MONTROSE
AIR QUALITY SERVICES

November 12, 2019

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

Subject: **Quarterly CGA Units 1 and 2**
Report Number: W002AS-541589-RT-560

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 8, 2019 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, O_2, CO, and SO_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 8, 2019

Parameter	Accuracy, % of Gas Value	Accuracy Acceptance Criteria	Difference From Gas Value, ppm	Difference Acceptance Criteria	Status*
SO_2 Low Range (mid span)	-4.5%	15%	-1.21	5 ppm	Pass
SO_2 Low range (low span)	-4.2%	15%	-0.52	5 ppm	Pass
NO_x Low range (mid span)	-0.3%	15%	-0.14	5 ppm	Pass
NO_x Low range(low span)	1.0%	15%	0.25	5 ppm	Pass
CO Low Range (mid span)	-1.0%	15%	-0.52	5 ppm	Pass
CO Low Range (low span)	-1.5%	15%	-0.36	5 ppm	Pass
O_2 (mid span)	-0.8%	15%	N/A	N/A	Pass
O_2 (low span)	0.4%	15%	N/A	N/A	Pass
SO_2 High Range (mid span)	-0.5%	15%	-1.41	5 ppm	Pass
SO_2 High Range (low span)	3.1%	15%	3.83	5 ppm	Pass
NO_x High Range (mid span)	1.2%	15%	3.36	5 ppm	Pass
NO_x High Range (low span)	1.9%	15%	2.38	5 ppm	Pass
CO High Range (mid span)	0.8%	15%	2.29	5 ppm	Pass
CO High Range (low span)	4.3%	15%	5.29	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 8, 2019

Parameter	Accuracy, % of Gas Value	Accuracy Acceptance Criteria	Difference From Gas Value, ppm	Difference Acceptance Criteria	Status*
SO_2 Low Range (mid span)	-10.7%	15%	-2.90	5 ppm	Pass
SO_2 Low range (low span)	-21.1%	15%	-2.63	5 ppm	Pass
NO_x Low range (mid span)	2.8%	15%	1.53	5 ppm	Pass
NO_x Low range(low span)	8.0%	15%	1.98	5 ppm	Pass
CO Low Range (mid span)	0.2%	15%	0.13	5 ppm	Pass
CO Low Range (low span)	3.7%	15%	0.94	5 ppm	Pass
O_2 (mid span)	-0.6%	15%	NA	NA	Pass
O_2 (low span)	1.4%	15%	NA	NA	Pass
SO_2 High Range (mid span)	-1.8%	15%	-5.07	5 ppm	Pass
SO_2 High Range (low span)	0.6%	15%	0.71	5 ppm	Pass
NO_x High Range (mid span)	0.8%	15%	2.21	5 ppm	Pass
NO_x High Range (low span)	2.9%	15%	3.73	5 ppm	Pass
CO High Range (mid span)	1.5%	15%	4.09	5 ppm	Pass
CO High Range (low span)	5.3%	15%	6.51	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: 11/8/2019

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	4.544	9.48
Replicate								
1	24.74	55.35	24.51	54.42	11.03	25.73	4.55	9.41
2	25.08	55.40	24.76	54.41	12.42	25.91	4.57	9.41
3	25.02	55.32	24.64	54.60	12.49	26.04	4.57	9.40
Average	24.95	55.36	24.64	54.48	11.98	25.89	4.56	9.41
Difference, ppm	0.25	-0.14	-0.36	-0.52	-0.52	-1.21	n/a	n/a
Accuracy	1.0%	-0.3%	-1.5%	-1.0%	-4.2%	-4.5%	0.4%	-0.8%

Client: Desert View Power
Location: Mecca
Date: 11/8/2019

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	129.93	285.34	127.82	276.05	122.48	274.63
2	131.22	285.14	128.85	276.03	131.47	273.34
3	131.49	285.61	129.11	276.80	132.53	278.80
Average	130.88	285.36	128.59	276.29	128.83	275.59
Difference, ppm	2.38	3.36	5.29	2.29	3.83	-1.41
Accuracy	1.9%	1.2%	4.3%	0.8%	3.1%	-0.5%

Client: Desert View Power
Location: Mecca
Date: 11/8/2019

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	4.544	9.48
Replicate								
1	26.62	56.75	25.92	55.08	9.26	24.07	4.62	9.45
2	26.58	56.96	25.95	55.14	10.12	24.15	4.60	9.42
3	26.85	57.38	25.94	55.16	10.22	24.38	4.60	9.40
Average	26.68	57.03	25.94	55.13	9.87	24.20	4.61	9.42
Difference, ppm	1.98	1.53	0.94	0.13	-2.63	-2.90	n/a	n/a
Accuracy	8.0%	2.8%	3.7%	0.2%	-21.1%	-10.7%	1.4%	-0.6%

Client: Desert View Power
Location: Mecca
Date: 11/8/2019

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	131.48	284.37	129.15	278.01	119.92	270.98
2	132.69	283.52	130.06	277.59	128.22	270.11
3	132.53	284.74	130.21	278.66	128.98	274.70
Average	132.23	284.21	129.81	278.09	125.71	271.93
Difference, ppm	3.73	2.21	6.51	4.09	0.71	-5.07
Accuracy	2.9%	0.8%	5.3%	1.5%	0.6%	-1.8%

Client: **Desert View Power**
Location: **Mecca**
Date: 11/8/2019

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	4.544	9.48	25	55
% of Range	25%	56%	25%	54%	18%	38%	25%	55%
Status	OK	OK	OK	OK	OK	OK	OK	OK
Cylinder No.	CC499373	CC31709	CC499373	CC31709	SG9134119	CC84508	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

Airgas
an Air Liquide company

Airgas Specialty Gases
Airgas USA, LLC
11711 S. Alameda Street
Los Angeles, CA 90059
Airgas.com

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Part Number:	E03NI86E15A62Q5	Reference Number:	48-401274632-1
Cylinder Number:	SG9134119	Cylinder Volume:	149.7 CF
Laboratory:	124 - Los Angeles (SAP) - CA	Cylinder Pressure:	2015 PSIG
PGVP Number:	B32018	Valve Outlet:	580
Gas Code:	CO2,O2,BALN	Certification Date:	Aug 10, 2018

Expiration Date: Aug 10, 2026

Certification performed in accordance with "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards (May 2012)" document EPA 600/R-12/531, using the assay procedures listed. Analytical Methodology does not require correction for analytical interference. This cylinder has a total analytical uncertainty as stated below with a confidence level of 95%. There are no significant impurities which affect the use of this calibration mixture. All concentrations are on a volume/volume basis unless otherwise noted.

Do Not Use This Cylinder below 100 psig, i.e. 0.7 megapascals.

ANALYTICAL RESULTS

Component	Requested Concentration	Actual Concentration	Protocol Method	Total Relative Uncertainty	Assay Dates
OXYGEN	4.500 %	4.544 %	G1	+/- 0.5% NIST Traceable	08/10/2018
CARBON DIOXIDE	9.000 %	8.988 %	G1	+/- 0.7% NIST Traceable	08/10/2018
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	11060718	CC338458	4.861 % OXYGEN/NITROGEN	+/- 0.4%	Dec 13, 2022
NTRM	13060432	CC413737	7.489 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	Jan 14, 2019

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
SIEMENS 6E CO2	NDIR	Jul 23, 2018
SIEMENS OXYMAT 6	PARAMAGNETIC	Jul 27, 2018

Triad Data Available Upon Request

O_2 4.544
CO_2 8.988
SG 9134119
Exp: 8-10-26
B32018
1400psi.

Approved for Release

PRAXAIR
Making our planet more productive

DocNumber: 254755

Praxair Distribution, Inc.
5700 S. Alameda Street
Los Angeles CA 90058
Tel: 323-585-2154
Fax: 714-542-6689
PGVP ID: F22019

ITE OF ANALYSIS / EPA PROTOCOL GAS

ntrose Air Quality Services, LLC
1 E. St. Andrew Pl.
ta Ana, CA 92705

O2 9.48
CO2 19.02
CC 84508
EX 7/9/27
F22019

Certificate Issuance Date: 07/10/2019
Praxair Order Number: 71014012
Part Number: NI CD19O5E-AS
Customer PO Number: 78998037

Fill Date: 06/27/2019
Lot Number: 70086917804
Cylinder Style & Outlet: AS CGA 590
Cylinder Pressure and Volume: 2000 psig 140 ft3

Certified Concentration

Expiration Date:	07/09/2027	NIST Traceable
Cylinder Number:	CC84508	Expanded Uncertainty
19.02 %	Carbon dioxide	± 0.5 %
9.48 %	Oxygen	± 0.4 %
Balance	Nitrogen	

ProSpec EZ Cert

Certification Information:

Certification Date: 07/09/2019 *Term:* 96 Months *Expiration Date:* 07/09/2027

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 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: 19.02 %
Instrument Used: Horiba VIA-510 S/N 20C194WK
Analytical Method: NDIR
Last Multipoint Calibration: 06/11/2019

Reference Standard: Type / Cylinder #: GMIS / CC149981
Concentration / Uncertainty: 19.98 % ±0.279%
Expiration Date: 06/07/2026
Traceable to: SRM # / Sample # / Cylinder #: RGM#CC28033 / N/A / RGM#CC28033
SRM Concentration / Uncertainty: 19.67% / ±0.04%
SRM Expiration Date: 07/15/2021

First Analysis Data:				Date	07/09/2019
Z: 0	R: 19.06	C: 19.02	Conc: 19.02		
R: 19.98	Z: 0	C: 19.02	Conc: 19.02		
Z: 0	C: 19.02	R: 19.98	Conc: 19.02		
UOM: %		Mean Test Assay:	19.02 %		

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:	%		

2. ***Component:*** **Oxygen**

Requested Concentration: 9.5 %
Certified Concentration: 9.48 %
Instrument Used: OXYMAT 5E
Analytical Method: Paramagnetic
Last Multipoint Calibration: 06/12/2019

Reference Standard: Type / Cylinder #: NTRM / DT0010384
Concentration / Uncertainty: 9.875 % ±0.4%
Expiration Date: 11/18/2022
Traceable to: SRM # / Sample # / Cylinder #: NTRM / 170701 / NTRM DT0010384
SRM Concentration / Uncertainty: 9.875% / ±0.040%
SRM Expiration Date: 11/18/2022

First Analysis Data:				Date	07/09/2019
Z: 0	R: 9.88	C: 9.48	Conc: 9.48		
R: 9.88	Z: 0	C: 9.49	Conc: 9.49		
Z: 0	C: 9.48	R: 9.88	Conc: 9.48		
UOM: %		Mean Test Assay:	9.48 %		

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:	%		

Analyzed By **Brandon Aguilar** Brandon A (HL)

Certified By **Jose Vasquez**

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.

HL 7/19/19

PRAXAIR

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PGVPID: F22018

DocNumber: 000120028

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

MONTROSE

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

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.

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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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
SO2- 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

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.

JD 2/28/18

PRAXAIR

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

DocNumber: 000120030

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Analyzed by: Henry Koung

Certified by: Amalia Real

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 con tained herein exceed the fee established for providing such information

PRAXAIR

DocNumber: 000119814

Praxair
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

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 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.

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

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

DocNumber: 000119815

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 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

Certified by: Quinn Hailes

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

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