12			BL1010	1GF		
13			"			
14			BL1010 S			
15			"			
16			BL1010 DS			
17			"			
18		1/10	44798			
19			"			
20			44798 D			
21			"			
22			44798 S			
23			"			
24			44798 DS			
25			"			
26			42477 a			
27			"			
28			42477 b			
29			"			
30			42477 c			
31			"			
32			CCV			
33			B			
34			D4			
35			42534			
36			"			
37			42264			
38			"			
39		1/10	44799			
40						
41		1/10	44800			
42			"			
43		1/4	44801			
44			"			
45		1/8	44802			
46			"			
47		1/4	44803			
48			"			
49		1/2	47491			
50			"			
51			BL1010	2GF		
52			"			
53			BL1010 S			
54			"			
55			CCV			
56			B			
57			D4			
58			BL1010 DS			
59			"			
60		1/4	47492			
61			"			
62			47492 D			
63			"			
64			47492 S			
65			"			
66			47492 DS			
67			"			
68		1/2	47493			
69			"			
70			47494			
71			"			
72			47495			
73			"			
74			47496			
75			"			
76			47497			
77			"			
78			CCV			
79			B			
80			D4			

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

RUN DATE: 10-11-1999 CHART DATE: 10-11-1999
CHART SPEED: 30
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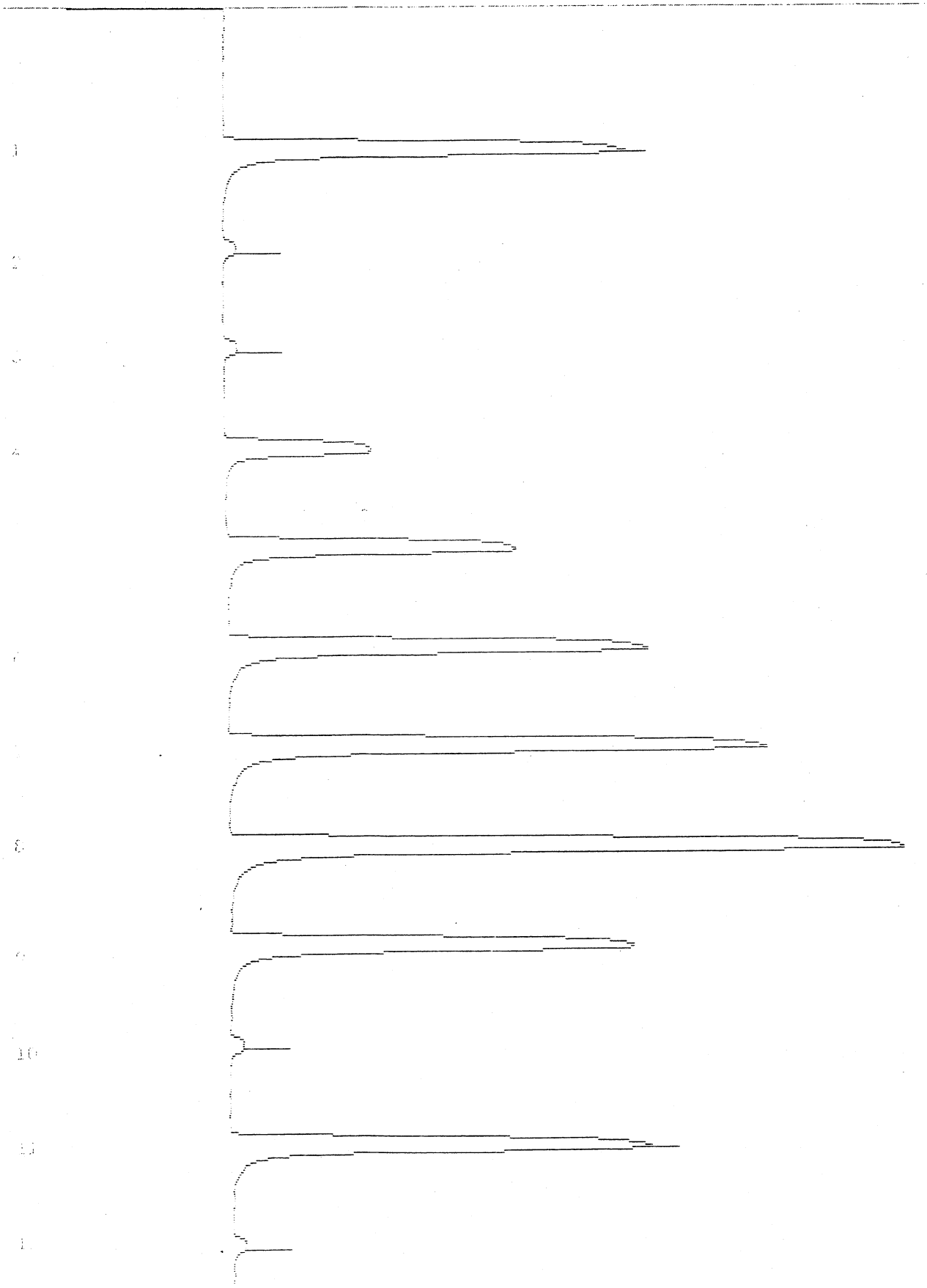

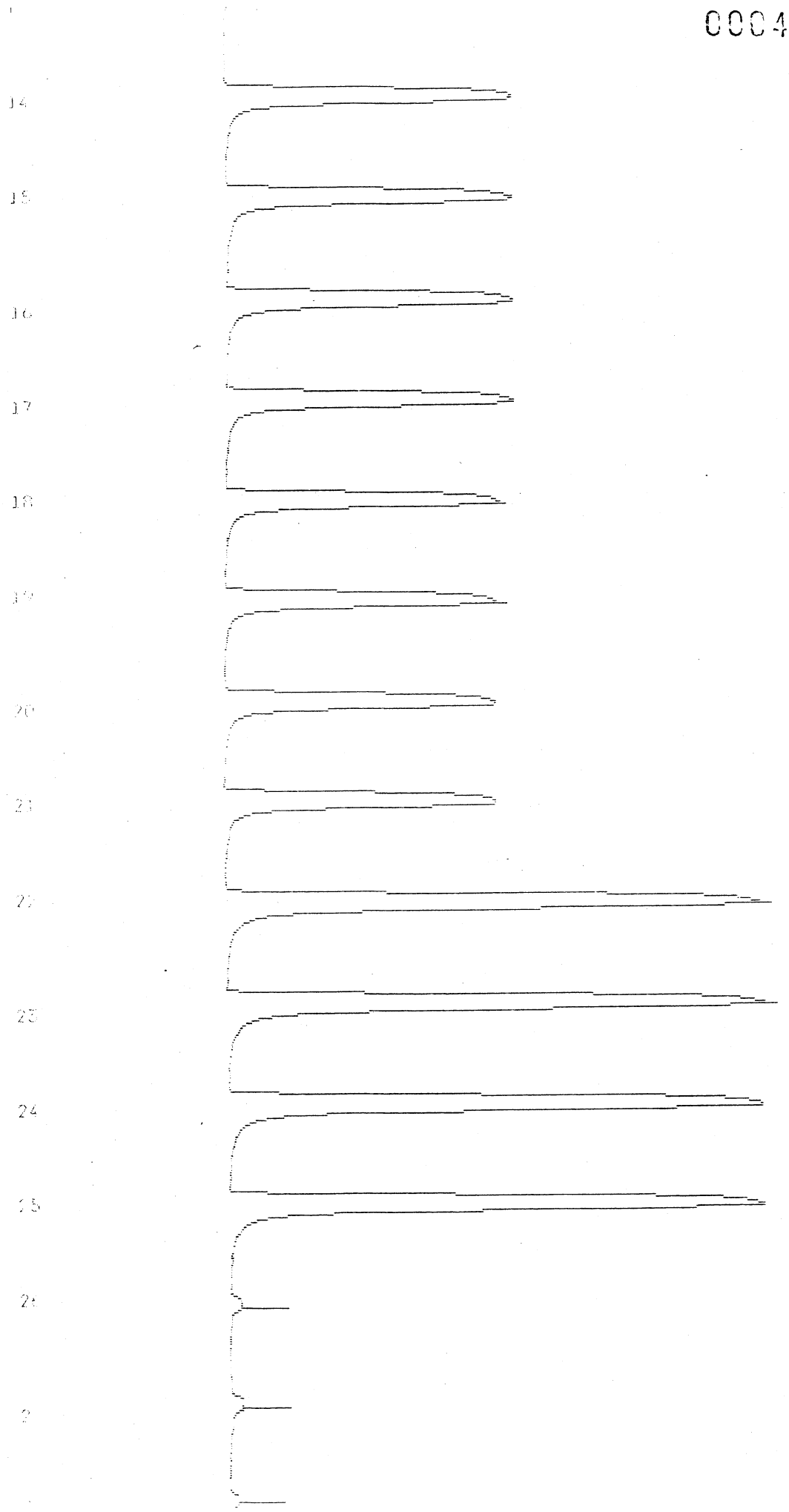
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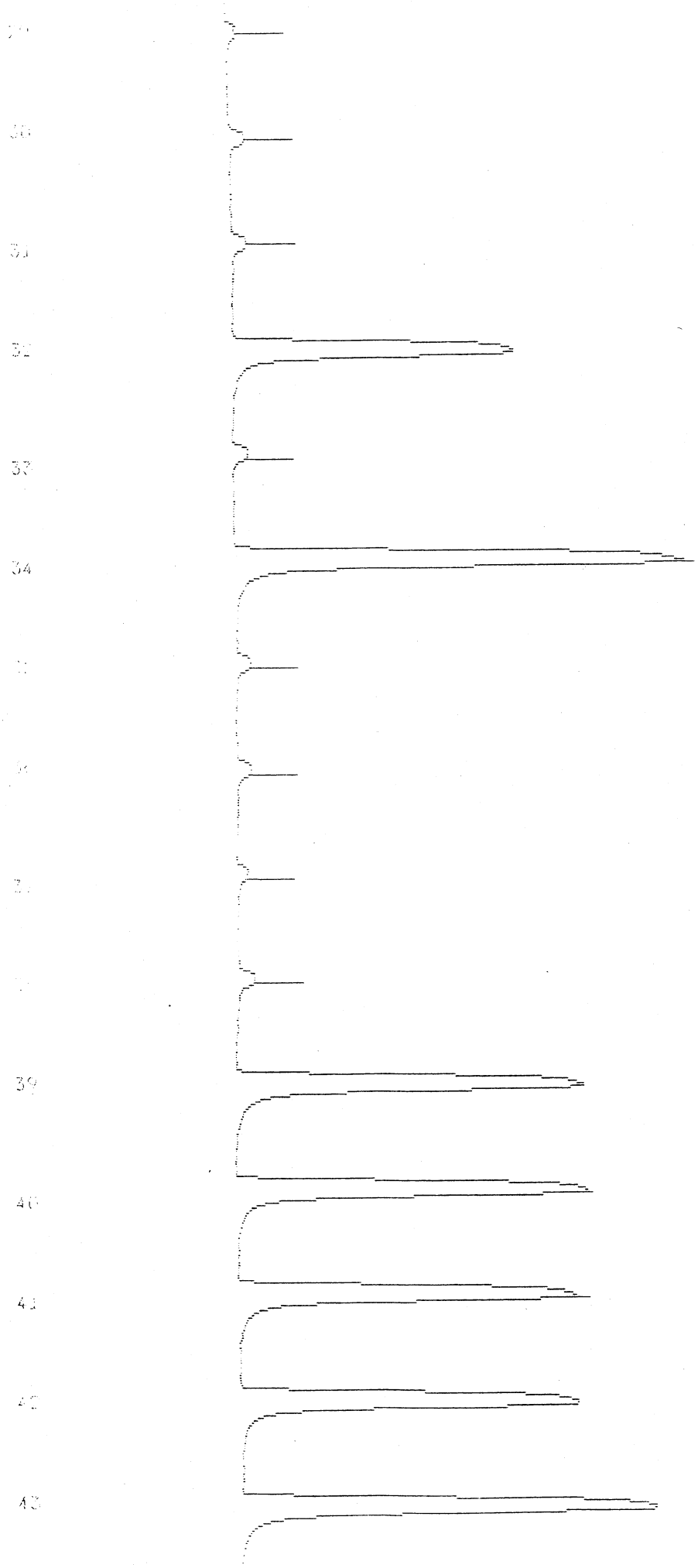
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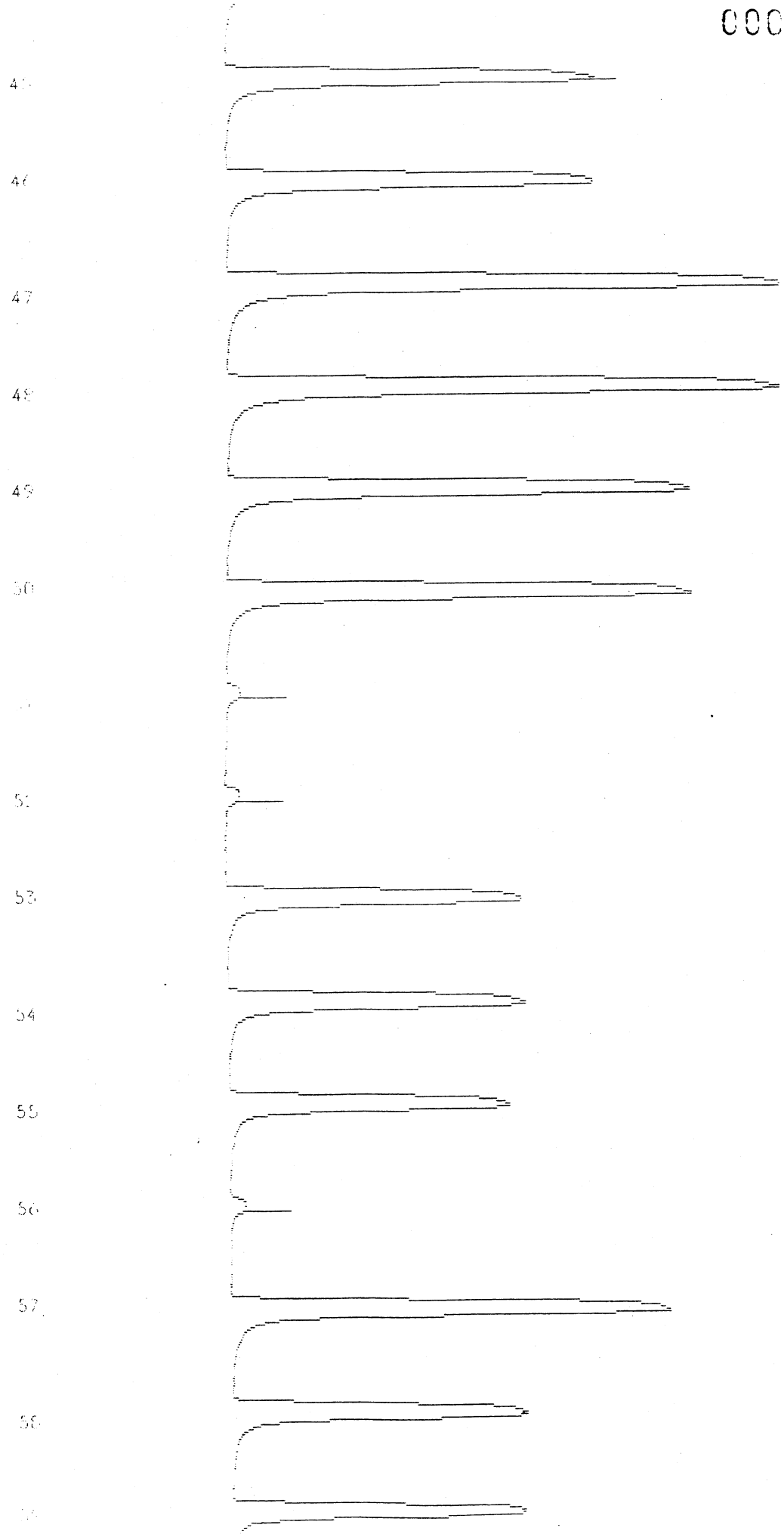
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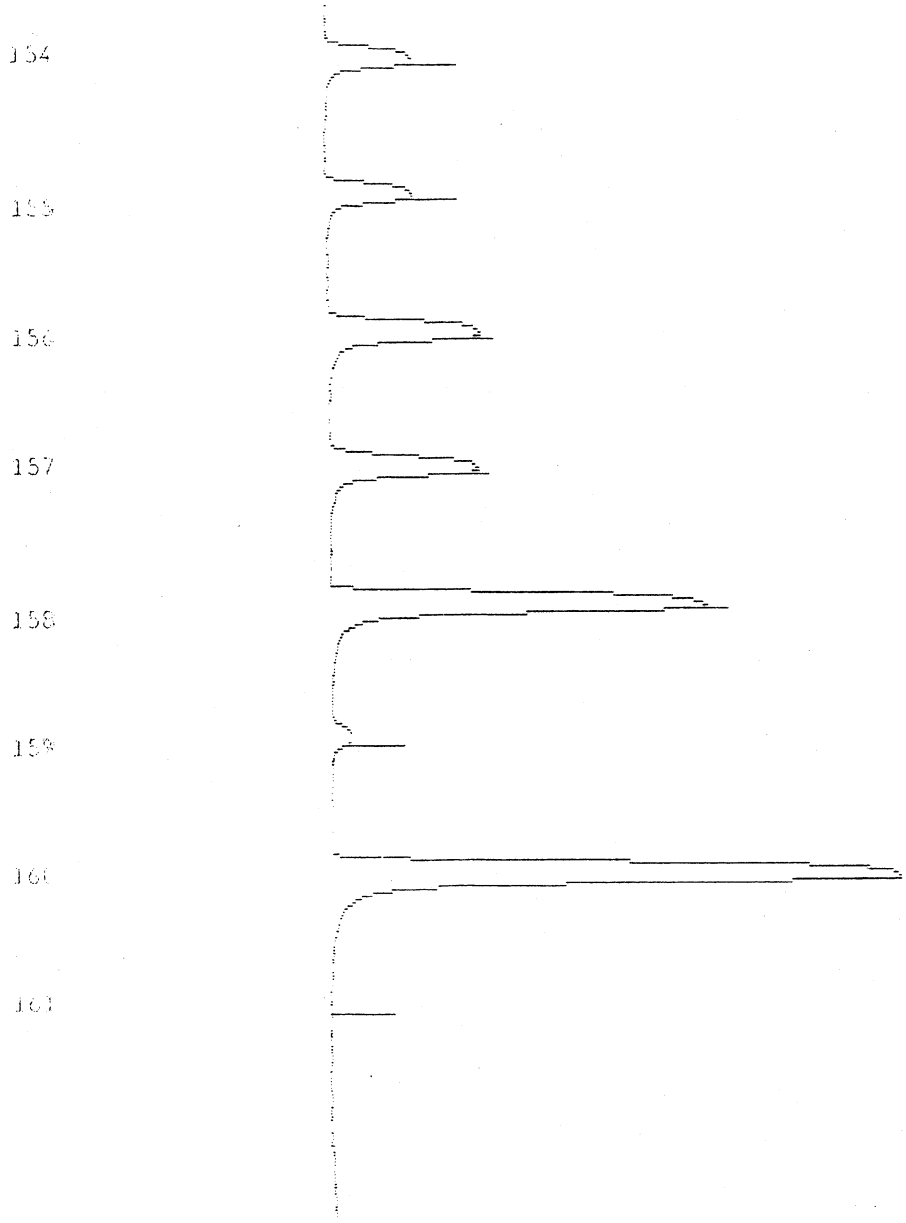
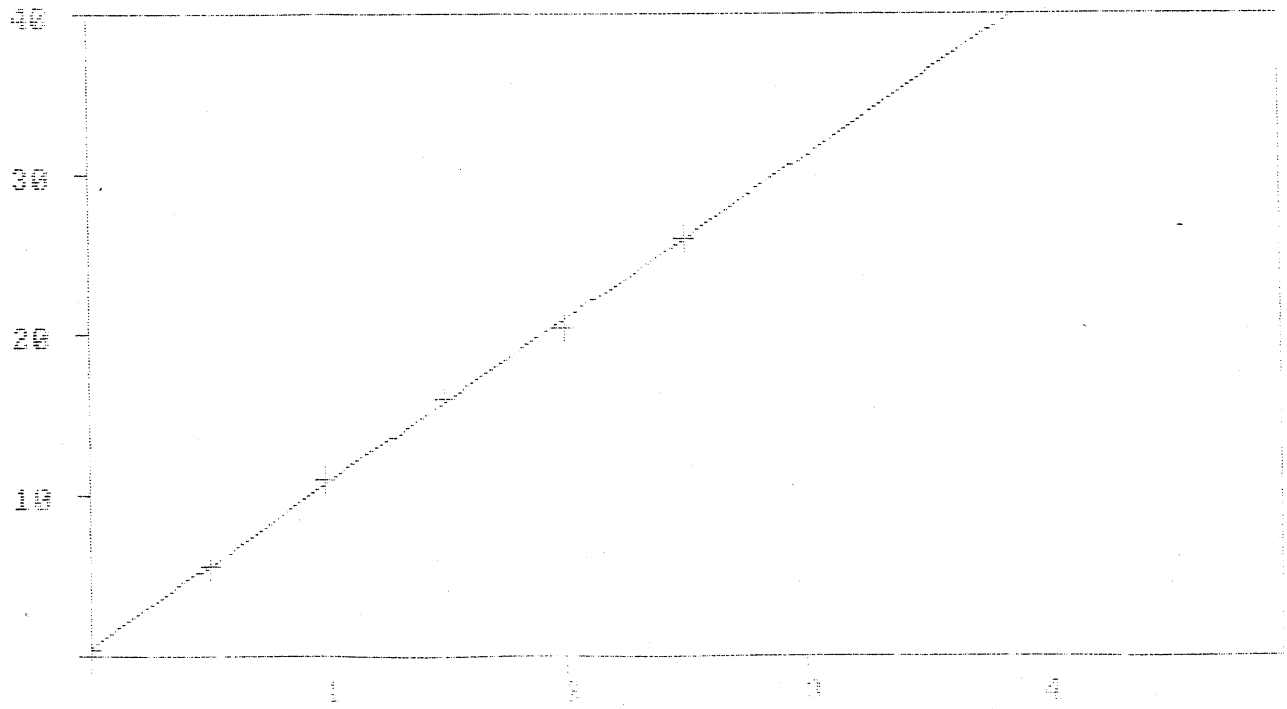


CHANNEL NAME: LDC
RUN NAME: 991010WA



CORRELATION: .9996244

CHANNEL NAME: LDC
RUN DATE: 10-11-1999
SAMPLE TABLE NAME: 991010WA
METHOD NAME: HGWATER

ppb

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA		CONCENTRATION	EF
1	PRIMER	1	1	15.6		1.479	s
2	DUMMY	1	1	0.4		-0.015	I
3	S1: 0	1	1	0.4		-0.015	1
4	S2: .5	1	1	5.5		0.492	
5	S3: 1	1	1	11.0		1.034	
6	S4: 1.5	1	1	16.0		1.522	
7	S5: 2	1	1	20.5		1.964	
8	S6: 2.5	1	1	26.0		2.504	
9	ICV	1	1	15.4	TUG	1.459	97%
10	B	1	1	0.0		-0.051	b
11	D4	1	1	16.0		1.522	d
12	BL1010-1GFT 44795	1	1	0.0	<0.01	-0.051	1
13	BL1010-1GFT 47488	1	1	0.0		-0.046	1
14	BL1010S	1	1	10.7	0.100	1.001	100%
15	BL1010S	1	1	10.6		0.991	
16	BL1010DS	1	1	10.6	0.100	0.996	100%
17	BL1010DS	1	1	10.7		1.001	
18	44798	10		10.5	NA ~9.466	9.506	
19	44798	10	1	10.1		9.406	
20	447980	10	1	10.1	9.418	9.430	
21	447980	10	1	10.1		9.406	
22	447980	10	1	20.9	19.264	19.204	98%
23	447980	10	1	20.9		19.324	
24	4479805	10	1	20.1	19.240	19.252	98%
25	4479805	10	1	20.1		19.228	
26	42477 A	1	1	0.0	<0.01	0.051	I
27	42477 A	1	1	0.0		-0.051	1
28	42477 B	1	1	0.0	<0.01	-0.051	1
29	42477 B	1	1	0.0		-0.051	1
30	42477 C	1	1	0.0	<0.01	-0.051	1
31	42477 C	1	1	0.0		-0.046	s
32	CCV	1	1	9.9		0.921	92%
33	B	1	1	0.0		-0.051	b
34	D4	1	1	16.0		1.522	d
35	42534	1	1	0.0	<0.200	-0.051	1
36	42534	1	1	0.0		-0.049	1
37	42264	1	1	0.0	<0.01	-0.051	1
38	42264	1	1	0.1		-0.044	1
39	44799	10	1	12.2	11.603	11.519	
40	44799	10	1	12.4		11.687	
41	44800	10	1	12.0	11.231	11.279	
42	44800	10	1	11.9		11.183	
43	44801	4	1	14.7	5.583	5.588	
44	44801	4	1	14.2		5.578	
45	44802	8	1	13.4	10.138	10.197	
46	44802	8	1	13.4		10.118	
47	44803	4	1	20.5	7.845	7.855	
48	44803	4	1	20.4		7.835	
49	47491	2	1	16.2	3.231	3.216	
50	47491	2	1	17.0		3.245	
51	[illegible]	1	1	0.0	<0.01	-0.051	
[illegible]	[illegible]	1	1	0.0		-0.051	

00051

56	[illegible]	1	1	[illegible]		[illegible]	
57	04	1	1	16.0		1.522	d
58	BL101005	1	1	10.6	0.099	0.993	99%
59	BL101005	1	1	10.6		0.993	
60	47492	4	1	7.6	2.793	2.783	
61	47492	4	1	7.6		2.802	s
62	474928	4	1	7.6	2.802	2.792	
63	474928	4	1	7.7		2.811	
64	474928	4	1	17.9	6.818	6.827	101%
65	474928	4	1	17.8		6.808	
66	474928S	4	1	17.9	6.793	6.817	100%
67	474928S	4	1	17.7		6.769	
68	47493	2	1	14.9	2.830	2.837	
69	47493	2	1	14.9		2.823	
70	47494	2	1	19.1	3.671	3.663	
71	47494	2	1	19.2		3.678	
72	47495	2	1	10.2	1.894	1.896	
73	47495	2	1	10.1		1.891	
74	47496	2	1	18.2	3.512	3.485	
75	47496	2	1	18.5		3.538	
76	47497	2	1	12.1	2.266	2.275	s
77	47497	2	1	12.0		2.256	
78	CCV	1	1	9.9		0.921	92%
79	B	1	1	0.0		-0.051	b
80	04	1	1	16.0		1.522	d
81	47498	2	1	17.3	3.291	3.293	
82	47498	2	1	17.2		3.289	
83	51453	2	1	11.9	2.239	2.241	
84	51453	2	1	11.9		2.237	
85	51454	1	1	13.0	1.205	1.224	
86	51454	1	1	12.7		1.186	
87	51455	1	1	12.2	1.151	1.152	
88	51455	1	1	12.2		1.150	
89	BL1010-3GFI	1	1	0.0	<0.01	-0.051	I
90	BL1010-3GFI	1	1	0.0		-0.051	I
91	BL101005	1	1	10.5		0.984	s
92	BL101005	1	1	10.5	0.098	0.979	98%
93	BL101005	1	1	10.5	0.098	0.979	98%
94	BL101005	1	1	10.5		0.981	
95	51456	1	1	13.2	1.237	1.243	
96	51454	1	1	13.0		1.231	
97	514540	1	1	13.1	1.236	1.234	
98	514540	1	1	13.1		1.238	
99	514548	1	1	22.9	2.208	2.197	97%
100	514548	1	1	22.1		2.218	
101	CCV	1	1	9.9		0.924	92%
102	B	1	1	0.0		-0.051	b
103	D4	1	1	16.0		1.522	d
104	514540S	1	1	23.0	2.209	2.209	97%
105	514540S	1	1	23.0		2.209	
106	51455	1	1	11.4	1.059	1.068	s
107	51455	1	1	11.2		1.049	
108	51456	1	1	15.1	1.450	1.438	
109	51456	1	1	15.4		1.462	
110	51457	1	1	7.4	0.665	0.672	
111	51457	1	1	7.3		0.657	
112	51458	1	1	0.0	<0.100	-0.051	I
113	51458	1	1	0.0		-0.051	I
114	53131	8	1	14.8	11.262	11.252	
115	53131	8	1	14.9		11.271	
116	53132	8	1	14.7	2.799	2.794	
117	53132	1	1	14.9		2.803	

Lenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
)42245	BRAUN-MN	MB R456	Mercury -	PV	-0.010	-99999.0	0.100	100.	0.100	100.	99/10/11	1GFB	99/10/11	MG01	90.	69.	
)42248	BRAUN-MN	1Blank-C01/C02	Mercury -	PV	-0.040						99/10/11	1GFB	99/10/11	MG01	90.	69.	
)42249	BRAUN-MN	1R1-C01/C02	Mercury -	PV	-0.300						99/10/11	1GFB	99/10/11	MG01	90.	69.	
)42250	BRAUN-MN	1R2-C01/C02	Mercury -	PV	-0.400						99/10/11	1GFB	99/10/11	MG01	89.	69.	
)42251	BRAUN-MN	1R3-C01/C02	Mercury -	PV	-0.300						99/10/11	1GFB	99/10/11	MG01	89.	69.	
)42724	BRAUN-MN	MB R456	Mercury -	PV	-0.010	-99999.0	0.100	100.	0.100	100.	99/10/11	1GFB	99/10/11	MG01	88.	67.	
)42725	BRAUN-MN	Reagent Blank C7,C12	Mercury -	PV	-0.050						99/10/11	1GFB	99/10/11	MG01	88.	67.	
)42726	BRAUN-MN	1B-C01/C02	Mercury -	PV	-0.080						99/10/11	1GFB	99/10/11	MG01	88.	67.	
3L1011	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.100	100.	0.100	100.	99/10/11	1GFB	99/10/11	MG01	$$$	$$$	
)42727	BRAUN-MN	1R1-C01/C02	Mercury -	PV	0.876	0.887	2.916	101.	2.904	101.	99/10/11	2GFB	99/10/11	MG01	88.	67.	*PDS*
)42728	BRAUN-MN	1R2-C01/C02	Mercury -	PV	0.395						99/10/11	2GFB	99/10/11	MG01	87.	67.	
)42729	BRAUN-MN	1R3-C01/C02	Mercury -	PV	4.401						99/10/11	2GFB	99/10/11	MG01	87.	67.	
)43188	BRAUN-MN	MB R456	Mercury -	PV	-0.010	-99999.0	0.104	104.	0.103	103.	99/10/11	2GFB	99/10/11	MG01	84.	62.	
)43189	BRAUN-MN	Reagent Blank C7/C12	Mercury -	PV	-0.080						99/10/11	2GFB	99/10/11	MG01	84.	62.	
)43190	BRAUN-MN	1B-C01/C02	Mercury -	PV	-0.100						99/10/11	2GFB	99/10/11	MG01	84.	62.	
)43191	BRAUN-MN	1R1-C01/C02	Mercury -	PV	4.272						99/10/11	2GFB	99/10/11	MG01	84.	62.	
)43192	BRAUN-MN	1R2-C01/C02	Mercury -	PV	2.485						99/10/11	2GFB	99/10/11	MG01	83.	62.	
)43193	BRAUN-MN	1R3-C01/C02	Mercury -	PV	6.395						99/10/11	2GFB	99/10/11	MG01	83.	62.	
3L1011	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.104	104.	0.103	103.	99/10/11	2GFB	99/10/11	MG01	$$$	$$$	

19 Tests for OHFLTB with an MDL of 0.010 ug Validated By CMT Control Chart Updated N/A IO Requirements met N/A

00052

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.11 Run Code: MG01 Matrix: IMP.

Analyst: MG Units: µg (see comments) MDL: 0.01

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12			BL1011	1GFB		
13			"			
14			BL1011 S			
15			"			
16			BL1011 DS			
17			"			
18		1/5	53136			
19			"			
20			53136 D			
21			"			
22			53136 S			
23			"			
24			53136 DS			
25			"			
26		1/10	53137			
27			"			
28			53146			
29			"			
30			53147			
31			"			
32			CCV			
33			B			
34			D4			
35			42248			
36			"			
37			42249			
38			"			
39			42250			
40			"			
41			42251			
42			"			
43			42725 a			
44			"			
45			42725 b			
46			"			
47			42725 c			
48			"			
49			42726			
50			"			
51			BL10 "	2GFB		
52			"			
53			BL10" S			
54			"			
55			CCV			
56			B			
57			D4			
58			BL1011 DS			
59			"			
60			42727			
61			"			
62			42727 D			
63			"			
64			42727 S			
65			"			
66			42727 DS			
67			"			
68			42728			
69			"			
70			42729			
71			"			
72			43189 a			
73			"			
74			43189 b			
75			"			
76			43189 c			
77			"			
78			CCV			
79			B			
80			D4			

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

ICV = 1.5 mg/kg, CCV = 1.0 mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.11 Run Code: MG01 Matrix: MP.

Analyst: MG Units: µg (see comments) MDL: 0.01

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21			43190			
22			"			
23			43191			
24			"			
25			43192			
26			"			
27			43193			
28			"			
29		1/5	53136 DS			
30		↓	"			
31			51460	OH FLT		
32			"			
33		1/10	51462			
34			"			
35			51463			
36		↓	" 63	↓		
37			51664			
38			"			
39		1/2	43192			
40		↓	"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41			CCV			
42			B			
43			D4			
44						
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Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

ICV = 1.5 mg/kg, CCV = 1.0 mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

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CHART SPEED: 30
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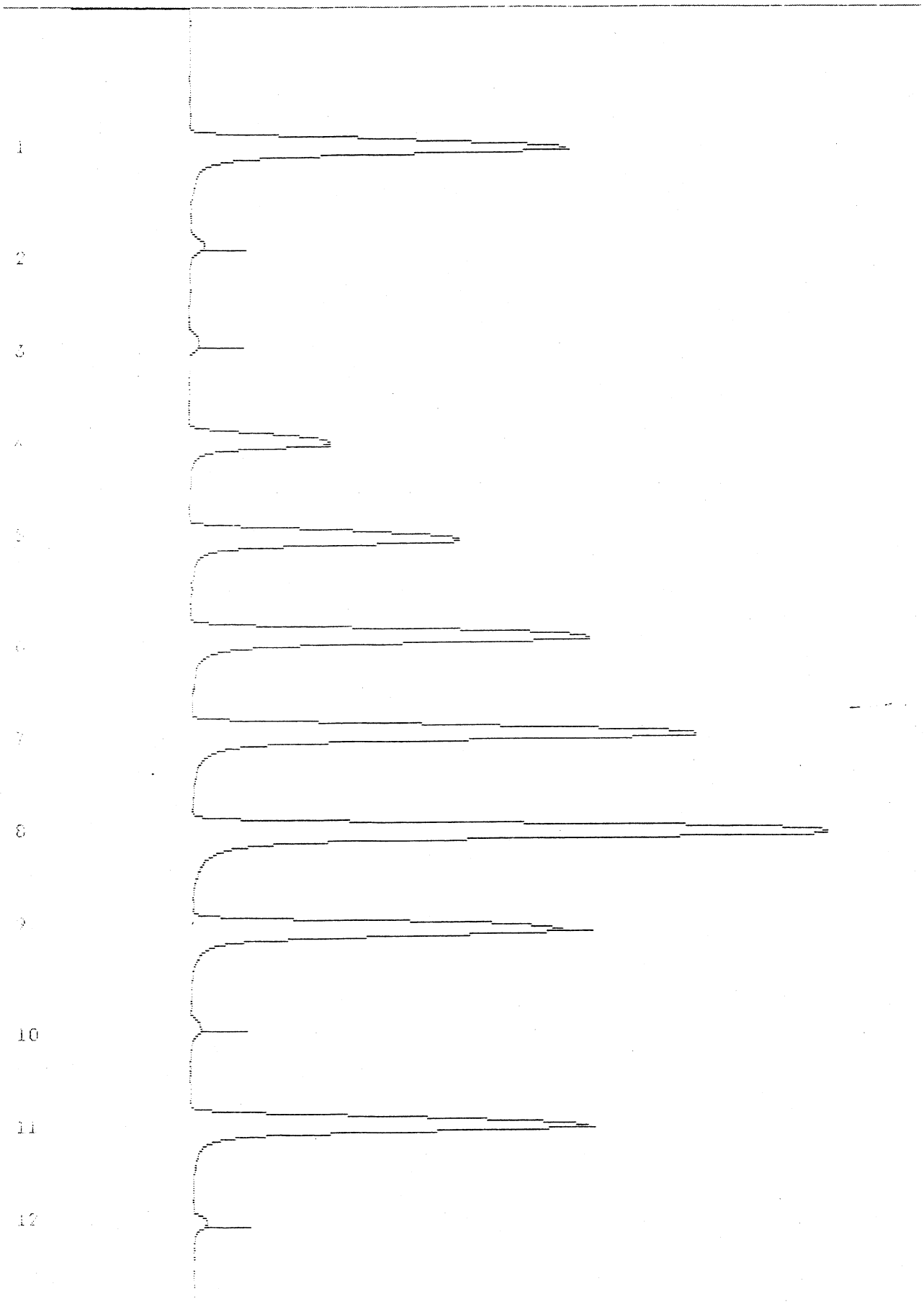

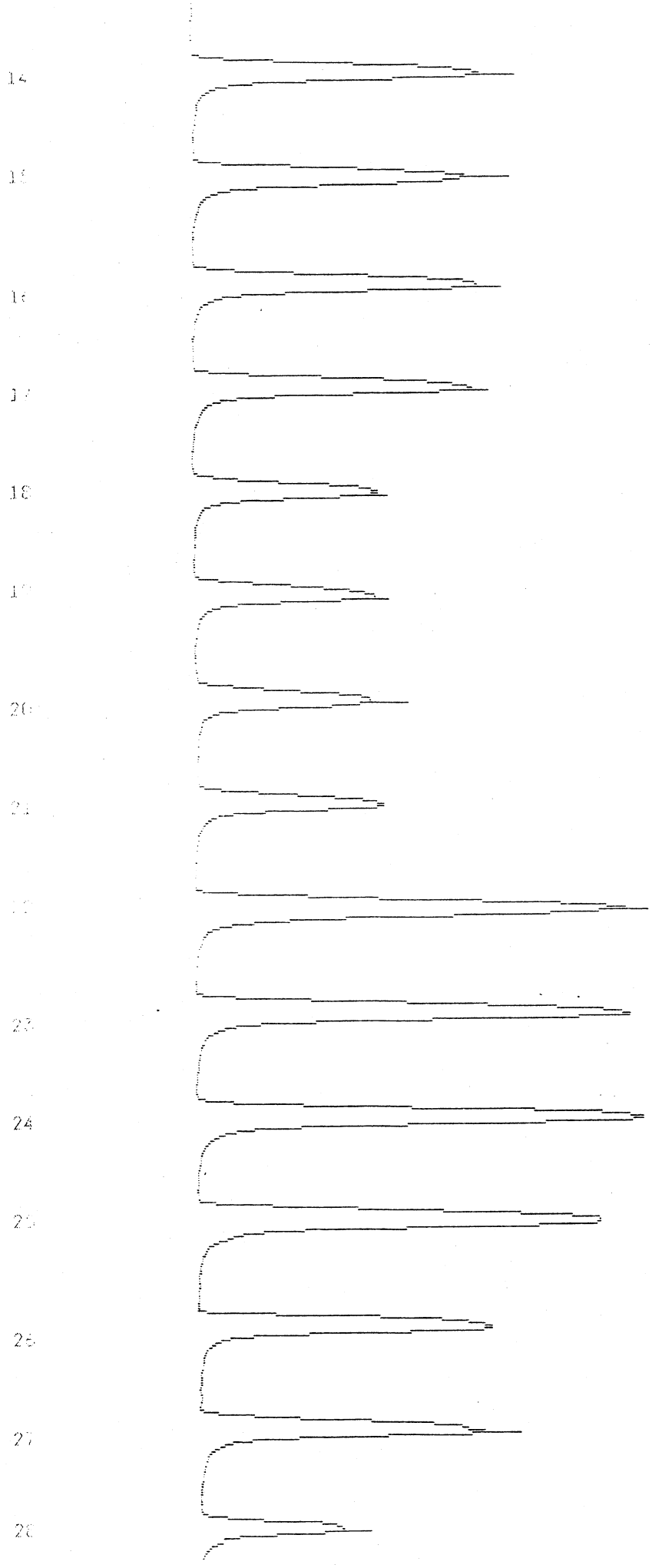
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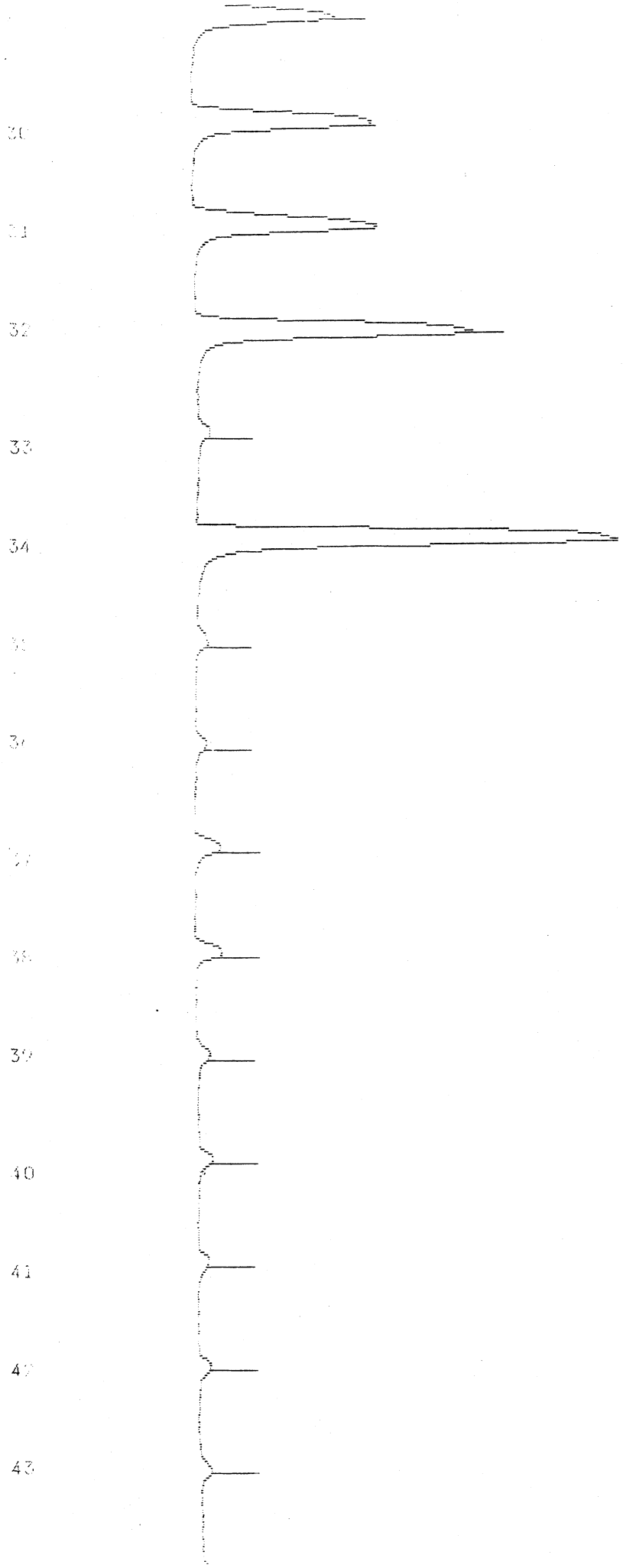
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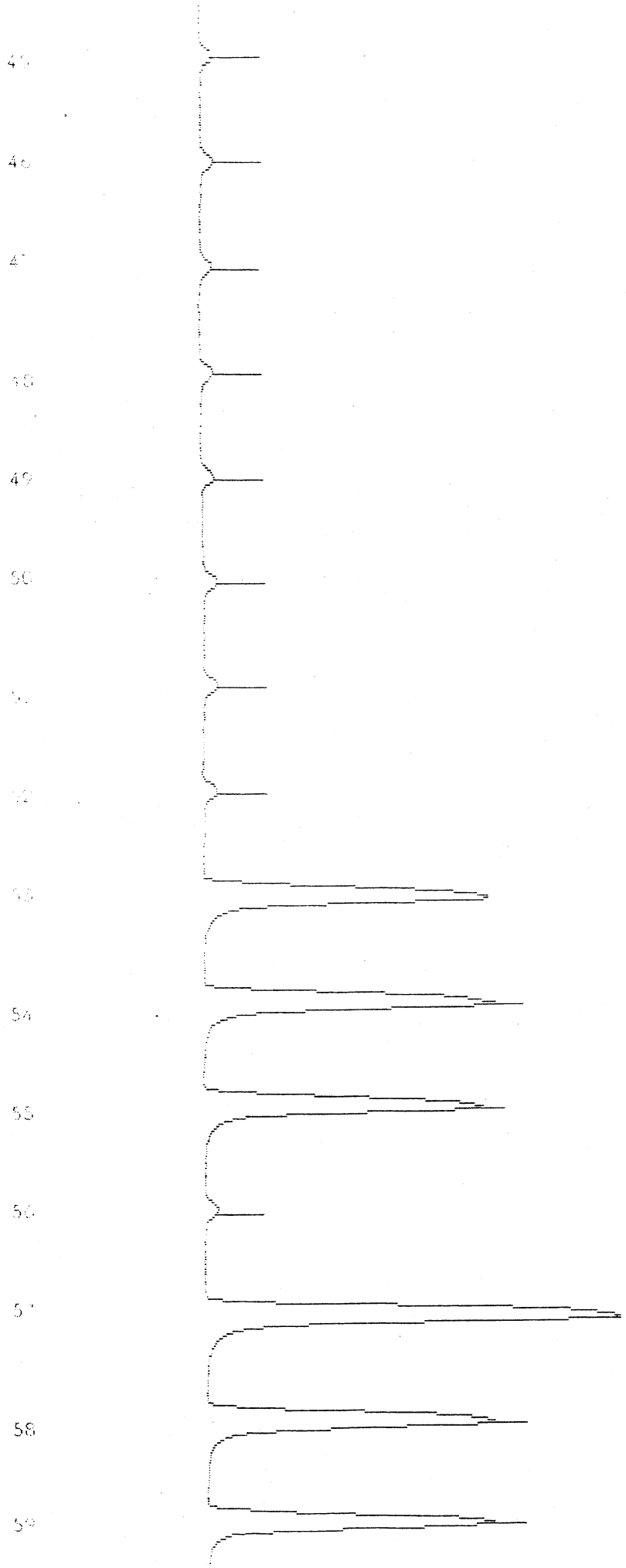
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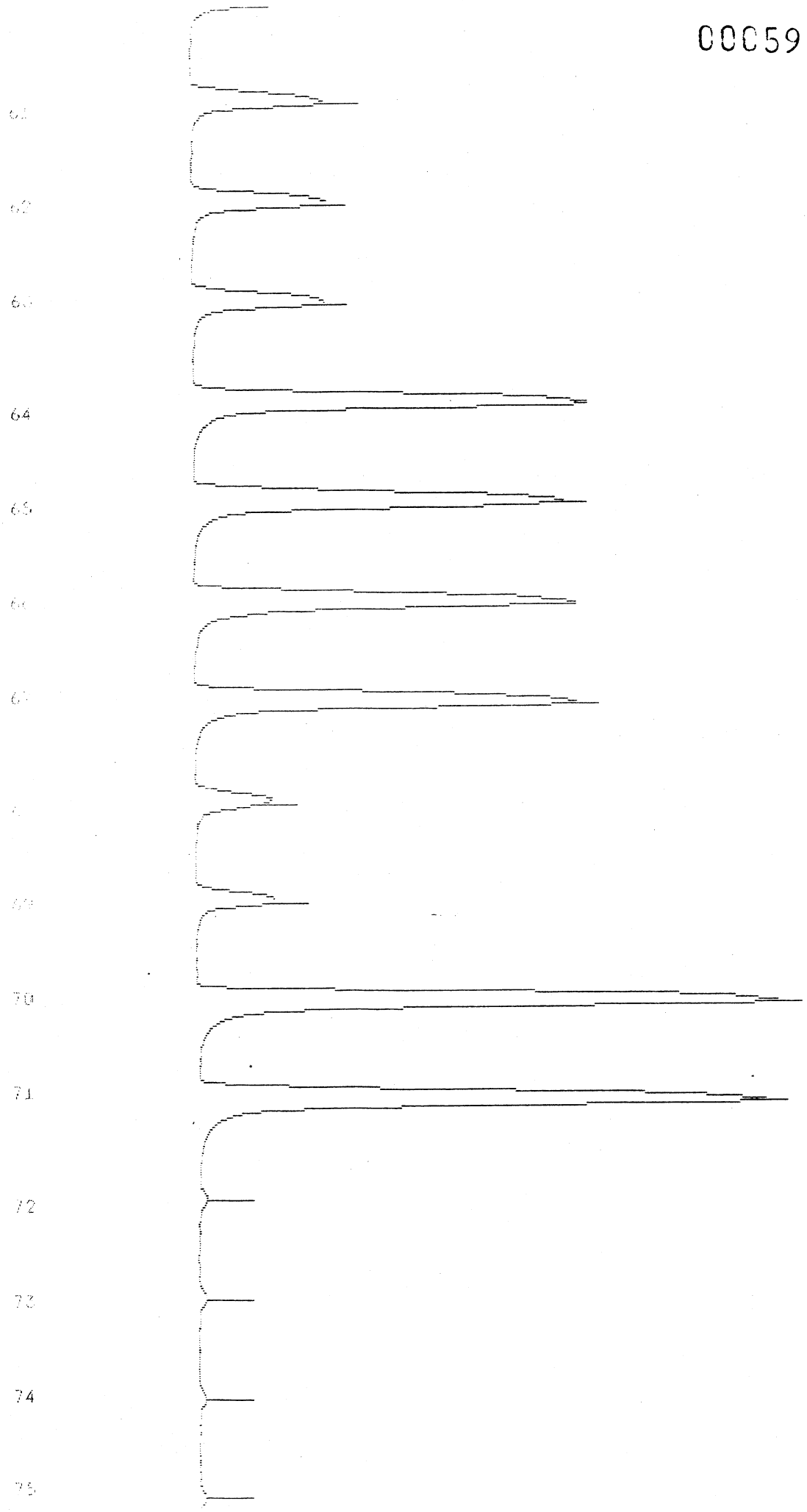
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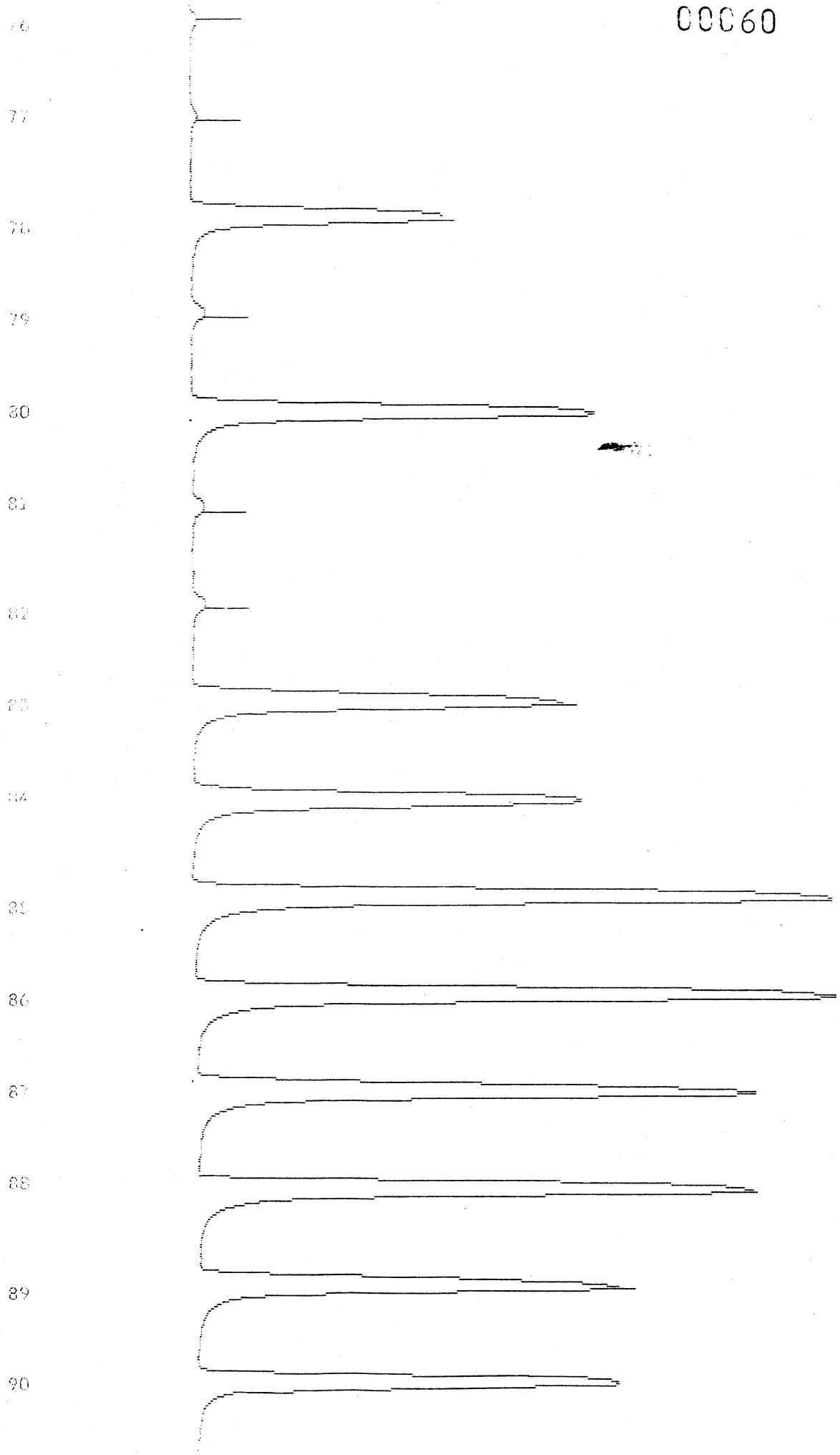
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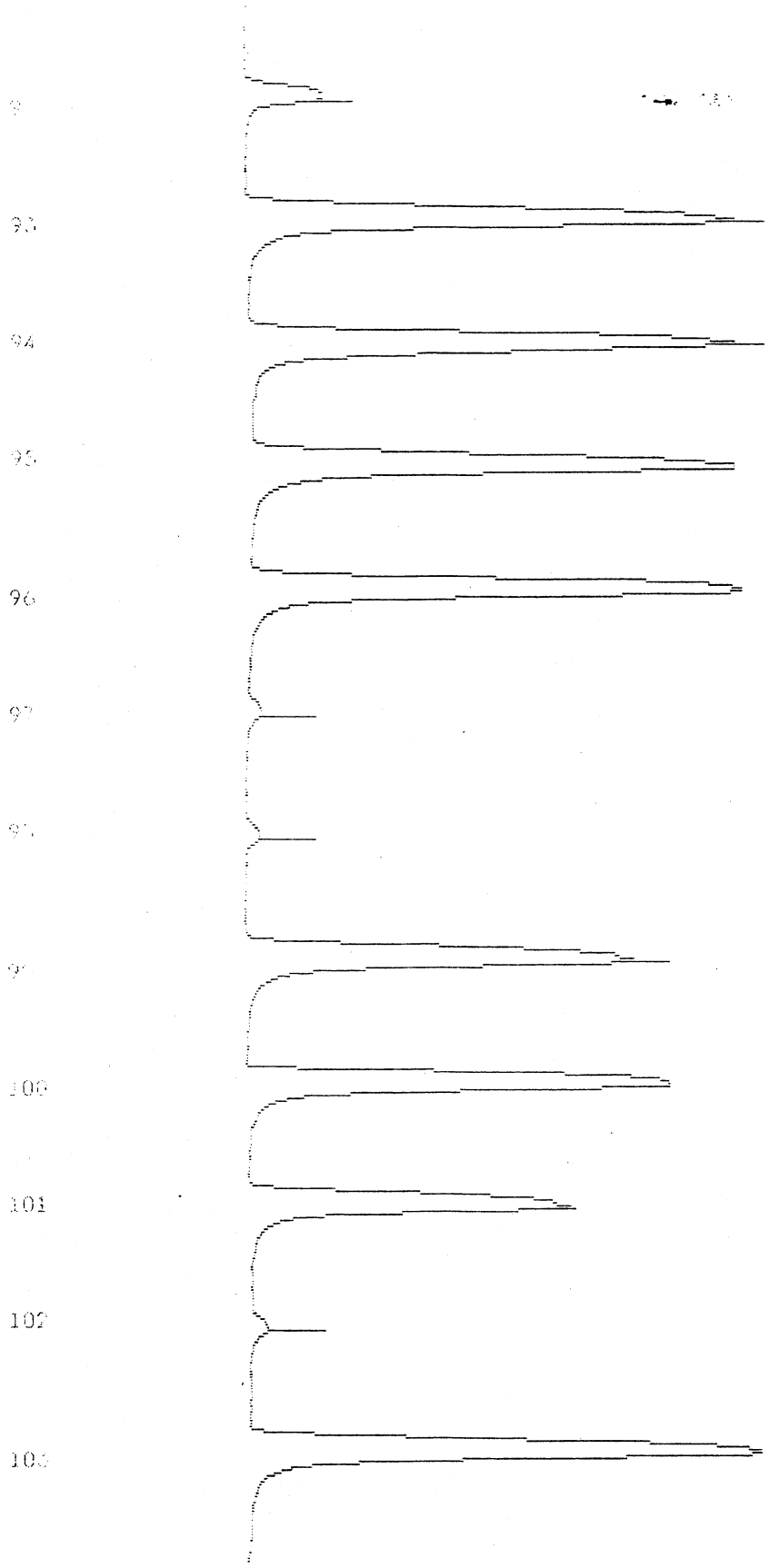
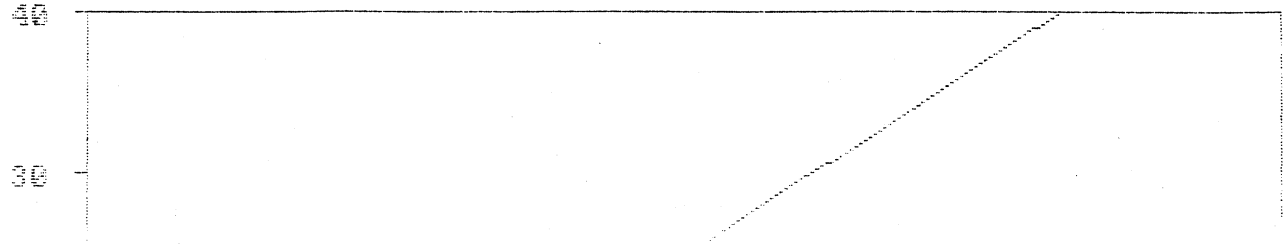


CHANNEL NAME: LDC
RUN NAME: 991011W



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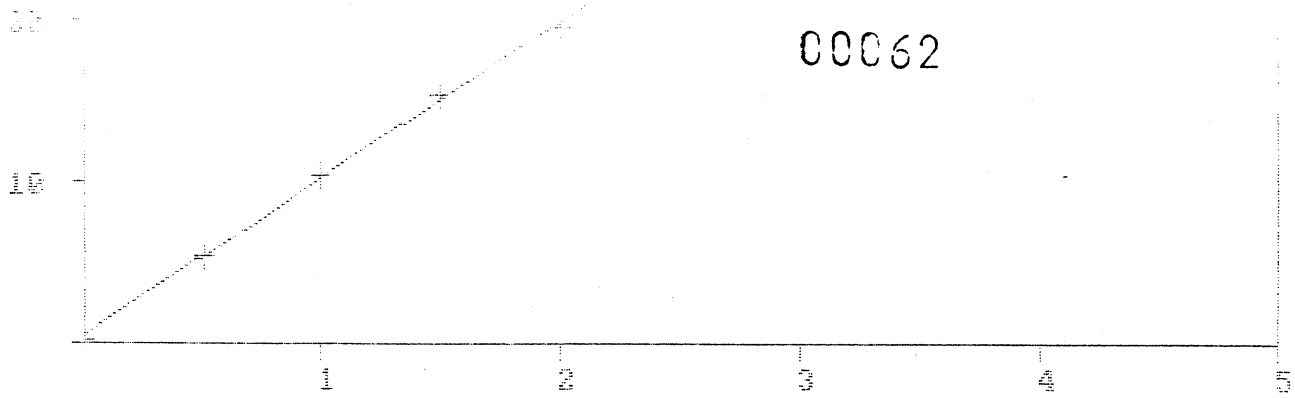

DATA TYPE: FIA CALIBRATION ORDER: 1
INTERCEPT = 0.52 SLOPE = 9.684284

CORRELATION: .9995842

CHANNEL NAME: LOC
RUN DATE: 10-11-1999
SAMPLE TABLE NAME: 991011W
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA		CONCENTRATION (ppb)	CF
1	PRIMER	1	1	14.6		1.457	s
2	DUMMY	1	1	0.5		-0.003	I
3	S1: 0	1	1	0.3		-0.023	I
4	S2: .5	1	1	5.4		0.504	
5	S3: 1	1	1	10.4		1.023	
6	S4: 1.5	1	1	15.4		1.535	
7	S5: 2	1	1	19.5		1.964	
8	S6: 2.5	1	1	24.7		2.498	
9	ICV	1	1	14.3	TuG	1.424	95%
10	B	1	1	0.0		-0.054	b
11	D4	1	1	15.4		1.535	d
12	BL1011-1GFB 42245,	1	1	0.1	<0.01	-0.041	I
13	BL1011-1GFB 42724	1	1	0.1		-0.046	I
14	BL1011S	1	1	10.3	0.100	1.028	100%
15	BL1011S	1	1	9.9		0.965	
16	BL1011DS	1	1	10.2	0.100	1.003	100%
17	BL1011DS	1	1	10.1		0.988	
18	53136	5	1	6.5	3.098	3.085	
19	53136	5	1	6.5		3.111	
20	53136D	5	1	6.2	3.060	2.934	
21	53136D	5	1	6.7		3.186	
22	53136S	5	1	15.7	7.889	7.839	96%
23	53136S	5	1	15.9		7.939	
24	53136DS VOID	5	1	16.3		8.141	RERUN SEE BELOW ↓
25	53136DS	5	1	14.6		7.284	
26	53137	10	1	10.5	10.243	10.331	
27	53137	10	1	10.4		10.155	
28	53146	1	1	4.9	0.452	0.451	
29	53146	1	1	4.9		0.453	
30	53147	1	1	6.4	0.619	0.607	
31	53147	1	1	6.6		0.630	s
32	CCV	1	1	10.0		0.983	98%
33	B	1	1	0.0		-0.054	b
34	D4	1	1	15.4		1.535	d
35	42248	1	1	0.0	<0.04	-0.054	I
36	42248	1	1	0.0		-0.054	I
37	42248	1	1	0.5		-0.003	P

40	[illegible]	1	1	[illegible]	[illegible]	[illegible]	[illegible]	I
41	[illegible]	1	1	0.0	<0.00663	[illegible]	[illegible]	I
42	[illegible]	1	1	0.0		-0.054		I
43	42721 A	1	1	0.0	<0.05	-0.054		I
44	42721 A	1	1	0.0		-0.054		I
45	42725 B	1	1	0.0	<0.01	-0.054		I
46	42725 B	1	1	0.0		-0.051		s
47	42725 C	1	1	0.0	<0.01	-0.054		I
48	42725 C	1	1	0.0		-0.054		I
49	42726	1	1	0.0	<0.08	-0.054		I
50	42726	1	1	0.0		-0.051		I
51	BL1011-2GFB 43188	1	1	0.0	<0.01	-0.049		I
52	BL1011-2GFB	1	1	0.1		0.046		I
53	BL1011S	1	1	10.5	0.104	1.031	104%	
54	BL1011S	1	1	10.7		1.048		
55	CCV	1	1	10.2		1.000	100%	
56	B	1	1	0.0		-0.054		b
57	D4	1	1	15.4		1.535		d
58	BL1011DS	1	1	10.5	0.103	1.031	103%	
59	BL1011DS	1	1	10.5		1.028		
60	42727	1	1	4.8	0.876	0.443		
61	42727	1	1	4.7		0.433		s
62	42727D	1	1	4.9	0.887	0.451		
63	42727D	1	1	4.7		0.436		
64	42727S	1	1	15.2	2.916	1.512	101%	
65	42727S	1	1	14.1		1.404		
66	42727DS	1	1	14.7	2.904	1.462	101%	
67	42727DS	1	1	14.5		1.442		
68	42728	1	1	2.4	0.395	0.191		
69	42728	1	1	2.5		0.204		
70	42729	1	1	22.2	4.401	2.236		
71	42729	1	1	21.5		2.165		
72	43189 A	1	1	0.0	<0.08	-0.054		I
73	43189 A	1	1	0.0		-0.054		I
74	43189 B	1	1	0.0	<0.01	-0.054		I
75	43189 B	1	1	0.0		-0.054		I
76	43189 C	1	1	0.0	<0.01	-0.054		I
77	43189 C	1	1	0.0		-0.054		I
78	CCV	1	1	9.5		0.922	92%	
79	B	1	1	0.0		-0.054		b
80	D4	1	1	15.4		1.535		d
81	43190	1	1	0.0	<0.100	-0.054		I
82	43190	1	1	0.0		-0.054		I
83	43191	1	1	14.0	4.272	1.391		
84	43191	1	1	14.6		1.457		
85	43192	1	1	24.5	2.485	2.473		
86	43192	1	1	24.7		2.496		
87	43193	1	1	21.3	6.395	2.143		
88	43193	1	1	21.1		2.120		
89	93136DS	5	1	15.9	7.915	7.927	97%	
90	93136DS	5	1	15.8		7.902		
91	51460-OHFLT	1	1	1.7	0.013	0.120		s
92	51460-OHFLT	1	1	1.8		0.133		
93	51462-OHFLT	10	1	14.6	1.442	14.543		
94	51462-OHFLT	10	1	14.4		14.290		
95	51463-OHFLT	10	1	14.5	1.443	14.442		
96	51463-OHFLT	10	1	14.5		14.416		
97	42264-?	1	1	0.0	<0.01	-0.054		I
98	42264-?	1	1	0.0		-0.054		I
99	43192 VOID	2	1	11.6		2.283	VOID	
100	43192	2	1	12.5		2.465		
101	CCV	1	1	9.4		0.920	92%	
102	B	1	1	0.0		-0.054		b
103	D4	1	1	15.4		1.535		d

Zenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
042282	BRAUN-MN	Reagent Blank C11	Mercury -	PV	-0.010						99/10/01	MGHY	99/10/01	MG02	79.	59.	
042760	BRAUN-MN	Reagent blank C11	Mercury -	PV	-0.010						99/10/01	MGHY	99/10/01	MG02	78.	57.	
043224	BRAUN-MN	Reagent Blank C11	Mercury -	PV	-0.010						99/10/01	MGHY	99/10/01	MG02	73.	52.	
BL1001	INTERNAL		Mercury -	PV	-0.010	-99999.0	0.100	100.	0.101	101.	99/10/01	MGHY	99/10/01	MG02	$$$	$$$	*BLKIMP*

4 Tests for OHHYX with an MDL of 0.010 ug Validated By CMB Control Chart Updated N/A IO Requirements met N/A

00055

Lenon Number	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
)42245	BRAUN-MN	MB R456	Mercury -	PV	-0.0050	-99999.0	0.0510	102.	0.0500	101.	99/10/01	1N2B	99/10/01	MG02	80.	59.	*BLKIMP*
)42256	BRAUN-MN	1B-C04 Blank	Mercury -	PV	-0.2500						99/10/01	1N2B	99/10/01	MG02	80.	59.	*DDL*
)42257	BRAUN-MN	1R1-C04	Mercury -	PV	-0.2500	-0.2500	2.8710	105.	2.8190	103.	99/10/01	1N2B	99/10/01	MG02	80.	59.	*POST SPIKE*
)42258	BRAUN-MN	1R2-C04	Mercury -	PV	0.3640						99/10/01	1N2B	99/10/01	MG02	79.	59.	
)42259	BRAUN-MN	1R3-C04	Mercury -	PV	0.3280						99/10/01	1N2B	99/10/01	MG02	79.	59.	
)42272	BRAUN-MN	SB-C04 Blank	Mercury -	PV	-0.2500						99/10/01	1N2B	99/10/01	MG02	80.	59.	*DDL*
)42273	BRAUN-MN	SR1-C04	Mercury -	PV	-0.0250						99/10/01	1N2B	99/10/01	MG02	80.	59.	*DDL*
)42274	BRAUN-MN	SR2-C04	Mercury -	PV	-0.2500						99/10/01	1N2B	99/10/01	MG02	79.	59.	*DDL*
)42275	BRAUN-MN	SR3-C04	Mercury -	PV	-0.2500						99/10/01	1N2B	99/10/01	MG02	79.	59.	*DDL*
)42280	BRAUN-MN	Reagent Blank C9	Mercury -	PV	-0.2500						99/10/01	1N2B	99/10/01	MG02	79.	59.	*DDL*
3L1001	INTERNAL		Mercury -	PV	-0.0050	-99999.0	0.0510	102.	0.0500	101.	99/10/01	1N2B	99/10/01	MG02	$$$	$$$	*BLKIMP*

11 Tests for OHPOX with an MDL of 0.010 ug Validated By CMB Control Chart Updated N/A IO Requirements met N/A

00066

00067

1 of 3

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.01 Run Code: MG02 Matrix: IMP.

Analyst: MG Units: µg (see comments) MDL: 0.005

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12			WS 378			
13			ORG. REF.			
14			BL4001	1B1B		
15			~~XXXXXX~~	NO CUP		
16			BL1001 S			
17			"			
18			BL1001 DS			
19			"			
20	2		50091			
21			"			
22			50091 D			
23			"			
24			50091 S			
25			"			
26			50091 DS			
27			"			
28			50089			
29			"			
30			50090			
31			"			
32			50092			
33			"			
34			CCV			
35			B			
36			D4			
37			50093			
38			"			
39			50094			
40			"			

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41			BL4001	1N2B		
42			"			
43			BL1001 S			
44			"			
45			BL1001 DS			
46			"			
47	10		42257			
48			"			
49			42257 D			
50			"			
51			42257 S			
52			"			
53			42257 DS			
54			"			
55			42256			
56			"			
57			CCV			
58			B			
59			D4			
60	10		42258			
61			"			
62			42259			
63			"			
64			42272			
65			"			
66			42273			
67			"			
68			42274			
69			"			
70			42275			
71			"			
72			42280			
73			"			
74			BL4001	2N2B		
75			"			
76			BL1001 S			
77			"			
78			BL1001 DS			
79			"			
80			CCV			

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

[illegible] mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.01 Run Code: MG02 Matrix: IMP.

Analyst: MG Units: µg (see comments) MDL: _____

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
81 ~~21~~			B			
22			D4			
23	10		42489			
24			"			
25			42489 D			
26			"			
27			42489 S			
28			"			
29			42489 DS			
30			"			
31			42488			
32			"			
33			42488			
34			"			
35			42490			
36			"			
37			42491			
38			"			
39			42507			
40			"			
41	10		42508			
42			"			
43			CCV			
44			B			
45			D4			
46	10		42509			
47			"			
48			42510			
49			"			
50			BL1001	3N28		
51			"			
52			BL1001 S			
53			"			
54			BL1001 DS			
55			"			
56	10		42524			
57			"			
58			42524 D			
59			"			
60			42524 S			
61			"			
62			42524 DS			
63			"			
64			42523			
65			"			
66			CCV			
67			B			
68			D4			
69	10		42525			
70			"			
71			42526			
72			"			
73			42529			
74			"			
75			42538			
76			42540			
77			42541			
78			"			
79			42542			
80			"			

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

" Blank Spike = 1.0 mg/kg for solid samples.

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10801 Run Code: MG02 Matrix: IMP

Analyst: MG Units: µg (see comments) MDL: _____

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21			BL1001	4N2B		
22			"			
23			BL1001S			
24			"			
25			BL1001 DS			
26			"			
27	10		42745			
28			"			
29			CCV			
30			B			
31			D4			
32	10		42745 D			
33			"			
34			42745 S			
35			"			
36			42745 DS			
37			"			
38			42743			
39			"			
40			42744			
41	10		42744 (Cup Missed)			
42			42746			
43			"			
44			42747			
45			"			
46			42748			
47			"			
48			42749			
49			"			
50			42750			
51			"			
52			CCV			
53			B			
54			D4			
55	10		42751			
56			"			
57			42282	HYDR.		
58			"	HYX		
59			42497			
60			"			
61			43224			
62			"			
63			42760			
64			"			
65			44796			
66			"			
67			47489			
68			"			
69			53129			
70			"			
71			53143			
72			"			
73			53685			
74			"			
75			WS 378			
76			ORG REF			
77			CCV			
78			B			
79			D4			
80						

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

ICV = CCV = 1.0 mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG
DGHGLEACH, DG29HG***

Calibration Solutions:

#	I.D.	*Conc.	Spike	**Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	0.33	200 ul of 0.05 ppm IV working standard	0.5
4	Standard 3	0.67	400 ul of 0.05 ppm IV working standard	1.0
5	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
6	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
7	Standard 5	1.33	800 ul of 0.05 ppm IV working standard	2.0
7	Standard 6	1.67	1000 ul of 0.05 ppm IV working standard	2.5

Check List
- ✓ Digest Code/labels
- ✓ Samples poured out
- ✓ Acids added
- ✓ Reagents added
- ✓ Samples spiked
- ✓ Bath at 95 degrees C
- ✓ Samples digested
- ✓ Hydroxylamine HCl added
- ✓ Samples bulked and mixed
- ✓ Rack order checked

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	9	ICV (Init. Calib. Verif.)	2N2B	20 ml	30 ml	1 X	1.5 ppb = 600 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	10	BL ~~0930~~ 1001	"	"	"	"	(Processed Blank)
	11	BL ~~0930~~ 1001 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	12	42257	"	1 ml	15 ml	10X	FINAL VOL 250 ml
1	13	D	"	↓	↓	↓	(Duplicate sample)
1	14	S	"	↓	↓	↓	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	15	DS	"	↓	↓	↓	(Duplicate Spiked sample)
2	16	56	"	↓	↓	↓	
3	17	57	"	↓	↓	↓	
4	18	59	"	↓	↓	↓	
5	19	42272	"	↓	↓	↓	
6	20	73	"	↓	↓	↓	
7	21	74	"	↓	↓	↓	
8	22	75	"	↓	↓	↓	
9	23	42280	"	↓	↓	↓	
10	24		"	"	"	"	
	25	CCV (Cont. Calib. Verif.)	2N2B	20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	26	BL ~~0930~~ 1001	"	"	"	"	(Processed Blank) 42476 MB
	27	BL 0930 1001 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	28	42489	"	1 ml	15 ml	10X	FINAL VOL 250 ml
1	29	D	"	↓	↓	↓	(Duplicate sample)
1	30	S	"	↓	↓	↓	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	31	DS	"	↓	↓	↓	(Duplicate Spiked sample)
2	32	37	"	↓	↓	↓	
3	33	38	"	↓	↓	↓	
4	34	70	"	↓	↓	↓	
5	35	71	"	↓	↓	↓	
6	36	42507	"	↓	↓	↓	
7	37	08	"	↓	↓	↓	
8	38	09	"	↓	↓	↓	
9	39	10	"	↓	↓	↓	
10	40		"	"	"	"	

Notes: Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C
DG29HGI, DG29HGF, DG101AA1, DG101AA2

Include External Reference Material (EPA WS 378 or SPEX CertiPrep TM - WS) per run

Prepare 0.05 ppm standards daily

HNO3 Lot. No. 219040	H2SO4 Lot. No. ~~[illegible]~~	Bath Temps. 1 195°C

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG
DGHGLEACH, DG29HG***

Calibration Solutions:

#	I.D.	*Conc.	Spike	**Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	0.33	200 ul of 0.05 ppm IV working standard	0.5
4	Standard 3	0.67	400 ul of 0.05 ppm IV working standard	1.0
5	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
6	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
7	Standard 5	1.33	800 ul of 0.05 ppm IV working standard	2.0
7	Standard 6	1.67	1000 ul of 0.05 ppm IV working standard	2.5

Check List

- ✓ Digest Code/labels
- ✓ Samples poured out
- ✓ Acids added
- ✓ Reagents added
- ✓ Samples spiked
- ✓ Bath at 95 degrees C
- ✓ Samples digested
- ✓ Hydroxylamine HCl added
- ✓ Samples bulked and mixed
- ✓ Rack order checked

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	9	ICV (Ini. Calib. Verif.)	[illegible]	20 ml	30 ml	1 X	1.5 ppb = 600 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	10	BL ~~0730~~ 1001	"	"	"	"	(Processed Blank)
	11	BL ~~0730~~ 1001 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	12	42745	"	1 mL	15 mL	18X	FINAL VOL 250 mL
1	13	D	"	"	"	"	(Duplicate sample)
1	14	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	15	DS	"	"	"	"	(Duplicate Spiked sample)
2	16	42743	"	"	"	"	
3	17	44	"	"	"	"	
4	18	46	"	"	"	"	
5	19	47	"	"	"	"	
6	20	48	"	"	"	"	
7	21	49	"	"	"	"	
8	22	50	"	"	"	"	
9	23	51	"	"	"	"	
10	24		"	"	"	"	
	25	CCV (Cont. Calib. Verif.)		20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	26	BL	"	"	"	"	(Processed Blank)
	27	BL S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	28		"	"	"	"	
1	29	D	"	"	"	"	(Duplicate sample)
1	30	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	31	DS	"	"	"	"	(Duplicate Spiked sample)
2	32		"	"	"	"	
3	33		"	"	"	"	
4	34		"	"	"	"	
5	35		"	"	"	"	
6	36		"	"	"	"	
7	37		"	"	"	"	
8	38		"	"	"	"	
9	39		"	"	"	"	
10	40		"	"	"	"	

Notes: Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C
DG29HGI, DG29HGF, DG101AA1, DG101AA2

Include External Reference Material (EPA WS 378 or SPEX CertiPrep TM - WS) per run

Prepare 0.05 ppm standards daily

HNO3 Lot. No. 119040	H2SO4 Lot. No. 312064	Bath Temps. 1 175 °C

00072 NOT DIGESTED

EPA 7470 WATER PREPARATION LOG - MERCURY

DG7470HG
DGHGLEACH, DG29HG***

Calibration Solutions:

#	I.D.	*Conc.	Spike	**Conc. Entered
1	Blank/Dummy	0 ppb	None	0.0
2	Standard 1	0 ppb	None	0.0
3	Standard 2	0.33	200 ul of 0.05 ppm IV working standard	0.5
4	Standard 3	0.67	400 ul of 0.05 ppm IV working standard	1.0
5	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
6	Standard 4	1.0	600 ul of 0.05 ppm IV working standard	1.5
7	Standard 5	1.33	800 ul of 0.05 ppm IV working standard	2.0
7	Standard 6	1.67	1000 ul of 0.05 ppm IV working standard	2.5

Check List
- Digest Code/labels
- Samples poured out
- Acids added
- Reagents added
- Samples spiked
- Bath at 95 degrees C
- Samples digested
- Hydroxylamine HCl added
- Samples bulked and mixed
- Rack order checked

	#	Sample I.D.	B.Code	Init.Vol.	F. Vol.	Dil	Comment
	9	ICV (Init. Calib. Verif.)	MGHY	20 ml	30 ml	1 X	1.5 ppb = 600 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	10	BL 1001	"	"	"	"	(Processed Blank)
	11	BL 1001 S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	12	42282	"	"	"	"	90 ml
1	13	D	"	"	"	"	(Duplicate sample)
1	14	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	15	DS	"	"	"	"	(Duplicate Spiked sample)
2	16	42497	"	"	"	"	50 ml
3	17	43224	"	"	"	"	84 ml
4	18	42760	"	"	"	"	90 ml
5	19	~~42498~~	"	"	"	"	50 ml
6	20	44796	"	"	"	"	110 ml
7	21	47489	"	"	"	"	100 ml
8	22	53129	"	"	"	"	48 ml
9	23	53143	"	"	"	"	74 ml
10	24	53685	"	"	"	"	50 ml
	25	CCV (Cont. Calib. Verif.)		20 ml	30 ml	1 X	1.0 ppb = 400 ul. of 0.05 ppm HP MESS-ZENO 30/QCA Std.
	26	BL	"	"	"	"	(Processed Blank)
	27	BL S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	28		"	"	"	"	
1	29	D	"	"	"	"	(Duplicate sample)
1	30	S	"	"	"	"	1 ppb = 400 ul. of 0.05 ppm Inorganic Ventures Std Interm.
1	31	DS	"	"	"	"	(Duplicate Spiked sample)
2	32		"	"	"	"	
3	33		"	"	"	"	
4	34		"	"	"	"	
5	35		"	"	"	"	
6	36		"	"	"	"	
7	37		"	"	"	"	
8	38		"	"	"	"	
9	39		"	"	"	"	
10	40		"	"	"	"	

Notes: Other Applicable Test Codes: DG29HG-1B, DG29HG-2B, DG29HG-3A, DG29HG-3B, DG29HG-3C
DG29HGI, DG29HGF, DG101AA1, DG101AA2

Include External Reference Material (EPA WS 378 or SPEX CertiPrep TM - WS) per run

Prepare 0.05 ppm standards daily

HNO3 Lot. No.	H2SO4 Lot. No.	Bath Temps. / / °C

RUN DATE: 10-01-1999 CHART DATE: 10-02-1999
CHART SPEED: 30
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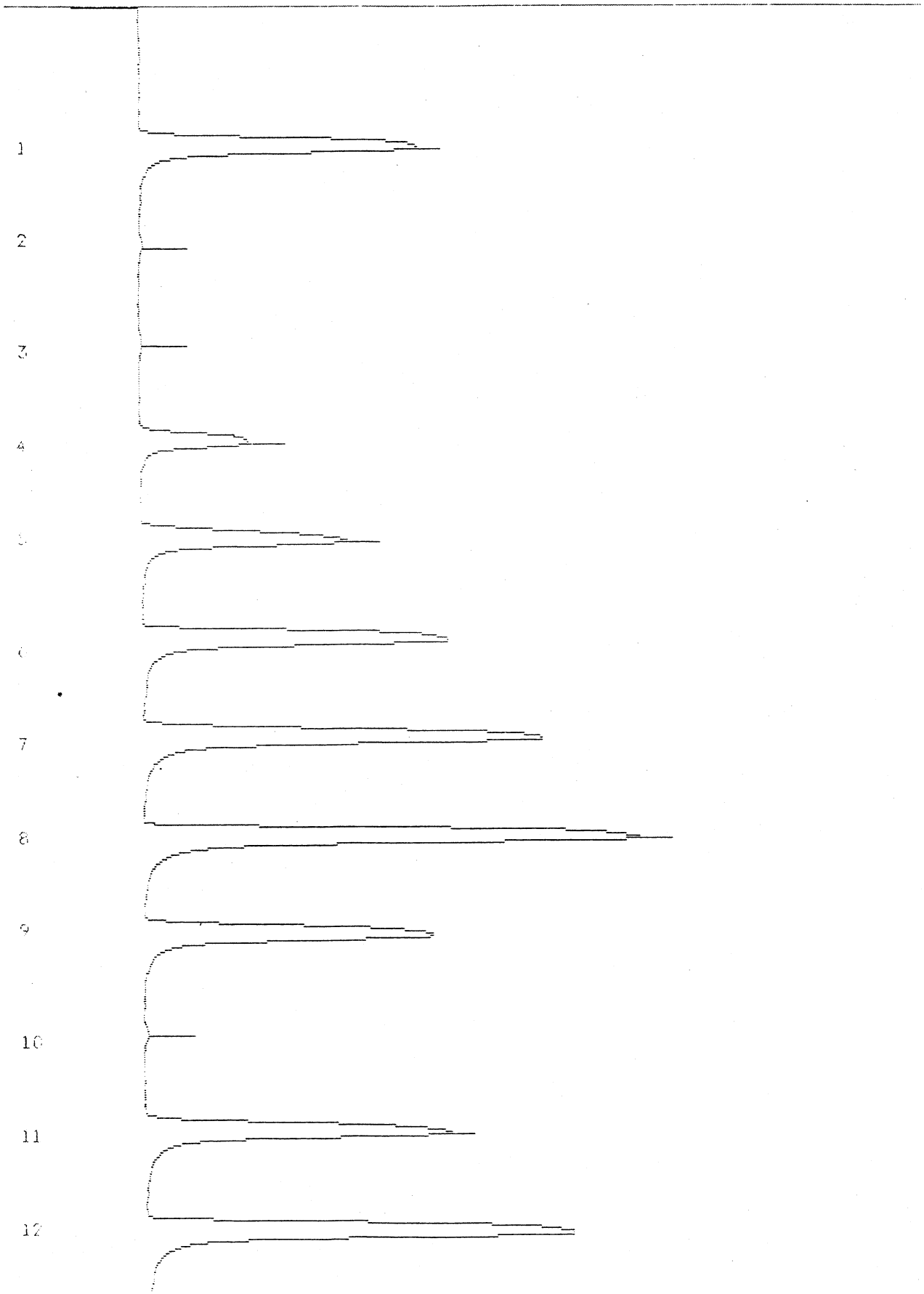

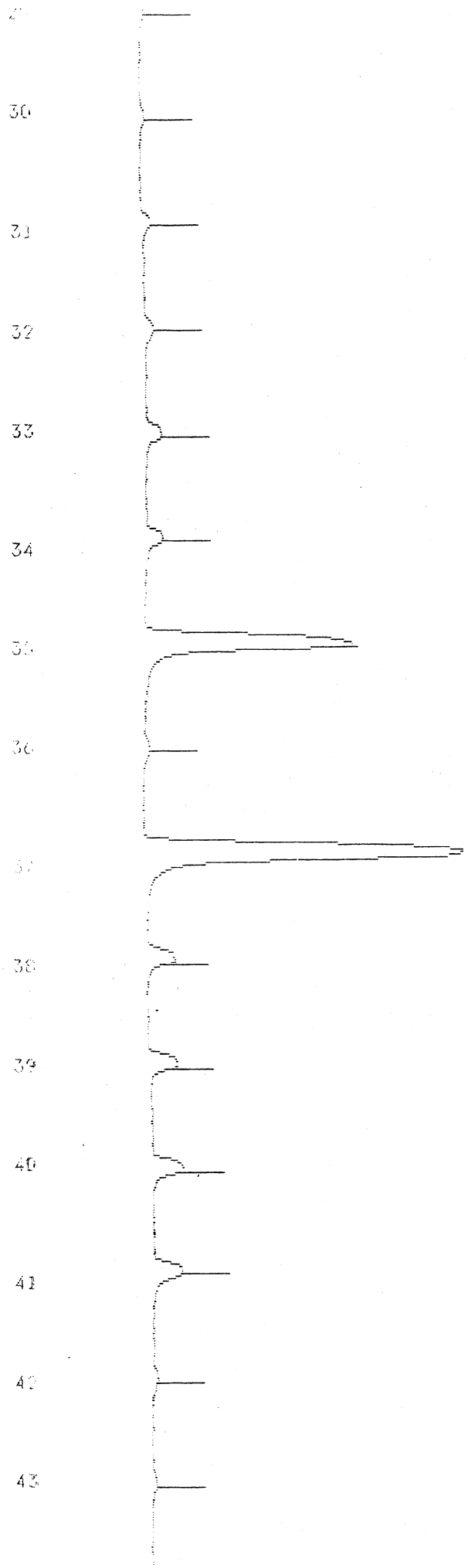
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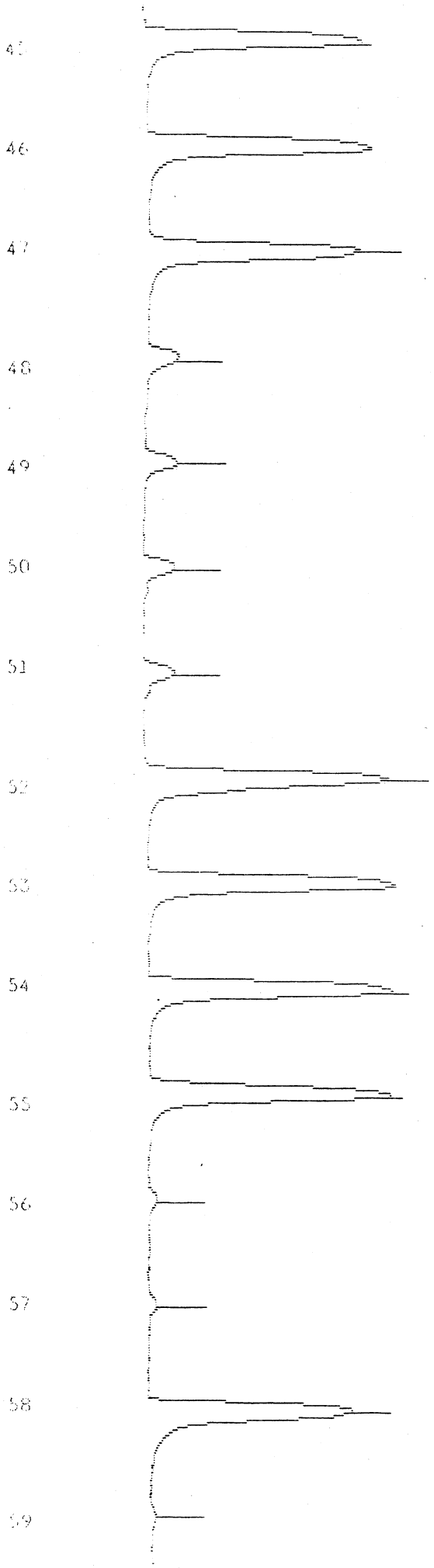
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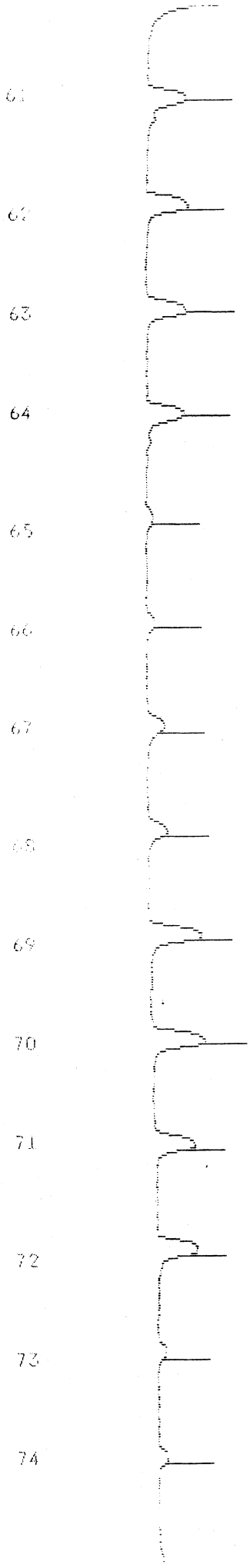
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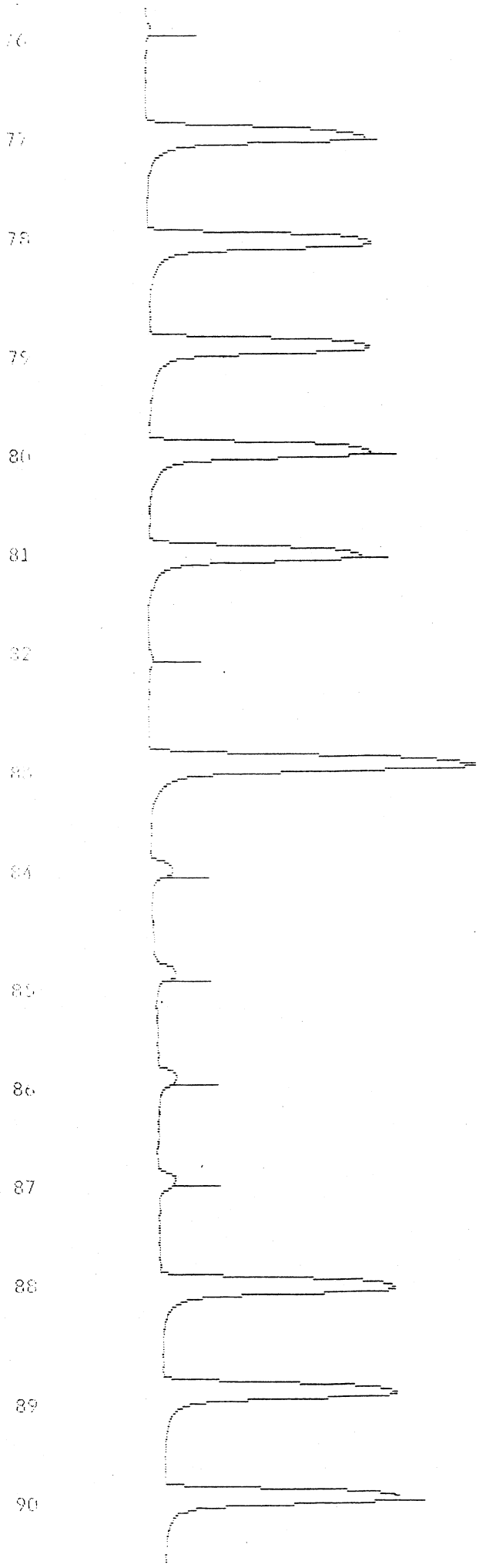
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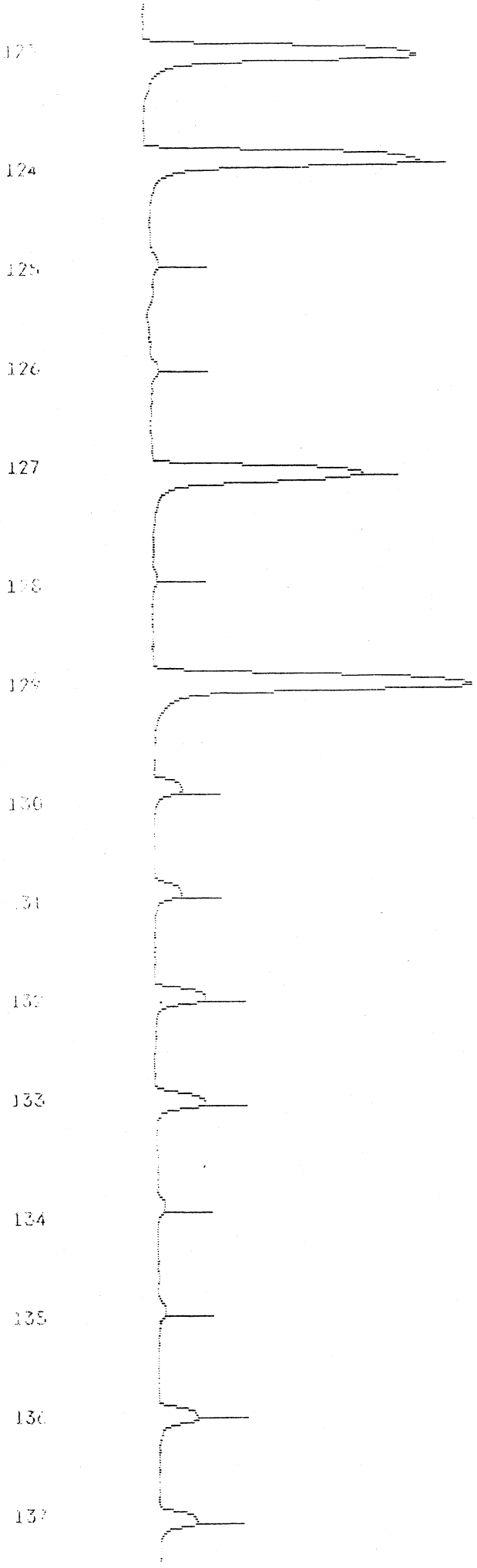
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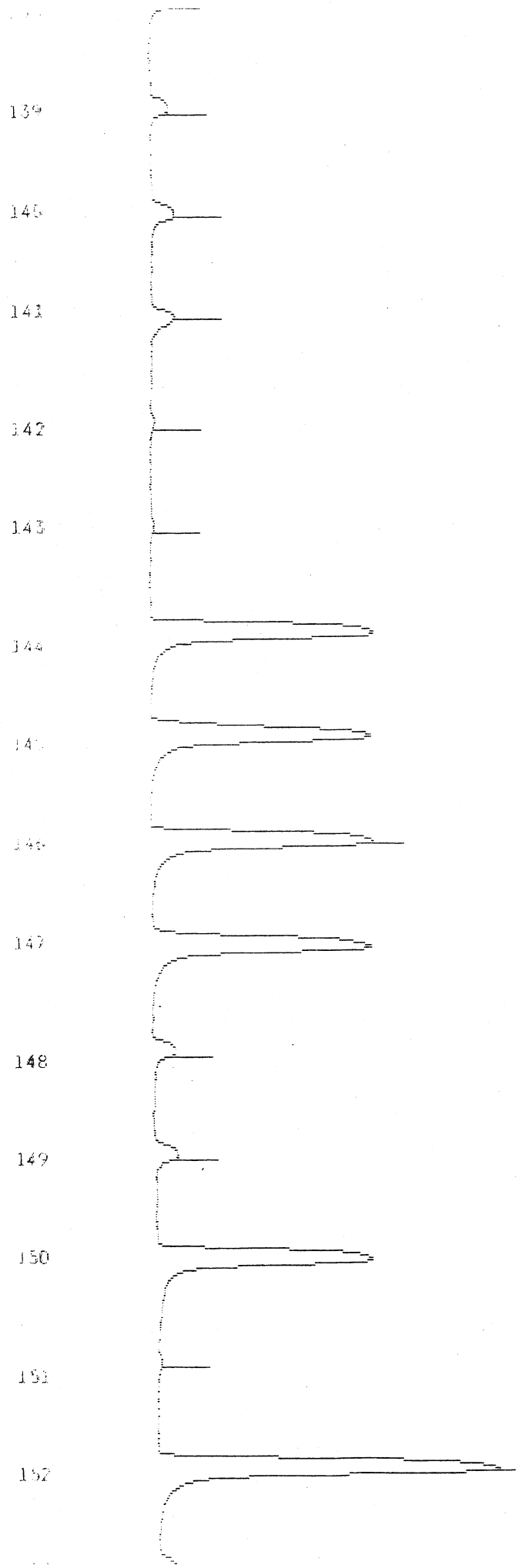
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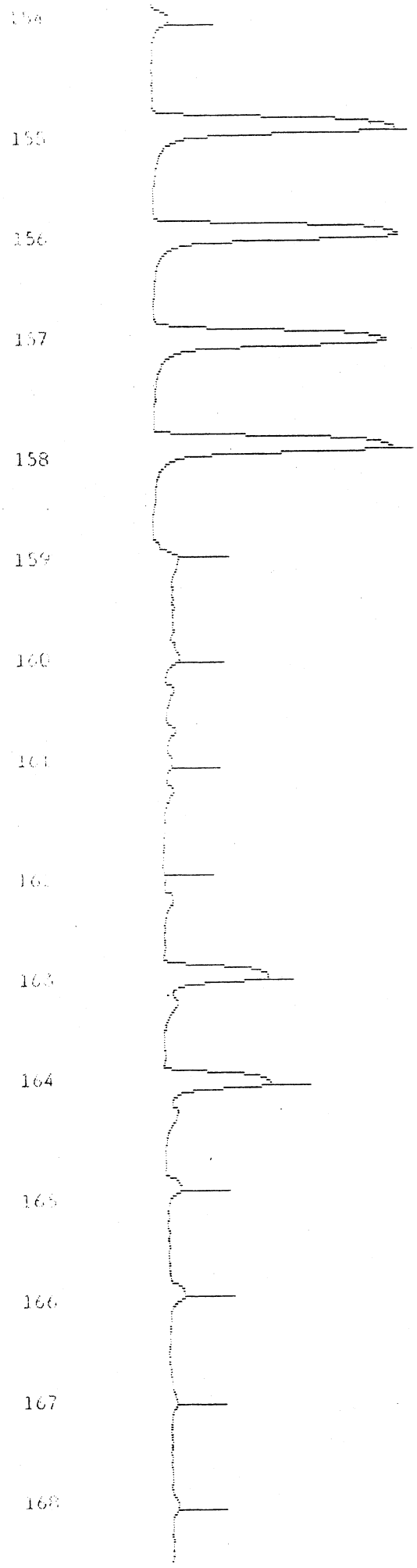
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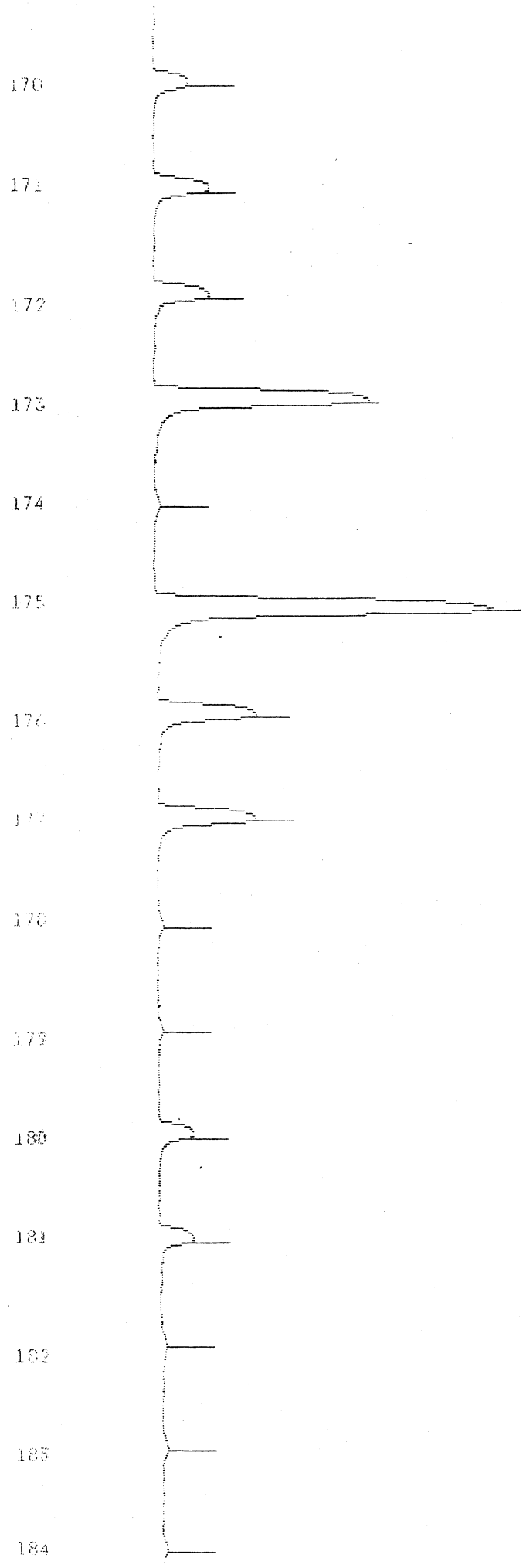
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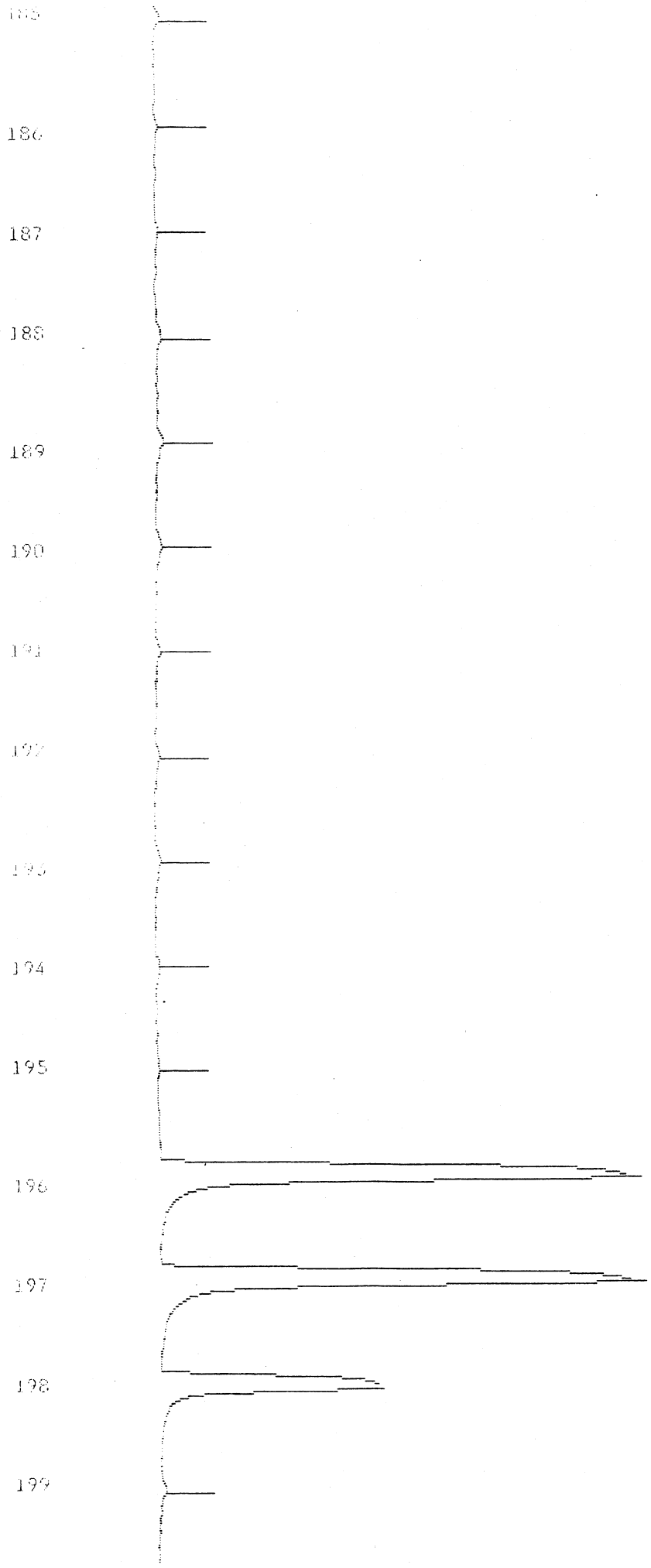
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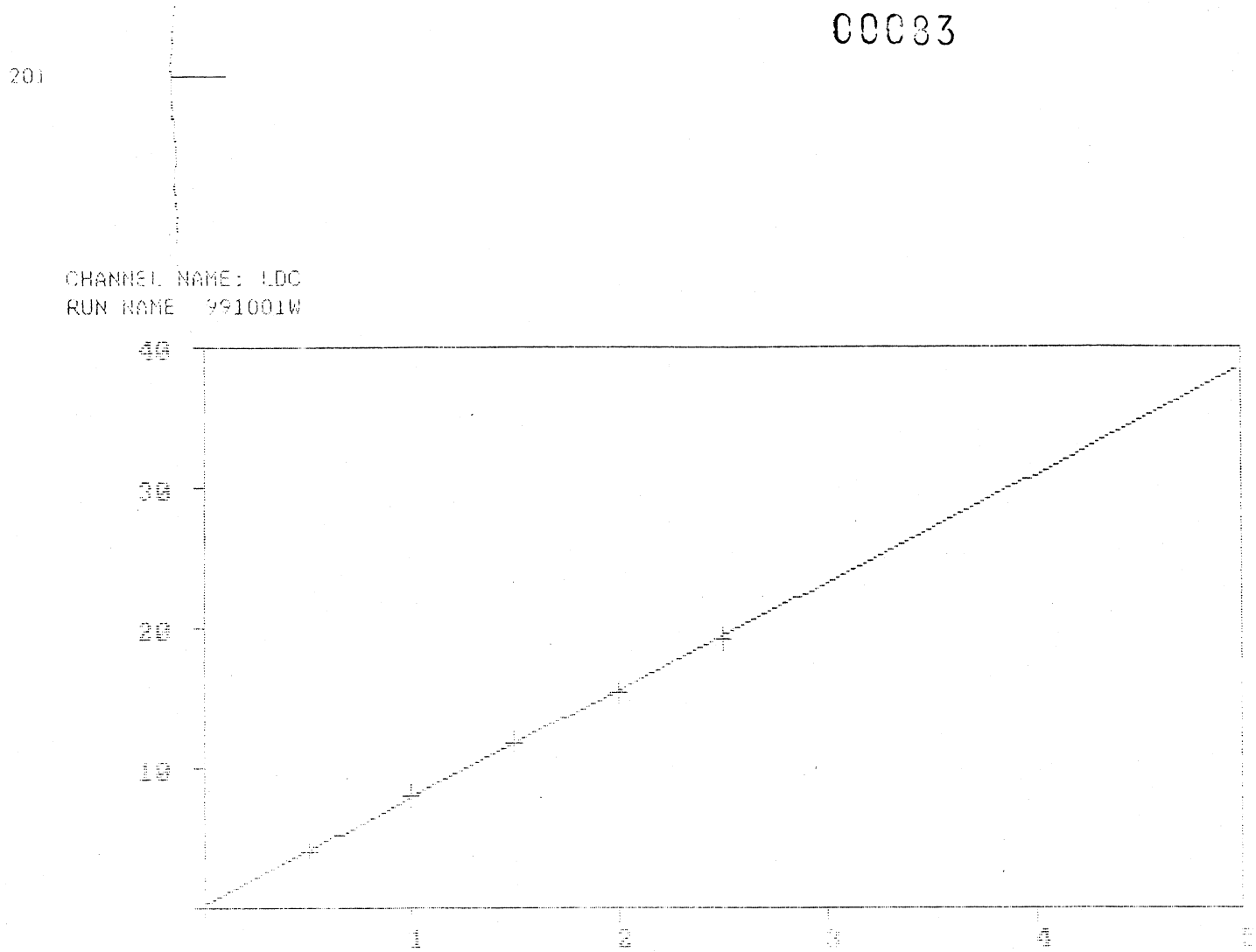

DATA TYPE: FIA CALIBRATION ORDER: 1
INTERCEPT = 0.20 SLOPE = 7.63819

CORRELATION: .9997931

CHANNEL NAME: LDC
RUN DATE: 10-01-1999
SAMPLE TABLE NAME: 991001W
METHOD NAME: HGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA	CONCENTRATION ppb	EF
1	PRIMER	1	1	10.8	1.383	s
2	DUMMY	1	1	0.0	-0.020	I
3	S1: 0	1	1	0.0	-0.023	I
4	S2: .5	1	1	4.1	0.506	
5	S3: 1	1	1	8.0	1.019	
6	S4: 1.5	1	1	11.9	1.523	
7	S5: 2	1	1	15.4	1.989	
8	S6: 2.5	1	1	19.2	2.486	
9	ICV	1	1	11.2	1.440 96%	
10	8	1	1	0.0	-0.027	b
11	D4	1	1	11.9	1.523	d
12	WS 378	1	1	16.6	Tug 2.139 107%	
13	ORG REF	1	1	16.5	2.132 107%	
14	BL1001-1818 50089	1	1	0.0	<0.03 -0.027	I
15	BL1001-1818	1	1	0.0	-0.027	I

18	[illegible]	1	1	[illegible]		[illegible]	
19	BL1001D	1	1	7.5		0.959	
20	BL1001DS	1	1	7.8	0.292	0.987	97%
21	50091	2	1	0.3	<0.03	~~0.012~~ 0.024	
22	50091	2	1	0.3		~~0.015~~ 0.030	
23	50091D	2	1	0.3	<0.03	~~0.009~~ 0.018	
24	50091D	2	1	0.3		~~0.012~~ 0.024	
25	50091S	2	1	8.1	0.631	~~1.026~~ 2.052	103%
26	50091S	2	1	8.4		~~1.077~~ 2.154	
27	50091DS	2	1	8.4	0.639	~~1.070~~ 2.140	105%
28	50091DS	2	1	8.4		~~1.067~~ 2.122	
29	50089	1	1	0.0	<0.03	-0.027	I
30	50089	1	1	0.0		-0.027	I
31	50090	1	1	0.1	<0.03	-0.017	s
32	50090	1	1	0.1		-0.011	I
33	50092	1	1	0.4	<0.03	0.024	I
34	50092	1	1	0.4		0.028	I
35	CCV	1	1	7.7		0.984	98%
36	B	1	1	0.0		-0.027	b
37	D4	1	1	11.9		1.523	d
38	50093	1	1	0.8	<0.03	0.082	
39	50093	1	1	0.9		0.085	
40	50094	1	1	1.0	<0.03	0.098	
41	50094	1	1	0.8		0.079	
42	BL1001-1N2B	1	1	0.0	<0.005	-0.027	I
43	BL1001-1N2B	1	1	0.0		-0.027	I
44	BL1001S	1	1	8.1	0.051	1.029	102%
45	BL1001S	1	1	8.0		1.019	
46	BL1001DS	1	1	8.1	0.050	1.035	101%
47	BL1001DS	1	1	7.7		0.981	
48	42257	10	1	1.0	<0.250	0.978	I
49	42257	10	1	1.0		0.978	
50	422570	10	1	0.9	<0.250	0.914	
51	422570	10	1	0.9		0.850	
52	422573	10	1	8.9	2.871	11.341	105%
53	422573	10	1	9.1		11.628	
54	422570S	10	1	8.9	2.819	11.341	103%
55	422570S	10	1	8.8		11.214	
56	42256	10	1	0.2	<0.250	-0.011	I
57	42256	10	1	0.1		-0.106	I
58	CCV	1	1	7.3		0.924	92%
59	B	1	1	0.0		-0.027	b
60	D4	1	1	11.9		1.523	d
61	42258	10	1	1.2	0.364	1.329	s
62	42258	10	1	1.4		1.584	
63	42259	10	1	1.2	0.328	1.361	
64	42259	10	1	1.2		1.265	
65	42272	10	1	0.1	<0.250	-0.170	I
66	42272	10	1	0.2		-0.043	I
67	42273	10	1	0.5	<0.250	0.372	I
68	42273	10	1	0.6		0.468	I
69	42274	10	1	1.8	0.512	2.030	
70	42274	10	1	1.8		2.062	
71	42275	10	1	1.3	0.372	1.488	
72	42275	10	1	1.3		1.488	
73	42280	10	1	0.2	<0.250	-0.043	I
74	42280	10	1	0.2		-0.011	I
75	BL1001-2N2B 42476	1	1	0.0	<0.005	-0.023	I
76	BL1001-2N2B	1	1	0.0		-0.023	s
77	BL1001S	1	1	8.0	0.051	1.013	101%
78	BL1001S	1	1	8.1		1.026	
79	BL1001DS	1	1	7.9	0.051	1.010	101%
80	BL1001DS	1	1	8.0		1.016	
81	CCV	1	1	7.6		0.972	97%

85	[illegible]	10	1	0.6	<0.250	[illegible]		
86	42489	10	1	0.5		0.404	I	
87	42489D	10	1	0.5	<0.250	0.436	I	
88	42489S	10	1	8.5		10.799		
89	42489S	10	1	8.3	2.676	10.608		102%
90	42489DS	10	1	8.4		10.640		
91	42489DS	10	1	8.5	2.684	10.831	s	103%
92	42487	10	1	0.2	<0.250	-0.011	I	
93	42487	10	1	0.1		-0.170	I	
94	42488	10	1	0.2	<0.250	-0.043	I	
95	42488	10	1	0.1		-0.074	I	
96	42490	10	1	0.7	<0.250	0.691		
97	42490	10	1	0.7		0.659		
98	42491	10	1	0.6	<0.250	0.531	I	
99	42491	10	1	0.6		0.468	I	
100	42507	10	1	0.1	<0.250	-0.074	I	
101	42507	10	1	0.1		-0.106	I	
102	42508	10	1	0.2		0.021	I	
103	42508	10	1	0.2		-0.011	I	
104	CCV	1	1	7.6		0.968		97%
105	B	1	1	0.0		-0.027	b	
106	D4	1	1	11.9		1.523	s	
107	42509	10	1	0.2	<0.250	0.053	I	
108	42509	10	1	0.3		0.085	I	
109	42510	10	1	0.4	<0.250	0.244	I	
110	42510	10	1	0.4		0.276	I	
111	BL1001-3N2B	1	1	0.0		-0.027	I	
112	BL1001-3N2B	1	1	0.0	<0.005	-0.027	I	
113	BL1001S	1	1	7.8	0.050	0.997		101%
114	BL1001S	1	1	8.0		1.013		
115	BL1001DS	1	1	8.1	0.051	1.035		101%
116	BL1001DS	1	1	7.9		1.000		
117	42524	10	1	2.0	0.595	2.381		
118	42524	10	1	2.0		2.381		
119	42524D	10	1	1.8	0.512	2.067		
120	42524D	10	1	1.8		2.030		
121	42524S	10	1	9.9	3.182	12.713		105%
122	42524S	10	1	10.0		12.744		
123	42524DS	10	1	10.0	3.222	12.840		107%
124	42524DS	10	1	10.1		12.936		
125	42523	10	1	0.2	<0.250	0.021	I	
126	42523	10	1	0.2		-0.043	I	
127	CCV	1	1	7.8		0.987		99%
128	B	1	1	0.0		-0.027	b	
129	D4	1	1	11.9		1.523	d	
130	42525	10	1	0.9	<0.250	0.914		
131	42525	10	1	0.9		0.882		
132	42526	10	1	1.8	0.496	2.030		
133	42526	10	1	1.7		1.935		
134	42539	10	1	0.1	<0.250	-0.074	I	
135	42539	10	1	0.1		-0.074	I	
136	42540	10	1	1.2	0.320	1.297	s	
137	42540	10	1	1.2		1.365		
138	42541	10	1	0.6	<0.250	0.468	I	
139	42541	10	1	0.5		0.436	I	
140	42542	10	1	0.6	<0.250	0.563		
141	42542	10	1	0.6		0.563	I	
142	BL1001-4N2B	1	1	0.0	<0.005	-0.027	I	
143	BL1001-4N2B	1	1	0.0		-0.027	I	
144	BL1001S	1	1	8.0	0.050	1.013		100%
145	BL1001S	1	1	7.8		0.994		
146	BL1001DS	1	1	7.9	0.050	1.000		99%
[illegible]	BL1001DS	1	1	7.7		0.984		

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152	D4	1	1	11.9		1.523	d
153	427450	10	1	0.5	<0.250	0.372	I
154	427450	10	1	0.5		0.436	I
155	425456	10	1	8.4	2.676	10.640	101%
156	425456	10	1	8.4		10.767	
157	425450S	10	1	7.9	2.568	10.098	97%
158	425450S	10	1	8.2		10.449	
159	42743	10	1	0.5	<0.250	0.404	I
160	42743	10	1	0.3		0.085	I
161	42744	10	1	0.2	<0.250	-0.043	I
162	42744	10	1	0.0		-0.266	I
163	42746	10	1	3.5	1.090	4.294	
164	42746	10	1	3.6		4.422	
165	42747	10	1	0.4	<0.250	0.276	I
166	42747	10	1	0.4		0.276	s
167	42748	10	1	0.1	<0.250	-0.170	I
168	42748	10	1	0.1		-0.138	I
169	42749	10	1	1.1	0.264	1.105	
170	42749	10	1	1.0		1.010	
171	42750	10	1	1.8	0.520	2.094	
172	42750	10	1	1.8		2.062	
173	CCV	1	1	7.5		0.956	95%
174	B	1	1	0.0		-0.027	b
175	D4	1	1	11.9		1.523	d
176	42751	10	1	3.3	1.018	4.071	
177	42751	10	1	3.3		4.071	
178	42282-HYX -MGHYX	1	1	0.0		-0.023	I
179	42282-HYX	1	1	0.0		-0.027	I
180	42497	1	1	1.1		0.111	
181	42497	1	1	1.1		0.114	s
182	43224	1	1	0.0		-0.027	I
183	43224	1	1	0.0		-0.027	I
184	42766	1	1	0.0		-0.020	I
185	42766	1	1	0.0		-0.020	I
186	44796	1	1	0.0		-0.027	I
187	44796	1	1	0.0		-0.027	I
188	47489	1	1	0.0		-0.027	I
189	47489	1	1	0.1		-0.017	I
190	53129	1	1	0.1		-0.017	I
191	53129	1	1	0.0		-0.027	I
192	53143	1	1	0.0		-0.027	I
193	53143	1	1	0.0		-0.027	I
194	53685	1	1	0.0		-0.027	I
195	53685	1	1	0.0		-0.027	I
196	WS 378	1	1	16.1		2.075	103%
197	ORG REF	1	1	16.2		2.084	104%
198	CCV	1	1	7.5		0.952	95%
199	B	1	1	0.0		-0.027	b
200	D4	1	1	11.9		1.523	d

INTERCEPT: 0.20 LINEAR COEF: 7.65812

CORRELATION COEF: .9997931

on ber	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
245	BRAUN-MN	MB R456	Mercury -	PV	-0.030	-99999.0	0.284	95.	0.283	94.	99/10/03	1BKC	99/10/03	MG01	82.	61.	
247	BRAUN-MN	Reagent Blank C8	Mercury -	PV	-0.030						99/10/03	1BKC	99/10/03	MG01	82.	61.	
252	BRAUN-MN	1BC03 Blank	Mercury -	PV	0.192						99/10/03	1BKC	99/10/03	MG01	82.	61.	
253	BRAUN-MN	1R1-C03A/B	Mercury -	PV	1.636	1.636	3.137	100.	3.161	101.	99/10/03	1BKC	99/10/03	MG01	82.	61.	*PDS*
254	BRAUN-MN	1R2-C03A/B	Mercury -	PV	1.788						99/10/03	1BKC	99/10/03	MG01	81.	61.	
255	BRAUN-MN	1R3-C03A/B	Mercury -	PV	0.685						99/10/03	1BKC	99/10/03	MG01	81.	61.	
268	BRAUN-MN	SB-C03 Blank	Mercury -	PV	-0.030						99/10/03	1BKC	99/10/03	MG01	82.	61.	
269	BRAUN-MN	SR1-C03A/B	Mercury -	PV	0.882						99/10/03	1BKC	99/10/03	MG01	82.	61.	
270	BRAUN-MN	SR2-C03A/B	Mercury -	PV	2.739						99/10/03	1BKC	99/10/03	MG01	81.	61.	
271	BRAUN-MN	SR3-C03A/B	Mercury -	PV	1.130						99/10/03	1BKC	99/10/03	MG01	81.	61.	
003	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.284	95.	0.283	94.	99/10/03	1BKC	99/10/03	MG01	$$$	$$$	

11 Tests for OHKCL with an MDL of 0.030 ug Validated By CMB Control Chart Updated N/A IO Requirements met N/A

00087

Run Date: 99/10/03 Matrix: IMP(KCl)
Run Code MG01

Batch	Sample #	Result (ug/L)	Average (ug/L)	Volume (L)	Result (total ug)	% Rec.
1BKC	bl1003	-0.024	-0.022	0.300	-0.0066	
	bl1003	-0.02				
	bl1003s	0.941	0.945	0.300	0.2835	94.5
	bl1003s	0.949				
	bl1003ds	0.941	0.943	0.300	0.2829	94.3
	bl1003ds	0.945				
	42253	1.639	1.636	1	1.636	
	42253	1.633				
	42253d	1.627	1.636	1	1.636	
	42253d	1.645				
	42253s	3.17	3.137	1	3.137	100.07
	42253s	3.104				
	42253ds	3.146	3.161	1	3.161	101.67
	42253ds	3.176				
	42247	0.012	0.018	1	0.018	
	42247	0.024				
	42252	0.191	0.197	1	0.197	
	42252	0.203				
	42254	1.794	1.788	1	1.788	
	42254	1.782				
	42255	0.67	0.685	1	0.685	
	42255	0.7				
	42268	0.018	0.009	1	0.009	
	42268	0				
	42269	0.879	0.882	1	0.882	
	42269	0.885				
	42270	2.751	2.739	1	2.739	
	42270	2.727				
	42271	1.13	1.13	1	1.13	
	42271	1.13				
	42482	-0.048	-0.048	1	-0.048	
	42482	-0.048				

Run Date: 99/10/03 Matrix: IMP(KCl)
Run Code MG01

Batch	Sample #	Result (ug/L)	Average (ug/L)	Volume (L)	Result (total ug)	% Rec.
3BKC	bl1003	-0.028	-0.026	0.300	-0.0078	
	bl1003	-0.024				
	bl1003s	0.985	0.995	0.300	0.2985	99.5
	bl1003s	1.005				
	bl1003ds	0.981	0.975	0.300	0.2925	97.5
	bl1003ds	0.969				
	42521	6.34	6.232	1	6.232	
	42521	6.124				
	42521d	6.411	6.2915	1	6.2915	
	42521d	6.172				
	42521s	12.488	12.2845	1	12.2845	100.38
	42521s	12.081				
	42521ds	12.536	12.6315	1	12.6315	106.16
	42521ds	12.727				
	Dil. Check	11.962	11.902	1	11.902	Dilution Check %RPD: 5.947
		11.842				
	42522	8.349	8.3135	1	8.3135	
	42522	8.278				
	42535	0.269	0.281	1	0.281	
	42535	0.293				
	42536	1.621	1.597	1	1.597	
	42536	1.573				
	42537	2.405	2.4185	1	2.4185	
	42537	2.432				
	42538	4.402	4.408	1	4.408	
	42538	4.414				
	42734	-0.042	-0.045	1	-0.045	
	42734	-0.048				
	42735	-0.036	-0.042	1	-0.042	
	42735	-0.048				
	42737	1.441	1.435	1	1.435	
	42737	1.429				
	42738	2.781	2.79	1	2.79	
	42738	2.799		1		

Run Date: 99/10/03 Matrix: IMP(KCl)

Run Code MG01

Batch	Sample #	Result (ug/L)	Average (ug/L)	Volume (L)	Result (total ug)	% Rec.
4BKC	bl1003	-0.024	-0.028	0.300	-0.0084	
	bl1003	-0.032				
	bl1003s	0.913	0.925	0.300	0.2775	92.5
	bl1003s	0.937				
	bl1003ds	0.961	0.951	0.300	0.2853	95.1
	bl1003ds	0.941				
	42736	0.795	0.7775	1	0.7775	
	42736	0.76				
	42736d	0.789	0.792	1	0.792	
	42736d	0.795				
	42736s	2.38	2.371	1	2.371	105.75
	42736s	2.362				
	42736ds	2.38	2.3595	1	2.3595	104.98
	42736ds	2.339				
	42739	0.048	0.048	1	0.048	
	42739	0.048				
	42740	3.421	3.403	1	3.403	
	42740	3.385				
	42741	4.797	4.8445	1	4.8445	
	42741	4.892				
	42742	7.033	6.9975	1	6.9975	
	42742	6.962				
	43197	-0.048	-0.048	1	-0.048	
	43197	-0.048				
	43198	1.304	1.286	1	1.286	
	43198	1.268				
	43199	11.094	11.109	1	11.109	
	43199	11.124				
	43200	1.806	1.845	1	1.845	
	43200	1.884				
	43201	0.849	0.849	1	0.849	
	43201	0.849		1		

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 09.10.03 Run Code: MG01 Matrix: IMP (KCl)

Analyst: MG Units: µg (see comments) MDL: _____

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12			WS 378			
13			DRG. REF.			
14			BL1003	iBKC		
15			"			
16			BL1003 S			
17			"			
18			BL1003 DS			
19			"			
20	1.5		42253			
21			"			
22			42253 D			
23			"			
24			42253 S			
25			"			
26			42253 DS			
27			"			
28			42257			
29			"			
30			42252			
31			"			
32			42254			
33			"			
34			CCV			
35			B			
36			D4			
37	1.5		42255			
38			"			
39			42268			
40			"			
41	1.5		42269			
42			"			
43			42270			
44			"			
45			42271			
46			"			
47			42482			
48			"			
49			BL1003	2BKC		
50			"			
51			BL1003 S			
52			"			
53			BL1003 DS			
54			"			
55	1.5		42483			
56			"			
57			CCV			
58			B			
59			D4			
60	1.5		42483 D			
61			"			
62			42483 S			
63			"			
64			42483 DS			
65			"			
66			42484			
67			"			
68		1/4	42485			
69			"			
70			42486			
71			"			
72			42503			
73			"			
74			42504			
75			"			
76			42505			
77			"			
78		1/4	42506			
79			"			
80			CCV			

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

[illegible] 1.0 mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99/10/.03 Run Code: MG01 Matrix: IMP. (KCl)

Analyst: MG Units: µg (see comments) MDL: _____

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21			B			
22			D4			
23	1.5		42519			
24	↓		"			
25		1/4	42520			
26	↓	↓	"			
27			BL1003	3BKG		
28			"			
29			BL1003 S			
30			"			
31			BL1003 DS			
32			"			
33	1.5	1/4	42521			
34	↓	↓	"			
35			42521 D			
36			"			
37			42521 S			
38			"			
39			42521 DS			
40	↓	↓	"			
41	1.5	1/10	42521 DS			
42	↓	↓	"			
43			CCV			
44			B			
45			D4			
46	1.5	1/4	42522			
47	↓	↓	"			
48			42535			
49			"			
50			42536			
51			"			
52		1/2	42537			
53		↓	"			
54		1/2	42538			
55		↓	"			
56			42734			
57			"			
58			42735			
59			"			
60			42737			
61			"			
62	↓	1/2	42738			
63		↓	"			
64			BL1003	4BKC		
65			"			
66			CCV			
67			B			
68			D4			
69			BL1003 S			
70			"			
71			BL1003 DS			
72			"			
73	1.5		42736			
74	↓		"			
75			42736 D			
76			"			
77			42736 S			
78			"			
79			42736 DS			
80	↓		"			

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

[illegible] Blank Spike = 1.0 mg/kg for solid samples.

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99/10/03 Run Code: MG01 Matrix: IMP (KCL)

Analyst: MG Units: µg (see comments) MDL: _____

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21	1.5		42739			
22			"			
23		1/2	42740			
24			"			
25			42741			
26			"			
27		1/4	42742			
28			"			
29			CCV			
30			B			
31			D4			
32	1.5		43197			
33			"			
34			43198			
35			"			
36			43199			
37			"			
38			43200			
39			"			
40			43201			
41	1.5		43201			
42			BL1003	IGKC		
43			"			
44			BL1003 S			
45			"			
46			BL1003 DS			
47			"			
48	1.5	1/20	53744			
49			"			
50		1/20	53744 D			
51			"			
52			CCV			
53			B			
54			D4			
55	1.5	1/20	53744 S			
56			"			
57			53744 DS			
58			"			
59		1/100	53744 DS			
60			"			
61			BL1003	IG2B		
62			"			
63			BL1003 S			
64			"			
65			BL1003 DS			
66			"			
67	10		53749			
68			"			
69			53749 D			
70			"			
71			53749 S			
72			"			
~~73~~			53749 DS			
~~74~~			"			
73 ~~75~~			WS 378			
74 ~~76~~			ORG. REF.			
75 ~~77~~			CCV			
76 ~~78~~			B			
77 ~~79~~			D4			
78 ~~80~~	1.5	1/5	43199			

didn't add to sample tray

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

[illegible] mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99-10-03 Run Code: MG01 Matrix: IMP(KCl)

Analyst: MG Units: µg (see comments) MDL: _____

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
~~19~~	1.5	1/5	43199			
20	↓	1/25	53744			
21		↓	"			
22			53744 d			
23		↓	"			
24		1/125	53744 d			
25	↓	↓	"			
26	10		53749 ds			
27	10		"			
28	"	1/25	53744 s			
29		↓	"			
30			53744 ds			
31		↓	"			
32		1/125	53744 ds			
33		↓	"			
34			CCV			
35			B			
36			D4			
37						
38						
39						
40						

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
41						
42						
43						
44						
45						
46						
47						
48						
49						
50						
51						
52						
53						
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77						
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79						
80						

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

CCV = 1.0 mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

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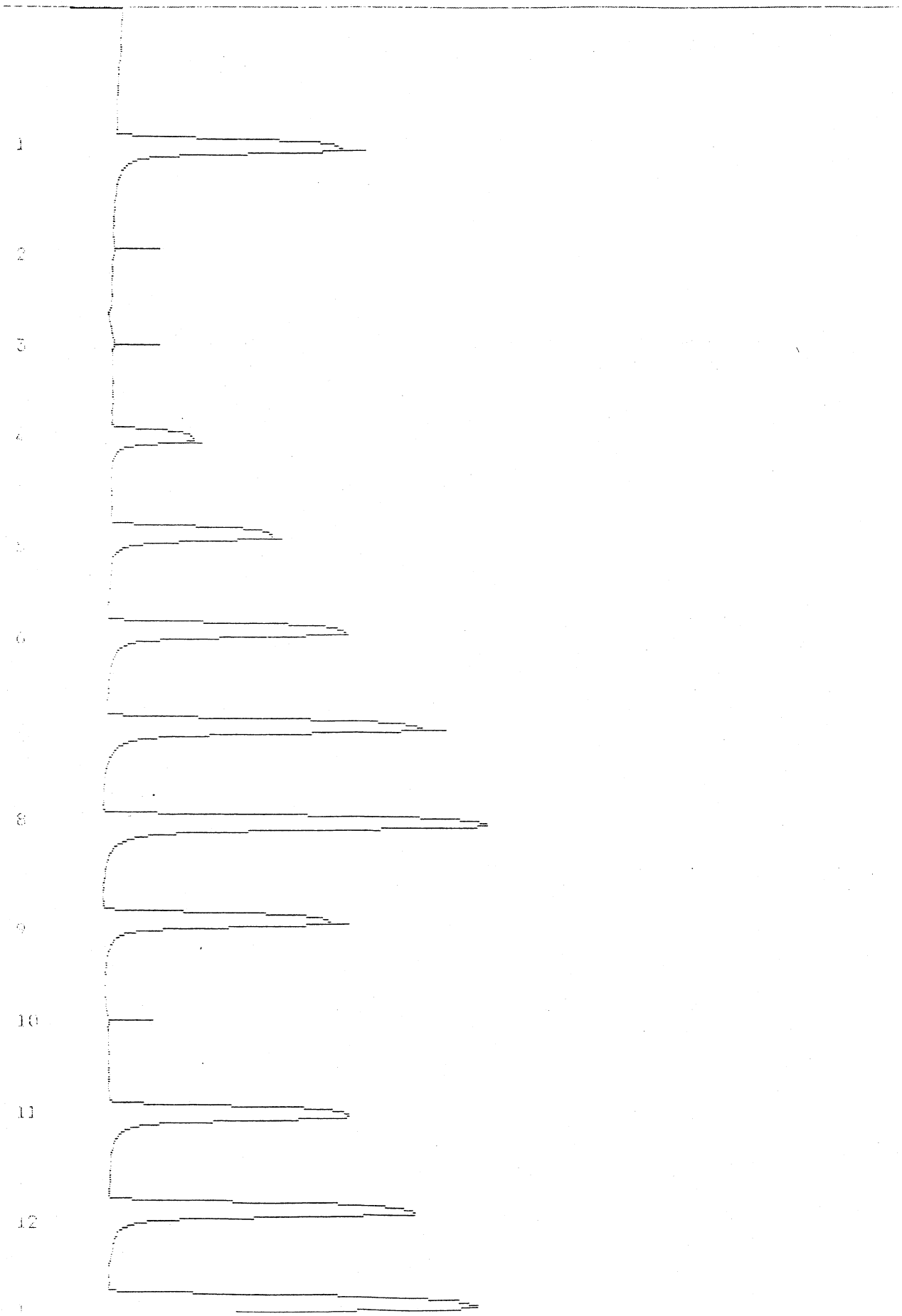

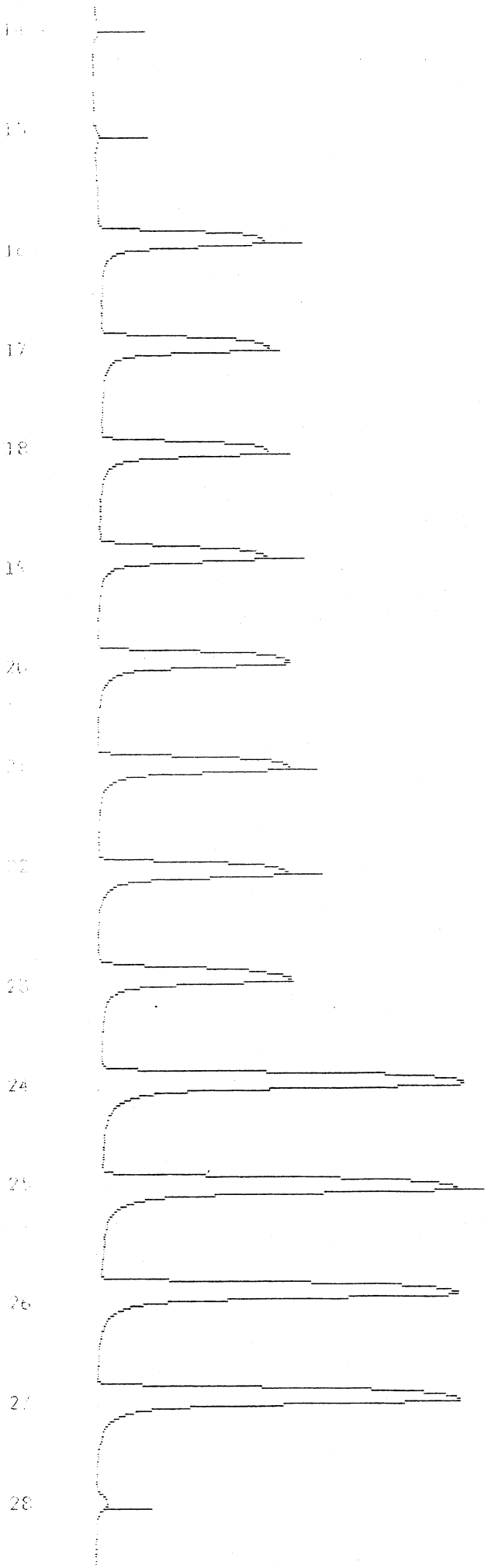
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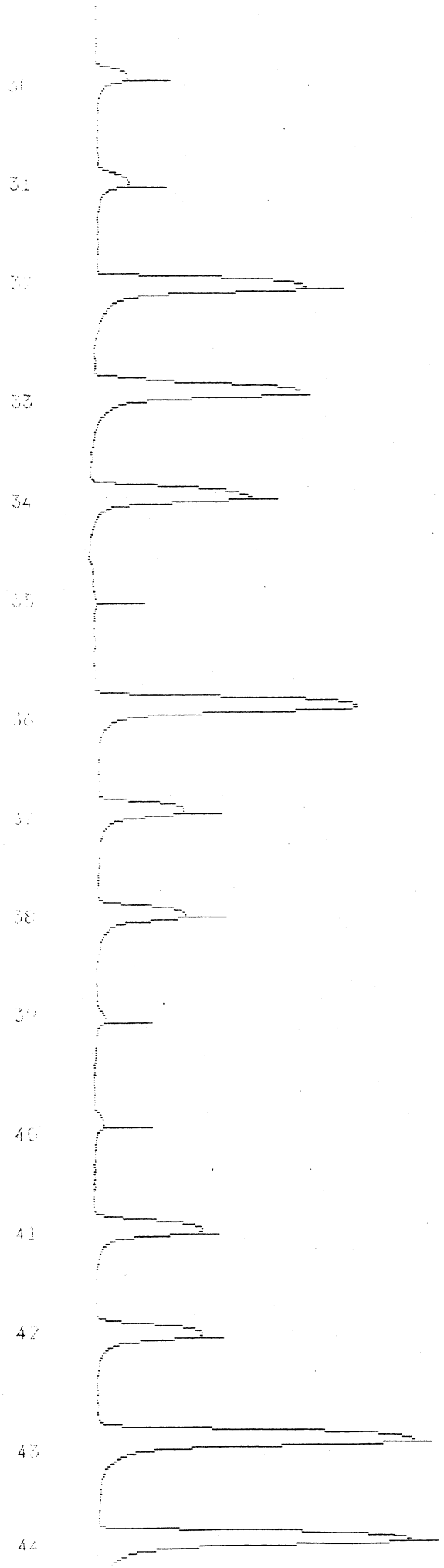
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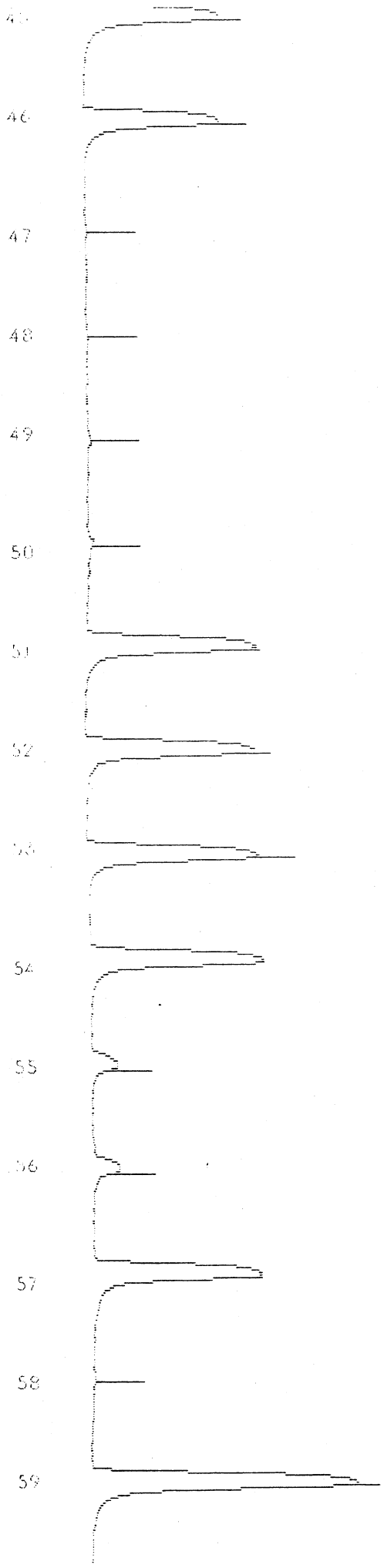
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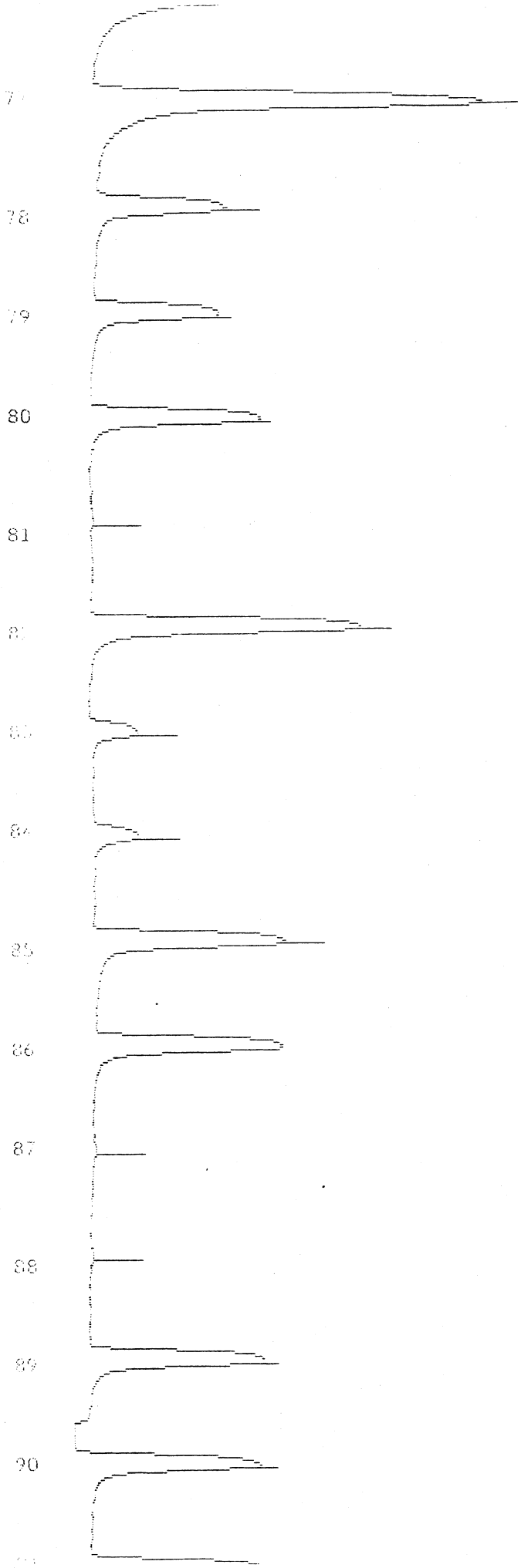
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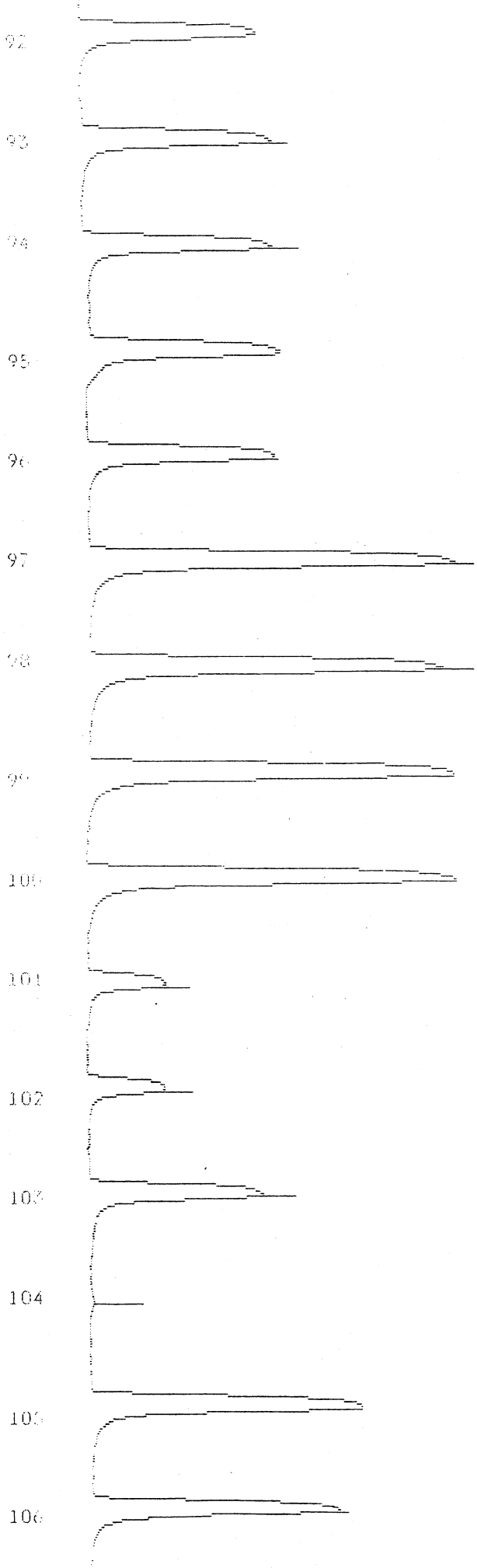
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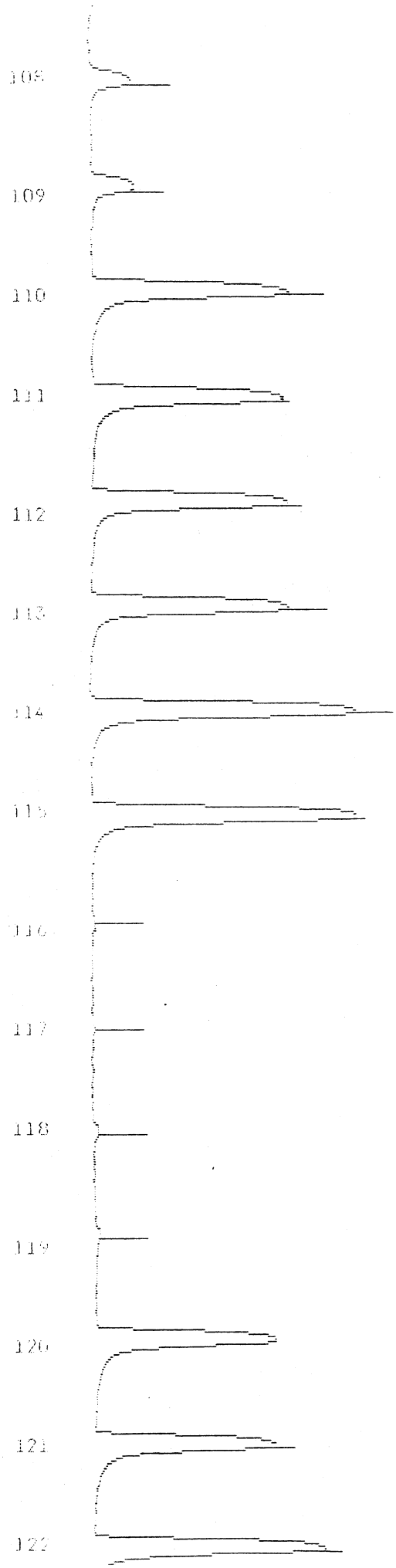
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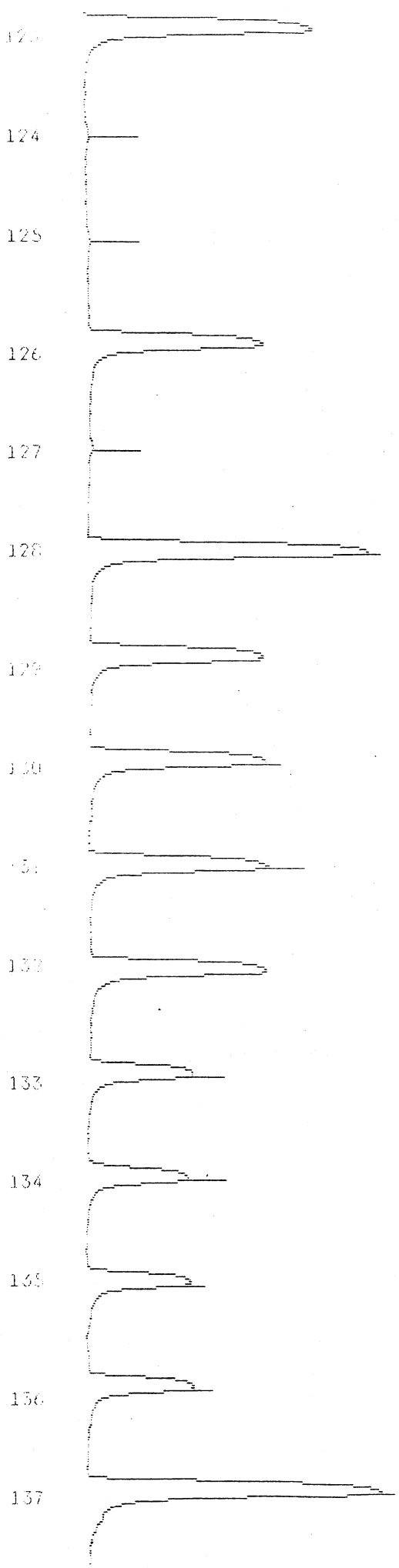
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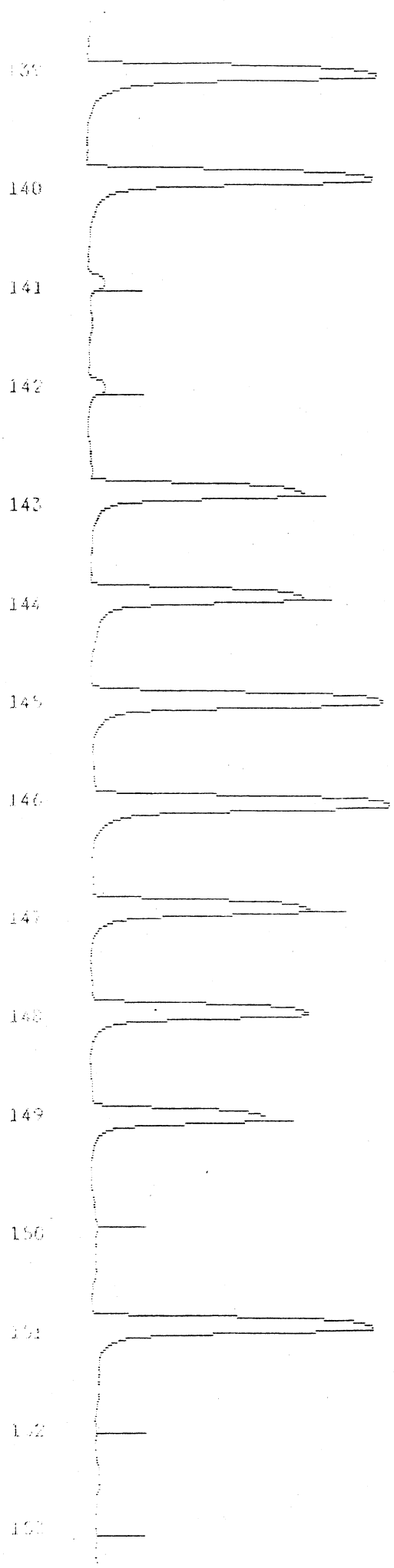
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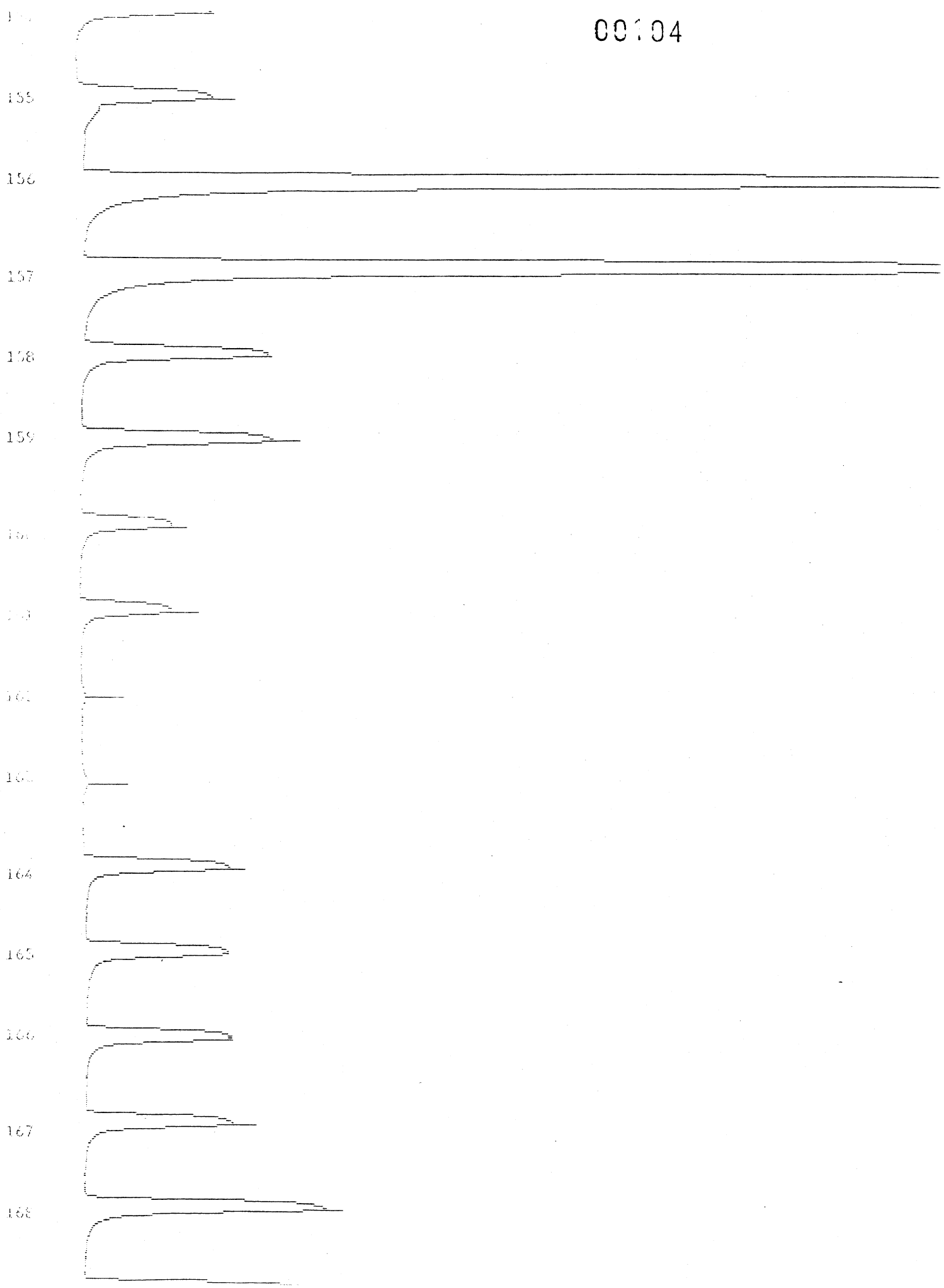
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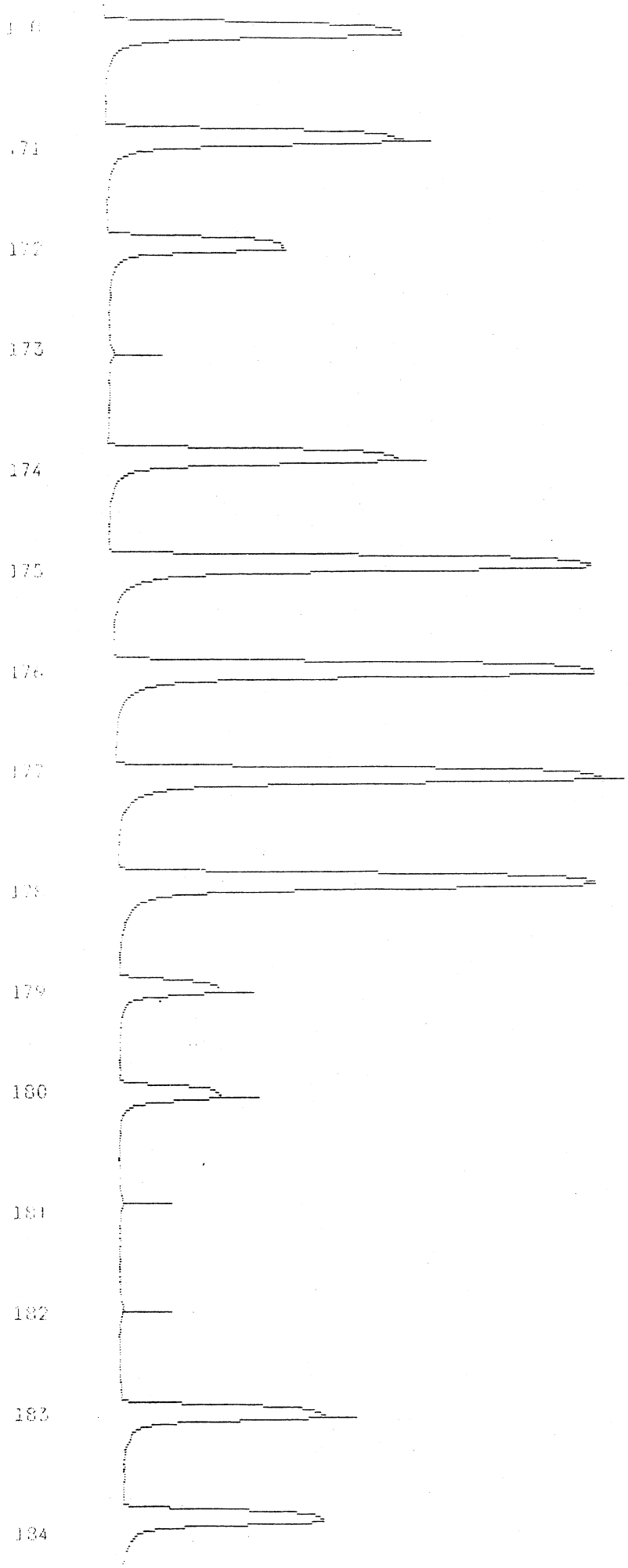
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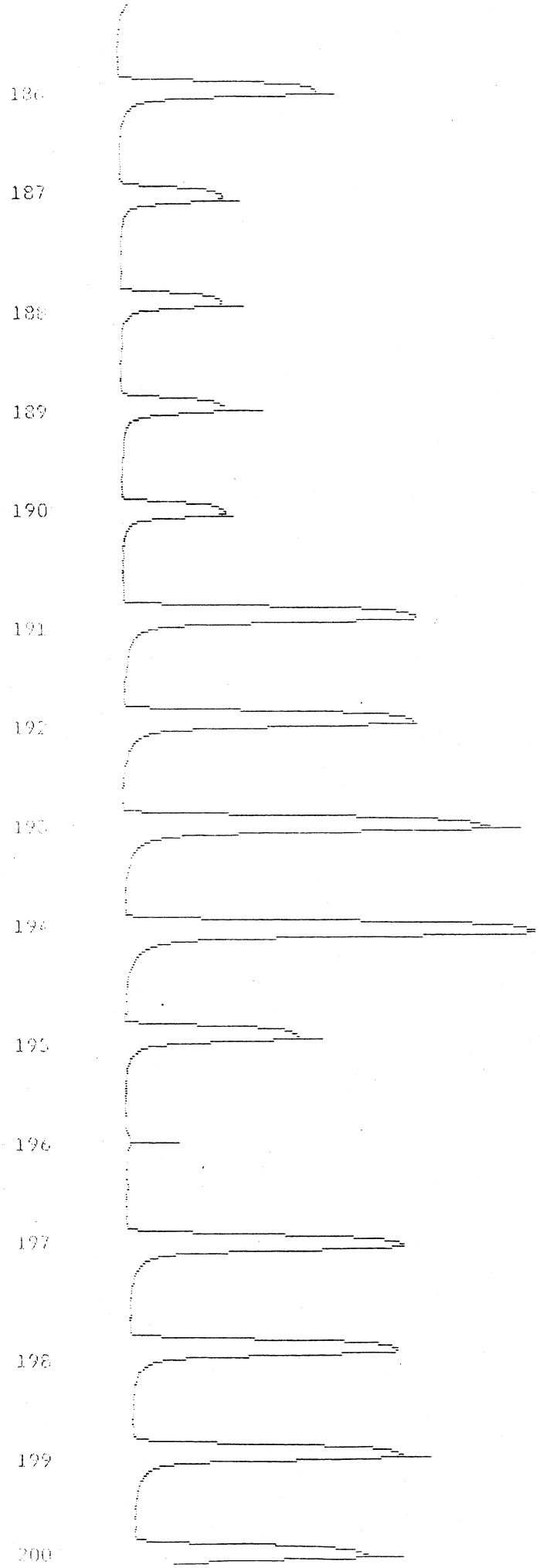
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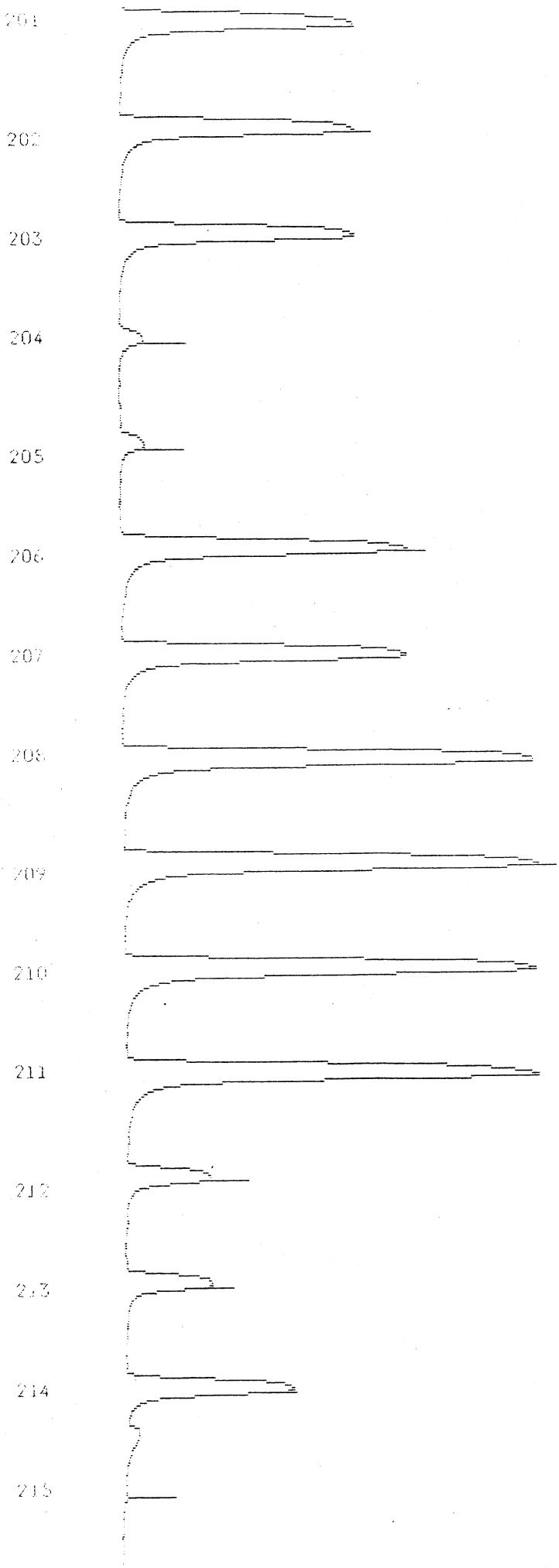
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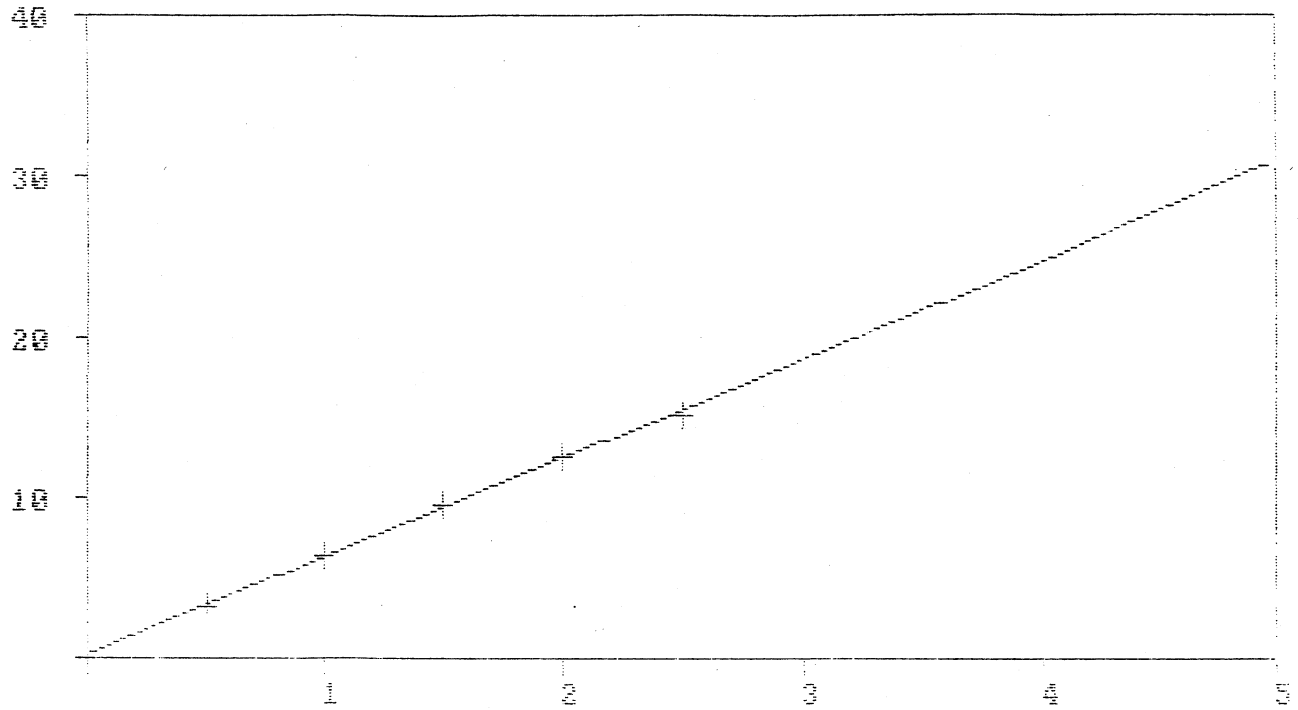
CHANNEL NAME: LDC
RUN NAME: 991003W



DATA TYPE: FIA CALIBRATION ORDER: 1
INTERCEPT = 0.20 SLOPE = 6.124542

CORRELATION: .9995149

CHANNEL NAME: LDC
RUN DATE: 10-03-1999
SAMPLE TABLE NAME: 991003W
METHOD NAME: WGWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA	CONCENTRATION (ppb)	EF
1	PRIMER	1	1	9.1	1.459	s
2	DUMMY	1	1	0.0	-0.028	I
3	S1: 0	1	1	0.1	-0.020	I
4	S2: .5	1	1	3.2	0.490	
5	S3: 1	1	1	6.4	1.021	
6	S4: 1.5	1	1	9.5	1.523	
7	S5: 2	1	1	12.6	2.030	
8	S6: 2.5	1	1	15.2	2.456	
9	ICV	1	1	9.0	1.443 96%	
10	B	1	1	0.0	-0.032	b
11	D4	1	1	9.5	1.523	d
12	WS 378	1	1	12.1	1.946 97%	
13	ORG REF	1	1	14.6	2.352 117%	
14	BL1003-1BKC	1	1	0.0	-0.024	I
15	BL1003-1BKC	1	1	0.1	<0.03 -0.020	I
16	BL1003S	1	1	6.0	0.941	s
17	BL1003S	1	1	6.0	0.949 95%	
18	BL1003DS	1	1	6.0	0.941	
19	BL1003DS	1	1	6.0	0.943 94%	
20	42253	1.5	1	6.9	1.639	

00110

25	422538	1.5	1	12.9		3.146	
26	422530S	1.5	1	13.0		3.146	
27	422530S	1.5	1	13.2		3.176	
28	42247	1.5	1	0.2		0.012	I
29	42247	1.5	1	0.3		0.024	I
30	42252	1.5	1	1.0		0.191	
31	42252	1.5	1	1.0		0.203	s
32	42254	1.5	1	7.5		1.794	
33	42254	1.5	1	7.5		1.782	
34	CCV	1	1	5.8		0.913	91%
35	B	1	1	0.0		-0.032	b
36	D4	1	1	9.5		1.523	d
37	42255	1.5	1	2.9		0.670	
38	42255	1.5	1	3.1		0.700	
39	42268	1.5	1	0.3		0.018	I
40	42268	1.5	1	0.2		0.000	I
41	42269	1.5	1	3.8		0.879	
42	42269	1.5	1	3.8		0.885	
43	42270	1.5	1	11.4		2.751	
44	42270	1.5	1	11.3		2.727	
45	42271	1.5	1	4.8		1.130	
46	42271	1.5	1	4.8		1.130	s
47	42482	1.5	1	0.0		-0.048	I
48	42482	1.5	1	0.0		-0.048	I
49	BL1003-28KC	1	1	0.0	<0.03	-0.024	I
50	BL1003-28KC	1	1	0.1		-0.012	I
51	BL1003S	1	1	6.1		0.957	96%
52	BL1003S	1	1	6.1		0.969	
53	BL1003OS	1	1	6.1		0.965	
54	BL1003OS	1	1	6.2		0.981	97%
55	42483	1.5	1	0.8		0.156	
56	42483	1.5	1	0.9		0.161	
57	CCV	1	1	6.0		0.949	95%
58	B	1	1	0.0		0.032	b
59	D4	1	1	9.5		1.523	d
60	424830	1.5	1	0.9		0.167	
61	424830	1.5	1	0.8		0.150	s
62	424833	1.5	1	6.8		1.627	
63	424833	1.5	1	7.6		1.812	
64	424830S	1.5	1	7.5		1.782	
65	424830S	1.5	1	6.6		1.579	
66	42484	1.5	1	12.7		3.074	
67	42484	1.5	1	12.8		3.080	
68	42485	6	1	9.6		9.211	
69	42485	6	1	9.4		8.995	
70	42486	6	1	6.4		6.053	
71	42486	6	1	6.3		5.981	
72	42503	1.5	1	0.9		0.161	I
73	42503	1.5	1	0.9		0.161	
74	42504	1.5	1	5.6		1.316	
75	42504	1.5	1	5.8		1.370	
76	42505	1.5	1	13.6		3.272	s
77	42505	1.5	1	13.6		3.283	
78	42506	6	1	4.5		4.234	
79	42506	6	1	4.3		4.067	
80	CCV	1	1	5.9		0.929	93%
81	B	1	1	0.0		-0.032	b
82	D4	1	1	9.5		1.523	d
83	42519	1.5	1	1.6		0.335	
84	42519	1.5	1	1.5		0.317	
85	42520	6	1	6.6		6.268	
86	42520	6	1	6.5		6.220	
[illegible]	[illegible]	[illegible]	1	0.0		0.028	I

00141

91	BL100400	1	1	6	[illegible]	-
92	BL100400	1	1	6.1	0.969	
93	42521	6	1	6.2	6.340	
94	42521	6	1	6.4	6.124	
95	425210	6	1	6.7	6.411	
96	425210	6	1	6.5	6.172	
97	425210	6	1	12.9	12.488	
98	425210	6	1	12.5	12.081	
99	425210S	6	1	13.0	12.536	
100	425210S	6	1	13.2	12.727	
101	425210S	30	1	2.6	11.962	
102	425210S	30	1	2.6	11.842	
103	CCV	1	1	6.0	0.945	95%
104	B	1	1	0.0	-0.032	b
105	D4	1	1	9.5	1.523	d
106	42522	6	1	8.7	8.349	s
107	42522	6	1	8.6	8.278	
108	42535	1.5	1	1.3	0.269	
109	42535	1.5	1	1.4	0.293	
110	42536	1.5	1	6.8	1.621	
111	42536	1.5	1	6.6	1.573	
112	42537	1.5	1	6.7	1.603	
113	42537	1.5	1	6.8	1.621	
114	42538	3	1	9.2	4.402	
115	42538	3	1	9.2	4.414	
116	42734	1.5	1	0.0	-0.042	I
117	42734	1.5	1	0.0	-0.048	I
118	42735	1.5	1	0.0	-0.036	I
119	42735	1.5	1	0.0	-0.048	I
120	42737	1.5	1	6.1	1.441	
121	42737	1.5	1	6.0	1.429	s
122	42738	1.5	1	7.8	1.854	
123	42738	1.5	1	7.8	1.866	
124	BL1003-1860	1	1	0.0	-0.021	I
125	BL1003-1860	1	1	0.0	0.032	I
126	CCV	1	1	5.9	0.933	93%
127	B	1	1	0.0	-0.032	b
128	D4	1	1	9.5	1.523	d
129	BL100300	1	1	5.8	0.913	
130	BL100300	1	1	5.9	0.937	
131	BL100300S	1	1	6.1	0.961	
132	BL100300S	1	1	6.0	0.941	
133	42736	1.5	1	3.4	0.795	
134	42736	1.5	1	3.3	0.760	
135	427360	1.5	1	3.4	0.789	
136	427360	1.5	1	3.4	0.795	s
137	424368	1.5	1	9.9	2.380	
138	424368	1.5	1	9.8	2.362	
139	427360S	1.5	1	9.9	2.380	
140	427360S	1.5	1	9.7	2.339	
141	42739	1.5	1	0.4	0.048	I
142	42739	1.5	1	0.4	0.048	I
143	42740	3	1	7.2	3.421	
144	42740	3	1	7.1	3.389	
145	42741	3	1	10.0	4.797	
146	42741	3	1	10.2	4.892	
147	42742	6	1	7.4	7.033	
148	42742	6	1	7.3	6.962	
149	CCV	1	1	5.8	0.913	91%
150	B	1	1	0.0	-0.032	b
151	D4	1	1	9.5	1.523	s
152	43197	1.5	1	0.0	-0.048	I
[illegible]	[illegible]	[illegible]	[illegible]	0.0	-0.048	I

156	[illegible]	[illegible]	1	[illegible]	[illegible]	
157	43199	1.5	1	42.[illegible]	[illegible]	
158	43200	1	1	7.6	1.006	
159	43200	1.5	1	7.9	1.884	
160	43201	1.5	1	3.7	0.849	
161	43201	1.5	1	3.7	0.849	
162	8L1003-10KC	1	1	0.0	-0.032	I
163	8L1003-10KC	1	1	0.0	-0.024	I
164	8L1003S	1	1	5.9	0.933	
165	8L1003S	1	1	5.8	0.909	
166	8L10030S	1	1	5.9	0.925	s
167	8L10030S	1	1	6.0	0.941	
168	53744	30	1	10.0	47.847	
169	53744	30	1	9.9	47.727	
170	537440	30	1	9.9	47.488	
171	537440	30	1	10.0	47.847	
172	CCV	1	1	5.8	0.909	91%
173	B	1	1	0.0	-0.032	b
174	D4	1	1	9.5	1.523	d
175	537443	30	1	16.1	77.751	
176	53744S	30	1	16.0	77.632	
177	53744DS	30	1	16.1	77.990	
178	53744DS	30	1	16.0	77.273	
179	53744DS	150	1	3.2	74.163	
180	53744DS	150	1	3.2	74.751	
181	8L1003-1028	1	1	0.0	-0.032	-
182	8L1003-1028	1	1	0.0	-0.032	I
183	8L10033	1	1	6.7	1.05	
184	8L10030	1	1	6.6	1.049	
185	8L100300	1	1	6.8	1.073	
186	8L100300	1	1	6.[illegible]	1.0[illegible]	
187	53749	10	1	3.4	5.303	
188	53749	10	1	3.4	5.183	
189	537490	10	1	3.4	5.303	
190	537490	10	1	3.4	5.263	
191	537493	10	1	15.1	16.140	
192	537493	10		10.0	15.989	
193	43378	1	1	12.7	2.037	
194	0BG REF	1	1	1[illegible]	2.289	
195	CCV	1	1	5.9	0.933	93%
196	B	1	1	0.0	-0.032	b
197	D4	1	1	9.5	1.523	d
198	43199	7.5	1	9.3	11.074	
199	43199	7.5	1	9.3	11.124	
200	53744	37.5	1	8.0	47.996	
201	53744	37.5	1	8.0	47.847	
202	537440	37.5	1	8.1	48.146	
203	537440	37.5	1	8.1	48.445	
204	537440	187.5	1	0.7	16.447	
205	537440	187.5	1	0.8	17.943	
206	5374903	15	1	9.9	23.864	
207	5374900	15	1	9.8	23.624	
208	537443	37.5	1	14.3	86.124	
209	537443	37.5	1	14.3	86.274	
210	537440S	37.5	1	14.3	86.274	
211	537440S	37.5	1	14.3	86.274	s
212	537440S	187.5	1	2.8	79.994	
213	537440S	187.5	1	2.9	82.984	
214	CCV	1	1	5.7	0.897	90%
215	B	1	1	0.0	-0.032	b
216	D4	1	1	9.5	1.523	d

~~00412~~ VOID MA

INTERCEPT: 0.20 LINEAR COEF: 0.124542

[illegible]

ɜhon umber	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
;2245	BRAUN-MN	MB R456	Mercury -	PV	-0.030	-99999.0	0.298	99.	0.298	99.	99/10/05	1GMN	99/10/05	MG02	84.	63.	
42260	BRAUN-MN	1B-C05 Blank	Mercury -	PV	-0.030						99/10/05	1GMN	99/10/05	MG02	84.	63.	
42261	BRAUN-MN	1R1-C05	Mercury -	PV	33.461						99/10/05	1GMN	99/10/05	MG02	84.	63.	
42262	BRAUN-MN	1R2-C05	Mercury -	PV	33.568						99/10/05	1GMN	99/10/05	MG02	83.	63.	
42263	BRAUN-MN	1R3-C05	Mercury -	PV	32.074						99/10/05	1GMN	99/10/05	MG02	83.	63.	
42276	BRAUN-MN	SB-C05 Blank	Mercury -	PV	-0.030						99/10/05	1GMN	99/10/05	MG02	84.	63.	
42277	BRAUN-MN	SR1-05	Mercury -	PV	0.651	0.654	1.346	93.	1.355	93.	99/10/05	1GMN	99/10/05	MG02	84.	63.	*BLKIMP*
42278	BRAUN-MN	SR2-05	Mercury -	PV	28.278						99/10/05	1GMN	99/10/05	MG02	83.	63.	
42279	BRAUN-MN	SR3-05	Mercury -	PV	24.603						99/10/05	1GMN	99/10/05	MG02	83.	63.	
L1005	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.298	99.	0.298	99.	99/10/05	1GMN	99/10/05	MG02	$$$	$$$	

10 Tests for OHMN4 with an MDL of 0.030 ug Validated By _____ Control Chart Updated N/A IO Requirements met N/A

00113

non mber	Client	Client ID	Parameter	TS	Result	Dup.	Spike	% Rec.	Dup. Spk	% Rec.	Batch Date	Batch Code	Run Date	Run Code	Day Old	Day In	Analyst's Comments
2281	BRAUN-MN	Reagent Blank C10	Mercury -	PV	-0.030						99/10/05	2GMN	99/10/05	MG02	83.	63.	
2724	BRAUN-MN	MB R456	Mercury -	PV	-0.030	-99999.0	0.298	99.	0.299	99.	99/10/05	2GMN	99/10/05	MG02	82.	61.	
2752	BRAUN-MN	Reagent Blank C10	Mercury -	PV	-0.030						99/10/05	2GMN	99/10/05	MG02	82.	61.	
2753	BRAUN-MN	1B-C05	Mercury -	PV	0.073						99/10/05	2GMN	99/10/05	MG02	82.	61.	
2754	BRAUN-MN	1R1-C05	Mercury -	PV	10.966	10.806	25.137	95.	25.004	94.	99/10/05	2GMN	99/10/05	MG02	82.	61.	*BLKIMP*
2755	BRAUN-MN		Mercury -	PV	29.060						99/10/05	2GMN	99/10/05	MG02	81.	61.	
2756	BRAUN-MN	1R3-C05	Mercury -	PV	16.010						99/10/05	2GMN	99/10/05	MG02	81.	61.	
2757	BRAUN-MN	SB-C05	Mercury -	PV	-0.030						99/10/05	2GMN	99/10/05	MG02	82.	61.	
2758	BRAUN-MN	SR1-C05	Mercury -	PV	16.090						99/10/05	2GMN	99/10/05	MG02	82.	61.	
2759	BRAUN-MN	SR2-C05	Mercury -	PV	22.352						99/10/05	2GMN	99/10/05	MG02	81.	61.	
3188	BRAUN-MN	MB R456	Mercury -	PV	-0.030	-99999.0	0.298	99.	0.299	99.	99/10/05	2GMN	99/10/05	MG02	78.	56.	
3215	BRAUN-MN	Reagent Blank C10	Mercury -	PV	-0.030						99/10/05	2GMN	99/10/05	MG02	77.	56.	
1005	INTERNAL		Mercury -	PV	-0.030	-99999.0	0.298	99.	0.299	99.	99/10/05	2GMN	99/10/05	MG02	$$$	$$$	

13 Tests for OHMN4 with an MDL of 0.030 ug Validated By CMH Control Chart Updated N/A IO Requirements met N/A

CC114

Run Date: 99/10/05 Matrix: IMP(KMnO4)
Run Code MG02

Batch	Sample #	Result (ug/L)	Average (ug/L)	Volume (L)	Result (total ug)	% Rec.
1GMN	BL1004	-0.011	-0.011	0.300	-0.0033	
	BL1004	-0.011				
	BL1004S	0.996	0.9945	0.300	0.29835	99.45
	BL1004S	0.993				
	BL1004D	1	0.9945	0.300	0.29835	99.45
	BL1004D	0.989				
	53747	34.369	33.995	0.5	16.9975	
	53747	33.621				
	53747D	33.835	33.8885	0.5	16.94425	
	53747D	33.942				
	53747S	61.27	61.0565	0.5	30.52825	90.38
	53747S	60.843				
	53747DS	61.377	61.2165	0.5	30.60825	90.92
	53747DS	61.056				
1G3C	53750	0.993	0.966	0.5	0.483	
	53750	0.939				
	53750D	0.939	0.971	0.5	0.4855	
	53750D	1.003				
	53750S	2.092	2.1855	0.5	1.09275	81.13
	53750S	2.279				
	53750DS	2.22	2.26	0.5	1.13	86.10
	53750DS	2.3				
	42277	1.302	1.302	0.5	0.651	
	42277	1.302				
	42277D	1.307	1.307	0.5	0.6535	
	42277D	1.307				
	42277S	2.663	2.6925	0.5	1.34625	92.53
	42277S	2.722				
	42277DS	2.701	2.709	0.5	1.3545	93.63
	42277DS	2.717				
	42260	-0.006	-0.0085	0.5	-0.00425	
	42260	-0.011				
	42261	66.389	66.9225	0.5	33.46125	
	42261	67.456				
	42262	67.029	67.136	0.5	33.568	
	42262	67.243				
	42263	63.827	64.147	0.5	32.0735	
	42263	64.467				
	42276	-0.016	-0.016	0.5	-0.008	
	42276	-0.016				
	42278	61.342	56.5555	0.5	28.27775	
	42278	51.769				
	42279	49.42	49.2065	0.5	24.60325	
	42279	48.993				

Run Date: 99/10/05 Matrix: IMP(KMnO4)
Run Code MG02

Batch	Sample #	Result (ug/L)	Average (ug/L)	Volume (L)	Result (total ug)	% Rec.
2GMN	BL1004	-0.011	-0.011	0.300	-0.0033	
	BL1004	-0.011				
	BL1004S	0.993	0.993	0.300	0.2979	99.3
	BL1004S	0.993				
	BL1004D	1	0.998	0.300	0.2994	99.8
	BL1004D	0.996				
	42754	21.986	21.9325	0.5	10.96625	
	42754	21.879				
	42754D	21.665	21.612	0.5	10.806	
	42754D	21.559				
	42754S	50.595	50.2745	0.5	25.13725	95.01
	42754S	49.954				
	42754DS	50.275	50.008	0.5	25.004	94.12
	42754DS	49.741				
	42281	-0.016	-0.016	0.5	-0.008	
	42281	-0.016				
	42752	-0.016	-0.016	0.5	-0.008	
	42752	-0.016				
	42753	0.149	0.1465	0.5	0.07325	
	42753	0.144				
	42755	58.067	58.1205	0.5	29.06025	
	42755	58.174				
	42756	31.807	32.0205	0.5	16.01025	
	42756	32.234				
	42757	0.08	0.0425	0.5	0.02125	
	42757	0.005				
	42758	32.127	32.1805	0.5	16.09025	
	42758	32.234				
	42759	44.403	44.7035	0.5	22.35175	
	42759	45.004				
	43215	-0.016	-0.016	0.5	-0.008	
	43215	-0.016				

Run Date: 99/10/05 Matrix: IMP(KMnO4)
Run Code MG02

Batch	Sample #	Result (ug/L)	Average (ug/L)	Volume (L)	Result (total ug)	% Rec.
3GMN	BL1004	-0.011	0.016	0.300	0.0048	
	BL1004	0.043				
	BL1004S	1.053	1.023	0.300	0.3069	102.3
	BL1004S	0.993				
	BL1004D	0.993	0.966	0.300	0.2898	96.6
	BL1004D	0.939				
	43217	13.715	13.608	0.5	6.804	
	43217	13.501				
	43217D	13.662	13.662	0.5	6.831	
	43217D	13.662				
	43217S	27.913	27.726	0.5	13.863	93.94
	43217S	27.539				
	43217DS	27.966	27.911	0.5	13.9555	95.17
	43217DS	27.856				
	43216	1.27	1.3315	0.5	0.66575	
	43216	1.393				
	43218	9.765	9.7385	0.5	4.86925	
	43218	9.712				
	43219	11.097	10.99	0.5	5.495	
	43219	10.883				
	43220	1.019	1.035	0.5	0.5175	
	43220	1.051				
	43221	35.436	36.0765	0.5	18.03825	
	43221	36.717				
	43222	38.745	39.0655	0.5	19.53275	
	43222	39.386				
	43223	34.689	34.849	0.5	17.4245	
	43223	35.009				
	53685	-0.016	-0.016	1	-0.016	
	53685	-0.016				
	53686	0.021	0.0025	1	0.0025	
	53686	-0.016				

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.05(W) Run Code: MG02 Matrix: IMP. (KMNO4)

Analyst: MG Units: µg (see comments) MDL: 0.03

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12			WS 378			
13			ORG. REF.			
14			BL1005	1GMN		
15			"			
16			BL1005 S			
17			"			
18			BL1005 S			
19			"			
20	1.5	1/20	53747			
21			"			
22			53747 D			
23			"			
24			53747 S			
25			"			
26			53747 DS			
27			"			
28		1/100	53747 DS			
29			"			
30			53750			
31			"			
32			53750 D			
33			"			
34			CCV			
35			B			
36			D4			
37	1.5		53750 S			
38			"			
39			53750 DS			
40			"			
41	1.5		42277			
42			"			
43			42277 D			
44			"			
45			42277 S.			
46			"			
47			42277 DS			
48			"			
49			42260			
50			"			
51		1/40	42261			
52			"			
53			42262			
54			"			
55			42263			
56			"			
57			CCV			
58			B			
59			D4			
60	1.5		42276			
61			"			
62		1/20	42278			
63			"			
64			42279			
65			"			
66			BL1005	2GMN		
67			"			
68			BL1005 S			
69			"			
70			BL1005 DS			
71			"			
72	1.5	1/20	42754			
73			"			
74			42754 D			
75			"			
76			42754 S			
77			"			
78			42754 DS			
79			"			
80			CCV			

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

[illegible] mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.05 Run Code: MG02 Matrix: IMP. (MN04)

Analyst: MG Units: µg (see comments) MDL: 0.03

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21			B			
22			D4			
23	1.5	1/100	42754 D5			
24			"			
25			42281			
26			"			
27			42752			
28			"			
29			42753			
30			"			
31		1/20	42755			
32			"			
33			42756			
34			"			
35			42757			
36			"			
37		1/20	42758			
38			"			
39			42759			
40			"			
41	1.5		43215			
42			"			
43			CCV			
44			B			
45			D4			
46			BL1005	36 MN		
47			"			
48			BL1005 S			
49			"			
50			BL1005 S			
51			"			
52	1.5	1/10	43217			
53			"			
54			43217 D			
55			"			
56			43217 S			
57			"			
58			43217 DS			
59			"			
60			43216			
61			"			
62		1/10	43218			
63			"			
64		1/20	43219			
65			"			
66			CCV			
67			B			
68			D4			
69	1.5		43220			
70	1.5		"			
71		1/20	43321			
72			"			
73			43322			
74			"			
75			43323			
76			"			
77			53685			
78			"			
79			53686			
80			"			

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

[illegible] mg/kg, Blank Spike = 1.0 mg/kg for solid samples.

LDC AUTOSAMPLER RUN LOG (MERCURY)

Date: 99.10.05 Run Code: MG02 Matrix: IMP-

Analyst: Units: µg (see comments) MDL: 0.03

Cup	Dig. F.	Dil. F.	Zenon ID	Init. Conc.	F. Conc.	% R
1			Primer (ICV)			
2			Dummy (Blk)			
3			Std 1 (S1)	0.0		
4			Std 2 (S2)	0.5		
5			Std 3 (S3)	1.0		
6			Std 4 (S4)	1.5		
7			Std 5 (S5)	2.0		
8			Std 6 (S6)	2.5		
9			ICV			
10			B (Std 1)			
11			D4 (Std 4)			
12						
13						
14						
15						
16						
17						
18						
19						
20						
21			BL1005	46MN		
22			"			
23			BL1005 S			
24			"			
25			BL1005 DS			
26			"			
27	1.5	1/20	53687			
28	↓	↓	"			
29			CCV			
30			B			
31			D4			
32	1.5	1/20	53687 D			
33	↓	↓	"			
34			53687 S			
35			"			
36			53687 DS			
37		↓	"			
38		1/20	53688			
39		↓	"			
40	↓	1/10	53689			
41	1.5	1/10	53689			
42	↓		53690			
43			"			
44		1/20	53691			
45		↓	"			
46			53692			
47			"			
48			53693			
49			"			
50			53747			
51	↓	↓	"			
52			WS 370			
53			ORG. REF			
54			CCV			
55			B			
56			D4			
57						
58						
59						
60						
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79						
80						

Comments: *** "HG-347" and "MISA12" units are expressed in mg/L not ug/L

ICV = 1.5 ug/L, CCV = 1.0 ug/L, Blank Spike = 1.0 ug/L for liquid samples.

Blank Spike = 1.0 mg/kg for solid samples.

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CHART SPEED 5
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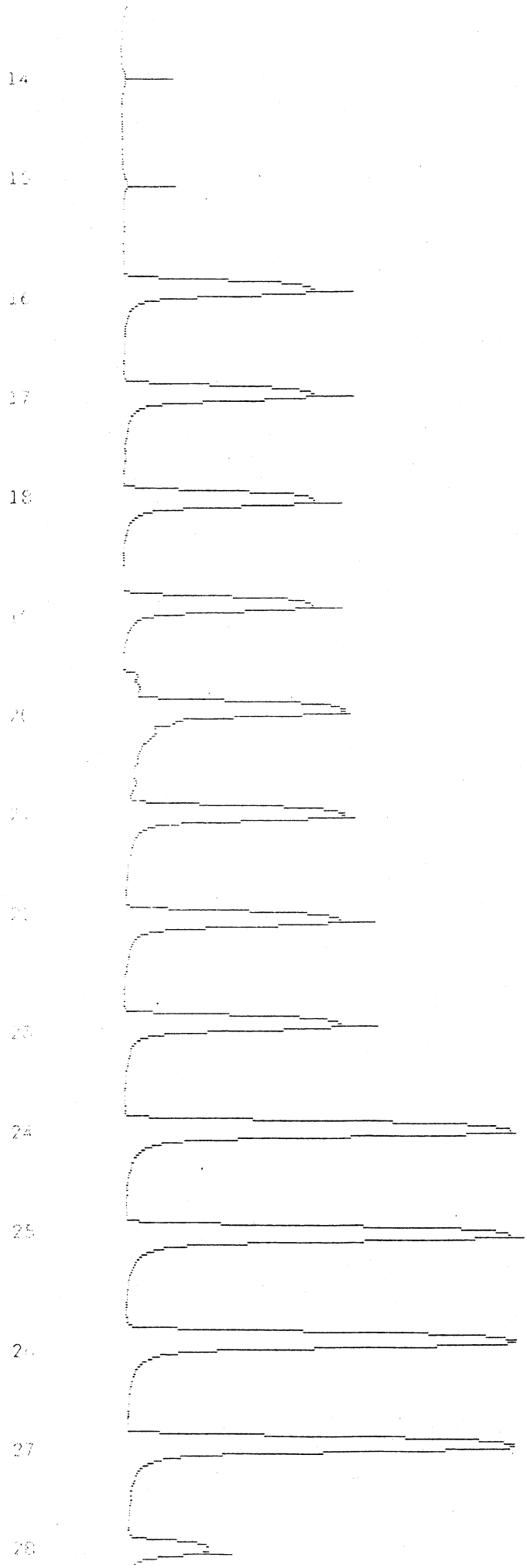
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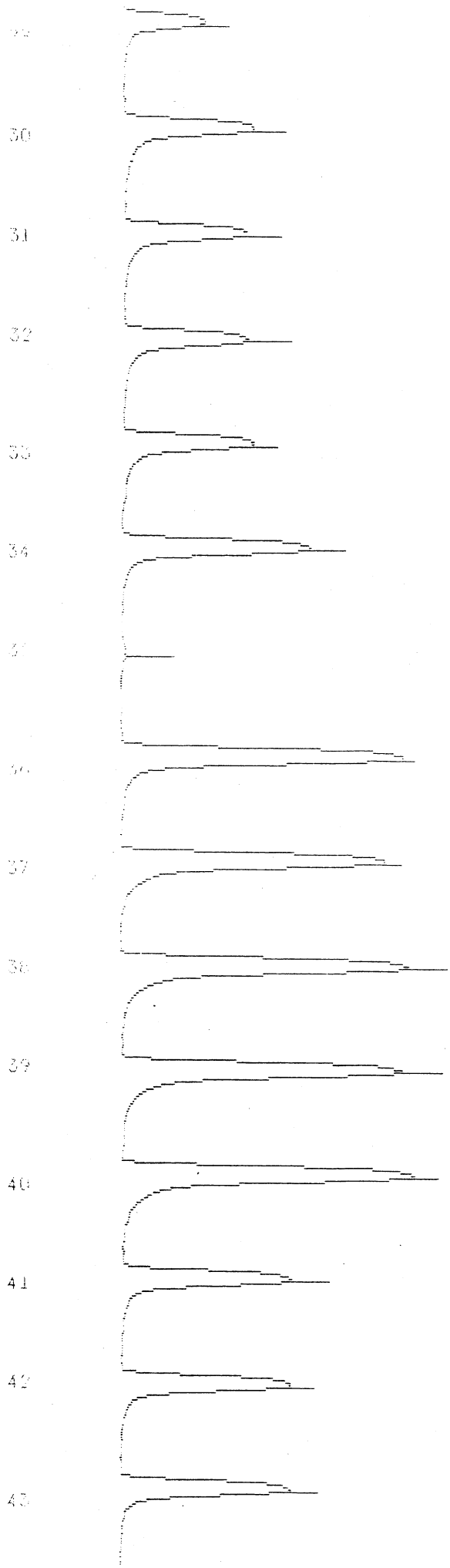
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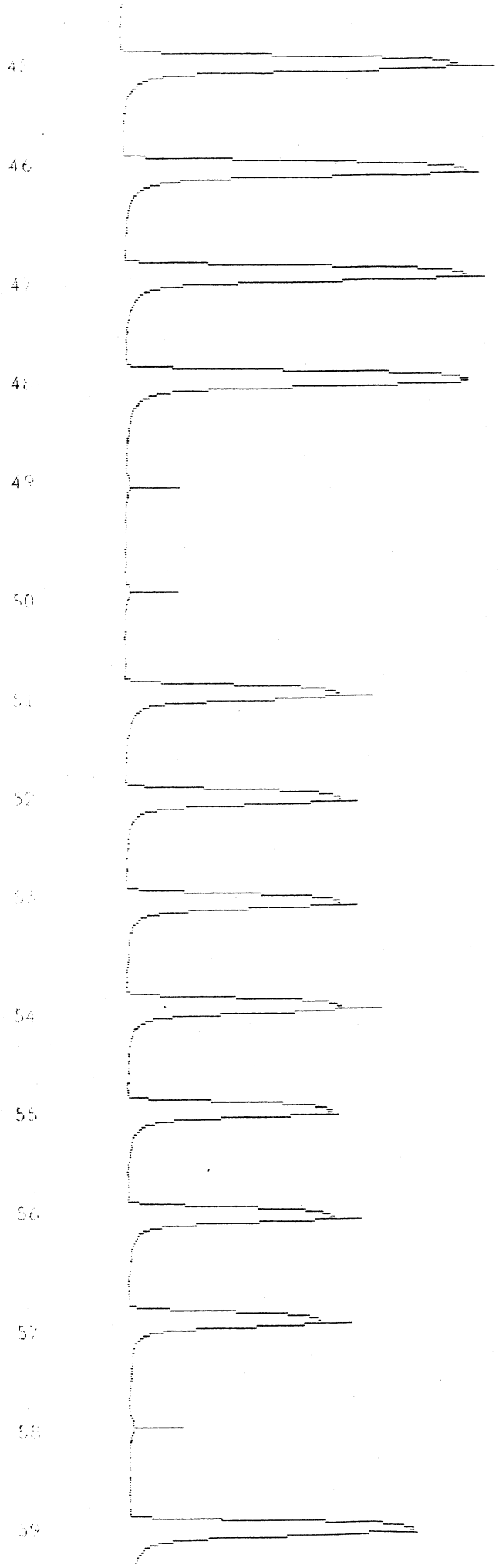
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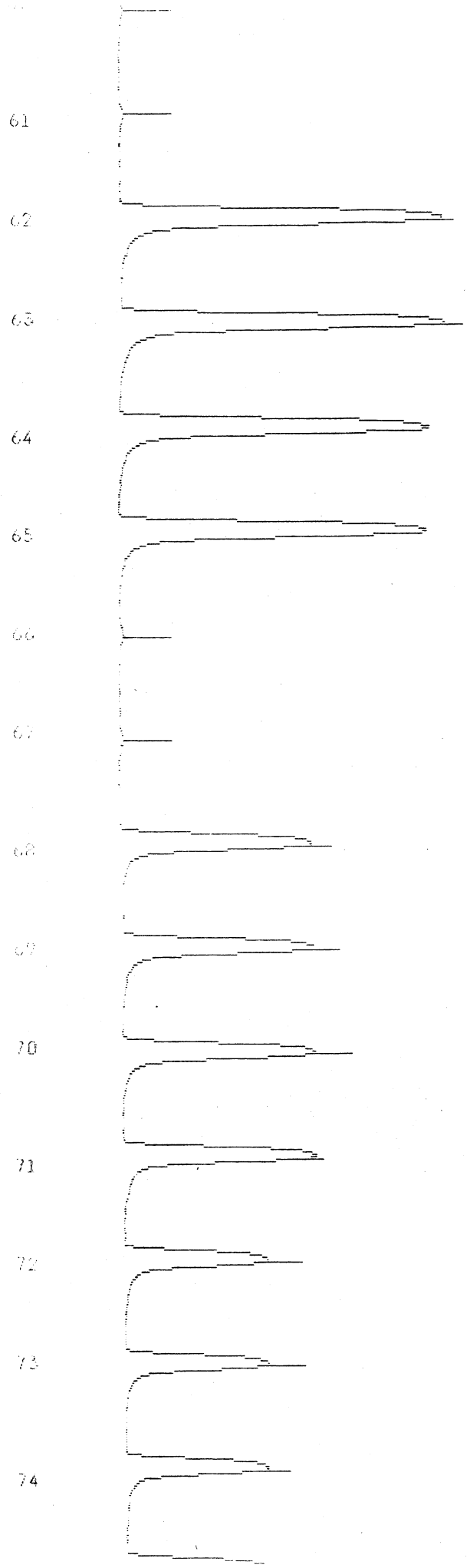
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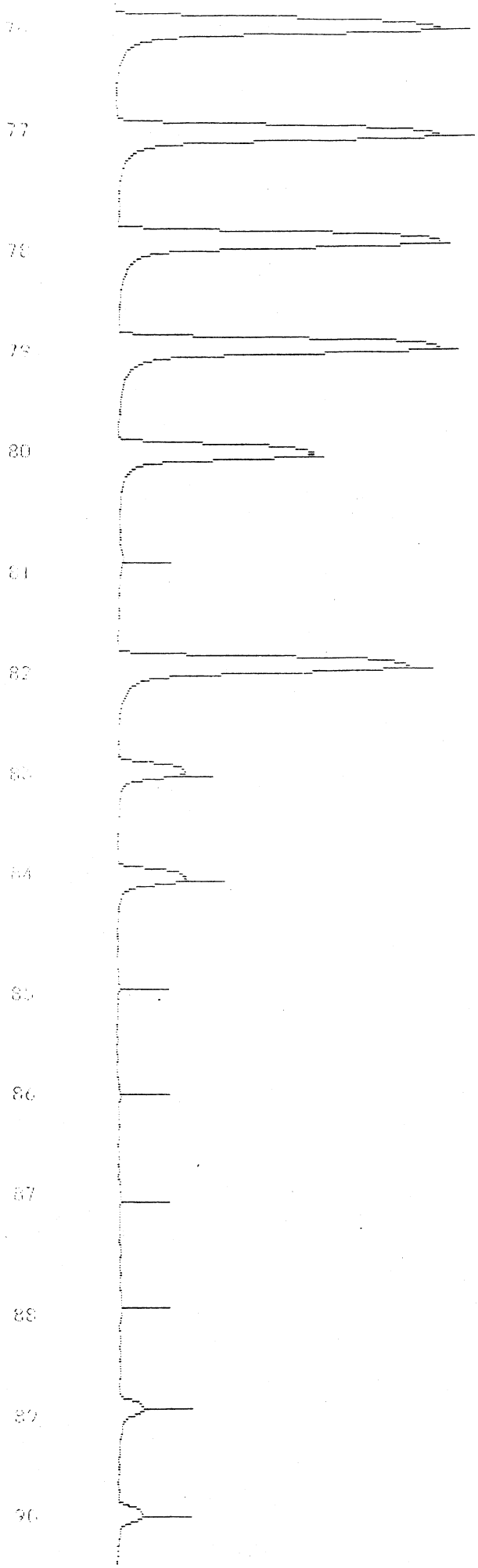
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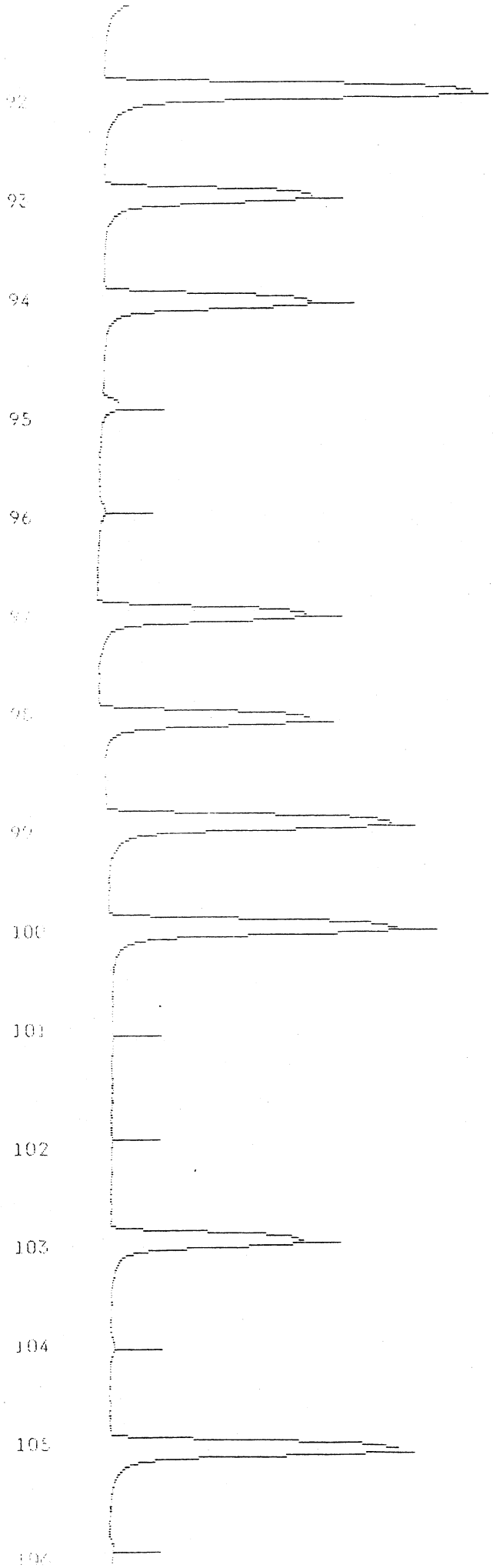
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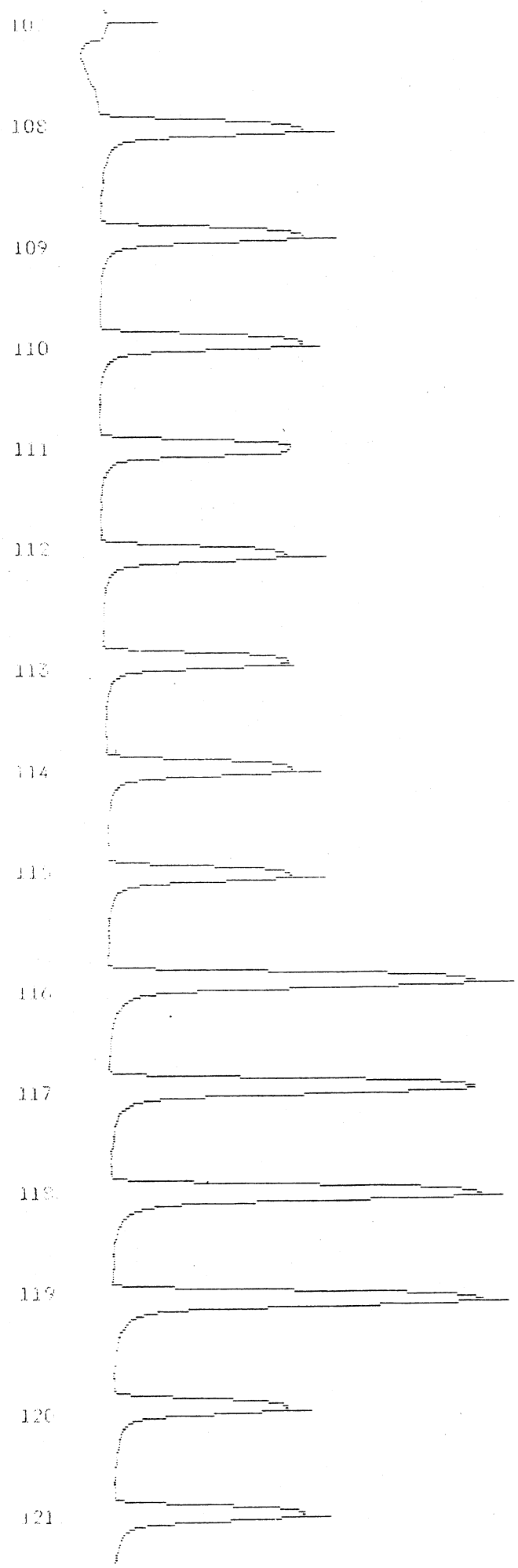
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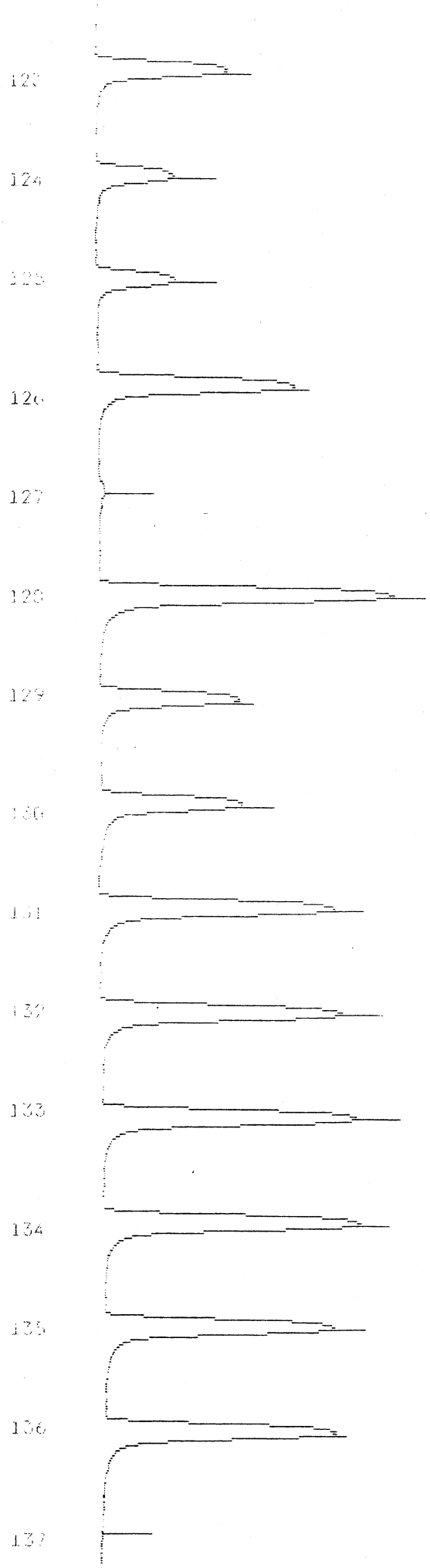
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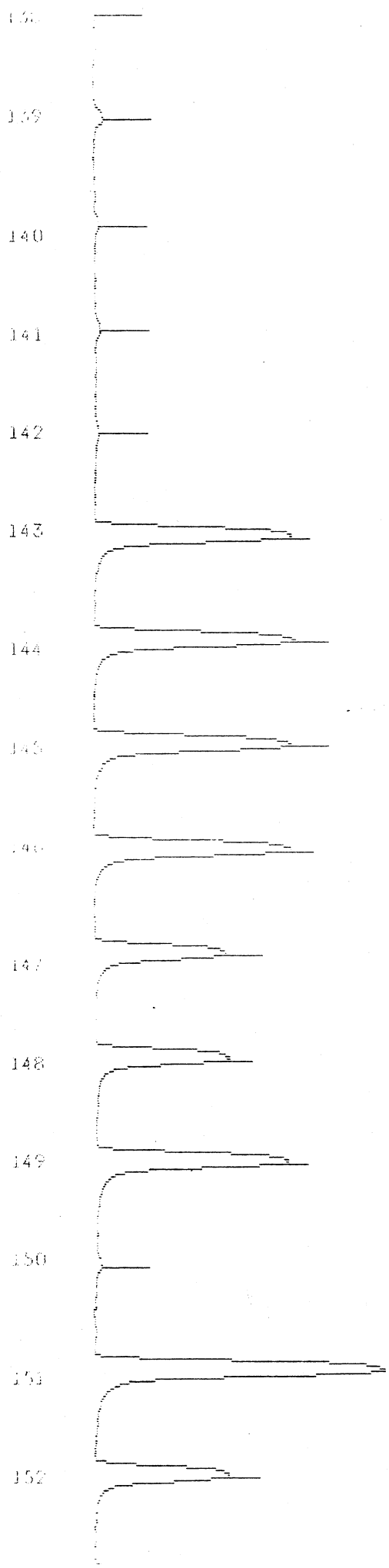
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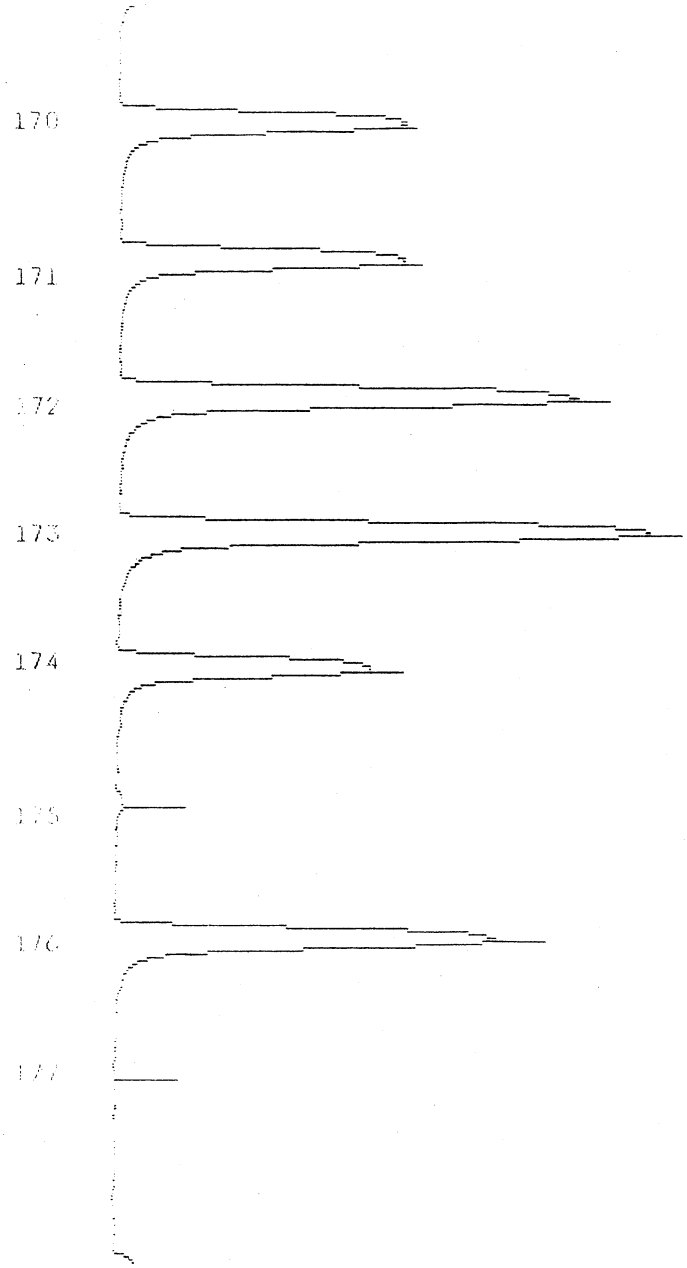

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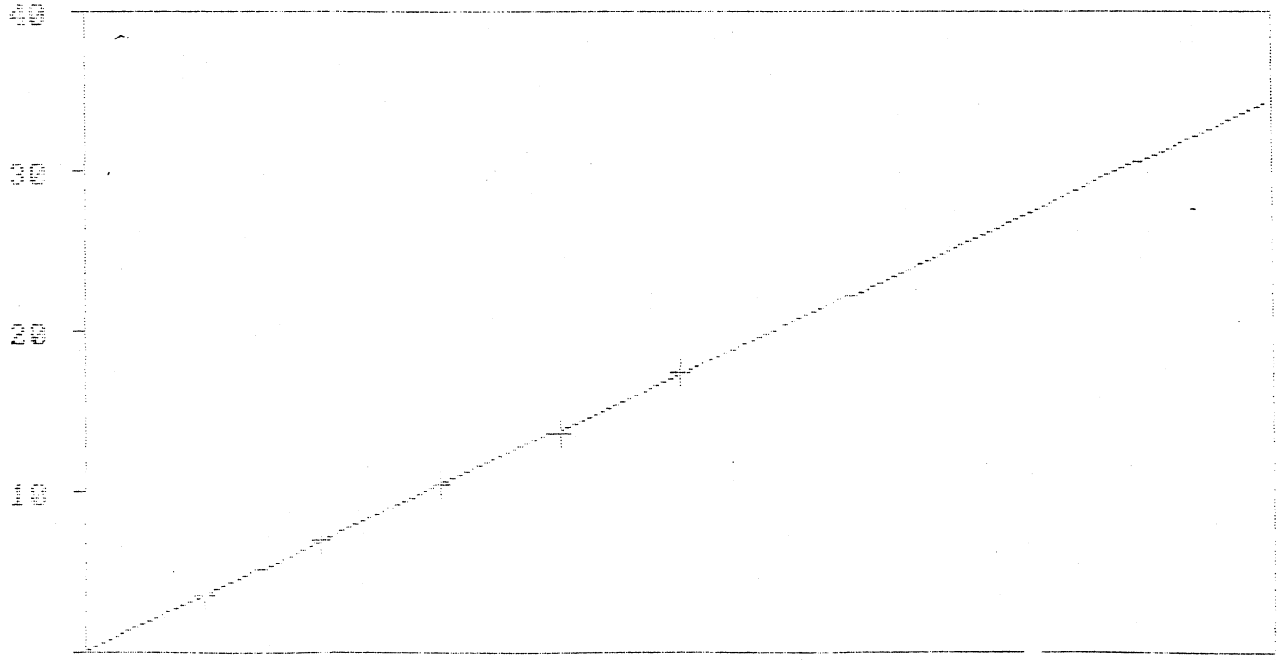
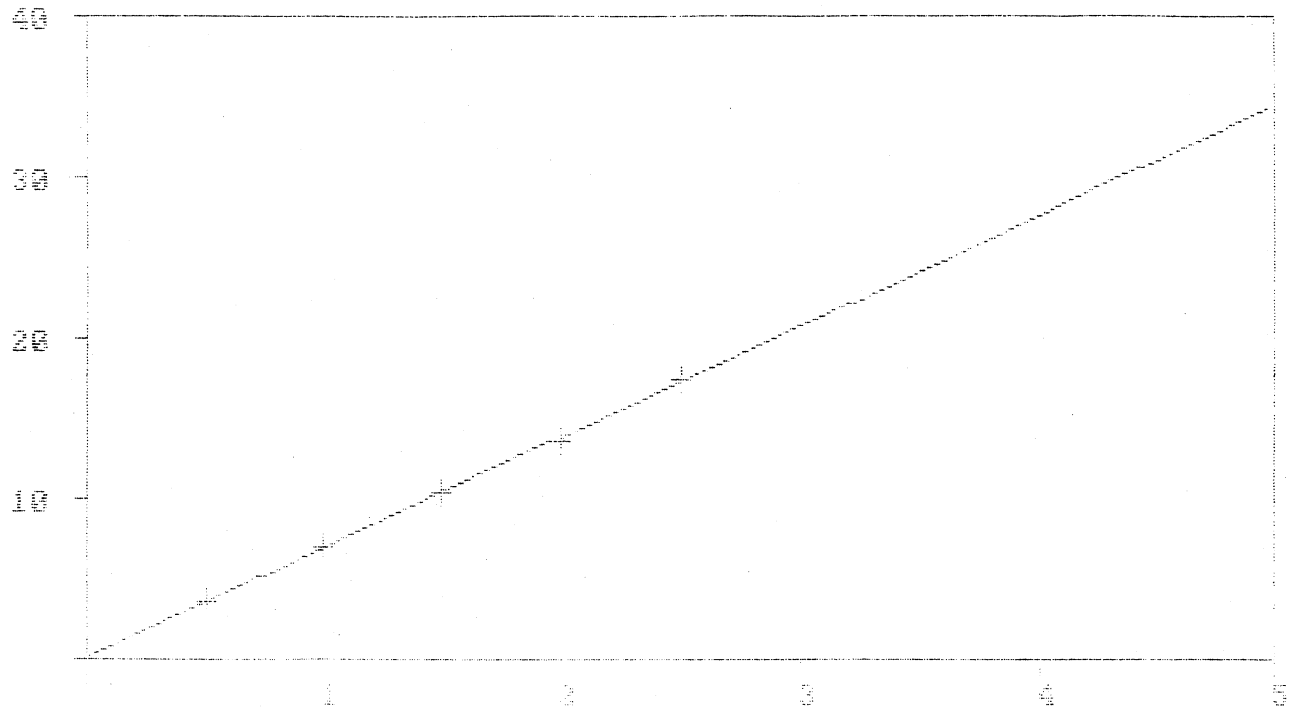
RUN NAME: 991005W



CHANNEL NAME: LOC
RUN NAME: 991005W



DATA TYPE: HA CALIBRATION ORDER: 1
INTERCEPT = 7.44 SLOPE = 6.862324

CORRELATION= .9999232

CHANNEL NAME: LOC
RUN DATE: 10-06-1999
SAMPLE TABLE NAME: 991005W
METHOD NAME: NCWATER

CUP#	SAMPLE ID	DIL	WGT	HEIGHT/AREA	CONCENTRATION (PPb)	EF
1	PRIMER	1	1	10.1	1.466	s
2	DUMMY	1	1	0.0	-0.004	I
3	S1: 0	1	1	0.1	-0.000	I
4	S2: .5	1	1	3.6	0.509	
5	S3: 1	1	1	6.9	0.996	
6	S4: 1.5	1	1	10.4	1.498	
7	S5: 2	1	1	13.7	1.982	
8	S6: 2.5	1	1	17.3	2.516	
9	ICV	1	1	10.1	1.462	97%
10	B	1	1	0.0	-0.011	b
11	D4	1	1	10.4	1.498	d
12	WS 378	1	1	12.6	1.818	91%
13	ORG REF	1	1	11.9	1.719	86%
14	BL1005-10MN	1	1	0.0	-0.011	I
15	BL1005-10MN	1	1	0.0	-0.011	I
16	BL1005S	1	1	6.9	0.996	s
17	BL1005S	1	1	6.9	0.993	
18	BL1005DS	1	1	6.9	1.000	
19	BL1005DS	1	1	6.9	0.989	
20	S3747	30	1	7.9	34.369	
21	3747	30	1	7.8	33.621	

TUG

<0.03

REPEATED @ END TO CHECK. MA

00133

25	53[illegible]	30	1	14.0	[illegible]	
26	5374708	30	1	14.1	[illegible]	
27	5374708	30	1	14.0	61.056	
28	5374708	150	1	2.8	60.289	
29	5374708	150	1	2.9	61.890	
30	53751	1.5	1	4.6	0.993	
31	53751	1.5	1	4.4	0.939	b
32	537510	1.5	1	4.4	0.939	
33	537510	1.5	1	4.7	1.003	
34	CCV	1	1	6.8	0.978 98%	
35	B	1	1	0.0	-0.011	b
36	D4	1	1	10.4	1.498	d
37	537510	1.5	1	9.6	2.092	
38	537518	1.5	1	10.5	2.279	
39	5374708	1.5	1	10.2	2.220	
40	5374708	1.5	1	10.6	2.300	
41	42277	1.5	1	6.0	1.302	
42	42277	1.5	1	6.0	1.302	
43	422770	1.5	1	6.1	1.307	
44	422770	1.5	1	6.1	1.307	
45	422778	1.5	1	12.3	2.663	
46	422778	1.5	1	12.5	2.722	s
47	422770S	1.5	1	12.4	2.701	
48	422770S	1.5	1	12.5	2.717	
49	42260	1.5	1	0.0	-0.006	I
50	42260	1.5	1	0.0	-0.011	I
51	42261	60	1	1.7	66.389	
52	42261	60	1	7.8	67.456	
53	42262	60	1	7.7	67.029	
54	42262	60	1	7.3	67.243	
55	42263	60	1	7.4	63.827	
56	42263	30	1	7.4	64.467	
57	CCV	1	1	6.9	0.[illegible] 99%	
58	B	1	1	0.0	[illegible]	
59	D4	1	1	10.4	1.[illegible]	d
60	42276	1.5	1	0.0	0.0[illegible]	I
61	42276	1.5	1	0.0	-0.0[illegible]	I
62	42278	30	1	11.8	51.5[illegible]	
63	42278	30	1	11.9	51.7[illegible]	
64	42279	30	1	11.4	49.420	
65	42279	30	1	11.[illegible]	48.993	
66	BL1005-20MN	1	1	0.0	-0.011	I
67	BL1005-20MN	1	1	0.0	-0.011	I
68	BL10056	1	1	6.9	0.993	
69	BL10056	1	1	6.9	0.993	
70	BL100503	1	1	6.9	1.000	
71	BL100503	1	1	6.9	0.996	
72	42754	30	1	5.1	21.986	
73	42754	30	1	5.1	[illegible].879	
74	427540	30	1	5.0	21.666	
75	427540	30	1	5.0	21.550	
76	42754S	30	1	11.5	50.595	s
77	42754S	30	1	11.5	49.954	
78	42754OS	30		11.6	50.275	
79	42754OS	30		11.[illegible]	49.741	
80	CCV	1	1	6.9	0.9[illegible] 99%	
81	B	1	1	0.0	-0.011	b
82	D4	1	1	10.4	1.498	d
83	42754OS	150	1	2.2	46.94[illegible]	
84	42754OS	150	1	2.2	47.479	
85	42281	1.5	1	0.0	-0.016	I
86	42281	1.5	1	0.0	-0.016	I
87	[illegible]	1	1	0.0	0.006	I

[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	
[illegible]	[illegible]	30	1	[illegible]	33.807	
[illegible]	[illegible]	[illegible]	1	[illegible]	32.234	
95	[illegible]	1.5	1	0.4	0.080	I
96	[illegible]	[illegible]	1	0.1	0.005	I
97	42756	30	1	7.4	32.127	
98	[illegible]	30	1	7.4	32.234	
99	42756	30	1	10.2	44.403	
100	42759	30	1	10.4	45.044	
101	43215	1.5	1	0.0	-0.016	I
102	43215	1.5	1	0.0	-0.016	I
103	CCV	1	1	[illegible]	0.975	98%
104	B	1	1	0.0	-0.011	b
105	D4	1	1	10.4	1.498	d
106	BL1005-3GMN	1	1	0.0	-0.011	s
107	BL1005-3GMN	1	1	0.3	0.039	l
108	BL1005S	1	1	7.3	1.053	
109	BL1005S	1	1	6.9	0.993	
110	BL1005DS	1	1	6.9	0.993	
111	BL1005DS	1	1	6.5	0.939	
112	43217	15	1	6.3	13.715	
113	43217	15	1	6.3	13.501	
114	432170	15	1	6.3	13.662	
115	432170	15	1	6.3	13.662	
116	432170	15	1	12.8	27.913	
117	432170	15	1	12.7	27.739	
118	4321705	15	1	12.9	27.966	
119	4321705	15	1	12.8	27.859	
120	43216	[illegible]	1	[illegible]	[illegible]	
121	43216	1.5	1	6.4	1.393	[illegible]
122	43218	15	1	[illegible]	[illegible]	
123	43218	15	1	4.5	9.712	
124	[illegible]	30	1	[illegible]	[illegible]	
125	43219	30	1	2.6	10.583	
126	CCV	1	1	[illegible]	0.975	98%
127	B	1	1	0.0	-0.011	b
128	D4	1	1	10.4	1.498	d
129	43220	1.5	1	4.7	1.019	
130	43220	1.5	1	4.9	1.061	
131	43221	30	1	8.2	35.436	
132	43221	30	1	8.5	36.717	
133	43222	30	1	8.9	38.745	
134	43222	30	1	9.1	39.386	
135	43223	30	1	8.0	34.689	
136	43223	30	1	8.1	35.009	s
137	53685	1.5	1	0.0	-0.016	I
138	53635	1.5	1	0.0	-0.016	I
139	53686	1.5	1	0.2	0.021	I
140	53686	1.5	1	0.0	-0.016	I
141	BL1005-4GMN	1	1	0.0	-0.011	I
142	BL1005-4GMN	1	1	0.0	-0.011	I
143	BL1005S	1	1	6.9	0.996	
144	BL1005S	1	1	7.0	1.014	
145	BL1005DS	1	1	6.9	0.996	
146	BL1005DS	1	1	7.0	1.003	
147	53687	30	1	4.5	19.530	
148	53687	30	1	4.7	20.064	
149	CCV	1	1	6.7	0.968	97%
150	B	1	1	0.0	-0.011	b
151	D4	1	1	10.4	1.498	s
152	536870	30	1	4.7	20.064	
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	

00135

157	53687B	[illegible]	1	[illegible]	[illegible]	
158	53688	30	1	[illegible]	24.[illegible]	
159	53688	30	1	[illegible]	24.634	
160	53689	15	1	[illegible].0	10.833	
161	53689	15	1	5.[illegible]	10.886	
162	53690	1.5	1	0.2	0.037	I
163	53690	1.5	1	0.6	0.112	I
164	53691	30	1	[illegible].3	18.370	
165	53691	30	1	4.2	18.143	
166	53692	30	1	5.4	23.267	S
167	53692	30	1	5.4	23.160	
168	53693	30	1	4.2	18.143	
169	53693	30	1	4.3	18.356	
170	53747	30	1	[illegible].7	33.301	
171	53747	30	1	[illegible]	33.088	
172	WS 378	1	1	12.4	1.793	90%
173	ORG. REF	1	1	14.4	2.081	104%
174	CCV	1	1	6.8	0.975	98%
175	B	1	1	0.0	-0.011	B
176	D4	1	1	10.4	1.498	d

INTERCEPT: 0.00 LINEAR COEF: 6.862174

CORRELATION COEF: .9997337

4. SHIPPING/RECEIVING DOCUMENTS

Airbills (No. of shipments)
Chain-of-Custody Records
Sample Log-In Sheets
Miscellaneous Shipping/Receiving Records (describe or list)
fax notification

BRAUN INTERTEC℠
Braun Intertec Corporation
6875 Washington Ave. S.
Edina, MN 55439-0108

Bottle orders and sampling inquires:
labservices@brauncorp.com
Phone: 612-942-4930 Fax: 612-942-4844

REQUEST FOR LABORATORY ANALYTICAL SERVICES

IMPORTANT
Date Results Requested: _____
Time _____
Rush Charges Authorized? ____ Yes ____ No
Rush / Quote # _____

For Braun Intertec Use Only
Braun Intertec Project No.

REPORT RESULTS TO
Contact Name: Bruce Randall
Company: Braun Intertec Corp.
Mailing Address: P.O. Box 39108
City, State, Zip: Minneapolis, MN 55439
Telephone #: (612) 833-4653 Fax #: (612) 946-6001

Project ID/Project Name: CMXX-99-0304
P.O. #

SEND INVOICE TO
Contact Name: B. Randall
Company:
Address:
City, State, Zip:
Telephone #:
Fax #:

Special Instructions and/or Specific Regulatory Requirements:
(method, limit of detection, petrofund, reporting units)
MD - 42745

Circle metals that require low detection limits
Ag | As | Be | Cd | Cr | Pb | Ni | Sb | Se | Tl | V | Other

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request)

	CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	Metals Field Filtered Y/N	Ha Ontario Hydro									FOR LAB USE ONLY
1	1R1-CØ1	7/13		Filter				X									
2	1R2-CØ1	7-14						X									
3	1R3-CØ1	7-14						X									
4	~~1B-CØ1 (Blank)~~	~~7/13~~						X			42745	Not Present - included in another batch					
5	1R1-CØ2 HNO3	7-13		Liquid				X									42249 BR
6	1R2-CØ2	7-14						X									42250
7	1R3-CØ2	7-14						X									42251
8	1B-CØ2 (Blank)	7-13						X									42248
9	1R1-CØ3A > combine	7-13						X									
10	1R1-CØ3B > KCl	7-13						X									
11	1R2-CØ3A > combine	7-14						X									
12	1R2-CØ3B	7-14						X									
13	1R3-CØ3A > combine	7-14						X									
14	1R3-CØ3B	7-14						X									
15																	

CHAIN OF CUSTODY
Collected by: (Print) Bruce Randall
Collector's Signature:
Relinquished by: Date/Time 7-29 1400
Relinquished by: Date/Time
Received by: Date/Time
Received Contents Not Verified: Date/Time
Received Contents Verified: Date/Time

Evidence Tape Intact ☐ Yes ☐ No ☐ N/A
Sample Condition Upon Receipt: ☐ Acceptable ☐ Other_____
Temperature _____ °C ☐ Received on Ice
Matrix Spike Samples Received: ☐ Yes ☐ No ☐ N/A

Comments:

00,37

BRAUN INTERTEC[SM]
Braun Intertec Corporation
6875 Washington Ave. S.
Edina, MN 55439-0108

Bottle orders and sampling inquires:
labservices@brauncorp.com
Phone: 612-942-4930 Fax: 612-942-4844

REQUEST FOR LABORATORY ANALYTICAL SERVICES

IMPORTANT
Date Results Requested: _____
Time _____
Rush Charges Authorized? ____ Yes ____ No
Rush / Quote # _____

For Braun Intertec Use Only
Braun Intertec Project No.

REPORT RESULTS TO
Contact Name: Bruce Randall
Project ID/Project Name: CMXX-99-0304
P.O. #:
Company: Braun Intertec Corp
Mailing Address: P.O. Box 39108
City, State, Zip: Minneapolis, MN
Telephone #: (612) 833-4653
Fax #: (612) 946-6001

SEND INVOICE TO
Contact Name: B. Randall
Company:
Address:
City, State, Zip:
Telephone #:
Fax #:

Special Instructions and/or Specific Regulatory Requirements:
(method, limit of detection, petrofund, reporting units)

Circle metals that require low detection limits
Ag | As | Be | Cd | Cr | Pb | Ni | Sb | Se | Tl | V | Other

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request)

	CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	Metals Field Filtered Y/N	Hg-Ontario Hydro									FOR LAB USE ONLY
1	1BCØ3 (Blank)	7-13		Liquid				X									
2	1R1-CØ4 + H2O2	7-13						X									
3	1R2-CØ4	7-14						X									
4	1R3-CØ4	7-14						X									
5	1B-CØ4 (Blank)	7-13						X									
6	1R1-CØ5	7-13						X									
7	1R2-CØ5 KMnO4	7-14						X									
8	1R3-CØ5	7-14						X									
9	1B-CØ5 (Blank)	7-13						X									
10	C7 reagent blank							X									
11	C8 reagent blank							X									
12																	
13																	
14																	
15																	

CHAIN OF CUSTODY
Collected by: *(Print)* Bruce Randall
Collector's Signature:
Relinquished by: Date/Time 7-29 1400
Relinquished by: Date/Time
Received by: Date/Time
Received Contents Not Verified: Date/Time
Received Contents Verified: Date/Time
Comments:

Evidence Tape Intact ☐ Yes ☐ No ☐ N/A
Sample Condition Upon Receipt: ☐ Acceptable ☐ Other _____
Temperature _____ °C ☐ Received on Ice
Matrix Spike Samples Received: ☐ Yes ☐ No ☐ N/A

03-03

BRAUN INTERTEC[SM]
Braun Intertec Corporation
6875 Washington Ave. S.
Edina, MN 55439-0108

Bottle orders and sampling inquires:
labservices@brauncorp.com
Phone: 612-942-4930 Fax: 612-942-4844

REQUEST FOR LABORATORY ANALYTICAL SERVICES

IMPORTANT
Date Results Requested: _____
Time _____
Rush Charges Authorized? ____ Yes ____ No
Rush / Quote # _____

For Braun Intertec Use Only
Braun Intertec Project No.

REPORT RESULTS TO
Contact Name: Bruce Randall
Company: Braun Intertec Corp
Mailing Address: P.O. Box 39108
City, State, Zip: Minneapolis, MN 55439
Telephone #: (612) 833-4653 Fax #: (612) 946-6001

Project ID/Project Name: CMXX-99-0309
P.O. #

SEND INVOICE TO
Contact Name: B. Randall
Company:
Address:
City, State, Zip:
Telephone #:
Fax #:

Special Instructions and/or Specific Regulatory Requirements:
(method, limit of detection, petrofund, reporting units)

Circle metals that require low detection limits
Ag | As | Be | Cd | Cr | Pb | Ni | Sb | Se | Tl | V | Other

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request)

	CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	Metals Field Filtered Y/N	Hg-Organic Hydro										FOR LAB USE ONLY
1	SR1-C01	7-13		Filter				X										
2	SR2-~~C02~~ C01	7-14		↓	✓			X										
3	SR3-C01	7-14			✓			X										
4	SB-C01 (Blank)	7-13		↓	✓			X										
5	SR1-C02	7-13		Hg.	✓			X										
6	SR2-C02	7-14			✓			X										
7	SR3-C02	7-14			✓			X										
8	SB-C02 (Blank)	7-13			✓			X										
9	SR1-C03A → combine	7-13			✓			X										
10	SR1-C03B	"			✓			X										
11	SR2-C03A → combine	7-14			✓			X										
12	SR2-C03B	"			✓			X										
13	SR3-C03A → combine	"			✓			X										
14	SR3-C03B	"			✓			X										
15	SB-C03 (Blank)	7-13		↓	✓			X										

CHAIN OF CUSTODY
Collected by: *(Print)* Bruce Randall
Collector's Signature:
Relinquished by: Date/Time 7/29-1400
Received by: Date/Time
Relinquished by: Date/Time
Received Contents Not Verified: Date/Time
Received Contents Verified: Date/Time

Evidence Tape Intact ☐ Yes ☐ No ☐ N/A
Sample Condition Upon Receipt: ☐ Acceptable ☐ Other _____
Temperature _____ °C ☐ Received on Ice
Matrix Spike Samples Received: ☐ Yes ☐ No ☐ N/A

Comments:

C0139

BRAUN INTERTEC[SM]
Braun Intertec Corporation
6875 Washington Ave. S.
Edina, MN 55439-0108

Bottle orders and sampling inquires:
labservices@brauncorp.com
Phone: 612-942-4930 Fax: 612-942-4844

REQUEST FOR LABORATORY ANALYTICAL SERVICES

IMPORTANT
Date Results Requested: _____
Time _____
Rush Charges Authorized? ____ Yes ____ No
Rush / Quote # _____

For Braun Intertec Use Only
Braun Intertec Project No.

REPORT RESULTS TO
Contact Name: Bruce Randall
Company: Braun Intertec Corp.
Mailing Address: P.O. Box 39108
City, State, Zip: Minneapolis, MN 55439
Telephone #: (612) 833-4653 Fax #: (612) 946-6001

Project ID/Project Name: CMXX-99-0304
P.O. #

SEND INVOICE TO
Contact Name: B Randall
Company:
Address:
City, State, Zip:
Telephone #:
Fax #:

Special Instructions and/or Specific Regulatory Requirements:
(method, limit of detection, petrofund, reporting units)

Circle metals that require low detection limits
Ag | As | Be | Cd | Cr | Pb | Ni | Sb | Se | Tl | V | Other

ANALYSIS REQUESTED
(Enter an 'X' in the box below to indicate request)

	CLIENT SAMPLE IDENTIFICATION	DATE SAMPLED	TIME SAMPLED	MATRIX/ MEDIA	AIR VOLUME (specify units)	Number of Containers	Metals Field Filtered Y/N	Hg-Ultra Hydro										FOR LAB USE ONLY
1	SR1-C04			Liq.				X										
2	SR2-C04							X										
3	SR3-C04							X										
4	SB-C04 (Blank)							X										
5	SR1-C05							X										
6	SR2-C05							X										
7	SR3-C05							X										
8	SB-C05 (Blank)							X										
9	C9 (reagent blank)							X										
10	C10 "							X										
11	C11 "							X										
12	C12 "			Filter														
13	Nothing Below this Line																	
14																		
15																		

CHAIN OF CUSTODY
Collected by: *(Print)* Bruce Randall
Collector's Signature:
Relinquished by: Date/Time 7/29-1400
Received by: Date/Time
Relinquished by: Date/Time
Received Contents Not Verified: Date/Time
Received Contents Verified: Date/Time

Evidence Tape Intact ☐ Yes ☐ No ☐ N/A
Sample Condition Upon Receipt: ☐ Acceptable ☐ Other _____
Temperature _____ °C ☐ Received on Ice
Matrix Spike Samples Received: ☐ Yes ☐ No ☐ N/A

Comments:

00140

Page ___ of ___

US SAMPLE LOG IN SHEET

00141 BRAUN

Lab Name: Philip Analytical Services Corporation, Burlington Laboratory

Received By (Print Name):

Received By (Signature):

Client Project ID:

REMARKS:		Condition of Samples/Sample Shipment:
Custody Seal(s)	Present ___ Absent ✓	[illegible]
Chain of Custody Records	Present ✓ Absent ___	
Airbill	Present ✓ Absent ___	
Airbill No.	1Z565 76R 03 1001243 34	
Does Information on Custody Records and Samples Agree?	Yes ___ No ___	
Date Received at Lab	08-03-99	
Time Received	5:00	

Temperature of Coolers

Cooler ID:	Temperature
2 coolers	28° 28°

Relinquished By: [signature]

Date: 08-03-99

Logbook No: ___

Logbook Page No. ___

** TX STATUS REPORT ** AS OF AUG 07 1999 10:30 PAGE.01

PHILIP ANALYTICAL

	DATE	TIME	TO/FROM	MODE	MIN/SEC	PGS	JOB#	STATUS
01	08/07	10:29	16129466001	EC--S	00'38"	002	179	OK

NOTICE OF SAMPLE RECEIPT-PHILIP ANALYTICAL SERVICES

Attention: Bruce Randall
Client: Braun Intertec
Re Client Project: 99-0304
FAX #: 612-946-6001
Phone #: 612-833-4653

Samples for: 'DH' Meraviso
were received in good condition unless indicated below.

SAMPLE LISTING

Philip ID #	Sample ID	Date Sampled	Date Received
042246	F.H. Blank C7/C12	99/07/13	99/08/03
042248	1Blank-C01/C02	99/07/13	99/08/03
042249	1R1-C01/C02	99/07/13	99/08/03
042250	1R2-C01/C02	99/07/14	99/08/03
042251	1R3-C01/C02	99/07/14	99/08/03
042264	SB-C01/C02 Blank	99/07/13	99/08/03
042265	SR1-C01/C02	99/07/13	99/08/03
042266	SR2-C01/C02	99/07/14	99/08/03
042267	SR3-C01/C02	99/07/14	99/08/03
042256	1B-C04 Blank	99/07/13	99/08/03
042257	1R1-C04	99/07/13	99/08/03
042258	1R2-C04	99/07/14	99/08/03
042259	1R3-C04	99/07/14	99/08/03
042272	SB-C04 Blank	99/07/13	99/08/03
042273	SR1-C04	99/07/13	99/08/03
042274	SR2-C04	99/07/14	99/08/03
042275	SR3-C04	99/07/14	99/08/03
042280	Reagent Blank C9	99/07/14	99/08/03
042260	1B-C05 Blank	99/07/13	99/08/03
042261	1R1-C05	99/07/13	99/08/03
042262	1R2-C05	99/07/14	99/08/03
042263	1R3-C05	99/07/14	99/08/03
042276	SB-C05 Blank	99/07/13	99/08/03
042277	SR1-05	99/07/13	99/08/03
042278	SR2-05	99/07/14	99/08/03
042279	SR3-05	99/07/14	99/08/03
042281	Reagent Blank C10	99/07/14	99/08/03
042247	Reagent Blank C8	99/07/13	99/08/03
042252	1BC03 Blank	99/07/13	99/08/03
042253	1R1-C03A/B	99/07/13	99/08/03
042254	1R2-C03A/B	99/07/14	99/08/03
042255	1R3-C03A/B	99/07/14	99/08/03
042268	SB-C03 Blank	99/07/13	99/08/03
042269	SR1-C03A/B	99/07/13	99/08/03
042270	SR2-C03A/B	99/07/14	99/08/03
042271	SR3-C03A/B	99/07/14	99/08/03

Comments: _____

Date 99/08/07

NOTICE OF SAMPLE RECEIPT-PHILIP ANALYTICAL SERVICES

Attention: Bruce Randall
Client: Braun Intertec
Re Client Project: 99-0304
FAX #: 612-946-6001
Phone #: 612-833-4653

Samples for: [illegible]
were received in good condition unless indicated below.

SAMPLE LISTING

Philip ID #	Sample ID	Date Sampled	Date Received
042246	F.H. Blank C7/C12	99/07/13	99/08/03
042248	1Blank-C01/C02	99/07/13	99/08/03
042249	1R1-C01/C02	99/07/13	99/08/03
042250	1R2-C01/C02	99/07/14	99/08/03
042251	1R3-C01/C02	99/07/14	99/08/03
042264	SB-C01/C02 Blank	99/07/13	99/08/03
042265	SR1-C01/C02	99/07/13	99/08/03
042266	SR2-C01/C02	99/07/14	99/08/03
042267	SR3-C01/C02	99/07/14	99/08/03
042256	1B-C04 Blank	99/07/13	99/08/03
042257	1R1-C04	99/07/13	99/08/03
042258	1R2-C04	99/07/14	99/08/03
042259	1R3-C04	99/07/14	99/08/03
042272	SB-C04 Blank	99/07/13	99/08/03
042273	SR1-C04	99/07/13	99/08/03
042274	SR2-C04	99/07/14	99/08/03
042275	SR3-C04	99/07/14	99/08/03
042280	Reagent Blank C9	99/07/14	99/08/03
042260	1B-C05 Blank	99/07/13	99/08/03
042261	1R1-C05	99/07/13	99/08/03
042262	1R2-C05	99/07/14	99/08/03
042263	1R3-C05	99/07/14	99/08/03
042276	SB-C05 Blank	99/07/13	99/08/03
042277	SR1-05	99/07/13	99/08/03
042278	SR2-05	99/07/14	99/08/03
042279	SR3-05	99/07/14	99/08/03
042281	Reagent Blank C10	99/07/14	99/08/03
042247	Reagent Blank C8	99/07/13	99/08/03
042252	1BC03 Blank	99/07/13	99/08/03
042253	1R1-C03A/B	99/07/13	99/08/03
042254	1R2-C03A/B	99/07/14	99/08/03
042255	1R3-C03A/B	99/07/14	99/08/03
042268	SB-C03 Blank	99/07/13	99/08/03
042269	SR1-C03A/B	99/07/13	99/08/03
042270	SR2-C03A/B	99/07/14	99/08/03
042271	SR3-C03A/B	99/07/14	99/08/03

Comments:

Date 99/08/07

NOTICE OF SAMPLE RECEIPT-PHILIP ANALYTICAL SERVICES

Attention: Bruce Randall
Client: Braun Intertec
Re Client Project: 99-0304
FAX #: 612-946-6001
Phone #: 612-833-4653

Samples for: _____
were received in good condition unless
indicated below.

SAMPLE LISTING

Philip ID #	Sample ID	Date Sampled	Date Received
042282	Reagent Blank C11	99/07/14	99/08/03

Comments: _____

_____

_____

Date 99/08/07

Appendix E

Analytical Data Sheets for Fuel Samples

BASIN ELECTRIC POWER COOPERATIVE

1717 EAST INTERSTATE AVENUE
BISMARCK, NORTH DAKOTA 58501-0564
PHONE: 701/223-0441
FAX: 701/224-5336

August 9, 1999

Mr. Bruce Randall
Braun Intertec Corporation
8585 West 78th Street
P.O. Box 39108
Minneapolis, MN 55439-0108

Dear Mr. Randall:

Enclosed are the coal analysis sheets for the mercury testing at the Antelope Valley Station Unit 1 and the Leland Olds Station Unit 2. Each sample had an analysis run rather than a composite of the three samples. If this is a problem we can rerun a composite of the three samples taken for each unit. Please let me know if this will satisfy the site test plan and QAPP.

If you have any questions please contact me.

Sincerely,

Jerry Menge
Air Quality Program Coordinator

jm:mev
Enclosure

sampleno	SAMPLEID	SPLINGDATE	ASH AR	ASH DRY	CHLORINE AR	CHLORINE DRY	GCV AR	GCV DAF	GCV DRY	MERCURY AR	MERCURY DRY	MERCURY NIST	MOISTURE AR	NA2O IN ASH	NA2O IN COAL	SULFUR AR	SULFUR DAF	SULFUR DRY
990029791	AVS R-1	13-Jul-99	9.54	15.30	88	140	6350	12020	10180	0.038	0.060	0.097	37.64	4.19	0.40	0.68	1.29	1.09
990029792	AVS R-2	14-Jul-99	10.20	15.93	54	84	6580	12230	10280	0.046	0.071	0.097	35.95	5.30	0.54	0.79	1.47	1.24
990029793	AVS R-3	14-Jul-99	9.11	14.39	61	97	6580	12150	10400	0.035	0.055	0.097	36.67	5.30	0.48	0.66	1.23	1.05
990029971	LOS T1 Feeder 7	16-Jul-99	7.21	11.27	58	91	6720	11830	10500	0.027	<0.05	0.097	36.03	3.07	0.22	0.51	0.90	0.80
990029972	LOS T2 Feeder 7	16-Jul-99	6.84	10.73	66	104	6820	11990	10700	0.036	0.056	0.097	36.26	2.81	0.19	0.68	1.20	1.07
990029974	LOS T3 Feeder 7	16-Jul-99	6.02	9.46	<50	77	6930	12030	10890	0.023	<0.05	0.097	36.37	3.40	0.20	0.58	1.01	0.91

DAKOTA GASIFICATION COMPANY
A BASIN ELECTRIC SUBSIDIARY
GREAT PLAINS SYNFUELS PLANT
P.O. BOX 1149
BEULAH, NORTH DAKOTA 58523
PHONE: 701/873-2100
FAX: 701/873-6875

Sample Date: **7/13/99** **AVS SPECIAL**
AVS R-1

Component	**Lab Sample Number:**	**990029791**
MOISTURE, AS RECEIVED	37.64	WT %
ASH, AS RECEIVED	9.54	WT %
ASH, DRY	15.30	WT %
GROSS CALORIFIC VALUE, AS RECEIVED	6350	BTU/LB
GROSS CALORIFIC VALUE, DRY	10180	BTU/LB
GROSS CALORIFIC VALUE,DRY ASH-FREE	12020	BTU/LB
SULFUR, AS RECEIVED	0.68	WT %
SULFUR, DRY	1.09	WT %
SULFUR, DRY ASH-FREE	1.29	WT %
COAL WEIGHT	1	POUNDS
CHLORINE, DRY	140	MG/KG
MERCURY, DRY	0.060	MG/KG
MERCURY ON NIST1630A Reference range is 0.106+/-0.02	0.097	MG/KG

DAKOTA GASIFICATION COMPANY
A BASIN ELECTRIC SUBSIDIARY
GREAT PLAINS SYNFUELS PLANT
P.O. BOX 1149
BEULAH, NORTH DAKOTA 58523
PHONE: 701/873-2100
FAX: 701/873-6875

Sample Date: **7/14/99**

AVS SPECIAL
AVS R-2
Lab Sample Number: **990029792**

Component		
MOISTURE, AS RECEIVED	35.95	WT %
ASH, AS RECEIVED	10.20	WT %
ASH, DRY	15.93	WT %
GROSS CALORIFIC VALUE, AS RECEIVED	6580	BTU/LB
GROSS CALORIFIC VALUE, DRY	10280	BTU/LB
GROSS CALORIFIC VALUE,DRY ASH-FREE	12230	BTU/LB
SULFUR, AS RECEIVED	0.79	WT %
SULFUR, DRY	1.24	WT %
SULFUR, DRY ASH-FREE	1.47	WT %
COAL WEIGHT	1	POUNDS
CHLORINE, DRY	84	MG/KG
MERCURY, DRY	0.071	MG/KG
MERCURY ON NIST1630A Reference range is 0.106+/-0.02	0.097	MG/KG

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Sample Date: **7/14/99**

AVS SPECIAL
AVS R-3
Lab Sample Number: **990029793**

Component		
MOISTURE, AS RECEIVED	36.67	WT %
ASH, AS RECEIVED	9.11	WT %
ASH, DRY	14.39	WT %
GROSS CALORIFIC VALUE, AS RECEIVED	6580	BTU/LB
GROSS CALORIFIC VALUE, DRY	10400	BTU/LB
GROSS CALORIFIC VALUE,DRY ASH-FREE	12150	BTU/LB
SULFUR, AS RECEIVED	0.66	WT %
SULFUR, DRY	1.05	WT %
SULFUR, DRY ASH-FREE	1.23	WT %
COAL WEIGHT	1	POUNDS
CHLORINE, DRY	97	MG/KG
MERCURY, DRY	0.055	MG/KG
MERCURY ON NIST1630A Reference range is 0.106+/-0.02	0.097	MG/KG

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Sample Date: **7/16/99**

LOS SPECIAL
LOS T1 Feeder 7
Lab Sample Number: **990029971**

Component		
MOISTURE, AS RECEIVED	36.03	WT %
ASH, AS RECEIVED	7.21	WT %
ASH, DRY	11.27	WT %
GROSS CALORIFIC VALUE, AS RECEIVED	6720	BTU/LB
GROSS CALORIFIC VALUE, DRY	10500	BTU/LB
GROSS CALORIFIC VALUE,DRY ASH-FREE	11830	BTU/LB
SULFUR, AS RECEIVED	0.51	WT %
SULFUR, DRY	0.80	WT %
SULFUR, DRY ASH-FREE	0.90	WT %
COAL WEIGHT	1	POUNDS
CHLORINE, DRY	91	MG/KG
MERCURY, DRY	<0.05	MG/KG
MERCURY ON NIST1630A Reference range is 0.106+/-0.02	97	MG/KG

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Sample Date: **7/16/99**

LOS SPECIAL
LOS T2 Feeder 7
Lab Sample Number: **990029972**

Component		
MOISTURE, AS RECEIVED	36.26	WT %
ASH, AS RECEIVED	6.84	WT %
ASH, DRY	10.73	WT %
GROSS CALORIFIC VALUE, AS RECEIVED	6820	BTU/LB
GROSS CALORIFIC VALUE, DRY	10700	BTU/LB
GROSS CALORIFIC VALUE,DRY ASH-FREE	11990	BTU/LB
SULFUR, AS RECEIVED	0.68	WT %
SULFUR, DRY	1.07	WT %
SULFUR, DRY ASH-FREE	1.20	WT %
COAL WEIGHT	1	POUNDS
CHLORINE, DRY	104	MG/KG
MERCURY, DRY	0.056	MG/KG
MERCURY ON NIST1630A Reference range is 0.106+/-0.02	97	MG/KG

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Sample Date: **7/16/99**

LOS SPECIAL
LOS T3 Feeder 7
Lab Sample Number: **990029974**

Component		
MOISTURE, AS RECEIVED	36.37	WT %
ASH, AS RECEIVED	6.02	WT %
ASH, DRY	9.46	WT %
GROSS CALORIFIC VALUE, AS RECEIVED	6930	BTU/LB
GROSS CALORIFIC VALUE, DRY	10890	BTU/LB
GROSS CALORIFIC VALUE,DRY ASH-FREE	12030	BTU/LB
SULFUR, AS RECEIVED	0.58	WT %
SULFUR, DRY	0.91	WT %
SULFUR, DRY ASH-FREE	1.01	WT %
COAL WEIGHT	1	POUNDS
CHLORINE, DRY	77	MG/KG
MERCURY, DRY	<0.05	MG/KG
MERCURY ON NIST1630A Reference range is 0.106+/-0.02	0.097	MG/KG

BRAUNSM
INTERTEC

CMXX-99-0304

[redacted]

7/13/99 Pbar = 28.87

Meter Yc check

Inlet
meter 81231
$\gamma = 1.003$
$\Delta He = 1.829$

$V_i = 619.954$
$V_f = 627.678$

$Vm = 7.724$

$\overline{Tm} = 88$ (548°R)

$$Yc = \frac{10}{7.724}\left(\frac{0.0319 \times 548}{28.87}\right)^{1/2}$$

$Yc = 1.0074$

$0.97Y = 0.97(1.003)$
$= 0.9729$
$1.03Y = 1.03(1.003)$
1.0331
$0.9729 < 1.0074 < 1.0331$

OK

Outlet
meter 38758
$\gamma = 1.005$
$\Delta He = 1.811$

$V_i = 638.371$
$V_f = 646.012$

Vm 7.641

$\overline{Tm} = 75$ (535°R)

$$Yc = \frac{10}{7.641}\left(\frac{0.0319 \times 535}{28.87}\right)^{1/2}$$

$Yc = 1.0062$

$0.97Y = 0.97(1.005)$
$= 0.9749$
$1.03Y = 1.03(1.005)$
$= 1.0352$
$0.9749 < 1.0062 < 1.0352$

OK

List of Participants

Name	Organization	Project Role
Jerry Menge	BEPC	Air Quality Program Coordinator
Cris Miller	BEPC - AVS	Plant Contact/Process Monitor
Bruce Randall	Braun Intertec	Project Director/Test Team Leader
James Tryba	Braun Intertec	Inlet Sample Team Leader
David Hillesheim	Braun Intertec	Main Stack Sample Team Leader
Kevin Hoffman	Braun Intertec	Inlet Sample Technician
George Jansen	Braun Intertec	Main Stack Sample Technician
Ron McCloud	Phillips Analytical	Speciated Mercury Sample Analysis

CERTIFICATION SHEET

Having supervised and worked on the test program described in this report, and having written this report, I hereby certify the data, information, and results in this report to be accurate and true according to the methods and procedures used.

Data collected under the supervision of others is included in this report and is presumed to have been gathered in accordance with recognized standards.

MOSTARDI-PLATT ASSOCIATES, INC.

Bruce Randall

Bruce Randall
Regional Manager

Reviewed by:

Scott W. Banach

Scott W. Banach
Director, Project Engineering