

Source Test Report

Stockton, Ca.

**NO_x & CO Emission Results
12.6 MMBtu/hr Superior Boiler**



Test Date: December 05, 2023

Report Date: February 5, 2024

Performed and Reported by:

BEST ENVIRONMENTAL

339 Stealth Court

Livermore, CA 94551

Phone: (925) 455-9474

Fax: (925) 455-9479

Email: bestair@best-enviro.com

Prepared For:

California Boiler, Inc.

1361 North Emerald Avenue

Modesto, CA 95351

Attn: Mr. Ethan Saccone

For Submittal To:

San Joaquin Valley Air Pollution Control District

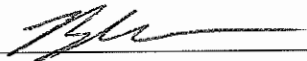
4800 Enterprise Way

Modesto, CA 95356

Attn: Ms. Lisa Middleton

REVIEW AND CERTIFICATIONTeam Leader:

The work performed herein was conducted under my supervision, and I certify that the details and results contained within this report are to the best of my knowledge an authentic and accurate representation of the test program. If this report is submitted for compliance purposes it should only be reproduced in its entirety. If there are any questions concerning this report, please contact Regan Best or myself at (925) 455-9474.



Basim (Bobby) Asfour
Principal

Reviewer:

I have reviewed this report for presentation and accuracy of content, and hereby certify that to the best of my knowledge the information is complete and correct.



William Johnston
Project Manager

Source Test Information

Source Owner:	Stockton, Ca.
Source Location:	California Boiler, Inc 1549 Cummins Dr Modesto, CA 95358 Attn: Mr. Ethan Saccone
Project Contractor:	12.6 MMBtu/hr Superior Boiler
Source Description:	O ₂ , NO _x and CO
<u>Test Parameters:</u>	<u>Average Results</u>
<u>Emission Limits:</u>	4 ppmv @ 3%O ₂
NOx: 5 ppmv @3%O ₂	<3 ppmv @ 3%O ₂
CO: 50 ppmv @3%O ₂	BEST ENVIRONMENTAL 339 Stealth Court Livermore, CA 94551 Phone (925) 455-9474 Email: bestair@best-enviro.com Bobby Asfour (510) 719-0769
Source Testing Firm:	
Contact:	December 05, 2023
Test Date:	

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SECTION 1. INTRODUCTION

1.1. Test Purpose

Best Environmental (BE) was contracted by California Boiler Inc. to perform a compliance source test on a Superior boiler located the located in Stockton California. The purpose of the source test is to demonstrate compliance with SJVAPCD permit number N-9646-1-4. Emission testing was conducted at the boiler for the determination of Oxygen (O₂), Oxides of Nitrogen (NO_x) and Carbon Monoxide (CO). A copy of the boiler rule is included in the appendices.

1.2. Test Location

The boiler is located at Stockton Ca.

1.3. Test Date

Testing was conducted on December 05, 2023.

1.4. Test Parameters and Methods

The following emission parameters were measured.

Parameter	Methods
NO _x , CO & O ₂	EPA Methods 7E, 10 & 3A
Heat Input	EPA Method 19

1.5. Sampling and Observing Personnel

Sampling was performed by Bobby Asfour of BE. Mr. Ethan Saccone of California Boiler, Inc. coordinated the test program. James Sanders of the SJVAPCD was present during the test.

SECTION 2. SUMMARY OF RESULTS

2.1. Emission Results

Table 2.1 summarizes the Average Test Results. Triplicate 30-minute runs were performed at the outlet for all test parameters. The tests were conducted with the boiler at normal load. Testing was conducted according to approved Environmental Protection Agency (EPA) test methods. A more extensive summary of the emissions is presented in Table 1 on page 6.

**Table 2.1: Average Test Results
12.6 MMBtu/hr Superior Boiler**

Test Parameters	Average Results	Limits
NO _x , ppm @ 3% O ₂	3.9	5
CO, ppm @ 3% O ₂	<2.5	50

2.2. Allowable Emissions

See Table 2.1. The test results show that all emissions are with-in the emission limits shown in the Permit to Operate.

2.3. Comments: Discussion of Quality Assurance and Errors

Quality assurance procedures listed in the above referenced test methods and referenced in the Source Test plan were performed and documented. The QA/QC procedures are described in Section 4.3 of the report. Documentation of the QA/QC is provided in Appendices A & C. Calculations, field data sheets, calibration gas certifications, stack diagram, sampling system diagrams, source test plan, and permit to operate are appended to this report.

SECTION 3. SOURCE OPERATION

3.1. Process Description

The natural gas fired boiler is used for industrial process. The boiler is rated at 12.6 MMBtu/hr and is Superior Boiler Works Model Mohican 7-5-1500 with a Rogue Combustion Model S5-500 burner.

3.2. Flow Diagram

A digital image of the boiler is contained in Appendix D.

3.3. Process and Control Operating Parameters

All tests were conducted at normal load.

3.4. Testing or Process Interruptions and Changes

Per normal operation, the boiler shut down multiple times throughout the testing. Testing was paused during these periods.

SECTION 4. SAMPLING AND ANALYSIS PROCEDURES

4.1. Port Location

The boiler stack has an inside diameter of 24-inches. Port location is described by the distance (measured in duct diameters) from the nearest disturbance (bend, junction etc.) in both directions upstream and downstream. Sampling was performed from two ports 90° apart on the circular stack. The ports are located >2 diameter upstream and >8 diameters downstream from the nearest disturbance.

4.2. Point Description/Labeling – Ports/Stack

The stack was traversed during each run. The traverse points were selected according to EPA Method 1.

4.3. Method Description, Equipment, Sampling, Analysis and QA/QC

Sampling and analytical procedures of the EPA Methods are followed as published in the “Quality Assurance Handbook for Air Pollution Measurement Systems” Volume III, US EPA 600/4-77-027b.

The following is an overview of the Testing Performed

Parameter	Location	Methods	Duration	# of Runs
Traverse points	Exhaust	EPA Method 1	30 mins	1
O ₂ , CO & NO _x	Exhaust	EPA Methods 3A, 7E & 10	30 mins	3

EPA Method 1. This method is used to determine the duct or stack area and appropriate traverse points that represent equal areas of the duct for sampling and velocity measurements.

EPA Method 7E, 10 & 3A are all continuous monitoring techniques using instrumental analyzers. Sampling is performed by extracting exhaust flue gas from the stack, conditioning the sample and analyzing the flue gas using continuous monitoring gas analyzers in a CEM test van. The sampling system consists of a stainless-steel sample probe, teflon sample line, glass-fiber particulate filter, glass moisture-knockout condensers in ice, teflon sample transfer tubing, diaphragm pump and a stainless steel/teflon manifold and flow control/delivery system. A constant sample and calibration gas supply pressure of 5 PSI was provided to each analyzer to avoid pressure variable response differences. The entire sampling system was leak checked prior to and at the end of the sampling program.

The BE sampling and analytical system was checked for linearity with zero, mid and high level span calibration gases, and was checked for system bias at the beginning of the test day. System bias was determined by pulling calibration gas through the entire sampling system. Individual test run calibrations used the calibration gas, which most closely matches the stack gas effluent. The calibration gases were selected to fall approximately within the following instrument ranges; 80 to 100 percent for the high calibration, 40 to 60 percent for the mid range and zero. Zero, calibration and bias drift values were determined for each test.

EPA Methods 7E, 10 & 3A met the following QA/QC method requirements:**System Criteria**

Instrument Linearity	± 2% Calibration Span or 0.5 difference.
Instrument Bias	± 5% Calibration Span or 0.5 difference.
Calibration Gas	± 2% Value
NO ₂ converter efficiency	> 90%

Test Criteria

Instrument Zero Drift	± 3% Calibration Span or 0.5 difference.
Instrument Span Drift	± 3% Calibration Span or 0.5 difference.

The following continuous monitoring analyzers were used:

<u>Parameter</u>	<u>Make</u>	<u>Model</u>	<u>Principle</u>
O ₂	CAI	200P	Paramagnetic
NO _x	CAI	600CLD	Chemiluminescence
CO	TECO	48I	GFC IR analyzer

All BE calibration gases are EPA Protocol # 1. The analyzer data recording system consists of BE's Computer Data Acquisition System (DAS). The NO₂ converter was checked and confirmed to be > 90% efficient.

TABLE #1

12.6 MMBtu/hr
Test Results

RUN	1	2	3	Average	Limit
Test Date	12/05/23	12/05/23	12/05/23		
Test Time	950-1032	1044-1126	1137-1218		
Standard Temp., °F	60	60	60		
Process Parameters					
Load, %	44%	80%	80%		
Heat Input, MMBtu/hr	5.5	10.1	10.1	8.6	
Fuel Flow, SCFM	88	161	162	137	
Exhaust Flow Rate, DSCFM	1,140	2,074	2,083	1,766	
Outlet Emissions					
O ₂ , %	6.44	6.42	6.42	6.43	
					5
NO _x , ppm	3.21	3.01	3.15	3.12	
NO _x , ppm @ 3% O ₂	4.0	3.7	3.9	3.9	50
NO _x , lbs/hr	0.03	0.05	0.05	0.04	
NO _x , lbs/MMBtu	0.0048	0.0045	0.0047	0.0047	
CO, ppm	<2.0	<2.0	<2.0	<2.0	
CO, ppm @ 3% O ₂	<2.5	<2.5	<2.5	<2.5	
CO, lbs/hr	<0.010	<0.018	<0.018	<0.016	
CO, lbs/MMBtu	<0.0018	<0.0018	<0.0018	<0.0018	

WHERE:NO_x = Oxides of Nitrogen (MW=46)

CO = Carbon Monoxide (MW=28)

O₂ = Oxygen

ppm = Parts Per Million Concentration

DSCFM = Dry Standard Cubic Feet per Minute

lbs/MMBtu = Pounds per Million Btu

lbs/hr = Pound Per Hour Emission Rate

Tstd. = Standard Temp.; °R = °F + 460

VOC = Total Non-methane non-ethane Hydrocarbons as CH₄ (MW = 16)THC = total hydrocarbons as CH₄ (MW = 16)**CALCULATIONS:**3%O₂ correction = ppm of pollutant * 17.9 / (20.9 - %O₂)lbs/MMBtu = Fd * MW * ppm * 2.59E-9 * 20.9 / (20.9 - %O₂)lbs/hr = ppm * DSCFM * MW * 60 / 385 x 10⁶ (@ 68°F)

lbs/day = lbs/hr * 24

Fd = 8579

APPENDICES

APPENDIX A - CALCULATIONS & NOMENCLATURE

APPENDIX B - FIELD DATA SHEETS

APPENDIX C - STRIP CHART RECORDS

APPENDIX D – CALIBRATION GAS CERTIFICATES

APPENDIX E - STACK DIAGRAMS

APPENDIX F - SAMPLING SYSTEM DIAGRAMS

APPENDIX G – SOURCE TEST PLAN

APPENDIX H – PERMIT TO OPERATE

APPENDIX A
CALCULATIONS & NOMENCLATURE

Standard Abbreviations for Reports

Unit	Abbreviation	Unit	Abbreviation
Brake horsepower	bhp	microgram	ug
Brake horsepower hour	bhp-hr	milligram	mg
British Thermal Unit	Btu	milliliter	ml
capture efficiency	CE	million	MM
destruction efficiency	DE	minute	min
Dry Standard Cubic Feet	DSCF	Molecular Weight	M
Dry Standard Cubic Feet per Minute	DSCFM	nanogram	ng
Dry Standard Cubic Meter	DSCM	Parts per Billion	ppb
grains per dry standard cubic foot	gr/DSCF	Parts per Million	ppm
gram	g	pound	lb
grams per Brake horsepower hour	g/bhp-hr	pounds per hour	lbs/hr
kilowatt	kW	pounds per million Btu	lbs/MMBtu
liter	l	second	sec
Megawatts	MW	Specific Volume, ft ³ /lb-mole	SV
		Thousand	K

Common Conversions / Calculations / Constants

1 gram = 15.432 grains

1 pound = 7000 grains

grams per pound = 453.6

bhp = 1.411 * Engine kW, (where Engine kW = Generator kW output / 0.95) @ 95% efficiency

g/bhp-hr = 453 * ppm * (MW / (385E6)) * 0.00848 * f-factor * (20.9 / (20.9 - O₂)); CARB

g/bhp-hr = lbs/hr * 453.6 / bhp

2.59E-9 = Conversion factor for ppm to lbs/scf; EPA 40CFR60.45 @ 68°F

Correction Multiplier for Standard Temperature = (460 + T_{std.} °F) / 528

F factor: dscf / MMBTU @ 60°F = 8579, @ 68°F = 8710. @ 70°F = 8743 for natural gas

Btu/ft³: 1040

lb/hr Part. Emission Rate = 0.00857 * gr/dscf * dscfm; EPA Method 5

lbs/hr = ppm * dscfm * MW * 0.00008223 / (Std Temp + 460)

Correction to 12% CO₂ = gr/dscf * 12% / stack CO₂%; EPA Method 5

Correction to 3% O₂ = ppm * 17.9 / (20.9 - stack O₂ %); CARB Method 100

Correction to 15% O₂ = ppm * 5.9 / (20.9 - stack O₂ %); CARB Method 100

dscfm = Gas Fd * MMBtu/min * 20.9 / (20.9 - stack O₂ %); EPA Method 19

Lb/MMBtu @ 60°F = Fd * M * ppm * 2.64E-9 * 20.9 / (20.9 - stack O₂ %);

@ 68°F = Fd * M * ppm * 2.59E-9 * 20.9 / (20.9 - stack O₂ %);

@ 70°F = Fd * M * ppm * 2.58-9 * 20.9 / (20.9 - stack O₂ %)

Standard Temperatures by District

EPA	68 °F	NSAPCD - Northern Sonoma	68 °F
CARB	68 °F	PCAPCD - Placer	68 °F
BAAQMD - Bay Area	70 °F	SLOCAPCD - San Luis Obispo	60 °F
SJVUAPCD - San Joaquin	60 °F	SMAQMD - Sacramento	68°F de facto
SCAQMD - South Coast	60 °F	SCAQMD - Shasta County	68 °F
MBUAPCD - Monterey Bay	68 °F	YSAPCD - Yolo-Solano	68 °F
FRAQMD - Feather River	68 °F	AADBAPC - Amador County	68 °F

CEM TEST SHEET

Facility: Stericycle

Date: 12/5/2023

Personnel: BA/CG

Location: Boiler

	O ₂	NO _x	CO		Comments
Analyzer	600p	600cld	48C		
Range	21.07	8.62	90.3		
Zero Value (N2)	0.00	0.00	0.00		
Cal Value (low)					EPA 20 & 25A only
Cyl. #					
Cal Value (mid)	9.00	4.44	45.00		
Cyl. #	DT43921	CC761112	DT43921		
Exp Date	9/25/2031	2/24/2026	9/25/2031		
Cal Value (Hi)	21.07	8.62	90.30		
Cyl. #	SG9149884	DT8375	SG9149884		
Exp Date	9/25/2031	9/27/2024	9/25/2031		

CALIBRATION ERROR CHECK

Zero cal (int)	0.13	0.03	0.03		
% Linearity	0.6	0.4	0.0		<2% or +/- 0.5 diff.
low cal (int)					
% Linearity					
mid cal (int)	9.08	4.38	45.08		
% Linearity	0.4	-0.7	0.1		<2% or +/- 0.5 diff.
high cal (int)	21.15	8.73	90.53		
% Linearity	0.4	1.3	0.3		<2% or +/- 0.5 diff.

SYSTEM BIAS & DRIFT

Zero (int)	0.13	0.03	0.03		
Zero (ext) 1(i)	0.11	0.21	-0.36		
Abs. Difference	0.02	0.18	0.40		
bias, % Zero	0.1	-2.0	0.4		<5% or +/- 0.5 diff.
Cal (int)	9.08	4.38	45.08		
Cal (ext) 1(i)	9.00	4.54	41.62		
Abs. Difference	0.08	0.17	3.46		
bias, % Cal	0.4	-1.9	3.8		<5% or +/- 0.5 diff.
Zero (ext) 1(f)	0.30	0.43	0.01		950-1032
Cal (ext) 1(f)	9.10	4.62	43.29		Run 1
Zero % Drift	0.9	2.5	0.4		Limit (±3%) or +/-0.5 diff.
Cal % Drift	0.5	0.9	1.9		Limit (±3%) or +/-0.5 diff.
Zero % Bias	0.8	4.6	0.0		Limit (±5%) or +/-0.5 diff.
Cal % Bias	0.1	2.8	-2.0		Limit (±5%) or +/-0.5 diff.
Average	6.53	3.40	0.02		
Corr. Average	6.44	3.21	0.21		
Zero (ext) 2(f)	0.25	0.45	0.15		1044-1126
Cal (ext) 2(f)	9.10	4.61	43.20		Run 2
Zero % Drift	-0.2	0.3	0.2		Limit (±3%) or +/-0.5 diff.
Cal % Drift	0.0	-0.1	-0.1		Limit (±3%) or +/-0.5 diff.
Zero % Bias	0.6	4.9	0.1		Limit (±5%) or +/-0.5 diff.
Cal % Bias	0.1	2.7	-2.1		Limit (±5%) or +/-0.5 diff.
Average	6.57	3.27	0.15		
Corr. Average	6.42	3.01	0.07		
Zero (ext) 3(f)	0.22	0.44	-0.91		1137-1218
Cal (ext) 3(f)	9.08	4.66	42.21		Run 3
Zero % Drift	-0.1	-0.1	-1.2		Limit (±3%) or +/-0.5 diff.
Cal % Drift	-0.1	0.5	-1.1		Limit (±3%) or +/-0.5 diff.
Zero % Bias	0.4	4.8	-1.0		Limit (±5%) or +/-0.5 diff.
Cal % Bias	0.0	3.2	-3.2		Limit (±5%) or +/-0.5 diff.
Average	6.55	3.42	-0.98		
Corr. Average	6.42	3.15	-0.63		

System Bias (Limit ± 5%) = $100 * \frac{\text{External cal} - \text{Internal cal}}{\text{High Gas Value}}$

% Linearity (Limit ± 2%) = $100 * \frac{\text{Span Value} - \text{Internal cal}}{\text{High Gas Value}}$

Corrected Average = $[\text{Test Avg.} - ((Z_i + Z_f) / 2)] * \text{Span Gas Value} / [((S_i + S_f) / 2) - ((Z_i + Z_f) / 2)]$

NO ₂ Converter Test	NO ₂ Cal Gas	NO ₂ Value	% of Efficiency	Cyl. #	Cyl. Exp. Date
	8.250	7.41	89.85%	DT9567	10/24/23

Zero to Cal	Cal to Zero
60.0	60.0

System response time =

The time required (in seconds) to achieve a 95% difference between ext zero to ext span or ext span to ext zero.

STACK GAS FLOW RATE DETERMINATION -- FUEL USAGE **EPA Method 19**

Facility: XXXXXXXXXX
 Unit: Boiler
 Date: 12/05/23

	Run 1	Run 2	Run3	
Gross Calorific Value @ 60°F	1040	1040	1040	Btu / ft³
Stack Oxygen	6.44	6.42	6.42	%
Gas Fd-Factor @ 60°F	8579	8579	8579	DSCF/MMBtu
Standard Temperature (°F)	60	60	60	°F

Fuel Rate (SCFM) @ 60°F	88	161	162	SCFM
Fuel Flowrate (SCFH)	5,303	9,665	9,703	SCFH
Million Btu per minute	0.092	0.168	0.168	MMBtu/min
Heat Input (MMBtu/hour)	5.52	10.05	10.09	MMBtu/Hr

Stack Gas Flow Rate

1,140	2,074	2,083	DSCFM
--------------	--------------	--------------	--------------

WHERE:

Gas Fd-Factor = Fuel conversion factor (ratio of combustion gas volumes to heat inputs)
 MMBtu = Million Btu

CALCULATIONS:

SCFM = CFM * 528 * (gas line PSIA) / 14.7 / (gas °F + 460)
 MMBtu/min = (SCFM * Btu/ft³) / 1,000,000
 DSCFM = Gas Fd-Factor * MMBtu/min * 20.9 / (20.9 - stack oxygen%) * (460 + Standard Temp.) / 528
 SCFH = SCFM * 60
 Heat Input = MMBtu/min * 60

APPENDIX B
FIELD DATA SHEETS

CEMS CALIBRATION SHEET

Facility: [REDACTED] Date: 12-5-23 Personnel: BA/CG
 Location: Boiler Barometric Pressure: 29.9

	O ₂	CO ₂	NO _x	CO	THC		Comments
Analyzer	200P		600CLD	48C			
Range							
Cal Value (low)							
Cyl. #							
Expiration	9-0						
Cal Value (mid)	11.07		4.44	45			
Cyl. #	DT43921		CC76112	*			
Expiration	9-25-31		2-24-26	*			NO2
Cal Value (Hi)	21.07		8.62	90.3			8.25
Cyl #	369149884		DT8375	*			DT9567
Expiration	9-25-31		9-27-24				10-24-23

	Start	Stop
Run 1	950	1032
Run 2	1044	1126
Run 3	1137	1218

scph			Steam Press. SP
5303			125
9665			1
9703			

Leak Check: 0

Heated Line Temp (F): 261

Calculations

% Linearity (Limit $\pm 2\%$) = $100 \times \frac{\text{Span Value} - \text{Internal cal}}{\text{Span Range}}$

Zero and Calibration Drift = $100 \times \frac{(\text{Cfb} - \text{Cib})}{\text{range}}$
 $\text{Cbcal} = (\text{Cib} + \text{Cfb}) / 2$ for cal gas

1 shutdown during Run 1
 1 shutdown during Run 2
 NA Run 3

Steam Demand is Low

DAS CONTINUOUS EMISSIONS MONITORING DATA SHEET

Facility: XXXXXXXXXX
 Location: Boiler
 Observers: James Sanders
 Expected Run Time = 30 min

Run #: cec
 Barometric: 29.95
 Personnel: BA/CG
 Std. Temp: 60

Date: 12/05/23
 Leak ✓ : OK
 Strat. ✓ : OK

Cylinder #s:

Analyte	O2		NOX	CO					
Analyzer	600p		600cld	48i					
Range	21.07		8.62	90.30					
Span Value	9.00		4.44	45.00					
Time					Comments:				
9:10	0.13		0.02	0.08					
9:11	0.13		0.03	0.03					Unit #
9:12	4.95		0.04	4.52					
9:13	21.43		0.07	286.55					
9:14	21.02		0.10	314.47					Operating Conditions
9:15	0.37		8.18	22.10					
9:16	0.21		8.97	7.85					
9:17	0.20		8.76	-1.55					Fuel
9:18	0.19		8.73	-2.02					
9:19	0.46		6.08	-2.03					
9:20	0.18		2.39	-2.03					
9:21	0.61		1.67	-2.03					
9:22	0.17		4.04	-0.52					
9:23	0.18		4.38	-0.02					
9:24	0.18		4.38	-0.01					
9:25	0.18		3.53	-0.02					
9:26	2.92		3.71	1.94					
9:27	4.22		6.68	1.21					
9:28	4.21		6.96	0.01					
9:29	4.21		7.25	0.01					
9:30	4.21		7.41	0.01					Nox Converter
9:31	7.22		2.11	5.57					
9:32	9.07		0.17	21.33					
9:33	9.08		0.15	33.44					
9:34	9.08		0.14	41.18					
9:35	9.08		0.14	45.47					
9:36	9.08		0.14	44.91					
9:37	9.08		0.14	45.08					
9:38	20.05		0.14	64.20					
9:39	21.14		0.15	89.03					
9:40	21.14		0.14	90.53					
9:41	21.15		0.14	89.23					

DAS CONTINUOUS EMISSIONS MONITORING DATA SHEET

Facility: XXXXXXXXXX
 Location: Boiler
 Observers: James Sanders
 Expected Run Time = 30 min

Run #: 1
 Barometric: 29.95
 Personnel: BA/CG
 Std. Temp: 60

Date: 12/05/23
 Leak ✓ : OK
 Strat. ✓ : OK

Cylinder #s:

Analyte	O2		NOX	CO					
Analyzer	600p		600cld	48C					
Range	21.07		8.62	90.30					
Span Value	9.00		4.44	45.00					
Time									Comments:
	9:50	6.54		3.27	0.00				
	9:51	6.44		3.64	-0.01				Unit #
	9:52	6.27		3.95	-0.01				
	9:53	6.14		4.17	0.00				
	9:54	6.32		3.89	-0.01				Operating Conditions
	9:55	6.38		3.79	-0.01				
	9:56	6.59		3.73	0.13				
	10:10	6.72		2.80	0.00				Fuel
	10:11	6.75		2.86	0.01				
	10:12	6.61		3.16	0.01				
	10:13	6.62		3.24	0.01				
	10:14	6.62		3.32	0.01				
	10:15	6.81		3.05	0.02				
	10:16	6.75		3.03	0.01				
	10:17	6.76		2.95	0.02				
	10:18	6.73		2.95	0.02				
	10:19	6.85		2.81	0.02				
	10:20	6.72		2.88	0.03				
	10:21	6.67		2.97	0.02				
	10:22	6.71		2.91	0.01				
	10:23	6.64		3.10	0.03				
	10:24	6.49		3.46	0.02				
	10:25	6.32		3.87	0.02				
	10:26	6.11		4.20	0.03				
	10:27	6.16		4.07	0.01				
	10:28	6.37		3.77	0.02				
	10:29	6.38		3.73	0.01				
	10:30	6.51		3.68	0.10				
ZERO I	13:56	0.11		0.21	-0.36				
SPAN I	13:54	9.00		4.5	41.6				
Average		6.53		3.40	0.02				
ZERO f	10:37	0.30		0.43	0.01				
SPAN f	10:38	9.10		4.6	43.3				
Zero Drift %		0.9%		2.5%	0.4%				
Span Drift %		0.5%		0.9%	1.9%				
Corr. Avg.		6.44		3.21	0.21				

Corrected Average = [Test Avg. - ((Zi+Zf) / 2)] * Span Gas Value / [((Si+St) / 2) - ((Zi+Zf) / 2)]

Zero Drift % = 100 * (Zf - Zi) / Instrument Range

Span Drift % = 100 * (Sf - Si) / Instrument Range

DAS CONTINUOUS EMISSIONS MONITORING DATA SHEET

Facility: XXXXXXXXXX
 Location: Boiler
 Observers: James Sanders
 Expected Run Time = 30 min

Run #: 2
 Barometric: 29.95
 Personnel: BA/CG
 Std. Temp: 60

Date: 12/05/23
 Leak ✓ : OK
 Strat. ✓ : OK

Cylinder #s:

Analyte	O2		NOX	CO					
Analyzer	600p		600cld	48C					
Range	21.07		8.62	90.30					
Span Value	9.00		4.44	45.00					
Time					Comments:				
	10:44	6.51		3.17	6.76				
	10:45	6.58		3.15	0.19				Unit #
	10:46	6.64		3.05	0.02				
	10:47	6.68		3.00	0.02				
	10:48	6.55		3.25	0.04				Operating Conditions
	10:49	6.60		3.24	-0.01				
	10:50	6.47		3.51	0.05				
	10:51	6.47		3.56	-0.14				Fuel
	10:52	6.35		3.73	-0.65				
	10:53	6.85		3.10	0.05				
	10:54	6.67		3.13	0.06				
	10:55	6.76		2.90	0.08				
	10:56	6.69		2.93	0.06				
	10:57	6.80		2.72	0.02				
	10:58	6.83		2.70	0.03				
	10:59	6.81		2.75	0.03				
	11:00	6.78		2.82	0.03				
	11:01	6.68		3.03	0.03				
	11:02	6.47		3.52	0.01				
	11:03	6.35		3.82	-1.05				
	11:04	6.18		4.11	-1.16				
	11:05	6.27		3.98	-1.11				
	11:06	6.37		3.83	-1.12				
	11:07	6.38		3.79	-0.55				
	11:08	6.37		3.79	-0.66				
	11:09	6.39		3.77	-0.39				
	11:22	6.65		2.82	5.38				
	11:23	6.59		3.01	-0.07				
	11:24	6.72		2.92	-0.38				
	11:25	6.64		3.13	-1.11				
ZERO I	10:37	0.30		0.43	0.01				
SPAN I	10:38	9.10		4.6	43.3				
Average		6.57		3.27	0.15				
ZERO f	11:35	0.25		0.5	0.2				
SPAN f	11:34	9.10		4.6	43.2				
Zero Drift %		-0.2%		0.3%	0.2%				
Span Drift %		0.0%		-0.1%	-0.1%				
Corr. Avg.		6.42		3.01	0.07				

Corrected Average = [Test Avg. - ((Zi+Zf) / 2)] * Span Gas Value / [((Si+Sf) / 2) - ((Zi+Zf) / 2)]

Zero Drift % = 100 * (Zf - Zi) / Instrument Range

Span Drift % = 100 * (Sf - Si) / Instrument Range

DAS CONTINUOUS EMISSIONS MONITORING DATA SHEET

Facility: XXXXXXXXXX
 Location: Boiler
 Observers: James Sanders
 Expected Run Time = 30 min

Run #: 3
 Barometric: 29.95
 Personnel: BA/CG
 Std. Temp: 60

Date: 12/05/23
 Leak ✓ : OK
 Strat. ✓ : OK

Cylinder #s:

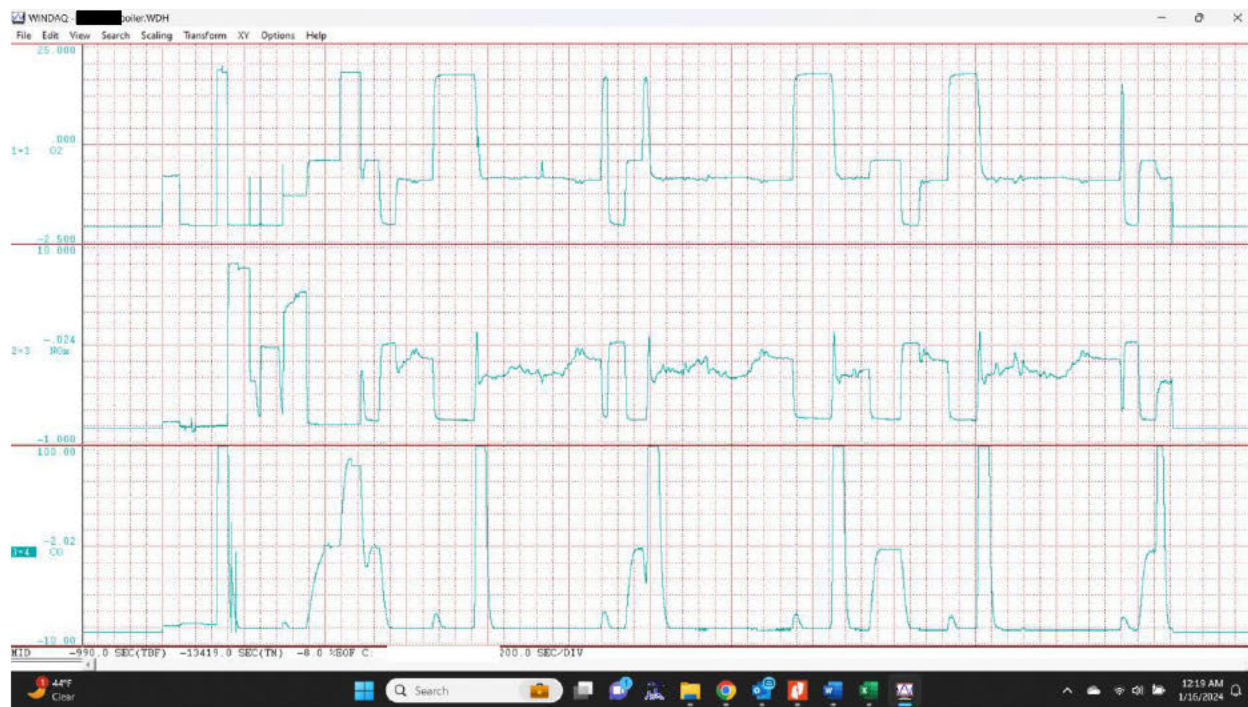
Analyte	O2	CO2	NOX	CO					
Analyzer	600p		600cld	48C					
Range	21.07		8.62	90.30					
Span Value	9.00		4.44	45.00					
Time					Comments:				
	11:37	6.14		3.97	-1.08				
	11:38	6.17		3.94	-1.07				Unit #
	11:39	6.34		3.70	-1.11				
	11:40	6.33		3.68	-1.11				
	11:41	6.36		3.65	-1.09				Operating Conditions
	11:54	6.53		3.23	-1.07				
	11:55	6.38		3.45	-1.05				
	11:56	6.32		3.61	-1.04				Fuel
	11:57	6.61		3.25	-0.26				
	11:58	6.59		3.21	-0.79				
	11:59	6.67		3.05	-1.08				
	12:00	6.63		3.03	-1.09				
	12:01	6.68		2.89	-1.05				
	12:02	6.72		2.80	-1.12				
	12:03	6.69		2.86	-1.08				
	12:04	6.79		2.73	-1.08				
	12:05	6.78		2.73	-1.09				
	12:06	6.70		2.89	-1.08				
	12:07	6.54		3.27	-1.12				
	12:08	6.47		3.54	-1.09				
	12:09	6.26		3.87	-1.09				
	12:10	6.21		4.01	-1.11				
	12:11	6.28		3.88	-1.07				
	12:12	6.33		3.79	-1.08				
	12:13	6.34		3.76	-1.08				
	12:14	6.37		3.72	-1.05				
	12:15	6.37		3.71	-1.05				
	12:16	6.35		3.73	-1.04				
	12:17	9.12		3.14	0.60				
ZERO I	11:35	0.25		0.45	0.15				
SPAN I	11:34	9.10		4.6	43.2				
Average		6.55		3.42	-0.98				
ZERO f	12:22	0.22		0.4	-0.9				
SPAN f	12:24	9.08		4.7	42.2				
Zero Drift %		-0.1%		-0.1%	-1.2%				
Span Drift %		-0.1%		0.5%	-1.1%				
Corr. Avg.		6.42		3.15	-0.63				

Corrected Average = [Test Avg. - ((Zi+Zf) / 2)] * Span Gas Value / [((Si+Sf) / 2) - ((Zi+Zf) / 2)]

Zero Drift % = 100 * (Zf - Zi) / Instrument Range

Span Drift % = 100 * (Sf - Si) / Instrument Range

APPENDIX C
STRIP CHART RECORDS



APPENDIX D
CALIBRATION GAS CERTIFICATES



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more productive



Linde Gas & Equipment Inc.
5700 S. Alameda Street
Los Angeles, CA 90058
Tel: 323-585-2154
Fax: 714-542-6689

Customer & Order Information:

LGEPKG FREMONT CA HP
41446 CHRISTY STREET,
FREMONT, CA 94538-5105
Linde Order Number: 72414388
Customer PO Number: 80422668

Certificate Issuance Date: 4/26/2023

Certification Date: 4/26/2023
Lot Number: 70086311005
Part Number: NI NX8MN-AS
DocNumber: 14961
Expiration Date: 10/24/2023

CERTIFICATE OF ANALYSIS

Primary Master

Component	Requested Concentration (Molar)	Certified Concentration (Molar)	Analytical Reference	Analytical Uncertainty
Nitrogen dioxide (as NOx)	8 ppm	8.25 ppm	1	± 1%
Nitrogen	Balance	Balance		

Cylinder Style: AS Fill Date: 4/20/2023 Filling Method: Gravimetric
Cylinder Pressure @ 70 F: 2000 psig Analysis Date: 4/24/2023
Cylinder Volume: 142 ft³
Valve Outlet Connection: CGA 660
Cylinder Number(s): DT0009567

Comments: This mixture contains 2% Oxygen.

Analyst: Muneeb Abdeirahman-Chemist

Approved Signer: Lissette Morales-Chemist

Key to Analytical Techniques:

Reference	Analytical Instrument - Analytical Principle	Reference Standard
1	MKS 2 MultiGas 2031 FTIR - FTIR	NO2 (as NOx) /AIR 11.4 ppm # ND7457, Expiration Date: 11/18/2023, Traceable to PRM# D970555

The gas calibration cylinder standard prepared by Linde Gas & Equipment Inc. is considered a certified standard. It is prepared by gravimetric, volumetric, or partial pressure techniques. The calibration standard provided is certified against Linde Gas & Equipment Inc. Reference Materials which are traceable to the International System of Units (SI) through either weights traceable to the National Institute of Standards and Technology (NIST) or Measurement Canada, or through NIST Standard Reference Materials or equivalent where available.

Note: All expressions for concentration (e.g., % or ppm) are for gas phase, by mole unless otherwise noted. Analytical uncertainty is expressed as a Relative % unless otherwise noted.

IMPORTANT

The information contained herein has been prepared at your request by personnel within Linde Gas & Equipment Inc. While we believe the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any particular purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall liability of Linde Gas & Equipment Inc. arising out of the use of the information contained herein exceed the fee established for providing such information.



CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information

BEST ENVIRONMENTAL SERVICES
339 STEALTH CT
LIVERMORE CA 94551

Certificate Issuance Date: 09/27/2021

Praxair Order Number: 52060432

Part Number: NI NO8.4ME-AS

Customer PO Number: 21

Fill Date: 09/08/2021

Lot Number: 70086125109

Cylinder Style & Outlet: AS

CGA 350

Cylinder Pressure and Volume: 2000 psig 140 ft3

Certified Concentration

Expiration Date:	09/27/2024	NIST Traceable
Cylinder Number:	DT0008375	Expanded Uncertainty
8.59 ppm	Nitric oxide	± 0.05 ppm
Balance	Nitrogen	

ProSpec EZ Cert



For Reference Only:

NOx 8.62 ppm

Certification Information:

Certification Date: 09/27/2021

Term: 36 Months

Expiration Date: 09/27/2024

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Uncertainty above is expressed as absolute expanded uncertainty at a level of confidence of approximately 95% with a coverage factor k = 2. Do Not Use this Standard if Pressure is less than 100 PSIG.

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component:

Nitric oxide

Requested Concentration: 8.4 ppm

Certified Concentration: 8.59 ppm

Instrument Used: Thermo Electron 42i-LS S/N 1030645077

Analytical Method: Chemiluminescence

Last Multipoint Calibration: 09/02/2021

Reference Standard:

Type / Cylinder #: GMIS / DT0037647

Concentration / Uncertainty: 9.49 ppm ±0.05 ppm

Expiration Date: 09/10/2024

Traceable to: SRM # / Sample # / Cylinder #: PRM / C1837210.02 / APEX1324301

SRM Concentration (enter with units) / 10.00 ppm / ±0.05 ppm

SRM Expiration Date: 04/17/2022

First Analysis Data:				Date	09/20/2021
Z:	0	R:	9.49	C:	8.6
R:	9.48	Z:	0	C:	8.59
Z:	0	C:	8.62	R:	9.49
UOM: ppm				Mean Test Assay:	8.61 ppm

Second Analysis Data:				Date	09/27/2021
Z:	0	R:	9.49	C:	8.56
R:	9.49	Z:	0	C:	8.58
Z:	0	C:	8.58	R:	9.48
UOM: ppm				Mean Test Assay:	8.58 ppm

Analyzed By

Henry Koung

Certified By

Lissette Morales



WestAir Gases & Equipment, Inc.
3001 E. Miraloma Avenue
Anaheim, CA 92806
Telephone: (714) 860-4830
ISO 17025:2017 Accredited Company
EPA PGVP ID# W12023

EPA PROTOCOL

CERTIFICATE OF ANALYSIS

CUSTOMER NAME: Best Environmental
ADDRESS: 339 Stealth Court
Livermore, CA 94551

PURCHASE ORDER #:
CERTIFIED DATE: 2/23/2023
EXPIRATION DATE: 2/24/2026
SHELF LIFE (YEARS): 3

DATE ISSUED: 2/27/2023
ORDER NUMBER:
CYLINDER SIZE: DA
VALVE CONNECTION: CGA 660
VOLUME: 140 scf
LOT NUMBER: 00020723E50
FILL PRESSURE : 2000 psig at 70° F.
PART NUMBER: NI NO4.5ME-DA
BARCODE: WGE000160971

ANALYSIS RESULTS					
ANALYZED CYLINDER SERIAL NUMBER	COMPONENT	REQUESTED CONCENTRATION	CERTIFIED CONCENTRATION	EXPANDED UNCERTAINTY	ASSAY DATES
CC761112	Nitric Oxide	4.5 ppm	4.44 ppm	±0.05 ppm Abs.	02/15/2023, 02/23/2023
	Nitrogen	BALANCE		—	
	NOx		4.50 ppm	Reference Only	

Method:

This standard was analyzed according to EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards, EPA 600/R-12/531, May 2012, Procedure G1.

DO NOT USE THIS STANDARD WHEN CYLINDER PRESSURE IS BELOW 100 PSIG.

REFERENCE STANDARDS

TYPE / SRM, GMIS, PRM	STANDARD	SERIAL NO.	CONCENTRATION	LOT NO.	EXPIRATION
GMIS	Nitric Oxide	CC514822	4.94 ppm ±0.05 ppm Abs.	00053019A50	12/31/2025

GMIS TRACEABLE TO:

SRM2627a	Nitric Oxide	CAL016575	5.11 ppm ±0.04 ppm Abs.	48-H-72	3/3/2023
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INSTRUMENTATION INFORMATION

INSTRUMENT / MODEL	SERIAL NUMBER	CALIBRATION DATE	ANALYTICAL PRINCIPLE
Thermo 42i-LS	1181580011	2/9/2023	Chemiluminescence

PRINCIPAL ANALYST:

Jose Vasquez

SIGNATURE

02/27/2023

DATE

The product furnished under the stated reference lot number has been tested and found to contain the component concentrations listed above. All values are reported in mol/mol basis gas phase. WestAir Gases & Equipment, Inc. warrants that the above product conforms, at the time of shipment, to the above description. WestAir Gases & Equipment, Inc. liability does not exceed the value of the product purchased. Specifications are reviewed annually and are subject to change without notice. This certificate of analysis applies only to the item described and shall not be reproduced, other than in full, without written approval from WestAir Gases & Equipment, Inc. Please do not use cylinder below 100 psig. Note: ppm = µmol/mol.



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DocNumber: 557547



Linde Gas & Equipment Inc.
5700 S. Alameda Street
Los Angeles CA 90058
Tel: 323-585-2154
Fax: 714-542-6689
PGVP ID: F22023

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information

LGEPKG FREMONT CA HP
41446 CHRISTY STREET
FREMONT CA 94538-5105

Certificate Issuance Date: 09/26/2023

Linde Order Number: 72580034

Part Number: NI CD19CO11E-AS

Customer PO Number: 80590393

Fill Date: 09/21/2023

Lot Number: 70086326401

Cylinder Style & Outlet: AS

Cylinder Pressure and Volume: 2000 psig

CGA 590

156 f33

Certified Concentration

Expiration Date:	09/25/2031	NIST Traceable
Cylinder Number:	SG9149884	Expanded Uncertainty
19.14 %	Carbon dioxide	± 0.18 %
90.3 ppm	Carbon monoxide	± 0.8 ppm
21.07 %	Oxygen	± 0.05 %
Balance	Nitrogen	

ProSpec EZ Cert



Certification Information:

Certification Date: 09/25/2023

Term: 96 Months

Expiration Date: 09/25/2031

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Uncertainty above is expressed as absolute expanded uncertainty at a level of confidence of approximately 95% with a coverage factor k = 2. Do Not Use this Standard if Pressure is less than 100 PSIG.

CO responses have been corrected for CO2 interference. CO responses have been corrected for O2 interference. CO2 responses have been corrected for Oxygen IR Broadening effect. O2 responses have been corrected for CO2 interference.

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component:

Carbon dioxide

Requested Concentration: 19 %
Certified Concentration: 19.14 %
Instrument Used: Horiba VIA-510 S/N 20C194WK
Analytical Method: NDIR
Last Multipoint Calibration: 08/31/2023

First Analysis Data:	Date	09/25/2023
Z: 0	R: 19.34	C: 19.15
R: 19.33	Z: 0	C: 19.14
Z: 0	C: 19.12	R: 19.34
UOM: %	Mean Test Assay:	19.14 %

Reference Standard:

Type / Cylinder #: NTRM / CC725984

Concentration / Uncertainty: 19.34 % ± 0.16 %

Expiration Date: 01/12/2027

Traceable to: SRM # / Sample # / Cylinder #: NTRM / 190701 / CC725973

SRM Concentration / Uncertainty: 19.34 % ± 0.16 %

SRM Expiration Date: 01/12/2027

2. Component:

Carbon monoxide

Requested Concentration: 93 ppm
Certified Concentration: 90.3 ppm
Instrument Used: Horiba VIA-510 S/N 576876015
Analytical Method: NDIR
Last Multipoint Calibration: 08/31/2023

First Analysis Data:	Date	09/25/2023
Z: 0	R: 100.1	C: 90.2
R: 100.1	Z: 0	C: 90.4
Z: 0	C: 90.2	R: 100.1
UOM: ppm	Mean Test Assay:	90.3 ppm

Reference Standard:

Type / Cylinder #: NTRM / CC108780

Concentration / Uncertainty: 100.1 ppm ± 0.8 ppm

Expiration Date: 07/09/2027

Traceable to: SRM # / Sample # / Cylinder #: NTRM / 190703 / CC8737

SRM Concentration / Uncertainty: 100.1 ppm ± 0.8 ppm

SRM Expiration Date: 07/09/2027

3. Component:

Oxygen

Requested Concentration: 21 %
Certified Concentration: 21.07 %
Instrument Used: Siemens Oxymat 6E S/N 7MB20211AA000CA1
Analytical Method: Paramagnetic
Last Multipoint Calibration: 08/31/2023

First Analysis Data:	Date	09/25/2023
Z: 0	R: 24.96	C: 20.98
R: 24.98	Z: 0	C: 21.09
Z: 0	C: 21.13	R: 24.92
UOM: %	Mean Test Assay:	21.07 %

Reference Standard:

Type / Cylinder #: GMIS / DT0025134

Concentration / Uncertainty: 24.96 % ± 0.04 %

Expiration Date: 12/14/2026

Traceable to: SRM # / Sample # / Cylinder #: SRM 2659a / 71-E-19 / FF22331

SRM Concentration / Uncertainty: 20.863 % ± 0.021 %

SRM Expiration Date: 02/27/2026

Second Analysis Data:	Date	
Z: 0	R: 0	C: 0
R: 0	Z: 0	C: 0
Z: 0	C: 0	R: 0
UOM: %	Mean Test Assay:	%

Analyzed By

Courtney Ziehl

Certified By

Nelson Ma

Information contained herein has been prepared at your request by qualified experts within Linde Gas & Equipment Inc. While we believe that the information is accurate within the limits of the analytical methods employed and is complete to the extent of the specific analyses performed, we make no warranty or representation as to the suitability of the use of the information for any purpose. The information is offered with the understanding that any use of the information is at the sole discretion and risk of the user. In no event shall the liability of Linde Gas & Equipment Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.



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Linde Gas & Equipment Inc.
5700 S. Alameda Street
Los Angeles CA 90058
Tel: 323-585-2154
Fax: 714-542-6689
PGVP ID: F22023

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information

BEST ENVIRONMENTAL SERVICES
339 STEALTH CT
LIVERMORE CA 94551

Certificate Issuance Date: 09/25/2023

Linde Order Number: 17093939

Part Number: NI CD9CO18E-AS

Customer PO Number: 82

Fill Date: 09/21/2023

Lot Number: 70086326406

Cylinder Style & Outlet: AS

Cylinder Pressure and Volume: 2000 psig 148 ft3

Certified Concentration

Expiration Date:	09/25/2031	NIST Traceable
Cylinder Number:	DT0043921	Expanded Uncertainty
9.13 %	Carbon dioxide	± 0.04 %
45.0 ppm	Carbon monoxide	± 0.4 ppm
9.00 %	Oxygen	± 0.03 %
Balance	Nitrogen	

ProSpec EZ Cert



Certification Information:

Certification Date: 09/25/2023

Term: 96 Months

Expiration Date: 09/25/2031

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Uncertainty above is expressed as absolute expanded uncertainty at a level of confidence of approximately 95% with a coverage factor k = 2. Do Not Use this Standard if Pressure is less than 100 PSIG.

CO responses have been corrected for CO2 interference. CO responses have been corrected for O2 interference. CO2 responses have been corrected for Oxygen IR Broadening effect. O2 responses have been corrected for CO2 interference.

Analytical Data:

(R=Reference Standard, Z=Zero Gas, C=Gas Candidate)

1. Component:

Carbon dioxide

Requested Concentration: 9 %
Certified Concentration: 9.13 %
Instrument Used: Horiba VIA-510 S/N 20C194WK
Analytical Method: NDIR
Last Multipoint Calibration: 08/31/2023

First Analysis Data:		Date	
Z:	0	R:	13.92
R:	13.92	Z:	0
Z:	0	C:	9.14
C:	9.14	R:	13.95
UOM:	%	Conc:	9.13
		Conc:	9.12
		Conc:	9.13
		Mean Test Assay:	9.13 %

Reference Standard:

Type / Cylinder #: GMIS / ND54512

Concentration / Uncertainty: 13.92 % ± 0.04 %

Expiration Date: 06/06/2031

Traceable to: SRM # / Sample # / Cylinder #: RGM / 109433807 / CC28033

SRM Concentration / Uncertainty: 19.67% / ± 0.04% .

SRM Expiration Date: 05/11/2025

Second Analysis Data:		Date	
Z:	0	R:	0
R:	0	Z:	0
Z:	0	C:	0
C:	0	R:	0
UOM:	%	Conc:	0
		Conc:	0
		Conc:	0
		Mean Test Assay:	%

2. Component:

Carbon monoxide

Requested Concentration: 45 ppm
Certified Concentration: 45.0 ppm
Instrument Used: Horiba VIA-510 S/N 576876015
Analytical Method: NDIR
Last Multipoint Calibration: 08/31/2023

First Analysis Data:		Date	
Z:	0	R:	100.1
R:	100.1	Z:	0
Z:	0	C:	45
C:	45	R:	100.2
UOM:	ppm	Conc:	45
		Conc:	45
		Conc:	45
		Mean Test Assay:	45 ppm

Reference Standard:

Type / Cylinder #: NTRM / CC108780

Concentration / Uncertainty: 100.1 ppm ± 0.8 ppm

Expiration Date: 07/09/2027

Traceable to: SRM # / Sample # / Cylinder #: NTRM / 190703 / CC8737

SRM Concentration / Uncertainty: 100.1 ppm / ± 0.8 ppm

SRM Expiration Date: 07/09/2027

Second Analysis Data:		Date	
Z:	0	R:	0
R:	0	Z:	0
Z:	0	C:	0
C:	0	R:	0
UOM:	ppm	Conc:	0
		Conc:	0
		Conc:	0
		Mean Test Assay:	ppm

3. Component:

Oxygen

Requested Concentration: 9 %
Certified Concentration: 9.00 %
Instrument Used: Siemens Oxymat 6E S/N 7MB20211AA000CA1
Analytical Method: Paramagnetic
Last Multipoint Calibration: 08/31/2023

First Analysis Data:		Date	
Z:	0	R:	9.978
R:	9.998	Z:	0
Z:	0	C:	8.997
C:	8.997	R:	9.99
UOM:	%	Conc:	8.99
		Conc:	9.03
		Conc:	8.99
		Mean Test Assay:	9 %

Reference Standard:

Type / Cylinder #: GMIS / DT0018893

Concentration / Uncertainty: 9.978 % ± 0.024 %

Expiration Date: 12/20/2030

Traceable to: SRM # / Sample # / Cylinder #: SRM 2658a / 72-D-28 / CAL016862

SRM Concentration / Uncertainty: 9.918 % / ± 0.022 %

SRM Expiration Date: 02/03/2024

Second Analysis Data:		Date	
Z:	0	R:	0
R:	0	Z:	0
Z:	0	C:	0
C:	0	R:	0
UOM:	%	Conc:	0
		Conc:	0
		Conc:	0
		Mean Test Assay:	%

Analyzed By

Courtney Zielke

Certified By

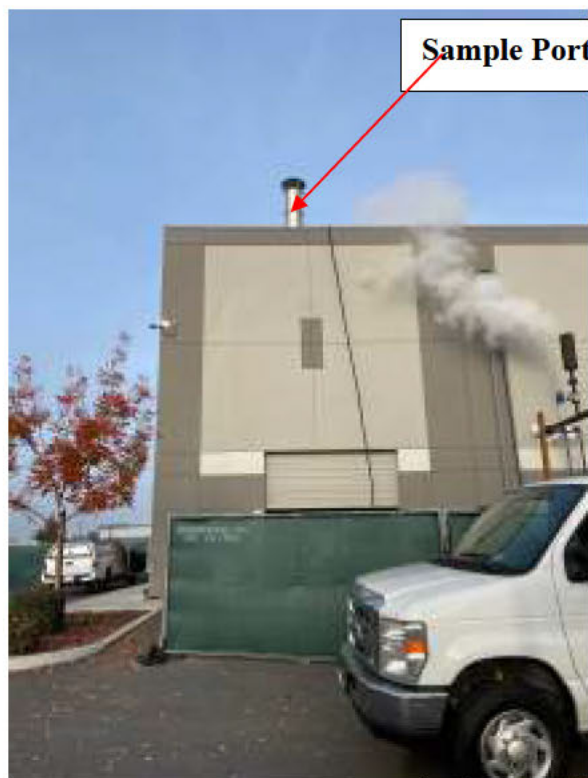
Nelson Ma

APPENDIX E

STACK DIAGRAMS

Stockton, CA

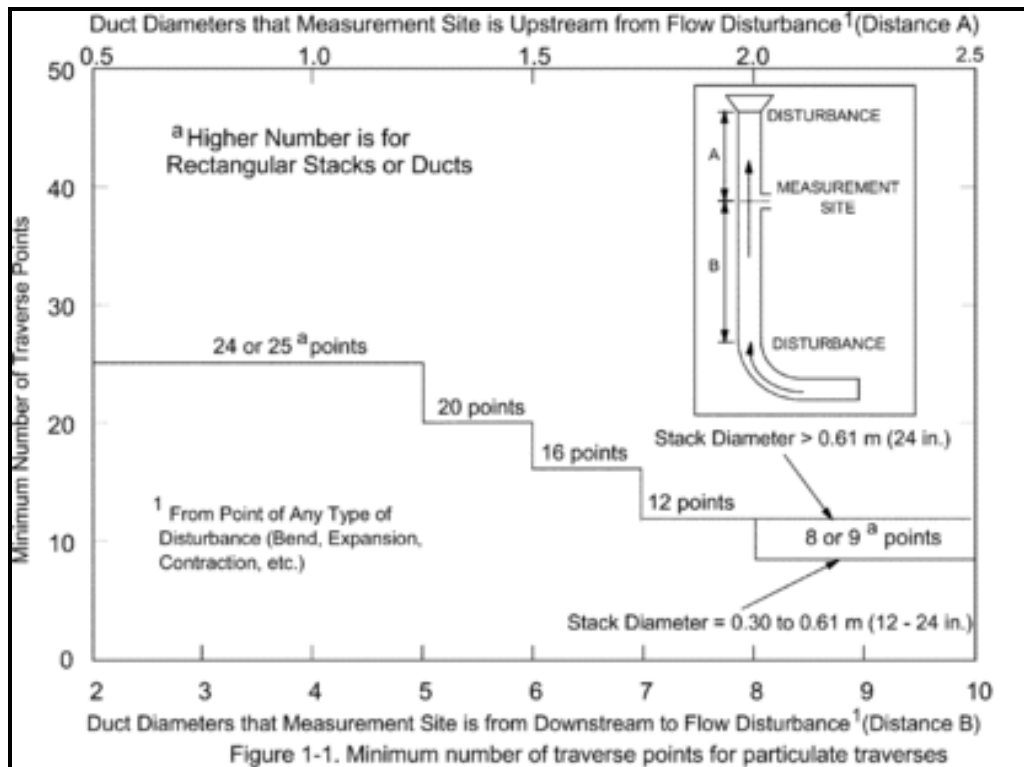
**12.6 MMBtu/hr Hurst Boiler
[Boiler N-9646-1-4]**



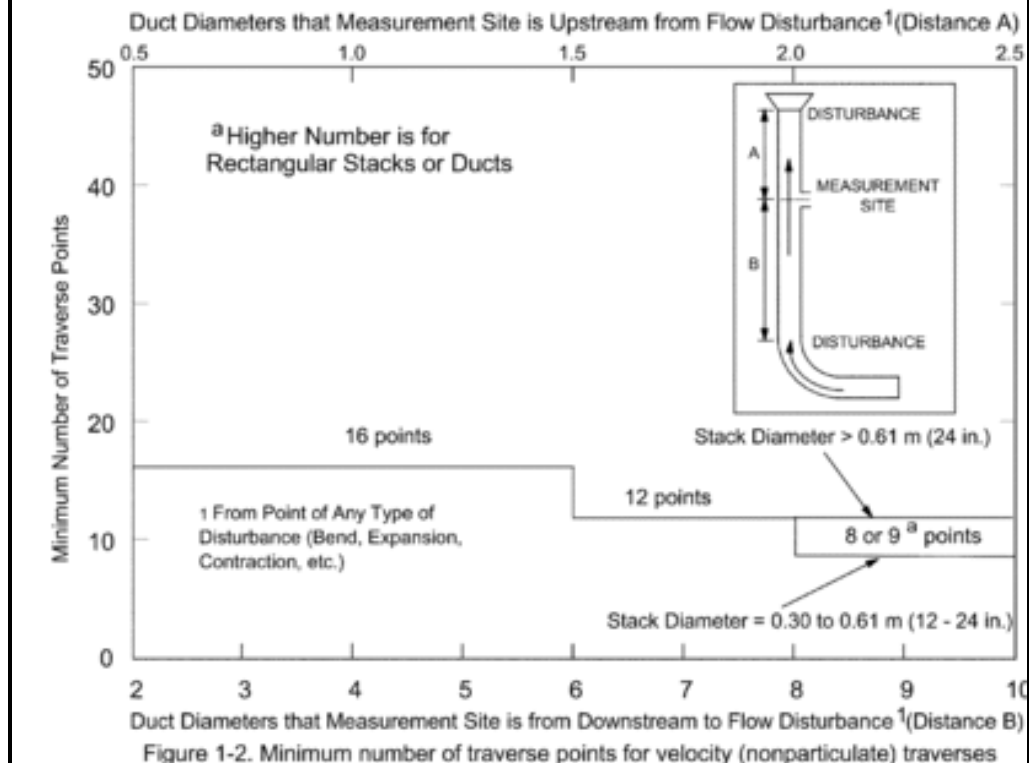
APPENDIX F

SAMPLING SYSTEM DIAGRAMS

EPA METHOD 1



* * * * *



EPA METHOD 1

TABLE 1-1 CROSS-SECTION LAYOUT FOR RECTANGULAR STACKS

Number of tranverse points layout	Matrix
9	3×3
12	4×3
16	4×4
20	5×4
25	5×5
30	6×5
36	6×6
42	7×6
49	7×7

TABLE 1-2—LOCATION OF TRAVERSE POINTS IN CIRCULAR STACKS

[Percent of stack diameter from inside wall to traverse point]

[illegible]

EPA METHOD 1

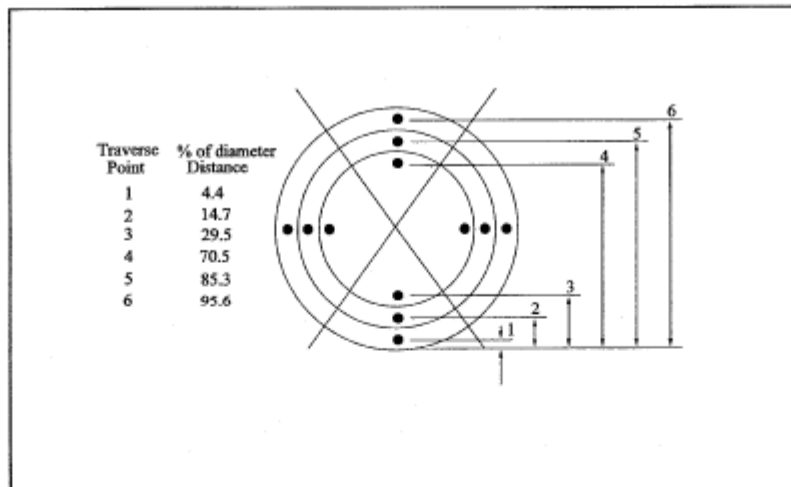


Figure 1-3. Example showing circular stack cross section divided into 12 equal areas, with location of traverse points.

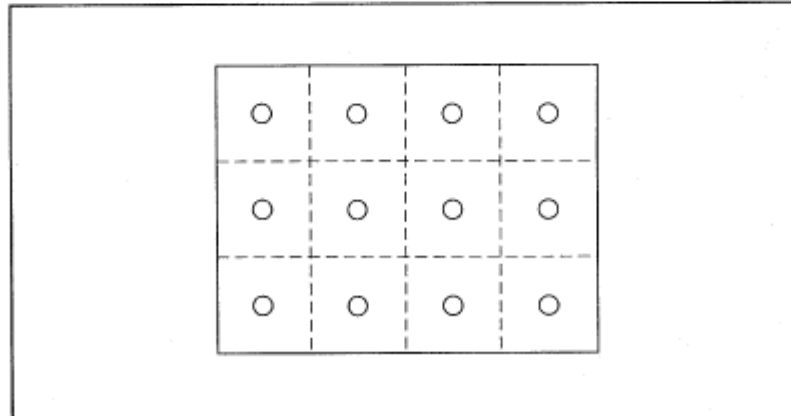
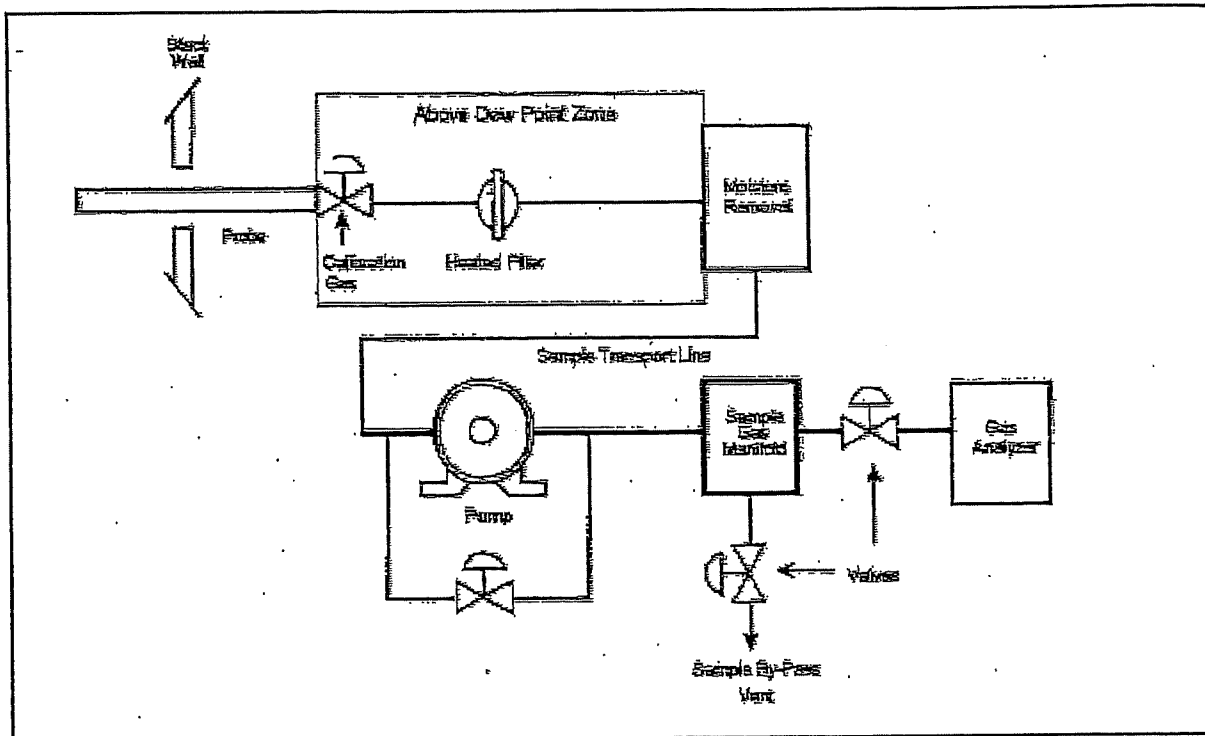


Figure 1-4. Example showing rectangular stack cross section divided into 12 equal areas, with traverse points at centroid of each area.

EPA Methods 3A, 6C, 7E & 10



CEM Sampling Train

APPENDIX G

SOURCE TEST PLAN

BEST ENVIRONMENTAL

339 Stealth Ct
Livermore, California 94551
(925) 455-9474 FAX (925) 455-9479
E-Mail bestair@best-enviro.com

November 9, 2023

Attn: Lisa Middleton
San Joaquin Valley APCD
4800 Enterprise Way
Modesto, CA 95356

Re: Source Test Plan for Compliance testing of a 12.6 MMBtu/hr Superior Boiler located at [REDACTED],
[REDACTED]

ATC/PTO	Boiler Description	Limits @ 3% O ₂
[REDACTED]	12.6 MMBtu/hr Superior Boiler	NO _x 5 ppm, CO 50 ppm

Dear Lisa:

BEST ENVIRONMENTAL (BE) proposes the following methodology to perform the compliance testing (District Rule 2201, 4305 & 4306) referenced above.

- Triplicate 30-minute test runs (+ response time) will be performed for NO_x, CO and O₂ at the boiler outlet using EPA Methods 7E, 10 And 3A at **normal operating conditions**.
- Load will be determined during the test series using EPA Method 19 or steam flow readings.
- The technical report (meeting all SJVAPCD requirements) will be submitted to California Boiler within four-six weeks of completion of testing. The report will include a test description and tables presenting concentrations (ppm @3% O₂) and emission factors (lbs/MMBtu) for all compliance parameters. All supporting documentation will be included (strip charts, calibrations, calculations, field data sheets, etc.).

Pending your approval, the test program is scheduled for December 5, 2023. BE's on-site arrival time will be ~8:00 AM.

Mr. Ethan Saccone of California Boiler is coordinating the test schedule and he can be reached at (253) 303-9096. If you have any questions concerning this Source Test Plan, please contact me at (510) 719-0769.

Best regards



Bobby Asfour
Principal/QSTI

cc: Ethan Saccone, California Boiler



San Joaquin Valley
AIR POLLUTION CONTROL DISTRICT



November 22, 2023

Mr. Bobby Asfour
Best Environmental, Inc.
339 Stealth Court
Livermore, CA 94551

RE: Approval of Test Protocol
Facility: [REDACTED]
Scheduled Test Date(s): 12/05/2023
Permit(s): [REDACTED]

District staff has completed the review of the test protocol submitted for the testing of [REDACTED]. The staff finds the protocol will meet the District's requirements. Should the test date or test methods change from the approved protocol, then a modified protocol shall be submitted for review prior to the scheduled test date. Failure to submit a modified protocol may result in test cancellation by District staff.

Please note the following requirements:

- 1) If the source test needs to be postponed or rescheduled, the District must be notified prior to the scheduled testing time for approval.
- 2) Source test reports may be submitted to the District electronically at Source.testNorth@valleyair.org or via PAS Portal. Refer to the latest policy for requirements.
- 3) All testing must be done during normal District business hours unless otherwise approved in advance.

All source testing must strictly adhere to the District's Source Test Policy. This policy is found on the District's website (www.valleyair.org). If you have any questions, please contact Erick Macario at (209) 557-6400.

Sincerely,

Lisa D Middleton
Supervising Air Quality Inspector

APPENDIX H
PERMIT TO OPERATE

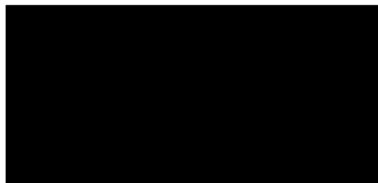


AUTHORITY TO CONSTRUCT

PERMIT NO: [REDACTED]

ISSUANCE DATE: 06/15/2023

LEGAL OWNER OR OPERATOR:
MAILING ADDRESS:



LOCATION:

EQUIPMENT DESCRIPTION:

MODIFICATION OF 12.6 MMBTU/HR SUPERIOR BOILER WORKS MODEL MOHICAN 7-5-1500 NATURAL GAS-FIRED BOILER WITH A POWER FLAME MODEL UCM300-G-30 LOW-NOX BURNER AND FLUE GAS RECIRCULATION (FGR) SYSTEM: RETROFIT THE BOILER BY REPLACING AN EXISTING BURNER WITH A ROUGE COMBUSTION MODEL 300 CORE-S ULTRA LOW NOX BURNER TO COMPLY WITH RULE 4320 EMISSION LIMIT

CONDITIONS

1. No air contaminant shall be released into the atmosphere which causes a public nuisance. [District Rule 4102]
2. Particulate matter emissions shall not exceed 0.1 grains/dscf in concentration. [District Rule 4201]
3. No air contaminant shall be discharged into the atmosphere for a period or periods aggregating more than three minutes in any one hour which is as dark as, or darker than, Ringelmann 1 or 20% opacity. [District Rule 4101]
4. The unit shall only be fired on PUC-quality natural gas. [District Rules 2201, 4320, and 4801]
5. Except during start-up, emission from this unit shall not exceed any of the following limits: 5 ppmvd NOx @ 3% O2 or 0.0061 lb-NOx/MMBtu, 0.00285 lb-SOx/MMBtu, 0.003 lb-PM10/MMBtu, 50 ppmvd CO @ 3% O2 or 0.037 lb-CO/MMBtu, or 0.0055 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306 and 4320]
6. During start-up, emissions from this unit shall not exceed any of the following limits: 9 ppmvd NOx @ 3% O2 or 0.0109 lb-NOx/MMBtu, 0.00285 lb-SOx/MMBtu, 0.003 lb-PM10/MMBtu, 400 ppmvd CO @ 3% O2 or 0.296 lb-CO/MMBtu, or 0.4223 lb-VOC/MMBtu. [District Rules 2201, 4305, 4306, and 4320]
7. Total duration of startup shall not exceed either of the following limits: 2 hours per day or 104 hours per year. [District Rules 2201, 4305, 4306, and 4320]

CONDITIONS CONTINUE ON NEXT PAGE

YOU **MUST** NOTIFY THE DISTRICT COMPLIANCE DIVISION AT (209) 557-6400 WHEN CONSTRUCTION IS COMPLETED AND PRIOR TO OPERATING THE EQUIPMENT OR MODIFICATIONS AUTHORIZED BY THIS AUTHORITY TO CONSTRUCT. This is NOT a PERMIT TO OPERATE. Approval or denial of a PERMIT TO OPERATE will be made after an inspection to verify that the equipment has been constructed in accordance with the approved plans, specifications and conditions of this Authority to Construct, and to determine if the equipment can be operated in compliance with all Rules and Regulations of the San Joaquin Valley Unified Air Pollution Control District. Unless construction has commenced pursuant to Rule 2050, this Authority to Construct shall expire and application shall be cancelled two years from the date of issuance. The applicant is responsible for complying with all laws, ordinances and regulations of all other governmental agencies which may pertain to the above equipment.

Samir Sheikh, Executive Director / APCO

Brian Clements
Brian Clements, Director of Permit Services

Jun 15 2023 1:47PM - MORALESM : Joint Inspection NOT Required

8. During start-up, the emissions control system shall be in operation, and emissions shall be minimized insofar as technologically possible. [District Rules 4305, 4306, and 4320]
9. The source test plan shall identify which basis (ppmv or lb/MMBtu) will be used to demonstrate compliance. [District Rules 4305, 4306, and 4320]
10. All emissions measurements shall be made with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. No determination of compliance shall be established within two hours after a continuous period in which fuel flow to the unit is shut off for 30 minutes or longer, or within 30 minutes after a re-ignition as defined in Section 3.0 of District Rule 4320. [District Rules 4305, 4306, and 4320]
11. For emissions source testing, the arithmetic average of three 30-consecutive-minute test runs shall apply. If two of three runs are above an applicable limit the test cannot be used to demonstrate compliance with an applicable limit. [District Rules 4305, 4306, and 4320]
12. Source testing shall be conducted using the methods and procedures approved by the District. The District must be notified at least 30 days prior to any compliance source test, and a source test plan must be submitted for approval at least 15 days prior to testing. [District Rule 1081]
13. Source testing to measure NO_x and CO emissions during steady state operation from this unit while fired on natural gas shall be conducted within 60 days of initial start-up. [District Rules 2201, 4305, 4306, and 4320]
14. Source testing to measure NO_x and CO emissions during steady state operation from this unit while fired on natural gas shall be conducted at least once every twelve (12) months. After demonstrating compliance on two (2) consecutive annual source tests, the unit shall be tested not less than once every thirty-six (36) months. If the result of the 36-month source test demonstrates that the unit does not meet the applicable emission limits, the source testing frequency shall revert to at least once every twelve (12) months. [District Rules 2201, 4305, 4306, and 4320]
15. NO_x emissions for source test purposes shall be determined using EPA Method 7E or ARB Method 100 on a ppmv basis, or EPA Method 19 on a heat input basis. [District Rules 4305, 4306, and 4320]
16. CO emissions for source test purposes shall be determined using EPA Method 10 or ARB Method 100. [District Rules 4305, 4306, and 4320]
17. Stack gas oxygen (O₂) shall be determined using EPA Method 3 or 3A or ARB Method 100. [District Rules 4305, 4306, and 4320]
18. The results of each source test shall be submitted to the District within 60 days thereafter. [District Rule 1081]
19. The permittee shall monitor and record the stack concentration of NO_x, CO, and O₂ at least once every month (in which a source test is not performed) using a portable emission monitor that meets District specifications. Monitoring shall not be required if the unit is not in operation, i.e. the unit need not be started solely to perform monitoring. Monitoring shall be performed within 5 days of restarting the unit unless monitoring has been performed within the last month. [District Rules 4305, 4306, and 4320]
20. If either the NO_x or CO concentrations corrected to 3% O₂, as measured by the portable analyzer, exceed the allowable emissions concentration, the permittee shall return the emissions to within the acceptable range as soon as possible, but no longer than 1 hour of operation after detection. If the portable analyzer readings continue to exceed the allowable emissions concentration after 1 hour of operation after detection, the permittee shall notify the District within the following 1 hour and conduct a certified source test within 60 days of the first exceedance. In lieu of conducting a source test, the permittee may stipulate a violation has occurred, subject to enforcement action. The permittee must then correct the violation, show compliance has been re-established, and resume monitoring procedures. If the deviations are the result of a qualifying breakdown condition pursuant to Rule 1100, the permittee may fully comply with Rule 1100 in lieu of performing the notification and testing required by this condition. [District Rules 4305, 4306, and 4320]
21. All alternate monitoring parameter emission readings shall be taken with the unit operating either at conditions representative of normal operations or conditions specified in the Permit to Operate. The analyzer shall be calibrated, maintained, and operated in accordance with the manufacturer's specifications and recommendations or a protocol approved by the APCO. Emission readings taken shall be averaged over a 15 consecutive-minute period by either taking a cumulative 15 consecutive-minute sample reading or by taking at least five (5) readings, evenly spaced out over the 15 consecutive-minute period. [District Rules 4305, 4306, and 4320]

CONDITIONS CONTINUE ON NEXT PAGE

22. The permittee shall maintain records of: (1) the date and time of NO_x, CO, and O₂ measurements, (2) the O₂ concentration in percent and the measured NO_x and CO concentrations corrected to 3% O₂, (3) make and model of exhaust gas analyzer, (4) exhaust gas analyzer calibration records, and (5) a description of any corrective action taken to maintain the emissions within the acceptable range. [District Rules 4305, 4306, and 4320]
23. Permittee shall determine sulfur content of combusted gas annually or shall demonstrate that the combusted gas is provided from a PUC or FERC regulated source. [District Rules 1081 and 4320]
24. Valid purchase contracts, supplier certifications, tariff sheets, or transportation contracts may be used to satisfy the fuel sulfur content analysis, provided they establish the fuel sulfur concentration and higher heating value. [District Rule 4320]
25. Daily and annual records of start-up durations and numbers of occurrences of each shall be maintained. [District Rules 2201 and 4320]
26. All records shall be maintained and retained on-site for a minimum of five (5) years, and shall be made available for District inspection upon request. [District Rules 1070, 4305, 4306 and 4320]