U.S.BORAX

January 7, 1994

Mr. David P. Howekamp A-3-3
Division Director
Air and Toxics Division
U. S. EPA, Region IX
75 Hawthorne Street
San Francisco, CA 94105

Dear Mr. Howekamp:

Attached is a copy of the annual compliance test that was performed on the Cogeneration I facility by Titon Environmental (EPA Permit No. SE82-02), (Kern County APCD Permit No. 1004077A). Testing was performed on December 8, 1993 and was witnessed by Steve Beyn with the Kern County A.P.C.D.

As shown in the Summary of Source Test Results on pages 5 & 6, all emission parameters were well within the compliance limits.

If you or your staff have any questions or comments, please don't hesitate to call me at (619) 762-7311.

Sincerely,

C. M. Kirby
Sr. Environmental Engineer

csm
Attachment

cc: Mr. Thomas Paxson, P.E.
Director, Kern County APCD
2700 "M" St., Suite 290
Bakersfield, CA 93301

Mr. James J. Morgester
Chief, Compliance Division
California Air Resources Board
P. O. Box 2815
Sacramento, CA 95812

U.S. BORAX INC • 14486 BORAX ROAD • BORON, CALIFORNIA 93516-2000 • (619) 762-7000

Kern County Air Pollution Control District
and
Environmental Protection Agency (EPA)

Compliance Source Test Report

for

U.S. Borax & Chemical Corporation
Boron Facility
48 MW Cogeneration Facility

Permit Numbers:

KCAPCD 1004077A
EPA NSR 4-4-11 SE 82-02

Determination of Concentrations and Emissions of
Particulate Matter, NOx, CO, O_2
and Non-Methane Hydrocarbons (NMHC)

Prepared by

Titan Environmental
Project 450-039

Tested On December 8, 1993

Table of Contents

Project Information

Company:

U.S. Borax & Chemical Corporation
14486 Borax Road
Boron, CA 93516
(619) 762-7000 FAX (619) 762-7335

Attention: *Mike Kirby*

Source(s):

Turbine/Cogeneration Facility
KCAPCD Permit No. 1004077A
EPA Permit No. NSR 4-4-11 SE 82-02

Source Description:

The unit tested is one Westinghouse frame W-251 48-MW gas turbine equipped with 210 MMBtu/hr duct burners; heat recovery steam generator (HRSG); and a 48-MW electric generator.

Independent Contractor:

Titan Environmental
18828 Highway 65
Bakersfield, CA 93308
(805) 391-0112 FAX (805) 391-0153

Attention: *Tim Brennan*

Agency:

Kern County Air Pollution Control District
2700 "M" Street, Suite 290
Bakersfield, CA 93301
(805) 861-2593 FAX (805) 861-2595

Attention: *Thomas Paxson, P.E.*

TITAN ENVIRONMENTAL
18828 Highway 65
Bakersfield, CA 93308
(805) 391-0112 FAX (805) 391-0153

CERTIFICATION

December 29, 1993

Mike Kirby
U.S. Borax & Chemical Corporation
14486 Borax Road
Boron, CA 93516

Dear Mr. Kirby:

Regarding Project 450-039, referred to in this report, I, Scott Davis, as Project Supervisor and on-site director of the testing program described in this report, do hereby certify the sampling, analytical procedures, and results presented in this report are authentic and accurate according to the methods and procedures used.

Scott A. Davis

Regarding Project 450-039, referred to in this report, I certify that I have reviewed the sampling, analytical procedures, and results reported herein, and have found them to be accurate and true according to the methods and procedures used.

Tim Brennan

Summary of Results

TITAN ENVIRONMENTAL

SUMMARY OF SOURCE TEST RESULTS

COMPANY: U.S. BORAX & CHEMICAL CORPORATION
UNIT: COGENERATION FACILITY
APCD #: 1004077A

PROJECT : 450-039
DECEMBER 8, 1993

EMISSIONS	gr/scf	gr/scf @ 12% CO2	ppm	ppm @ 15% O2	lb/ MMBtu	lb/hr	Permit Limits
NOx			41.5	39.4	0.144	75.46	
			39.5	37.8	0.1381	71.84	96 ppm
			38.6	36.7	0.1339	70.24	@15% O2
Mean:			**39.9**	**38.0**	**0.1387**	**72.51**	**268 lb/hr**
CO			6.0	5.7	0.0128	6.69	
			6.5	6.3	0.0139	7.23	
			6.7	6.3	0.0141	7.39	
Mean:			**6.4**	**6.1**	**0.0136**	**7.10**	**446 lb/hr**
NMHC			< 0.1		< 0.06	0.00	
			< 0.1		< 0.06	0.00	
			< 0.1		< 0.06	0.00	
Mean:			**< 0.1**		**< 0.06**	**0.00**	**2.9 lb/hr**
FUEL SULFUR as SO2			non detect			non detect	
Mean:			**< 1.0**			**< 2.79**	**146 lb/hr as SO2**

Comments:

SUMMARY OF SOURCE TEST RESULTS FOR EPA

U.S. BORAX & CHEMICAL CORPORATION
COGENERATION FACILITY
PERMIT: NSR 4-4-11 SE 82-02 **LOCATION: BORON CA.**

Pollutant	Method	Test Date	Test Results	Permit Limits
Particulate	EPA Method 5	8 DEC 93	.591 lbs/hr	14.0 lbs/hr
NOx as NO2	EPA Method 7E	8 DEC 93	72.53 lbs/hr .1384 lb/MMBtu	268.2 lbs/hr 0.57 lb/MMBtu
Carbon Monoxide	EPA Method 10	8 DEC 93	7.11 lbs/hr	446 lbs/hr
Sulfur Content	GC-FPD	8 DEC 93	nd < 1.0 ppm	N/A

*Emissions are corrected to EPA standard conditions (68°F and 29.92 inches of Hg) in the units stated in the EPA permit.

Prepared by: SCOTT DAVIS
Title: PROJECT SUPERVISOR
Date: November 5, 1993

Introduction

Introduction

On December 8, 1993 Titan Environmental performed a compliance source test for U.S. Borax at their Boron Cogeneration Facility. One 48-MW gas turbine was tested for emissions of NOx, CO, NMHC and Fuel Sulfur to satisfy KCAPCD requirements. The same unit was tested for emissions of Particulate, NOx, CO and Sulfur content to satisfy EPA requirements. Testing was performed under normal operating conditions. The following methodology was used.

Table I - General Approach

Parameter	Method	Analysis Method	Test Runs Per Unit	Permit Limits	
				EPA	KCAPCD
PM	EPA Method 5	Gravimetric analysis of front half	1 6 Hour	14.0 lb/hr	N/A
NOx	EPA Method 7E	TECO Model 10; Chemiluminescent	3 40 Minute	268.2 lb/hr 0.57 lb/MMBtu	268 lb/hr 96ppm @ 15% O_2
CO	EPA Method 10	TECO Model 48; Gas Filter Correlation	3 40 Minute	446 lb/hr	446 lb/hr
O_2	EPA Method 3A	Teledyne Model 320AR; Micro Fuel Cell	3 40 Minute	N/A	N/A
NMHC	EPA Method 18	GC-FID Analysis for C_1 - C_6+	3	N/A	2.9 lb/hr
Volume Flow	EPA Methods 2, 3, 4	Pitot Tube Traverse/ Condensation Train Simultaneous w/Method 5	1 6 Hour	N/A	N/A
Fuel Sulfur	Tedlar Bag Sample	GC-FPD analysis for Total Sulfur	1	N/A	146 lb/hr SO_2
Fuel Sample	Stainless Steel Bomb	GC-FID/TCD analysis for C_1-C_6+,O_2,CO_2,N_2	1	N/A	N/A

All testing was conducted by Scott Davis, Randall Kastner and Robert Ernst of Titan Environmental. Operation of the units was supervised by Mike Kirby of U.S. Borax.

EPA Method 5

U.S. BORAX & CHEMICAL CORPORATION
COGENERATION FACILITY

DECEMBER 8, 1993
PROJECT 450-039

METHOD 1-5
FIELD DATA @ 60° F & 29.92 "Hg.

DATA INPUT	
Run #:	1
Time :	9:11-15:28
Vm, dry gas volume sampled, ft3	284.81
Y, meter calibration factor	0.983223
P bar, Barometric pressure, "Hg	27.68
P static, stack pressure, " H2O	-0.6
Delta H, differential meter press, " H2O	1.01
Tm, meter temperature, R°	529
Vol H2O, grams condensed	571
% CO2, percent volume dry	2.7
% O2, percent volume dry	15.1
% N2, percent volume dry	82.2
Cp, pitot tube coefficient	0.84
Avg. square root delta-p, "H20	0.90
Temp. stack, R°	767
Stack area, ft2	113.70
Area noz, ft2	3.25E-04

CALCULATED RESULTS	
Run #:	1
Vm(std); dscf, sample volume	255.34
Bws; H2O vapor, fractional percent	0.0941
MF; moisture factor, 1-Bws	0.9059
Md; MW stk gas dry, lb/lb-mole	29.04
Ms; MW stk gas wet, lb/lb-mole	28.00
Vs; fps, gas velocity	64.63
Q-acfm; actual volume flow	440860
Qstd-dscfm; dry standard volume flow	250088
Sample time; minutes	360
% Isokinetic Sample Rate	99.3

U.S. BORAX & CHEMICAL CORPORATION
COGENERATION FACILITY

DECEMBER 8, 1993
PROJECT 450-039

METHOD 1-5
FIELD DATA @ 68° F & 29.92 "Hg.

DATA INPUT	
Run #:	1
Time :	9:11-15:28
Vm, dry gas volume sampled, ft3	284.81
Y, meter calibration factor	0.983223
P bar, Barometric pressure, "Hg	27.68
P static, stack pressure, " H2O	-0.6
Delta H, differential meter press, " H2O	1.01
Tm, meter temperature, R°	529
Vol H2O, grams condensed	571
% CO2, percent volume dry	2.7
% O2, percent volume dry	15.1
% N2, percent volume dry	82.2
Cp, pitot tube coefficient	0.84
Avg. square root delta-p, "H20	0.904
Temp. stack, R°	767
Stack area, ft2	113.7
Area noz, ft2	3.25E-04

CALCULATED RESULTS	
Run #:	1
Vm(std); dscf, sample volume	259.27
Bws; H2O vapor, fractional percent	0.0941
MF; moisture factor, 1-Bws	0.9059
Md; MW stk gas dry, lb/lb-mole	29.04
Ms; MW stk gas wet, lb/lb-mole	28
Vs; fps, gas velocity	64.63
Q-acfm; actual volume flow	440906
Qstd-dscfm; dry standard volume flow	253967
Sample time; minutes	360
% Isokinetic Sample Rate	99.3

U.S. BORAX & CHEMICAL CORPORATION
COGENERATION FACILITY

DECEMBER 8, 1993
PROJECT 450-039

EPA METHOD 5 DATA
@ 68°F & 29.92 "Hg

PARTICULATE GRAVIMETRIC RESULTS					
RUN #1	net mg	gr/dscf	gr/scf	gr/dscf @ 12% CO2	lbs/hr
Probe & Nozzle Wash:	3.2	0.00019	0.00017	0.00084	0.414
Filter:	0.9	0.00005	0.00005	0.00024	0.116
TOTAL, front half	4.1	0.00024	0.00022	0.00108	0.531

SUPPORTING DATA							
Run #	Time start	Time finish	%O2	%CO2	%H2O	Vm(std)	DSCFM
1	9:11	15:28	15.1	2.7	9.41	259.27	253967

EPA Methods 3A, 7E and 10

RUN #1

NOx/CO/O2

@ 60° F

EMISSION DATA

10:02 AM – 10:42 AM	%O2	ppm	ppm @ @ 3% O2	ppm @ @15% O2	lb/hr	lb/MMBtu
NOx emissions	14.69	41.5	119.6	39.4	75.46	0.1440
CO emissions	14.69	6.0	17.4	5.7	6.69	0.0128
Fuel F factor	8508 DSCF/MMBtu (See Fuel Analysis Section)					
DSCFM	250088 (Average of Method 2 Pitot Tube Velocity Profiles)					

SUPPORTING DATA

Incremental Readings, Stack Gas Measurement Data

TIME INTERVAL BEGIN – END	% FULL SCALE O2	% FULL SCALE NOx	% FULL SCALE CO	CONCENTRATIONS O2 %	CONCENTRATIONS NOx ppm	CONCENTRATIONS CO ppm
10:02 AM – 10:12 AM	69.2	51.5	15.1	14.72	41.52	5.91
10:12 AM – 10:22 AM	69.3	51.5	15.2	14.72	41.52	5.96
10:22 AM – 10:32 AM	69.2	51.5	15.4	14.67	41.52	6.12
10:32 AM – 10:42 AM	69.2	51.4	15.5	14.65	41.41	6.17
Averages	**69.2**	**51.5**	**15.3**	**14.69**	**41.49**	**6.04**

Calibration Data and Instrument Drift

	O2	NOx	CO
FULL SCALE RANGE	25	100	100
CALIBRATION GAS VALUE	20.9	83.03	82.51
INITIAL zero, %fs	10	10	9.3
FINAL zero, %fs	10	10	9.5
ZERO DRIFT % fs	0.00	0.00	0.20
ZERO DRIFT ppm or %	0.00	0.00	0.20
INITIAL span, %fs	94	93	90
FINAL span, %fs	94.5	93	90
CALIBATION DRIFT % fs	0.50	0.00	0.00
CALIBRATION DRIFT ppm or %	0.12	0.00	0.00

U.S. BORAX & CHEMICAL CORPORATION
COGENERATION FACILITY

DECEMBER 8, 1993
PROJECT 450-039

RUN #2

NOx/CO/O2

@ 60° F

EMISSION DATA

10:53 AM - 11:33 AM	%O2	ppm	ppm @ @ 3% O2	ppm @ @15% O2	lb/hr	lb/MMBtu
NOx emissions	14.74	39.5	114.7	37.8	71.84	0.1381
CO emissions	14.74	6.5	19.0	6.3	7.23	0.0139
Fuel F factor	8508 DSCF/MMBtu (See Fuel Analysis Section)					
DSCFM	250088 (Average of Method 2 Pitot Tube Velocity Profiles)					

SUPPORTING DATA

Incremental Readings, Stack Gas Measurement Data

TIME INTERVAL			% FULL SCALE			CONCENTRATIONS		
BEGIN	-	END	O2	NOx	CO	O2 %	NOx ppm	CO ppm
10:53 AM	-	11:03 AM	69.8	50.8	15.7	14.76	40.77	6.37
11:03 AM	-	11:13 AM	69.9	49.3	16.0	14.74	39.17	6.70
11:13 AM	-	11:23 AM	70.1	49.3	15.8	14.73	39.08	6.52
11:23 AM	-	11:33 AM	70.2	49.3	15.8	14.71	38.99	6.54
Averages			**70.0**	**49.7**	**15.8**	**14.74**	**39.50**	**6.53**

Calibration Data and Instrument Drift

	O2	NOx	CO
FULL SCALE RANGE	25	100	100
CALIBRATION GAS VALUE	20.9	83.03	82.51
INITIAL zero, %fs	10	10	9.5
FINAL zero, %fs	10	10	9.4
ZERO DRIFT % fs	0.00	0.00	-0.10
ZERO DRIFT ppm or %	0.00	0.00	-0.10
INITIAL span, %fs	94.5	93	90
FINAL span, %fs	95.7	93.8	90
CALIBATION DRIFT % fs	1.20	0.80	0.00
CALIBRATION DRIFT ppm or %	0.30	0.80	0.00

RUN #3

NOx/CO/O2

@ 60° F

EMISSION DATA

11:39 AM - 12:19 PM	%O2	ppm	ppm @ @ 3% O2	ppm @ @15% O2	lb/hr	lb/MMBtu
NOx emissions	14.69	38.6	111.2	36.7	70.24	0.1339
CO emissions	14.69	6.7	19.2	6.3	7.39	0.0141
Fuel F factor 8508 DSCF/MMBtu (See Fuel Analysis Section)						
DSCFM 250088 (Average of Method 2 Pitot Tube Velocity Profiles)						

SUPPORTING DATA

Incremental Readings, Stack Gas Measurement Data							
TIME INTERVAL			% FULL SCALE			CONCENTRATIONS	
BEGIN	-	END	O2	NOx	CO	O2 %	NOx ppm	CO ppm
11:39 AM	-	11:49 AM	69.0	49.0	15.9	14.66	38.64	6.65
11:49 AM	-	11:59 AM	69.2	49.0	15.8	14.66	38.62	6.55
11:59 AM	-	12:09 PM	69.5	49.0	16.0	14.69	38.61	6.76
12:09 PM	-	12:19 PM	69.8	49.0	16.0	14.73	38.60	6.76
Averages			69.4	49.0	15.9	14.69	38.62	6.68

Calibration Data and Instrument Drift	O2	NOx	CO
FULL SCALE RANGE	25	100	100
CALIBRATION GAS VALUE	20.9	83.03	82.51
INITIAL zero, %fs	10	10	9.4
FINAL zero, %fs	10	10	9.4
ZERO DRIFT % fs	0.00	0.00	0.00
ZERO DRIFT ppm or %	0.00	0.00	0.00
INITIAL span, %fs	94	93.8	90
FINAL span, %fs	95	93.9	90
CALIBATION DRIFT % fs	1.00	0.10	0.00
CALIBRATION DRIFT ppm or %	0.25	0.10	0.00

RUN #1

NOx/CO/O2

@ 68° F

EMISSION DATA

10:02 AM – 10:42 AM	%O2	ppm	ppm @ @ 3% O2	ppm @ @15% O2	lb/hr	lb/MMBtu
NOx emissions	14.69	41.5	119.6	39.4	75.47	0.1497
CO emissions	14.69	6.0	17.4	5.7	6.69	0.0127
Fuel F factor	8637 DSCF/MMBtu (See Fuel Analysis Section)					
DSCFM	253967 (Average of Method 2 Pitot Tube Velocity Profiles)					

SUPPORTING DATA

Incremental Readings, Stack Gas Measurement Data							
TIME INTERVAL			% FULL SCALE			CONCENTRATIONS	
BEGIN	–	END	O2	NOx	CO	O2 %	NOx ppm	CO ppm
10:02 AM	–	10:12 AM	69.2	51.5	15.1	14.72	41.52	5.91
10:12 AM	–	10:22 AM	69.3	51.5	15.2	14.72	41.52	5.96
10:22 AM	–	10:32 AM	69.2	51.5	15.4	14.67	41.52	6.12
10:32 AM	–	10:42 AM	69.2	51.4	15.5	14.65	41.41	6.17
Averages			**69.2**	**51.5**	**15.3**	**14.69**	**41.49**	**6.04**

Calibration Data and Instrument Drift	O2	NOx	CO
FULL SCALE RANGE	25	100	100
CALIBRATION GAS VALUE	20.9	83.03	82.51
INITIAL zero, %fs	10	10	9.3
FINAL zero, %fs	10	10	9.5
ZERO DRIFT % fs	0.00	0.00	0.20
ZERO DRIFT ppm or %	0.00	0.00	0.20
INITIAL span, %fs	94	93	90
FINAL span, %fs	94.5	93	90
CALIBATION DRIFT % fs	0.50	0.00	0.00
CALIBRATION DRIFT ppm or %	0.12	0.00	0.00

RUN #2

NOx/CO/O2

@ 68° F

EMISSION DATA

10:53 AM – 11:33 AM	%O2	ppm	ppm @ @ 3% O2	ppm @ @15% O2	lb/hr	lb/MMBtu
NOx emissions	14.74	39.5	114.7	37.8	71.85	0.1378
CO emissions	14.74	6.5	19.0	6.3	7.23	0.0139
Fuel F factor	8637 DSCF/MMBtu (See Fuel Analysis Section)					
DSCFM	253967 (Average of Method 2 Pitot Tube Velocity Profiles)					

SUPPORTING DATA

Incremental Readings, Stack Gas Measurement Data							
TIME INTERVAL			% FULL SCALE			CONCENTRATIONS	
BEGIN	–	END	O2	NOx	CO	O2 %	NOx ppm	CO ppm
10:53 AM	–	11:03 AM	69.8	50.8	15.7	14.76	40.77	6.37
11:03 AM	–	11:13 AM	69.9	49.3	16.0	14.74	39.17	6.70
11:13 AM	–	11:23 AM	70.1	49.3	15.8	14.73	39.08	6.52
11:23 AM	–	11:33 AM	70.2	49.3	15.8	14.71	38.99	6.54
Averages			**70.0**	**49.7**	**15.8**	**14.74**	**39.50**	**6.53**

Calibration Data and Instrument Drift	O2	NOx	CO
FULL SCALE RANGE	25	100	100
CALIBRATION GAS VALUE	20.9	83.03	82.51
INITIAL zero, %fs	10	10	9.5
FINAL zero, %fs	10	10	9.4
ZERO DRIFT % fs	0.00	0.00	-0.10
ZERO DRIFT ppm or %	0.00	0.00	-0.10
INITIAL span, %fs	94.5	93	90
FINAL span, %fs	95.7	93.8	90
CALIBATION DRIFT % fs	1.20	0.80	0.00
CALIBRATION DRIFT ppm or %	0.30	0.80	0.00

RUN #3

NOx/CO/O2

@ 68° F

EMISSION DATA

11:39 AM – 12:19 PM	%O2	ppm	ppm @ @ 3% O2	ppm @ @15% O2	lb/hr	lb/MMBtu
NOx emissions	14.69	38.6	111.2	36.7	70.25	0.1337
CO emissions	14.69	6.7	19.2	6.3	7.40	0.0141
Fuel F factor	8637 DSCF/MMBtu (See Fuel Analysis Section)					
DSCFM	253967 (Average of Method 2 Pitot Tube Velocity Profiles)					

SUPPORTING DATA

Incremental Readings, Stack Gas Measurement Data

TIME INTERVAL			% FULL SCALE			CONCENTRATIONS		
BEGIN	–	END	O2	NOx	CO	O2 %	NOx ppm	CO ppm
11:39 AM	–	11:49 AM	69.0	49.0	15.9	14.66	38.64	6.65
11:49 AM	–	11:59 AM	69.2	49.0	15.8	14.66	38.62	6.55
11:59 AM	–	12:09 PM	69.5	49.0	16.0	14.69	38.61	6.76
12:09 PM	–	12:19 PM	69.8	49.0	16.0	14.73	38.60	6.76
Averages			**69.4**	**49.0**	**15.9**	**14.69**	**38.62**	**6.68**

Calibration Data and Instrument Drift

	O2	NOx	CO
FULL SCALE RANGE	25	100	100
CALIBRATION GAS VALUE	20.9	83.03	82.51
INITIAL zero, %fs	10	10	9.4
FINAL zero, %fs	10	10	9.4
ZERO DRIFT % fs	0.00	0.00	0.00
ZERO DRIFT ppm or %	0.00	0.00	0.00
INITIAL span, %fs	94	93.8	90
FINAL span, %fs	95	93.9	90
CALIBATION DRIFT % fs	1.00	0.10	0.00
CALIBRATION DRIFT ppm or %	0.25	0.10	0.00

EPA Method 18

U.S. BORAX & CHEMICAL CORPORATION
COGENERATION FACILITY

DECEMBER 8, 1993
PROJECT 450-039

EPA METHOD 18, HYDROCARBON RESULTS

SAMPLE #	C1 Methane	C2 Ethane(s)	C3 Propane(s)	C4 Butane(s)	C5 Pentane(s)	C6+ Hexane(s)	Total	Total Non Methane
Run #1:								
ppm	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**
ppm @ 3% O2	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**
lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**
ppm as Methane	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**
lb/hr as Methane	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**
Run #2:								
ppm	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**
ppm @ 3% O2	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**
lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**
ppm as Methane	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**
lb/hr as Methane	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**
Run #3:								
ppm	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**
ppm @ 3% O2	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**
lb/hr	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**
ppm as Methane	0.0	0.0	0.0	0.0	0.0	0.0	**0.0**	**0.0**
lb/hr as Methane	0.00	0.00	0.00	0.00	0.00	0.00	**0.00**	**0.00**
METHOD BLANK, ppm	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
DETECTION LIMIT, ppm	0.1	0.1	0.1	0.1	0.1	0.1		

SUPPORTING DATA

	Run #1	Run #2	Run #3
%O2	15.1	15.1	15.1
DSCFM	250088	250088	250088

Fuel Analysis

PACIFIC GAS TECHNOLOGY

2122 Q Street
Bakersfield, California 93301
805/324-1317
Fax: 805/324-2746

GAS ANALYSIS BY CHROMATOGRAPH

TITAN ENVIRONMENTAL
18828 HIGHWAY 65
BAKERSFIELD, CA 93308

SAMPLED: 8-Dec-93
SUBMITTED: 9-Dec-93
REPORTED: 16-Dec-93
LAB # 93-6856-1

ATTENTION: TIM BRENNEN

Sample ID : US BORAX
COGEN

PROJECT # : 450-040

PURCHASE ORDER #: 0002288

ANALYZED GAS

	MOLE %	WT %
OXYGEN	0.08	0.15
NITROGEN	1.24	1.99
CARBON DIOXIDE	0.70	1.77
HYDROGEN	ND	0.00
CARBON MONOXIDE	ND	0.00
HYDROGEN SULFIDE	ND	0.00
METHANE	91.87	84.61
ETHANE	5.18	8.94
PROPANE	0.75	1.90
iso-BUTANE	0.07	0.23
n-BUTANE	0.07	0.23
iso-PENTANE	0.02	0.08
n-PENTANE	0.01	0.04
HEXANE +	0.01	0.05
TOTAL :	100.00	

CHONS WT %	
CARBON	73.05
HYDROGEN	23.52
OXYGEN	1.43
NITROGEN	1.99
SULFUR	0.00

EPA
F FACTOR: 8637.36
68 DEG F
1 atm

F FACTOR: 8507.80
60 DEG F
1 atm

SPECIFIC GRAVITY * : 0.602

SPECIFIC VOLUME : 21.83 cu ft/lb

TOTAL * BTU/cu ft DRY : 1045
WET : 1027

BTU/lb : 22808

NET * BTU/cu ft DRY : 942
WET : 926

BTU/lb : 20562

Sample ID : TEDLAR BAG PUC GAS
Lab No. : 6856-1

TOTAL SULFUR as Hydrogen Sulfide : ND < 1 ppm(GC\FPD)

* CALCULATED ACCORDING TO : ASTM D-3588

Methods and Equations

CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS)

Reference: *State of California Air Resources Board, Test Methods 1-100, June 1979*
EPA CFR Title 40, Pt. 60, Appendix A, Method 3A, 6C, 7E, 10 and 20.

Instrument Summary

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

Sample Conditioning System

The sample conditioning system consists of a borosilicate glass tube or 316 grade stainless steel probe fitted with a sintered stainless steel or pyrex glass wool particulate filter. The probe was fitted with a teflon (TFE) sample line which connects to a water condensation system located at the source. The condensation system consisted of three 500-ml short stem glass impingers connected in a series, immersed in an ice bath. The gas was delivered to the instrument trailer with a diaphragm pump. The sample system was leak checked prior to sampling by plugging the end of the sample probe and adjusting the sample pump to its maximum rate (approximately 22" Hg). A zero leak condition was indicated by the sampling flow rotometers dropping to zero.

Manifold System

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

Analog Strip Chart Data Reduction

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

SAMPLING AND ANALYTIC PROCEDURES

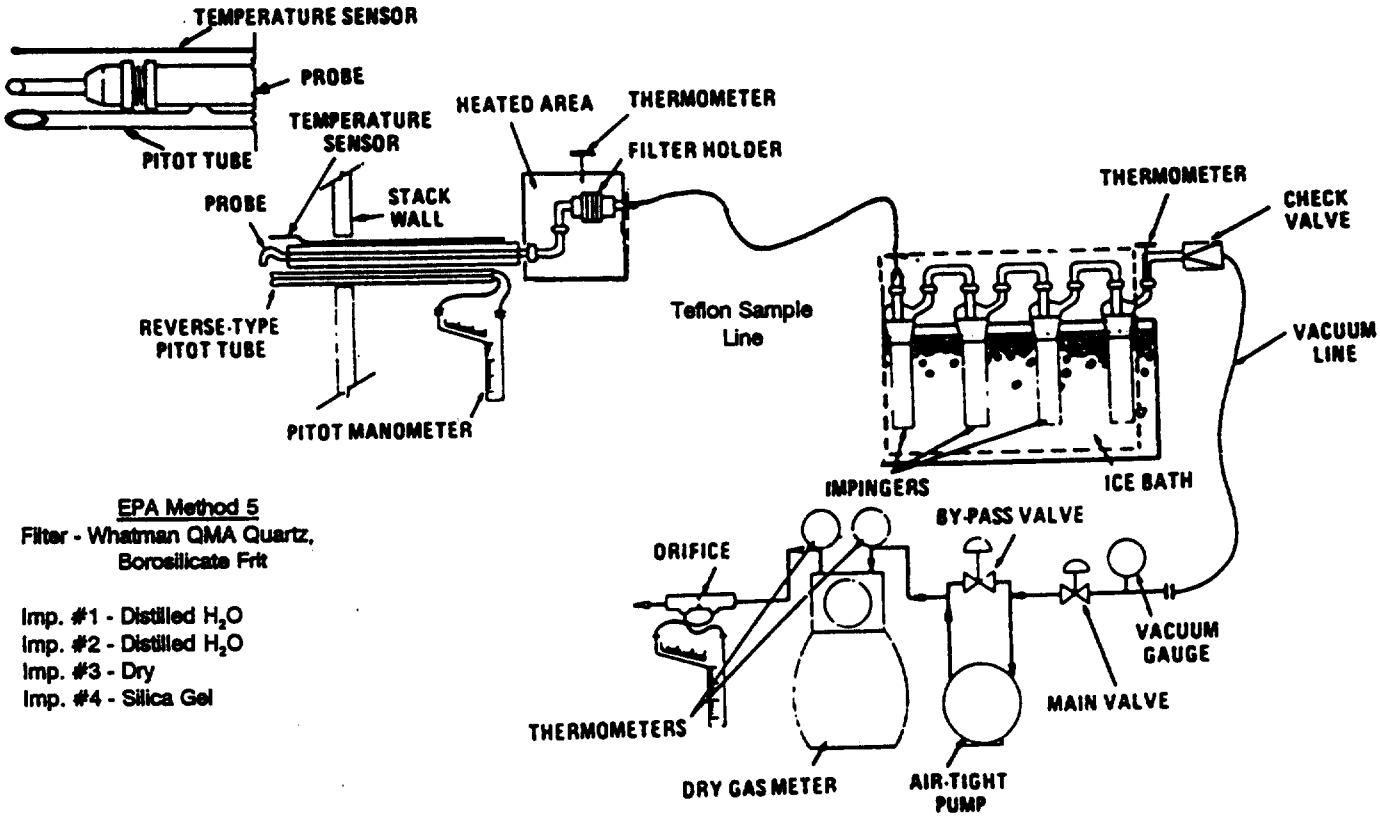
Method(s) 1-4 and 5

Reference: *EPA Code of Federal Regulations, Title 40, Part 60, Appendix A; Methods 1, 2, 3, 4, and 5.*

Sampling Apparatus

The sampling apparatus consisted of a nozzle, a heater-wrapped probe, and a heated filter holder (the data sheets indicated the type of nozzle, probe and filter). The filter was connected to a heated teflon filter-to-impinger line. A series of impingers (data sheets indicated the type and contents) were connected in tandem and immersed in an ice bath. Following the absorption train, was a gas pump, dry gas meter, and a calibrated restriction orifice fitted with a magnehelic differential pressure gauge. A type "S" pitot tube and temperature probe was then positioned alongside the probe terminating at the sample nozzle, for the purpose of monitoring duct conditions throughout the test.

Sampling Diagram



EPA Method 1: Sampling and Velocity Traverses for Stationary Sources

Prior to the source testing, a site assessment was performed to determine the sample points that obtained the best representative measurements of pollution concentrations and volumetric flow rates. EPA Method 1 takes into account duct area, straight run and cyclonic, or stratified flow patterns.

SAMPLING AND ANALYTIC PROCEDURES

Method(s) 1-4 and 5

(Continued)

EPA Method 2: Velocity and Volumetric Flow Rates

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

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

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

EPA Method 4: Percent Water

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

EPA Method 5: Particulate Emissions

A series of preliminary measurements were made prior to conducting the particulate test. EPA Methods 1, 2, and 3 were performed to determine location and number of traverse points, average gas velocity, and pressure and gas molecular weight. Percent water was determined by a psychometric chart or from combustion analysis of the fixed gases. The results of these measurements were entered into the field computer for the purpose of determining an appropriate nozzle size for isokinetic sampling.

The Method 5 apparatus was then prepared on-site in the mobile laboratory. The absorption train was charged with freshly prepared chemicals, weighted on a calibrated digital balance to the nearest 0.1 grams, and assembled. The probe was brushed out and rinsed with distilled water and acetone, then the filter holder was charged. The sampling apparatus was sealed and transported to the sampling site where it was assembled and leak tested at 15 inches mercury vacuum.

The probe, filter and impinger line heaters were set at 250 degrees F and the probe was positioned into the duct at the first traverse point with the nozzle out of the flow.

The nozzle was positioned into the gas flow and the vacuum pump was started immediately and adjusted to obtain an isokinetic sample rate. A complete traverse was performed while sampling at a minimum of two minutes per sample point.

SAMPLING AND ANALYTIC PROCEDURES

Method(s) 1-4, and 5

(Continued)

EPA Method 5 (Continued):

Upon completion of the traverse, the vacuum pump was turned off and the probe transferred into the next sample EPA port where an identical sample-traverse was then performed. Duct conditions (temperature, ΔP) and sampling conditions (meter temperature, volume and pressure, probe, filter, sample line, impinger temperatures, and absorption train vacuum) was monitored and recorded regularly for each sample point.

Upon completion of sampling, the apparatus was leak tested at a vacuum greater than the highest observed vacuum. The leak was recorded and the apparatus was then sealed and transported to the mobile laboratory. The heated filter-to-impinger line was rinsed with a known amount of distilled water into the first impinger.

The filter and any loose particulate was carefully removed from the filter holder with tweezers. It was then placed in a labeled petri dish and transported to the laboratory. The nozzle, probe, and filter top housing was rinsed and brushed three times with distilled water and acetone. The sample fractions were combined, bottled, labeled, and the fluid level marked for transportation to the laboratory. Aliquots of distilled water and acetone were similarly treated for blank analysis.

The absorption train was inspected for abnormalities and disassembled. The impingers were weighed on a digital balance for a percent moisture determination. The contents of the impingers were quantitatively transferred into separate bottles, sealed, labeled, and fluid level marked for transportation to the laboratory for analysis, if required. Aliquots of the reagent grade impinger contents will be saved for blank analysis.

The filter was transferred to an oven and heated at 105° F for 2-3 hours and then placed in a desiccator for 24 hours. The filter was then weighed on a Mettler digital balance to the nearest 0.01mg. Additional six hour desiccations and weighings were then performed until the difference between consecutive weighings were less than 0.5 mg or one percent of the total filtrate weight (weighed to a constant weight).

The nozzle/probe/filter top wash was examined for any leakage during transportation and transferred to a tared evaporation dish. The wash was then evaporated at an elevated temperature, below the boiling point of the wash, with occasional swirling. The dish and wash residue was then desiccated and weighed to a constant weight.

The net weight of particulate was calculated from the two fractions (three fractions including the impinger contents, if required). Concentrations (gr/DSCF) and emissions (lbs/hr) or other applicable units were then calculated and reported.

EPA Method 18
Hydrocarbon Emissions Testing
FID Analysis

Reference: *EPA Code of Federal Regulations, Title 40, Part 60 Appendix A, Method 18; Measurement of Gaseous Organic Compound Emissions by Gas Chromatography.*

Sampling Procedures

The sample was drawn via an evacuated canister through a stainless steel/teflon probe into a tedlar bag. Each sample was evacuated and then filled.

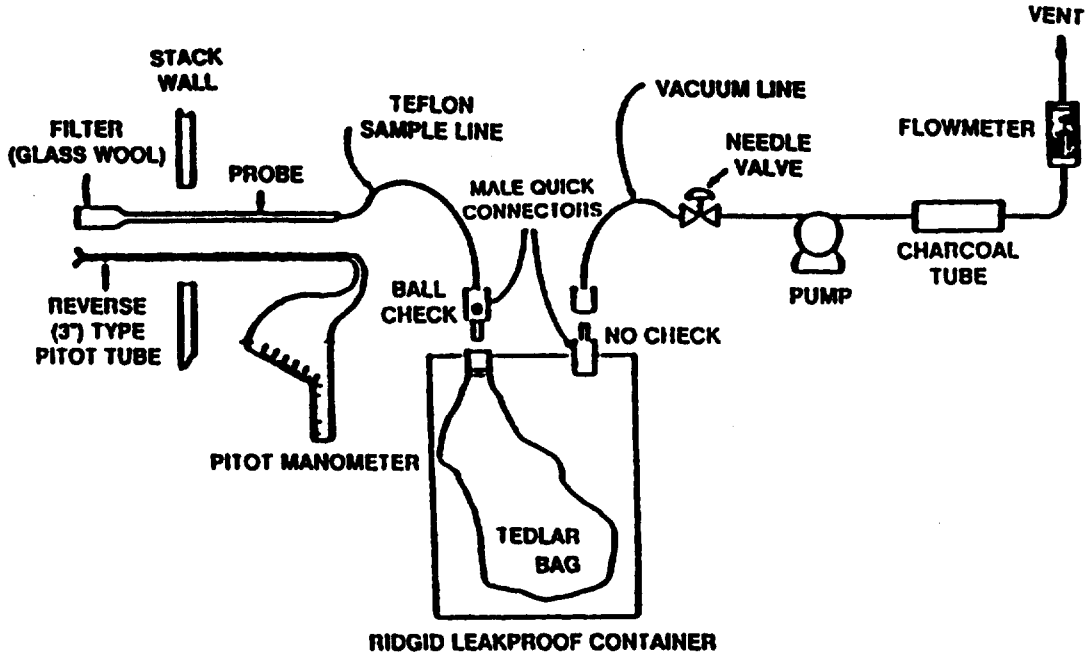
The sampling apparatus consisted of a stainless steel probe, teflon sample line, and a two liter tedlar bag housed in a rigid, air-tight container (evacuated canister). The container was connected to a vacuum pump/rotameter/dry gas meter assembly.

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

The samples were stored out of the sunlight, packaged and delivered to the analytical laboratory for analysis of C_1 - C_6+ by flame ionization detector.

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

Sampling Diagram



INTEGRATED BAG SAMPLING TRAIN

EPA Method 18
Hydrocarbon Emissions Testing
FID Analysis (Continued)

Analytical Procedures

The contents of the tedlar bag were analyzed by gas chromatography. The gas chromatograph was calibrated with an appropriate standard for each carbon number, both before and after each set of samples were analyzed. The sample is speciated by carbon number - C_1, C_2, C_3, C_4, C_5, and C_6 + backflush.

Symbol Identification

i	=	Carbon number; i = 1 through 6+
s	=	Refers to standard for the indicated carbon number
Rx_i	=	Response factor for C_i
MW	=	Molecular Weight - g/mole
DSCFM	=	Average volume flow rate of unit tested

Equations

$$Rx_i = \frac{Area\ std}{ppm\ std}$$

$$Sample\ ppm_i = \frac{1}{Rx_i} \times Area_i$$

$$Sample\ ppm\ (as\ C_1) = Sample\ ppm \times \#\ of\ Carbons$$

$$\frac{lbs}{hr_i} = ppm_i \times MW_i \times DSCFM \times 1.581 \times 10^{-7}$$

$$Total\ non\text{-}methane\ \frac{lbs}{hr} = \sum_{i=2}^{6+} \frac{lbs}{hr_i}$$

Note 1: *If lbs/hr as methane is required, MW will equal 16.0 (MW of methane, CH_4)*

Note 2: *Number of carbons: ethane = 2, propane = 3, etc.*

EQUATIONS

EPA Method 2
Stack Gas Velocity and Volumetric Flowrate

Average Stack Gas Velocity

Equation 2-1

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

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

Equation 2-2

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

Average Stack Gas Volumetric Flow Rate

Equation 2-3

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

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

EQUATIONS

EPA Method 3
Dry Molecular Weight of Stack Gas

Equation 3-1

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

Wet Molecular Weight of Stack Gas

Equation 3-2

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

Equations

EPA Method 3
Orsat Analysis

Dry Molecular Weight of Stack Gas

Equation 3-3

$$M_d = 0.440\,(\%\,CO_2) + 0.320\,(\%\,O_2) + 0.280\,(\%\,N_2 + \%\,CO)$$

Wet Molecular Weight of Stack Gas

Equation 3-4

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

EQUATIONS

EPA Method 4
Determination of Moisture Content in Stack Gases

Volume of Water Vapor Condensed

Equation 4-1

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

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

Volume of Water Vapor Collected in Silica Gel

Equation 4-2

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

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

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

EQUATIONS

EPA Method 4
Determination of Moisture Content in Stack Gases
(Continued)

Sample Gas Volume

Equation 4-3

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

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

$$\text{Where: } K_3 = 17.38\ \frac{^\circ R}{"Hg}\ @\ 520^\circ R$$

Moisture Content

Equation 4-4

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

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

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

EPA METHOD 5
DETERMINATION OF PARTICULATE EMISSIONS FROM STATIONARY SOURCES

Use in Method 5 and 8 combinations runs

Dry Gas Volume
Eq. 5-1

$$V_{m\,(std)} = V_m\, Y \left(\frac{T_{std}}{T_m}\right)\left[P_{bar} + \frac{\Delta\, H}{13.6}\right]$$

$$= K_1\, V_m\, Y \left[\frac{P_{bar} + \frac{\Delta H}{13.6}}{T_m}\right]$$

$$= K_1 = 17.38\ \frac{^\circ R}{in.Hg}\ @\ 520\ ^\circ R$$

*In case of leak rate beyond allowable limits, correct Eq. 5-1 as follows:

Case 1 - No component changes made during run.

$$V_m = V_m - (\,L_p - L_a\,)\theta$$

Case 2 - One or more component changes made during run.

$$V_m = \left[V_m - (L_1 - L_a\,)\,\theta_1 - \sum_{i=2}^{n}\,(\,L_i - L_a\,)\,\theta_i - (\,L_p - L_a\,)\,\theta_p\right]$$

EPA METHOD 5
(con't)

Volume of Water Vapor
Eq. 5-2

$$V_{wc\ (std)} = V_{1\,c}\left(\frac{\rho_w}{M_w}\right)\left(\frac{RT_{std}}{P_{std}}\right)$$

$$= K_2\, V_{1\,c}$$

$$\textit{Where:}\quad K_2 = 0.04646\ \frac{ft^3}{ml}\ @\ 60\ ^\circ F$$

Moisture Content
Eq. 5-3

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

Acetone Blank Concentration
Eq. 5-4

$$C_a = \frac{M_a}{V_a\ \rho_a}$$

Acetone Wash Blank
Eq. 5-5

$$W_a = C_a\ V_{aw}\ \ \rho_a$$

EPA METHOD 5
(con't)

Particulate Concentration
Eq. 5-6

$$C_s = \frac{gr}{dscf} = \left(0.001 \frac{g}{mg} \right) \left(\frac{M_n}{V_{m\,(std)}} \right) (15.432)$$

$$gr/dscf\ (MF) = \frac{gr}{scf}$$

Corrected to 12 % CO_2

$$\frac{gr}{dscf} @ 12\%\ CO_2 = \frac{\frac{gr}{dscf} \times 12\ \%\ CO_2}{\%\ CO_2\ (dry)}$$

Isokinetic Variation

Eq. 5-7 and 5-8

$$\%\ I = 100 \times \frac{T_s \left[V_{1c} K_3 + \frac{V_m}{T_m} \left(P_b + \frac{\Delta H}{13.6} \right) \right]}{60\ \theta\ A_n\ V_s\ P_s}$$

Where: $K_3 = 0.002669$

Mass Emission Rate

$$\frac{lbs}{hr} = \frac{gr}{dscf} \times dscfm \times 60 \frac{m}{hr} \times \frac{1\ lb}{7000\ gr}$$

NOMENCLATURE

A = Cross-sectional area of stack (ft^2)

A_n = Cross-sectional area of nozzle, (ft^2)

B_{ws} = Proportion of water vapor, by volume, in the gas stream

C_a = Acetone blank residue concentration, (mg/g)

C_p = Pitot tube coefficient, dimensionless

C_s = Concentration of particulate matter in stack gas, dry basis corrected to standard conditions, (gr/dscf)

C_{SO2} = Concentration of sulfur dioxide dry basis corrected to standard conditions, (lb/dscf)

C_{H2SO4} = Sulfuric acid (including SO3) concentration, corrected to standard conditions, (lb/dscf)

ΔH = Average pressure differential across the orifice meter, (in H_2O)

K_p = Pitot tube constant, 85.49 $\frac{ft\ [(lb/lb\text{-}mole)(in\ Hg)]\ ½}{sec[\ (°R)\ (in\ H_2O)\ ]}$

L_p = Leakage rate observed during the post-test leak check, (cfm)

L_a = Maximum acceptable leakage rate, (0.02 cfm or 4% of average sampling rate, whichever is less)

L_i = Individual leakage rate observed during the leak check conducted prior to the "i^{th}" component change, (cfm)

M_a = Mass of residue of acetone after evaporation, mg

M_d = Molecular weight of stack gas, dry basis, (lb/lb-mole)

M_n = Total weight of particulate matter collected, mg

M_s = Molecular weight of stack gas, wet basis, (lb/lb-mole)

M_w = Molecular weight of water, 18 lb/lb-mole

N = Normality of barium perchlorate titrant, (milliequivalents/ml)

ΔP = Velocity head of stack gas, (in H_2O)

P_{bar} = Barometric pressure at measurement site (in Hg)

P_g = Stack static pressure, (in Hg)

P_m = Absolute pressure at the dry gas meter, ($P_{bar} + \Delta H/13.6$)

P_s = Absolute stack gas pressure, (inches Hg)

$P_{(std)}$ = Standard absolute pressure, 29.92 in Hg

$Q_{(std)}$ = Dry volumetric stack gas flow rate, standard conditions, (dscfm)

R = Ideal gas constant, 21.85 (in Hg) (ft^3)/(lb-mole)(°R)

t_s = Stack temperature, (°F)

T_m = Absolute temperature at meter, (°R)

$T_{(std)}$ = Standard absolute temperature, (520°R)

T_s = Absolute stack temperature, (460°+ t_s)

V_a = Volume of sample aliquot titrated, (ml)

V_{ab} = Volume of acetone blank, ml

V_m = Dry gas volume measured by dry gas meter, (dcf)

$V_{m(std)}$ = Dry gas volume measured by dry gas meter, corrected to standard conditions, (dscf)

$V_{wc(std)}$ = Volume of water vapor condensed corrected to standard conditions,(scf)

$V_{wsg(std)}$ = Volume of water vapor collected in silica gel corrected to standard conditions (scf)

NOMENCLATURE
(continued)

V_{ic} = Volume of water vapor condensed in impingers and silica gel, (ml)
V_f = Final volume of condensed water, ml
V_i = Initial volume of condensed water, ml
v_s = Average stack gas velocity, (ft/sec)
V_{soln} = Total volume of solution in which the sulfur dioxide sample is contained (ml)
V_t = Volume of barium perchlorate titrant used for the sample, (ml)
V_{tb} = Volume of barium perchlorate titrant used for the blank, (ml)
W_f = Final weight of silica gel or silica gel plus impinger, (g)
W_i = Initial weight of silica gel or silica gel plus impinger, (g)
Y = Dry gas meter calibration factor
ρ_w = Density of water, (0.002202 lb/ml @ 60°F)
ρa = Density of acetone, (g/ml)(see bottle label)
MF = Moisture factor
$\%CO_2$ = Percent CO_2 by volume (dry basis)
$\%O_2$ = Percent O_2 by volume (dry basis)
%CO = Percent CO by volume (dry basis)
$\%N_2$ = Percent N_2 by volume (dry basis)
0.264 = Ratio of O_2 to N_2 in air v/v
0.280 = Molecular weight of N_2 or CO, divided by 100
0.320 = Molecular weight of O_2, divided by 100
0.440 = Molecular weight of CO_2, divided by 100
60 = Conversion factor, (sec/min)
18.0 = Molecular weight of water, (lb/lb-mole)
32.03 = Equivalent weight of sulfur dioxide
θ = Total sampling time (min)
θ_i = Sampling time interval, between two successive component changes, beginning with the interval between the first and second changes, (min)
θ_1 = Sampling time interval, from the run beginning until first component change, (min)
θ_p = Sampling time interval, from the final (n^{th}) component change until the end of the sampling run, (min)

Raw Data

TITAN ENVIRONMENTAL
ON-SITE DATA SHEET

COMPANY : US Borax
UNIT : Cogen #2
PROJECT : 458 - 089

RUN #: 1
DATE: 12-8-93
TIME: 911-1524

Vm, Dry sampled gas volume, dcf	284.81		
Y, Meter calibration factor (Met# 0001 , ,)	.983223		
Pbar, Barometric Pressure, "Hg	27.68		
Pstatic, Stack static pressure, "Hg	-0.60		
Δ H, Differential meter pressure, "H2O	1.01		
Tm, Meter temperature, °F	69		

CONTENTS	RUN # FINAL	TARE	NET	RUN # FINAL	TARE	NET	RUN # FINAL	TARE	NET
H_2O	847.4	565.0	282.4						
H_2O	845.5	558.5	287.0						
Dry	481.0	475.0	6.0						
Dry	469.1	466.2	2.9						
Silica	832.0	787.5	44.5						
KW	81.1	29.3	(51.8)						
Vlc, volume of H2O, gms			571.0						

	RUN #	RUN #	RUN #
CO2, % Dry Volume	2.7		
O2, % Dry Volume	15.1		
N2, % Dry Volume			
Cp, Pitot Tube Coefficient (# S' #2 , ,)	.84		
Δ p, Avg P, "H2O	.817		
Ts, Stack temperature, °F	307		
As, Stack Area, sq.ft.	113.7		
Ds, Stack diameter, inches	144.38		
Dn, Nozzle diameter, inches	.244		
Dur, Sampling time, min	360		
% ISO, Mini iso			
Filter #	36		
Filter tare weights, gms	.58723		

Comments:

TITAN ENVIRONMENTAL
FIELD DATA SHEET

METHOD 5 RUN # 1

COMPANY: U.S. BORAX	(PRE) / POST TEST LEAK CHECK		AMBIENT TEMP, °F: 53°
UNIT: TURBINE OUTLET			Pbar: ~~27.61~~ ~~27.66~~ 27.68
DATE: 12-8-93			STATIC PRESSURE ("Hg): -0.60
PROJECT: 450-039			ASSUMED MOISTURE,%: ~~16~~ 8% MW WET 27.5
TECH: RJK	LEAK RATE: <0.002 cfm		NOZZLE ID#: ¼-1
PUMP #: GAST	VACUUM: 10 " Hg		AVG. CALIB. NOZZLE DIAM.("): 0.244
METER BOX#: C001 (1.00)			PROBE LINER MATERIAL: SS
METER COEFF: 0.983 223			FILTER #:
PROBE #: P555-2 Cp: 0.84			DUCT DIAM ("): 144.38

TRAVERSE PT. NUMBER	TIME (θ) min. 18/PT.	VACUUM "Hg	STACK TEMP (Ts) °F 6	VELOCITY HEAD (Δ Ps)in. H2O	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O Δ H	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER 7 INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER 7 OUTLET, °F	FILTER HOLDER 4 TEMP. °F 5 PROBE	FILTER HOLDER 4 TEMP. °F 5 BOX	TEMP OF GAS 3 EXIT CONDENSER OR LAST IMPINGER
N.E.												
5	9:11	5	329	0.85	0.717	0.85	686.2	53	53	247	249	52
4	9:29	5	327	0.90	0.753	0.91	699.1	67	58	250	251	47
3	9:47	5	325	0.90	0.758	0.91	712.6	68	63	251	249	47
2	10:05	5	313	0.85	0.745	0.88	726.2	69	66	249	250	47
1	10:23	5	314	0.65	0.714	0.79	740.7	69	67	249	251	53
S.E.	10:41						753.8					
5	10:48	5	327	0.90	0.837	1.05	753.8	71	70	250	249	53
4	11:06	5	326	1.00	0.887	1.16	768.9	72	44	250	248	54
3	11:24	5	326	1.00	0.892	1.17	784.7	74	78	251	250	57
2	11:42	5	323	0.95	0.872	1.12	799.9	78	76	252	250	57
1	12:00						816.5					
AVG												

TITAN ENVIRONMENTAL
FIELD DATA SHEET

METHOD 5 RUN # 1 CONT.

COMPANY: U.S. BORAX			AMBIENT TEMP, °F: 53°
UNIT: TURBINE OUTLET			Pbar: ~~27.66~~ 27.68
DATE: 12-8-93	PRE (POST) TEST LEAK CHECK		STATIC PRESSURE ("Hg): -0.60
PROJECT: 450-039			ASSUMED MOISTURE,%: 8% MW WET 27.5
TECH: RJK	LEAK RATE: <0.003 cfm		NOZZLE ID#: #4-1
PUMP #: GAST.	VACUUM: 2" Hg		AVG. CALIB. NOZZLE DIAM.("): 0.244
METER BOX#: C001 (1.00)			PROBE LINER MATERIAL: SS
METER COEFF: 0.983223			FILTER #:
PROBE #: P555-2 Cp: 0.84	686.20		DUCT DIAM ("): 144.38

TRAVERSE PT. NUMBER	TIME (θ) min.	VACUUM "Hg	STACK TEMP (Ts) °F	VELOCITY HEAD (Δ P)in. H2O	PRESSURE DIFFERENTIAL,"H2O RATE	PRESSURE DIFFERENTIAL,"H2O Δ H	GAS SAMPLE VOLUME (cu.ft)	GAS SAMPLE TEMP. AT DRY GAS METER INLET, °F	GAS SAMPLE TEMP. AT DRY GAS METER OUTLET, °F	FILTER HOLDER TEMP, °F PROBE	FILTER HOLDER TEMP, °F BOX	TEMP OF GAS EXIT CONDENSER OR LAST IMPINGER
S.W.	18/PT.											
5	12:20	5	327	1.05	0.922	1.23	816.5	81	81	250	249	57
4	12:38	5	324	1.05	0.922	1.24	833.1	82	78	246	256	56
3	12:56	5	325	1.00	0.899	1.18	849.7	82	78	246	255	56
2	13:14	5	325	0.95	0.872	1.12	865.8	79	76	248	254	57
1	13:32	5	323	0.75	0.776	0.90	881.6	78	77	249	253	58
N.W.	13:50						895.7					
5	13:58	5	323	1.00	0.888	1.17	895.7	74	72	248	252	59
4	14:16	5	320	0.95	0.820	1.00	911.6	74	71	249	253	56
3	14:34	5	321	0.95	0.866	1.11	926.5	73	72	250	254	56
2	14:52	5	321	0.90	0.842	1.06	942.1	73	71	249	253	57
1	15:10	5	321	0.75	0.770	0.89	957.3	73	72	249	252	58
END	15:28						971.01					
							Vol = 284.81					
							I_{SO} = 98.62					
							VELFPS = 65.21					
AVG			307	0.817		1.01		69				

TITAN ENVIRONMENTAL

VELOCITY TRAVERSE

COMPANY:	US BORAX
UNIT:	TURBINE OUTLET
DATE:	12-7-93
PROJECT:	450-039
TECH:	RJK + RTE
PUMP #:	GAST.
METER BOX#:	C001
METER COEFF:	0.983223 (1.00)
PROBE #:	P555#2 Cp: 0.84

	163.88"
TOTAL	~~13' 7.875~~
COUPLING	19.5"
DIAMETER	144.38"
AREA	113.70

TRAVERSE POINTS

W/O	W/COUP	NO.	Port: N.E. Ts, °F	Port: N.E. Δ p	Port: _____ Ts, °F	Port: _____ Δ p
3.7	23.2	1	323	0.70		
11.8	31.3	2	325	0.85		
21.1	40.6	3	326	0.95		
32.6	52.1	4	326	1.00		
49.4	68.9	5	325	0.90		
		6				
		71				
		82				
		93				
		104				
		5				

VELOCITY DATA

Rated Total MMBtu/HR _____

Δ p	0.877	Vel
Ts	325	DSCFM
Static	−0.60	MMBtu/hr
Pbar	27.62	% Thr
MW(wet)	27.5	
%H2O	16	
%O2		
°F, (@ 60°)		

Additional Data:

0.250 = 0.818

1/4-2 0.244 =

Diameters before disturbance _____ Diameters after disturbance _____

Total number of traverse points _____

TITAN ENVIRONMENTAL
LABORATORY ANALYSIS

METHOD 5 - GRAVIMETRIC ANALYSIS

COMPANY: US BORAX PROJECT: 450-030
UNIT: Cogen ANALYSIS DATE: 12-12-93
TEST DATE: 12-8-93 *RUN #:* Meth5 #1

PROBE AND NOZZLE WASH

DISH #: 15 ***ALIQUOT:***

WEIGHT:	#1	#2	#3	AVERAGE
FINAL WEIGHT (gm)	71.4186	71.4186		71.4186
INITIAL WEIGHT (gm)	71.4154	71.4153		71.4154
NET WEIGHT (gm)				0.00320

FILTER

FILTER #: 36

WEIGHT:	#1	#2	#3	AVERAGE
FINAL WEIGHT (gm)	0.58812	0.58813		0.58813
INITIAL WEIGHT (gm)	0.58723			0.58723
NET WEIGHT (gm)				0.00090

CONDENSABLES - AQUEOUS

DISH #: ***ALIQUOT:***

WEIGHT:	#1	#2	#3	AVERAGE
FINAL WEIGHT (gm)				
INITIAL WEIGHT (gm)				
NET WEIGHT (gm)				

CONDENSABLES - ORGANIC

DISH #: ***ALIQUOT:***

WEIGHT:	#1	#2	#3	AVERAGE
FINAL WEIGHT (gm)				
INITIAL WEIGHT (gm)				
NET WEIGHT (gm)				

COMMENTS:

12/16
ANALYST SIGNATURE

TITAN ENVIRONMENTAL
OPERATING DATA SHEET

COMPANY : US Borax

UNIT : Cogen

DATE : 12-8-93

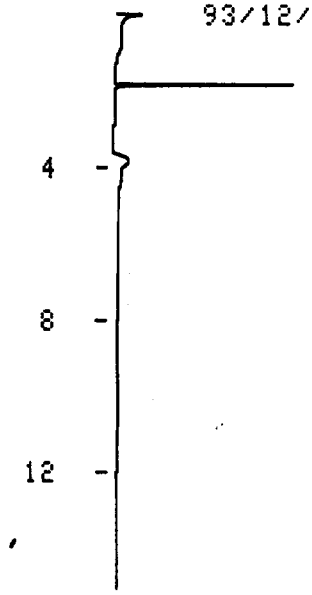
PROJECT : 450-039

Orsat Data

Bag #	1	2	3			
CO_2 Final	2.6	2.8				
Initial	0.0	0.0				
% CO_2	2.6	2.8				
O_2 Final	17.7	18.3				
Initial	2.6	2.8				
% O_2	15.1	14.5				

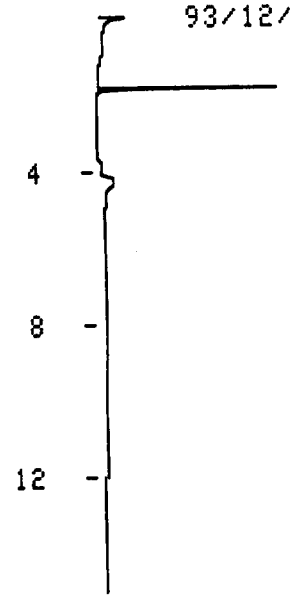
US BORAX
450-039
TURBINE, METH 18, METHOD BLANK

93/12/10 11:05:18



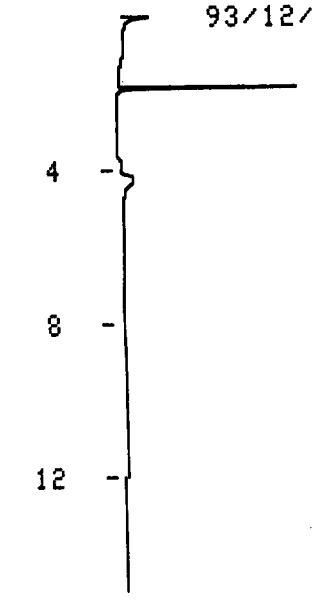
CHROMATOGRAM 27 MEMORIZED
WARNING NO PEAK

US BORAX
450-039
TURBINE, METH 18, RUN 1
93/12/10 11:23:00



CHROMATOGRAM 27 MEMORIZED
WARNING NO PEAK

US BORAX
450-039
TURBINE, METH 18, RUN 2
93/12/10 11:41:07



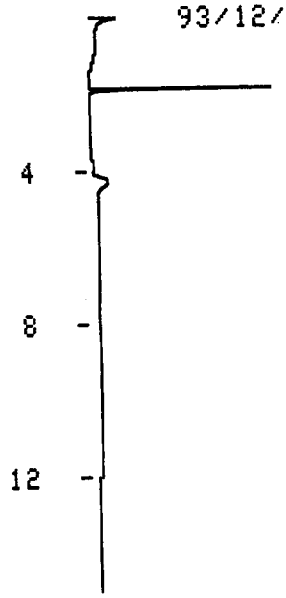
CHROMATOGRAM 27 MEMORIZED
WARNING NO PEAK

1 2 3

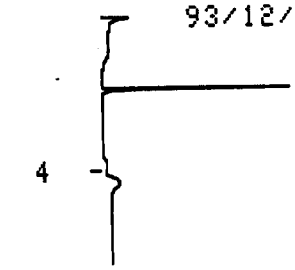
223-02037-02

Shimadzu

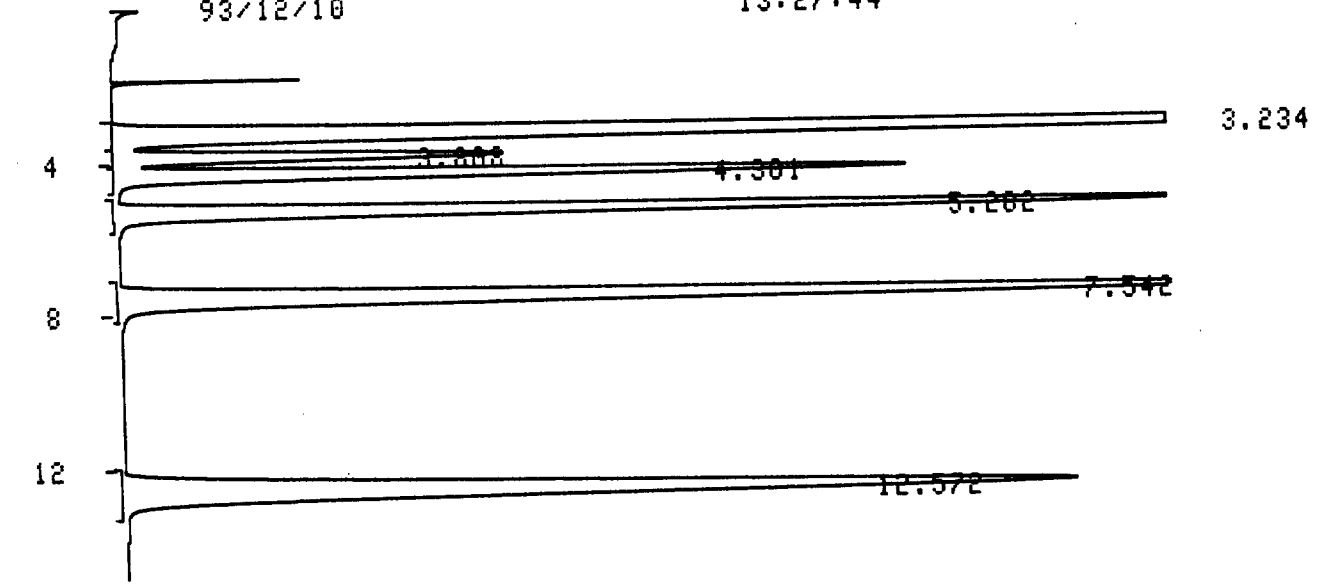
US BORAX
450-039
TURBINE, METH 18, RUN 3
93/12/10 11:59:35



CHROMATOGRAM 27 MEMORIZED
WARNING NO PEAK
93/12/10 13:20:03



CHROMATOGRAM 27 MEMORIZED
WARNING NO PEAK
93/12/10 13:27:44



1 2 4

223-02037-02

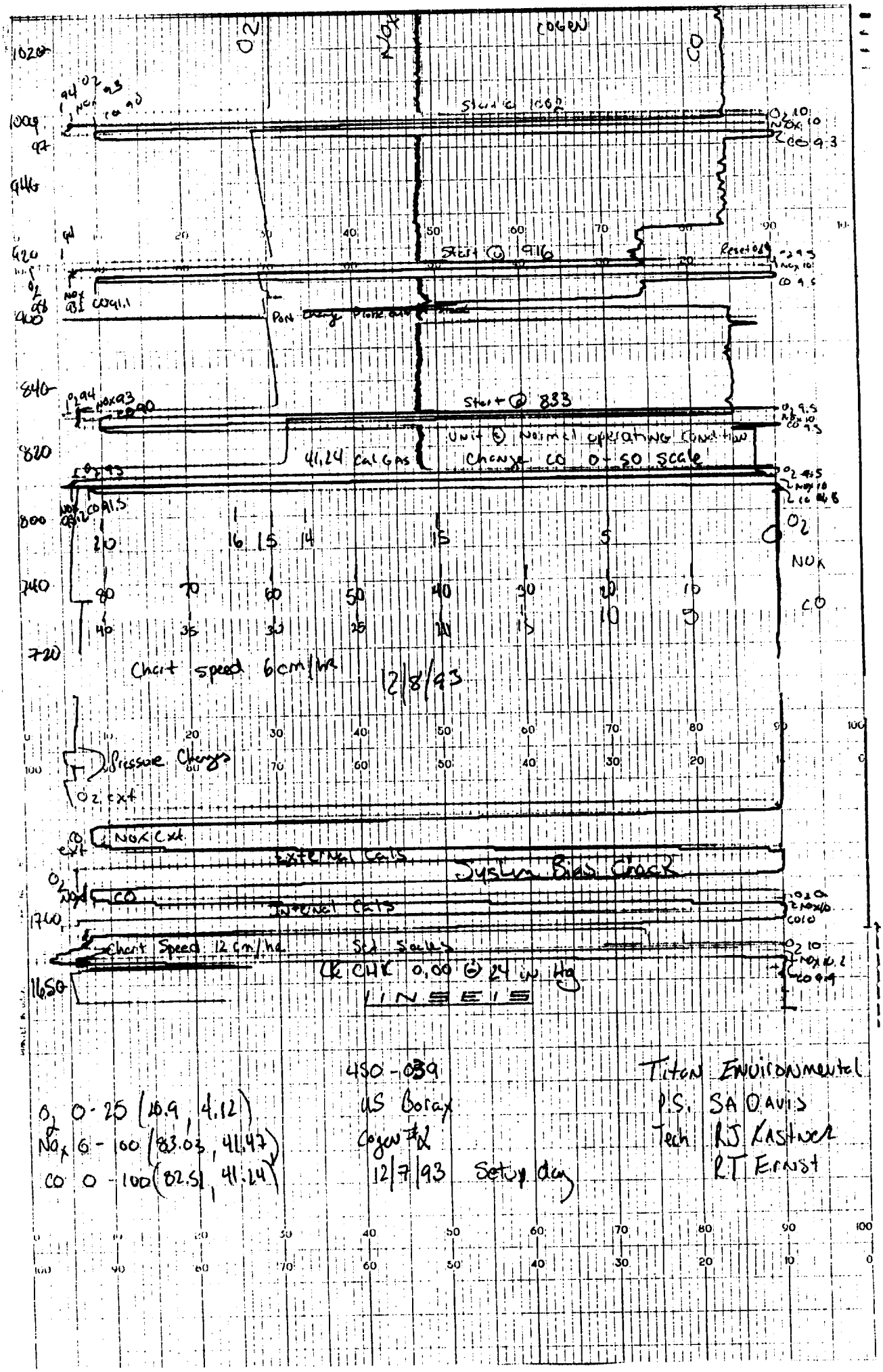
Shimadzu

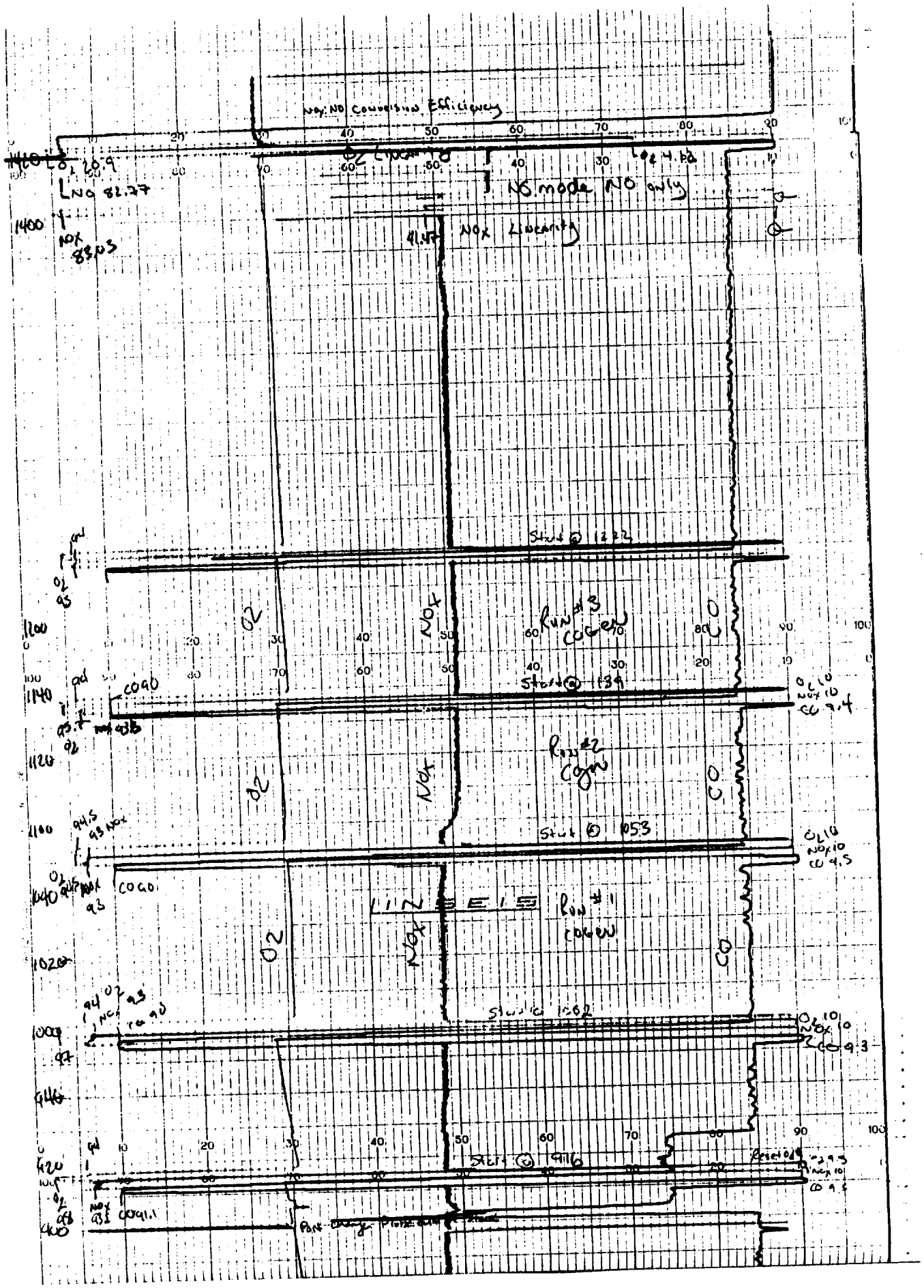
CHROMATOGRAM 27 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.234	299285		6	106.5815	C-6+
2	3.808	43718	V	1	97.9515	C-1
3	4.301	88234	V	2	99.493	C-2
4	5.282	131494		3	100.0859	C-3
5	7.542	174663		4	100.4333	C-4
6	12.572	175752		5	95.0893	C-5
	TOTAL	913145			599.6343	

GROUP(NAME)	CONC
C-1	97.9515
C-2	99.493
C-3	100.0859
C-4	100.4333
C-5	95.0893
C-6+	106.5815

Strip Charts


O2
NOx
COGEN
CO
Start @ 1008
Start @ 916
Reset O2
Start @ 833
Unit @ Normal operating condition
41.24 Cal Gas
Change CO 0-50 scale
Chart speed 6cm/hr
12/8/93
Pressure Change
O2 Ext
NOx Ext
External Cals
System Bias Check
CO
Internal Cals
Chart Speed 12 cm/hr
Std Scales
CK CHK 0.00 @ 24 in Hg
INSEIS
450-039
US Borax
Cogen #2
12/7/93 Setup day
O2 0-25 (20.9, 4.12)
NOx 0-100 (83.03, 41.47)
CO 0-100 (82.5, 41.24)
Titan Environmental
P.S. SA Davis
Tech RJ Kastner
RT Ernst


NOx/NO Conversion Efficiency
NO mode NO only
NOx Linearity
Run #3 Cogen
Run #2 Cogen
Run #1 Cogen
Stack @ 1222
Stack @ 1139
Stack @ 1053
Stack @ 1162
Stack @ 1116
O2
NOx
CO

Quality Assurance

INSTRUMENTATION QA CHECKLIST

DATE 12-7-93

CONSTITUENT	O2		NOX		CO			
INSTRUMENT								
MAKE	Teledyne		Teco		Teco			
MODEL	320 AR		10S		48			
SERIAL NUMBER								
RANGE	0-25		0-100		0-100			
CYLINDER#/GAS VALUE	NO.	VALUE	NO.	VALUE	NO.	VALUE	NO.	VALUE
CYLINDER 1	CC48271	0	CC48271	0	CC48271	0		
CYLINDER 2	CC4932	4.12	AAL7386	41.47	AAL7386	41.24		
CYLINDER 3	—	20.9	ALM12206	83.03	ALM12200	82.51		
CYLINDER 4								
SYSTEM BIAS %fs	zero	cal	zero	cal	zero	cal	zero	cal
INTERNAL	9.5	93	10	93.2	10.0	92.1		
EXTERNAL	9.5	94.5	10.2	93	9.9	92		
INTERNAL								
EXTERNAL								
LINEARITY								
OBSERVED/ACTUAL	0	0	0	0		0		
OBSERVED/ACTUAL	4.1	4.12	41.3	41.47		41.24		
OBSERVED/ACTUAL	21.3	20.9	84	83.03		82.51		
OBSERVED/ACTUAL								

Did all Instruments pass a System Bias Check (+\- 5%) ? yes

Did all Instruments pass Linearities (+\- 2%) ? yes

What was the Initial and Final leak check readings ? < 0.01 @ 24 in Hg

What portion of the Exhaust gas NOx was NO2 (%) ? > 5%

Was a NOx:NO Conversion Check performed? yes

Were all Calibration Gases In Cert (18 months) ? yes

Misc notes

TITAN ENVIRONMENTAL

DRY GAS METER CALIBRATION

DATE:	11-3-93	AMBIENT TEMP °F:	57
TECH:	RJK	BAROMETRIC Pbar:	29.86
METER I.D.#	CO01	TEST METER ID#:	93U766141
		TEST METER Mcf:	1.0000

APPROXIMATE CFM		0.75	0.50	0.30
STD TEST METER VOLUME CF	INITIAL	0.000	0.000	0.000
	FINAL	7.260	14.170	8.480
	TOTAL	7.260	14.170	8.480
FIELD GAS METER VOLUME CF	INITIAL	286.10	243.70	233.10
	FINAL	293.51	258.22	241.81
	TOTAL	7.41	14.52	8.71
STD TEST METER TEMP (°F)		72.0	64.0	60.0
FIELD GAS METER TEMP (°F)	IN	82.0	72.0	65.0
	OUT	73.0	65.0	60.0
	AVERAGE	77.5	68.5	62.5
STD TEST METER PRESSURE ("H2O)		-0.05	-0.05	-0.01
FIELD GAS METER PRESSURE ("H2O)		0.75	0.30	0.09
FIELD GAS METER, Mcf		0.988061	0.983550	0.978058

FIELD AVERAGE Mcf:	0.983223	H@:	0.7954

AIRCO **Special Gases**
An operating unit of the BOC Group, Inc.

680 N. Baldwin Park Blvd.
P.O. Box 868
City of Industry, CA 91749
Telephone: 818-369-1035
FAX: 818-333-1629

569789

ANALYTICAL REPORT

To: Bakersfield Welding Supply
2701 Fruitvale Avenue
Bakersfield, CA 93308

Date Reported: 07-08-93
Test Number: 43942
Fill Date: 07-08-93
Product Vol: 142 cf

Material Submitted: Nitrogen UHP, Grade 5.0

Specification Number: Airco Specifications, Minimum Purity: 99.999%

Method of Analysis: Trace Oxygen Analyzer, Total Hydrocarbon Analyzer, Moisture Monitor

Source Container No: 43941
Result of Investigation: Cylinder No. CC48771 Size 152

Component	Specification	Concentration
Oxygen	1 ppm	< 1 ppm
Total Hydrocarbons	0.5 ppm	<0.5 ppm
Moisture	1 ppm	< 1 ppm
Nitric Oxide		<0.1 ppm
Carbon Monoxide		<0.1 ppm
Nitrogen	Balance	Balance

By _____
Authorized Signature

Check for OFF SPEC result.

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An operating unit of the BOC Group, Inc.

680 N. Baldwin Park Blvd.
P.O. Box 868
City of Industry, CA 91749
Telephone: 818-369-1035
FAX: 818-333-1629

ANALYTICAL REPORT

To: Bakersfield Welding Supply
2701 Fruitvale Avenue
Bakersfield, CA 93308

Date Reported: 07-13-93
Test Number: 48738
Fill Date: 07-07-93
Product Vol: 140 cf

Material Submitted: 4% Oxygen, Balance Nitrogen

Specification Number: Airco Specifications

Method of Analysis: Percent Oxygen Analyzer

Result of Investigation: Cylinder No. CC4932 Size 152

Component	Specification	Concentration
Oxygen	4%	4.12 %
Nitrogen	Balance	Balance

By _____
Authorized Signature

Scott Specialty Gases, Inc.

2600 CAJON BOULEVARD, SAN BERNARDINO, CA 92411 (909) 887-2571 FAX: (909) 887-0549

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
TITAN ENVIRONMENTAL
SCOTT DAVID
18828 HIGHWAY 65
BAKERSFIELD, CA 93308

Assay Laboratory
Scott Specialty Gases
2600 Cajon Boulevard
San Bernardino, CA 92411

Purchase Order 2127
Project # 26497.005

ANALYTICAL INFORMATION

Certified to exceed the minimum specifications of EPA Protocol 1 Procedure #G1, Section Number 3.0.4

Cylinder Number AAL7380
Cylinder Pressure 1900 psig
Certification Date 07-28-93
GENERAL Date 01-28-94
ACID RAIN DATE

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
CARBON MONOXIDE	41.24 PPM	± 1 % NIST Traceable
NITRIC OXIDE	41.40 PPM	
SULFUR DIOXIDE	40.19 PPM	
Balance Gas: Nitrogen		
NOX	41.47 PPM	

*Analytical uncertainty is inclusive of usual known error sources which at least includes reference standard error & precision of the measurement processes

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
GMIS	06-94	ALM026614	96.23 ppm
GMIS	09-94	ALM033883	99.12 ppm
GMIS	06-94	ALM025735	48.52 ppm

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Horiba / OPE-135D / 56565502	07-12-93	NDIR
TECO / 10AR / 38644-258	05-11-93	Chemi-Luminescent
Horiba / OPE-135D / 56463601	07-01-93	NDIR

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Components — Carbon Monoxide

First Triad Analysis
Date: 07-20-93 Response Units: mv
Z1= 0.00 R1= 97.0 T1= 42.7
R2= 97.0 Z2= 0.00 T2= 42.7
Z3= 0.00 T3= 42.7 R3= 97.0
Avg. Conc. of Cust Cyl. 41.16 ppm

Second Triad Analysis
Date: 07-28-93 Response Units: mv
Z1= 0.00 R1= 97.0 T1= 42.8
R2= 97.0 Z2= 0.00 T2= 42.9
Z3= 0.00 T3= 42.9 R3= 97.0
Avg. Conc. of Cust Cyl. 41.32 ppm

Calibration Curve
Concentration= Ax^2+Bx+C
A =0.0005081
B =0.9438
C =-0.07474

Components — Nitric Oxide

First Triad Analysis
Date: 07-20-93 Response Units: mv
Z1= 0.00 R1= 95.7 T1= 40.1
R2= 95.8 Z2= 0.00 T2= 40.1
Z3= 0.00 T3= 40.1 R3= 95.8
Avg. Conc. of Cust Cyl. 41.50 ppm

Second Triad Analysis
Date: 07-27-93 Response Units: mv
Z1= 0.00 R1= 96.5 T1= 40.2
R2= 96.5 Z2= 0.00 T2= 40.2
Z3= 0.00 T3= 40.2 R3= 96.5
Avg. Conc. of Cust Cyl. 41.29 ppm

Calibration Curve
Concentration= Ax^2+Bx+C
A =-0.0005080
B =1.054
C =-0.1090

Components — Sulfur Dioxide

First Triad Analysis
Date: 07-20-93 Response Units: mv
Z1= 0.00 R1= 97.0 T1= 80.1
R2= 97.0 Z2= 0.00 T2= 80.2
Z3= 0.00 T3= 80.2 R3= 97.0
Avg. Conc. of Cust Cyl. 40.18 ppm

Second Triad Analysis
Date: 07-28-93 Response Units: mv
Z1= 0.00 R1= 97.0 T1= 80.2
R2= 97.0 Z2= 0.00 T2= 80.2
Z3= 0.00 T3= 80.2 R3= 97.0
Avg. Conc. of Cust Cyl. 40.20 ppm

Calibration Curve
Concentration= Ax + B
A =0.5010
B =0.007534

SPECIAL NOTES: IF THIS PRODUCT IS USED FOR ACID RAIN COMPLIANCE, THE ACID RAIN EXPIRATION DATE NOTED ABOVE APPLIES PER 40 CFT PART 75, APPENDIX H. OTHERWISE THE GENERAL EXPIRATION DATE APPLIES.

Analyst Joseph De La Torre

Scott Specialty Gases, Inc.

2600 CAJON BOULEVARD, SAN BERNARDINO, CA 92411 (909) 887-2571 FAX: (909) 887-0549

CERTIFICATE OF ANALYSIS: EPA PROTOCOL GAS

Customer
TITAN ENVIRONMENTAL
SCOTT DAVID
18828 HIGHWAY 65
BAKERSFIELD, CA 93308

Assay Laboratory
Scott Specialty Gases
2600 Cajon Boulevard
San Bernardino, CA 92411

Purchase Order 2127
Project # 26497.012

ANALYTICAL INFORMATION

Certified to exceed the minimum specifications of EPA Protocol 1 Procedure #G1, Section Number 3.0.4

Cylinder Number ALM012200
Cylinder Pressure 1950 psig
Certification Date 07-28-93
GENERAL Date 07-28-95
ACID RAIN DATE

ANALYZED CYLINDER

Components	Certified Concentration	Analytical Uncertainty*
CARBON MONOXIDE	**82.51 PPM**	**± 1 % NIST Traceable**
NITRIC OXIDE	**82.77 PPM**	
SULFUR DIOXIDE	**82.10 PPM**	
Balance Gas: Nitrogen		
NOX	**83.03 PPM**	

*Analytical uncertainty is inclusive of usual known error sources which at least includes reference standard error & precision of the measurement processes.

REFERENCE STANDARD

Type	Expiration Date	Cylinder Number	Concentration
GMIS	06-94	ALM026614	96.23 ppm
GMIS	09-94	ALM033883	99.12 ppm
GMIS	06-94	AAL1977	236.8 ppm

INSTRUMENTATION

Instrument/Model/Serial #	Last Date Calibrated	Analytical Principle
Horiba / OPE-135D / 56565502	07-12-93	NDIR
TECO / 10AR / 38644-258	05-11-93	Chemi-Luminescent
Horiba / OPE-135D / 56463601	07-01-93	NDIR

ANALYZER READINGS (Z=Zero Gas R=Reference Gas T=Test Gas r=Correlation Coefficient)

Carbon Monoxide

First Triad Analysis	Second Triad Analysis	Calibration Curve
Date: 07-21-93 Response Units: mv	Date: 07-28-93 Response Units: mv	Concentration= Ax^2+Bx+C
Z1= 0.00 R1= 97.0 T1= 83.8	Z1= 0.00 R1= 97.0 T1= 83.6	A =0.0005081
R2= 97.0 Z2= 0.00 T2= 83.8	R2= 97.0 Z2= 0.00 T2= 83.7	B =0.9438
Z3= 0.00 T3= 83.8 R3= 97.0	Z3= 0.00 T3= 83.6 R3= 97.0	C =-0.07474
Avg. Conc. of Cust Cyl. 82.59 ppm	Avg. Conc. of Cust Cyl. 82.42 ppm	

Nitric Oxide

First Triad Analysis	Second Triad Analysis	Calibration Curve
Date: 07-20-93 Response Units: mv	Date: 07-27-93 Response Units: mv	Concentration= Ax^2+Bx+C
Z1= 0.00 R1= 96.4 T1= 80.5	Z1= 0.00 R1= 96.7 T1= 80.7	A =-0.0005080
R2= 96.4 Z2= 0.00 T2= 80.5	R2= 96.8 Z2= 0.00 T2= 80.8	B =1.054
Z3= 0.00 T3= 80.5 R3= 96.4	Z3= 0.00 T3= 80.8 R3= 96.7	C =-0.1090
Avg. Conc. of Cust Cyl. 82.77 ppm	Avg. Conc. of Cust Cyl. 82.76 ppm	

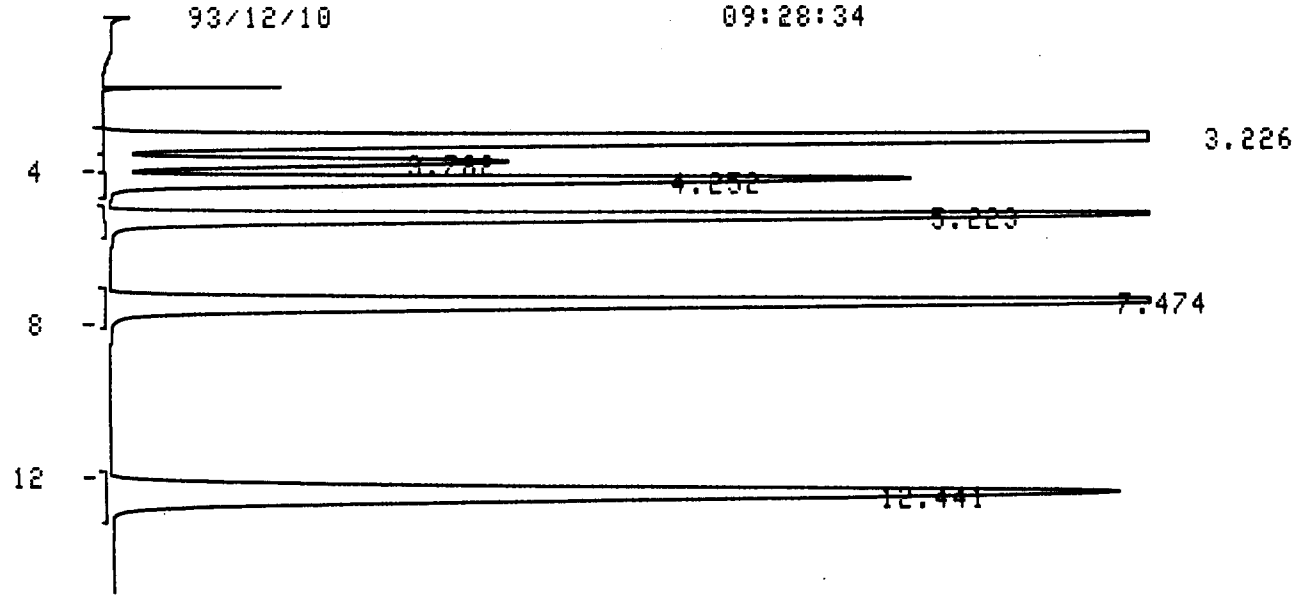
Sulfur Dioxide

First Triad Analysis	Second Triad Analysis	Calibration Curve
Date: 07-21-93 Response Units: mv	Date: 07-28-93 Response Units: mv	Concentration= Ax^2+Bx+C
Z1= 0.00 R1= 97.0 T1= 35.0	Z1= 0.00 R1= 97.0 T1= 35.1	A =0.001592
R2= 97.0 Z2= 0.00 T2= 35.0	R2= 97.0 Z2= 0.00 T2= 35.2	B =2.287
Z3= 0.00 T3= 35.0 R3= 97.0	Z3= 0.00 T3= 35.2 R3= 97.0	C =-0.1186
Avg. Conc. of Cust Cyl. 81.90 ppm	Avg. Conc. of Cust Cyl. 82.30 ppm	

SPECIAL NOTES: IF THIS PRODUCT IS USED FOR ACID RAIN COMPLIANCE, THE ACID RAIN EXPIRATION DATE NOTED ABOVE APPLIES PER 40 CFT PART 75, APPENDIX H. OTHERWISE THE GENERAL EXPIRATION DATE APPLIES.

Analyst: Joseph De La Torre

Initial Cal, 100 ppm



223-02037-02

Shimadzu

CHROMATOGRAM 27 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.226	280804		6		C-6+
2	3.782	44632	V	1		C-1
3	4.252	88684	V	2		C-2
4	5.223	131381		3		C-3
5	7.474	173910		4		C-4
6	12.441	184828		5		C-5
	TOTAL	904238				

CALIBRATION MADE IN IDENTIFICATION FILE 1
MODE$ 101 WINDOW 3

IDNO	NAME	TIME	FACTOR	CONC
1	C-1	3.77	0.00224054	100
2	C-2	4.24	0.00112761	100
3	C-3	5.22	0.000761144	100
4	C-4	7.47	0.000575011	100
5	C-5	12.44	0.000541043	100
6	C-6+	3.22	0.000356121	100
7	C-3	6.13	0.000807318	100
8	C-4	7.13	0.000613256	100
9	C-5	11.8	0.000599231	100

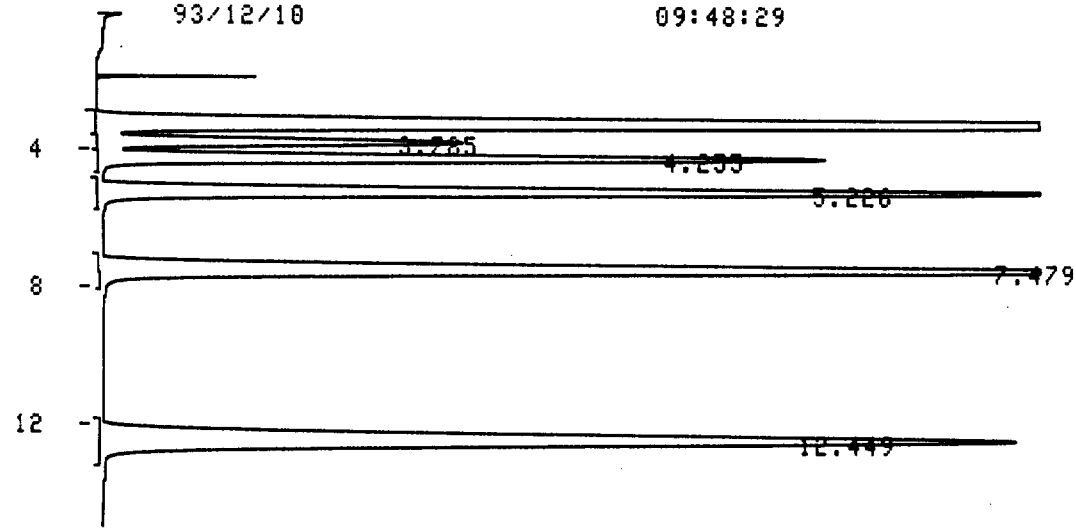
IDENTIFICATION FILE 1
MODE$ 101 WINDOW 3

IDNO	NAME	TIME	FACTOR	CONC
1	C-1	3.77	0.00224054	100
2	C-2	4.24	0.00112761	100
3	C-3	5.22	0.000761144	100
4	C-4	7.47	0.000575011	100
5	C-5	12.44	0.000541043	100
6	C-6+	3.22	0.000356121	100
7	C-3	6.13	0.000761144	100
8	C-4	7.13	0.000575011	100
9	C-5	11.8	0.000541043	100

ANALYSIS PARAMETER FILE 1

WIDTH	5	SLOPE	1000
DRIFT	20	MIN.AREA	200
T.DBL	0	STOP.TM	15
ATTEN	3	SPEED	5
METHOD$	0424	FORMAT$	2201
SPL.WT	100	IS.WT	1

100 ppm, Duplicate Cal



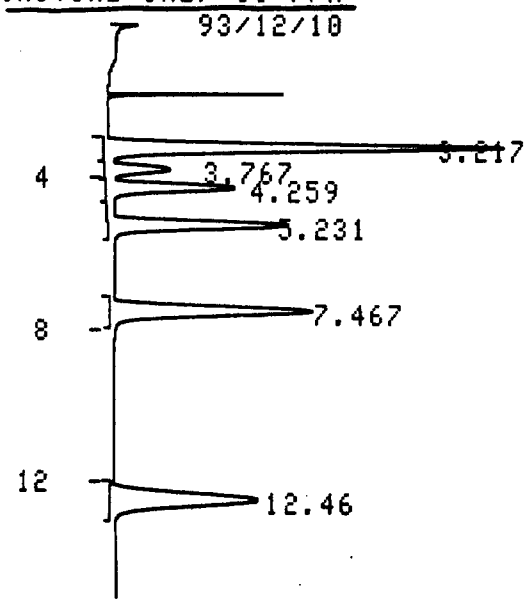
CHROMATOGRAM 27 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.226	286678		6	102.0919	C-6+
2	3.785	44522	V	1	99.7543	C-1
3	4.255	88999	V	2	100.3556	C-2
4	5.226	131828		3	100.3402	C-3
5	7.479	174506		4	100.343	C-4
6	12.449	185817		5	100.5349	C-5
	TOTAL	912350			603.4199	

GROUP(NAME)	CONC
C-1	99.7543
C-2	100.3556
C-3	100.3402
C-4	100.343
C-5	100.5349
C-6+	102.0919

INITIAL CAL, 15 PPM

93/12/10 10:14:53



CHROMATOGRAM 27 MEMORIZED

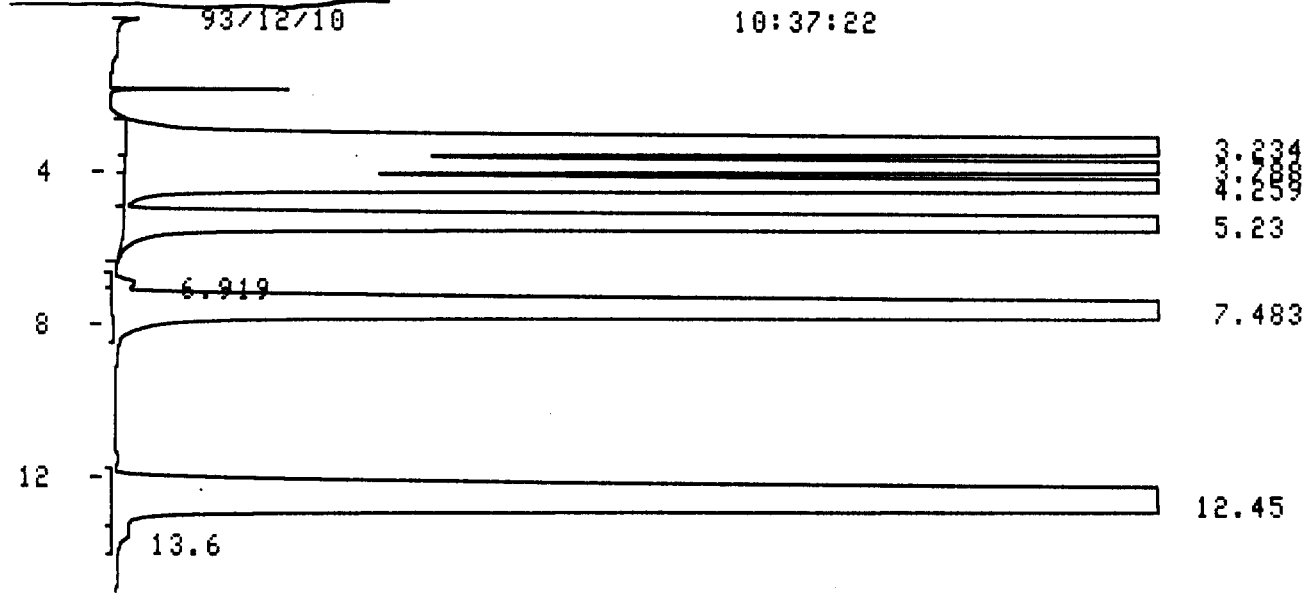
PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.217	42004		6	14.9586	C-6+
2	3.767	7343	V	1	16.4513	C-1
3	4.259	14461	V	2	16.3069	C-2
4	5.231	20976	V	3	15.9655	C-3
5	7.467	27439		4	15.778	C-4
6	12.46	27010		5	14.6136	C-5
	TOTAL	139233			94.0739	

GROUP(NAME)	CONC
C-1	16.4513
C-2	16.3069
C-3	15.9655
C-4	15.778
C-5	14.6136
C-6+	14.9586

223-02037-02

Shimadzu

INITIAL CAL, 1000 PPM



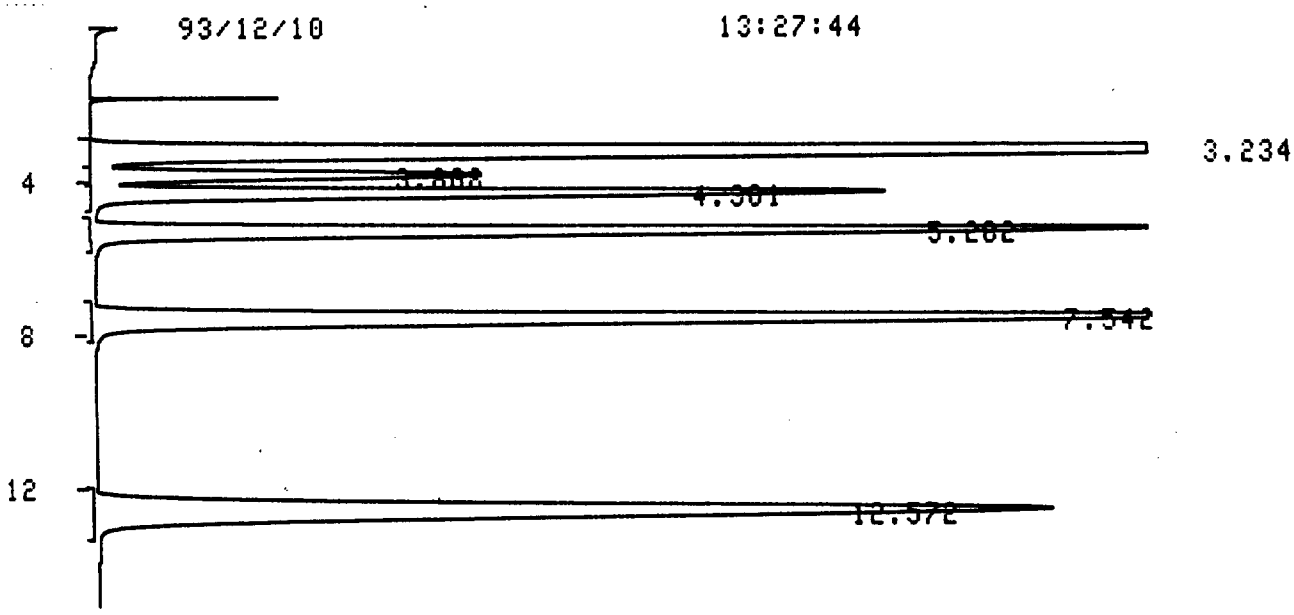
CHROMATOGRAM 27 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.234	2886382		6	1027.9011	C-6+
2	3.788	463501	V	1	1038.4932	C-1
3	4.259	938381	V	2	1058.1275	C-2
4	5.23	1340545		3	1020.3473	C-3
5	6.919	2836		8	1.6305	C-4
6	7.483	1777184	V	4	1021.9004	C-4
7	12.45	1931076		5	1044.795	C-5
8	13.6	2218	V			
	TOTAL	9342121			6213.1943	

GROUP(NAME)	CONC
C-1	1038.4932
C-2	1058.1275
C-3	1020.3473
C-4	1023.5308
C-5	1044.795
C-6+	1027.9011

12 2

223-02037-02



3-02037-02

Shimadzu

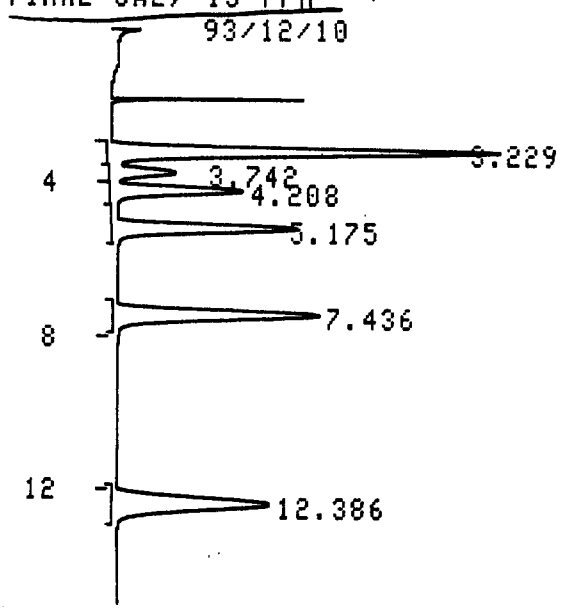
CHROMATOGRAM 27 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.234	299285		6	106.5815	C-6+
2	3.808	43718	V	1	97.9515	C-1
3	4.301	88234	V	2	99.493	C-2
4	5.282	131494		3	100.0859	C-3
5	7.542	174663		4	100.4333	C-4
6	12.572	175752		5	95.0893	C-5
	TOTAL	913145			599.6343	

GROUP(NAME)	CONC
C-1	97.9515
C-2	99.493
C-3	100.0859
C-4	100.4333
C-5	95.0893
C-6+	106.5815

FINAL CAL, 15 PPM

93/12/10 13:49:04



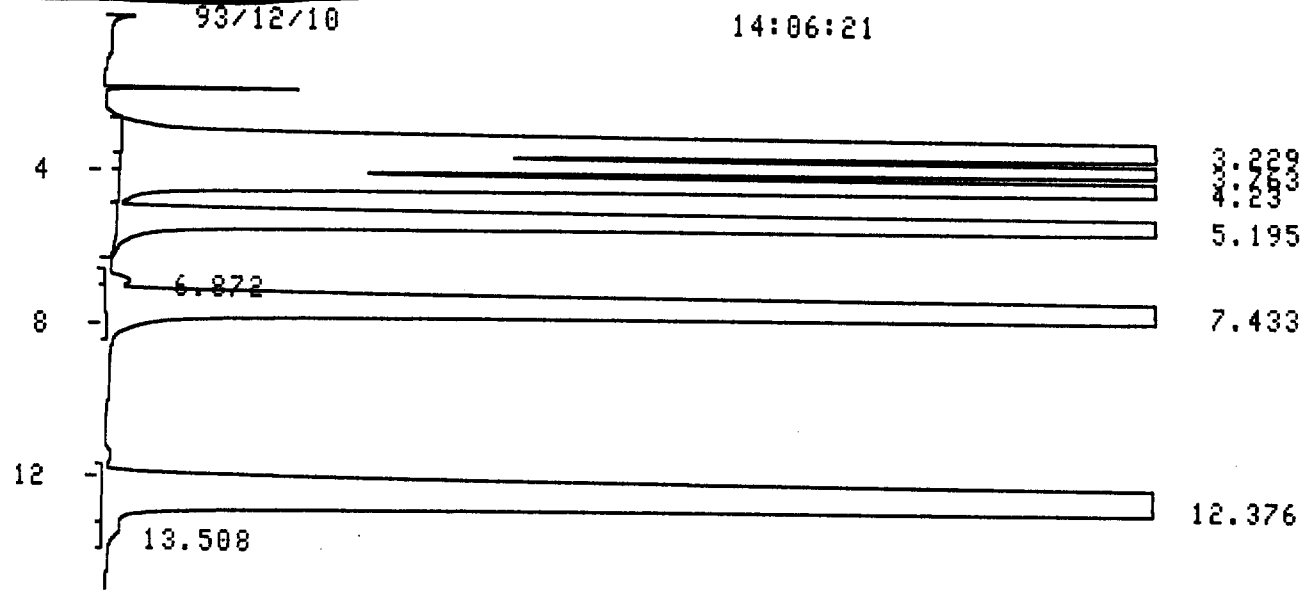
CHROMATOGRAM 27 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.229	42016		6	14.9628	C-6+
2	3.742	7682	V	1	17.2116	C-1
3	4.208	14944	V	2	16.8506	C-2
4	5.175	21412	V	3	16.2977	C-3
5	7.436	27935		4	16.0631	C-4
6	12.386	28936		5	15.6555	C-5
	TOTAL	142925			97.0414	

GROUP(NAME)	CONC
C-1	17.2116
C-2	16.8506
C-3	16.2977
C-4	16.0631
C-5	15.6555
C-6+	14.9628

FINAL CAL, 1000 PPM

93/12/10 14:06:21

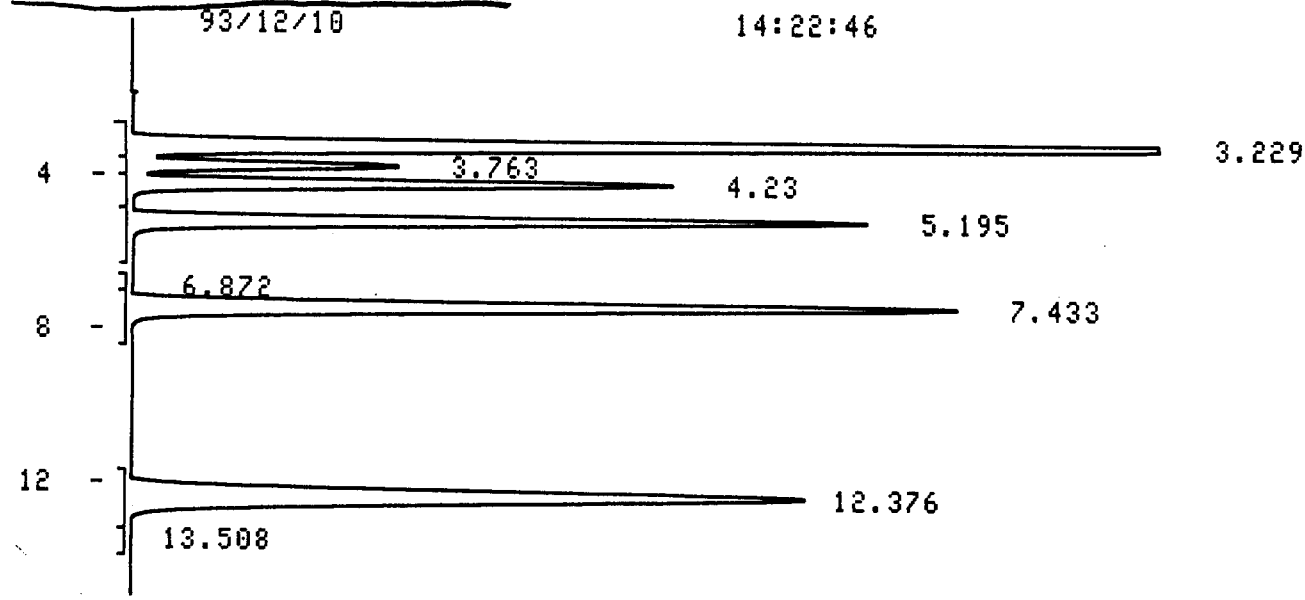


CHROMATOGRAM 27 MEMORIZED

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.229	2855104		6	1016.7625	C-6+
2	3.763	471087	V	1	1055.4888	C-1
3	4.23	948851	V	2	1069.9334	C-2
4	5.195	1356033		3	1032.1365	C-3
5	6.872	2916				
6	7.433	1797093	V	4	1033.3482	C-4
7	12.376	2013773		5	1089.5373	C-5
8	13.508	2227	V			
	TOTAL	9447082			6297.206	

GROUP(NAME)	CONC
C-1	1055.4888
C-2	1069.9334
C-3	1032.1365
C-4	1033.3482
C-5	1089.5373
C-6+	1016.7625

FINAL CAL, 1000 PPM, ATTEN 7



PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.229	2855105		6	1016.7626	C-6+
2	3.763	471087	V	1	1055.489	C-1
3	4.23	948851	V	2	1069.9334	C-2
4	5.195	1356034		3	1032.1367	C-3
5	6.872	2916				
6	7.433	1797092	V	4	1033.3474	C-4
7	12.376	2013772		5	1089.5372	C-5
8	13.508	2227	V			
	TOTAL	9447081			6297.2055	

GROUP(NAME)	CONC
C-1	1055.489
C-2	1069.9334
C-3	1032.1367
C-4	1033.3474
C-5	1089.5372
C-6+	1016.7626

TITAN ENVIRONMENTAL
LABORATORY ANALYSIS

METHOD 5 - GRAVIMETRIC ANALYSIS

COMPANY: US BORAX PROJECT: 450-040

UNIT: ANALYSIS DATE: 12-11-91

TEST DATE: 12-9-93 *RUN #:*

~~PROBE AND NOZZLE WASH~~ SPIKE 100 mls				
DISH #: 19	*ALIQUOT:*			
WEIGHT:	#1	#2	#3	AVERAGE
FINAL WEIGHT (gm)	71.4287	71.4284		71.42866
INITIAL WEIGHT (gm)	71.4064			71.4064
NET WEIGHT (gm)				0.02226

FILTER BLANK				
FILTER #: VS 31				
WEIGHT:	#1	#2	#3	AVERAGE
FINAL WEIGHT (gm)	0.58938	0.58933		0.58936
INITIAL WEIGHT (gm)	0.58935			0.58935
NET WEIGHT (gm)				0.00001

CONDENSABLES - AQUEOUS H2O BLANK				
DISH #: 6	*ALIQUOT:* 100 mls			
WEIGHT:	#1	#2	#3	AVERAGE
FINAL WEIGHT (gm)	71.6819	71.6818		71.6819
INITIAL WEIGHT (gm)	71.6814	71.6814		71.6814
NET WEIGHT (gm)				0.00050

CONDENSABLES - ORGANIC				
DISH #:	*ALIQUOT:*			
WEIGHT:	#1	#2	#3	AVERAGE
FINAL WEIGHT (gm)				
INITIAL WEIGHT (gm)				
NET WEIGHT (gm)				

COMMENTS: Spike = 100 ml, * 218.9 mg/l = 21.89 ∴ 101.7 % recovery

12/16
ANALYST SIGNATURE

TITAN ENVIRONMENTAL
LABORATORY ANALYSIS

METHOD 5 - GRAVIMETRIC ANALYSIS

COMPANY: US BORAX | PROJECT: 450-040

UNIT: | ANALYSIS DATE: 12-11-91

TEST DATE: 12-9-93 | *RUN #:* QA Method Blank

PROBE AND NOZZLE WASH #1

DISH #: 9 | *ALIQUOT:*

WEIGHT:	#1	#2	#3	AVERAGE
FINAL WEIGHT (gm)	72.3893	72.3890		72.3892
INITIAL WEIGHT (gm)	72.3867	72.3866		72.3867
NET WEIGHT (gm)				0.0025

FILTER

FILTER #:

WEIGHT:	#1	#2	#3	AVERAGE
FINAL WEIGHT (gm)				
INITIAL WEIGHT (gm)				
NET WEIGHT (gm)				

CONDENSABLES - AQUEOUS #1

DISH #: 24 | *ALIQUOT:* 200/400

WEIGHT:	#1	#2	#3	AVERAGE
FINAL WEIGHT (gm)	68.5640	68.5642		68.5641
INITIAL WEIGHT (gm)	68.5633	68.5633		68.5633
NET WEIGHT (gm)				0.0008

CONDENSABLES - ORGANIC

DISH #: | *ALIQUOT:*

WEIGHT:	#1	#2	#3	AVERAGE
FINAL WEIGHT (gm)				
INITIAL WEIGHT (gm)				
NET WEIGHT (gm)				

COMMENTS:

12/16
ANALYST SIGNATURE

TITAN ENVIRONMENTAL

18828 Highway 65
Bakersfield, CA 93308
(805) 391-0112 FAX (805) 391-0153

CHAIN OF CUSTODY RECORD

ANALYSIS REQUEST

LABORATORY: Pacific Gas Tech		LAB ID#:				C-Cat, O_2, CO_2, N_2 GC/FID-TCD	Total Sulfur by GC-FPD		
COMPANY: US BORAX	LOCATION/UNIT: Cogen								
PROJECT: 450-040	SAMPLED BY: Scott Davis								
METHOD: GRAB SAMPLE	DELIVER REPORT TO: Tim Brennan	TITAN P.O. #							
SAMPLE ID#	SAMPLE DESCRIPTION	SAMPLE DATE	Liq	Filter	Gas				
1	Tedlar Bag PUC Gas	12/8			X	X	X		
2	Tedlar Bag - Back-up Sample	12/8			X				

COMMENTS:

RELINQUISHED BY:	DATE: 12-10-93	RECEIVED BY:	DATE: 12-10-93
RELINQUISHED BY:	DATE: 12-10-93	RECEIVED BY:	DATE: 12-16-93
RELINQUISHED BY:	DATE:	RECEIVED BY:	DATE:

Source Test Protocol

Kern County Air Pollution Control District
and
Environmental Protection Agency (EPA)

Source Test Protocol

for

U.S. Borax & Chemical Corporation
Boron Facility

48 MW Cogeneration Facility

Prepared by

Titan Environmental

Project 450-039

Submitted November 17, 1993

Table of Contents

Source Test Protocol

Project Information

Company:

U.S. Borax & Chemical Corporation
14486 Borax Road
Boron, CA 93516
(619) 762-7000 FAX (619) 762-7335

Attention: *Mike Kirby*

Source(s):

Turbine/Cogeneration Facility
KCAPCD Permit No. 1004077A
EPA Permit No. NSR 4-4-11 SE 82-02

Source Description:

The unit to be tested is one Westinghouse frame W-251 48-MW gas turbine equipped with 210 MMBtu/hr duct burners; heat recovery steam generator (HRSG); and a 48-MW electric generator.

Operating Parameters:

The unit will be tested at normal operating conditions, approximately 45 MW.

Independent Contractor:

Titan Environmental
18828 Highway 65
Bakersfield, CA 93308
(805) 391-0112 FAX (805) 391-0153

Attention: *Tim Brennan*

Testing Objective:

The objective of the testing is to document compliance with EPA and KCAPCD permit conditions for annual source testing.

Test Date:

December 8, 1993

Testing Parameters

Testing is to determine concentrations (gr/DSCF), ppm) and emissions (lb/hr) of particulate matter (PM), NOx, CO and NMHC from the exhaust of one 48-MW cogeneration facility. PM, NOx and CO will be sampled to satisfy EPA permit conditions. NOx, CO, NMHC and fuel sulfur will be sampled to sateisfy Kern County APCD permit conditions. The following methods will be used.

Table I - General Approach

Parameter	Method	Analysis Method	Test Runs Per Unit	Permit Limits	
				EPA	SJVUA
PM	EPA Method 5	Gravimetric analysis of front half	1 6 Hour	14.0 lb/hr	N/A
NOx	EPA Method 7E	TECO Model 10; Chemiluminescent	3 40 Minute	268.2 lb/hr 0.57 lb/MMBtu	268 lb/hr 96ppm @ 15% O_2
CO	EPA Method 10	TECO Model 48; Gas Filter Correlation	3 40 Minute	446 lb/hr	446 lb/hr
O_2	EPA Method 3A	Teledyne Model 320AR; Micro Fuel Cell	3 40 Minute	N/A	N/A
NMHC	EPA Method 18	GC-FID Analysis for C_1 - C_6+	3	N/A	2.9 lb/hr
Volume Flow	EPA Methods 2, 3, 4	Pitot Tube Traverse/ Condensation Train Simultaneous w/Method 5	1 6 Hour	N/A	N/A
Fuel Sulfur	Tedlar Bag Sample	GC-FPD analysis for Total Sulfur	1	N/A	146 lb/hr SO_2
Fuel Sample	Stainless Steel Bomb	GC-FID/TCD analysis for C_1-C_6+,O_2,CO_2,N_2	1	N/A	N/A

Testing Parameters (Continued)

Table II - Testing Specifics

Parameter	Analytical Lab	Units of Measurement	Minimum Detection Limit	Anticipated Range
PM	Titan Environmental	gr/DSCF, lb/hr	0.0002 gr/DSCF	0.002 gr/DSCF
NOx	Titan Environmental	ppm, ppm @ 15% lb/hr, lb/MMBtu	1 ppm	0 - 100 ppm
CO	Titan Environmental	ppm, ppm @ 15% lb/hr, lb/MMBtu	1 ppm	0 - 100 ppm
O_2	Titan Environmental	%	0.1% vol dry	15% vol dry
NMHC	Titan Environmental	ppm, lb/hr	1 ppm	< 10 ppm
Volume Flow	Titan Environmental	DSCFM; MMBtu/hr	N/A	N/A
Fuel Sulfur	Pacific Gas Technology	H_2S ppm	1 ppm	< 5 ppm
Fuel Sample	Pacific Gas Technology	CHONS Btu/lb	N/A	N/A

Source Test Methods

CONTINUOUS EMISSIONS MONITORING SYSTEM (CEMS)

Reference: *State of California Air Resources Board, Test Methods 1-100, June 1979*
EPA CFR Title 40, Pt. 60, Appendix A, Method 3A, 6C, 7E, 10 and 20.

Instrument Summary

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

Sample Conditioning System

The sample conditioning system consists of a borosilicate glass tube or 316 grade stainless steel probe fitted with a sintered stainless steel or pyrex glass wool particulate filter. The probe will be fitted with a teflon (TFE) sample line which connects to a water condensation system located at the source. The condensation system will consist of three 500-ml short stem glass impingers connected in a series, immersed in an ice bath. The gas will be delivered to the instrument trailer with a diaphragm pump. The sample system will be leak checked prior to sampling by plugging the end of the sample probe and adjusting the sample pump to its maximum rate (approximately 22" Hg). A zero leak condition will be indicated by the sampling flow rotometers dropping to zero.

Manifold System

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

Analog Strip Chart Data Reduction

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

EPA Method 18
Hydrocarbon Emissions Testing
FID Analysis (Continued)

Analytical Procedures

The contents of the tedlar bag will be analyzed by gas chromatography. The gas chromatograph will be calibrated with an appropriate standard for each carbon number, both before and after each set of samples are analyzed. The sample is speciated by carbon number - C_1, C_2, C_3, C_4, C_5, and C_6 + backflush.

Symbol Identification

i	=	Carbon number; i = 1 through 6+
s	=	Refers to standard for the indicated carbon number
Rx_i	=	Response factor for C_i
MW	=	Molecular Weight - g/mole
DSCFM	=	Average volume flow rate of unit tested

Equations

$$Rx_i = \frac{Area\ std}{ppm\ std}$$

$$Sample\ ppm_i = \frac{1}{Rx_i} \times Area_i$$

$$Sample\ ppm\ (as\ C_1) = Sample\ ppm \times \#\ of\ Carbons$$

$$\frac{lbs}{hr_i} = ppm_i \times MW_i \times DSCFM \times 1.581 \times 10^{-7}$$

$$Total\ non\text{-}methane\ \frac{lbs}{hr} = \sum_{i=2}^{6+} \frac{lbs}{hr_i}$$

Note 1: *If lbs/hr as methane is required, MW will equal 16.0 (MW of methane, CH_4)*

Note 2: *Number of carbons: ethane = 2, propane = 3, etc.*

SAMPLING AND ANALYTIC PROCEDURES

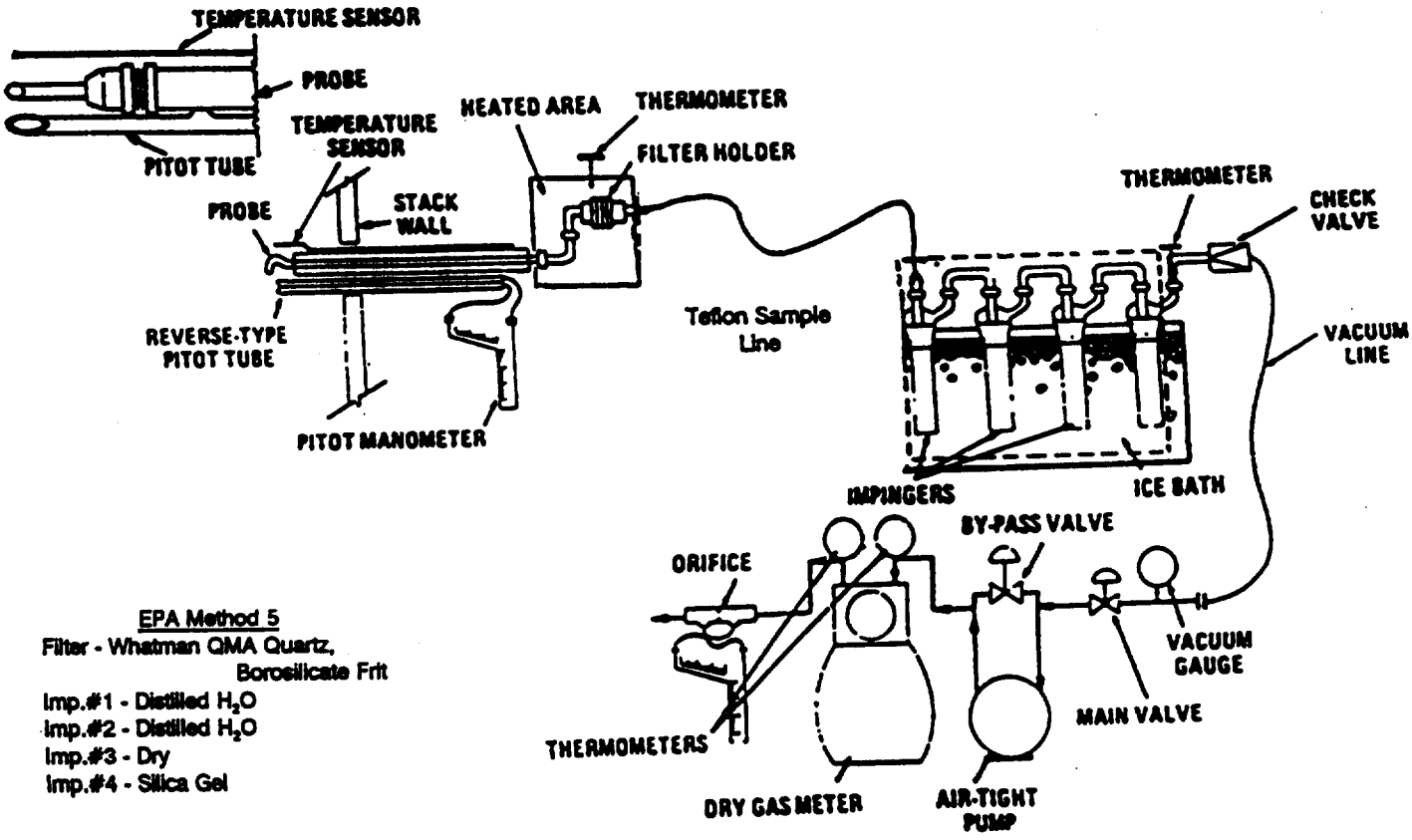
Method(s) 1-4, and 5

Reference: *EPA Code of Federal Regulations, Title 40, Part 60, Appendix A; Methods 1, 2, 3, 4 and 5.*

Sampling Apparatus

The sampling apparatus will consist of a nozzle, a heater-wrapped probe, and a heated filter holder (the data sheets will indicate the type of nozzle, probe and filter). The filter will be connected to a heated teflon filter-to-impinger line. A series of impingers (data sheets will indicate the type and contents) will be connected in tandem and immersed in an ice bath. Following the absorption train, will be a gas pump, dry gas meter, and a calibrated restriction orifice fitted with a magnehelic differential pressure gauge. A type "S" pitot tube and temperature probe will then be positioned alongside the probe terminating at the sample nozzle for the purpose of monitoring duct conditions throughout the test.

Sampling Diagram



EPA Method 1: Sampling and Velocity Traverses for Stationary Sources

Prior to the source testing, a site assessment will be performed to determine the sample points that will obtain the best representative measurements of pollution concentrations and volumetric flow rates. EPA Method 1 takes into account duct area, straight run and cyclonic, or stratified flow patterns.

SAMPLING AND ANALYTIC PROCEDURES

Method(s) 1-4 and 5

(Continued)

EPA Method 2: Velocity and Volumetric Flow Rates

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

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

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

EPA Method 4: Percent Water

Tare weights of the charged individual impingers are recorded prior to sampling. After sampling, the final weights will be recorded and percent water calculated from the weight of water collected and the dry gas volume sampled.

EPA Method 5: Particulate Emissions

A series of preliminary measurements will be made prior to conducting the particulate test. EPA Methods 1, 2, and 3 will be performed to determine location and number of traverse points, average gas velocity, and pressure and gas molecular weight. Percent water will be determined by a psychometric chart or from combustion analysis of the fixed gases. The results of these measurements will be entered into the field computer for the purpose of determining an appropriate nozzle size for isokinetic sampling.

The Method 5 apparatus will then be prepared on-site in the mobile laboratory. The absorption train will be charged with freshly prepared chemicals, weighted on a calibrated digital balance to the nearest 0.1 grams, and assembled. The probe will be brushed out and rinsed with distilled water and acetone, then the filter holder will be charged. The sampling apparatus will be sealed and transported to the sampling site where it will be assembled and leak tested at 15 inches mercury vacuum.

The probe, filter and impinger line heaters will be set at 250 degrees F and the probe will be positioned into the duct at the first traverse point with the nozzle out of the flow.

The nozzle is to be positioned into the gas flow and the vacuum pump will be started immediately and adjusted to obtain an isokinetic sample rate. A complete traverse will be performed while sampling at a minimum of two minutes per sample point.

SAMPLING AND ANALYTIC PROCEDURES

Method(s) 1-4 and 5

(Continued)

EPA Method 5 (Continued):

Upon completion of the traverse, the vacuum pump will be turned off and the probe transferred into the next sample EPA port where an identical sample-traverse will then be performed. Duct conditions (temperature, delta-P) and sampling conditions (meter temperature, volume and pressure, probe, filter, sample line, impinger temperatures, and absorption train vacuum) will be monitored and recorded regularly for each sample point.

Upon completion of sampling, the apparatus will be leak tested at a vacuum greater than the highest observed vacuum. The leak will be recorded and the apparatus will then be sealed and transported to the mobile laboratory. The heated filter-to-impinger line will be rinsed with a known amount of distilled water into the first impinger.

The filter and any loose particulate will be carefully removed from the filter holder with tweezers. It will then be placed in a labeled petri dish and transported to the laboratory. The nozzle, probe, and filter top housing will be rinsed and brushed three times with distilled water and acetone. The sample fractions will be combined, bottled, labeled, and the fluid level marked for transportation to the laboratory. Aliquots of distilled water and acetone will be similarly treated for blank analysis.

The absorption train will be inspected for abnormalities and disassembled. The impingers will be weighed on a digital balance for a percent moisture determination. The contents of the impingers will be quantitatively transferred into separate bottles, sealed, labeled, and fluid level marked for transportation to the laboratory for analysis, if required. Aliquots of the reagent grade impinger contents will be saved for blank analysis.

The filter will be transferred to an oven and heated at 105 degrees F for 2-3 hours and then placed in a desiccator for 24 hours. The filter will then be weighed on a Mettler digital balance to the nearest 0.01mg. Additional six hour desiccations and weighings will then be performed until the difference between consecutive weighings are less than 0.5 mg or one percent of the total filtrate weight (weighed to a constant weight).

The nozzle/probe/filter top wash will be examined for any leakage during transportation and transferred to a tared evaporation dish. The wash will then be evaporated at an elevated temperature, below the boiling point of the wash, with occasional swirling. The dish and wash residue will then be desiccated and weighed to a constant weight.

The net weight of particulate will be calculated from the two fractions (three fractions including the impinger contents, if required). Concentrations (gr/DSCF) and emissions (lbs/hr) or other applicable units will then be calculated and reported.

EPA Method 18
Hydrocarbon Emissions Testing
FID Analysis

Reference: *EPA Code of Federal Regulations, Title 40, Part 60 Appendix A, Method 18; Measurement of Gaseous Organic Compound Emissions by Gas Chromatography.*

Sampling Procedures

The sample will be drawn via an evacuated canister through a stainless steel/teflon probe into a tedlar bag. Each sample will be evacuated and then filled.

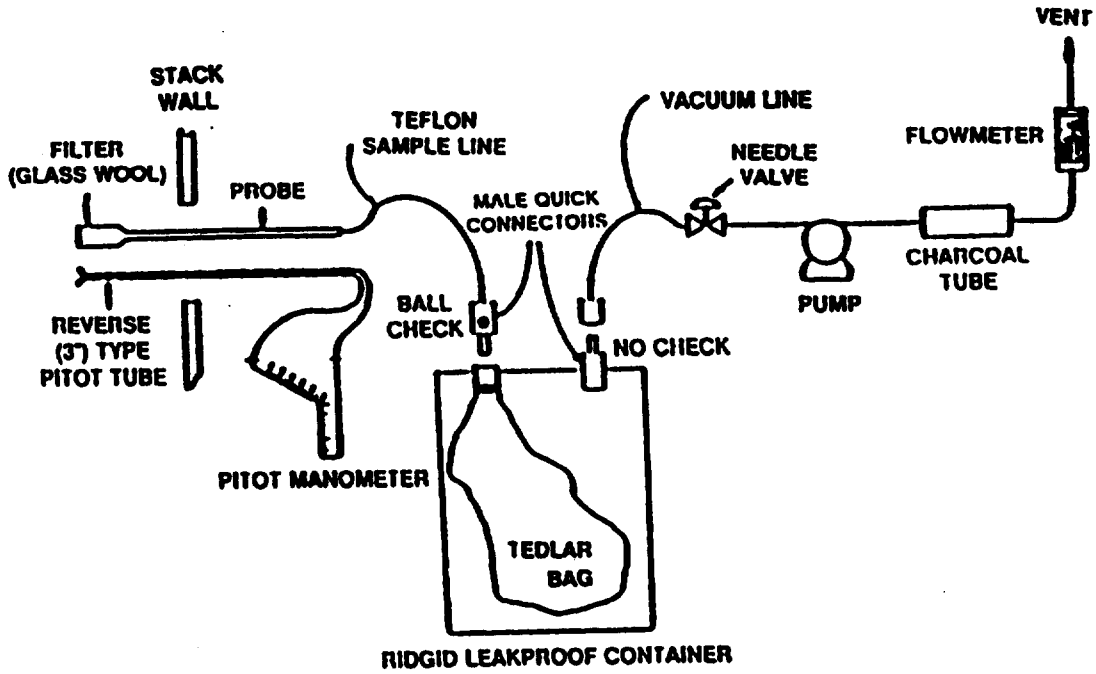
The sampling apparatus will consist of a stainless steel probe, teflon sample line, and a two liter tedlar bag housed in a rigid, air-tight container (evacuated canister). The container will be connected to a vacuum pump/rotameter/dry gas meter assembly.

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

The samples will be stored out of the sunlight, packaged and delivered to the analytical laboratory for analysis of C_1 - C_6+ by flame ionization detector.

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

Sampling Diagram



Source Test Reporting Formats

TITAN ENVIRONMENTAL

SUMMARY OF SOURCE TEST RESULTS

COMPANY: XXX **PROJECT : BBB**

UNIT: YYY **TEST DATE : AAA**

APCD #: ZZZ

EMISSIONS	gr/scf	gr/scf @ 12% CO2	ppm	ppm @ 15% O2	lb/ MMBtu	lb/hr	Permit Limits
NOx			33.2	37.3		0.122	
			35.1	33.5		0.139	
			32.9	34.9		0.269	
Mean:			33.7	35.2	0.0590	0.177	
CO			33.2	37.3		0.122	
			35.1	33.5		0.139	
			32.9	34.9		0.269	
Mean:			33.7	35.2	0.0237	0.177	
NMHC			33.2	37.3		0.122	
			35.1	33.5		0.139	
			32.9	34.9		0.269	
Mean:			33.7	35.2	0.0167	0.177	

Comments: _____

SUMMARY OF SOURCE TEST RESULTS FOR EPA

COMPANY: AAA **PERMIT: ZZZ**

UNIT# : BBB **LOCATION: QQQ**

Pollutant	Method	Test Date	Test Results	Permit Limits
Particulate	EPA 5	WWW		
NOx as NO2	EPA 7E	WWW		
Carbon monoxide	EPA 10	WWW		

*Emissions are corrected to EPA standard conditions (68°F and 29.92 inches of Hg) in units of EPA's permit.

Prepared by: TIM BRENNAN
Title: PROJECT SUPERVISOR
Date: MMM

COMPANY: PROJECT
UNIT : DATE :

RUN #1

NOx/CO/O2

EMISSION DATA

12:35 PM - 01:35 PM	%O2	ppm	ppm @ @ 3% O2	ppm @ @15% O2	lb/hr
NOx emissions	4.50	40.0	43.7	14.4	2.44
CO emissions	4.50	40.0	43.7	14.4	1.49
DSCFM = 8400 (Average of Method 2 Pitot Tube Velocity Profiles)					

SUPPORTING DATA

Incremental Readings, Stack Gas Measurement Data							
TIME INTERVAL		% FULL SCALE			CONCENTRATIONS		
BEGIN -	END	O2	NOx	CO	O2 %	NOx ppm	CO ppm
12:35 PM -	12:45 PM	50.0	50.0	50.0	4.08	40.00	40.00
12:45 PM -	12:55 PM	50.0	50.0	50.0	4.25	40.00	40.00
12:55 PM -	01:05 PM	50.0	50.0	50.0	4.42	40.00	40.00
01:05 PM -	01:15 PM	50.0	50.0	50.0	4.58	40.00	40.00
01:15 PM -	01:25 PM	50.0	50.0	50.0	4.75	40.00	40.00
01:25 PM -	01:35 PM	50.0	50.0	50.0	4.92	40.00	40.00
Averages		50.0	50.0	50.0	4.50	40.0	40.0

Calibration Data and Instrument Drift	O2	NOx	CO
FULL SCALE RANGE	10	100	100
CALIBRATION GAS VALUE	4	40	40
INITIAL zero, %fs	10	10	10
FINAL zero, %fs	0	10	10
ZERO DRIFT % fs	-10.00	0.00	0.00
ZERO DRIFT ppm or %	-1.00	0.00	0.00
INITIAL span, %fs	50	50	50
FINAL span, %fs	40	50	50
CALIBATION DRIFT % fs	-10.00	0.00	0.00
CALIBRATION DRIFT ppm or %	-1.00	0.00	0.00

COMPANY:
UNIT :

DATE :
PROJECT

METHOD 1-5
FIELD DATA @ 60° F & 29.92 "Hg.

DATA INPUT			
Run #:	1	2	3
Time :	1112-1233	1339-1409	1512-1613
Vm, dry gas volume sampled, ft3	118.86	118.6	118.59
Y, meter calibration factor	1.008784	1.008784	1.008784
P bar, Barometric pressure, "Hg	28.95	28.95	28.95
P static, stack pressure, " H2O	-0.5	-0.5	-0.5
Delta H, differential meter press, " H2O	1.38	1.52	1.52
Tm, meter temperature, R°	521.6	530	527
Vol H2O, grams condensed	160.2	152.5	149.4
% CO2, percent volume dry	2.3	2.2	2.3
% O2, percent volume dry	16.9	16.9	16.9
% N2, percent volume dry	80.8	80.9	80.8
Cp, pitot tube coefficient	0.805	0.805	0.805
Avg. square root delta-p, "H20	1.07	1.11	1.12
Temp. stack, R°	781	781	781
Stack area, ft2	76.91	76.91	76.91
Area noz, ft2	3.25E-04	3.25E-04	3.25E-04

CALCULATED RESULTS				
Run #:	1	2	3	AVERAGE
Vm(std); dscf, sample volume	116.07	114.02	114.66	na
Bws; H2O vapor, fractional percent	0.0603	0.0585	0.0571	0.0586
MF; moisture factor, 1-Bws	0.9397	0.9415	0.9429	0.9414
Md; MW stk gas dry, lb/lb-mole	29.04	29.03	29.04	29.04
Ms; MW stk gas wet, lb/lb-mole	28.38	28.38	28.41	28.39
Vs; fps, gas velocity	72.00	74.76	75.02	73.93
Q-acfm; actual volume flow	332268	344999	346199	341155
Qstd-dscfm; dry standard volume flow	200901	208989	210033	206641
Sample time; minutes	126	120	120	na
% Isokinetic Sample Rate	108.6	107.7	107.7	na

COMPANY
UNIT

DATE
PROJECT

EPA METHOD 5 DATA
@ 68°F & 29.92 "Hg

PARTICULATE GRAVIMETRIC RESULTS					
RUN #1	net mg	gr/dscf	gr/scf	gr/dscf @ 12% CO2	lbs/hr
Probe & Nozzle Wash:	1.6	0.00035	0.00032	0.00130	0.744
Filter:	3.5	0.00076	0.00070	0.00285	1.628
TOTAL, front half	5.1	0.00111	0.00102	0.00415	2.372

SUPPORTING DATA							
Run #	TIME start	finish	%O2	%CO2	%H2O	Vm(std)	DSCFM
1	1115	1230	15.7	3.2	7.47	71.01	250000

PROJECT XXX-YYY
DECEMBER ZZ, 1993

EPA METHOD 18, HYDROCARBON RESULTS

Run #1:	C1 Methane	C2 Ethane(s)	C3 Propane(s)	C4 Butane(s)	C5 Pentane(s)	C6+ Hexane(s)	Total	Total Non Methane
ppm	24.1	7.2	6.2	5.1	1.5	0.8	44.9	20.8
ppm @ 3% O2	28.8	8.6	7.4	6.1	1.8	1.0	53.6	24.8
lb/hr	0.75	0.42	0.53	0.58	0.21	0.13	2.6	1.9
Run #2:								
ppm	22.7	8.2	5.5	4.2	1.3	0.7	42.6	19.9
ppm @ 3% O2	26.9	9.7	6.5	5.0	1.5	0.8	50.5	23.6
lb/hr	0.75	0.51	0.50	0.50	0.19	0.12	2.6	1.8
Run #3:								
ppm	21.9	8.3	5.1	3.3	1.2	18.1	57.9	36.0
ppm @ 3% O2	25.6	9.7	6.0	3.9	1.4	21.2	67.7	42.1
lb/hr	0.78	0.55	0.50	0.42	0.19	3.45	5.9	5.1
METHOD BLANK, ppm	0.2	0.1	0.1	0.1	0.1	0.1	0.7	0.5
DETECTION LIMIT, ppm	0.1	0.1	0.1	0.1	0.1	0.1		

SUPPORTING DATA

		Run #1	Run #2	Run #3
FSC	Time	0830	0930	1015
	%O2	5.9	5.8	5.6
	DSCFM	12300	13000	14000

Permit to Operate

KERN COUNTY AIR POLLUTION CONTROL DISTRICT

PERMIT TO OPERATE

2700 "M" STREET, SUITE 290
BAKERSFIELD, CA. 93301-2323
BAKERSFIELD: (805) 861-2803
MOJAVE: (805) 824-4631, Ext. 237

Number: 1004077(A)

PERMIT TO OPERATE IS HEREBY GRANTED TO: U.S. BORAX, INC.

FOR EQUIPMENT LOCATED AT: Sec. 24, T11N, R08W, Boron, CA

EQUIPMENT OR PROCESS DESCRIPTION: Co-Generation Facility I

OPERATIONAL CONDITIONS LISTED BELOW.

THIS PERMIT BECOMES VOID UPON ANY CHANGE OF OWNERSHIP OR LOCATION, OR ANY ALTERATION.

NOTE: The permittee may be required to provide adequate sampling and testing facilities. Equipment modification requires a new permit.

REVOCABLE: This permit does not authorize the emission of air contaminants in excess of those allowed by the Rules and Regulations of the K.C.A.P.C.D.

THOMAS PAXSON, P.E.
DIRECTOR APCD

By: _____

For Period: 01-31-93 TO 01-31-94

CONDITIONAL APPROVAL:
Compliance with all conditions of approval imposed by any applicable Authority to Construct is required for life of this equipment unless modified by application.

EQUIPMENT DESCRIPTION: Cogeneration Facility I (Topping Cycle with Secondary Fuel, including the following equipment:

a. Electric generator driver - one Westinghouse frame W-251 gas turbine engine with a maximum heat input rating of 550 million Btu/hr (LHV) designed to burn either gaseous or liquid fuel and equipped with:

   1. Water injection oxides of nitrogen control system:

      a. One 3,000 gal. caustic tank,
      b. One 6,000 gal. sulfuric acid tank (see #1004078),
      c. One 3,500 gal. neutralization tank,
      d. Two 40 hp electric water injection pumps with water injection rate control system,
      e. One 20,000 gal. injection water storage tank.

   2. One 20,000 gal. injection water storage tank.

   3. One inlet air filtering and conditioning system with silencer.

b. One Co-Gen 210 million Btu/hr exclusively gas-fired duct burner with 8 rows of 20 flame stabilizers located downstream of gas turbine exhaust.
c. Heat recovery steam generator (HSRG) - rated at 412,000 lbm/hr of 175 psig saturated steam and equipped with bypass damper and exhaust stack,
d. Electric generator.

OPERATIONAL CONDITIONS:

1. Fuel oil sulfur content shall not exceed 0.25% by weight. (Rule 210.1 LAER requirement)
2. At rated load, water to fuel ratio shall be maintained at no less than 0.82 lbm/hr for gas firing and 0.90 lbm/lbm for oil firing (Rule 210.1 LAER requirement). These values are subject to revision upon mutual agreement by U.S. Borax and KCAPCD that lower rates are necessary to maintain reasonable levels of maintenance and equipment availability.
3. Gas turbine exhaust gas NOx concentration corrected to 15% O2 on a dry basis shall not exceed 96 ppmv for gas firing and 114 ppmv for oil firing (Rule 422 NSPS limits).
4. Exhaust stack emission rates shall not exceed the following : 268 lbm/hr for NOx, 149 lbm/hr for SOx, 446 lbm/hr for CO, 14 lbm/hr for PM and 2.9 lbm/hr for HC (Rule 210.1 dispersion modeling).
5. Combustion contaminant emissions shall not exceed 0.1 gr/scf @ 12% CO2. (Rule 407.2)

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY

CogenI

U.S. ENVIRONMENTAL PROTECTION AGENCY
215 FREMONT STREET
SAN FRANCISCO, CA 94105

In Reply Refer to: A-3-1
NSR 4-4-11
SE 82-02

EPA PTO #

20 DEC 1982

Mr. G.M. Pepper
Principal Engineer
U.S. Borax & Chemical Corp.
P.O. Box 75128
Stanford Station
Los Angeles, CA 90075

Dear Mr. Pepper:

In accordance with provisions of the Clean Air Act, as amended (42 U.S.C. 7401 et seq.), the Environmental Protection Agency has reviewed the application submitted by the U.S. Borax and Chemical Corporation.

A request for public comment regarding EPA's proposed action on the above application has been published. After consideration of the expressed views of all interested persons (including State and local agencies), and pertinent Federal statutes and regulations, the EPA hereby issues the enclosed Approval to Construct/Modify a Stationary Source for the facilities described above. This action does not constitute a significant change from the proposed action set forth and offered for public comment.

This Approval to Construct/Modify shall take effect immediately.

Sincerely yours,

Original Signed by:

David P. Howekamp
Acting Director
Air Management Division

Enclosures

cc: CA Air Resources Board
Kern County APCD

UNITED ES ENVIRONMENTAL PROTECTION ICY

APPROVAL TO CONSTRUCT/MODIFY
A STATIONARY SOURCE

In compliance with provisions of the Clean Air Act, as amended (42 U.S.C. 7401 et seq.), the U.S. Borax and Chemical Corporation is granted approval to construct a combustion gas turbine facility in accordance with the plans submitted with the application and with the Federal regulations governing the Prevention of Significant Air Quality Deterioration (40 CFR 52.21) and other conditions attached to this document and made a part of this approval.

Failure to comply with any condition or term set forth in this approval will be considered grounds for enforcement action pursuant to Section 113 of the Clean Air Act.

This Approval to Construct/Modify a stationary source grants no relief from the responsibility for compliance with any other applicable provision of 40 CFR Parts 52, 60 and 61 or any applicable Federal, State, or local air quality regulations.

This approval shall supersede the Approval to Construct/Modify a stationary source issued to U.S. Borax and Chemical Corporation on April 27, 1982 (NSR 4-4-11, SE 81-04) and shall become effective immediately.

Dated: 16 DEC 1982

Original Signed by:

Acting Director
Air Management Division

PJ d 41/Final 12-3-82/SLAMOVICH/U.S Borax

Permit Conditions

I. Permit Expiration

This Approval to Construct/Modify shall become invalid (1) if construction is not commenced (as defined in 40 CFR 52.21(b)(8)) within 18 months after the approval takes effect, (2) if construction is discontinued for a period of 18 months or more, or (3) if construction in not completed within a reasonable time.

II. Notification of Commencement of Construction and Startup

The Regional Administrator shall be notified in writing of the anticipated date of initial start-up (as defined in 40 CFR 60.2(o)) of each facility of the source not more than sixty (60) days nor less than thirty (30) days prior to such date and shall be notified in writing of the actual date of commencement of construction and start-up within fifteen (15) days after such date.

III. Facilities Operation

All equipment, facilities, and systems installed or used to achieve compliance with the terms and conditions of this Approval to Construct/Modify shall at all times be maintained in good working order and be operated as efficiently as possible so as to minimize air pollutant emissions.

IV. Malfunction

The Regional Administrator shall be notified by telephone within 48 hours following any failure of air pollution control equipment, process equipment, or of a process to operate in a normal manner which results in an increase in emissions above any allowable emissions limit stated in Section IX of these conditions. In addition, the Regional Administrator shall be notified in writing within fifteen (15) days of any such failure. This notification shall include a description of the malfunctioning equipment or abnormal operation, the date of the initial failure, the period of time over which emissions were increased due to the failure, the cause of the failure, the estimated resultant emissions in excess of those allowed under Section IX of these conditions, and the methods utilized to restore normal operations. Compliance with this malfunction notification provision shall not excuse or otherwise constitute a defense to any violations of this permit or of any law or regulations which such malfunction may cause.

V. Right to Entry

The Regional Administrator, the head of the State Air Pollution Control Agency, the head of the responsible local air pollution control agency, and/or their authorized representatives, upon the presentation of credentials, shall be permitted:

A. to enter upon the premises where the source is located or in which any records are required to be kept under the terms and conditions of this Approval to Construct/Modify; and

B. at reasonable times to have access to and copy any records required to be kept under the terms and conditions of this Approval to Construct/Modify; and

C. to inspect any equipment, operation, or method required in this Approval to Construct/Modify; and

D. to sample emissions from the source.

VI. Transfer of Ownership

In the event of any changes in control or ownership of facilities to be constructed or modified, this Approval to Construct/Modify shall be binding on all subsequent owners and operators. The applicant shall notify the succeeding owner and operator of the existence of this Approval to Construct/Modify and its conditions by letter, a copy of which shall be forwarded to the Regional Administrator and the State and local Air Pollution Control Agency.

VII. Severability

The provisions of this Approval to Construct/Modify are severable, and, if any provision of this Approval to Construct/Modify is held invalid, the remainder of this Approval to Construct/Modify shall not be affected thereby.

VIII. Other Applicable Regulations

The owner and operator of the proposed project shall construct and operate the proposed stationary source in compliance with all other applicable provisions of 40 CFR Parts 52, 60 and 61 and all other applicable Federal, State and local air quality regulations.

IX. Special Conditions

A. Certification

U.S. Borax shall notify the EPA (attn: A-3-3) in writing of compliance with Special Condition E. below and shall make such notification within fifteen (15) days of such compliance. This letter must be signed by a responsible representative of U.S. Borax.

B. Fuel Usage and Sulfur Content

1. The 45 MW gas turbine shall consume no more than 4,150 gallons per hour of No. 2 fuel oil or 615,500 SCFH of natural gas.

2. The duct burner unit shall consume no more than 221,000 SCFM of natural gas.

3. The sulfur content of the fuel oil shall be no greater than 0.25 percent by weight as determined by ASTM Methods D-129 or D-1552, or the most current method promulgated by ASTM, or by equivalent methods approved by EPA.

4. The amount of fuel oil/gas consumed per hour by the turbine and the duct burner unit; and the sulfur content of the fuel oil consumed by the turbine shall be recorded in a permanent record and shall be available for periodic inspection by the Kern County Air Pollution Control District, the California Air Resources Board, and the EPA.

5. When the gas turbine is in operation, the total heating value of the fuel consumed by the turbine, duct burner and Boilers 1 through 7 shall not exceed 1.11×10^9 BTU/hr.

C. Emission Limits

1. On and after the date of startup of the gas turbine/duct burner unit, U.S. Borax shall not discharge, or cause the discharge into the atmosphere from the heat recovery steam generator (HRSG) stack, pollutants in excess of the following specified limits:

Pollutant	Maximum Emission Limit (lbs/hr)
Particulate Matter	14.0
Carbon Monoxide	446.0

2. On and after the date of startup of the gas turbine/duct burner unit, U.S. Borax shall not discharge, or cause the discharge into the atmosphere from the HRSG stack nitrogen oxides in excess of the following limits:

   a. Maximum emission limit: 268.2 pounds per hour
   b. Average emission limit: 0.57 pounds per MMBTU

3. On and after the date of startup of the gas turbine, U.S. Borax shall not discharge, or cause the discharge into the atmosphere from the HRSG exhaust any gases which exhibit greater than 20 percent opacity.

D. Performance Tests

1. Within 60 days after achieving the maximum production rate of the gas turbine/duct burner unit, but no later than 180 days after initial startup (as defined in 40 CFR 60.2(o)) of the facility and at such times as may be specified by EPA, U.S. Borax shall conduct or cause to be conducted performance tests (as defined in 40 CFR 60.8) for NO_x, CO and particulate matter (PM) on the exhaust stack gases from the HRSG. U.S. Borax shall furnish the Kern County Air Pollution Control District and the EPA (Attn: A-3-3) a written report of the results of such tests. All performance tests shall be conducted at the maximum operating capacity of the emissions unit being tested. The performance tests shall be conducted on at least an annual basis. Upon prior written request and supporting justification, EPA may waive a specific annual test and/or allow for testing to be done at less than the maximum operating capacity. Such requests must be submitted (Attn: A-3-3) no later than 60 days prior to the annual test date.

2. Performance tests for the emissions of NO_x, CO and PM shall be conducted and results reported in accordance with the test methods set forth in 40 CFR 60, Part 60.8 and Appendix A. The following test methods shall be used:

a. Performance tests for the emissions of NO_x shall be conducted using EPA Methods 1-4 and 7 procedures.

b. Performance tests for the emissions of CO shall be conducted using EPA Methods 1-4 and 10 procedures.

c. Performance tests for PM shall be conducted using EPA Methods 1-4 and 5 procedures.

At least 30 days prior to actual testing, U.S. Borax shall submit to the EPA (Attn: A-3-3) (1) a quality assurance project plan detailing methods and procedures to be used and (2) a quality assurance test plan. Such a plan shall conform to EPA document "Guidelines for Developing a Quality Assurance Project Plan," QAMS 005/80. A test plan or quality assurance plan that does not have EPA approval may be grounds to invalidate any test and require a retest. In lieu of the above mentioned test methods, equivalent methods may be used with prior approval from the EPA.

3. For performance test purposes, sampling ports, platforms, and access shall be provided by U.S. Borax on the turbine exhaust stack in accordance with 40 CFR 60.8(e).

E. Continuous Monitoring

1. NO_x and Opacity Continuous Monitoring

Prior to the date of startup and thereafter, U.S. Borax shall install, maintain and operate the following continuous monitoring system in the exhaust stack of the HRSG:

a. A continuous monitoring system to measure stack gas NO_x concentration. The system shall meet EPA monitoring performance specifications (40 CFR 60.13 and 40 CFR 60, Appendix B, Performance Specification 2).

b. A transmissometer system for continuous measurement of the opacity of stack emissions. The system shall meet EPA monitoring requirements performance specifications (40 CFR 60.13 and 40 CFR 60, Appendix B, Performance Specification 1).

c. A continuous monitoring system to measure stack gas volumetric flow rates. The system shall meet EPA monitoring requirements performance specifications (40 CFR Part 52, Appendix E).

2. U.S. Borax shall notify EPA (Attn: A-3-3) of the date upon which demonstration of the continuous monitoring systems performance commences (40 CFR 60.13(c)).

3. U.S. Borax shall submit a written report of all excess emissions to EPA (Attn: A-3-3) for every calendar quarter. The report shall include the following:

   a. The magnitude of excess emissions computed in accordance with 40 CFR 60.13(h), any conversion factors(s) used, and the date and time of commencement and completion of each time period of excess emissions.

   b. Specific identification of each period of excess emissions that occurs during startups, shutdowns, and malfunctions of the gas turbine. The nature and cause of any malfunction (if known) and the corrective action taken or preventative measures adopted shall also be reported.

   c. The date and time identifying each period during which the continuous monitoring system was inoperative except for zero and span checks and the nature of the system repairs or adjustments.

   d. When no excess emissions have occurred or the continuous monitoring system has not been inoperative, repaired, or adjusted, such information shall be stated in the report.

   Excess emissions shall be defined as:

   (1) any consecutive three-hour period during which the average emissions of NO_x, as measured by the continuous monitoring system, exceeds the maximum emission limits set forth in IX.C.2. above.

   (2) any consecutive 24-hour period during which the average emissions of NO_x, as measured by the continuous monitoring system, exceeds the average emission limit set forth in IX.C.2.

   (3) any 6-minute average, as measured by the continuous monitoring system, which exceeds an opacity of 20 percent, except for one 6-minute period per hour of not more than 25 percent opacity.

4. U.S. Borax shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks adjustments and maintenance performed on these systems or devices; and all other information required by 40 CFR 60 recorded in a permanent form suitable for inspection. The file shall be retained for at least two years following the date of such measurements, maintenance, reports and records.

5. Not less than 90 days prior to the date of startup, U.S. Borax shall submit to the EPA (Attn: A-3-3) a quality assurance project plan for the certification and operation of the continuous emission monitors. Such a plan shall conform to the EPA document "Guidelines for Developing a Quality Assurance Project Plan" (QAMS 005/80). Continuous emission monitoring may not begin until the quality assurance project plan has been approved by EPA Region 9.

F. By-Pass Recordkeeping

U.S. Borax shall maintain a record of the date(s), time(s), and duration(s) of those periods when the exhaust stream of the gas turbine or the duct burner unit, is vented through the by-pass stack.

X. Agency Notifications

All correspondence as required by this Approval to Construct/Modify shall be forwarded to:

A. Director, Air Management Division (Attn: A-3-3)
EPA Region 9
215 Fremont Street
San Francisco CA 94105

B. Chief, Regional Programs Division
California Air Resources Board
P. O. Box 2815
Sacramento CA 95814

C. Air Pollution Control Officer
Kern County Air Pollution Control District
1601 H Street, Suite 250
Bakersfield CA 93301

READFILE: Connie Final 10/27/82
Slamovich: NSS-6/US Borax
transferred to d/Old aagirs
Copies run 12/14/82 CB