MONTROSE
AIR QUALITY SERVICES

August 17, 2018

Mr. Kevin Lawrence
Desert View Power
62-300 Gene Welmas Drive
Mecca, CA 92254-0758

Subject: **Quarterly CGA Units 1 and 2**
Report Number: 002AS-320471-RT-934

Dear Kevin:

This letter presents the results of the Continuous Emission Monitoring System (CEMS) quarterly test audit conducted by Dave Wonderly of Montrose Air Quality Services, LLC (MAQS), on November 21, 2018 MAQS was contracted by Desert View Power to perform this audit. The program consists of a Cylinder Gas Audit (CGA) for unit 1 and 2 on the NO_x, CO, SO_2, and O_2 monitors in accordance with 40 CFR Part 60 Appendix F Section 5.1.2.

The CGA comprised of challenging the entire unit CEMS, as close to the tip of the probe as possible, with NBS traceable gases of known concentration. The gases were injected at the probe through previously installed audit ports.

Two audit gases per monitor range were selected according to the requirements of Appendix F. Each monitor was challenged by each of its two gases three separate times. The accuracy was calculated two ways. By the percent difference between the actual known gas concentration and the average value read by the monitor, and the difference in ppm from actual known gas concentration and the average value read by the monitor. Results are shown in the attached tables (Tables 1 and 2).

The results of the CGA demonstrate that the CEMS was operating within the EPA quality assurance specification of either 15% accuracy or 5 ppm difference for all parameters. All data, including gas bottle certifications and monitor response data sheets, are provided as an attachment. If you have any questions or comments, please do not hesitate to call me at 714-279-6777.

Sincerely,

Dave Wonderly
Program Manager
Montrose Air Quality Services, LLC.
DW/rcr

Attachments

TABLE 1
CYLINDER GAS AUDIT RESULTS
UNIT 1
DESERT VIEW POWER
November 21, 2018

Parameter	Accuracy, % of Gas Value	Accuracy Acceptance Criteria	Difference From Gas Value, ppm	Difference Acceptance Criteria	Status*
SO_2 Low Range (mid span)	-8.3%	15%	-2.26	5 ppm	Pass
SO_2 Low range (low span)	-3.4%	15%	-0.43	5 ppm	Pass
NO_x Low range (mid span)	0.4%	15%	0.20	5 ppm	Pass
NO_x Low range(low span)	2.7%	15%	0.66	5 ppm	Pass
CO Low Range (mid span)	-5.8%	15%	-3.18	5 ppm	Pass
CO Low Range (low span)	-11.3%	15%	-2.82	5 ppm	Pass
O_2 (mid span)	-0.9%	15%	N/A	N/A	Pass
O_2 (low span)	1.1%	15%	N/A	N/A	Pass
SO_2 High Range (mid span)	0.1%	15%	0.24	5 ppm	Pass
SO_2 High Range (low span)	4.3%	15%	5.36	5 ppm	Pass
NO_x High Range (mid span)	0.9%	15%	2.50	5 ppm	Pass
NO_x High Range (low span)	1.8%	15%	2.26	5 ppm	Pass
CO High Range (mid span)	-1.2%	15%	-3.31	5 ppm	Pass
CO High Range (low span)	1.1%	15%	1.34	5 ppm	Pass

*** Pass if accuracy less than 15% or within 5 ppm and O_2 accuracy is less than 15%**

TABLE 2
CYLINDER GAS AUDIT RESULTS
UNIT 2
DESERT VIEW POWER
November 21, 2018

Parameter	Accuracy, % of Gas Value	Accuracy Acceptance Criteria	Difference From Gas Value, ppm	Difference Acceptance Criteria	Status*
SO_2 Low Range (mid span)	-5.6%	15%	-1.51	5 ppm	Pass
SO_2 Low range (low span)	-0.5%	15%	-0.06	5 ppm	Pass
NO_x Low range (mid span)	-0.2%	15%	114.69	5 ppm	Pass
NO_x Low range(low span)	-1.1%	15%	-0.26	5 ppm	Pass
CO Low Range (mid span)	-6.4%	15%	-3.52	5 ppm	Pass
CO Low Range (low span)	-11.9%	15%	-2.97	5 ppm	Pass
O_2 (mid span)	-1.8%	15%	NA	NA	Pass
O_2 (low span)	0.9%	15%	NA	NA	Pass
SO_2 High Range (mid span)	0.1%	15%	0.24	5 ppm	Pass
SO_2 High Range (low span)	4.3%	15%	5.36	5 ppm	Pass
NO_x High Range (mid span)	0.9%	15%	2.50	5 ppm	Pass
NO_x High Range (low span)	1.8%	15%	2.26	5 ppm	Pass
CO High Range (mid span)	-1.2%	15%	-3.31	5 ppm	Pass
CO High Range (low span)	1.1%	15%	1.34	5 ppm	Pass

*** Pass if accuracy less than 15% or within 5 ppm and O_2 accuracy is less than 15%**

CYLINDER GAS AUDIT
WORK SHEET

Client: DESERT VIEW POWER
Location: Mecca

Unit No: 1
Data By: DW

Date: 11/21/2018

NORMAL RANGE

	NOx ppm		CO ppm		SO2 ppm		O2 %	
Reference Gas	Point 1	Point 2	Point 1	Point 2	Point 1	Point 2	Point 1	Point 2
Concentration	24.7	55.5	25	55	12.5	27.1	5.04	9.51
Replicate								
1	24.70	55.57	22.36	52.03	10.27	24.62	5.09	9.42
2	25.51	55.78	22.14	51.55	12.82	24.27	5.10	9.43
3	25.87	55.74	22.04	51.89	13.13	25.63	5.10	9.43
Average	25.36	55.70	22.18	51.82	12.07	24.84	5.10	9.43
Difference, ppm	0.66	0.20	-2.82	-3.18	-0.43	-2.26	n/a	n/a
Accuracy	2.7%	0.4%	-11.3%	-5.8%	-3.4%	-8.3%	1.1%	-0.9%

Client: Colmac
Location: Mecca
Date: 11/21/2018

Unit No: 1
Data By: DW

HIGH RANGE

	NOx ppm		CO ppm		SO2 ppm	
Reference Gas	Point 1	Point 2	Point 1	Point 2	Point 1	Point 2
Concentration	128.5	282	123.3	274	125	277.0
Replicate						
1	130.07	283.58	124.61	270.08	123.52	274.23
2	130.95	284.01	124.69	269.98	133.05	277.02
3	131.25	285.90	124.63	272.02	134.51	280.46
Average	130.76	284.50	124.64	270.69	130.36	277.24
Difference, ppm	2.26	2.50	1.34	-3.31	5.36	0.24
Accuracy	1.8%	0.9%	1.1%	-1.2%	4.3%	0.1%

Client: Colmac
Location: Mecca
Date: 11/21/2018

Unit No: 2
Data By: DW

CYLINDER GAS AUDIT
WORK SHEET

NORMAL RANGE

	NOx ppm		CO ppm		SO2 ppm		O2 %	
Reference Gas	Point 1	Point 2	Point 1	Point 2	Point 1	Point 2	Point 1	Point 2
Concentration	24.7	55.5	25	55	12.5	27.1	5.04	9.51
Replicate								
1	24.32	55.37	22.18	51.73	11.04	25.55	5.08	9.33
2	24.51	55.41	22.10	51.23	13.05	25.01	5.08	9.34
3	24.49	55.45	21.82	51.49	13.23	26.22	5.09	9.34
		125.11						
Average	24.44	170.19	22.03	51.48	12.44	25.59	5.08	9.34
Difference, ppm	-0.26	114.69	-2.97	-3.52	-0.06	-1.51	n/a	n/a
Accuracy	-1.1%	-0.2%	-11.9%	-6.4%	-0.5%	-5.6%	0.9%	-1.8%

Client: Colmac
Location: Mecca
Date: 11/21/2018

Unit No: 2
Data By: DW

HIGH RANGE

	NOx ppm		CO ppm		SO2 ppm	
Reference Gas	Point 1	Point 2	Point 1	Point 2	Point 1	Point 2
Concentration	128.5	282	123.3	274	125	277.0
Replicate						
1	130.07	283.58	124.61	270.08	123.52	274.23
2	130.95	284.01	124.69	269.98	133.05	277.02
3	131.25	285.90	124.63	272.02	134.51	280.46
Average	130.76	284.50	124.64	270.69	130.36	277.24
Difference, ppm	2.26	2.50	1.34	-3.31	5.36	0.24
Accuracy	1.8%	0.9%	1.1%	-1.2%	4.3%	0.1%

CYLINDER GAS AUDIT
WORK SHEET

CeDAR 1-Minute Data
Data for 11/21/2018 10:00 AM thru 11/21/2018 10:54 AM

Timestamp	(Boiler 1) NOx ppm 1-Min	(Boiler 1) SO2 ppm 1-Min	(Boiler 1) CO ppm 1-Min	(Boiler 1) O2% 1-Min	(Boiler 2) NOx ppm 1-Min	(Boiler 2) SO2 ppm 1-Min	(Boiler 2) CO ppm 1-Min	(Boiler 2) O2% 1-Min
11/21/2018 10:03	1.81	1.97	0	5.09	0.12	1.27	0	5.08
11/21/2018 10:04	1.54	1.41	0	6.7	0.07	0.8	0	7.17
11/21/2018 10:05	2.46	1.24	0.35	9.42	0.47	0.73	0	9.33
11/21/2018 10:06	2.2	0.87	0.01	7.39	0.19	0.39	0	6.79
11/21/2018 10:07	1.4	0.52	0	5.1	0	0.14	0	5.08
11/21/2018 10:08	1.54	0.56	0	8.21	0	0.23	0	8.42
11/21/2018 10:09	2.16	0.65	0.08	9.43	0.43	0.26	0	9.34
11/21/2018 10:10	2.06	0.56	0	7.95	0.29	0.07	0	7.59
11/21/2018 10:11	1.03	0.23	0	5.1	0	0.01	0	5.09
11/21/2018 10:12	2.17	0.27	0	7.38	1.25	0.06	0	7.64
11/21/2018 10:13	3.13	0.54	0	9.43	0.78	0.13	0	9.34
11/21/2018 10:14	2.03	0.34	0	9.43	0.32	0.13	0	9.35
11/21/2018 10:15	7.98	1.13	6.98	5.12	9.28	1.97	7.66	4.78
11/21/2018 10:16	24.67	7.95	22.27	0.03	24.12	9.42	22.24	0
11/21/2018 10:17	25.05	9.71	22.36	0.01	24.1	10.54	22.24	0
11/21/2018 10:18	24.7	10.27	22.36	0	24.32	11.04	22.18	0
11/21/2018 10:19	33.35	13.43	33.52	0.01	35.68	15.22	33.66	0.03
11/21/2018 10:20	53.7	22.76	51.52	0	54.85	24.1	51.46	0.06
11/21/2018 10:21	55.57	24.62	52.03	0	55.37	25.55	51.73	0.06
11/21/2018 10:22	49.05	22.65	42.82	0	44.09	22.19	40.37	0
11/21/2018 10:23	25.51	12.82	22.14	0	24.51	13.05	22.1	0
11/21/2018 10:24	34.31	14.1	33.71	0	37.93	15.95	33.21	0.01
11/21/2018 10:25	55.78	24.27	51.55	0	55.41	25.01	51.23	0.05
11/21/2018 10:26	45.2	22.2	39.08	0	45.22	22.31	41.59	0
11/21/2018 10:27	25.87	13.13	22.04	0	24.49	13.23	21.82	0
11/21/2018 10:28	35.34	16.03	34.65	0	39.14	17.62	36.4	0.02
11/21/2018 10:29	54.47	24.42	51.27	0	55.16	25.14	50.97	0.04
11/21/2018 10:30	55.74	25.63	51.89	0	55.45	26.22	51.49	0.04
11/21/2018 10:31	74.67	51.98	76.13	0	84.74	59.94	137.25	0
11/21/2018 10:32	128.4	117.95	124.09	0	128.95	118.66	124.21	0
11/21/2018 10:33	130.07	123.52	124.61	0	129.67	123.52	124.54	0
11/21/2018 10:34	165.5	163.62	167.55	0	176.14	167.51	170.27	0.01
11/21/2018 10:35	282.1	264.49	267.2	0	279.37	265.35	268.24	0.07
11/21/2018 10:36	283.58	274.23	270.08	0	280	272.89	270.09	0.07
11/21/2018 10:37	247.03	224.67	212.65	0	220.22	214.38	205.19	0
11/21/2018 10:38	133.08	137.94	125.24	0	130.99	135.9	125.11	0
11/21/2018 10:39	130.95	133.05	124.69	0	130.6	131.52	124.66	0
11/21/2018 10:40	173.49	180.63	178.67	0	196.95	182.07	190.2	0.01
11/21/2018 10:41	283.11	272.23	269.77	0	279.93	271.21	269.54	0.08
11/21/2018 10:42	284.01	277.02	269.98	0	280.51	275.53	269.92	0.08

CYLINDER GAS AUDIT
WORK SHEET

11/21/2018 10:43	238.5	228.35	214.82	0	218.18	219.26	209.11	0
11/21/2018 10:44	132.24	139.28	125	0	130.82	136.19	124.72	0
11/21/2018 10:45	131.25	134.51	124.63	0	130.17	132.33	124.25	0
11/21/2018 10:46	162.85	168.03	160.59	0	176.02	176.13	170.19	0.01
11/21/2018 10:47	282.67	273.33	269.76	0	280.58	272.37	269.93	0.08
11/21/2018 10:48	285.9	280.46	272.02	0	282.74	278.08	271.9	0.08
11/21/2018 10:49	284.56	277.97	267.6	0.91	276.44	272.75	263.84	1.13
11/21/2018 10:50	94.86	86.71	48	8.83	76.42	79.66	43.36	8.71

Client: **DESERT VIEW POWER**
Location: **Mecca**
Date: 11/21/2018

Unit No: **Boiler 1&2**
Data By: **Dave Wonderly**

Instrument	NOx ppm Low Range		SO2 ppm Low Range		O2 %		CO ppm Low Range	
Range	100		50		25		100	
Gas Specification	Point 1	Point 2	Point 1	Point 2	Point 1	Point 2	Point 1	Point 2
Min	20	50	20	50	4	8	20	50
Max	30	60	30	60	6	12	30	60
Units	% FS	% FS	% FS	% FS	% O2	% O3	% FS	% FS
Gas Requirement	ppm NOx	ppm NOx	ppm SO2	ppm SO2	% O2	% O2	ppm CO	ppm CO
Min	**20**	**50**	**10**	**25**	**4**	**8**	**20**	**50**
Max	**30**	**60**	**15**	**30**	**6**	**12**	**30**	**60**
Gas Used	24.7	55.5	12.5	27.1	5.04	9.51	25	55
% of Range	25%	56%	25%	54%	20%	38%	25%	55%
Status	OK	OK	OK	OK	OK	OK	OK	OK
Cylinder No.	CC499373	CC31709	CC499373	CC31709	CC121213	SGAL2039	CC499373	CC31709

Instrument	NOx ppm High Range		SO2 ppm High Range		CO ppm High Range	
Range	500		500		500	
Gas Specification	Point 1	Point 2	Point 1	Point 2	Point 1	Point 2
Min	20	50	20	50	20	50
Max	30	60	30	60	30	60
Units	% FS	% FS	% FS	% FS	% FS	% FS
Gas Requirement	ppm NOx	ppm NOx	ppm SO2	ppm SO2	ppm CO	ppm CO
Min	**100**	**250**	**100**	**250**	**100**	**250**
Max	**150**	**300**	**150**	**300**	**150**	**300**
Gas Used	128.5	282	125	277	123.3	274
% of Range	26%	56%	25%	55%	25%	55%
Status	OK	OK	OK	OK	OK	OK
Cylinder No.	CC74949	CC169801	CC74949	CC169801	CC74949	CC169801

PRAXAIR

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Tel: (323) 585-2154 Fax:(714) 542-6689
PGVPID: F22018

DocNumber: 000123753

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Montrose Air Quality Services, LLC
1631 E. St. Andrew Pl.
Santa Ana, CA 92705

Praxair Order Number: 70579347
Customer P. O. Number:
Customer Reference Number:

Fill Date: 4/27/2018
Part Number: EV NICDOXE53-AS
Lot Number: 70086811702
Cylinder Style & Outlet: AS CGA 580
Cylinder Pressure & Volume: 2000 psig 140 cu. ft

O_2 5.04%
CO_2 10.05%
CC121213
5-1-26
F22018

Certified Concentration:

Expiration Date:		5/1/2026	NIST Traceable
Cylinder Number:		CC121213	Analytical Uncertainty:
10.05	%	CARBON DIOXIDE	± 0.3 %
5.04	%	OXYGEN	± 0.3 %
	Balance	NITROGEN	

Certification Information: Certification Date: 5/1/2018 Term: 96 Months Expiration Date: 5/1/2026

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1: Do Not Use this Standard if Pressure is less than 100 PSIG.

CO2 responses have been corrected for O2 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: 10 %
Certified Concentration: 10.05 %
Instrument Used: Horiba VIA-510 S/N 20C194WK
Analytical Method: NDIR
Last Multipoint Calibration: 4/23/2018

First Analysis Data: Date: 5/1/2018

Z:	0	R:	14.01	C:	10.06	Conc:	10.06
R:	14.01	Z:	0	C:	10.05	Conc:	10.05
Z:	0	C:	10.04	R:	14.01	Conc:	10.04

UOM: % Mean Test Assay: 10.05 %

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC179324
Ref. Std. Conc.: 14.01%
Ref. Std. Traceable to SRM #: 1675b
SRM Sample #: 6-F-51
SRM Cylinder #: CAL014538

Second Analysis Data: Date:

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: % Mean Test Assay: 0 %

2. Component: OXYGEN

Requested Concentration: 5 %
Certified Concentration: 5.04 %
Instrument Used: PARA 1 OXYMAT 5E
Analytical Method: PARAMAGNETIC
Last Multipoint Calibration: 4/2/2018

First Analysis Data: Date: 5/1/2018

Z:	0	R:	5.02	C:	5.04	Conc:	5.04
R:	5.02	Z:	0	C:	5.04	Conc:	5.04
Z:	0	C:	5.04	R:	5.02	Conc:	5.04

UOM: % Mean Test Assay: 5.04 %

Reference Standard Type: GMIS
Ref. Std. Cylinder #: SA7781
Ref. Std. Conc.: 5.02%
Ref. Std. Traceable to SRM #: 2658a
SRM Sample #: 72-D-28
SRM Cylinder #: CAL016862

Second Analysis Data: Date:

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: % Mean Test Assay: 0 %

Analyzed by: Danielle Burns

Certified by: Jose Vasquez

RW 6-18-18

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, 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 Praxair Distribution, Inc. arising out of the use of the information contained herein exceed the fee established for providing such information.

PRAXAIR

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Los Angeles, CA 90058
Tel: (323) 585-2154 Fax:(714) 542-6689
PGVPID: F22017

DocNumber: 000118505

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Montrose Air Quality Services, LLC
1631 E. St. Andrew Pl.
Santa Ana, CA 92705

Praxair Order Number: 70443442
Customer P. O. Number:
Customer Reference Number:

Fill Date: 12/18/2017
Part Number: NI CD19O5E-AS
Lot Number: 70086735208
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure & Volume: 2000 psig 140 cu. ft

- O_2 - 9.51 %
- CO_2 - 19.30 %
- Exp - 12-27-25
- SGAL2039
- F22017

Certified Concentration:

Expiration Date:		12/27/2025	NIST Traceable
Cylinder Number:		SGAL2039	Analytical Uncertainty:
19.30	%	CARBON DIOXIDE	± 0.4 %
9.51	%	OXYGEN	± 0.4 %
	Balance	NITROGEN	

Certification Information: *Certification Date:* 12/27/2017 *Term:* 96 Months *Expiration Date:* 12/27/2025

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. Do Not Use this Standard if Pressure is less than 100 PSIG.

CO2 responses have been corrected for O2 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: 19.30 %
Instrument Used: Horiba VIA-510 S/N 20C194WK
Analytical Method: NDIR
Last Multipoint Calibration: 12/19/2017

Reference Standard Type: GMIS
Ref. Std. Cylinder # : CC167324
Ref. Std. Conc: 19.92%
Ref. Std. Traceable to SRM # : RGM#CC28
SRM Sample # : N/A
SRM Cylinder # : RGM#CC28033

First Analysis Data:						Date:	12/27/2017
Z:	0	R:	19.92	C:	19	Conc:	19
R:	19.92	Z:	0	C:	19.91	Conc:	19.91
Z:	0	C:	18.99	R:	19.92	Conc:	18.99
UOM:	%			Mean Test Assay:			19.3 %

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

2. Component: OXYGEN

Requested Concentration: 9.5 %
Certified Concentration: 9.51 %
Instrument Used: PARA 1 OXYMAT 5E
Analytical Method: PARAMAGNETIC
Last Multipoint Calibration: 12/20/2017

Reference Standard Type: NTRM
Ref. Std. Cylinder # : DT0010402
Ref. Std. Conc: 9.88%
Ref. Std. Traceable to SRM # : 170701
SRM Sample # : 17070115
SRM Cylinder # :

First Analysis Data:						Date:	12/27/2017
Z:	0	R:	9.88	C:	9.52	Conc:	9.52
R:	9.88	Z:	0	C:	9.51	Conc:	9.51
Z:	0	C:	9.51	R:	9.88	Conc:	9.51
UOM:	%			Mean Test Assay:			9.513 %

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

Analyzed by: Danielle Burns

Certified by: Jose Vasquez

AL 3-30-18

Information contained herein has been prepared at your request by qualified experts within Praxair Distribution, 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 Praxair Distribution, Inc., arising out of the use of the information contained herein exceed the fee established for providing such information.

PRAXAIR

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PGVPID: F22018

DocNumber: 000120028

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Montrose Air Quality Services, LLC
1631 E. St. Andrew Pl.
Santa Ana, CA 92705

Praxair Order Number: 70480156
Customer P. O. Number:
Customer Reference Number:

Fill Date: 1/29/2018
Part Number: NI CO25MNS11EAS
Lot Number: 70086802906
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu. ft

CO-25.0
NO-24.7
SO_2-12.5
CC499373
Exp. 2/9/21
F22018

Certified Concentration:

Expiration Date:		2/9/2021	NIST Traceable
Cylinder Number:		CC499373	Analytical Uncertainty:
25.0	ppm	CARBON MONOXIDE	± 0.8 %
24.7	ppm	NITRIC OXIDE	± 0.7 %
12.5	ppm	SULFUR DIOXIDE	± 1.7 %
	Balance	NITROGEN	

NOx = 24.9 ppm

NOx for Reference Only

Certifcation Information: *Certification Date:* 2/9/2018 *Term:* 36 Months *Expiration Date:* 2/9/2021

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. 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: CARBON MONOXIDE

Requested Concentration: 25 ppm
Certified Concentration: 25.0 ppm
Instrument Used: Horiba VIA-510 S/N 576876015
Analytical Method: NDIR
Last Multipoint Calibration: 1/15/2018

Reference Standard Type: GMIS
Ref. Std. Cylinder #: ALM 035595
Ref. Std. Conc.: 25.3 ppm
Ref. Std. Traceable to SRM #: 2635a
SRM Sample #: 58-E-34
SRM Cylinder #: FF10666

First Analysis Data: Date: 2/2/2018

Z:	0	R:	25.2	C:	24.9	Conc:	24.933
R:	25.3	Z:	0	C:	25	Conc:	25.033
Z:	0	C:	25	R:	25.3	Conc:	25.033

UOM: ppm Mean Test Assay: 25 ppm

Second Analysis Data: Date:

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: ppm Mean Test Assay: 0 ppm

2. Component: NITRIC OXIDE

Requested Concentration: 25 ppm
Certified Concentration: 24.7 ppm
Instrument Used: Thermo Electron 42i-LS S/N 1030645077
Analytical Method: Chemiluminescence
Last Multipoint Calibration: 1/12/2018

Reference Standard Type: SRM
Ref. Std. Cylinder #: CC2852
Ref. Std. Conc.: 51.00 ppm
Ref. Std. Traceable to SRM #: 1683b
SRM Sample #: 45-V-42
SRM Cylinder #: CAL017897

First Analysis Data: Date: 2/2/2018

Z:	0	R:	51	C:	24.7	Conc:	24.7
R:	51	Z:	0	C:	24.8	Conc:	24.8
Z:	0	C:	24.8	R:	51	Conc:	24.8

UOM: ppm Mean Test Assay: 24.767 ppm

Second Analysis Data: Date: 2/9/2018

Z:	0	R:	51	C:	24.6	Conc:	24.648
R:	50.8	Z:	0	C:	24.5	Conc:	24.548
Z:	0	C:	24.5	R:	50.9	Conc:	24.548

UOM: ppm Mean Test Assay: 24.582 ppm

3. Component: SULFUR DIOXIDE

Requested Concentration: 12 ppm
Certified Concentration: 12.5 ppm
Instrument Used: Ametek 921CE S/N AW-921-S321
Analytical Method: Ultraviolet Absorption
Last Multipoint Calibration: 1/16/2018

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC423833
Ref. Std. Conc.: 10.21 ppm
Ref. Std. Traceable to SRM #: PRM#C1194
SRM Sample #: C1194310
SRM Cylinder #: D506172

First Analysis Data: Date: 2/2/2018

Z:	0	R:	99.8	C:	122.3	Conc:	12.375
R:	101.6	Z:	0	C:	123.1	Conc:	12.456
Z:	0	C:	122.7	R:	101.3	Conc:	12.416

UOM: ppm Mean Test Assay: 12.416 ppm

Second Analysis Data: Date: 2/9/2018

Z:	0	R:	101.5	C:	124.3	Conc:	12.512
R:	101.6	Z:	0	C:	124.2	Conc:	12.502
Z:	0	C:	124.9	R:	101.2	Conc:	12.572

UOM: ppm Mean Test Assay: 12.528 ppm

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JP 2-25-18

PRAXAIR

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PGVPID: F22018

DocNumber: 000120028

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Analyzed by: Henry Koung

Certified by: Amalia Real

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PRAXAIR

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Tel: (323) 585-2154 Fax:(714) 542-6689
PGVPID: F22018

DocNumber: 000120030

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Montrose Air Quality Services, LLC
1631 E. St. Andrew Pl.
Santa Ana, CA 92705

Praxair Order Number: 70480156
Customer P. O. Number:
Customer Reference Number:

Fill Date: 1/25/2018
Part Number: NI CO55MNS10EAS
Lot Number: 70086802503
Cylinder Style & Outlet: AS CGA 660
Cylinder Pressure & Volume: 2000 psig 140 cu ft

CO- 55.0
NO- 55.5
SO_2- 27.1
CC31709
Exp. 2/7/22
F22018

Certified Concentration:

Expiration Date:		2/7/2022	NIST Traceable
Cylinder Number:		CC31709	Analytical Uncertainty:
55.0	ppm	CARBON MONOXIDE	± 0.6 %
55.5	ppm	NITRIC OXIDE	± 0.7 %
27.1	ppm	SULFUR DIOXIDE	± 1 %
	Balance	NITROGEN	

NOx = 55.6 ppm — NOx for Reference Only

Certifcation Information: *Certification Date:* 2/7/2018 *Term:* 48 Months *Expiration Date:* 2/7/2022

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1. 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: CARBON MONOXIDE

Requested Concentration: 55 ppm
Certified Concentration: 55.0 ppm
Instrument Used: Horiba VIA-510 S/N 576876015
Analytical Method: NDIR
Last Multipoint Calibration: 1/15/2018

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC186877
Ref. Std. Conc: 50.3 ppm
Ref. Std. Traceable to SRM #: 1678c
SRM Sample #: 04-I-41
SRM Cylinder #: FF18402

First Analysis Data: Date: 1/31/2018

Z:	0	R:	50.2	C:	55	Conc:	55
R:	50.4	Z:	0	C:	55.1	Conc:	55.1
Z:	0	C:	55	R:	50.3	Conc:	55

UOM: ppm — Mean Test Assay: 55.033 ppm

Second Analysis Data: Date:

Z:	0	R:	0	C:	0	Conc:	0
R:	0	Z:	0	C:	0	Conc:	0
Z:	0	C:	0	R:	0	Conc:	0

UOM: ppm — Mean Test Assay: 0 ppm

2. Component: NITRIC OXIDE

Requested Concentration: 55 ppm
Certified Concentration: 55.5 ppm
Instrument Used: Thermo Electron 42i-LS S/N 1030645077
Analytical Method: Chemiluminescence
Last Multipoint Calibration: 1/12/2018

Reference Standard Type: SRM
Ref. Std. Cylinder #: CC2852
Ref. Std. Conc: 51.00 ppm
Ref. Std. Traceable to SRM #: 1683b
SRM Sample #: 45-V-42
SRM Cylinder #: CAL017897

First Analysis Data: Date: 1/31/2018

Z:	0	R:	51	C:	55.4	Conc:	55.4
R:	51	Z:	0	C:	55.5	Conc:	55.5
Z:	0	C:	55.5	R:	51	Conc:	55.5

UOM: ppm — Mean Test Assay: 55.467 ppm

Second Analysis Data: Date: 2/7/2018

Z:	0	R:	51	C:	55.5	Conc:	55.573
R:	50.9	Z:	0	C:	55.4	Conc:	55.473
Z:	0	C:	55.4	R:	50.9	Conc:	55.473

UOM: ppm — Mean Test Assay: 55.506 ppm

3. Component: SULFUR DIOXIDE

Requested Concentration: 27 ppm
Certified Concentration: 27.1 ppm
Instrument Used: Ametek 921CE S/N AW-921-S321
Analytical Method: Ultraviolet Absorption
Last Multipoint Calibration: 1/16/2018

Reference Standard Type: NTRM
Ref. Std. Cylinder #: CC72598
Ref. Std. Conc: 48.58 ppm
Ref. Std. Traceable to SRM #: NTRM12070
SRM Sample #: JOB NO 16055
SRM Cylinder #: N/A

First Analysis Data: Date: 1/31/2018

Z:	0	R:	48.6	C:	27.1	Conc:	27.052
R:	48.7	Z:	0	C:	27.3	Conc:	27.251
Z:	0	C:	27.2	R:	48.7	Conc:	27.152

UOM: ppm — Mean Test Assay: 27.152 ppm

Second Analysis Data: Date: 2/7/2018

Z:	0	R:	48.9	C:	27.2	Conc:	27.04
R:	48.8	Z:	0	C:	27.2	Conc:	27.04
Z:	0	C:	27.2	R:	48.9	Conc:	27.04

UOM: ppm — Mean Test Assay: 27.04 ppm

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JD 2-25-18

PRAXAIR

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PGVPID: F22018

DocNumber: 000120030

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Analyzed by: Henry Koung

Certified by: Amalia Real

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PRAXAIR

DocNumber: 000119814

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5700 South Alameda Street
Los Angeles, CA 90058
Tel:(323)585-2154 Fax:(714)542-6689
PGVP ID: F22018

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Montrose Air Quality Services, LLC
1631 E. St. Andrew Pl.
Santa Ana, CA 92705

Praxair Order Number: 70478952
Customer PO Number:
Customer Reference Number:

Fill Date: 1/25/2018
Part Number: NI CO125NS4E-AS
Lot Number: 70086802507
Cylinder Style and Outlet: AS CGA 660
Cylinder Pressure and Volume: 2000 psig 140 cu. ft.

CO-123.3 ppm
NOX-128.5 ppm
SO2-125.0 ppm
CC74949
EXP-2-5-26
F22018

Certified Concentration:

Expiration Date: 02/05/2026			NIST Traceable Expanded Uncertainty:
Cylinder Number: CC74949			
123.3	ppm	CARBON MONOXIDE	± 0.4 %
128.5	ppm	NITRIC OXIDE	± 0.7 %
125	ppm	SULFUR DIOXIDE	± 1.0 %
	Balance	NITROGEN	

NOx ppm = 128.5 ppn NOX for Reference Only

Certification Information: *Certification Date :* 2/5/2018 *Term :* 96 Months *Expiration Date :* 02/05/2026

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
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: CARBON MONOXIDE

Requested Concentration: 125 ppm
Certified Concentration: 123.3 ppm
Instrument Used: HORIBA, VIA-510 576 876 015
Analytical Method: NDIR
Last Multipoint Calibration: 01/02/2018

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC243560
Ref. Std. Conc: 102.2 ppm
Ref. Std. traceable to SRM #: 1679c
SRM Sample #: 3-I-45
SRM Cylinder #: FF28593

First Analysis Data:						Date: 01/29/2015	
Z:	0	R:	102.2	C:	123.4	Conc:	123.3
R:	102.3	Z:	0	C:	123.5	Conc:	123.4
Z:	0	C:	123.5	R:	102.3	Conc:	123.3
UOM:	ppm				Mean Test Assay:	123.3	ppm

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

2 . Component: NITRIC OXIDE

Requested Concentration: 125 ppm
Certified Concentration: 128.5 ppm
Instrument Used: Thermo Electron 42i S/N 072602432C
Analytical Method: Chemiluminescence
Last Multipoint Calibration: 01/29/2018

Reference Standard Type: NTRM
Ref. Std. Cylinder #: CC338497
Ref. Std. Conc: 100.4 ppm
Ref. Std. traceable to SRM #: 1684b
SRM Sample #: 44-T-83
SRM Cylinder # FF9258

First Analysis Data:						Date: 01/29/2018	
Z:	0	R:	100.4	C:	128.4	Conc:	128.4
R:	100.4	Z:	0	C:	128.3	Conc:	128.3
Z:	0	C:	128.3	R:	100.4	Conc:	128.1
UOM:	ppm				Mean Test Assay:	128.3	ppm

Second Analysis Data:						Date: 02/05/2018	
Z:	0	R:	100.4	C:	128.9	Conc:	128.9
R:	100.3	Z:	0	C:	128.7	Conc:	128.7
Z:	0	C:	128.7	R:	100.3	Conc:	128.7
UOM:	ppm				Mean Test Assay:	128.8	ppm

3 . Component: SULFUR DIOXIDE

Requested Concentration: 125 ppm
Certified Concentration: 125 ppm
Instrument Used: HORIBA, VIA-510, 5203551011
Analytical Method: NDIR
Last Multipoint Calibration: 01/27/2018

Reference Standard Type: NTRM
Ref. Std. Cylinder #: SA15531
Ref. Std. Conc: 95.17 ppm
Ref. Std. traceable to SRM #: 120702
SRM Sample #: 12070204
SRM Cylinder #:

First Analysis Data:						Date: 01/29/2018	
Z:	0	R:	95.2	C:	125.6	Conc:	125.4
R:	95.3	Z:	0	C:	125.4	Conc:	125.2
Z:	0	C:	125.4	R:	95.3	Conc:	125.1
UOM:	ppm				Mean Test Assay:	125.3	ppm

Second Analysis Data:						Date: 02/05/2018	
Z:	0	R:	95.2	C:	124.7	Conc:	124.7
R:	95.1	Z:	0	C:	124.6	Conc:	124.6
Z:	0	C:	124.6	R:	95.1	Conc:	124.7
UOM:	ppm				Mean Test Assay:	124.7	ppm

Analyzed by: Leeanna Rodriguez

Certified by: Quinn Hailes

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AC 2-13-18

PRAXAIR

DocNumber: 000119815

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PGVP ID: F22018

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

MONTROSE

Montrose Air Quality Services, LLC
1631 E. St. Andrew Pl.
Santa Ana, CA 92705

Praxair Order Number: 70478952
Customer PO Number:
Customer Reference Number:

Fill Date 1/25/2018
Part Number: NI CO275NS1E-AS
Lot Number: 70086802508
Cylinder Style and Outlet AS CGA 660
Cylinder Pressure and Volume 2000 psig 140 cu. ft.

CO-274 ppm
NOx-282 ppm
SO2-277 ppm
CC169801
EXP-2-5-26

Certified Concentration:

Expiration Date:	02/05/2026	NIST Traceable Expanded Uncertainty:
Cylinder Number:	CC169801	
274 ppm	CARBON MONOXIDE	± 0.7 %
282 ppm	NITRIC OXIDE	± 0.3 %
277 ppm	SULFUR DIOXIDE	± 0.6 %
Balance	NITROGEN	

NOx ppm = 282 ppm NOX for Reference Only

Certification Information: *Certification Date:* 2/5/2018 *Term:* 96 Months *Expiration Date:* 02/05/2026

This cylinder was certified according to the 2012 EPA Traceability Protocol, Document #EPA-600/R-12/531, using Procedure G1.
Do Not Use this Standard if Pressure is less than 100 PSIG.

F22018

Analytical Data:

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

1. Component: CARBON MONOXIDE

Requested Concentration: 275 ppm
Certified Concentration: 274 ppm
Instrument Used: HORIBA, VIA-510 576 876 015
Analytical Method: NDIR
Last Multipoint Calibration: 01/02/2018

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC243385
Ref. Std. Conc: 248.5 ppm
Ref. Std. traceable to SRM #: 2636a
SRM Sample #: 57-E-28
SRM Cylinder #: FF23380

First Analysis Data:						Date: 01/29/2015	
Z:	0	R:	248.5	C:	275	Conc:	275
R:	248.4	Z:	0	C:	274	Conc:	274
Z:	0	C:	274	R:	248.4	Conc:	274
UOM:	ppm				Mean Test Assay:		274 ppm

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

2. Component: NITRIC OXIDE

Requested Concentration: 275 ppm
Certified Concentration: 282 ppm
Instrument Used: Thermo Electron 42i S/N 072602432C
Analytical Method: Chemiluminescence
Last Multipoint Calibration: 01/29/2018

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC2744
Ref. Std. Conc: 253.2 ppm
Ref. Std. traceable to SRM #: 1685b
SRM Sample #: 43-M-28
SRM Cylinder #: FF20734

First Analysis Data:						Date: 01/29/2018	
Z:	0	R:	253	C:	283	Conc:	283
R:	253	Z:	0	C:	284	Conc:	284
Z:	0	C:	284	R:	253	Conc:	281
UOM:	ppm				Mean Test Assay:		283 ppm

Second Analysis Data:						Date: 02/05/2018	
Z:	0	R:	253	C:	281	Conc:	280
R:	254	Z:	0	C:	282	Conc:	281
Z:	0	C:	282	R:	254	Conc:	280
UOM:	ppm				Mean Test Assay:		281 ppm

3. Component: SULFUR DIOXIDE

Requested Concentration: 275 ppm
Certified Concentration: 277 ppm
Instrument Used: HORIBA, VIA-510, 5203551011
Analytical Method: NDIR
Last Multipoint Calibration: 01/27/2018

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC121190
Ref. Std. Conc: 495.4 ppm
Ref. Std. traceable to SRM #: 1661a
SRM Sample #: 94-I-18
SRM Cylinder #: FF22304

First Analysis Data:						Date: 01/29/2018	
Z:	0	R:	495.4	C:	276.6	Conc:	277
R:	495.4	Z:	0	C:	276.6	Conc:	277
Z:	0	C:	276.6	R:	495.4	Conc:	276
UOM:	ppm				Mean Test Assay:		276 ppm

Second Analysis Data:						Date: 02/05/2018	
Z:	0	R:	495.4	C:	276.2	Conc:	276
R:	495.2	Z:	0	C:	276.6	Conc:	277
Z:	0	C:	276.6	R:	495.2	Conc:	277
UOM:	ppm				Mean Test Assay:		277 ppm

Analyzed by: Leeanna Rodriguez — Leeanna Rodriguez

Certified by: Quinn Hailes

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Making Our Planet More Productive

AC 2-13-18

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If you have any questions, please contact one of the following individuals by email or phone.

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