EMISSION PERFORMANCE TESTING OF ONE COGENERATION TURBINE

SITE: 32nd STREET NAVAL STATION

San Diego, California

DATE: MAY 1991

Prepared For:

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1.0 INTRODUCTION

At the request of Sithe Energies, San Diego, California, Western Environmental Services (WES) conducted AB 2588 testing at the 32nd Street Naval Station, San Diego, California. The testing consisted of collecting samples on the exhaust of the cogeneration unit. The testing was performed from April 28 through April 30, 1991.

The sampling program consisted of collecting formaldehyde, benzene, 1,3 butadiene, and flow rate. While the turbine was using natural gas, formaldehyde and flow rates were measured at the stack outlet. While the turbine was using diesel oil, benzene, 1,3 butadiene, formaldehyde, and flow rates were determined at the stack outlet.

The unit is a cogeneration unit using either natural gas or diesel oil. The total output was 44 MW while on natural gas and 34 MW while on oil.

The following sections will be presented in this report: Summary of Results, Site Description, Sampling and Analytical Procedures, Quality Assurance, and Appendices. The appendices contain the Field and Laboratory data sheets, Gas Calibration Information, and Sample Calculations.

2.0 SUMMARY OF RESULTS

2.1 Discussion of Results

Tables 2.1 through 2.6 present the field testing results. Tables 2.1 and 2.2 show the formaldehyde test results without the blank while tables 2.5 and 2.6 show the formaldehyde test results including the blanks. Tables 2.3 summarizes the organic analysis. Table 2.4 shows the trace metal results.

The results are summarized below:

Condition	Test 1	Test 2	Test 3	Average
Stack Outlet				
Natural Gas				
Electrical Output, mw	44	44	44	44
Flow Rate, DSCFM				269,903**
Moisture, %				7.39
Fuel Flow Rate, KSCFH	474.4			
#/Sec		5.82	5.82	
Formaldehyde Results excluding the blank				
Formaldehyde, ppb	39.6	0.5	4.6	10.4
Formaldehyde, #/Day	1.219	0.015	0.142	.459
Formaldehyde Results including the blank				
Formaldehyde, ppb	78.5	0.5	16.3	31.8
Formaldehyde, #/Day	2.417	0.015	0.502	0.978

Condition	Test 1	2	3	Average
Stack Outlet				
[redacted]				
Electrical Output, mw	34	34	34	34
Stack Flow Rate, DSCFM				265,599**
Moisture, %				6.85
Fuel Flow Rate, #/Sec	6.42	6.41	6.41	6.41
Formaldehyde Results excluding the blank				
Formaldehyde, ppb	17.6	4.6		11.10
Formaldehyde, #/Day	0.533	0.139		0.336
Formaldehyde Results including the blank				
Formaldehyde, ppb	36.6	22.7		29.7
Formaldehyde, #/Day	1.109	0.688		0.899
Benzene, ppb	16	14	24	18
Benzene, #/Day	1.261	1.104	1.892	1.419
1,3 Butadiene, ppb	<7.5	<7.5	<7.5	<7.5
1,3 Butadiene, #/Day	0.409	0.409	0.409	0.409
Oil Analysis				
Arsenic, ug/kg	<1,000	<1,0000	<1,000	<1,000
Arsenic, #/1,000 gal	<0.0071	<0.0071	<0.0071	<0.0071
Beryllium, ug/kg	<100	<100	<100	<100
Beryllium, #/1,000 gal	<0.0007	<0.0007	<0.0007	<0.0007
Cadmium, ug/kg	<100	<100	<100	<100
Cadmium, #/1,000 gal	<0.0007	<0.0007	<0.0007	<0.0007
Chromium VI, ug/kg	<50	<50	<50	<50
Chromium VI, #/1,000 gal	<0.0004	<0.0004	<0.0004	<0.0004
Chromium Total, ug/kg	<50	<50	<50	<50
Chromium Total, #/1,000 gal	<0.0004	<0.0004	<0.0004	0.0004
Copper, ug/kg	640	<100	<100	213
Copper, #/ 1,000 gal	<0.0045	<0.0007	<0.0007	<0.0015
Lead, ug/kg	<50	<50	<50	<50
Lead, #/1,000 gal	<0.0004	<0.0004	<0.0004	<0.0004

Mercury, ug/kg	<100	<100	<100	<100
Mercury, #/1,000 gal	<0.0007	<0.0007	<0.0007	<0.0007
Nickel, ug/kg	<500	<500	<500	<500
Nickel, #/1,000 gal	<0.0035	<0.0035	<0.0035	<0.0035
Selenium, ug/kg	<100	<100	<100	<100
Selenium, #/1,000 gal	<0.0007	<0.0007	<0.0007	<0.0007
Zinc, ug/kg	280	240	<100	173
Zinc, #/1,000 gal	<0.0020	<0.0017	<0.0007	<0.0012
Manganese, ug/kg	<50	<50	<50	<50
Manganese #/1,000 gal	<0.0004	<0.0004	<0.0004	<0.0004
Density, g/ml	0.85	0.85	0.85	0.85
Sulfur, %	0.01	0.01	0.01	0.01
Sulfur, #/1,000 gal	.354	.354	.354	.354
Chloride, mg/kg	8	7	7	7.33
Chloride, #/1,000 gal	0.0071	0.0071	0.0071	0.0071

** The stack flow rate, DSCFM, calculation was based on the stack dimensions of 9'9" by 10'3" as shown in Figure 3.3, Stack Blue Prints.

2.2 Quality Assurance

The quality assurance procedures are outlined in Section 5.0. During the testing, the formaldehyde sampling system was checked for leaks prior to and after each test. The velocity equipment was checked for leaks and the temperature was checked at two points.

The heat trace line was checked for leaks by plugging the probe and determining the flow through a rotameter at the pump exhaust.

TABLE 2.1 FORMALDEHYDE CALCULATIONS

EXCLUDES BLANKS

SITE: SITHE
UNIT: Cogen – Natural Gas
DATE: April 29, 1991

PARAMETER	TEST 1	2	3	AVERAGE
HCHO	0.039	0.00053	0.015	0.018
Vm,FT(3)	26.783	27.907	89.041	47.910
Tm, F	75	82	74	77
Pb,"Hg	30.15	30.15	30.15	30.15
Dlta H, "h20	0.75	0.75	0.75	0.75
Meter Corr	1.041	1.041	1.041	1.041
HCHO, ppm	0.0396	0.0005	0.0046	0.0149
Vmstd, Ft(3)	27.779	28.571	92.524	49.624

TABLE 2.2 FORMALDEHYDE CALCULATIONS

EXCLUDES BLANKS

SITE: SITHE
UNIT: Cogen - Oil
DATE: April 30, 1991

PARAMETER	TEST 1	TEST 2	AVERAGE
HCHO	0.047	0.013	0.030
Vm,FT(3)	73.018	76.085	74.552
Tm, F	75	70	73
Pb,"Hg	30.10	30.10	30.10
Dlta H, "h20	0.75	0.75	0.75
Meter Corr	1.041	1.041	1.041
HCHO, ppm	0.0176	0.0046	0.0111
Vmstd, Ft(3)	75.607	79.526	77.566

TABLE 2.3 ORGANIC GC ANALYSIS

Site: Sithe – 32nd Naval Station
Unit: Cogeneration Unit – Oil Testing
Date: April 30, 1991

Parameter	Test 1	2	3	Average
Concentration, ppb				
Benzene	16	14	24	18
Butadiene	7.5	7.5	7.5	7.5
Emission Rate, #/Day				
Benzene	1.62	1.42	2.43	1.82
Butadiene	0.534	0.534	0.534	0.534
Detection Limit, ppb				
Benzene	5	5	5	
Butadiene	7.5	7.5	7.5	

TABLE 2.4 FUEL OIL ANALYSIS

SITE: SITHE
DATE: April 30, 1991

CONSTITUENT	DETECTION LIMIT (ug/kg)	TEST RESULTS 1	2	3	AVERAGE
Arsenic	1000.0	ND	ND	ND	ND
Beryllium	100.0	ND	ND	ND	ND
Cadmium	100.0	ND	ND	ND	ND
Chromium (VI)	50.0	ND	ND	ND	ND
Chromium (Total)	50.0	ND	ND	ND	ND
Copper	100.0	640	ND	ND	213
Lead	50.0	ND	ND	ND	ND
Mercury	100.0	ND	ND	ND	ND
Nickel	500.0	ND	ND	ND	ND
Selenium	100.0	ND	ND	ND	ND
Zinc	100.0	280	240	ND	173
Manganese	50.0	ND	ND	ND	ND
Chloride	1.00	8.00	7.00	7.00	7.33
Sulfur, *	0.005	0.01	0.01	0.01	0.01
Density		0.85	0.85	0.85	0.85

* percent by weight

TABLE 2.5 FORMALDEHYDE CALCULATIONS
INCLUDES BLANKS

SITE: SITHE
UNIT: Cogen - Natural Gas
DATE: April 29, 1991

PARAMETER	TEST 1	2	3	AVERAGE
HCHO	0.0773	0.0005	0.0533	0.044
Vm,FT(3)	26.783	27.907	89.041	47.910
Tm, F	75	82	74	77
Pb,"Hg	30.15	30.15	30.15	30.15
Dlta H, "h20	0.75	0.75	0.75	0.75
Meter Corr	1.041	1.041	1.041	1.041
HCHO, ppm	0.0785	0.0005	0.0163	0.0318
Vmstd, Ft(3)	27.779	28.571	92.524	49.624

TABLE 2.6 FORMALDEHYDE CALCULATIONS
INCLUDES BLANKS

SITE: SITHE
UNIT: Cogen - Oil
DATE: April 30, 1991

PARAMETER	TEST 1	TEST 2	AVERAGE
HCHO	0.098	0.064	0.081
Vm,FT(3)	73.018	76.085	74.552
Tm, F	75	70	73
Pb,"Hg	30.10	30.10	30.10
Dlta H, "h20	0.75	0.75	0.75
Meter Corr	1.041	1.041	1.041
HCHO, ppm	0.0366	0.0227	0.0297
Vmstd, Ft(3)	75.607	79.526	77.566

3.0 SITE DESCRIPTION

3.1 Stack Outlet

Samples were collected from a 136 x 136 inch vertical stack located approximately 50 feet above the ground level. Five ports, 4" diameter, were located on a single side of the stack. Figure 3.1 shows the sampling site while Figure 3.2 depicts the traverse point location.

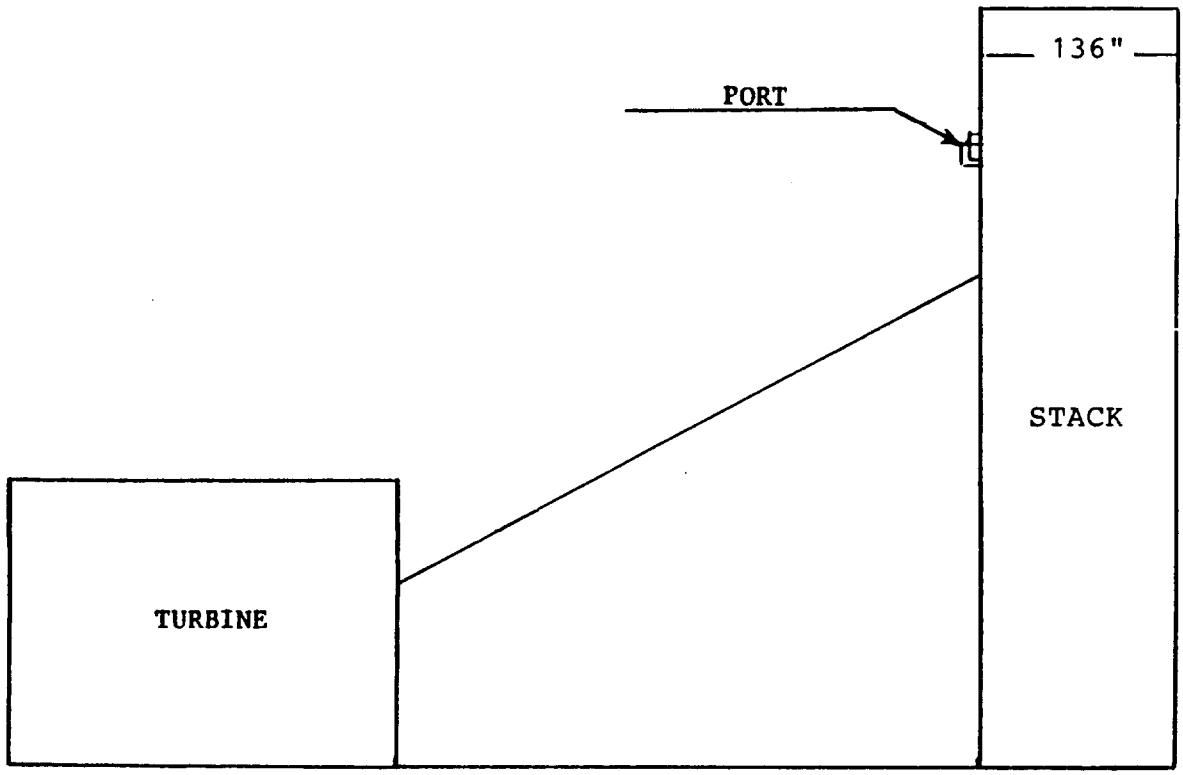
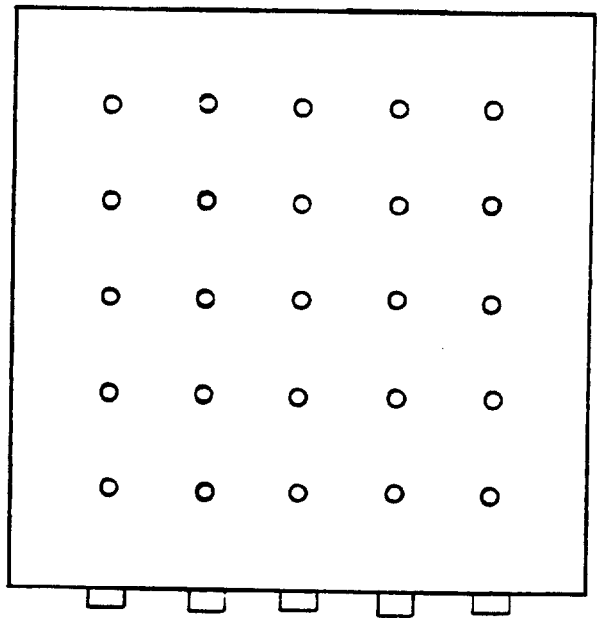
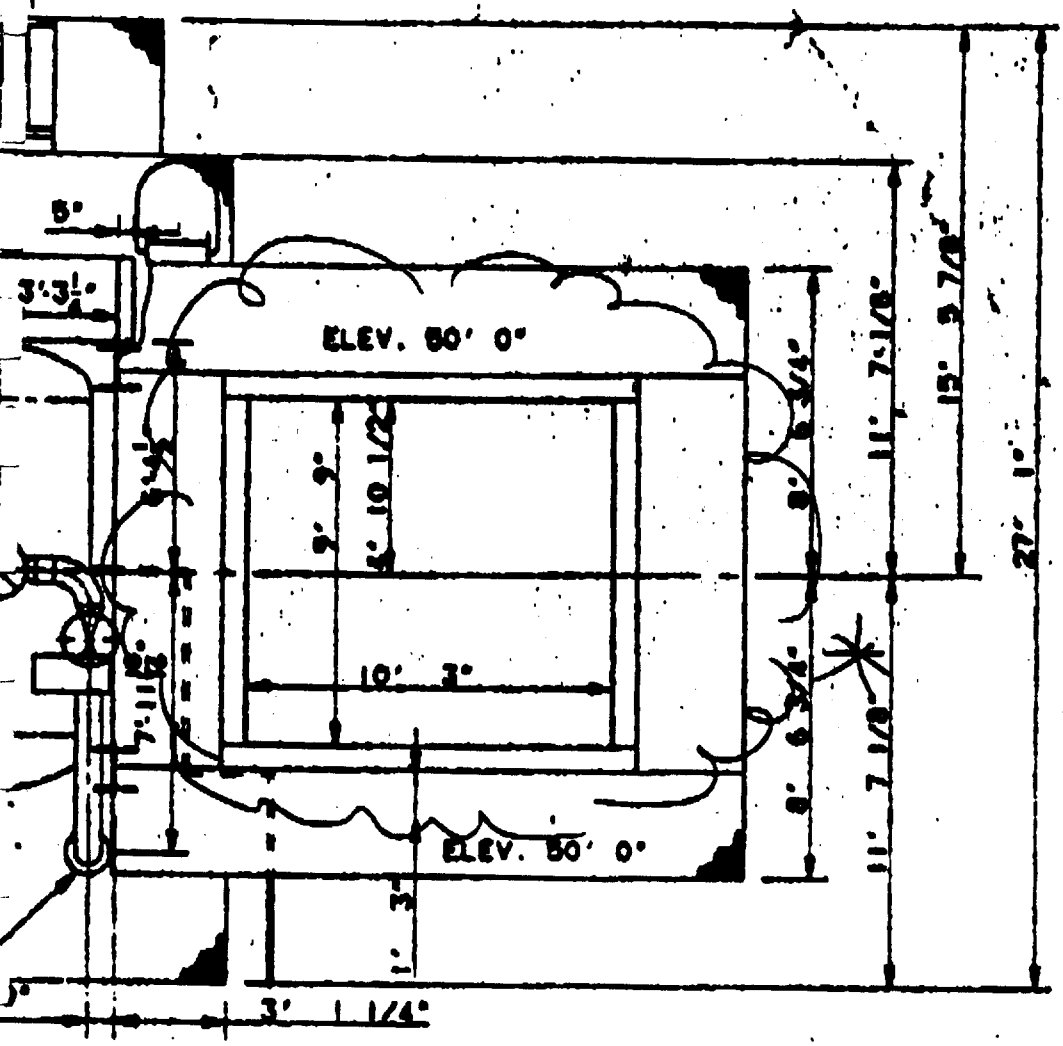


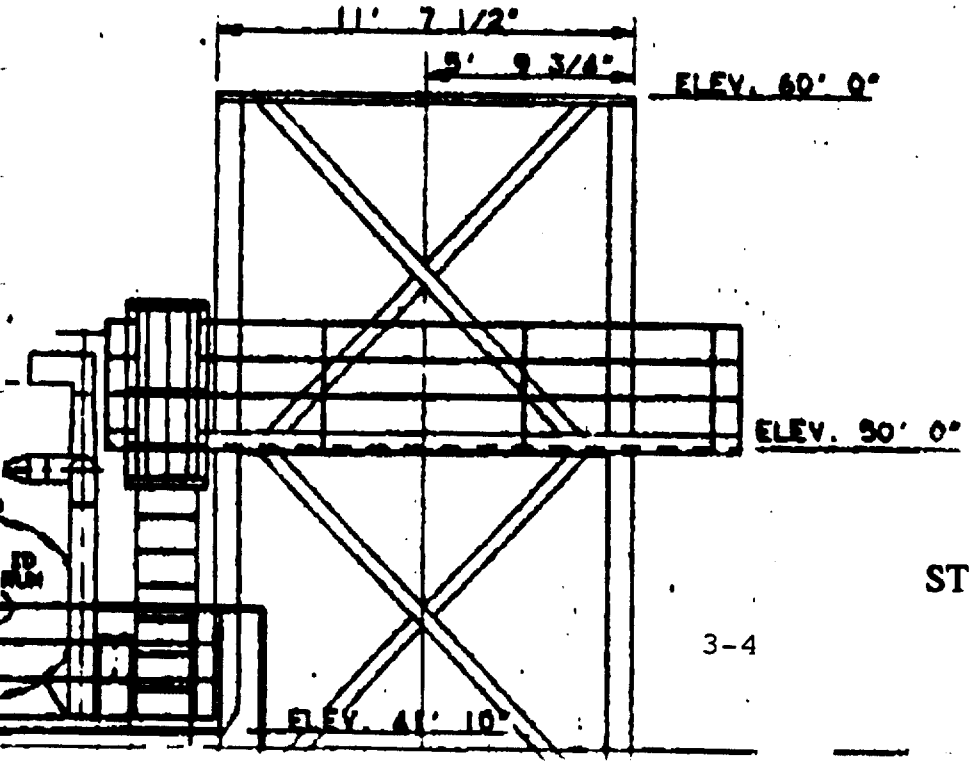
FIGURE 3.1 SITE SCHEMATIC



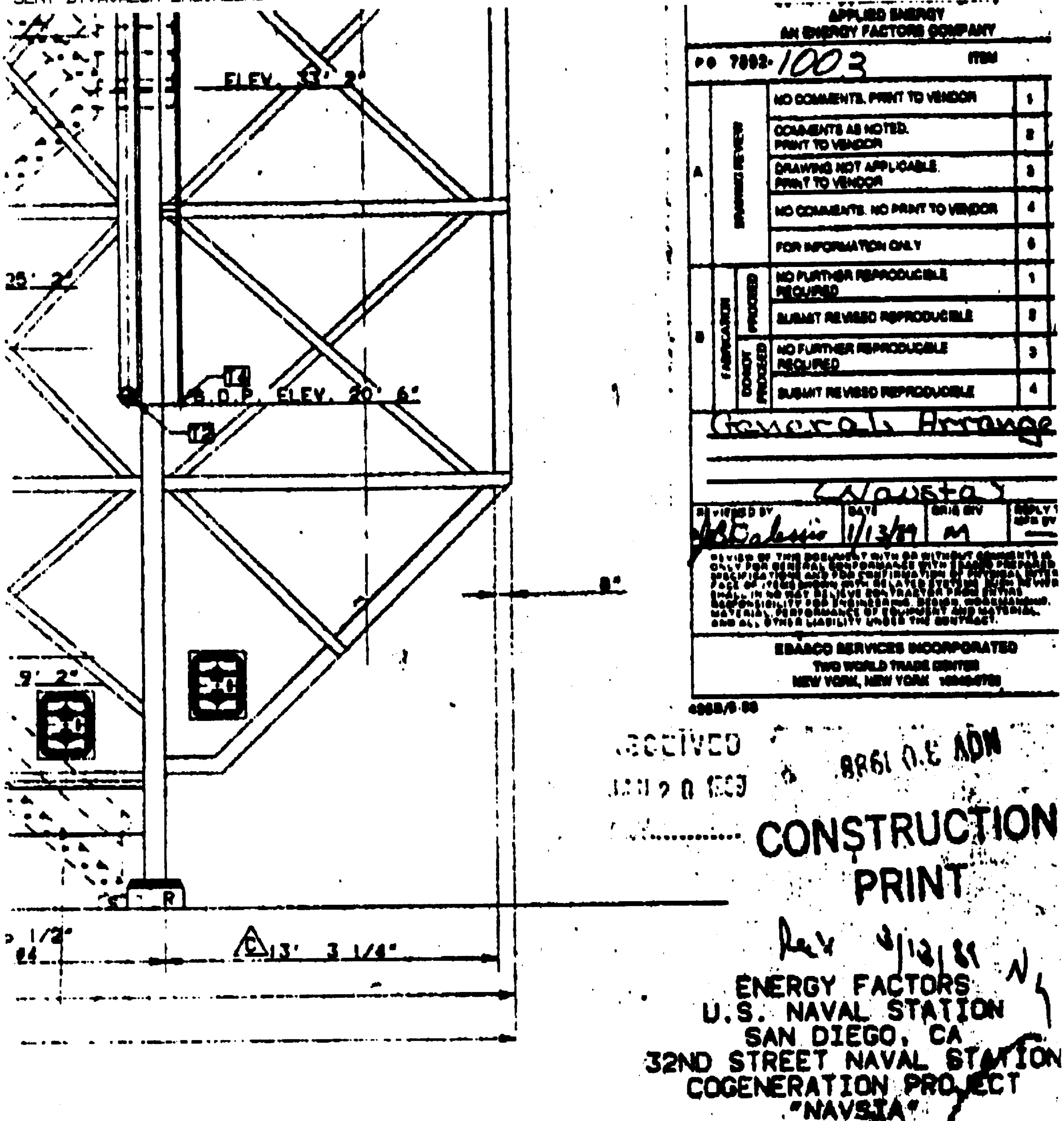
TRAVERSE POINT LOCATION STACK EXHAUST
FIGURE 3.2

TRAVERSE POINT	POINT LOCATION
1	23.1
2	50.3
3	77.5
4	104.7
5	131.9





STACK BLUE PRINTS
FIGURE 3.3



STACK BLUE PRINTS

FIGURE 3.3

(CONT)

DWN. BY: FRY

CKD. BY: AWM

RVD. BY: D.P.U.

DATE: 5-2-88

SCALE: 3/16" = 1'-0

HENRY VOGT MACHINE

Louisville, Ky.

GENERAL ARRANGEMENT

DWG. NO. D384-001D

4.0 SAMPLING AND ANALYTICAL PROCEDURES

4.1 Traverse Point Location

Traverse point locations were determined by utilizing EPA Method 1, "Sample and Velocity Traverses for Stationary Sources." Five points were used on each of five traverses.

4.2 Formaldehyde Sampling and Analysis

Samples were collected for formaldehyde by using a set of impingers containing DNPH reagent. The sampling train consisted of a probe, set of four impingers, pump, and dry gas meter. The sampling train was checked for leaks prior to and after the sampling by capping the probe. The leak test was less than 0.02 cfm at 15 inches of mercury. The sampling procedure followed CARB Method 430.

After sampling, the probe and impingers were recovered by using distilled water. The solutions were placed into an amber glass bottle. The sampling and analysis were performed by CARB 430. The laboratory analysis were conducted by Pyramid Laboratories, Huntington Beach, California.

4.3 Benzene Sampling and Analysis

Samples were collected into a tedlar bag from a heat trace line placed in the stack. The samples were collected by CHROMALAB personnel who stored the full teflon baags in the dark and transported them to the laboratory for analysis. The CARB 410 analysis was conducted by CHROMALAB personnel.

4.4 1,3 Butadiene Sampling and Analysis

Samples were collected from a heat trace line placed in the stack. The heat trace line was checked for leaks by plugging the inlet and watching the flow meter drop to zero. Samples were injected directly into a GC equipped with PID detector. The samples were compared with known standards prepared on-site. CHROMALAB, Inc. performed the on-site analysis. Appendix D presents the laboratory data by CHROMOLAB, Inc.

4.5 Fuel Sampling and Analysis

Triplicate fuel samples were collected and analyzed for metals, chloride and sulfur by the following methods. The triplicate grab samples were placed into 950 milliliter amber glass bottles. The analysis was performed by Del Mar Analytical, Irvine, California.

Constituent	EPA Method	Instrument
Arsenic	7060	AA
Berylium		AA
Cadmium	6010	ICP
Total Chromium	6010	ICP
Chromium +6	7197	Colorimetric
Copper	6010	ICP
Lead	7420	AA
Manganese	6010	ICP
Mercury	7471	AA
Nickel	6010	ICP
Selenium	7740	AA
Zinc	6010	ICP

4.6 Velocity Measurements

The stack gas volumetric flow rate was measured by using a calibrated Type "S" pitot tube which was connected to a magnehlic gauge. The stack temperature was measured simultaneously with the velocity pressures at individual traverse points utilizing a Type "K" chromel-alumel thermocouple wire attached to a digital readout.

4.7 Stack Gas Moisture

The stack gas moisture was measured by utilizing a probe, impingers, pump, and dry gas meter. The gas sample was drawn through a set of pre-measured impingers containing water. Before and after the sampling, the system was checked for leaks to insure a good sample. After completion of the sampling, the impingers were re-measured and the weight gain was used to calculate the stack gas moisture. The procedures followed EPA Method Four guidelines, "Determination of Moisture Content in Stack Gases."

5.0 QUALITY ASSURANCE

5.1 Field Equipment Quality Assurance

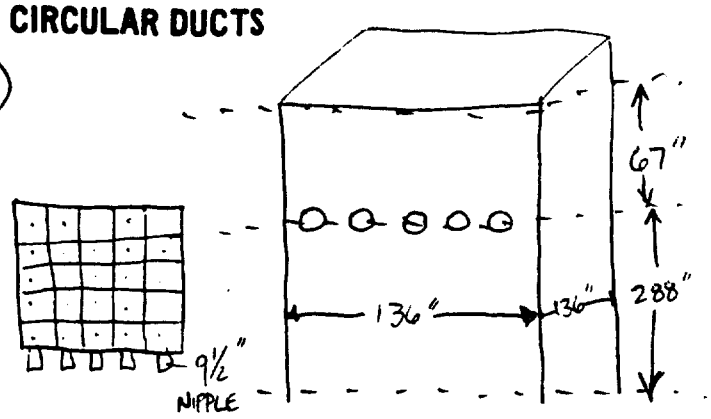
The calibration of the pitot tube, dry gas meter, digital thermometers, and manometers were performed by utilizing standard EPA Methodology, "Quality Assurance Handbook for Air Pollution Measurement Systems, Volume III, Stationary Source Specific Methods" (EPA-600/4-77-0278.

WESTERN ENVIRONMENTAL SERVICES

APPENDIX A

TRAVERSE POINT LOCATION FOR CIRCULAR DUCTS

PLANT SITHE COGEN OUTLET (NAVY BASE S.D.)
DATE 4/28/91
SAMPLING LOCATION COGEN OUTLET
INSIDE OF FAR WALL TO OUTSIDE OF NIPPLE, (DISTANCE A) 145½"
INSIDE OF NEAR WALL TO OUTSIDE OF NIPPLE, (DISTANCE B) 9½"
STACK I.D., (DISTANCE A - DISTANCE B) 136"
NEAREST UPSTREAM DISTURBANCE 67"
NEAREST DOWNSTREAM DISTURBANCE 288"
CALCULATOR H.P. 32 S



SCHEMATIC OF SAMPLING LOCATION

TRAVERSE POINT NUMBER	FRACTION OF STACK I.D.	STACK I.D.	PRODUCT OF COLUMNS 2 AND 3 (TO NEAREST 1/8 INCH)	DISTANCE B	TRAVERSE POINT LOCATION FROM OUTSIDE OF NIPPLE (SUM OF COLUMNS 4 & 5)
1		136"		9½"	23.1"
2		↓		↓	50.3"
3		↓		↓	77.5"
4		↓		↓	104.7"
5		↓		↓	131.9"

PA (Dur) 232
4/72

A00001

FIELD DATA

PLANT SITHE COGEN (NAVY BASE)
DATE 4/29/91
SAMPLING LOCATION COGEN OUTLET
SAMPLE TYPE MOISTURE / VELOCITY / TEMP.
RUN NUMBER # 1
OPERATOR MARLOTTE / HASTRITER
AMBIENT TEMPERATURE 90° F
BAROMETRIC PRESSURE 30.15
STATIC PRESSURE, (P_s) -0.75
FILTER NUMBER (s) —

NATURAL GAS
MOISTURE
VELOCITY / TEMP.
TEST #1

PROBE LENGTH AND TYPE # 30 (10')
NOZZLE I.D. —
ASSUMED MOISTURE, % —
SAMPLE BOX NUMBER —
METER BOX NUMBER WOOD # 91
METER $\Delta H_@$ —
C FACTOR —
PROBE HEATER SETTING —
HEATER BOX SETTING —
REFERENCE Δp #13 (0-2")

27 ml
+ 6 9
33 = VLC

SCHEMATIC OF TRAVERSE POINT LAYOUT

READ AND RECORD ALL DATA EVERY 10 MINUTES

preleak √L .005 cfm @ 15"

postleak √L .005 cfm @ 10"

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
					DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0	1:59	985.323									
1	10	2:09	991.690	1.40			345	78	80	7		
2	20	2:19	997.985	1.35			352	80	80	7		
3	30	2:29	1004.291	1.15			354	82	82	7		
4				0.90			358					
5				0.65			356					
1			18.968	1.40			348					
2				1.30			347					
3				1.00			346					
4				0.90			347					
5				0.60			346					
1				1.50			340					
2				1.35			347					
3				1.00			341					
4				0.86			342					
5				0.56			345					
1				1.50			347					
2				1.45			343					
3				1.10			345					
4				0.95			347					
5				0.60			345					
1				1.55			346					
2				1.45			345					
3				1.30			344					
				1.15			346					
				0.65			342					
				(1.30)			(347)	(80)				

COMMENTS:
4
EPA (Dur) 235
172

A00002

SITHE COGEN - 04/29/91
MOISTURE - NATURAL GAS

GAS METER READING	VELOCITY HEAD	SQUARE ROOT		ORIFICE PRESSURE DELTA H		STACK TEMPERATURE	DRY GAS METER TEMPERATURE	
985.323	1.4	1.183215				345	78	80
1004.291	1.35	1.161895				352	80	80
---	1.15	1.072380				354	82	82
18.968	0.9	0.948683				358		
=========	0.65	0.806225				356		
(DIFFERENCE)	1.4	1.183215				348		
	1.3	1.140175				347		
	1	1				346		
	0.9	0.948683				347		
	0.6	0.774596				346		
	1.5	1.224744				340		
	1.35	1.161895				347		
	1	1				341		
	0.86	0.927361				342		
	0.56	0.748331				345		
	1.5	1.224744				347		
	1.45	1.204159				343		
	1.1	1.048808				345		
	0.95	0.974679				347		
	0.6	0.774596				345		
	1.55	1.244989				346		
	1.45	1.204159				345		
	1.3	1.140175				344		
	1.15	1.072380				346		
	0.65	0.806225				342		
		---	AVERAGE SQUARED					
	AVERAGE	1.039053	1.080	AVERAGE	ERR	AVERAGE 347	AVERAGE	80
		=========	=========		==========	=========		=========

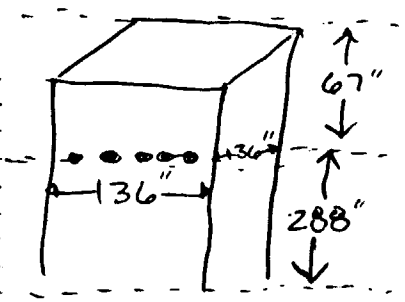
39 Megawatts

FIELD DATA

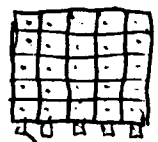
PLANT SYTHE COGEN (NAVY BASE) NATURAL GAS
DATE 4/28/91
SAMPLING LOCATION COGEN OUTLET
SAMPLE TYPE DMPH
RUN NUMBER # 1
OPERATOR MARCOTTE / MUZIK
AMBIENT TEMPERATURE 82° F
BAROMETRIC PRESSURE 30.15
STATIC PRESSURE, (P_s)
FILTER NUMBER (s)

DMPH
TEST # 1
4 HOURS

PROBE LENGTH AND TYPE 5' glass
NOZZLE I.D.
ASSUMED MOISTURE, %
SAMPLE BOX NUMBER
METER BOX NUMBER WOOD # 91
METER $\Delta H_@$
C FACTOR
PROBE HEATER SETTING
HEATER BOX SETTING
REFERENCE Δp



SCHEMATIC OF TRAVERSE POINT LAYOUT



Prelak ✓ .005 cfm @ 15"

READ AND RECORD ALL DATA EVERY 15 MINUTES

Postlak ✓ .005 cfm @ 5"

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
					DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0	7:47	841.314									
	15	8:02	842.305					82	84	1		
	30	8:17	842.965					82	84	1		
	45	8:32	844.655					80	82	1		
	60	8:47	846.420					80	82	1		
	75	9:02	848.275					76	78	1		
	90	9:17	850.070					76	78	1		
	105	9:32	852.055					74	76	1		
	120	9:47	853.975					70	72	1		
	135	10:02	855.805					68	70	1		
	150	10:17	857.570					68	70	1		
	165	10:32	859.355					68	70	1		
	180	10:47	861.180					70	70	1		
	195	11:02	862.830					72	72	1		
	210	11:17	864.581					72	72	1		
	225	11:32	866.335					72	74	1		
	240	11:47	868.097					72	74	1		
			26.783						75			

COMMENTS:

AOC001

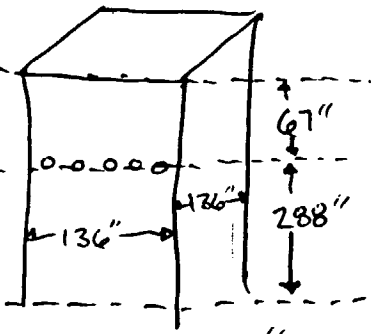
39 Megawatts

FIELD DATA

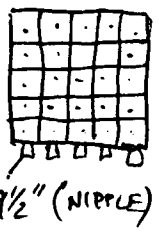
NATURAL GAS
DMPH
TEST #2
4 HOURS

PLANT SYTHE COGEN. (NAVY BASE)
DATE 4/28/91
SAMPLING LOCATION COGEN OUTLET
SAMPLE TYPE DMPH
RUN NUMBER #2
OPERATOR MARCOTTE/MUZIK
AMBIENT TEMPERATURE 76° F
BAROMETRIC PRESSURE 30.15
STATIC PRESSURE, (P_s) —
FILTER NUMBER (s) —

PROBE LENGTH AND TYPE 5' glass
NOZZLE I.D. —
ASSUMED MOISTURE, % —
SAMPLE BOX NUMBER —
METER BOX NUMBER WOOD #91
METER $\Delta H_@$ —
C FACTOR —
PROBE HEATER SETTING —
HEATER BOX SETTING —
REFERENCE Δp —



SCHEMATIC OF TRAVERSE POINT LAYOUT



preleak ✓ < .005 cfm @ 15"

READ AND RECORD ALL DATA EVERY 15 MINUTES

postleak ✓ < .005 cfm @ 5"

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0 12:02	868.161									
	15 12:17	870.410					76	76	2		
	30 12:32	872.680					78	78	2		
	45 12:47	874.945					78	78	2		
	60 1:02	877.180					80	80	2		
	75 1:17	879.365					82	80	2		
	90 1:32	881.555					82	80	2		
	105 1:47	883.070					84	82	2		
	120 2:02	884.540					84	84	1		
	135 2:17	886.015					84	84	1		
	150 2:32	887.510					84	86	1		
	165 2:47	888.905					84	86	1		
	180 3:02	890.565					86	86	1		
	195 3:17	891.970					86	84	1		
	210 3:32	893.265					86	84	1		
	225 3:47	894.640					84	82	1		
	240 4:02	896.068					82	80	1		
		27.907						82			

COMMENTS:

AOC005

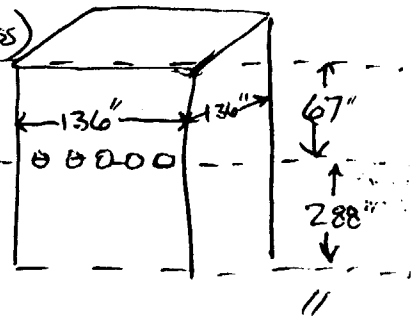
EPA (Dur) 235
4 72

PLANT SITHE COGEN (NAVY BASE) NATURAL GAS
DATE 4/29/91
SAMPLING LOCATION COGEN OUTLET
SAMPLE TYPE DMPH (NATURAL GAS)
RUN NUMBER # 3
OPERATOR MARLOTTE / HASTRITER
AMBIENT TEMPERATURE 72° F
BAROMETRIC PRESSURE 30.15
STATIC PRESSURE, (P_s)
FILTER NUMBER (s)

DMPH - TEST # 3

FORMALDAHYDE

PROBE LENGTH AND TYPE #28 - (5' glass)
NOZZLE I.D.
ASSUMED MOISTURE, %
SAMPLE BOX NUMBER
METER BOX NUMBER Wood # 91
METER $\Delta H_@$
C FACTOR
PROBE HEATER SETTING
HEATER BOX SETTING
REFERENCE Δp



SCHEMATIC OF TRAVERSE POINT LAYOUT

Preleak ✓ .005 cfm @ 15"

READ AND RECORD ALL DATA EVERY 15 MINUTES

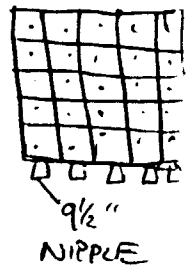
Postleak ✓ .005 cfm @ 5

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0 / 9:40	896.140									
	15 / 9:55	903.565					72	72	5		
	30 / 10:10	910.830					74	74	5		
	45 / 10:25	917.695					74	74	5		
	60 / 10:40	925.575					72	72	5		
	75 / 10:55	931.850					72	72	4		
	90 / 11:10	937.165					70	70	4		
	105 / 11:25	943.190					70	70	4		
	120 / 11:40	948.785					68	68	4		
	135 / 11:55	951.796					68	70	3		
*	150 / 12:10 ~~START 12:10~~	951.839	Preleak ✓ .005		cfm 15"	*	[illegible]				
↓	165 / 12:18 ~~12:25~~	956.760					72	72	3		
	180 / 12:33 ~~12:40~~	961.525					74	74	3		
	195 / 12:48 ~~12:55~~	966.270					~~80~~	78	3		
	210 / 1:03 ~~1:10~~	970.910					80	80	3		
	225 / 1:18 ~~1:25~~	975.775					80	80	3		
	~~240~~ / 1:33 ~~1:40~~	980.450					80	80	3		
	~~240~~ / 1:48	985.181					82	82	3		
		89.041						74			

A00003

* STOPPED FOR ADJUSTMENT @ 11:55

STARTED AGAIN @ 12:03



COMMENTS:

SITHE COGEN - NATURAL GAS
FORMALDAHYDE - TEST #1

GAS METER READING	VELOCITY HEAD	SQUARE ROOT		ORIFICE PRESSURE DELTA H		STACK TEMPERATURE	DRY GAS METER TEMPERATURE	
841.314		0					82	84
868.097		0					82	84
		0					80	82
26.783		0					80	82
		0					76	78
(DIFFERENCE)		0					76	78
		0					74	76
		0					70	72
		0					68	70
		0					68	70
		0					68	70
		0					70	70
		0					72	72
		0					72	72
		0					72	74
		0					72	74
			AVERAGE SQUARED					
	AVERAGE	0	0.000	AVERAGE	ERR	AVERAGE ERR	AVERAGE	75

SITHE COGEN - NATURAL GAS
FORMALDAHYDE - TEST #2

GAS METER READING	VELOCITY HEAD	SQUARE ROOT	ORIFICE PRESSURE DELTA H	STACK TEMPERATURE	DRY GAS METER TEMPERATURE	
868.161		0			76	76
896.068		0			78	78
---		0			78	78
27.907		0			80	80
=========		0			82	80
(DIFFERENCE)		0			82	80
		0			84	82
		0			84	84
		0			84	84
		0			84	86
		0			84	86
		0			86	86
		0			86	84
		0			86	84
		0			84	82
		0			82	80
		---	AVERAGE SQUARED			
	AVERAGE	0	0.000 AVERAGE ERR	AVERAGE ERR	AVERAGE	82
		=========	========= **********	=========		=========

SITHE COGEN - NATURAL GAS
FORMALDAHYDE - TEST #3

GAS METER READING	VELOCITY HEAD	SQUARE ROOT		ORIFICE PRESSURE DELTA H		STACK TEMPERATURE	DRY GAS METER TEMPERATURE	
896.140		0					72	72
985.181		0					74	74
		0					74	74
89.041		0					72	72
		0					72	72
(DIFFERENCE)		0					70	70
		0					70	70
		0					68	68
		0					68	70
		0					72	72
		0					74	74
		0					80	78
		0					80	80
		0					80	80
		0					80	80
		0					82	82
			AVERAGE SQUARED					
	AVERAGE	0	0.000	AVERAGE	ERR	AVERAGE ERR	AVERAGE	74

FIELD DATA

PLANT SITHE COGEN (NAVY BASE S.D.)
DATE 4/30/91
SAMPLING LOCATION COGEN OUTLET
SAMPLE TYPE MOISTURE/VELOCITY/TEMP
RUN NUMBER # 1
OPERATOR LUARCOTTE / HASTRITER
AMBIENT TEMPERATURE 65 F
BAROMETRIC PRESSURE 30.10
STATIC PRESSURE, (P_s) -0.65
FILTER NUMBER (s) —

OIL
MOISTURE/VELOCITY/TEMP.
TEST #1
(ALSO FOR Ph)

PROBE LENGTH AND TYPE # 30 (10')
NOZZLE I.D. —
ASSUMED MOISTURE, % —
SAMPLE BOX NUMBER —
METER BOX NUMBER WOOD # 91
METER $\Delta H_@$ —
C FACTOR —
PROBE HEATER SETTING —
HEATER BOX SETTING —
REFERENCE Δp # 3 (0-2")

24 ml
+ 5 g
29 = VLC

SCHEMATIC OF TRAVERSE POINT LAYOUT

preleak VC .005 cfm @ 15" READ AND RECORD ALL DATA EVERY 10 MINUTES postleak VC .005 cfm @ 10"

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0 / 8:11	004.520									
1	10 / 8:21	010.365	1.45			323	80	82	7		
2	20 / 8:31	016.590	1.32			327	80	84	6		
3	30 / 8:41	022.696	0.93			327	80	84	6		
4			0.80			331					
5			0.50			329					
1			1.37			320					
2			1.26			320					
3			0.98			316					
4			0.85			319					
5			0.55			319					
1			1.41			315					
2			1.30			313					
3			0.85			314					
4			0.82			315					
5			0.50			313					
1			1.35			315					
2			1.37			316					
3			1.03			318					
4			0.85			316					
5			0.52			322					
1			1.47			318					
2			1.40			323					
3			1.20			326					
4			1.07			330					
5			0.65			337					

COMMENTS:

EPA (Jun) 235

A0C010

SITHE COGEN - 04/30/91
MOISTURE - OIL

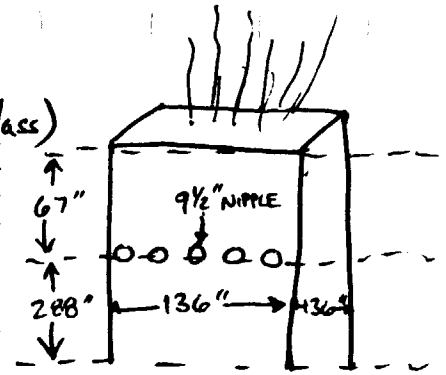
GAS METER READING	VELOCITY HEAD	SQUARE ROOT	ORIFICE PRESSURE DELTA H	STACK TEMPERATURE	DRY GAS METER TEMPERATURE	
4.520	1.45	1.204159		323	80	82
22.696	1.32	1.148912		327	80	84
---	0.93	0.964365		327	80	84
18.176	0.8	0.894427		331		
=========	0.5	0.707106		329		
(DIFFERENCE)	1.37	1.170469		320		
	1.26	1.122497		320		
	0.98	0.989949		316		
	0.85	0.921954		319		
	0.55	0.741619		319		
	1.41	1.187434		315		
	1.3	1.140175		313		
	0.85	0.921954		314		
	0.82	0.905538		315		
	0.5	0.707106		313		
	1.35	1.161895		315		
	1.37	1.170469		316		
	1.03	1.014889		318		
	0.85	0.921954		316		
	0.52	0.721110		322		
	1.47	1.212435		318		
	1.4	1.183215		323		
	1.2	1.095445		326		
	1.07	1.034408		330		
	0.65	0.806225		337		
		---	AVERAGE SQUARED			
	AVERAGE	1.001988	1.004 AVERAGE	ERR	AVERAGE 321	AVERAGE 82
		=========	=========	==========	=========	=========

FIELD DATA

PLANT SITHE COGEN (NAVY BASE S.D.)
DATE 4/30/91
SAMPLING LOCATION COGEN OUTLET
SAMPLE TYPE FORMALDAHYDE
RUN NUMBER #1
OPERATOR MARCOTTE / HASTRITER
AMBIENT TEMPERATURE 70° F
BAROMETRIC PRESSURE 30.10
STATIC PRESSURE, (P_s) —
FILTER NUMBER (s) —

OIL
FORMALDAHYDE
TEST # 1
2-HOURS

PROBE LENGTH AND TYPE #28 (5' glass)
NOZZLE I.D. —
ASSUMED MOISTURE, % —
SAMPLE BOX NUMBER —
METER BOX NUMBER WOOD #91
METER $\Delta H_@$ —
C FACTOR —
PROBE HEATER SETTING —
HEATER BOX SETTING —
REFERENCE Δp —



SCHEMATIC OF TRAVERSE POINT LAYOUT

Preleak V/L .005 cfm @ 17"

READ AND RECORD ALL DATA EVERY 15 MINUTES

Postleak V/L .005 cfm @ 17"

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0 / 9:09	022.920									
	15 / 9:24	031.935					74	76	5		
	30 / 9:39	040.780					76	76	5		
	45 / 9:54	050.115					78	78	5		
	60 / 10:09	059.730					76	76	6		
	75 / 10:24	068.895					74	74	6		
	90 / 10:39	079.010					72	74	6		
	105 / 10:54	087.560					72	72	6		
	120 / 11:09	095.938					74	72	6		
	~~135~~										
	~~150~~										
	~~165~~										
	~~180~~	23.018						75			
	~~195~~										
	~~210~~										
	~~225~~										
	~~240~~										

COMMENTS:

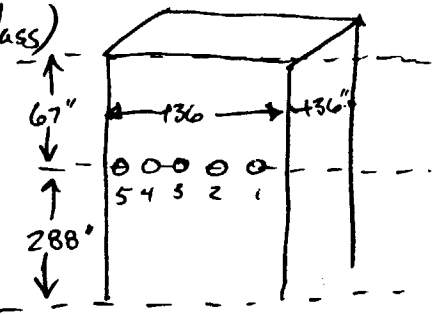
A00012

FIELD DATA

PLANT SITHE COGEN (NAVY BASE SD)
DATE 4/30/91
SAMPLING LOCATION COGEN OUTLET
SAMPLE TYPE FORMALDAHYDE
RUN NUMBER #2
OPERATOR MARLOTTE/MASTRITER
AMBIENT TEMPERATURE 70°F
BAROMETRIC PRESSURE 30.10
STATIC PRESSURE, (P_s)
FILTER NUMBER (s)

OIL
FORMALDAHYDE
TEST #2
2 - HOURS

PROBE LENGTH AND TYPE #28 (5' glass)
NOZZLE I.D.
ASSUMED MOISTURE, %
SAMPLE BOX NUMBER
METER BOX NUMBER WOOD #91
METER $\Delta H_@$
C FACTOR
PROBE HEATER SETTING
HEATER BOX SETTING
REFERENCE Δp



SCHEMATIC OF TRAVERSE POINT LAYOUT

READ AND RECORD ALL DATA EVERY 15 MINUTES

preleak ✓ L. 005 cfm @ 17"

postleak ✓ L. 005 cfm @ 15"

TRAVERSE POINT NUMBER	SAMPLING TIME, min	CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
					DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0	11:37	097.118									
	15	11:52	107.090					74	74	6		60
	30	12:07	116.710					74	74	6		58
	45	12:22	126.285					72	72	6		58
	60	12:37	135.800					70	70	6		58
	75	12:52	145.365					68	70	6		57
	90	1:07	154.735					68	68	6		56
	105	1:22	163.990					68	68	6		56
	120	1:37	173.203					68	68	6		56
			76.085						70			

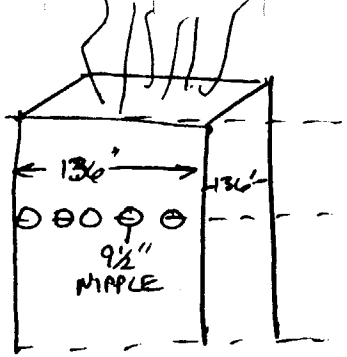
COMMENTS:

FIELD DATA

PLANT SITHE COGEN (NAVY BASE S.D.)
DATE 4/30/91
SAMPLING LOCATION COGEN OUTLET
SAMPLE TYPE FORMALDAHYDE
RUN NUMBER # 3
OPERATOR MARCOTTE / MASTRITER
AMBIENT TEMPERATURE 70°F
BAROMETRIC PRESSURE 30.10
STATIC PRESSURE, (P_s) —
FILTER NUMBER (s) —

OIL
FORMALDAHYDE
TEST # 3
2 HOURS

PROBE LENGTH AND TYPE # 28 (5' glass)
NOZZLE I.D. —
ASSUMED MOISTURE, % —
SAMPLE BOX NUMBER —
METER BOX NUMBER WOOD # 91
METER $\Delta H_@$ —
C FACTOR —
PROBE HEATER SETTING —
HEATER BOX SETTING —
REFERENCE Δp —



SCHEMATIC OF TRAVERSE POINT LAYOUT

READ AND RECORD ALL DATA EVERY 15 MINUTES

Preleak ✓ L. Gun @ 17" Postleak ✓ L. Gun @ "

TRAVERSE POINT NUMBER	SAMPLING TIME, min / CLOCK TIME (24-hr CLOCK)	GAS METER READING (V_m), ft^3	VELOCITY HEAD (Δp_s), in. H_2O	ORIFICE PRESSURE DIFFERENTIAL (ΔH), in. H_2O		STACK TEMPERATURE (T_s), °F	DRY GAS METER TEMPERATURE		PUMP VACUUM, in. Hg	SAMPLE BOX TEMPERATURE, °F	IMPINGER TEMPERATURE, °F
				DESIRED	ACTUAL		INLET ($T_{m\,in}$), °F	OUTLET ($T_{m\,out}$), °F			
	0 / 2:04	173.427									
STOPPED *	15 / 2:19	182.835					76	78	6		60
	~~30~~ / ~~2:34~~						74	76	6		
	~~45~~ / ~~2:49~~										
	~~60~~ / ~~3:04~~										
	~~75~~ / ~~3:19~~										
	~~90~~ / ~~3:34~~										
	~~105~~ / ~~3:49~~										
	~~120~~ / ~~4:04~~										
		9.408						76 ✓			

COMMENTS:

AOC014

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4-72

SITHE COGEN - OIL
FORMALDAHYDE - TEST #1

GAS METER READING	VELOCITY HEAD	SQUARE ROOT	ORIFICE PRESSURE DELTA H	STACK TEMPERATURE	DRY GAS METER TEMPERATURE	
22.920		0			74	76
95.938		0			76	76
		0			78	78
73.018		0			76	76
		0			74	74
(DIFFERENCE)		0			72	74
		0			72	72
		0			74	72
			AVERAGE SQUARED			
	AVERAGE	0	0.000 AVERAGE ERR	AVERAGE ERR	AVERAGE	75

FORMALDAHYDE - TEST #2

GAS METER READING	VELOCITY HEAD	SQUARE ROOT	ORIFICE PRESSURE DELTA H	STACK TEMPERATURE	DRY GAS METER TEMPERATURE	
97.118		0			74	74
173.203		0			74	74
		0			72	72
76.085		0			70	70
		0			68	70
(DIFFERENCE)		0			68	68
		0			68	68
		0			68	68
			AVERAGE SQUARED			
	AVERAGE	0	0.000 AVERAGE ERR	AVERAGE ERR	AVERAGE	70

FORMALDAHYDE - TEST #3

GAS METER READING	VELOCITY HEAD	SQUARE ROOT	ORIFICE PRESSURE DELTA H	STACK TEMPERATURE	DRY GAS METER TEMPERATURE	
173.427		0			76	78
182.835		0			74	76
		0				
9.408		0				
		0				
(DIFFERENCE)		0				
			AVERAGE SQUARED			
	AVERAGE	0	0.000 AVERAGE ERR	AVERAGE ERR	AVERAGE	76

WESTERN ENVIRONMENTAL SERVICES

APPENDIX B

WESTERN ENVIRONMENTAL SERVICES

PITOT TUBE CALIBRATION

Date: October 4, 1989
Calibrated by: Ty Hastriter
Number: 30
Source: Magnehlic 0-2"

Delta P std	Delta P leg 1	Delta P leg 2	Cp leg 1	Cp leg 2
1.32	1.81	2.15	0.85	0.78
0.97	1.20	1.28	0.90	0.87
0.34	0.47	0.51	0.85	0.82
		Averages	0.87	0.82
		Average	0.85	

WESTERN ENVIRONMENTAL SERVICES

GAS METER CALIBRATION

Meter Number: Wood
Barometric Pressure: 29.92
Date: April 9,1991
Calibrated By: J. T. Hastriter

Orifice	Standard Meter Start	Standard Meter Finish	Temp F	Test Meter Start	Test Meter Finish	Temp F	Time Min	V	Delta H
0.50	547.233	551.584	67	666.600	670.805	66	10	1.031	1.48
0.50	551.584	555.934	67	670.805	675.016	68	10	1.034	1.47
1.00	556.910	563.296	67	675.950	682.196	69	10	1.024	1.36
1.00	563.296	569.632	67	682.196	688.293	71	10	1.045	1.38
2.00	571.682	580.576	68	690.252	698.660	73	10	1.063	1.40
2.00	580.576	589.513	69	698.660	707.205	74	10	1.051	1.39
						Average		1.041	1.41

WESTERN ENVIRONMENTAL SERVICES

APPENDIX C

WESTERN ENVIRONMENTAL SERVICES

NOMENCLATURE

%CO	Percent CO by volume, dry
$\%CO_2$	Percent CO_2 by volume, dry
%EA	Percent excess air in stack gas
%I	Percent Isokinetic
%M	Percent Moisture in Stack Gas, by Volume
$\%N_2$	Percent N_2 by volume, dry
$\%O_2$	Percent O_2 by volume, dry
A_s	Stack Area, ft^2
C_p	Pitot Tube Coefficient
C_{sf}	Particulate concentrations at standard conditions (1), dry, based on probe, cyclone and filter catch, GRS/SDCF
C_{st}	Particulate concentration at standard conditions (1), dry, based on total catch, GRS/SDCF
D_n	Sampling nozzle diameter, in.
E_f	Particulate emission rate, based on probe, cyclone and filter catch, lbs/hr
E_t	Particulate emission rates based on total particulate catch, lbs/hr
I_c	Percent of particulate caught in impingers
M_d	Mole Fraction Dry Stack Gas
M_f	Particulate collected in probe, cyclone and filter, mg.
M_t	Total particulate collected mg.
MW	Molecular Weight of Wet Stack Gas, gm/gm-mole
MW_c	Molecular Weight of Chemical
MW_d	Molecular Weight of Dry Stack Gas, gm/gm-mole
P	Velocity head, in. H_2O
P_b	Barometric Pressure, in. Hg.
PE_f	Particulate emission rate on a process basis, probe, cyclone and filter catch
PE_t	Particulate emission rate on a process basis, Total catch
P_m	Average Orifice Pressure Drop, in. Hg.

WESTERN ENVIRONMENTAL SERVICES

NOMENCLATURE

(CONT)

PPM	Parts per million
P_s	Stack Gas Pressure, in. Hg., absolute
P_u	Unit process rate
Q_a	Stack Gas Flow Rate at Stack Conditions, ft^3/min
Q_s	Stack Gas Flow Rate at Standard Conditions (1), dry ft^3/min
T_m	Average Dry Gas Meter Temperature, ^oF.
T_s	Stack Gas Temperature, ^oF
T_s	Average Stack Gas Temperature, ^oF
T_{std}	Standard Temperature, ^oF
T_t	Net time of test min.
V_m	Volume of Dry Gas Sampled at Meter Conditions, ft^3
$V_{m_{std}}$	Volume of Dry Gas Sampled at Standard Conditions (1), ft^3
V_s	Average Stack Gas Velocity, Stack Conditions, ft/sec
V_w	Total H_2O Collected in Impingers and Silica Gel, ml
$V_{w_{std}}$	Volume of Water Vapor Collected at Standard Conditions (1), ft^3

WESTERN ENVIRONMENTAL SERVICES

CALCULATIONS

1. Volume of water vapor at standard conditions [1]

$$V_{w_{std}} = .00267 * \frac{460 + T_{std}}{29.92} * Vlc$$

2. Volume of dry gas sampled at standard conditions [1]

$$V_{m_{std}} = 17.64 * \frac{V_m (P_b + P_m)}{(T_m + 460)}$$

3. Percent moisture in stack gas by volume.

$$\%M = \frac{100 * V_{w_{std}}}{V_{w_{std}} + V_{m_{std}}}$$

4. Mole fraction dry stack gas.

$$M_s = \frac{100 - \%M}{100}$$

5. Molecular weight of dry stack gas (gm/gm - Mole)

$$MW_d = [(\% CO_2 * .44) + (\% O_2 * .32) + (\% N_2 * .28) + (\% CO * .28) + (\% \text{ Additional Gas} * \text{MW of Additional Gas})]$$

6. Molecular weight of wet stack gas (gm/gm - Mole)

$$MW + (18 * Bwo) + [(1-Bwo) * MW_d]$$

7. Stack gas velocity at stack conditions [2], (ft/sec)

$$V_s = 85.49 * CP * \sqrt{\Delta P} * \frac{\sqrt{(T_s + 460)}}{Ms * P_s}$$

8. Stack gas volumetric flow rate at stack conditions.

$$Q_a = V_s * A_s * 60$$

CALCULATIONS

9. Stack gas volumetric folw rate at standard conditions [1]

$$Q_s = Q_a * \frac{528}{460 + T_s} * \frac{P_s}{29.92} * (1.00 - Bwo)$$

10. Percent isokinetic

$$\%I = \left[\frac{(T_s + 460) * V_{m\,std}}{P_s * V_s * AN * T_t} * (1 - Bwo) \right] * .0945$$

11. Particulate Concentrations at standard conditions [1], dry, based on probe, cyclone and filter catch.

$$C_{sf} = \frac{M_f * 15.43}{V_{m\,std} * 1000}$$

12. Particulate concentration at standard conditions [1], dry, based on total catch.

$$C_{st} = \frac{M_t * 15.43}{V_{m\,std} * 1000}$$

13. Particulate emission rate, based on probe, cyclone, and filter catch.

$$E_f = \frac{M_f * 60 * Q_s}{454,000 * V_{m\,std}}$$

14. Particulate emission rate, based on total catch.

$$E_t = \frac{M_t * 60 * Q_s}{454,000 * V_{m\,std}}$$

CALCULATIONS

15. Particulate emission rate on a process basis, probe, cyclone, and filter catch.

$$PE_f = \frac{E_f}{P_u}$$

16. Particulate emission rate on a process basis, total catch.

$$PE_t = \frac{E_t}{P_u}$$

17. Particulate emission rate, part per million.

$$ppm = \frac{M_t}{V_{m_{std}}} * \frac{863.3}{MW_c}$$

(1) Standard conditions: 68^0, 29.92 "Hg

(2) $\sqrt{\Delta P_s * (T_s + 460)}$ is determined by averaging the square root of the product of the velocity head (ΔP_s) and the absolute stack temperature (T_s + 460) for each indibidual point

WESTERN ENVIRONMENTAL SERVICES

SITHE – NATURAL GAS
APRIL 29, 1991

SAMPLE CALCULATIONS– NON–PARTICULATES

Pb=	30.15	Ts=	347.00
Delta H	0.75	Tstd=	68.00
Pm=	0.06	P=	1.080
Tm	80.00	Stac Area, Ft(2)	99.94
Vm=	18.968		
Vlc=	33.00		
cp=	0.85	Pst=	–0.75
%O2=	20.95	Ps	30.09
%CO2=	0.00		
%N2=	79.05		
Meter corr	1.041		

Water Vapor at Std Conditions
Vwstd=.00267*((460+Tstd)/29.92)*Vlc
Vwstd= 1.55

Gas Sampled Std=(17.64*Vm*Mc*((Pb+Pm)/(Tm+460)))
Vmstd= 19.483

Percent Moisture
%M=(100*(Vwstd/(Vwstd+Vmstd)))
%M= 7.39

Molecular Weight of Dry Stack Gas
MWd=(%CO2*.44)+(%O2*.32)+((%N2+%CO)*.28)
MWd= 28.84

Molecular Weight of Wet Stack Gas
Mw=MWd*(1–(%M/100))+(18*(%M/100))
Mw= 28.04

Stack Gas Velocity
Vs=85.49*cp*(p^.5)*((460+Ts)/(Ps*Ms))^.5
Vs= 73.85

Volumetric Flow Rate, ACFM
ACFM= Vs * SA * 60
ACFM= 442856

Volumetric Flow Rate DSCFM
DSCFM= ACFM*(528/(460+Ts))*(Ps/29.92)*(1.00–(%M/100))
DSCFM= 269903

C00006

WESTERN ENVIRONMENTAL SERVICES

SITHE COGEN – NATURAL GAS
EXCLUDES BLANKS

SAMPLE CALCULATIONS – FORMALDEYDE
TEST #1

Gas Concentration (ppm)	0.0396
Gas Molecular Weight (MW)	30.03
Volumetric Flow Rate (DSCFM)	269903

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.05	lbs/day=	1.219499	lbs/yr=	445.1172
				tons/yr=	0.222558

TEST #2

Gas Concentration (ppm)	0.0005
Gas Molecular Weight (MW)	30.03
Volumetric Flow Rate (DSCFM)	269903

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.00	lbs/day=	0.015397	lbs/yr=	5.620166
				tons/yr=	0.002810

TEST #3

Gas Concentration (ppm)	0.0046
Gas Molecular Weight (MW)	30.03
Volumetric Flow Rate (DSCFM)	269903

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.01	lbs/day=	0.141658	lbs/yr=	51.70553
				tons/yr=	0.025852

WESTERN ENVIRONMENTAL SERVICES

SITHE COGEN - NATURAL GAS
INCLUDES BLANKS

SAMPLE CALCULATIONS - FORMALDEYDE
TEST #1

Gas Concentration (ppm)	0.0785
Gas Molecular Weight (MW)	30.03
Volumetric Flow Rate (DSCFM)	269903

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.10	lbs/day=	2.417441	lbs/yr=	882.3661
				tons/yr=	0.441183

TEST #2

Gas Concentration (ppm)	0.0005
Gas Molecular Weight (MW)	30.03
Volumetric Flow Rate (DSCFM)	269903

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.00	lbs/day=	0.015397	lbs/yr=	5.620166
				tons/yr=	0.002810

TEST #3

Gas Concentration (ppm)	0.0163
Gas Molecular Weight (MW)	30.03
Volumetric Flow Rate (DSCFM)	269903

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.02	lbs/day=	0.501965	lbs/yr=	183.2174
				tons/yr=	0.091608

WESTERN ENVIRONMENTAL SERVICES

SITHE - [redacted]
APRIL 30, 1991

SAMPLE CALCULATIONS- NON-PARTICULATES

Pb=	30.10	Ts=	321.00
Delta H	0.75	Tstd=	68.00
Pm=	0.06	P=	1.004
Tm	82.00	Stac Area, Ft(2)	99.94
Vm=	18.176		
Vlc=	29.00		
cp=	0.85	Pst=	-0.65
%O2=	20.95	Ps	30.05
%CO2=	0.00		
%N2=	79.05		
Meter corr	1.041		

Water Vapor at Std Conditions
Vwstd=.00267*((460+Tstd)/29.92)*Vlc
Vwstd= 1.37

Gas Sampled Std=(17.64*Vm*Mc*((Pb+Pm)/(Tm+460)))
Vmstd= 18.570

Percent Moisture
%M=(100*(Vwstd/(Vwstd+Vmstd)))
%M= 6.85

Molecular Weight of Dry Stack Gas
MWd=(%CO2*.44)+(%O2*.32)+((%N2+%CO)*.28)
MWd= 28.84

Molecular Weight of Wet Stack Gas
Mw=MWd*(1-(%M/100))+(18*(%M/100))
Mw= 28.10

Stack Gas Velocity
Vs=85.49*cp*(p^.5)*((460+Ts)/(Ps*Ms))^.5
Vs= 70.03

Volumetric Flow Rate, ACFM
ACFM= Vs * SA * 60
ACFM= 419918

Volumetric Flow Rate DSCFM
DSCFM= ACFM*(528/(460+Ts))*(Ps/29.92)*(1.00-(%M/100))
DSCFM= 265599

WESTERN ENVIRONMENTAL SERVICES

SITHE COGEN - [redacted]
EXCLUDES BLANKS

SAMPLE CALCULATIONS - [redacted]
TEST #1

Gas Concentration (ppm)	0.0176
Gas Molecular Weight (MW)	30.03
Volumetric Flow Rate (DSCFM)	265599

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.02	lbs/day=	0.533356	lbs/yr=	194.6751
				tons/yr=	0.097337

TEST #2

Gas Concentration (ppm)	0.0046
Gas Molecular Weight (MW)	30.03
Volumetric Flow Rate (DSCFM)	265599

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.01	lbs/day=	0.139400	lbs/yr=	50.88101
				tons/yr=	0.025440

WESTERN ENVIRONMENTAL SERVICES

SITHE COGEN – [redacted]
[redacted]S BLANKS

SAMPLE CALCULATIONS – [redacted]E
TEST #1

Gas Concentration (ppm)	0.0366
Gas Molecular Weight (MW)	30.03
Volumetric Flow Rate (DSCFM)	265599

0.093 not corrected for Blanks

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.05	lbs/day=	1.109139	lbs/yr=	404.8358
				tons/yr=	0.202417

TEST #2

Gas Concentration (ppm)	0.0227
Gas Molecular Weight (MW)	30.03
Volumetric Flow Rate (DSCFM)	265599

0.064 ppm not corrected for Blanks

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.03	lbs/day=	0.687908	lbs/yr=	251.0867
				tons/yr=	0.125543

Formaldehyde see PP. D0004

WESTERN ENVIRONMENTAL SERVICES

SITHE COGEN – [redacted]

SAMPLE CALCULATIONS – [redacted]e

TEST #1

Gas Concentration (ppm)	0.0075
Gas Molecular Weight (MW)	54.09
Volumetric Flow Rate (DSCFM)	265599

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.02	lbs/day=	0.409381	lbs/yr=	149.4241
				tons/yr=	0.074712

TEST #2

Gas Concentration (ppm)	0.0075
Gas Molecular Weight (MW)	54.09
Volumetric Flow Rate (DSCFM)	265599

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.02	lbs/day=	0.409381	lbs/yr=	149.4241
				tons/yr=	0.074712

TEST #3

Gas Concentration (ppm)	0.0075
Gas Molecular Weight (MW)	54.09
Volumetric Flow Rate (DSCFM)	265599

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.02	lbs/day=	0.409381	lbs/yr=	149.4241
				tons/yr=	0.074712

WESTERN ENVIRONMENTAL SERVICES

SITHE COGEN - [redacted]

[redacted] - [redacted]

TEST #1

Gas Concentration (ppm)	0.016
Gas Molecular Weight (MW)	78.11
Volumetric Flow Rate (DSCFM)	265599

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.05	lbs/day=	1.261177	lbs/yr=	460.3299
				tons/yr=	0.230164

TEST #2

Gas Concentration (ppm)	0.014
Gas Molecular Weight (MW)	78.11
Volumetric Flow Rate (DSCFM)	265599

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.05	lbs/day=	1.103530	lbs/yr=	402.7886
				tons/yr=	0.201394

TEST #3

Gas Concentration (ppm)	0.024
Gas Molecular Weight (MW)	78.11
Volumetric Flow Rate (DSCFM)	265599

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.08	lbs/day=	1.891766	lbs/yr=	690.4948
				tons/yr=	0.345247

WESTERN ENVIRONMENTAL SERVICES

SITHE COGEN – [redacted]

[redacted]S

SAMPLE CALCULATIONS – [redacted]

Gas Concentration (ppm)	0.005
Gas Molecular Weight (MW)	78.11
Volumetric Flow Rate (DSCFM)	265599

Lbs/Hr=((ppm*DSCFM)/(379*10^6))*MW*60

Lbs/Hr=	0.02	lbs/day=	0.394118	lbs/yr=	143.8530
				tons/yr=	0.071926

Sample Calculations

Oil Analysis

$.946\,l/1\,qt \times 4\,qt/1\,gal = 3.784\,l$

$3.784\,l/gal \times 1000\,ml/l = 3,7840\,ml/gal$

$3.7840\,ml/gal \times .85\,gram/ml = 3,216\,g/gal$

$3,216\,g/gal \times 1000\,gal = 3,216,400\,g/1000\,gal$

$3,216,400\,g/1000\,gal \times \frac{1\,\#}{454\,g} = 7,084\,\#/1,000\,gal$

$3,216,400\,g/1000\,gal \times \frac{1\,kg}{1,000\,g} = 3,216.40\,kg/1,000\,gal$

Arsenic

$mg/kg \times \frac{3,216.40\,kg}{454,000,000\,mg/\#} = \frac{\#\ of\ Arsenic}{1,000\,gal}$

$mg/kg = .0071 = \frac{\#\ of\ Arsenic}{1,000\,gal}$

WESTERN ENVIRONMENTAL SERVICES

APPENDIX D

Pyramid Laboratories

HPLC • IC • Consulting

5702 Bolsa Avenue, Huntington Beach, California 92649 (714) 893-1012

LABORATORY REPORT

Date: May 3, 1991

Client: Western Environment Services

Analysis: [redacted]

Date Received: 4.29.91, 5.1.91
Date Analyzed: 5.2.91

Matrix: Liquid

Sample Number	Results mg/L	Det. Lmt. mg/L	Original Volume
91-Sythe-Cogen-Test #1	1.03	0.007	75 mL
91-Sythe-Cogen-Test #2	0.40	0.007	75 mL
91-DNPH-Blank	0.51	0.003	180 mL
91-Sithe-Gas #3	0.71	0.007	75 mL
91-Sithe-Oil #1	0.98	0.005	100 mL
91-Sithe-Oil #2	0.64	0.005	100 mL

Q C DATA: Spike Recovery 85%

Spike Duplicate Recovery 128%

Medhat Gorgy
Lab Manager

D00001

SITHE - FORMALDEHYDE
NATURAL GAS

TEST	RESULTS	BLANK	SAMPLE	HCHO
1	1.03	0.51	75	0.039
2	0.007	0	75	0.000525
3	0.71	0.51	75	0.015
AVERAGE				0.019762

SITHE - FORMALDEHYDE
NATURAL GAS - DETECTION LIMITS

TEST	RESULTS	BLANK	SAMPLE	HCHO
1	0.007	0.003	75	0.0003
2	0.007	0.003	75	0.0003
3	0.007	0.003	75	0.0003
AVERAGE				0.0003

Pyramid Laboratories

HPLC • IC • Consulting 5702 Bolsa Avenue, Huntington Beach, California 92649 (714) 893-1012

LABORATORY REPORT

Date: May 3, 1991

Client: Western Environment Services

Analysis: [redacted]

Date Received: 4.29.91, 5.1.91
Date Analyzed: 5.2.91

Matrix: Liquid

Sample Number	Results mg/L	Det. Lmt. mg/L	Original Volume
91-Sythe-Cogen-Test #1	1.03	0.007	75 mL
91-Sythe-Cogen-Test #2	0.40	0.007	75 mL
91-DNPH-Blank	0.51	0.003	180 mL
91-Sithe-Gas #3	0.71	0.007	75 mL
91-Sithe-Oil #1	0.98	0.005	100 mL
91-Sithe-Oil #2	0.64	0.005	100 mL

Q C DATA:		
	Spike Recovery	85%
	Spike Duplicate Recovery	128%

Medhat Gorgy
Lab Manager

SITHE - [redacted]

TEST	RESULTS	BLANK	SAMPLE	HCHO
1	0.98	0.51	100	0.047
2	0.64	0.51	100	0.013
3	0.98	0.51	100	0.047
AVERAGE				0.03

SITHE - FORMALDEHYDE
OIL - DETECTION LIMITS

TEST	RESULTS	BLANK	SAMPLE	HCHO
1	0.005	0.003	100	0.0002
2	0.005	0.003	100	0.0002
3	0.005	0.003	100	0.0002
AVERAGE				0.0002

CHROMALAB, INC.

Analytical Laboratory (E694)

5 DAYS TURNAROUND

May 3, 1991 ChromaLab File No.: 0591004

WESTERN ENVIRONMENTAL

Attn: Tom Rooney

RE: Three air samples for Benzene analysis

Project Name: 91 SITHE ENERGIES
Date Sampled: April 30, 1991 Date Submitted: April 30, 1991
Date Analyzed: May 2, 1991

RESULTS:

Sample No.	Time Collected	Benzene (ppbv)
FIELD BLANK	8:30 A.M.	17
SAMPLE A	10:55 A.M.	16
SAMPLE B	11:20 A.M.	14
SAMPLE C	1:47 P.M.	24
BLANK		N.D.
FIELD SPIKE RECOVERY	2:30 P.M.	84.0%
DETECTION LIMIT		5
METHOD OF ANALYSIS		MOD. 410A

ChromaLab, Inc.

David Duong
Chief Chemist

Eric Tam (by DD)
Eric Tam
Laboratory Director

D00005

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798
Federal ID #68-0140157

Standard 0: Using 0.25 ml of Supelco mix per 500 ml
Nitrogen: 1,3-butadiene conc. = 7.50 ppb
Standard I: Using 0.500 ml of Supelco mix per 500 ml
Nitrogen: 1,3-Butadiene conc. = 15.00 ppb
Standard II: Using 1.00 ml of supelco mix per 500 ml
Nitrogen: 1,3-Butadiene conc. = 30.00 ppb
Standard III: Using 2.00 ml of Supelco mix per 500 ml
Nitrogen: 1,3-Butadiene conc. - 60.00 ppb

Our detection limit is 5.00 ppb. This detection limit is achieved based on our good signal to noise ratio provided by our instrument when we run Standard #0.

Calculation:

* pH sample blank = 6.4

* pH sample = 6.3

* Calibration Table: At the beginning of the analysis

Standard #	Concentration (ppb)	Area	Response Factor	Average Response Factor	% RSD
1	15	2585	5.8027×10^{-3}		
2	30	5356	5.6012×10^{-3}	5.7247×10^{-3}	1.89
3	60	10398	5.7703×10^{-3}		

Sample I.D.	Average Response Factor	Area	Concentration Found (ppb) for 1,3-Butadiene
#1 at 9:55 AM	5.7247×10^{-3}	0	N.D.
#2 at 10:27 AM	5.7247×10^{-3}	0	N.D.
#3 at 10:51 AM	5.7247×10^{-3}	0	N.D.
#4 at 11:12 AM	5.7247×10^{-3}	0	N.D.
#5 at 11:33 AM	5.7247×10^{-3}	0	N.D.
#6 at 12:33 PM	5.7247×10^{-3}	0	N.D.

*Retention time for 1,3-Butadiene = 10.13 minute

Sample I.D.	True Concentration (ppb)	Average Response Factor	Area	Found Concentration (ppb)	% Recovery
Matrix Blank	---	5.7247×10^{-3}	0	0	---
Sample Blank	---	5.7247×10^{-3}	0	0	---
30 ppb standard AVN after sample #5	30	5.7247×10^{-3}	5124	28.33	97.8%

*Calibration Table: at the end of the analysis

Standard #	Concentration (ppb)	Area	Response Factor	Average Response Factor	% RSD
0	7.5	1271	5.9009×10^{-3}		
1	15	2191	6.8462×10^{-3}		
2	30	5077	5.9090×10^{-3}	6.1669×10^{-3}	7.4
3	60	9981	6.0114×10^{-3}		

DD 04/30/91

Report done at 2:58 P.M.
on 04/30/91

CHROMALAB, INC.

2239 Omega Road, #1 • San Ramon, California 94583
415/831-1788 • Facsimile 415/831-8798

CHROMALAB FILE # 591004

Order # 2195

DATE 5/1/91 PAGE 1 OF 1

PROJ. MGR. Tom Rooney
COMPANY Western Environmental
ADDRESS 1010 So. Pacific Coast Hwy
Redondo Beach, CA 90277

SAMPLERS (SIGNATURE) GR Cook / TRooney / D Duong

(PHONE NO.) (213) 540 4616

ANALYSIS REPORT

SAMPLE ID.	DATE	TIME	MATRIX	LAB ID.	TPH - Gasoline (EPA 5030)	TPH - Gasoline (5030, 8015) w/BTEX (EPA 602, 8020)	TPH - Diesel (EPA 3510, 3550, 8015)	PURGEABLE AROMATICS BTEX (EPA 602, 8020)	PURGEABLE HALOCARBONS (EPA 601, 8010)	VOLATILE ORGANICS (EPA 624, 8240)	BASE/NEUTRALS, ACIDS (EPA 625/627, 8270)	TOTAL OIL & GREASE (EPA 5520 D&F)	PESTICIDES/PCB (EPA 608, 8080)	PHENOLS (EPA 604, 8040)	CARB410A BENZENE		METALS: Cd, Cr, Pb, Zn	CAM METALS (18) w/Cr VI	PRIORITY POLLUTANT METALS (13)						NUMBER OF CONTAINERS
Benzene A	4/30	10:55A													X	Duplicate									
Benzene B		11:20A.													X	Duplicate									
Benzene C		1:47P.													X	Duplicate									
Field Blank		8:33A													X										
Spike-Field		2:30P													X										

D0003

PROJECT INFORMATION

PROJECT NAME: 91 Sithe Energies
PROJECT NUMBER:
SHIPPING ID. NO.
VIA: Delivered by GRC

SAMPLE RECEIPT

TOTAL NO. OF CONTAINERS	5
CHAIN OF CUSTODY SEALS	
REC'D GOOD CONDITION/COLD	✓
CONFORMS TO RECORD	
LAB NO.	

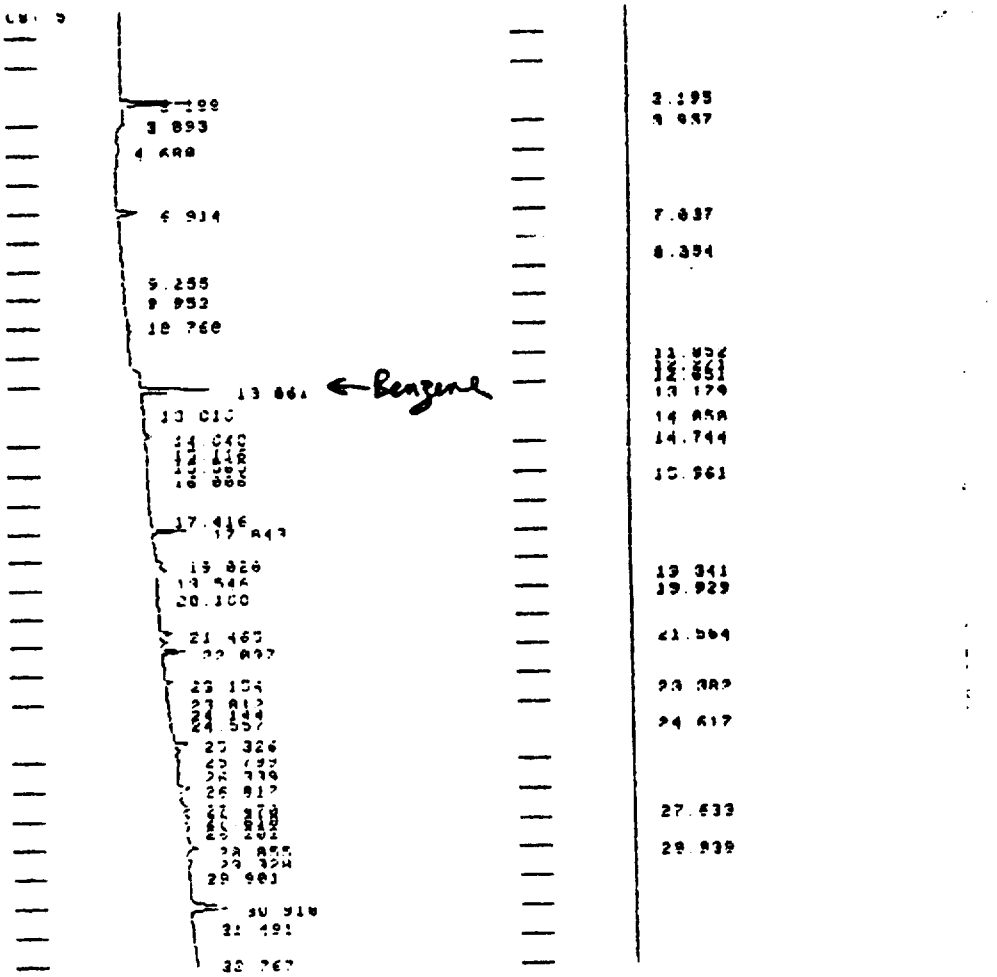
SPECIAL INSTRUCTIONS/COMMENTS: Need results Thurs Aft.
Detection Limit: 10ppb

RELINQUISHED BY 1.	RELINQUISHED BY 2.	RELINQUISHED BY 3.
(SIGNATURE) (TIME)	(SIGNATURE) (TIME)	(SIGNATURE) (TIME)
(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)
(COMPANY)	(COMPANY)	(COMPANY)
RECEIVED BY 1.	**RECEIVED BY 2.**	**RECEIVED BY (LABORATORY) 3.**
(SIGNATURE) (TIME)	(SIGNATURE) (TIME)	GR Cook 11:30 (SIGNATURE) (TIME)
(PRINTED NAME) (DATE)	(PRINTED NAME) (DATE)	GR Cook 5/1/91 (PRINTED NAME) (DATE)
(COMPANY)	(COMPANY)	ChromaLab (LAB)

spike 5ml

CHART SPEED 0.0 CM/MIN
ATTEN: 128 ZERO: 5% 1 MIN/TICK

ATTEN: 256 ZERO: 5% 1 MIN/TICK



CHANNEL: 1A - 1 TITLE: 3 MAY 91

SAMPLE: METHOD: PID=1 CALCULATION: A% - ANALYS - OP

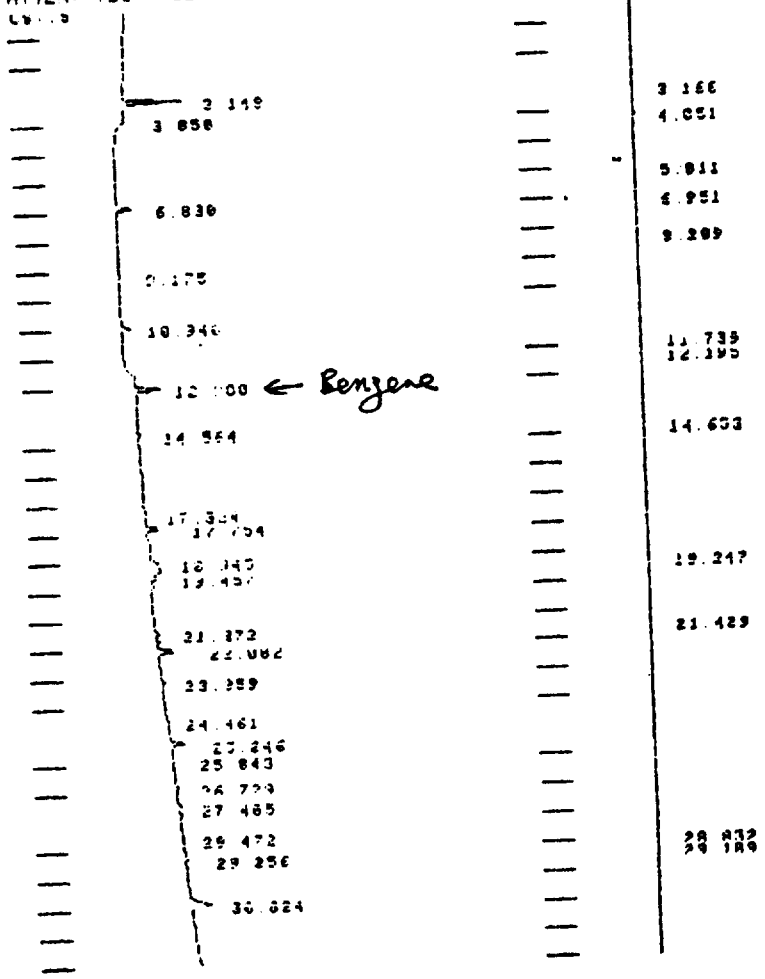
PEAK NO	PEAK NAME	RESULT HT%	TIME (MIN)	HEIGHT COUNTS	SEP CODE
1		17.9409	3.188	319733	BB
2		0.8075	3.893	14390	BB
3		0.6395	4.680	11397	BB
4		5.2247	6.914	93112	BB
5		0.3442	9.255	6134	BB
6		0.1272	9.952	2267	BB
7		0.3416	10.760	6088	BB
8		1.3972	11.024	24901	BB
9		17.9402	13.861	319721	BB
10		0.1457	13.816	2597	BB
11		0.2152	14.014	3835	BB
12		1.5441	14.648	27519	BB
13		0.4007	15.116	7141	BB
14		0.2502	15.356	4459	BB

D00010

MAY- 6-91 MON 12:06 415-831-8798

Sample C 20mL

CHART SPEED 0.5 CM/MIN 1 MIN/TICK ATTEN: 128 ZERO: 5%



ATTEN: 256 ZERO: 5% 1 MIN/TICK

2 MAY 91

CHANNEL: 1A - 1 TITLE:

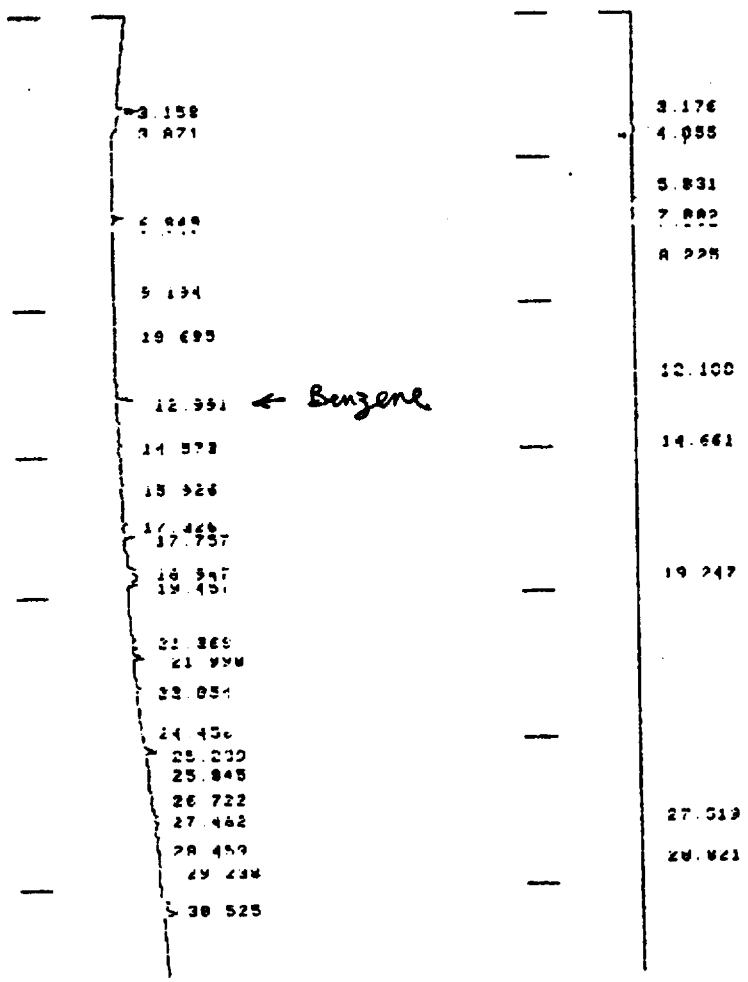
SAMPLE: METHOD: PID-1 CALCULATION: AX - ANALYS - DP

PEAK NO	PEAK NAME	RESULT HT%	TIME (MIN)	HEIGHT COUNTS	SEP CODE
1		22.6586	3.149	243684	BB
2		1.4293	3.850	15372	BB
3		8.3888	6.830	90218	BB
4		1.2768	9.175	13731	BB
5		4.1375	10.940	44497	BB
6		11.1633	12.980	120057	BB
7		1.2874	14.564	13845	BB
8		0.7993	17.324	8596	BB
9		7.3265	17.754	78794	BB
10		1.9765	18.945	21256	BB
11		2.3872	19.171	25673	BB
12		2.8170	19.457	30296	BB
13		0.4594	19.714	4941	BB
14		1.6084	21.372	17298	BB
15		1.9306	21.689	20763	BB
16		9.5606	22.002	102821	BB
17		1.8356	23.059	19741	BB
18		0.4048	24.461	4354	BB
19		5.3492	25.246	57519	BB
20		0.3416	25.843	3674	BB
21		1.0755	26.729	11567	BB
22		1.2304	27.485	13233	BB
23		1.2316	27.757	13245	BB
24		0.1794	28.472	1929	BB
25		0.6609	28.700	7105	BB

DOC011

MAY- 6-91 MON 12:04 415-[illegible] Sample B (dom)

CHART SPEED 0.5 CM/MIN
ATTEN: 128 ZERO: 5% 5 MIN/TICK   ATTEN: 256 ZERO: 5% 5 MIN/TICK



CHANNEL: 1A - 1   TITLE: 2 MAY 91

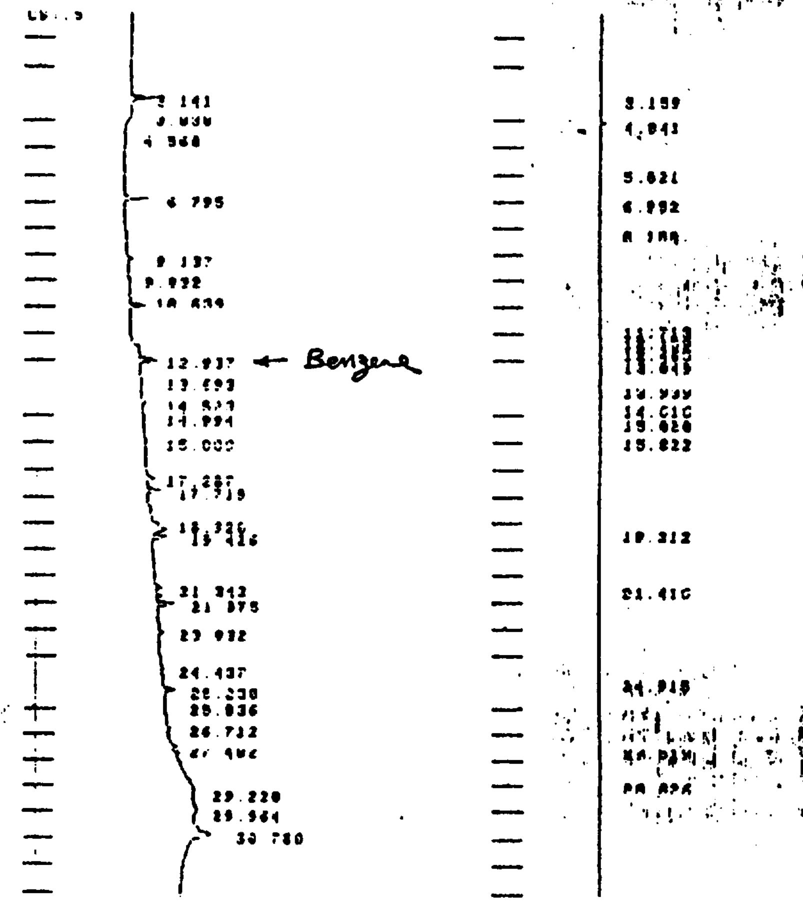
SAMPLE: METHOD: PID=1   CALCULATION: AX - ANALYS - OP

PEAK NO	PEAK NAME	RESULT HT%	TIME (MIN)	HEIGHT COUNTS	SEP CODE
1		17.3046	3.158	151131	BB
2		1.4449	3.871	12619	BB
3		11.0072	6.849	96132	BB
4		1.7109	9.194	14942	BB
5		0.7108	10.695	6208	BB
6		6.6629	10.955	58191	BB
7		7.9609	12.991	69527	BB
8		1.5774	14.573	13776	BB
9		0.5864	15.926	5121	BB
10		2.2699	17.326	19824	BB
11		6.7284	17.757	58763	BB
12		2.1035	18.947	18371	BB
13		1.1055	19.167	9655	BB
14		6.1752	19.457	53932	BB
15		0.4861	19.711	4245	BB
16		1.7790	21.368	15537	BB
17		1.9011	21.684	16603	BB
18		7.8310	21.998	68393	BB
19		1.9390	23.054	16934	BB
20		0.3182	24.456	2779	BB
21		5.0136	25.239	43787	BB

D00012

SAMPLE 1A

CHART SPEED 0.0 CM/MIN
ATTEN: 128 ZERO: 5% 1 MIN/TICK   ATTEN: 256 ZERO: 5% 1 MIN/TICK



CHANNEL: 1A - 1   TITLE: 2 MAY 91

SAMPLE: METHOD: PID-1   CALCULATION: A% - ANALYS - DP

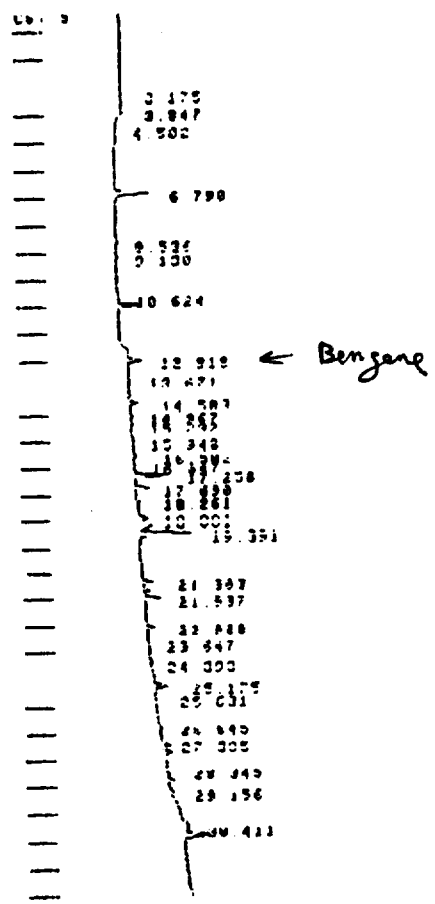
PEAK NO	PEAK NAME	RESULT HT%	TIME (MIN)	HEIGHT COUNTS	SEP CODE
1		9.4392	3.141	105439	BB
2		1.1035	3.839	12327	BB
3		0.3640	4.568	4066	BB
4		9.4355	6.795	105398	BB
5		1.9527	9.137	21812	BB
6		0.2110	9.832	2357	BB
7		0.5882	10.639	6570	BB
8		6.1222	10.897	68387	BB
9		7.3481	12.937	82081	BB
10		0.2938	13.693	3282	BB
11		1.6902	14.523	18880	BB
12		0.3781	14.994	4224	BB
13		0.4895	15.889	5468	BB
14		3.3683	17.287	37625	BB
15		0.3114	17.553	3479	BB
16		5.9507	17.719	66471	BB
17		0.9412	18.920	10514	BB
18		4.7001	19.134	52502	BB
19		7.6818	19.426	85809	BB
20		0.3427	19.683	3828	BB
21		3.0563	21.342	34140	BB
22		2.5695	21.660	28702	BB
23		9.4959	21.975	106073	BB
24		2.1433	23.032	23942	BB
25		0.5624	24.437	6282	BB

D00013

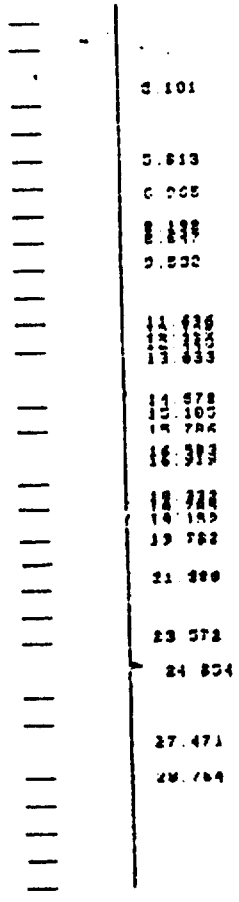
Sample Blanks (Background) (20ml)

CHART SPEED 0.0 CM/MIN
ATTEN: 128 ZERO: 5% 1 MIN/TICK

ATTEN: 256 ZERO: 5% 1 MIN/TICK



← Benzene



CHANNEL: 1A - 1 TITLE: 2 MAY 91

SAMPLE: METHOD: PID=1 CALCULATION: A% - ANALYS - OP

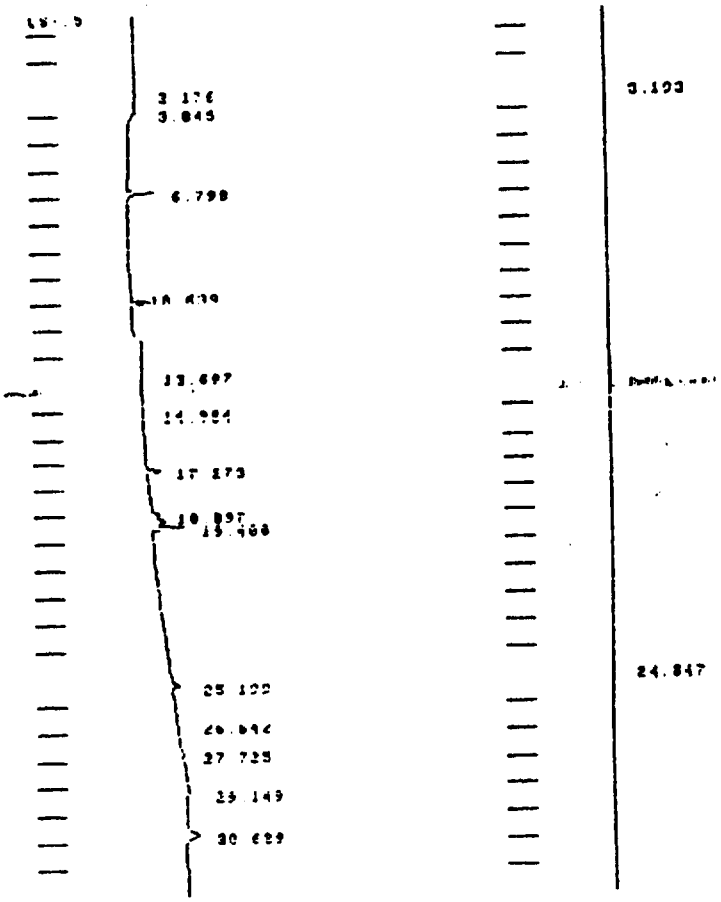
PEAK NO	PEAK NAME	RESULT HT%	TIME (MIN)	HEIGHT COUNTS	SEP CODE
1		0.2641	3.175	4050	BB
2		0.8309	3.847	12741	BB
3		0.4583	4.502	7029	BB
4		10.1390	6.790	155343	BB
5		0.2059	8.535	3156	BB
6		0.2647	9.130	4059	BB
7		0.4322	10.624	6627	BB
8		7.7395	10.880	118696	BB
9		5.6825	12.918	87150	BB
10		0.5025	13.671	7707	BB
11		2.5587	14.503	39242	BB
12		0.4326	14.967	6634	BB
13		0.3315	15.292	5085	BB
14		0.4935	15.948	7569	BB
15		1.6448	16.502	25225	BB
16		0.3544	16.847	5435	BB
17		0.6530	17.075	10014	BB
18		10.0855	17.259	154692	BB

D00014

Method Blank

CHART SPEED 0.0 CM/MIN
ATTEN: 128 ZERO: 5% 1 MIN/TICK

ATTEN: 256 ZERO: 5% 1 MIN/TICK



CHANNEL: 1A - 1 TITLE: 2 MAY 91

SAMPLE: METHOD: PID=1 CALCULATION: AX - ANALYS - OP

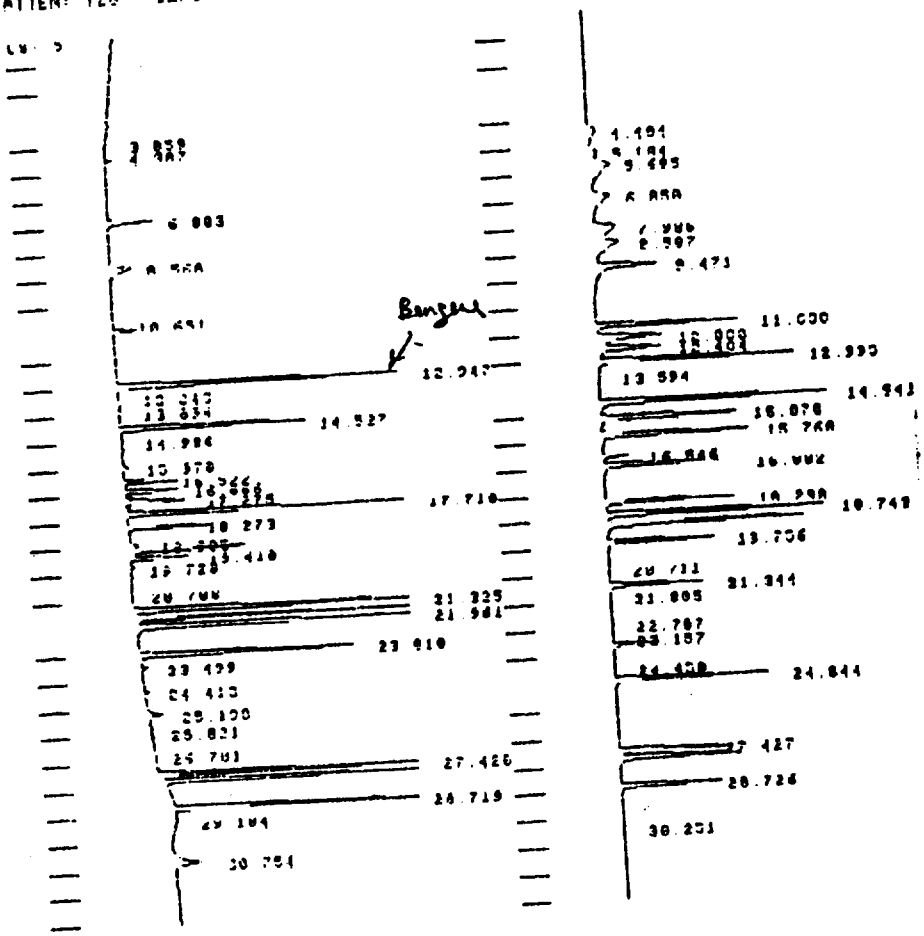
PEAK NO	PEAK NAME	RESULT HT%	TIME (MIN)	HEIGHT COUNTS	SEP CODE
1		1.1103	3.176	7109	BB
2		1.7050	3.845	10917	BB
3		19.8507	6.798	127100	BB
4		0.8802	10.639	5636	BB
5		13.9127	10.894	89082	BB
6		0.7333	13.687	4695	BB
7		0.6495	14.984	4159	BB
8		11.4729	17.273	73450	BB
9		3.5944	18.897	23015	BB
10		6.6713	19.223	42716	BB
11		20.5610	19.488	131651	BB
12		7.0677	25.199	45254	BB
13		0.4445	26.642	2846	BB
14		0.9051	27.725	5802	BB
[illegible]		[illegible]	28.149	10594	BB

DOC015

20ng STD

CHART SPEED 0.0 CM/MIN 1 MIN/TICK
ATTEN: 128 ZERO: 5%

ATTEN: 256 ZERO: 5% 1 MIN/TICK



2 MAY 91

CHANNEL: 1A - 1 TITLE:

METHOD: PID=1

CALCULATION: A% - ANALYS - DP

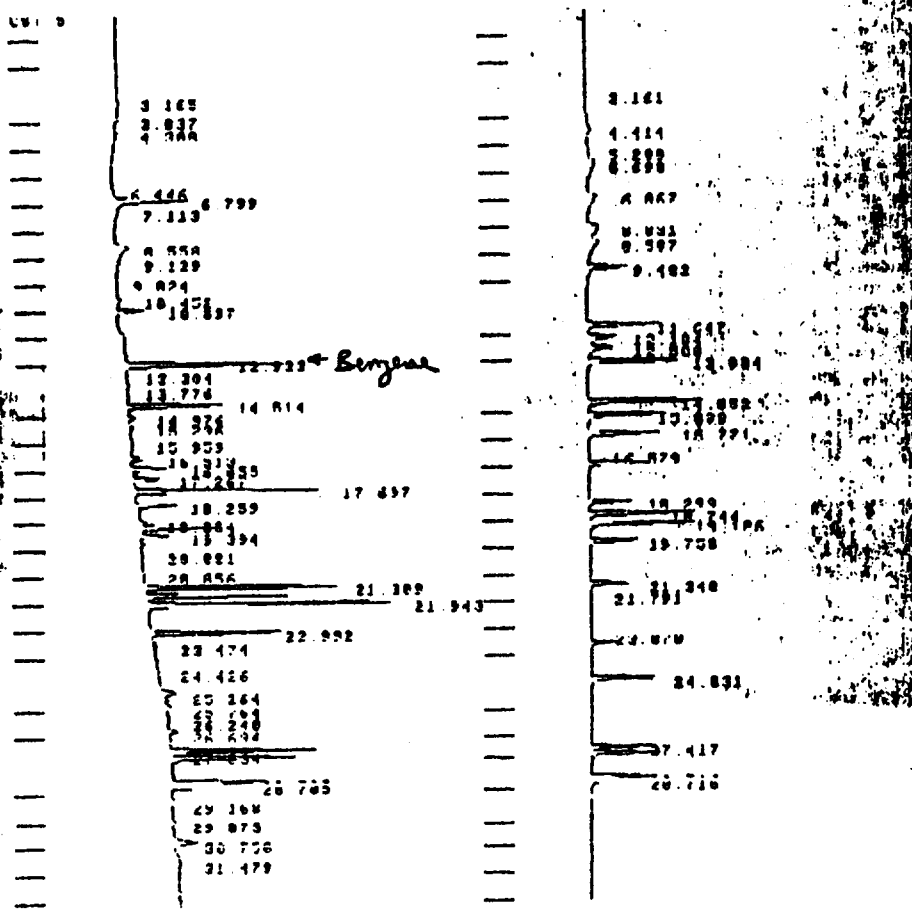
SAMPLE:

PEAK NO	PEAK NAME	RESULT HT%	TIME (MIN)	HEIGHT COUNTS	SEP CODE
1		0.0555	3.859	9995	BB
2		0.0683	4.307	12275	BB
3		0.4231	4.486	76100	BB
4		1.3292	6.803	239043	BB
5		0.7482	9.560	134551	BB
6		0.0449	10.651	8063	BB
7		0.8586	10.906	154424	BB
8		7.8095	12.947	1404507	BB
9		0.0708	13.694	12729	T
10		0.0492	13.894	8666	T
11		0.0223	14.181	4018	T
12		5.1478	14.527	925814	BB
13		0.0509	14.986	9153	T
14		0.0523	15.311	9406	T
		0.1599	15.970	28569	T
			16.622	296016	BB

D00016

CHART SPEED 0.0 CM/MIN
ATTEN: 128 ZERO: 5% 1 MIN/TICK

10 ng STD B
ATTEN: 256 ZERO: 5% 1 MIN/TICK



CHANNEL: 1A - 1 TITLE: 2 MAY 91

SAMPLE: METHOD: PID=1 CALCULATION: AX - ANALYS - CP

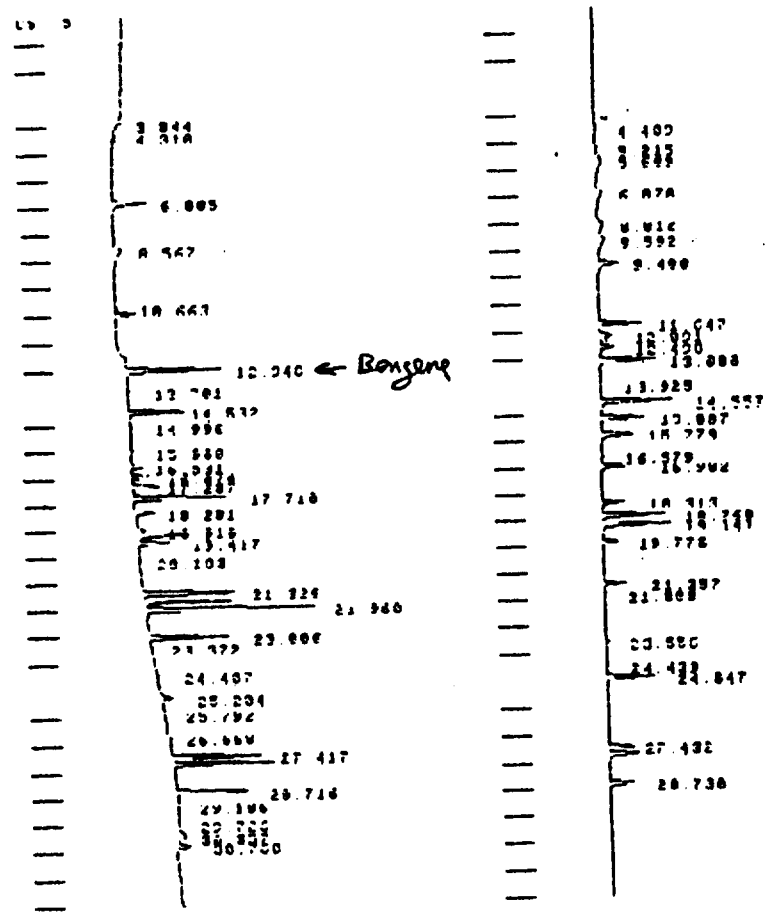
PEAK NO	PEAK NAME	RESULT HT%	TIME (MIN)	HEIGHT COUNTS	SEP CODE
1		0.0752	3.165	6113	BB
2		0.1615	3.837	13128	BB
3		0.1811	4.308	14715	BB
4		0.1510	4.495	12273	BB
5		0.0291	5.446	2361	BB
6		3.9751	5.799	323035	BB
7		0.6822	8.558	55437	BB
8		0.0591	9.129	4806	BB
9		0.0713	9.365	5794	BB
10		0.0540	9.824	4392	BB
11		0.2125	10.452	17269	BB
12		0.0879	10.550	7146	BB
13		1.4454	10.897	117452	BB
14		9.3972	12.933	763668	BB
15		0.0420	13.304	3415	T
16		0.0593	13.420	4820	T
17		0.1464	13.681	11897	T
18		0.0237	13.775	1943	T

D00017

5ng STD

CHART SPEED 0.0 CM/MIN
ATTEN: 128 ZERO: 5% 1 MIN/TICK

ATTEN: 256 ZERO: 5% 1 MIN/TICK



CHANNEL: 1A - 1 TITLE:

2 MAY 91

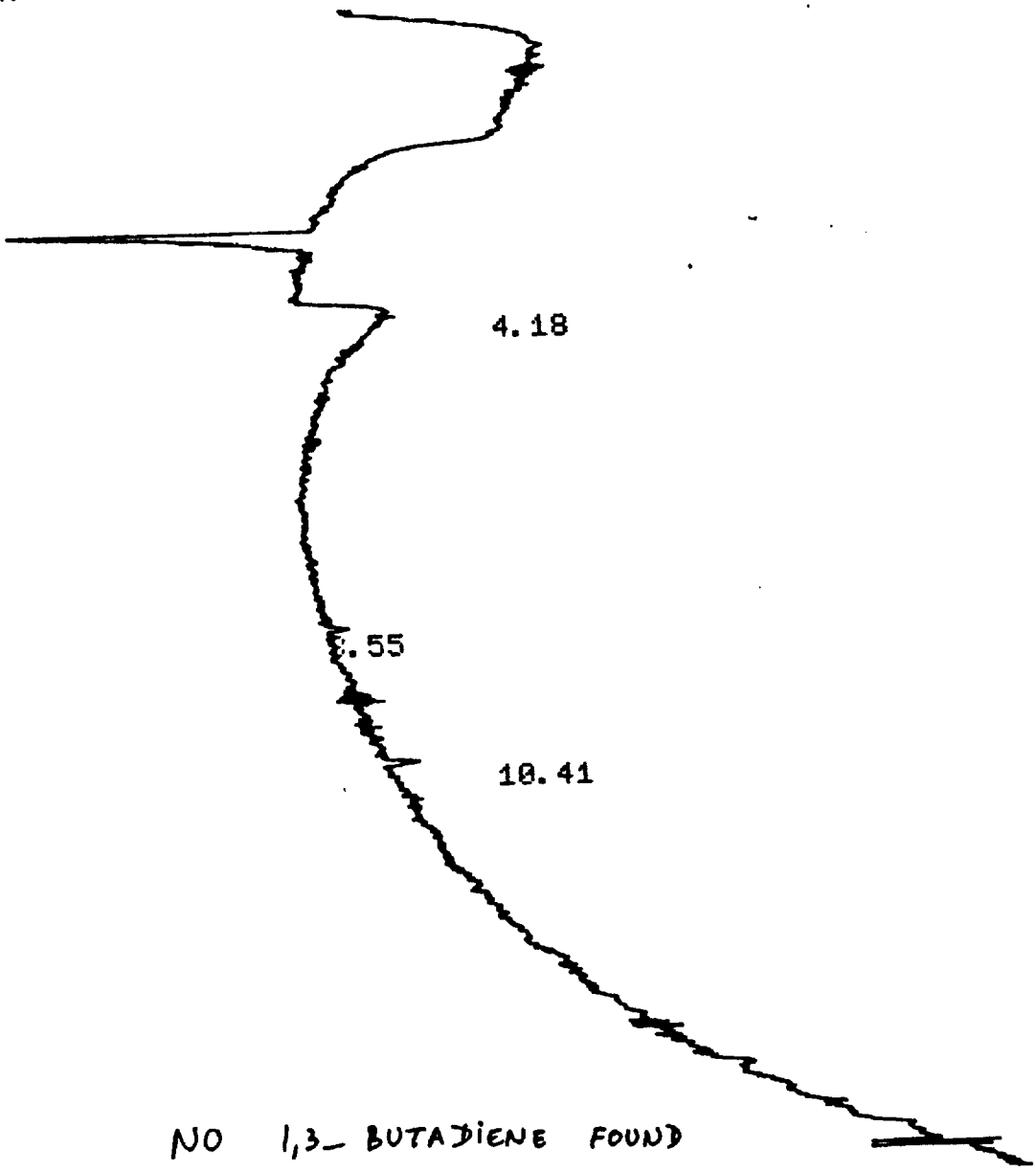
SAMPLE: METHOD: PID-1 CALCULATION: AX - ANALYS - OF

PEAK NO	PEAK NAME	RESULT HT%	TIME (MIN)	HEIGHT COUNTS	SEP CODE
1		0.2221	3.844	12937	BB
2		0.1345	4.310	7837	BB
3		0.1685	4.497	9818	BB
4		2.7026	6.805	157439	BB
5		0.5812	8.567	33856	BB
6		0.1159	10.663	6750	BB
7		1.4551	10.911	84768	BB
8		7.4138	12.940	431883	BB
9		0.1055	13.701	5143	BB
10		0.0715	13.899	4172	BB
11		5.1498	14.532	299939	BB
12		0.1313	14.996	7647	T
13		0.1182	15.324	6888	T
14		0.1892	15.980	11021	BB
15		1.1008	16.531	64543	BB
16		1.5934	16.974	92821	BB
17		0.2555	17.103	14886	BB
18		2.3428	17.287	136478	BB
19		0.1301	17.553	7576	BB
20		7.8145	17.718	455223	BB

D00018

SAMPLE #6 at 12:33 PM on April 30, 1991

CHANNEL A INJECT < 21:25:19 STORED TO BIN # 15



NO 1,3- BUTADIENE FOUND

DATA SAVED TO BIN # 15

< 21:25:19 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 15 INDEX 15 BIN 15

PEAK#	AREA%	RT	AREA BC
1	92.455	4.18	22597 01
2	2.549	8.55	623 01
3			1221 01

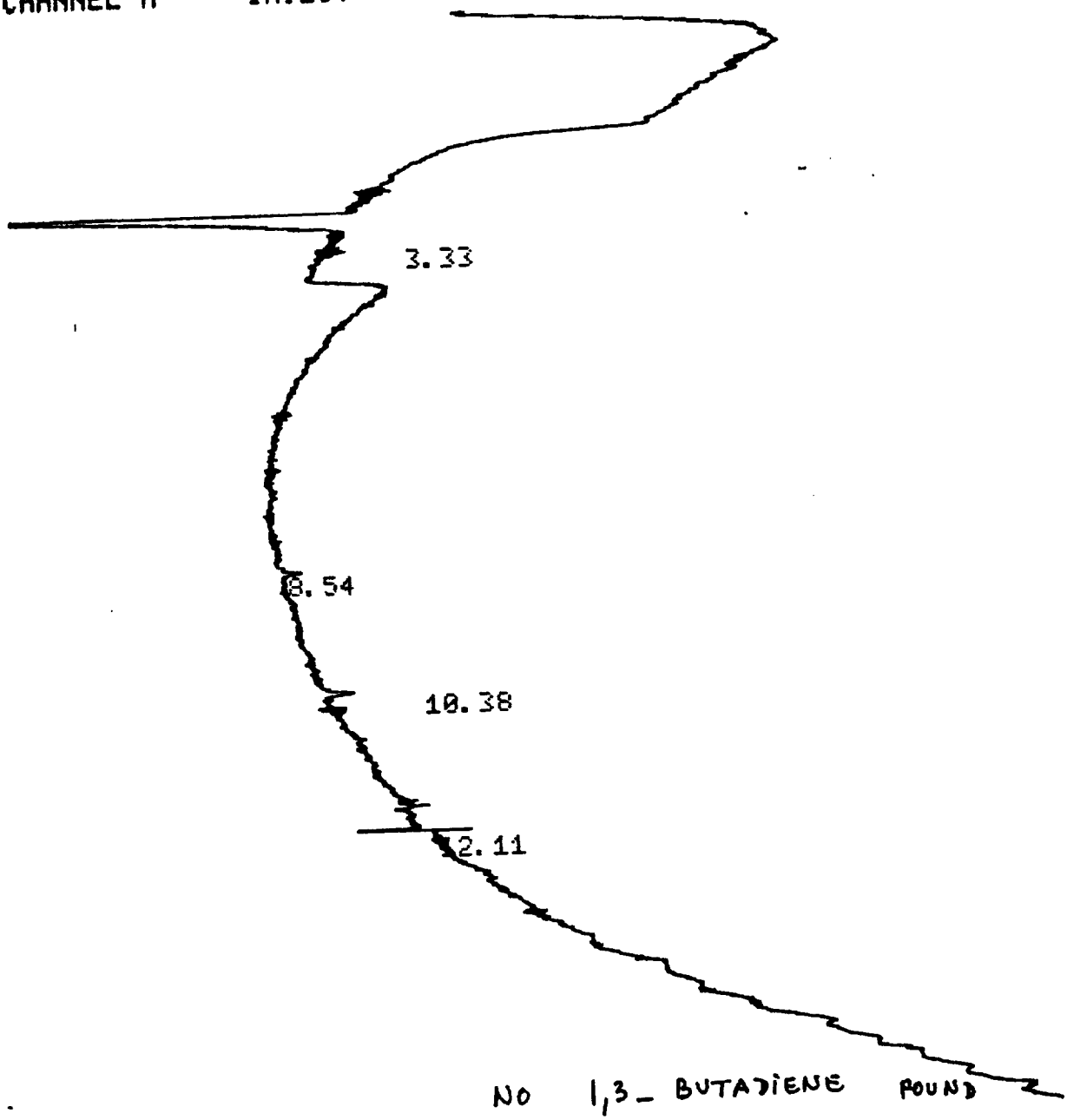
TOTAL

D00019

CHANN

1008 SAMPLE # 5 at 11:33 AM on April 30, 1991

CHANNEL A INJECT < 20:25:23 STORED TO BIN # 13



NO 1,3- BUTADIENE FOUND

DATA SAVED TO BIN # 13

< 20:25:23 CH= "A" PS= 1.

BIN 13

FILE 1. METHOD 0. RUN 13 INDEX 13

PEAK#	AREA%	RT	AREA BC
1	95.263	3.33	123360 03
2	0.398	8.54	516 01
3	0.711	10.38	921 01
4	3.627	12.11	4697 03
TOTAL	100.		129494

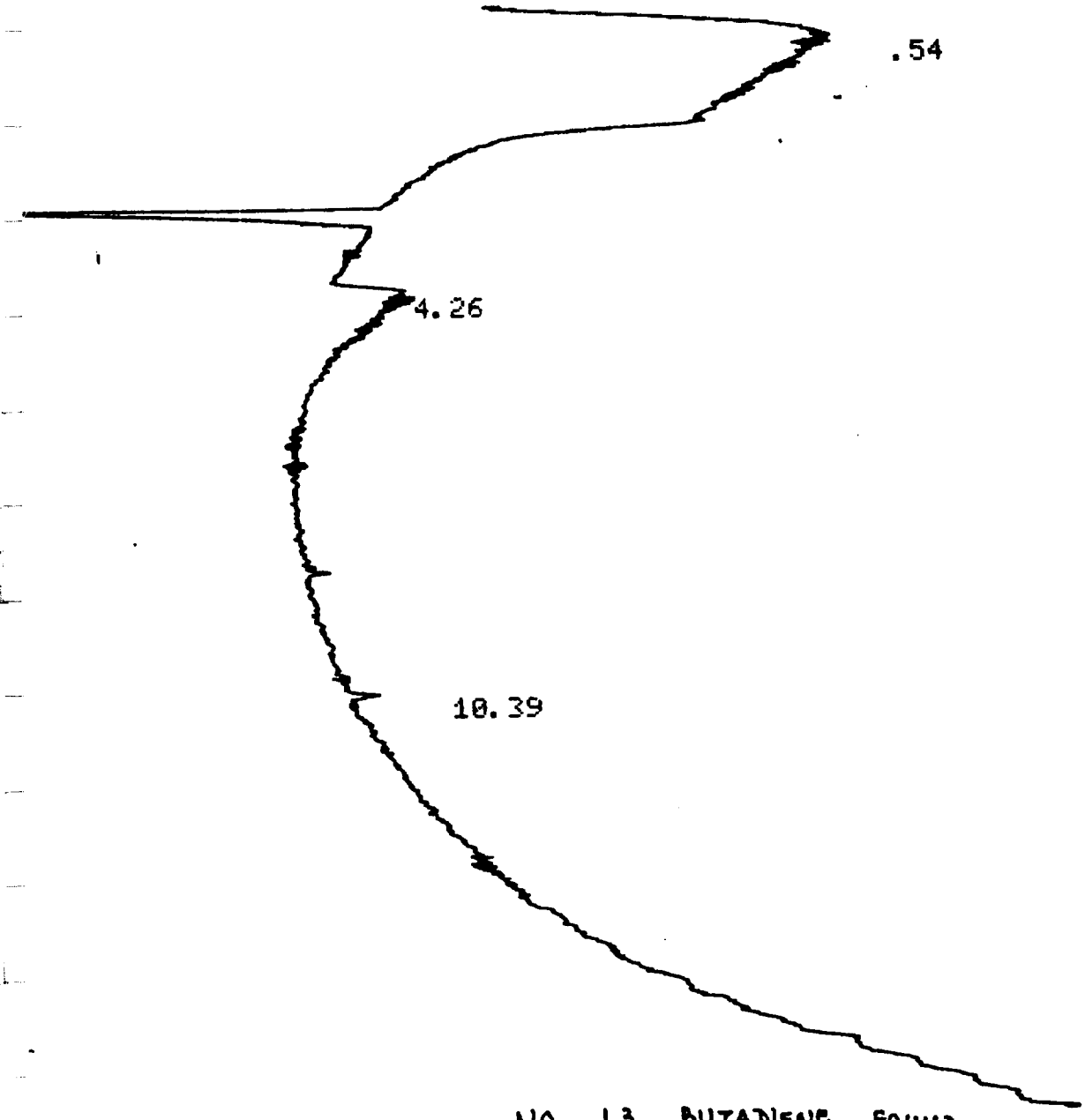
D00020

BUTADIENE STANDARD

TOTAL 100. 1859

1004 SAMPLE # 4 at 11:12 AM on April 30, 1991

CHANNEL A INJECT < 20:04:15 STORED TO BIN # 12



NO 1,3- BUTADIENE FOUND

DATA SAVED TO BIN # 12

< 20:04:15 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 12 INDEX 12 BIN 12

PEAK#	AREA%	RT	AREA BC
1	78.533	0.54	139286 01
2	20.787	4.26	36868 01
3	0.679	10.39	1205 01

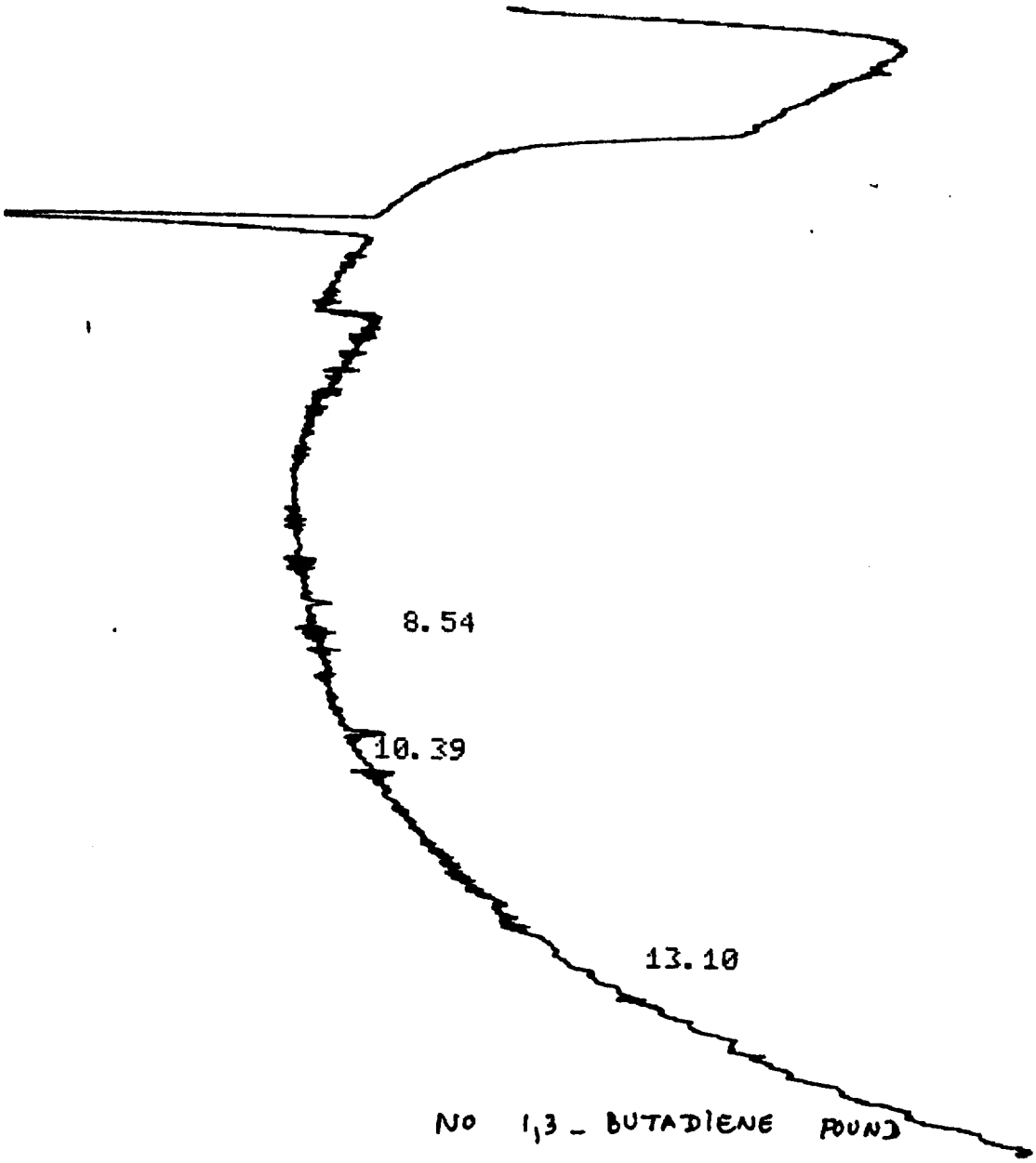
TOTAL 100. 177359

D00021

12 6

Sample # 3 at 10:51 AM on April 30,

CHANNEL A INJECT < 19:43:18 STORED TO BIN # 11



No 1,3 - BUTADIENE FOUND

DATA SAVED TO BIN # 11

< 19:43:18 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 11 INDEX 11 BIN 11

PEAK#	AREA%	RT	AREA BC
1	47.23	8.54	878 01
2	52.77	10.39	981 01
TOTAL	100.		1859

D00022

1004

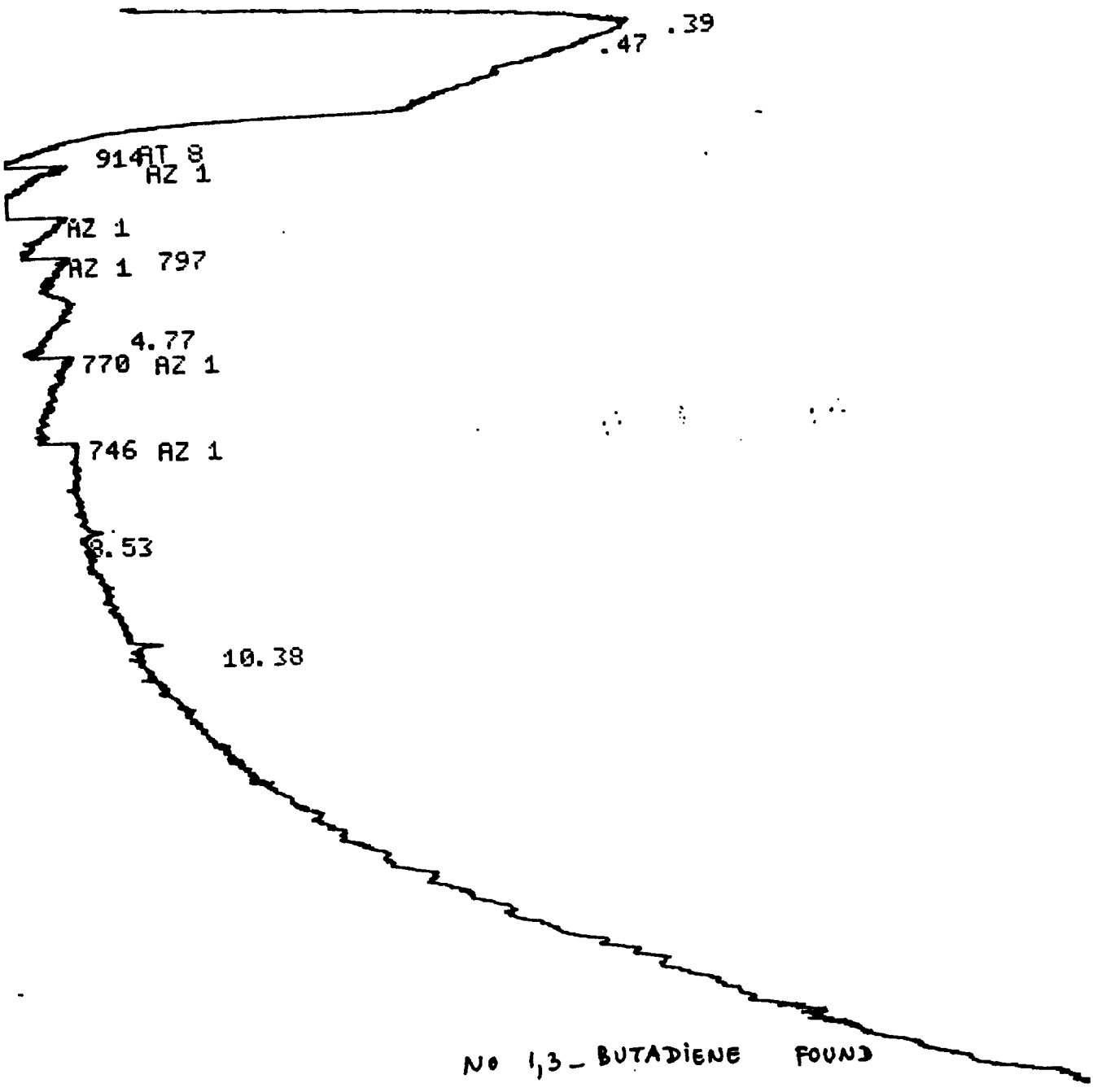
SAMPLE # 4 at 11:12 AM on April 30, 1991

CHANNEL A INJECT < 20:04:15 STORED TO BIN # 12

MAY- 6-91 MON 11:41 5767723
TOTAL 100.

SAMPLE #2 at 10:27 AM on April 30, 1

CHANNEL A INJECT < 19:19:19 STORED TO BIN # 10



No 1,3 - BUTADIENE FOUND

DATA SAVED TO BIN # 10

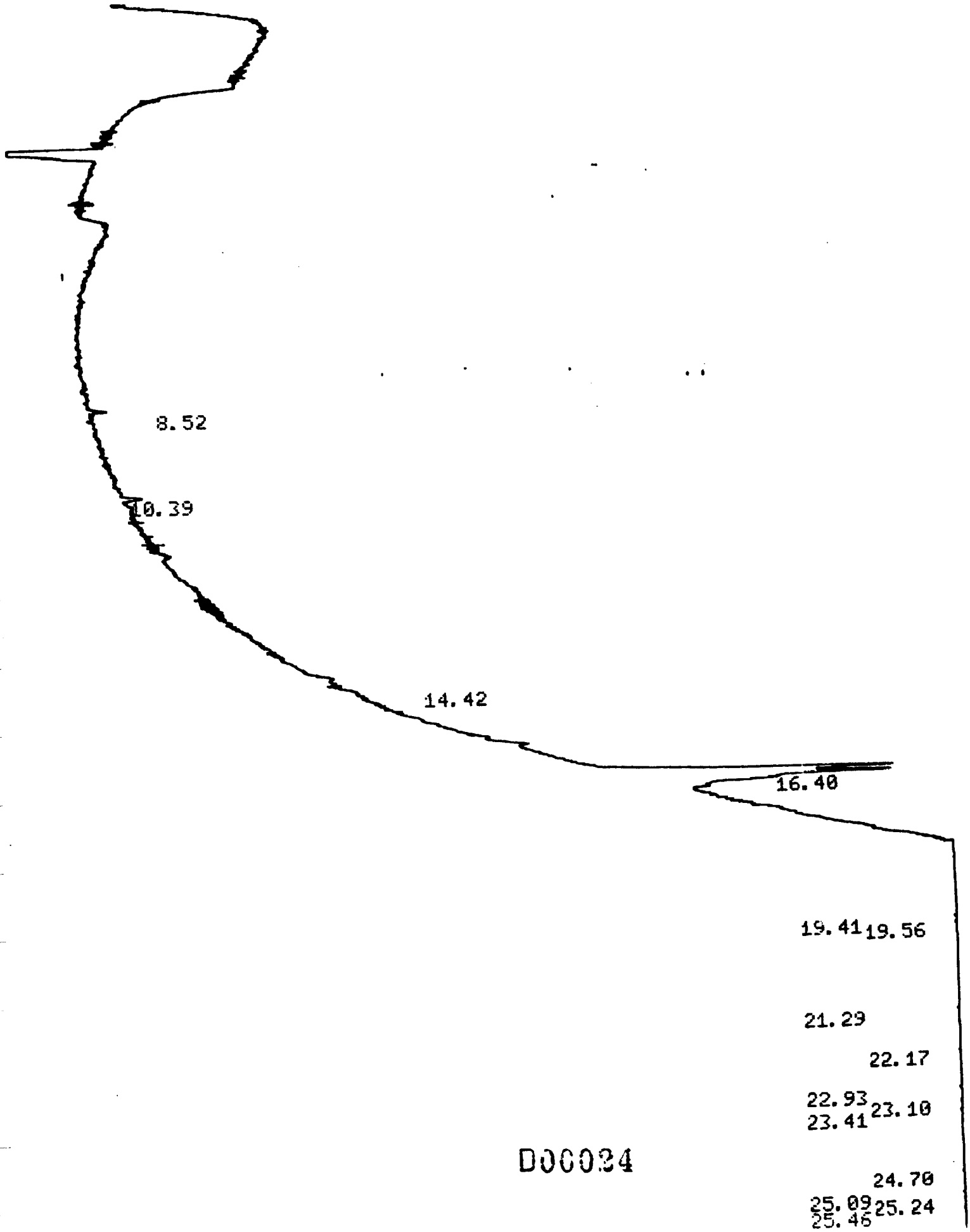
< 19:19:19 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 10 INDEX 10 BIN 10

PEAK#	AREA%	RT	AREA BC
1	44.747	0.39	35340 02
2	39.218	0.47	30973 03
3	13.347	4.77	10541 01
4	1.019	8.53	805 01

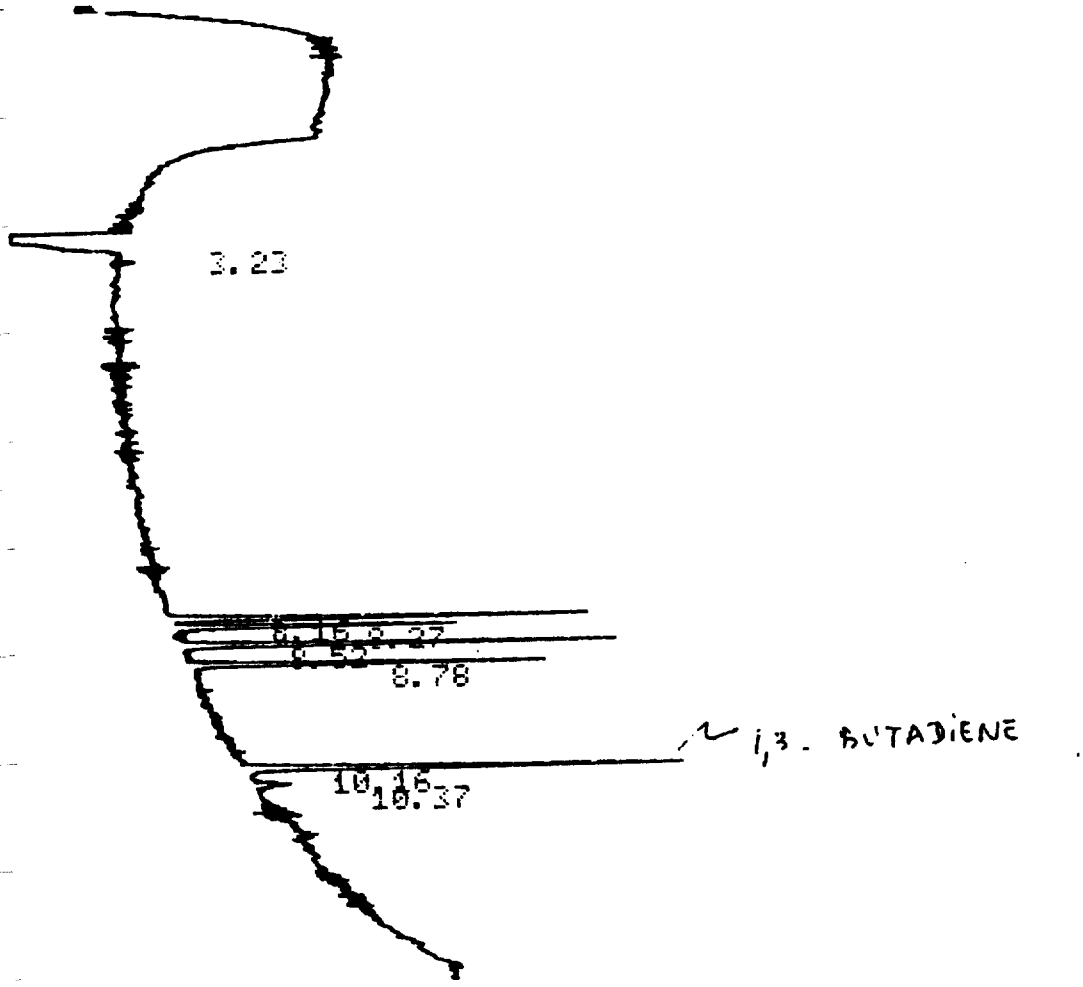
D00033

CHANNEL A INJECT < 18:47:19 STORED TO BIN # 9



60 ppb 1,3- BUTADIENE STANDARD

CHANNEL A INJECT < 16:28:56 STORED TO BIN # 3



DATA SAVED TO BIN # 3

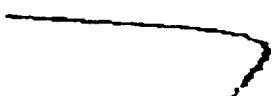
< 16:28:56 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 3 INDEX 3 BIN 3

PEAK#	AREA%	RT	AREA BC
1	2.583	3.23	1311 03
2	21.034	8.16	10676 02
3	14.489	8.27	7354 03
4	21.676	8.52	11002 01
5	17.944	8.78	9108 01
6	20.486	10.16	10398 01 ✓
7	1.789	10.37	908 01
TOTAL	100.		50757

60.00 ppb 1,3- BUTADIENE STANDARD

CHANNEL A INJECT < 16:47:20 STORED TO BIN # 4



D00035

MAY- 6-91 MON 11:45 415-831-8798

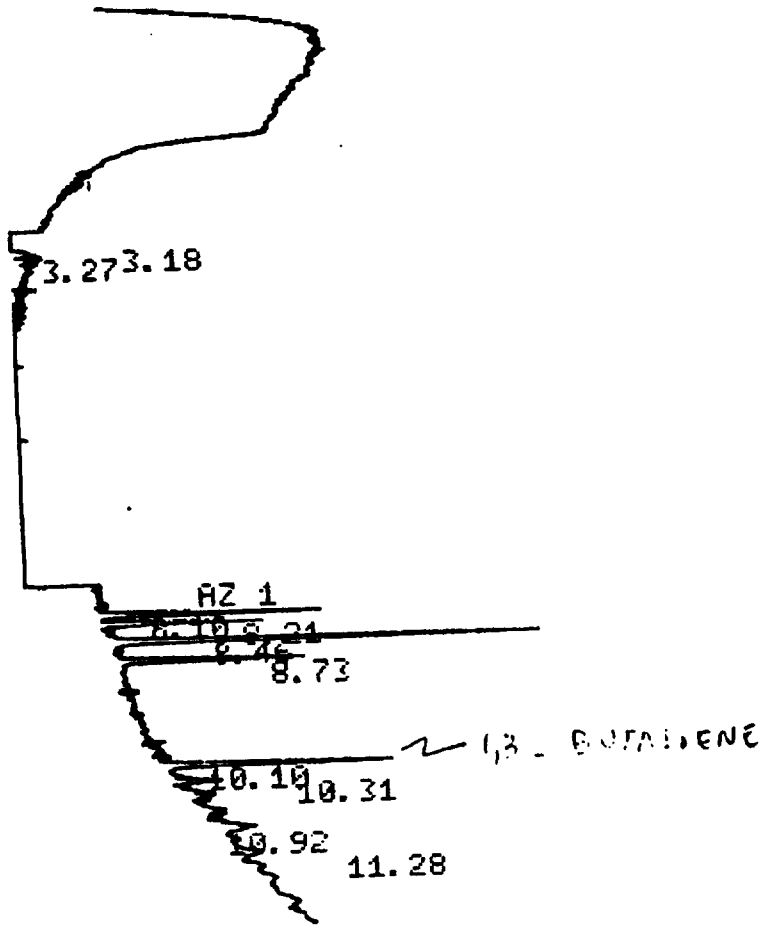
5	15.156	8.74	2320	01
6	16.832	10.11	2585	01 ✓
7	7.11	10.33	1092	01

TOTAL 100. 15358

1158 1150 1000 998 994

30.0 ppb 1,3-BUTADIENE STANDARD

CHANNEL A INJECT < 17:46:35 STORED TO BIN # 6



DATA SAVED TO BIN # 6

< 17:46:35 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 6 INDEX 6 BIN 6

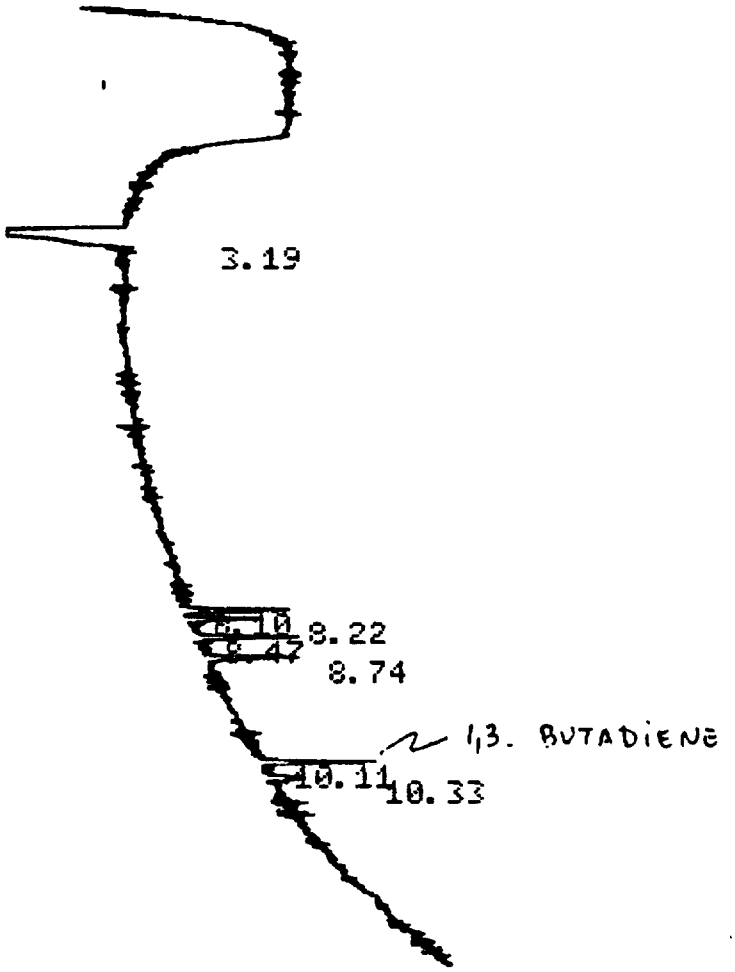
PEAK#	AREA%	RT	AREA BC
1	8.749	3.18	4681 02
2	5.731	3.27	3066 03
3	10.756	8.1	5755 02
4	7.622	8.21	4078 03
5	20.019	8.46	10711 01
6	8.687	8.73	4648 01
7	10.011	10.1	5356 01 ✓
8	1.875	10.31	1003 01
9	16.489	10.92	8822 02
10	10.061	11.28	5383 03

TOTAL 100. 53503

D00036

1003 15.0 ppb 1,3_ BUTADIENE STANDARD

CHANNEL A INJECT < 17:28:04 STORED TO BIN # 5



DATA SAVED TO BIN # 5

< 17:28:04 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 5 INDEX 5 BIN 5

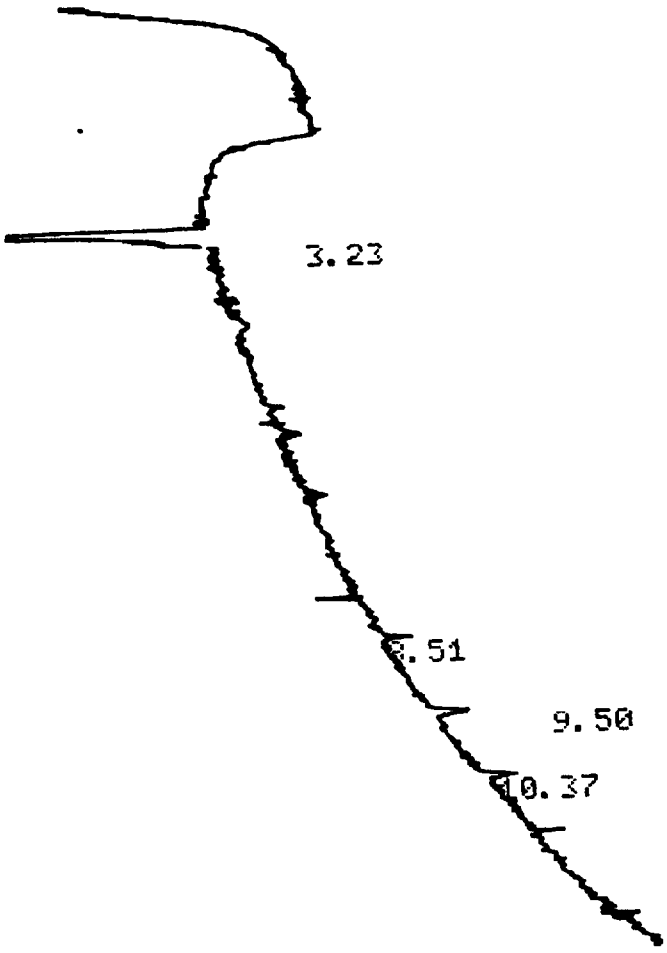
PEAK#	AREA%	RT	AREA BC
1	14.742	3.19	2264 03
2	17.997	8.1	2764 02
3	12.065	8.22	1853 03
4	16.096	8.47	2472 01
5	15.158	8.74	2328 01
6	16.832	10.11	2585 01 ✓
7	7.11	10.33	1092 01
TOTAL	100.		15358

D00027

PT=200

AT= 8 BLANK FROM HEAT-TREATED SAMPLE TRANSFER UN

CHANNEL A INJECT < 16:07:19 STORED TO BIN # 2



No 1,3- BUTADIENE FOUND

DATA SAVED TO BIN # 2

< 16:07:19 CH= "A" PS= 1.

FILE 1. METHOD 0. RUN 2 INDEX 2 BIN 2

PEAK# AREA% RT AREA BC

D00038

Del Mar Analytical
2852 Alton Avenue • Irvine, California 92714
(714) 261-1022 • FAX (714) 261-1228

Site Sampled April 30, 1991

Constituent	Detection Limit, ug/Kg	Test Results; 1	2	3	Average
Arsenic	1000	N.D.	N.D.	N.D.	N.D.
Beryllium	100	N.D.	N.D.	N.D.	N.D.
Cadmium	100	N.D.	N.D.	N.D.	N.D.
Chromium (VI)	50	N.D.	N.D.	N.D.	N.D.
Chromium (Total)	50	N.D.	N.D.	N.D.	N.D.
Copper	100	640 ←	N.D.	N.D.	213 ←
Lead	50	N.D.	N.D.	N.D.	N.D.
Mercury	100	N.D.	N.D.	N.D.	N.D.
Nickel	500	N.D.	N.D.	N.D.	N.D.
Selenium	100	N.D.	N.D.	N.D.	N.D.
Zinc	100	280 ←	240 ←	N.D.	173 ← average is wrong should be 190 MG/KG Fd.
Manganese	50	N.D.	N.D.	N.D.	N.D.
Chloride, mg/Kg	1	8	7	7	7.33
Sulfur, percent	0.005	0.01	0.01	0.01	0.01
Density		0.85	0.85	0.85	0.85

D00029

Del Mar Analytical

2852 Alton Avenue • Irvine, California 92714
(714) 261-1022 • FAX (714) 261-1228

Western Environmental Services	Client Project ID:	Sithe	Sampled: Apr 30, 1991
1010 So. Pacific Coast Highway			Received: May 1, 1991
Redondo Beach, CA 90277	Sample Descript:	Liquid, Fuel Oil #1	Analyzed: May 3, 1991
Attention: Tom Rooney	Lab Number:	105-0011	Reported: May 6, 1991

Analyte	EPA Method	Detection Limit (ug/kg)	Analysis Result (ug/kg)
Arsenic	7060	1,000.0	N.D.
Beryllium	6010	100.0	N.D.
Cadmium	6010	100.0	N.D.
Chromium (VI)	7197	50.0	N.D.
Chromium (Total)	6010	50.0	N.D.
Copper	6010	100.0	640
Lead	6010	50.0	N.D.
Mercury	7471	100.0	N.D.
Nickel	6010	500.0	N.D.
Selenium	7740	100.0	N.D.
Zinc	6010	100.0	260
Manganese	6010	50.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

DEL MAR ANALYTICAL

Gary Steube
Laboratory Director

Del Mar Analytical

2852 Alton Avenue · Irvine, California 92714
(714) 261-1022 · FAX (714) 261-1228

Western Environmental Services	Client Project ID:	Sithe	Sampled: Apr 30, 1991
1010 So. Pacific Coast Highway	Sample Descript:	Liquid, Fuel Oil #1	Received: May 1, 1991
Redondo Beach, CA 90277			Analyzed: May 3, 1991
Attention: Tom Rooney	Lab Number:	105-0011	Reported: May 6, 1991

LABORATORY ANALYSIS

Analyte	Detection Limit	Sample Results
Density	0.002	0.8534
Sulfur, %	0.005	0.01
Chloride, mg/kg	1.0	8.0

Analytes reported as N.D. were not present above the stated limit of detection.

DEL MAR ANALYTICAL

Gary Steube
Laboratory Director

D00031

1050011.WES <4>

Del Mar Analytical

2852 Alton Avenue · Irvine, California 92714
(714) 261-1022 · FAX (714) 261-1228

Western Environmental Services	Client Project ID:	Slthe	Sampled: Apr 30, 1991
1010 So. Pacific Coast Highway			Received: May 1, 1991
Redondo Beach, CA 90277	Sample Descript:	Liquid, Fuel Oil #2	Analyzed: May 3, 1991
Attention: Tom Rooney	Lab Number:	105-0012	Reported: May 6, 1991

Analyte	EPA Method	Detection Limit (ug/kg)	Analysis Result (ug/kg)
Arsenic	7060	1,000.0	N.D.
Beryllium	6010	100.0	N.D.
Cadmium	6010	100.0	N.D.
Chromium (VI)	7197	50.0	N.D.
Chromium (Total)	6010	50.0	N.D.
Copper	6010	100.0	N.D.
Lead	6010	50.0	N.D.
Mercury	7471	100.0	N.D.
Nickel	6010	500.0	N.D.
Selenium	7740	100.0	N.D.
Zinc	6010	100.0	240
Manganese	6010	50.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

DEL MAR ANALYTICAL

Gary Steube
Laboratory Director

Del Mar Analytical
2852 Alton Avenue · Irvine, California 92714
(714) 261-1022 · FAX (714) 261-1228

Western Environmental Services	Client Project ID:	Sitho	Sampled: Apr 30, 1991
1010 So. Pacific Coast Highway	Sample Descript:	Liquid, Fuel Oil #2	Received: May 1, 1991
Redondo Beach, CA 90277			Analyzed: May 3, 1991
Attention: Tom Rooney	Lab Number:	105-0012	Reported: May 6, 1991

LABORATORY ANALYSIS

Analyte	Detection Limit	Sample Results
Density	0.002	0.8534
Sulfur, %	0.005	0.01
Chloride, mg/kg	1.0	7.0

Analytes reported as N.D. were not present above the stated limit of detection.

DEL MAR ANALYTICAL

Gary Steube
Laboratory Director

D00033

1050011.WES <5>

Del Mar Analytical
2852 Alton Avenue · Irvine, California 92714
(714) 261-1022 · FAX (714) 261-1228

Western Environmental Services	Client Project ID:	Sithe	Sampled: Apr 30, 1991
1010 So. Pacific Coast Highway			Received: May 1, 1991
Redondo Beach, CA 90277	Sample Descript:	Liquid, Fuel Oil #3	Analyzed: May 3, 1991
Attention: Tom Rooney	Lab Number:	105-0013	Reported: May 6, 1991

Analyte	EPA Method	Detection Limit (ug/kg)	Analysis Result (ug/kg)
Arsenic	7060	1,000.0	N.D.
Beryllium	6010	100.0	N.D.
Cadmium	6010	100.0	N.D.
Chromium (VI)	7197	50.0	N.D.
Chromium (Total)	6010	50.0	N.D.
Copper	6010	100.0	N.D.
Lead	6010	50.0	N.D.
Mercury	7471	100.0	N.D.
Nickel	6010	500.0	N.D.
Selenium	7740	100.0	N.D.
Zinc	6010	100.0	N.D.
Manganese	6010	50.0	N.D.

Analytes reported as N.D. were not present above the stated limit of detection. Because matrix effects and/or other factors required additional sample dilution, detection limits for this sample have been raised.

DEL MAR ANALYTICAL

Gary Steube
Laboratory Director

D00034

1050011.WE8 <3>

Del Mar Analytical

2852 Alton Avenue · Irvine, California 92714
(714) 261-1022 · FAX (714) 261-1228

Western Environmental Services	Client Project ID:	Sithe	Sampled: Apr 30, 1991
1010 So. Pacific Coast Highway	Sample Descript:	Liquid, Fuel Oil #3	Received: May 1, 1991
Redondo Beach, CA 90277			Analyzed: May 3, 1991
Attention: Tom Rooney	Lab Number:	105-0013	Reported: May 6, 1991

LABORATORY ANALYSIS

Analyte	Detection Limit	Sample Results
Density	0.002	0.8534
Sulfur, %	0.005	0.01
Chloride, mg/kg	1.0	7.0

Analytes reported as N.D. were not present above the stated limit of detection.

DEL MAR ANALYTICAL

Gary Steube
Laboratory Director

D00035

1050011.WES <6>

1010 ... PACI ... OAST ... IWA
REDONDO BEACH, CALIFORNIA 90277

CHAIN-OF-CUSTODY RECORD

PROJECT NO: Sithe
DATE 5-1-91 PAGE 1 OF 1

PROJECT NAME Sithe
REFERENCE
ADDRESS
SAMPLERS (SIGNATURE) [signature]
LABORATORY WES

SAMPLE NO.	DATE	TIME	LOCATION	PETROLEUM HYDROCARBONS 8015	PETROLEUM HYDROCARBONS 418.1	BTXE (8020/602)	CAC METALS	HALOGENATED VOLATILE ORGANICS 8010	Trace Metals	Density Specific	Chloride	Sulfur	Cr+6	NUMBER OF CONTAINERS	COMMENTS/ CONTAINER TYPE
Fuel Oil #1	4/30	1000	91-Sithe						✓	✓	✓	✓	✓	1	
Fuel Oil #2	4/30	1200	91-Sithe						✓	✓	✓	✓	✓	1	
Fuel Oil #3	4/30	200 pm	91-Sithe						✓	✓	✓	✓	✓	1	

TOTAL NUMBER OF CONTAINERS: 3

1 RELINQUISHED BY
SIGNATURE: [signature]
PRINTED NAME: Thomas Rooney
COMPANY: WES
DATE: 5/1
TIME: 700

2 RECEIVED BY
SIGNATURE: Jonathan Sibbald
PRINTED NAME: Jonathan Sibbald
COMPANY: Wes
DATE: 5/1
TIME: 7:15

3 RELINQUISHED BY
SIGNATURE: Jonathan Sibbald
PRINTED NAME: Jonathan Sibbald
COMPANY: WES
DATE: 5/1
TIME: 8:43

4 RECEIVED BY
SIGNATURE
PRINTED NAME
COMPANY
DATE
TIME

5 RELINQUISHED BY
SIGNATURE
PRINTED NAME
COMPANY
DATE
TIME

6 RECEIVED BY (LAB)
SIGNATURE: Libby Penkal
PRINTED NAME: Libby Penkal
COMPANY: DMA
DATE: 5/1/91
TIME: 8:45

SAMPLE CONDITIONS
RECEIVED ON ICE YES / NO (NO circled)
SEALED YES / NO (YES circled)

SPECIAL SHIPMENT/HANDLING OR STORAGE REQUIREMENTS: See attached Sheet

D00036

PL# 3689 APR 29 1991

Sithe

1010 SO. PACIFIC COAST HI[illegible]
REDONDO BEACH, CALIFORNIA 90277

CHAIN-OF-CUSTODY RECORD

PROJECT NO: Sithe
DATE 4/29/91 PAGE 1 OF 1

PROJECT NAME 32nd St Naval Station
REFERENCE
ADDRESS San Diego
SAMPLERS (SIGNATURE) Nat Muzik
LABORATORY WES

LAB NO.	SAMPLE NO.	DATE	TIME	LOCATION	METHODS: PETROLEUM HYDROCARBONS 8015	PETROLEUM HYDROCARBONS 418.1	BTXE (8020/602)	CAC METALS	HALOGENATED VOLATILE ORGANICS 8010	Formaldehyde	NUMBER OF CONTAINERS	COMMENTS/ CONTAINER TYPE
001A	91-SYTHE-Cogen-Test #1									✓	2	Combine +
001B												
002A	91-SYTHE-Cogen-Test #2									✓	2	Analyze
002B												↓
003	91-DIWPH-Blank									✓	1	
				Report TOTAL mg/sample								

1 RELINQUISHED BY	DATE	3 RELINQUISHED BY	DATE	5 RELINQUISHED BY	DATE
SIGNATURE: Nat Muzik	4/29/91	SIGNATURE: H. Neoma Muzik	4/29/91	SIGNATURE	
PRINTED NAME: NAT MUZIK	TIME: 730	PRINTED NAME: H. Neoma Muzik	TIME: 1015	PRINTED NAME	TIME
COMPANY: WES		COMPANY: WES		COMPANY	

2 RECEIVED BY	DATE	4 RECEIVED BY	DATE	6 RECEIVED BY (LAB)	DATE
SIGNATURE: H. Neoma Muzik	4/29/91	SIGNATURE: Jennifer Hereen	4.29.91	SIGNATURE	
PRINTED NAME: H. Neoma Muzik	TIME: 730	PRINTED NAME: JENNIFER HEREEN	TIME: 1015	PRINTED NAME	TIME
COMPANY: WES		COMPANY: PYRAMID LABS		COMPANY	

5 TOTAL NUMBER OF CONTAINERS

SAMPLE CONDITIONS
RECEIVED ON ICE YES / NO
SEALED YES / NO

SPECIAL SHIPMENT/HANDLING OR STORAGE REQUIREMENTS:

D00037

3689

MAY 01 1991

1010 SO. PACIFIC COAST HIGHWAY
REDONDO BEACH, CALIFORNIA 90277

CHAIN-OF-CUSTODY RECORD

PROJECT NO: SITHE
DATE 5-1-91 PAGE 1 OF 1

PROJECT NAME SITHE
REFERENCE
ADDRESS
SAMPLERS (SIGNATURE) Thom Looney
LABORATORY WES

LAB NO.	SAMPLE NO.	DATE	TIME	LOCATION	METHODS: PETROLEUM HYDROCARBONS 8015	PETROLEUM HYDROCARBONS 418.1	BTXE (8020/602)	CAC METALS	HALOGENATED VOLATILE ORGANICS 8010	Formaldehyde 8315	NUMBER OF CONTAINERS	COMMENTS/ CONTAINER TYPE
004	GAS #3			91-Sithe						✓	1	
005	Q1 #1			91-Sithe						✓	1	
006	Q1 #2			91-Sithe						✓	1	

TOTAL NUMBER OF CONTAINERS 3

1 RELINQUISHED BY: Thom Looney — SIGNATURE — PRINTED NAME: THOMAS LOONEY — COMPANY: WES — DATE: 5/1 — TIME: 800

2 RECEIVED BY: Jonathan Sibbald — SIGNATURE — PRINTED NAME: Jonathan Sibbald — COMPANY: Wes — DATE: 5/1 — TIME: 7:15

3 RELINQUISHED BY: Jonathan Sibbald — SIGNATURE — PRINTED NAME: Jonathan Sibbald — COMPANY: WES — DATE: 5/1 — TIME: 8:20

4 RECEIVED BY: Jennifer Herren — SIGNATURE — PRINTED NAME: JENNIFER HERREN — COMPANY: PYRAMID LABS — DATE: 5/1 — TIME: 8:30

5 RELINQUISHED BY — SIGNATURE — PRINTED NAME — COMPANY — DATE — TIME

6 RECEIVED BY (LAB) — SIGNATURE — PRINTED NAME — COMPANY — DATE — TIME

SAMPLE CONDITIONS
RECEIVED ON ICE YES (NO)
SEALED (YES) / NO

SPECIAL SHIPMENT/HANDLING OR STORAGE REQUIREMENTS:
Please FAX results as soon as possible

D00038

WESTERN ENVIRONMENTAL SERVICES

APPENDIX E

GROUP: 5 [illegible] [illegible]

GAS H1,2

	TWFY10 AO GAS TURB H20 INJ NET FLOW	SDGEGAS AO KSCFH	CEFI20 AO PROCESS CNDST RET FLOW	CETI16 AO PROCESS CNDST RET TEMP
28/04/91				
07:00:12	24.70	474.4	1.124	66.06
07:02:12	24.70	474.4	1.127	65.84
07:04:12	24.70	474.6	-1.125	65.62
07:06:12	24.68	474.3	1.126	65.47
07:08:12	24.66	474.2	-1.127	65.29
07:10:12	24.66	474.2	-1.127	65.14
07:12:12	24.68	474.3	-1.129	64.97
07:14:12	24.67	474.1	-1.125	64.81
07:16:12	24.67	473.9	-1.126	64.65
07:18:12	24.68	473.9	-1.127	64.48
07:20:12	24.71	473.6	-1.128	65.32
07:22:12	24.72	473.6	-1.128	65.62
07:24:12	24.70	473.6	-1.128	65.35
07:26:12	24.68	473.2	-1.127	65.07
07:28:12	24.69	473.3	-1.129	64.82
07:30:12	24.72	473.4	-1.126	64.59
07:32:12	24.70	473.4	-1.125	64.40
07:34:12	24.70	473.4	-1.125	64.20
07:36:12	24.66	473.2	-1.128	64.01
07:38:12	24.69	473.2	-1.125	63.79
07:40:12	24.72	473.2	-1.125	63.62
07:42:12	24.71	472.8	-1.125	63.87
07:44:12	24.66	472.6	-1.124	63.55
07:46:12	24.69	472.6	-1.126	63.49
07:48:12	24.66	472.6	-1.123	63.89
07:50:12	24.70	472.3	-1.126	63.52
07:52:12	24.71	472.3	-1.125	63.38
07:54:12	24.69	472.3	-1.116	63.24
07:56:12	24.70	472.2	-1.114	64.85
07:58:12	24.67	472.0	-1.113	67.14
08:00:12	24.71	471.8	-1.108	66.84
08:02:12	24.71	471.8	-1.106	66.71
08:04:12	24.74	471.6	-1.106	66.56
08:06:12	24.70	471.5	-1.104	66.37
08:08:12	24.71	471.7	-1.104	66.17
08:10:12	24.69	471.6	-1.102	65.96
08:12:12	24.72	471.6	-1.093	65.79
08:14:12	24.70	471.5	-1.090	65.65
08:16:12	24.70	471.1	-1.085	65.56
08:18:12	24.68	471.3	-1.082	65.92
08:20:12	24.72	471.3	-1.083	65.72
08:22:12	24.72	470.9	-1.097	65.64
08:24:12	24.72	471.0	-1.135	65.73
08:26:12	24.72	470.9	-1.169	65.83
08:28:12	24.66	470.5	-1.197	65.79
08:30:12	24.68	470.4	-1.204	65.83
08:32:12	24.73	470.2	-1.198	65.91
08:34:12	24.73	470.1	-1.183	65.97
08:36:12	24.76	470.0	-1.158	66.10
08:38:12	24.72	470.0	-1.139	66.27
08:40:12	24.71	469.8	-1.128	67.29
08:42:12	24.71	469.7	-1.135	68.45
08:44:12	24.72	469.4	-1.156	68.15
08:46:12	24.72	469.5	-1.181	68.01
08:48:12	24.66	469.6	-1.196	68.04
08:50:12	24.64	469.4	-1.212	68.26
08:52:12	24.68	469.4	-1.221	68.47

H_2O 25.3

(25.3)(60)(8.34) = 12,700 lb/hr.

Net gas (MW ~ 17)
Assume 700 F std. T.

(408/60)(1000) × (18/387)

= 5.7 lb/sec.

E00001

08:54:12	24.62	469.3	-1.225	68.61
08:56:12	24.59	469.4	-1.219	68.81
08:58:12	24.60	469.2	-1.214	69.25
09:00:12	24.61	469.0	-1.201	69.25
09:02:12	24.66	468.9	-1.187	69.32
09:04:12	24.64	468.8	-1.170	69.45
09:06:12	24.62	468.7	-1.140	69.45
09:08:12	24.62	468.6	-1.090	69.42
09:10:12	24.61	468.5	-1.044	69.38
09:12:12	24.69	468.5	-1.004	69.41
09:14:12	24.74	468.7	-0.979	69.43
09:16:12	24.75	468.6	-0.967	69.49
09:18:12	24.75	468.5	-0.948	69.59
09:20:12	24.75	468.2	-0.947	70.10
09:22:12	24.69	468.7	-0.946	70.42
09:24:12	24.69	468.6	-0.940	70.31
09:26:12	24.69	468.6	-0.929	70.35
09:28:12	24.73	468.7	-0.940	70.52
09:30:12	24.71	468.5	-0.947	70.76
09:32:12	24.71	468.3	-0.946	71.06
09:34:12	24.78	468.5	-0.928	71.41
09:36:12	24.74	468.0	-0.923	71.99
09:38:12	24.72	467.4	-0.937	71.99
09:40:12	24.76	467.3	-0.980	72.20
09:42:12	24.77	467.9	-1.029	72.41
09:44:12	24.73	468.2	-1.064	72.58
09:46:12	24.74	468.2	-1.086	72.73
09:48:12	24.72	467.8	-1.099	72.82
09:50:12	24.74	467.5	-1.106	73.13
09:52:12	24.75	467.1	-1.076	73.62
09:54:12	24.71	467.2	-1.015	73.41
09:56:12	24.77	467.0	-0.960	73.28
09:58:12	24.73	467.0	-0.912	73.33
10:00:12	24.79	467.1	-0.882	73.46
10:02:12	24.70	467.3	-0.856	73.61
10:04:12	24.72	467.5	-0.835	73.88
10:06:12	24.75	467.6	-0.823	74.42
10:08:12	24.74	467.5	-0.809	74.51
10:10:12	24.76	467.6	-0.803	74.39
10:12:12	24.76	467.6	-0.791	74.50
10:14:12	24.74	467.4	-0.783	74.69
10:16:12	24.74	466.8	-0.772	74.90
10:18:12	24.74	466.6	-0.764	75.10

E00002

GROUP: 3 PERIOD3 28/APR/91

	TWFY10 AO GAS TURB H20 INJ NET FLOW	SDGEGAS AO	CEFI20 AO PROCESS CNDST RET FLOW	CETI16 AO PROCESS CNDST RET TEMP
28/04/91				
10:18:12	24.74	466.6	-0.764	75.10
10:20:12	24.78	466.8	-0.784	75.31
10:22:12	24.73	466.8	-0.831	75.52
10:24:12	24.75	466.6	-0.874	75.74
10:26:12	24.75	466.6	-0.871	75.96
10:28:12	24.78	466.5	-0.835	76.45
10:30:12	24.72	466.2	-0.797	76.68
10:32:12	24.78	466.1	-0.771	76.68
10:34:12	24.75	465.9	-0.772	76.81
10:36:12	24.75	466.0	-0.809	76.96
10:38:12	24.75	466.0	-0.835	77.17
10:40:12	24.77	465.9	-0.820	77.40
10:42:12	24.74	465.8	-0.783	77.56
10:44:12	24.78	465.6	-0.751	77.73
10:46:12	24.74	465.4	-0.720	77.93
10:48:12	24.76	465.2	-0.699	78.17
10:50:12	24.73	465.3	-0.692	78.50
10:52:12	24.72	465.3	-0.676	78.64
10:54:12	24.78	465.0	-0.673	78.71
10:56:12	24.77	464.9	-0.677	78.82
10:58:12	24.79	464.9	-0.712	78.93
11:00:12	24.76	464.9	-0.776	79.01
11:02:12	24.79	464.7	-0.837	79.09
11:04:12	24.77	464.8	-0.888	79.11
11:06:12	24.72	465.0	-0.924	79.04
11:08:12	24.78	464.9	-0.946	78.98
11:10:12	24.76	464.8	-0.963	78.94
11:12:12	24.75	464.9	-0.974	78.89
11:14:12	24.75	464.7	-0.974	78.76
11:16:12	24.76	464.8	-0.976	78.63
11:18:12	24.75	464.4	-0.973	78.51
11:20:12	24.72	464.5	-0.972	78.40
11:22:12	24.76	464.5	-0.972	78.27
11:24:12	24.74	464.6	-0.966	78.15
11:26:12	24.79	464.3	-0.955	78.02
11:28:12	24.75	464.3	-0.950	77.79
11:30:12	24.78	464.5	-0.937	77.70
11:32:12	24.73	464.5	-0.926	77.65
11:34:12	24.71	464.8	-0.916	77.61
11:36:12	24.77	464.7	-0.915	77.57
11:38:12	24.71	464.6	-0.904	77.49
11:40:12	24.73	464.7	-0.904	77.44
11:42:12	24.74	464.3	-0.894	77.40
11:44:12	24.78	464.3	-0.881	77.29
11:46:12	24.77	464.3	-0.873	77.23
11:48:12	24.78	464.6	-0.854	77.20
11:50:12	24.77	464.6	-0.827	77.16
11:52:12	24.76	464.6	-0.766	77.17
11:54:12	24.78	464.7	-0.693	77.16
11:56:12	24.78	464.7	-0.641	77.17

E00003

GROUP: 5 PCTREND5 28/AP/91

	TWFY10 AO GAS TURB H20 INJ NET FLOW	SPCEGAS AO	CEFI20 AO PROCESS CNDST RET FLOW	CET116 AO PROCESS CNDST RET TEMP
28/04/91				
12:00:12	25.88	470.5	[illegible]	77.11
12:02:12	25.64	471.3	[illegible]	77.06
12:04:12	25.43	471.3	[illegible]	77.07
12:06:12	25.44	471.3	[illegible]	77.06
12:08:12	25.39	471.6	[illegible]	77.07
12:10:12	25.42	471.8	[illegible]	77.08
12:12:12	25.40	471.9	[illegible]	77.07
12:14:12	25.39	472.1	[illegible]	77.01
12:16:12	25.39	472.6	[illegible]	76.91
12:18:12	25.34	472.8	[illegible]	76.90
12:20:12	25.40	472.6	[illegible]	76.98
12:22:12	25.40	472.3	[illegible]	77.06
12:24:12	25.42	472.1	[illegible]	77.08
12:26:12	25.42	471.9	[illegible]	77.16
12:28:12	25.39	471.0	[illegible]	77.20
12:30:12	25.42	466.7	[illegible]	77.26
12:32:12	25.41	465.7	0.926	77.35
12:34:12	25.41	465.5	[illegible]	77.49
12:36:12	25.46	465.9	[illegible]	77.61
12:38:12	25.42	465.7	[illegible]	77.67
12:40:12	25.40	465.6	[illegible]	77.91
12:42:12	25.41	465.8	[illegible]	78.01
12:44:12	25.42	466.0	[illegible]	78.04
12:46:12	25.42	466.1	0.896	78.27
12:48:12	25.43	466.3	-0.875	78.42
12:50:12	25.44	466.2	0.855	78.55
12:52:12	25.40	466.3	-0.839	78.67
12:54:12	25.37	466.2	-0.819	78.87
12:56:12	25.44	466.3	0.813	80.83
12:58:12	25.44	466.4	-0.800	81.22
13:00:12	25.41	466.0	-0.78[illegible]	81.59
13:02:12	25.44	466.2	-0.764	81.63
13:04:12	25.42	466.0	-0.744	81.70
13:06:12	25.44	465.9	-0.733	81.79
13:08:12	25.45	465.9	-0.716	81.89
13:10:12	25.43	466.0	-0.700	81.94
13:12:12	25.41	466.0	-0.677	82.01

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13:14:12	25.41	466.1	-0.660	82.07
13:16:12	25.40	465.9	-0.655	82.21
13:18:12	25.40	465.8	-0.647	82.62
13:20:12	25.42	465.5	-0.640	82.68
13:22:12	25.49	465.4	-0.639	82.72
13:24:12	25.46	465.2	-0.635	82.75
13:26:12	25.39	465.1	-0.632	82.85
13:28:12	25.41	465.1	-0.629	82.92
13:30:12	25.40	465.4	-0.608	82.93
13:32:12	25.47	465.4	-0.608	82.96
13:34:12	25.42	465.4	-0.610	83.00
13:36:12	25.44	465.4	-0.610	83.03
13:38:12	25.40	465.5	-0.604	83.55
13:40:12	25.44	465.6	-0.573	85.23
13:42:12	25.40	465.3	-0.533	85.66
13:44:12	25.45	465.7	-0.489	85.62
13:46:12	25.40	465.6	-0.461	85.58
13:48:12	25.43	465.3	-0.448	85.60
13:50:12	25.39	465.2	-0.465	85.55
13:52:12	25.40	465.2	-0.518	85.55
13:54:12	25.43	465.1	-0.579	85.51
13:56:12	25.44	465.0	-0.631	85.52
13:58:12	25.44	465.7	-0.682	85.61
14:00:12	25.44	465.9	-0.723	85.71

E00005

GROUP: 5 PCTREND5 28/AP/91

	TWEY10 AO GAS TURB H20 INJ NET FLOW	SDGEGAS AO	CEF120 AO PROCESS CNDST RET FLOW	CEF116 AO PROCESS CNDST RET TEMP
28/04/91				
14:00:12	25.44	465.9	-0.723	85.71
14:02:12	25.41	465.5	-0.747	85.75
14:04:12	25.44	465.3	-0.744	85.87
14:06:12	25.42	465.1	-0.730	85.96
14:08:12	25.41	465.1	-0.711	86.10
14:10:12	25.43	464.8	-0.685	86.08
14:12:12	25.37	465.0	-0.677	86.03
14:14:12	25.39	465.1	-0.668	86.10
14:16:12	25.41	465.1	-0.652	87.32
14:18:12	25.41	465.2	-0.632	87.88
14:20:12	25.41	465.2	-0.611	87.93
14:22:12	25.40	465.6	-0.597	87.84
14:24:12	25.44	465.6	-0.589	87.78
14:26:12	25.36	465.5	-0.588	87.76
14:28:12	25.39	465.6	-0.586	87.73
14:30:12	25.41	466.2	-0.586	87.73
14:32:12	25.40	466.1	-0.588	87.70
14:34:12	25.40	466.3	-0.588	87.75
14:36:12	25.37	466.5	-0.589	87.74
14:38:12	25.40	466.7	-0.594	87.71
14:40:12	25.42	466.5	-0.608	87.69
14:42:12	25.41	466.7	-0.599	87.64
14:44:12	25.40	466.4	-0.589	87.64
14:46:12	25.41	466.9	-0.589	87.60
14:48:12	25.41	466.8	-0.594	87.60
14:50:12	25.42	467.0	-0.609	88.16
14:52:12	25.42	466.6	-0.607	88.77
14:54:12	25.37	466.5	-0.611	88.96
14:56:12	25.40	466.4	-0.619	88.95
14:58:12	25.40	466.3	-0.634	88.90
15:00:12	25.44	466.3	-0.640	88.85
15:02:12	25.39	466.4	-0.657	88.83
15:04:12	25.40	466.1	-0.657	88.78
15:06:12	25.39	466.0	-0.657	88.74
15:08:12	25.43	466.1	-0.658	88.69
15:10:12	25.41	466.0	-0.652	88.64
15:12:12	25.43	466.1	-0.657	88.63
15:14:12	25.42	466.1	-0.657	88.62
15:16:12	25.40	466.0	-0.656	88.60
15:18:12	25.41	465.8	-0.663	88.58
15:20:12	25.39	465.9	-0.655	88.60
15:22:12	25.43	465.8	-0.655	88.61
15:24:12	25.43	465.5	-0.657	88.60
15:26:12	25.41	465.4	-0.658	88.59
15:28:12	25.41	465.4	-0.659	88.59
15:30:12	25.43	465.0	-0.667	88.55
15:32:12	25.40	464.9	-0.683	88.54
15:34:12	25.40	464.7	-0.687	88.54
15:36:12	25.42	464.6	-0.701	88.51
15:38:12	25.40	464.7	-0.710	88.50
15:40:12	25.42	464.7	-0.722	88.54

15:42:12	25.45	464.8	-0.712	89.01
15:44:12	25.39	464.7	-0.706	89.04
15:46:12	25.39	464.9	-0.705	89.14
15:48:12	25.39	464.9	-0.703	89.14
15:50:12	25.37	464.7	-0.703	89.09
15:52:12	25.36	464.9	-0.695	89.07
15:54:12	25.42	464.8	-0.687	89.01
15:56:12	25.31	464.7	-0.686	88.97
15:58:12	25.31	464.7	-0.674	88.95
16:00:12	25.27	464.8	-0.652	88.93
16:02:12	25.26	465.1	-0.627	88.88
16:04:12	25.26	465.3	-0.600	88.89
16:06:12	25.27	465.4	-0.586	88.88
16:08:12	25.25	465.1	-0.585	88.87
16:10:12	25.25	465.4	-0.588	88.87

GROUP: 14 ELECTRIC PWR. 28/APR/91

	EE.IY103 AO 69KV WATT HOUR OUT	EE.IT114 AO STM TURB GENERAT WATTS	EE.IY108 AO GAS TURB GENERAT WATTS	EE.IT103 AO INSTANT OUTGOING POWER
28/04/91				
08:00:12	360.3	6.607	39.34	44.38
08:02:12	361.9	6.610	39.37	44.42
08:04:12	363.3	6.657	39.34	44.43
08:06:12	364.7	6.617	39.35	44.39
08:08:12	366.3	6.585	39.35	44.36
08:10:12	367.7	6.580	39.35	44.37
08:12:12	369.2	6.613	39.34	44.38
08:14:12	370.6	6.681	39.32	44.43
08:16:12	372.2	6.700	39.28	44.41
08:18:12	373.6	6.708	39.30	44.45
08:20:12	375.1	6.706	39.30	44.44
08:22:12	376.7	6.695	39.26	44.39
08:24:12	378.1	6.707	39.27	44.41
08:26:12	379.6	6.694	39.26	44.40
08:28:12	381.1	6.662	39.23	44.32
08:30:12	382.6	6.682	39.20	44.31
08:32:12	384.0	6.719	39.17	44.32
08:34:12	385.5	6.776	39.15	44.36
08:36:12	387.0	6.845	39.15	44.42
08:38:12	388.5	6.881	39.15	44.46
08:40:12	389.9	6.875	39.12	44.42
08:42:12	391.5	6.858	39.12	44.41
08:44:12	392.9	6.873	39.09	44.38
08:46:12	394.4	6.914	39.11	44.45
08:48:12	396.0	6.976	39.11	44.53
08:50:12	397.4	7.015	39.10	44.53
08:52:12	398.9	6.986	39.10	44.50
08:54:12	400.4	6.968	39.10	44.31
08:56:12	401.9	6.961	39.10	44.26
08:58:12	403.3	6.968	39.07	44.21
09:00:12	404.8	7.034	39.05	44.25
09:02:12	406.3	7.140	39.03	44.33
09:04:12	407.8	7.162	39.02	44.33
09:06:12	409.2	7.101	39.00	44.25
09:08:12	410.7	7.047	38.98	44.17

E00008

09:12:12	413.7	7.194	38.97	44.42
09:14:12	415.1	7.227	39.00	44.54
09:16:12	416.7	7.185	38.98	44.49
09:18:12	418.2	7.135	38.97	44.42
09:20:12	419.6	7.140	38.94	44.39
09:22:12	421.2	7.140	38.98	44.44
09:24:12	422.6	7.149	38.95	44.42
09:26:12	424.1	7.159	38.96	44.43
09:28:12	425.5	7.114	38.97	44.40
09:30:12	427.1	7.024	38.95	44.29
09:32:12	428.5	7.046	38.93	44.29
09:34:12	430.0	7.081	38.94	44.35
09:36:12	431.5	7.078	38.86	44.26
09:38:12	433.0	7.089	38.78	44.20
09:40:12	434.4	7.090	38.81	44.23
09:42:12	435.9	7.088	38.89	44.31
09:44:12	437.5	7.064	38.92	44.31
09:46:12	438.9	7.125	38.90	44.35
09:48:12	440.3	7.159	38.85	44.34
09:50:12	441.8	7.130	38.81	44.27
09:52:12	443.4	7.121	38.76	44.22
09:54:12	444.8	7.141	38.78	44.25
09:56:12	446.2	7.124	38.75	44.21
09:58:12	447.8	7.043	38.74	44.12
10:00:12	449.2	6.990	38.77	44.08
10:02:12	450.7	7.091	38.79	44.20
10:04:12	452.1	7.145	38.81	44.28
10:06:12	453.7	7.137	38.82	44.28
10:08:12	455.2	7.115	38.81	44.25
10:10:12	456.6	7.017	38.82	44.18
10:12:12	458.0	6.879	38.81	44.03
10:14:12	459.5	6.822	38.76	43.91
10:16:12	461.1	6.862	38.68	43.88
10:18:12	462.5	6.938	38.67	43.95
10:20:12	463.9	6.950	38.70	43.98
10:22:12	465.4	6.908	38.69	43.93
10:24:12	466.8	6.912	38.68	43.93
10:26:12	468.4	6.990	38.67	43.99
10:28:12	469.8	6.985	38.64	43.96
10:30:12	471.3	6.948	38.63	43.90
10:32:12	472.7	6.925	38.61	43.93
10:34:12	474.2	7.077	38.59	44.00
10:36:12	475.7	7.157	38.60	44.09
10:38:12	477.2	7.192	38.61	44.14
10:40:12	478.6	7.143	38.58	44.06
10:42:12	480.1	7.113	38.58	44.02
10:44:12	481.7	7.046	38.56	43.94
10:46:12	483.1	6.926	38.52	43.79
10:48:12	484.5	6.891	38.51	43.76
10:50:12	486.0	6.927	38.54	43.81
10:52:12	487.4	6.951	38.54	43.85
10:54:12	488.9	6.999	38.50	43.84
10:56:12	490.4	7.031	38.48	43.86
10:58:12	491.9	6.979	38.48	43.80
11:00:12	493.3	6.952	38.47	43.76
11:02:12	494.7	6.936	38.45	43.72
11:04:12	496.2	6.911	38.45	43.72
11:06:12	497.6	6.935	38.47	43.75
11:08:12	499.1	6.942	38.46	43.74
11:10:12	500.7	6.898	38.46	43.71
11:12:12	502.1	6.903	38.45	43.72
11:14:12	503.5	6.928	38.43	43.71
11:16:12	505.0	6.902	38.42	43.67
11:18:12	506.4	6.890	38.38	43.61

11:24:12	510.7	6.868	38.40	43.62
11:26:12	512.3	6.858	38.37	43.57
11:28:12	513.8	6.871	38.39	43.62
11:30:12	515.2	6.912	38.39	43.65
11:32:12	516.6	6.927	38.40	43.67
11:34:12	518.1	6.947	38.43	43.72
11:36:12	519.5	6.952	38.42	43.71
11:38:12	521.0	6.961	38.41	43.72
11:40:12	522.4	6.913	38.40	43.66
11:42:12	524.0	6.902	38.37	43.61
11:44:12	525.4	6.881	38.36	43.58
11:46:12	526.9	6.907	38.38	43.63
11:48:12	528.3	6.906	38.41	43.65
11:50:12	529.7	6.921	38.40	43.67
11:52:12	531.2	6.954	38.41	43.70
11:54:12	532.6	6.956	38.42	43.71
11:56:12	534.2	6.940	38.39	43.67
11:58:12	535.6	6.974	38.65	43.96
12:00:12	537.1	6.938	39.00	44.27
12:02:12	538.5	6.868	38.99	44.18
12:04:12	540.1	6.830	39.00	44.15
12:06:12	541.5	6.801	38.99	44.12
12:08:12	543.0	6.754	39.01	44.08
12:10:12	544.4	6.731	39.00	44.07
12:12:12	546.0	6.688	39.03	44.04
12:14:12	547.5	6.698	39.06	44.07
12:16:12	548.9	6.755	39.15	44.21
12:18:12	550.3	6.798	39.15	44.27
12:20:12	551.9	6.817	39.13	44.26
12:22:12	553.4	6.859	39.07	44.25
12:24:12	554.8	6.905	39.06	44.28
12:26:12	556.2	6.907	39.02	44.26
12:28:12	557.7	6.898	38.79	44.02
12:30:12	559.3	6.914	38.42	43.67
12:32:12	560.7	6.959	38.38	43.67
12:34:12	562.1	6.976	38.41	43.72
12:36:12	563.6	6.966	38.47	43.78
12:38:12	565.0	6.929	38.42	43.69
12:40:12	566.5	6.959	38.44	43.74
12:42:12	568.0	7.034	38.48	43.85
12:44:12	569.5	7.093	38.50	43.93
12:46:12	570.9	7.013	38.52	43.87
12:48:12	572.4	7.014	38.52	43.88
12:50:12	573.8	7.027	38.53	43.89
12:52:12	575.4	7.063	38.54	43.94
12:54:12	576.8	7.070	38.54	43.94
12:56:12	578.3	7.065	38.54	43.95
12:58:12	579.7	7.057	38.58	43.96
13:00:12	581.1	7.039	38.50	43.87
13:02:12	582.7	7.004	38.55	43.89
13:04:12	584.2	7.037	38.50	43.87
13:06:12	585.6	7.129	38.50	43.95
13:08:12	587.0	7.203	38.51	44.04
13:10:12	588.5	7.239	38.50	44.08
13:12:12	590.1	7.194	38.50	44.02
13:14:12	591.5	7.173	38.51	44.01
13:16:12	593.0	7.125	38.49	43.95
13:18:12	594.4	7.067	38.47	43.89
13:20:12	595.8	7.109	38.43	43.88
13:22:12	597.3	7.136	38.41	43.89
13:24:12	598.9	7.112	38.40	43.86
13:26:12	600.3	7.024	38.40	43.76
13:28:12	601.7	6.998	38.40	43.73
13:30:12	603.2	7.119	38.45	43.91

13:34:12	606.1	7.[illegible]	[illegible]	[illegible]
13:36:12	607.6	7.263	38.42	44.03
13:38:12	609.1	7.220	38.46	44.02
13:40:12	610.5	7.208	38.45	44.00
13:42:12	612.0	7.182	38.42	43.95
13:44:12	613.5	7.208	38.48	44.03
13:46:12	615.0	7.263	38.43	44.02
13:48:12	616.4	7.223	38.42	43.98
13:50:12	617.9	7.176	38.39	43.92
13:52:12	619.3	7.134	38.41	43.88
13:54:12	620.9	7.195	38.39	43.92
13:56:12	622.3	7.216	38.41	43.97
13:58:12	623.8	7.172	38.51	44.01
14:00:12	625.2	7.151	38.52	44.01
14:02:12	626.6	7.061	38.47	43.89
14:04:12	628.2	7.049	38.45	43.84
14:06:12	629.7	7.118	38.43	43.89
14:08:12	631.1	7.161	38.49	43.90
14:10:12	632.5	7.220	38.47	43.94
14:12:12	634.0	7.309	38.51	44.07
14:14:12	635.6	7.302	38.53	44.07
14:16:12	637.0	7.336	38.44	44.10
14:18:12	638.5	7.306	38.45	44.10
14:20:12	639.9	7.317	38.44	44.09
14:22:12	641.5	7.328	38.47	44.13
14:24:12	642.9	7.253	38.49	44.08
14:26:12	644.4	7.218	38.47	44.03
14:28:12	645.8	7.249	38.52	44.10
14:30:12	647.4	7.311	38.56	44.20
14:32:12	648.8	7.302	38.54	44.18
14:34:12	650.3	7.285	38.56	44.18
14:36:12	651.7	7.222	38.56	44.11
14:38:12	653.1	7.195	38.57	44.11
14:40:12	654.7	7.272	38.58	44.19
14:42:12	656.2	7.354	38.59	44.28
14:44:12	657.6	7.355	38.58	44.27
14:46:12	659.2	7.366	38.64	44.34
14:48:12	660.6	7.358	38.63	44.32
14:50:12	662.1	7.344	38.66	44.34
14:52:12	663.5	7.297	38.58	44.22
14:54:12	665.1	7.263	38.60	44.20
14:56:12	666.5	7.277	38.57	44.17
14:58:12	668.0	7.335	38.58	44.24
15:00:12	669.4	7.369	38.56	44.27
15:02:12	671.0	7.414	38.59	44.34
15:04:12	672.4	7.456	38.55	44.34
15:06:12	673.9	7.557	38.56	44.44
15:08:12	675.5	7.573	38.57	44.46
15:10:12	676.9	7.500	38.55	44.38
15:12:12	678.3	7.434	38.56	44.32
15:14:12	679.9	7.457	38.56	44.34
15:16:12	681.4	7.510	38.56	44.39
15:18:12	682.8	7.526	38.53	44.38
15:20:12	684.2	7.512	38.54	44.37
15:22:12	685.8	7.478	38.54	44.34
15:24:12	687.3	7.432	38.50	44.26
15:26:12	688.7	7.436	38.51	44.27
15:28:12	690.3	7.508	38.50	44.34
15:30:12	691.7	7.521	38.47	44.32
15:32:12	693.2	7.479	38.45	44.25
15:34:12	694.6	7.430	38.44	44.19
15:36:12	696.2	7.386	38.44	44.16
15:38:12	697.6	7.355	38.48	44.16
15:40:12	699.1	7.396	38.47	44.18
15:42:12	700.5	7.488	38.49	44.29

15:46:12	703.5	7.391	38.51	44.22
15:48:12	705.0	7.364	38.50	44.19
15:50:12	706.4	7.458	38.48	44.26
15:52:12	708.0	7.593	38.53	44.43
15:54:12	709.4	7.585	38.51	44.41
15:56:12	710.9	7.524	38.52	44.37
15:58:12	712.5	7.522	38.48	44.32
16:00:12	713.9	7.461	38.55	44.34

out of order
~~Stand~~ pp E13 & 14 should be between E18 & E19.

GROUP: H2 — 29/AP/91

NARSTA GAS RUNS 2 & 3

	GTFQG AO GAS FUEL FLOW	GTFQ AO LIQUID FUEL FLOW	GTWQJ AO STM INJ FLOW RED INPT	NHFC104 PV AMSUPPLY FLOW CONT'LER
29/04/91				
12:28:12	5.822	0.000	24.77	775.7
12:30:12	5.817	0.000	24.82	774.5
12:32:12	5.822	0.000	24.81	773.7
12:34:12	5.817	0.000	24.84	766.8
12:36:12	5.822	0.000	24.82	764.5
12:38:12	5.822	0.000	24.80	765.0
12:40:12	5.817	0.000	24.84	764.3
12:42:12	5.820	0.000	24.84	764.2
12:44:12	5.823	0.000	24.83	764.4
12:46:12	5.815	0.000	24.85	766.1
12:48:12	5.809	0.000	24.82	762.4
12:50:12	5.815	0.000	24.81	761.4
12:52:12	5.815	0.000	24.84	760.5
12:54:12	5.815	0.000	24.82	763.2
12:56:12	5.820	0.000	24.84	761.6
12:58:12	5.820	0.000	24.84	765.0
13:00:12	5.815	0.000	24.80	763.1
13:02:12	5.815	0.000	24.83	763.8
13:04:12	5.822	0.000	24.82	763.5
13:06:12	5.819	0.000	24.83	764.6
13:08:12	5.823	0.000	24.79	764.5
13:10:12	5.817	0.000	24.82	761.9
13:12:12	5.810	0.000	24.83	761.4
13:14:12	5.821	0.000	24.82	764.3
13:16:12	5.817	0.000	24.83	763.3
13:18:12	5.822	0.000	24.82	762.6
13:20:12	5.826	0.000	24.82	758.1
13:22:12	5.823	0.000	24.85	762.4
13:24:12	5.820	0.000	24.82	757.0
13:26:12	5.828	0.000	24.85	758.2
13:28:12	5.828	0.000	24.78	758.1
13:30:12	5.831	0.000	24.88	762.7
13:32:12	5.831	0.000	24.82	763.6
13:34:12	5.827	0.000	24.84	764.6

H_2O 24.8 lb/sec
(24.8)(60)(8.34)
= 12,400 lb/hr.

E00013

13:36:12	5.827	0.000	24.84	765.5
13:38:12	5.832	0.000	24.83	768.0
13:40:12	5.834	0.000	24.81	768.6
13:42:12	5.829	0.000	24.80	771.6
13:44:12	5.832	0.000	24.84	769.0
13:46:12	5.832	0.000	24.81	769.0
13:48:12	5.826	0.000	24.83	767.6
13:50:12	5.832	0.000	24.84	765.4
13:52:12	5.828	0.000	24.85	763.5
13:54:12	5.834	0.000	24.81	766.6
13:56:12	5.827	0.000	24.84	766.0
13:58:12	5.834	0.000	24.82	764.6
14:00:12	5.832	0.000	24.80	763.7
14:02:12	5.832	0.000	24.83	764.9
14:04:12	5.838	0.000	24.80	760.1
14:06:12	5.834	0.000	24.84	763.0
14:08:12	5.835	0.000	24.69	762.0
14:10:12	5.843	0.000	24.72	761.8
14:12:12	5.828	0.000	24.78	762.0
14:14:12	5.830	0.000	24.83	762.9
14:16:12	5.832	0.000	24.80	761.3
14:18:12	5.830	0.000	24.79	760.5
14:20:12	5.834	0.000	24.82	756.8
14:22:12	5.828	0.000	24.85	759.0
14:24:12	5.836	0.000	24.83	760.5
14:26:12	5.828	0.000	24.79	759.3
14:28:12	5.839	0.000	24.82	759.5

GROUP: 02 29/AP/91

	GTFQG AO GAS FUEL FLOW	GTFQ AO LIQUID FUEL FLOW	GTWQJ AO STM INJ FLOW RED INPT	NIFC104 PV AMSUPPLY FLOW CONT'LER
29/04/91				
08:30:12	5.894	0.000	24.76	909.5
08:32:12	5.894	0.000	24.75	908.7
08:34:12	5.890	0.000	24.76	909.3
08:36:12	5.888	0.000	24.78	909.5
08:38:12	5.889	0.000	24.76	909.2
08:40:12	5.882	0.000	24.73	907.9
08:42:12	5.885	0.000	24.77	910.1
08:44:12	5.879	0.000	24.77	908.4
08:46:12	5.880	0.000	24.79	909.9
08:48:12	5.878	0.000	24.78	909.1
08:50:12	5.872	0.000	24.79	910.3
08:52:12	5.866	0.000	24.76	909.8
08:54:12	5.863	0.000	24.81	910.0
08:56:12	5.856	0.000	24.79	908.5
08:58:12	5.852	0.000	24.79	910.4
09:00:12	5.852	0.000	24.78	910.1
09:02:12	5.850	0.000	24.81	910.1
09:04:12	5.851	0.000	24.79	907.1
09:06:12	5.861	0.000	24.75	911.4
09:08:12	5.856	0.000	24.82	909.0
09:10:12	5.855	0.000	24.81	910.5
09:12:12	5.860	0.000	24.82	908.7
09:14:12	5.863	0.000	24.79	909.7
09:16:12	5.861	0.000	24.80	910.6
09:18:12	5.861	0.000	24.80	909.8
09:20:12	5.856	0.000	24.76	908.8
09:22:12	5.857	0.000	24.77	909.9
09:24:12	5.865	0.000	24.79	910.5
09:26:12	5.870	0.000	24.80	909.3
09:28:12	5.857	0.000	24.77	911.2
09:30:12	5.856	0.000	24.77	909.6
09:32:12	5.865	0.000	24.81	908.8
09:34:12	5.855	0.000	24.80	911.2
09:36:12	5.864	0.000	24.77	910.3

09:38:12	5.854	0.000	24.75	909.2
09:40:12	5.856	0.000	24.79	910.9
09:42:12	5.859	0.000	24.78	909.5
09:44:12	5.855	0.000	24.78	910.1
09:46:12	5.860	0.000	24.80	910.5
09:48:12	5.859	0.000	24.81	909.9
09:50:12	5.859	0.000	24.81	907.1
09:52:12	5.855	0.000	24.80	910.9
09:54:12	5.857	0.000	24.76	908.6
09:56:12	5.857	0.000	24.80	911.2
09:58:12	5.860	0.000	24.79	908.8
10:00:12	5.855	0.000	24.80	910.6
10:02:12	5.857	0.000	24.79	908.5
10:04:12	5.854	0.000	24.78	907.5
10:06:12	5.861	0.000	24.79	900.3
10:08:12	5.846	0.000	24.75	900.8
10:10:12	5.852	0.000	24.79	899.9
10:12:12	5.847	0.000	24.79	899.9
10:14:12	5.853	0.000	24.79	898.5
10:16:12	5.852	0.000	24.81	900.6
10:18:12	5.849	0.000	24.78	899.4
10:20:12	5.852	0.000	24.80	900.2
10:22:12	5.853	0.000	24.81	900.1
10:24:12	5.852	0.000	24.82	899.9
10:26:12	5.849	0.000	24.77	898.5
10:28:12	5.853	0.000	24.81	900.3

GROUP: U2 29/AP/91

	GTFQG AO GAS FUEL FLOW	GTFQ AO LIQUID FUEL FLOW	GTWQJ AO STM INJ FLOW RED INPT	NUFC104 PV AMSUPPLY FLOW CONT'LER
29/04/91				
10:28:12	5.853	0.000	24.81	900.3
10:30:12	5.861	0.000	24.80	900.1
10:32:12	5.846	0.000	24.83	899.7
10:34:12	5.846	0.000	24.82	899.4
10:36:12	5.843	0.000	24.80	900.4
10:38:12	5.842	0.000	24.83	899.8
10:40:12	5.841	0.000	24.80	899.2
10:42:12	5.837	0.000	24.82	900.8
10:44:12	5.837	0.000	24.78	899.8
10:46:12	5.847	0.000	24.80	898.7
10:48:12	5.844	0.000	24.75	901.7
10:50:12	5.842	0.000	24.83	900.2
10:52:12	5.847	0.000	24.81	900.9
10:54:12	5.840	0.000	24.76	900.0
10:56:12	5.838	0.000	24.79	900.0
10:58:12	5.838	0.000	24.80	900.0
11:00:12	5.842	0.000	24.81	902.1
11:02:12	5.834	0.000	24.83	898.0
11:04:12	5.842	0.000	24.78	900.6
11:06:12	5.837	0.000	24.81	900.7
11:08:12	5.838	0.000	24.79	900.5
11:10:12	5.835	0.000	24.77	899.1
11:12:12	5.842	0.000	24.85	900.1
11:14:12	5.841	0.000	24.82	900.5
11:16:12	5.842	0.000	24.83	897.5
11:18:12	5.842	0.000	24.83	901.4
11:20:12	5.842	0.000	24.82	900.5
11:22:12	5.837	0.000	24.79	899.2
11:24:12	5.834	0.000	24.83	900.9
11:26:12	5.835	0.000	24.84	899.8
11:28:12	5.837	0.000	24.85	899.3
11:30:12	5.834	0.000	24.83	897.5
11:32:12	5.834	0.000	24.82	878.4
11:34:12	5.833	0.000	24.84	866.1

11:36:12	5.834	[illegible]	24.86	863.0
11:38:12	5.835	[illegible]	24.82	861.8
11:40:12	5.837	[illegible]	24.81	864.6
11:42:12	5.833	[illegible]	24.85	858.6
11:44:12	5.837	[illegible]	24.84	841.2
11:46:12	5.835	[illegible]	24.83	826.1
11:48:12	5.831	[illegible]	24.83	814.9
11:50:12	5.837	[illegible]	24.81	803.7
11:52:12	5.826	[illegible]	24.80	802.1
11:54:12	5.833	0.000	24.81	801.4
11:56:12	5.834	0.000	24.82	803.7
11:58:12	5.832	0.000	24.79	803.7
12:00:12	5.831	0.000	24.79	797.5
12:02:12	5.831	0.000	24.83	791.1
12:04:12	5.833	0.000	24.85	783.2
12:06:12	5.835	0.000	24.81	781.1
12:08:12	5.827	0.000	24.81	784.8
12:10:12	5.830	0.000	24.82	784.1
12:12:12	5.835	0.000	24.78	782.5
12:14:12	5.823	0.000	24.77	781.3
12:16:12	5.830	0.000	24.80	780.5
12:18:12	5.835	0.000	24.80	778.3
12:20:12	5.824	0.000	24.81	773.4
12:22:12	5.824	0.000	24.79	775.6
12:24:12	5.826	0.000	24.79	776.9
12:26:12	5.824	0.000	24.85	776.5
12:28:12	5.822	0.000	24.77	775.7

GROUP: 02

29/AP/91

	CTFQG AO GAS FUEL FLOW	CTFQ AO LIQUID FUEL FLOW	CTWQI AO STM INJ FLOW RED INPT	NUFC104 PV AMSUPPLY FLOW CONTTLER
29/04/91				
14:28:12	5.839	0.000	24.82	759.5
14:30:12	5.833	0.000	24.82	761.0
14:32:12	5.840	0.000	24.83	759.6
14:34:12	5.836	0.000	24.84	759.6
14:36:12	5.834	0.000	24.81	763.3
14:38:12	5.838	0.000	24.80	765.3
14:40:12	5.839	0.000	24.76	765.9
14:42:12	5.841	0.000	24.85	764.8
14:44:12	5.844	0.000	24.82	767.9
14:46:12	5.845	0.000	24.78	766.6
14:48:12	5.846	0.000	24.82	770.0
14:50:12	5.846	0.000	24.82	767.8
14:52:12	5.848	0.000	24.85	771.1
14:54:12	5.848	0.000	24.80	767.3
14:56:12	5.851	0.000	24.83	768.8
14:58:12	5.850	0.000	24.81	772.6
15:00:12	5.765	0.000	24.82	776.0

GROUP: 02 30/AP/91

E06020

CTFQC	CTFQ	CTWQ1	NHFC104
AO	AO	AO	PV
GAS	LIQUID	STM INJ	AMSUPPLY

	FLOW	FLOW		
30/04/91				
07:00:12	5.269	0.000	22.64	694.0
07:02:12	5.275	0.000	22.67	693.6
07:04:12	5.272	0.000	22.64	699.6
07:06:12	5.268	0.000	22.67	705.5
07:08:12	5.269	0.000	22.66	705.8
07:10:12	2.801	2.755	27.35	708.3
07:12:12	0.000	5.839	42.14	619.0
07:14:12	0.000	5.878	42.64	558.9
07:16:12	0.000	6.076	43.32	536.4
07:18:12	0.000	6.089	43.84	515.1
07:20:12	0.000	6.235	43.88	490.3
07:22:12	0.000	6.299	43.85	469.1
07:24:12	0.000	6.335	43.85	468.9
07:26:12	0.000	6.323	43.85	478.6
07:28:12	0.000	6.516	43.84	486.6
07:30:12	0.000	6.436	43.78	494.1
07:32:12	0.000	6.429	43.76	501.6
07:34:12	0.000	6.432	35.25	517.7
07:36:12	0.000	6.433	34.72	854.9
07:38:12	0.000	6.409	34.40	1050.
07:40:12	0.000	6.410	34.35	1162.
07:42:12	0.000	6.416	34.32	1191.
07:44:12	0.000	6.416	34.33	1197.
07:46:12	0.000	6.414	34.26	1199.
07:48:12	0.000	6.412	34.27	1160.
07:50:12	0.000	6.418	34.29	975.7
07:52:12	0.000	6.410	34.32	924.4
07:54:12	0.000	6.415	34.27	911.0
07:56:12	0.000	6.416	34.30	910.3
07:58:12	0.000	6.419	34.34	909.3
08:00:12	0.000	6.420	34.32	911.0
08:02:12	0.000	6.415	34.32	909.4
08:04:12	0.000	6.431	34.32	899.0
08:06:12	0.000	6.424	34.32	883.6
08:08:12	0.000	6.416	34.33	874.2
08:10:12	0.000	6.413	34.28	869.7
08:12:12	0.000	6.427	34.33	867.2
08:14:12	0.000	6.416	34.33	868.4
08:16:12	0.000	6.423	34.31	867.2
08:18:12	0.000	6.423	34.33	867.7
08:20:12	0.000	6.408	34.40	862.0
08:22:12	0.000	6.406	34.35	855.8
08:24:12	0.000	6.412	34.33	854.5
08:26:12	0.000	6.427	34.39	855.2
08:28:12	0.000	6.410	34.30	853.5
08:30:12	0.000	6.417	34.26	850.7
08:32:12	0.000	6.414	34.37	849.9
08:34:12	0.000	6.410	34.30	849.4
08:36:12	0.000	6.422	34.35	848.9
08:38:12	0.000	6.422	34.29	848.3
08:40:12	0.000	6.429	34.33	850.5
08:42:12	0.000	6.425	34.28	851.6
08:44:12	0.000	6.427	34.35	847.8
08:46:12	0.000	6.429	34.33	849.2
08:48:12	0.000	6.420	34.33	850.4
08:50:12	0.000	6.425	34.30	853.5
08:52:12	0.000	6.422	34.32	853.6
08:54:12	0.000	6.423	34.24	854.9
08:56:12	0.000	6.423	34.26	856.4
08:58:12	0.000	6.411	34.32	856.5
09:00:12	0.000	6.417	34.28	856.8
09:02:12	0.000	6.428	34.27	858.2
09:04:12	0.000	6.429	34.30	859.8

H_2O 343ppm

(34.3)(60/8.34)

= 7,200 lb/hr.

E00021

09:08:12	0.000	6.435	34.31	860.4
09:10:12	0.000	6.426	34.29	856.4
09:12:12	0.000	6.429	34.31	858.2
09:14:12	0.000	6.426	34.32	863.2
09:16:12	0.000	6.429	34.36	863.4
09:18:12	0.000	6.423	34.34	863.5
09:20:12	0.000	6.423	34.34	863.0
09:22:12	0.000	6.430	34.28	861.2
09:24:12	0.000	6.420	34.29	858.8
09:26:12	0.000	6.420	34.34	854.1
09:28:12	0.000	6.414	34.33	851.3
09:30:12	0.000	6.418	34.31	850.3
09:32:12	0.000	6.420	34.35	849.3
09:34:12	0.000	6.427	34.27	852.1
09:36:12	0.000	6.429	34.33	850.2
09:38:12	0.000	6.414	34.32	851.3
09:40:12	0.000	6.406	34.38	847.6
09:42:12	0.000	6.412	34.37	851.0
09:44:12	0.000	6.421	34.32	852.0
09:46:12	0.000	6.416	34.30	852.2
09:48:12	0.000	6.408	34.36	852.1
09:50:12	0.000	6.416	34.34	853.9
09:52:12	0.000	6.422	34.33	851.9
09:54:12	0.000	6.422	34.35	850.0
09:56:12	0.000	6.416	34.32	850.2
09:58:12	0.000	6.406	34.34	851.6
10:00:12	0.000	6.421	34.34	848.9
10:02:12	0.000	6.411	34.32	847.6
10:04:12	0.000	6.411	34.37	848.1
10:06:12	0.000	6.389	34.34	852.7
10:08:12	0.000	6.398	34.34	851.9
10:10:12	0.000	6.399	34.33	845.7
10:12:12	0.000	6.393	34.29	847.7
10:14:12	0.000	6.398	34.34	846.0
10:16:12	0.000	6.389	34.30	845.5
10:18:12	0.000	6.398	34.33	847.6
10:20:12	0.000	6.410	34.32	847.9
10:22:12	0.000	6.433	34.36	848.5
10:24:12	0.000	6.429	34.38	847.9
10:26:12	0.000	6.425	34.32	853.1
10:28:12	0.000	6.420	34.29	855.3
10:30:12	0.000	6.425	34.39	854.8
10:32:12	0.000	6.422	34.37	854.6
10:34:12	0.000	6.426	34.36	856.8
10:36:12	0.000	6.425	34.29	859.5
10:38:12	0.000	6.424	34.40	859.9
10:40:12	0.000	6.425	34.39	856.2
10:42:12	0.000	6.423	34.32	860.7
10:44:12	0.000	6.429	34.41	863.5
10:46:12	0.000	6.417	34.39	864.4
10:48:12	0.000	6.412	34.34	865.1
10:50:12	0.000	6.422	34.39	865.0
10:52:12	0.000	6.422	34.39	863.6
10:54:12	0.000	6.425	34.31	861.6
10:56:12	0.000	6.423	34.28	856.0
10:58:12	0.000	6.418	34.36	859.2
11:00:12	0.000	6.407	34.30	860.0
11:02:12	0.000	6.412	34.31	859.4
11:04:12	0.000	6.418	34.29	859.0
11:06:12	0.000	6.424	34.30	856.1
11:08:12	0.000	6.413	34.29	856.8
11:10:12	0.000	6.403	34.31	850.9
11:12:12	0.000	6.421	34.34	851.3
11:14:12	0.000	6.410	34.32	855.4

11:20:12	0.000	6.400	34.33	858.2
11:22:12	0.000	6.403	34.39	855.8
11:24:12	0.000	6.411	34.33	851.4
11:26:12	0.000	6.399	34.36	846.4
11:28:12	0.000	6.409	34.34	848.8
11:30:12	0.000	6.410	34.37	848.8
11:32:12	0.000	6.416	34.39	847.5
11:34:12	0.000	6.416	34.36	848.7
11:36:12	0.000	6.425	34.36	848.3
11:38:12	0.000	6.415	34.35	849.0
11:40:12	0.000	6.423	34.33	845.1
11:42:12	0.000	6.430	34.40	846.0
11:44:12	0.000	6.424	34.33	849.6
11:46:12	0.000	6.426	34.39	850.1
11:48:12	0.000	6.434	34.35	852.6
11:50:12	0.000	6.429	34.38	855.2
11:52:12	0.000	6.432	34.30	853.8
11:54:12	0.000	6.424	34.36	852.5
11:56:12	0.000	6.419	34.31	851.6
11:58:12	0.000	6.410	34.35	851.4
12:00:12	0.000	6.416	34.33	852.6
12:02:12	0.000	6.422	34.29	851.2
12:04:12	0.000	6.417	34.34	854.7
12:06:12	0.000	6.418	34.33	855.0
12:08:12	0.000	6.420	34.29	852.0
12:10:12	0.000	6.413	34.34	850.1
12:12:12	0.000	6.414	34.34	851.2
12:14:12	0.000	6.415	34.34	852.7
12:16:12	0.000	6.412	34.39	851.1
12:18:12	0.000	6.411	34.34	852.7
12:20:12	0.000	6.421	34.33	851.6
12:22:12	0.000	6.420	34.37	854.4
12:24:12	0.000	6.422	34.35	854.3
12:26:12	0.000	6.426	34.32	854.4
12:28:12	0.000	6.427	34.37	857.5
12:30:12	0.000	6.428	34.32	862.4
12:32:12	0.000	6.427	34.36	862.9
12:34:12	0.000	6.423	34.37	864.3
12:36:12	0.000	6.426	34.33	866.0
12:38:12	0.000	6.423	34.39	864.5
12:40:12	0.000	6.427	34.33	857.0
12:42:12	0.000	6.435	34.36	862.3
12:44:12	0.000	6.426	34.31	861.5
12:46:12	0.000	6.422	34.39	859.2
12:48:12	0.000	6.431	34.32	862.4
12:50:12	0.000	6.431	34.37	861.0
12:52:12	0.000	6.427	34.36	862.8
12:54:12	0.000	6.425	34.39	859.9
12:56:12	0.000	6.430	34.36	862.0
12:58:12	0.000	6.423	34.32	860.5
13:00:12	0.000	6.421	34.32	864.9
13:02:12	0.000	6.424	34.36	863.7
13:04:12	0.000	6.418	34.36	862.0
13:06:12	0.000	6.428	34.36	864.3
13:08:12	0.000	6.420	34.38	861.4
13:10:12	0.000	6.434	34.29	862.1
13:12:12	0.000	6.446	34.35	865.7
13:14:12	0.000	6.451	34.35	867.7
13:16:12	0.000	6.428	34.35	867.6
13:18:12	0.000	6.434	34.36	867.3
13:20:12	0.000	6.426	34.40	870.3
13:22:12	0.000	6.428	34.39	868.5
13:24:12	0.000	6.434	34.38	863.4
13:26:12	0.000	6.429	34.36	856.3

13:30:12	0.000	6.428	34.37	861.8
13:32:12	0.000	6.429	34.37	856.7
13:34:12	0.000	6.434	34.35	859.5
13:36:12	0.000	6.431	34.33	861.3
13:38:12	0.000	6.417	34.34	858.5
13:40:12	0.000	6.427	34.32	851.8
13:42:12	0.000	6.429	34.38	855.0
13:44:12	0.000	6.423	34.38	854.7
13:46:12	0.000	6.423	34.41	852.4
13:48:12	0.000	6.422	34.36	854.8
13:50:12	0.000	6.422	34.40	854.4
13:52:12	0.000	6.420	34.39	853.9
13:54:12	0.000	6.413	34.40	851.4
13:56:12	0.000	6.416	34.38	851.1
13:58:12	0.000	6.426	34.36	854.7
14:00:12	0.000	6.421	34.35	854.5
14:02:12	0.000	6.427	34.38	856.7
14:04:12	0.000	6.432	34.34	857.9
14:06:12	0.000	6.432	34.39	858.7
14:08:12	0.000	6.415	34.46	858.1
14:10:12	0.000	6.426	34.34	853.4
14:12:12	0.000	6.444	34.42	859.4
14:14:12	0.000	6.434	34.35	860.5
14:16:12	0.000	6.423	34.33	865.0
14:18:12	0.000	6.435	34.33	865.2
14:20:12	0.000	6.429	34.42	866.9
14:22:12	0.000	6.419	34.93	865.0

WESTERN ENVIRONMENTAL SERVICES

APPENDIX F

TABLE 2.1 FORMALDEHYDE CALCULATIONS
DETECTION LIMITS

SITE: SITHE
UNIT: Cogen – Natural Gas
DATE: April 29, 1991

PARAMETER	TEST 1	2	3	AVERAGE
HCHO	0.0003	0.0003	0.0003	0.0003
Vm,FT(3)	26.783	27.907	89.041	47.910
Tm, F	75	82	74	77
Pb,"Hg	30.15	30.15	30.15	30.15
Dlta H, "h20	0.75	0.75	0.75	0.75
Meter Corr	1.041	1.041	1.041	1.041
HCHO, ppm	0.0003	0.0003	0.0001	0.0002
Vmstd, Ft(3)	27.779	28.571	92.524	49.624

TABLE 2.2 FORMALDEHYDE CALCULATIONS
DETECTION LIMITS

SITE: SITHE
UNIT: Cogen - Oil
DATE: April 30, 1991

PARAMETER	TEST 1	TEST 2	AVERAGE
HCHO	0.0002	0.0002	0.0002
Vm,FT(3)	73.018	76.085	74.552
Tm, F	75	70	73
Pb,"Hg	30.10	30.10	30.10
Dlta H, "h20	0.75	0.75	0.75
Meter Corr	1.041	1.041	1.041
HCHO, ppm	0.0001	0.0001	0.0001
Vmstd, Ft(3)	75.607	79.526	77.566