DOCKETED

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Document Title:	Resubmission of Data Responses Set 1, Updated Response to Data Requests 4-6, Part 1
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Organization:	CH2M HILL
Submitter Role:	Applicant Consultant
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Huntington Beach Energy Project

(12-AFC-02C)

Resubmission of Data Responses, Set 1

(Updated Response to Data Requests 4 – 6 [Air Quality])

Submitted to

California Energy Commission

Prepared by

AES Southland Development, LLC

With Assistance from

CH2MHILL®

2485 Natomas Park Drive
Suite 600
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March 4, 2016

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Introduction

Attached are AES Southland Development, LLC's (AES or the Project Owner) updated responses to the California Energy Commission (CEC) Data Request, Set 1 (Air Quality, numbers 4 through 6) regarding the Huntington Beach Energy Project (HBEP) (12-AFC-02C) Petition to Amend (PTA).

The responses are presented in the same order as the CEC presented them and are keyed to the Data Request numbers (4 through 6). New or revised tables or attachments are numbered in reference to the Data Request number. For example, the first table used in response to Data Request 5 would be numbered Table DR5-1. The first attachment used in response to Data Request 4 would be Attachment DR4-1, and so on. Tables or attachments from previous Data Request submissions that have been revised have "1R" following the original number, indicating revision 1.

Air Quality (4–6)

CUMULATIVE AIR QUALITY IMPACTS

BACKGROUND

The PTA (Section 5.1.6 and Appendix 5.1F) describes the methodology for the cumulative effects analysis but does not include the analysis because a project list had not been provided by the District at the time the PTA was prepared. The cumulative analysis should include all reasonably foreseeable projects within a 6-mile radius, i.e. the projects that have received construction permits but are not yet operational, and those that are in the permitting process or can be expected to be in permitting in the near future. A complete cumulative impacts analysis should identify all existing and planned stationary sources that affect the baseline conditions and consider them in the modeling effort.

DATA REQUESTS

A4. Please provide a copy of the District's correspondence regarding existing and planned cumulative sources located within six miles of the project site.

Response: Please refer to Attachment A4-1R for copies of recent correspondence with the South Coast Air Quality Management District (SCAQMD), which was not previously docketed, regarding existing and planned cumulative sources located within six miles of the project site.

A5. Please provide the list of sources to be considered in the cumulative air quality impact analysis.

Response: On June 16, 2015, the Project Owner requested an updated list of projects that are within a 6-mile radius of the Amended HBEP and are either currently in the permitting process, undergoing California Environmental Quality Act (CEQA) review, or recently received a Permit to Construct from the SCAQMD. Per correspondence provided in response to Data Request A4, SCAQMD provided the requested information on January 15, 2016. On January 21, 2016, following review of this information, the Project Owner requested copies of permit applications and source test reports for approximately 30 sources located amongst eight facilities. Per correspondence provided in response to Data Request A4, SCAQMD noted that this secondary request could take a minimum of 30 days to complete. As of February 22, 2016, data for only three of the eight facilities had been provided by SCAQMD.

Attachment A5-1 presents the Project Owner's current evaluation of sources considered for inclusion in the revised cumulative air quality impact analysis. This evaluation steps through various refinements to the information identified in Attachment A4-1R, as follows:

- Table 1 identifies which facilities are within six miles of the project site that emit greater than 5 tons per year (tpy) of a single criteria pollutant.
- Tables 2 through 10 summarize sources, by facility, that may contribute to cumulative impacts. Some of the data necessary for evaluating these sources are still outstanding; however, the Project Owner will remove sources from the assessment if the source applications were for administrative changes only (i.e., no increase in air emissions expected), the permitted sources did not result in an increase in emissions, or the source's emissions were already captured in the ambient background.

Because a complete dataset has not yet been provided, the Project Owner proposes to use the list of sources previously submitted to the CEC on January 17, 2013, which is included as Attachment A5-2 and described in more detail below. If final input is received from SCAQMD prior to issuance of the Final Staff Assessment, the Project Owner may revise the cumulative air quality impacts assessment.

The emission and exhaust parameters proposed for use in estimating cumulative impacts are presented in Attachment A5-2. Because specific locations for each cumulative emission source were not available, all sources at a facility will be modeled as though they are at the center of the facility. Also, because emission rates for particulate matter with aerodynamic diameter less than or equal to 2.5 microns ($PM_{2.5}$) were not available for the cumulative sources, it was conservatively assumed that $PM_{2.5}$ emission rates were equal to those of particulate matter with aerodynamic diameter less than or equal to 10 microns (PM_{10}). The source parameters were based on the following data sources.

Amended Huntington Beach Energy Project:

- Source parameters and emission rates were based on the operating scenarios, which include start-up and shutdown emissions, resulting in the maximum predicted impacts presented in Table 4-3 of the *Revised HBEP Air Permit Application Documentation* (Permit Application), which was submitted to SCAQMD on December 21, 2015.
- Consistent with the emission rates presented in Table 3-13 of the Permit Application, a maximum fuel sulfur content of 0.75 grain per 100 dry standard cubic feet will be used to model the auxiliary boiler's sulfur dioxide (SO_2) emissions. This conservative approach may contribute to slightly higher impacts than those presented in Table 4-3 of the Permit Application, which were based on an average fuel sulfur content of 0.25 grain per 100 dry standard cubic feet.

Orange County Sanitation District (Facility ID 17301):

- Source parameters and emission rates were based on permitted source data received from SCAQMD on October 24, 2012, and November 2, 2012, with additional data provided by SCAQMD on November 29, 2012.
- The annual emissions from the three digester gas internal combustion engines (ICEs) were based on the daily maximum permitted allowances for the engines.
- The short-term oxides of nitrogen (NO_X) emissions from the permitted boiler were modeled at 15 parts per million (ppm), based on the permit limit beginning in 2015.

Orange County Sanitation District (Facility ID 29110):

- Source parameters and emission rates were based on permitted source data received from SCAQMD on October 25, 2012, with additional data provided by SCAQMD on November 29, 2012.
- The permit applications for the five emergency diesel ICEs (permitted February 27, 2008) are for a change in conditions only (increasing annual operating hours for each engine from 30 to 50 hours). Therefore, there was no increase in short-term emissions from these sources and the annual emissions modeled reflect only the increase in total emissions.
- As stack parameters were unavailable for the three emergency diesel ICEs (permitted April 12, 2006), it was assumed these were equivalent to the five emergency diesel ICEs previously described.

Arlon Graphics, LLC (Facility ID 167066):

- Source parameters and emission rates were based on permitted source data received from SCAQMD on October 24, 2012, with additional data provided by SCAQMD on December 5, 2012.
- Permit application numbers 532302 and 534234 were for new construction of a recuperative thermal oxidizer (RTO) and reductions to the permit limits of an existing RTO. The result of these permits is a net increase of emissions of carbon monoxide (CO), SO_2, PM_{10}, and $PM_{2.5}$, and a net decrease in emissions of NO_X. Therefore, only the increase in short-term and annual emissions were modeled using the stack parameters of the new RTO.

A6. Please provide the cumulative modeling and impact analysis, including amended HBEP and other identified existing and planned projects within 6 miles of the amended HBEP site.

Response: A cumulative air quality impact analysis will be prepared using the methodology presented in the *Dispersion Modeling Protocol for the Amended Huntington Beach Energy Project* and associated modeling

protocol addendum (see Appendix 5.1F of the HBEP PTA). The results of this analysis will be provided within 30 days of receipt of CEC comments on the source list provided in response to Data Request A5.

Attachment A4-1R
Correspondence with SCAQMD Regarding Cumulative Sources

CH2MHILL® TELEPHONE CONVERSATION RECORD

Call To: Lisa Ramos, SCAQMD

Phone No.: 906.396.3211 **Date:** 17 December 2015

Call From: Elyse Engel, CH2M **Time:** 11:20 PM PST

Message Taken By: N/A

Subject: PRR Update

Project No.: 653771.01.03.04 and 491232.AL.DI

Summary: Elyse called Lisa Ramos of the SCAQMD's Public Records Request Office to request an update on the status of the following two Public Records Requests:

- #81979, which was originally submitted on June 16, 2015 (HBEP Project)
- #83631, which was originally submitted on October 23, 2015 (AEC Project)

Lisa indicated that she had no new updates on either request. She also clarified that Public Records Requests soliciting "lists" of information take 90+ days to complete because SCAQMD personnel have to obtain information from 2 different departments. She did, however, state that she would try to follow-up with the departments to nail down a timeline for delivery of the request information.

Engel, Elyse/SJC

From: Engel, Elyse/SJC
Sent: Thursday, December 17, 2015 11:24 AM
To: 'Lisa Ramos'
Cc: OB PR Support NA Docs
Subject: RE: Public Records Request #81979

Hi Lisa,

Per our discussion, please follow-up with your SCAQMD contacts to check-on the status of PRR #81979. At the very least, I'd appreciate an anticipated timeline for when I may receive the requested information.

Thanks,
Elyse

From: Lisa Ramos [mailto:lramos1@aqmd.gov]
Sent: Friday, November 20, 2015 1:54 PM
To: Engel, Elyse/SJC <Elyse.Engel@ch2m.com>
Cc: OB PR Support NA Docs <ob_pr_support_na_docs@aqmd.gov>
Subject: Public Records Request #81979

Elyse Engel

I did not hear back from our contacts for the status. I forwarded your email again & I will respond as soon as I know something.

Lisa Ramos
South Coast A.Q.M.D
Public Records Unit
909.396.3211

From: Elyse.Engel@ch2m.com [mailto:Elyse.Engel@ch2m.com]
Sent: Tuesday, November 17, 2015 4:16 PM
To: Lisa Ramos
Cc: OB PR Support Docs
Subject: RE: SCAQMD PRR #81979

Hi Lisa,

It's been nearly 3 weeks since we last touched based on PRR #81979. Since that time, I still have not received any feedback / information from the SCAQMD. Can you please advise when I may expect to begin receiving information from the various contacts?

Thanks,
Elyse

From: Lisa Ramos [mailto:lramos1@aqmd.gov]
Sent: Wednesday, October 28, 2015 9:34 AM

To: Engel, Elyse/SJC <Elyse.Engel@ch2m.com>
Cc: OB PR Support Docs <ob_pr_support_docs@aqmd.gov>
Subject: RE: SCAQMD PRR #81979

Elyse,
This request is still in the processing phase. I forwarded your email to the appropriate contacts.

Lisa Ramos
South Coast A.Q.M.D
Public Records Unit
909.396.3211

From: Elyse.Engel@ch2m.com [mailto:Elyse.Engel@ch2m.com]
Sent: Thursday, October 22, 2015 10:04 AM
To: Lisa Ramos
Cc: OB PR Support NA Docs
Subject: SCAQMD PRR #81979

Hi Lisa,

I wanted to follow-up on the status of Public Records Request #81979. This request was initially filed by Beth Smoker on June 18, 2015. On July 10, 2015, Beth requested that you switch the e-mail address associated with this request from hers (beth.smoker@ch2m.com) to mine (elyse.engel@ch2m.com). I have not received any notifications from the SCAQMD regarding this request since July 10th. Therefore, to my knowledge, this request is still outstanding and we are still waiting on receipt of the requested information. Please let me know when we may expect to receive the requested information.

Thanks,
Elyse

Elyse Engel, EIT
Associate Engineer
D 1 669 800 1012
elyse.engel@ch2m.com

CH2M
1737 North First Street, Suite 300
San Jose, California 95112
www.ch2m.com

Engel, Elyse/SJC

From: Dunavent, Andrew/SDO
Sent: Thursday, January 07, 2016 3:39 PM
To: 'Lisa Ramos'
Cc: Engel, Elyse/SJC
Subject: Public Records Request #83631 and #81979

Hi Lisa,

As per my voicemail, I am contacting you with regards to the status of two public records requests that have been submitted, #83631 and #81979. I would appreciate an estimated timeline or date in which I may receive the requested information.

Thanks,

Andrew Dunavent, EIT
Environmental Engineer
CH2M
402 W. Broadway, Suite 1450
San Diego, CA 92101
Office Phone (619) 272-7223
Cell Phone (707) 372-7810

TELEPHONE CONVERSATION RECORD

CALL TO:	Lisa Ramos, Public Records Request, South Coast Air Quality Management District		
PHONE NO.:	(909) 396-3211	DATE:	1-8-2016
CALL FROM:	Andrew Dunavent	TIME:	3:30 PM
MESSAGE TAKEN BY:	Andrew Dunavent		
SUBJECT:	Public Records Request #83631 & #81979		
PROJECT NO.:	653771.01.02.02		

NOTES:

I spoke with Lisa Ramos in the afternoon to discuss the status of two public records request (PRR) that have been submitted. Lisa essentially states that the PRRs have been passed onto the engineering department and she has not heard anything from them. She instructed me to send an email regarding my inquiry (attached) to her that she can forward to the engineering department. I asked if she had an idea of time frame and she was unsure of status or an idea of a completion date for either PRR.

TELEPHONE CONVERSATION RECORD

CALL TO:	Lisa Ramos, Public Records Request, South Coast Air Quality Management District		
PHONE NO.:	(909) 396-3211	DATE:	1-12-2016
CALL FROM:	Andrew Dunavent	TIME:	11:15 AM
MESSAGE TAKEN BY:	Andrew Dunavent		
SUBJECT:	Public Records Request #83631 & #81979		
PROJECT NO.:	653771.01.02.02		

NOTES:

I spoke with Lisa Ramos to follow up my inquiry about the status of the two indicated Public Records Requests (PRR) 83631 and 81979. Lisa proceeded to inform me that when looked up on her end, they both reflected that they have been sent to the engineering department and she could not gather a status as to completion time for either PRR. She had yet to receive a response from the engineering department regarding our previous contact and my follow up email.

TELEPHONE CONVERSATION RECORD

CALL TO:	Lisa Ramos, Public Records Request, South Coast Air Quality Management District		
PHONE NO.:	(909) 396-3211	DATE:	1-12-2016
CALL FROM:	Andrew Dunavent	TIME:	1:15 PM
MESSAGE TAKEN BY:	Andrew Dunavent		
SUBJECT:	Public Records Request #83631 & #81979		
PROJECT NO.:	653771.01.02.02		

NOTES:

I spoke with Lisa Ramos to inquire if there was another way to submit the public records requests for an expedited response. Lisa informed me there was no possible way to resubmit them or expedite them. She then placed me on hold as she called the engineering department to begin to get some evidence of estimated completion. Lisa returned news that the secretary was in meetings and unable to talk. She then asked me to call back before COB today (01-12-2016) to see if she had received a follow up call, and if not, she would forward me directly to the engineering department.

Engel, Elyse/SJC

From: Lisa Ramos <lramos1@aqmd.gov>
Sent: Friday, January 15, 2016 8:48 AM
To: Engel, Elyse/SJC
Cc: OB PR Support NA Docs
Subject: Public Records Request #81979,
Attachments: - PR - PR Supporting Docs - 1/15/2016 - 81979 - - - COMPLETION LETTER - BETH SMOKER.pdf; - PR - PR Review Docs - 1/15/2016 - 81979 - - LIST OF SS OF NEW/MODIFIED EMI - - - BETH SMOKER.xlsx

Elyse Engel

I have attached the requested information for this request.

Lisa Ramos
South Coast A.Q.M.D
Public Records Unit
909.396.3211

Information Management
Public Records Unit

Direct Dial (909) 396-3700
Fax:(909) 396-3330

COMPLETION LETTER

January 15, 2016

BETH SMOKER
CH2M HILL
2485 NATOMAS PARK DR.# SUITE 600
SACRAMENTO, CA 95833

Ref.: CONTROL NO. 81979
Received 6/17/2015

Re: LIST OF STATIONARY SOURCES OF NEW OR MODIFIED EMISSIONS WITHIN 6 MI. RADIUS OF AMENDED HUNTINGTON BEACH ENERGY PROJECT ZIP CODE LIST ATTACHED, RECEIVING P/O'S OR ENTERING PERMITTING PROCESS SINCE MAY 7 2013.

After a thorough search of this agency's records, the following records were found:
LIST OF STATIONARY SOURCES OF NEW OR MODIFIED EMISSIONS WITHIN 6 MI. RADIUS OF AMENDED HUNTINGTON BEACH ENERGY PROJECT ZIP CODE LIST ATTACHED, RECEIVING P/O'S OR ENTERING PERMITTING PROCESS SINCE MAY 7 2013.

YOUR REQUESTED RECORDS WERE PROVIDED ELECTRONICALLY ON 01/15/2016

If you have any questions, please do not hesitate to contact me, Tuesday through Friday, **8:00 a.m**. to **4:30 p.m.**

Sincerely,

LISA RAMOS x3211
For Colleen Paine
Public Records Coordinator

:lr

Fac ID	Name	Fac Status	SIC Code	SIC Description	Appl Nbr	Appl Statu	Appl Date	Appl Type	UTM East	UTM North	Address	City	State	Zip	Zip Four	Area Code	Phone	Extension	First	Last	CO	SOX	PM10
3361	BEHR PROCESS CORP	A	2851	PAINTS AND ALLIED PRODUCTS	555006	31	8/6/2013 0:00	50	417.614	3729.466	1603 W AL	SANTA AN/	CA	92704	7258	714	5457101	2304	MICHAEL	BUTLER	0	0	61
3361	BEHR PROCESS CORP	A	2851	PAINTS AND ALLIED PRODUCTS	555007	51	8/6/2013 0:00	10	417.614	3729.466	1603 W AL	SANTA AN/	CA	92704	7258	714	5457101	2304	MICHAEL	BUTLER	0	0	61
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		539696	51	6/20/2012 0:00	74	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		545253	32	11/30/2012 0:00	25	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		545254	31	11/30/2012 0:00	63	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		545255	31	11/30/2012 0:00	63	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		545257	31	11/30/2012 0:00	63	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		545258	31	11/30/2012 0:00	63	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		545259	31	11/30/2012 0:00	63	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		545260	31	11/30/2012 0:00	63	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		545261	31	11/30/2012 0:00	63	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		545262	31	11/30/2012 0:00	63	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		545683	51	12/13/2012 0:00	25	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		545684	20	12/13/2012 0:00	50	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		545685	20	12/13/2012 0:00	50	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		545686	20	12/13/2012 0:00	50	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		545687	20	12/13/2012 0:00	10	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		545688	20	12/13/2012 0:00	10	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		545689	20	12/13/2012 0:00	10	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		549412	32	4/4/2013 0:00	25	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		560100	31	1/24/2014 0:00	50	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		560255	230	1/29/2014 0:00	76	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		560957	32	2/25/2014 0:00	25	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		574427	20	4/21/2015 0:00	10	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3496	FAIRVIEW DEVELOPMENTAL CENTER	A	8060		574428	20	4/21/2015 0:00	10	414.758	3725.004	2501 HARE	COSTA ME	CA	92626	6143	714	9575072		DEPAK	BHANDARI	201	0	20
3550	PACIFIC LIFE INSURANCE	A	6321	ACCIDENT AND HEALTH INSURANCE	542896	32	9/13/2012 0:00	25	418.589	3720.003	700 NEWP	NEWPORT	CA	92660	6397	949	2193360		DENNIS	COOPER	16	0	2
3550	PACIFIC LIFE INSURANCE	A	6321	ACCIDENT AND HEALTH INSURANCE	544068	32	10/18/2012 0:00	25	418.589	3720.003	700 NEWP	NEWPORT	CA	92660	6397	949	2193360		DENNIS	COOPER	16	0	2
3550	PACIFIC LIFE INSURANCE	A	6321	ACCIDENT AND HEALTH INSURANCE	575336	32	5/20/2015 0:00	25	418.589	3720.003	700 NEWP	NEWPORT	CA	92660	6397	949	2193360		DENNIS	COOPER	16	0	2
4591	ORANGE COUNTY WATER DISTRICT	A	4941	WATER SUPPLY	559040	32	12/12/2013 0:00	23	412.37	3728.13	18700 WAI	FOUNTAIN	CA	92708		714	9635661		STEVEN	CONKLIN	0	0	2
4591	ORANGE COUNTY WATER DISTRICT	A	4941	WATER SUPPLY	559041	31	12/12/2013 0:00	22	412.37	3728.13	18700 WAI	FOUNTAIN	CA	92708		714	9635661		STEVEN	CONKLIN	0	0	2
4591	ORANGE COUNTY WATER DISTRICT	A	4941	WATER SUPPLY	559089	32	12/12/2013 0:00	25	412.37	3728.13	18700 WAI	FOUNTAIN	CA	92708		714	9635661		STEVEN	CONKLIN	0	0	2
4591	ORANGE COUNTY WATER DISTRICT	A	4941	WATER SUPPLY	559091	32	12/12/2013 0:00	25	412.37	3728.13	18700 WAI	FOUNTAIN	CA	92708		714	9635661		STEVEN	CONKLIN	0	0	2
5076	PIONEER CIRCUITS INC	A	3672	PRINTED CIRCUIT BOARDS	540064	31	6/29/2012 0:00	10	414.444	3729.887	3000-10 S	SANTA AN/	CA	92704		714	6413132		YOUNG	LUU	0	0	9
5076	PIONEER CIRCUITS INC	A	3672	PRINTED CIRCUIT BOARDS	558596	230	12/3/2013 0:00	50	414.444	3729.887	3000-10 S	SANTA AN/	CA	92704		714	6413132		YOUNG	LUU	0	0	9
5076	PIONEER CIRCUITS INC	A	3672	PRINTED CIRCUIT BOARDS	559038	31	12/13/2013 0:00	50	414.444	3729.887	3000-10 S	SANTA AN/	CA	92704		714	6413132		YOUNG	LUU	0	0	9
5076	PIONEER CIRCUITS INC	A	3672	PRINTED CIRCUIT BOARDS	559039	31	12/13/2013 0:00	50	414.444	3729.887	3000-10 S	SANTA AN/	CA	92704		714	6413132		YOUNG	LUU	0	0	9
5076	PIONEER CIRCUITS INC	A	3672	PRINTED CIRCUIT BOARDS	564165	31	5/15/2014 0:00	10	414.444	3729.887	3000-10 S	SANTA AN/	CA	92704		714	6413132		YOUNG	LUU	0	0	9
5076	PIONEER CIRCUITS INC	A	3672	PRINTED CIRCUIT BOARDS	566816	31	7/18/2014 0:00	10	414.444	3729.887	3000-10 S	SANTA AN/	CA	92704		714	6413132		YOUNG	LUU	0	0	9
5076	PIONEER CIRCUITS INC	A	3672	PRINTED CIRCUIT BOARDS	569888	31	11/19/2014 0:00	50	414.444	3729.887	3000-10 S	SANTA AN/	CA	92704		714	6413132		YOUNG	LUU	0	0	9
5076	PIONEER CIRCUITS INC	A	3672	PRINTED CIRCUIT BOARDS	571231	31	12/26/2014 0:00	60	414.444	3729.887	3000-10 S	SANTA AN/	CA	92704		714	6413132		YOUNG	LUU	0	0	9
8309	CAMBRO MANUFACTURING CO	A	3086	PLASTICS FOAM PRODUCTS	557730	32	10/30/2013 0:00	74	407.74	3727.26	7601 CLAY	HUNTINGT	CA	92648		714	2304226		KENT D	ADAMS	23	0	2
8309	CAMBRO MANUFACTURING CO	A	3086	PLASTICS FOAM PRODUCTS	568751	21	10/2/2014 0:00	50	407.74	3727.26	7601 CLAY	HUNTINGT	CA	92648		714	2304226		KENT D	ADAMS	23	0	2
8309	CAMBRO MANUFACTURING CO	A	3086	PLASTICS FOAM PRODUCTS	568754	21	10/2/2014 0:00	50	407.74	3727.26	7601 CLAY	HUNTINGT	CA	92648		714	2304226		KENT D	ADAMS	23	0	2
8309	CAMBRO MANUFACTURING CO	A	3086	PLASTICS FOAM PRODUCTS	568755	21	10/2/2014 0:00	63	407.74	3727.26	7601 CLAY	HUNTINGT	CA	92648		714	2304226		KENT D	ADAMS	23	0	2
8309	CAMBRO MANUFACTURING CO	A	3086	PLASTICS FOAM PRODUCTS	568756	21	10/2/2014 0:00	55	407.74	3727.26	7601 CLAY	HUNTINGT	CA	92648		714	2304226		KENT D	ADAMS	23	0	2
8408	OMNI METAL FINISHING INC	A	3471	PLATING AND POLISHING	560168	31	1/29/2014 0:00	10	414.12	3730.415	11665 COL	FOUNTAIN	CA	92708	4279	714	9799414		RAMIRO	SALAZAR	0	0	5.48
8408	OMNI METAL FINISHING INC	A	3471	PLATING AND POLISHING	560683	52	2/13/2014 0:00	10	414.12	3730.415	11665 COL	FOUNTAIN	CA	92708	4279	714	9799414		RAMIRO	SALAZAR	0	0	5.48
8408	OMNI METAL FINISHING INC	A	3471	PLATING AND POLISHING	560684	52	2/13/2014 0:00	10	414.12	3730.415	11665 COL	FOUNTAIN	CA	92708	4279	714	9799414		RAMIRO	SALAZAR	0	0	5.48
8408	OMNI METAL FINISHING INC	A	3471	PLATING AND POLISHING	570651	31	12/2/2014 0:00	50	414.12	3730.415	11665 COL	FOUNTAIN	CA	92708	4279	714	9799414		RAMIRO	SALAZAR	0	0	5.48
8408	OMNI METAL FINISHING INC	A	3471	PLATING AND POLISHING	570652	31	12/2/2014 0:00	50	414.12	3730.415	11665 COL	FOUNTAIN	CA	92708	4279	714	9799414		RAMIRO	SALAZAR	0	0	5.48
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	540999	26	7/31/2012 0:00	10	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	541001	26	7/31/2012 0:00	10	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	541003	26	7/31/2012 0:00	10	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	542327	26	8/24/2012 0:00	10	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	554447	26	7/24/2013 0:00	10	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	563456	26	5/6/2014 0:00	50	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	565729	210	6/13/2014 0:00	10	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	565730	210	6/13/2014 0:00	10	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	565731	210	6/13/2014 0:00	10	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	565732	210	6/13/2014 0:00	10	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	565733	210	6/13/2014 0:00	10	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	565734	210	6/13/2014 0:00	10	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	565735	20	6/13/2014 0:00	10	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	565736	20	6/13/2014 0:00	50	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	565737	20	6/13/2014 0:00	50	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	565738	20	6/13/2014 0:00	50	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	565739	20	6/13/2014 0:00	50	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	565740	20	6/13/2014 0:00	50	413.73	3721.32	817-853 PI	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22

Fac ID	Name	Fac Status	SIC Code	SIC Description	Appl Nbr	Appl Statu	Appl Date	Appl Type	UTM East	UTM North	Address	City	State	Zip	Zip Four	Area Code	Phone	Extension	First	Last	CO	SOX	PM10
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	565741	20	6/13/2014 0:00	50	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	565742	20	6/13/2014 0:00	50	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	565743	25	6/13/2014 0:00	10	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	574971	26	5/8/2015 0:00	10	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577223	26	8/4/2015 0:00	50	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577224	26	8/4/2015 0:00	50	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577225	26	8/4/2015 0:00	50	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577226	26	8/4/2015 0:00	50	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577227	26	8/4/2015 0:00	50	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577228	26	8/4/2015 0:00	10	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577229	26	8/4/2015 0:00	10	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577230	26	8/4/2015 0:00	50	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577231	26	8/4/2015 0:00	10	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577542	26	8/18/2015 0:00	10	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577543	26	8/18/2015 0:00	10	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577544	26	8/18/2015 0:00	50	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577545	26	8/18/2015 0:00	50	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577546	26	8/18/2015 0:00	50	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577547	26	8/18/2015 0:00	50	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577548	26	8/18/2015 0:00	50	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577550	25	8/18/2015 0:00	10	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577551	25	8/18/2015 0:00	10	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577552	25	8/18/2015 0:00	50	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577555	26	8/18/2015 0:00	10	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577556	25	8/18/2015 0:00	10	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
11818	HIXSON METAL FINISHING	A	3479	METAL COATING/ALLIED SERVICES	577851	26	8/28/2015 0:00	60	413.73	3721.32	817-853 PF	NEWPORT	CA	92663	2809	714	6454800		THOMAS	WALLIENG	5	0	-22
14523	PACIFIC BELL, AT&T CALIFORNIA, DBA	A	4813	TELEPHONE COMMS, EXC RADIO	563210	32	3/27/2014 0:00	25	417.94	3729.61	3220 S BRI	SANTA AN	CA	92704		925	8236161		ANDREW	TAYLOR	3	0	0
16025	SOUNDCAST CO., DIVISION OF GRISWOLD IND	A	3599	INDUSTRIAL MACHINERY, NEC	554500	31	7/23/2013 0:00	10	413.6	3722.2	1731-41 PL	COSTA ME	CA	92627		714	7224848		BOB	ROSET	3	0	9
16025	SOUNDCAST CO., DIVISION OF GRISWOLD IND	A	3599	INDUSTRIAL MACHINERY, NEC	554501	230	7/23/2013 0:00	10	413.6	3722.2	1731-41 PL	COSTA ME	CA	92627		714	7224848		BOB	ROSET	3	0	9
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	543660	31	10/9/2012 0:00	22	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	546423	31	1/9/2013 0:00	63	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	546424	31	1/9/2013 0:00	63	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	549415	32	4/4/2013 0:00	25	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	549455	32	4/2/2013 0:00	25	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	555254	32	8/13/2013 0:00	80	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	555255	31	8/13/2013 0:00	63	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	555256	31	8/13/2013 0:00	63	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	556014	31	9/10/2013 0:00	10	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	556015	31	9/10/2013 0:00	10	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	556016	32	9/10/2013 0:00	80	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	560055	31	1/23/2014 0:00	22	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	562574	32	3/21/2014 0:00	25	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	566564	31	7/15/2014 0:00	10	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	566565	32	7/15/2014 0:00	80	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	568568	31	9/24/2014 0:00	60	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	568569	32	9/24/2014 0:00	80	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	568733	32	9/30/2014 0:00	16	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	568885	26	10/7/2014 0:00	10	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	568886	32	10/7/2014 0:00	80	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	573050	31	3/6/2015 0:00	63	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	573051	31	3/6/2015 0:00	63	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	573444	32	3/19/2015 0:00	25	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	573447	32	3/19/2015 0:00	25	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	577238	230	8/4/2015 0:00	10	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
16660	THE BOEING COMPANY	A	3769	SPACE VEHICLE EQUIPMENT, NEC	577239	230	8/4/2015 0:00	80	403.98	3734.11	5301 BOLS	HUNTINGT	CA	92647	2099	714	8963178		NOLAN	LEAL	69	0	20.4
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	546359	32	1/8/2013 0:00	56	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	546360	25	1/8/2013 0:00	50	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	546361	25	1/8/2013 0:00	50	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	546362	25	1/8/2013 0:00	50	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	554225	32	7/16/2013 0:00	74	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	557227	25	10/11/2013 0:00	10	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	557228	25	10/11/2013 0:00	10	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559061	230	12/18/2013 0:00	10	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559062	230	12/18/2013 0:00	10	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559063	230	12/18/2013 0:00	10	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559225	25	12/20/2013 0:00	10	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559226	25	12/20/2013 0:00	10	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559227	25	12/20/2013 0:00	10	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	563042	32	4/3/2014 0:00	25	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119

Fac ID	Name	Fac Status	SIC Code	SIC Description	Appl Nbr	Appl Statu	Appl Date	Appl Type	UTM East	UTM North	Address	City	State	Zip	Zip Four	Area Code	Phone	Extension	First	Last	CO	SOX	PM10
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	565933	32	6/25/2014 0:00	55	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	565934	25	6/25/2014 0:00	50	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	568969	31	10/9/2014 0:00	30	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	568970	32	10/9/2014 0:00	56	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	571379	32	1/13/2015 0:00	17	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
17301	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	573478	32	3/20/2015 0:00	25	413.24	3728.49	10844 ELLI	FOUNTAIN	CA	92708	7018	714	5937082		TERRY	AHN	1235	60	119
19097	SKILL-CRAFT BODY SHOP INC	A	7532	TOP & BODY REPAIR/PAINT SHOPS	564254	31	5/16/2014 0:00	63	407.327	3730.809	17072 GOT	HUNTINGT	CA	92647	5457	714	8482311		JIM	HOLLERBA	1	0	0
19097	SKILL-CRAFT BODY SHOP INC	A	7532	TOP & BODY REPAIR/PAINT SHOPS	565010	31	6/4/2014 0:00	63	407.327	3730.809	17072 GOT	HUNTINGT	CA	92647	5457	714	8482311		JIM	HOLLERBA	1	0	0
19353	GOLDEN WEST COLLEGE, COMMUNITY COLLE	A	8222	JUNIOR COLLEGES	567251	31	8/5/2014 0:00	50	406.72	3732.898	15744 GOL	HUNTINGT	CA	92647		714	4384728		ELOY	OAKLEY	28	0	4
20231	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	561605	31	3/11/2014 0:00	50	407.73	3728.75	19001-71 H	HUNTINGT	CA	92648	2211	714	3741512		JAY	KLEINHEIN	62	0	2
20231	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	562829	31	3/27/2014 0:00	63	407.73	3728.75	19001-71 H	HUNTINGT	CA	92648	2211	714	3741512		JAY	KLEINHEIN	62	0	2
20231	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	562831	31	3/27/2014 0:00	63	407.73	3728.75	19001-71 H	HUNTINGT	CA	92648	2211	714	3741512		JAY	KLEINHEIN	62	0	2
20231	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	562833	31	3/27/2014 0:00	63	407.73	3728.75	19001-71 H	HUNTINGT	CA	92648	2211	714	3741512		JAY	KLEINHEIN	62	0	2
20231	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	562836	31	3/27/2014 0:00	63	407.73	3728.75	19001-71 H	HUNTINGT	CA	92648	2211	714	3741512		JAY	KLEINHEIN	62	0	2
20231	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	562838	31	3/27/2014 0:00	63	407.73	3728.75	19001-71 H	HUNTINGT	CA	92648	2211	714	3741512		JAY	KLEINHEIN	62	0	2
20231	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	562839	31	3/27/2014 0:00	63	407.73	3728.75	19001-71 H	HUNTINGT	CA	92648	2211	714	3741512		JAY	KLEINHEIN	62	0	2
20231	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	562840	31	3/27/2014 0:00	63	407.73	3728.75	19001-71 H	HUNTINGT	CA	92648	2211	714	3741512		JAY	KLEINHEIN	62	0	2
21104	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	562841	31	3/27/2014 0:00	63	405.095	3734.853	14561 SPR	HUNTINGT	CA	92647		714	3741512		JAY	KLEINHEIN	66	0	6
21104	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	562843	31	3/27/2014 0:00	63	405.095	3734.853	14561 SPR	HUNTINGT	CA	92647		714	3741512		JAY	KLEINHEIN	66	0	6
21104	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	562844	31	3/27/2014 0:00	63	405.095	3734.853	14561 SPR	HUNTINGT	CA	92647		714	3741512		JAY	KLEINHEIN	66	0	6
21104	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	562845	31	3/27/2014 0:00	63	405.095	3734.853	14561 SPR	HUNTINGT	CA	92647		714	3741512		JAY	KLEINHEIN	66	0	6
21104	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	562847	31	3/27/2014 0:00	63	405.095	3734.853	14561 SPR	HUNTINGT	CA	92647		714	3741512		JAY	KLEINHEIN	66	0	6
21104	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	562848	31	3/27/2014 0:00	63	405.095	3734.853	14561 SPR	HUNTINGT	CA	92647		714	3741512		JAY	KLEINHEIN	66	0	6
23401	HOOD MFG INC	A	3229	PRESSED AND BLOWN GLASS, NEC	564541	32	5/27/2014 0:00	74	419.268	3730.367	2621 S BIR	SANTA AN	CA	92707	3410	714	9797681		DAVE	HARKER	0	0	309.6
24427	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	562851	31	3/27/2014 0:00	63	407.33	3732.13	16221 GOT	HUNTINGT	CA	92648		714	3741512		JAY	KLEINHEIN	17	0	1
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	540707	32	7/18/2012 0:00	55	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	540708	31	7/18/2012 0:00	63	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	540709	31	7/18/2012 0:00	63	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	540710	31	7/18/2012 0:00	63	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	540711	31	7/18/2012 0:00	63	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	540712	31	7/18/2012 0:00	63	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	544002	230	10/18/2012 0:00	76	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	544003	230	10/18/2012 0:00	60	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	544004	230	10/18/2012 0:00	50	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	545002	32	11/27/2012 0:00	55	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	545003	26	11/27/2012 0:00	60	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	545004	26	11/27/2012 0:00	50	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	545005	26	11/27/2012 0:00	50	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	546363	32	1/8/2013 0:00	56	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	546364	25	1/8/2013 0:00	50	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	546365	25	1/8/2013 0:00	50	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	546366	25	1/8/2013 0:00	50	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	546367	25	1/8/2013 0:00	50	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	546368	25	1/8/2013 0:00	50	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	554223	32	7/16/2013 0:00	74	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	556625	32	10/3/2013 0:00	55	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	556626	25	10/3/2013 0:00	50	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	556627	25	10/3/2013 0:00	10	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	557229	25	10/11/2013 0:00	10	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	557230	25	10/11/2013 0:00	10	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559056	230	12/18/2013 0:00	10	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559057	230	12/18/2013 0:00	10	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559058	230	12/18/2013 0:00	10	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559059	230	12/18/2013 0:00	10	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559060	230	12/18/2013 0:00	10	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559228	25	12/20/2013 0:00	10	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559229	25	12/20/2013 0:00	10	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559230	25	12/20/2013 0:00	10	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559231	25	12/20/2013 0:00	10	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559232	25	12/20/2013 0:00	10	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	559331	32	12/24/2013 0:00	17	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	563064	230	4/3/2014 0:00	25	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	563065	230	4/3/2014 0:00	25	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	565929	32	6/25/2014 0:00	55	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	565930	25	6/25/2014 0:00	50	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	570971	21	12/31/2014 0:00	56	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	570972	20	12/31/2014 0:00	10	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96
29110	ORANGE COUNTY SANITATION DISTRICT	A	4952	SEWERAGE SYSTEMS	577621	32	8/19/2015 0:00	17	410.92	3722.36	22212 BRO	HUNTINGT	CA	92646	8457	714	5937082		TERRY	AHN	2922	126	96

Fac ID	Name	Fac Status	SIC Code	SIC Description	Appl Nbr	Appl Statu	Appl Date	Appl Type	UTM East	UTM North	Address	City	State	Zip	Zip Four	Area Code	Phone	Extension	First	Last	CO	SOX	PM10
29986	AUTOMOBILE CLUB OF SO CALIF	A	6411	INSURANCE AGENTS/BROKERS/SVCS	545786	31	12/18/2012 0:00	96	415.85	3728.02	3333 FAIR\	COSTA ME	CA	92626	1698	714	8851551		RICK	FALB	2	0	0
29986	AUTOMOBILE CLUB OF SO CALIF	A	6411	INSURANCE AGENTS/BROKERS/SVCS	548809	32	3/19/2013 0:00	25	415.85	3728.02	3333 FAIR\	COSTA ME	CA	92626	1698	714	8851551		RICK	FALB	2	0	0
33395	HUNTINGTON BEACH CITY	A	9199	GENERAL GOVERNMENT, NEC	565251	32	5/13/2014 0:00	25	407.149	3726.468	2000 MAIN	HUNTINGT	CA	92648	2702	714	5365534		MARK	BOONE	48	16.08	2.4
33837	BODYCOTE THERMAL PROCESSING	A	3398	METAL HEAT TREATING	554574	230	7/26/2013 0:00	50	407.465	3737.313	7474 GARI	WESTMINS	CA	92683	2298	714	8936561		BOB	FARMER	13	0	0
33837	BODYCOTE THERMAL PROCESSING	A	3398	METAL HEAT TREATING	554576	230	7/26/2013 0:00	50	407.465	3737.313	7474 GARI	WESTMINS	CA	92683	2298	714	8936561		BOB	FARMER	13	0	0
33837	BODYCOTE THERMAL PROCESSING	A	3398	METAL HEAT TREATING	554578	230	7/26/2013 0:00	50	407.465	3737.313	7474 GARI	WESTMINS	CA	92683	2298	714	8936561		BOB	FARMER	13	0	0
33837	BODYCOTE THERMAL PROCESSING	A	3398	METAL HEAT TREATING	556268	31	9/24/2013 0:00	63	407.465	3737.313	7474 GARI	WESTMINS	CA	92683	2298	714	8936561		BOB	FARMER	13	0	0
33837	BODYCOTE THERMAL PROCESSING	A	3398	METAL HEAT TREATING	556269	31	9/24/2013 0:00	63	407.465	3737.313	7474 GARI	WESTMINS	CA	92683	2298	714	8936561		BOB	FARMER	13	0	0
33837	BODYCOTE THERMAL PROCESSING	A	3398	METAL HEAT TREATING	556270	31	9/24/2013 0:00	63	407.465	3737.313	7474 GARI	WESTMINS	CA	92683	2298	714	8936561		BOB	FARMER	13	0	0
33837	BODYCOTE THERMAL PROCESSING	A	3398	METAL HEAT TREATING	556836	31	10/8/2013 0:00	63	407.465	3737.313	7474 GARI	WESTMINS	CA	92683	2298	714	8936561		BOB	FARMER	13	0	0
33837	BODYCOTE THERMAL PROCESSING	A	3398	METAL HEAT TREATING	576295	26	6/25/2015 0:00	10	407.465	3737.313	7474 GARI	WESTMINS	CA	92683	2298	714	8936561		BOB	FARMER	13	0	0
35667	VERIZON CALIFORNIA INC	A	4813	TELEPHONE COMMS, EXC RADIO	562886	32	3/25/2014 0:00	25	406.404	3735.696	6802 WEST	WESTMINS	CA	92683	3709	562	6270186		MARTIN	GILMORE	0	0	0
42775	WEST NEWPORT OIL CO	A	1311	CRUDE PETRO AND NATURAL GAS	558565	31	11/27/2013 0:00	22	412.671	3722.006	1080 W 17	COSTA ME	CA	92627	4503	949	6311100		TOM	MCCLOSKE	48	0	7
42775	WEST NEWPORT OIL CO	A	1311	CRUDE PETRO AND NATURAL GAS	565095	31	5/7/2014 0:00	22	412.671	3722.006	1080 W 17	COSTA ME	CA	92627	4503	949	6311100		TOM	MCCLOSKE	48	0	7
47211	B & B ENAMELING INC	A	3479	METAL COATING/ALLIED SERVICES	539676	31	6/20/2012 0:00	63	407.59	3729.887	17591 SAN	HUNTINGT	CA	92647	7722	714	8480044		JAY	BOGERT	19	0	0
52201	VERIZON CALIFORNIA INC	A	4813	TELEPHONE COMMS, EXC RADIO	563044	32	3/25/2014 0:00	25	410.746	3727.442	19111 BUS	HUNTINGT	CA	92646	2434	562	6270186		MARTIN	GILMORE	5	0	0
53733	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	562853	230	3/27/2014 0:00	63	407.85	3732.15	16192 SHE	HUNTINGT	CA	92647	4150	714	3741512		JAY	KLEINHEIN	46	0	0
53733	HUNTINGTON BEACH CITY, WATER DEPT	A	9511	AIR WATER & SOLID WASTE MANAG	564823	31	6/3/2014 0:00	63	407.85	3732.15	16192 SHE	HUNTINGT	CA	92647	4150	714	3741512		JAY	KLEINHEIN	46	0	0
58591	ORANGE COAST COLLEGE, COMMUNITY COLLI	A	8222	JUNIOR COLLEGES	542591	230	9/4/2012 0:00	22	415.85	3725.75	2701 FAIR\	COSTA ME	CA	92626	5563	714	4384728		ELOY	OAKLEY	7.72	2.16	86.4
58591	ORANGE COAST COLLEGE, COMMUNITY COLLI	A	8222	JUNIOR COLLEGES	542592	31	9/4/2012 0:00	22	415.85	3725.75	2701 FAIR\	COSTA ME	CA	92626	5563	714	4384728		ELOY	OAKLEY	7.72	2.16	86.4
58591	ORANGE COAST COLLEGE, COMMUNITY COLLI	A	8222	JUNIOR COLLEGES	542593	32	9/4/2012 0:00	23	415.85	3725.75	2701 FAIR\	COSTA ME	CA	92626	5563	714	4384728		ELOY	OAKLEY	7.72	2.16	86.4
58591	ORANGE COAST COLLEGE, COMMUNITY COLLI	A	8222	JUNIOR COLLEGES	542594	32	9/4/2012 0:00	23	415.85	3725.75	2701 FAIR\	COSTA ME	CA	92626	5563	714	4384728		ELOY	OAKLEY	7.72	2.16	86.4
58591	ORANGE COAST COLLEGE, COMMUNITY COLLI	A	8222	JUNIOR COLLEGES	542595	32	9/4/2012 0:00	23	415.85	3725.75	2701 FAIR\	COSTA ME	CA	92626	5563	714	4384728		ELOY	OAKLEY	7.72	2.16	86.4
58591	ORANGE COAST COLLEGE, COMMUNITY COLLI	A	8222	JUNIOR COLLEGES	546323	32	1/8/2013 0:00	23	415.85	3725.75	2701 FAIR\	COSTA ME	CA	92626	5563	714	4384728		ELOY	OAKLEY	7.72	2.16	86.4
58591	ORANGE COAST COLLEGE, COMMUNITY COLLI	A	8222	JUNIOR COLLEGES	546324	230	1/8/2013 0:00	23	415.85	3725.75	2701 FAIR\	COSTA ME	CA	92626	5563	714	4384728		ELOY	OAKLEY	7.72	2.16	86.4
58591	ORANGE COAST COLLEGE, COMMUNITY COLLI	A	8222	JUNIOR COLLEGES	567249	31	8/5/2014 0:00	50	415.85	3725.75	2701 FAIR\	COSTA ME	CA	92626	5563	714	4384728		ELOY	OAKLEY	7.72	2.16	86.4
58591	ORANGE COAST COLLEGE, COMMUNITY COLLI	A	8222	JUNIOR COLLEGES	568329	230	9/16/2014 0:00	50	415.85	3725.75	2701 FAIR\	COSTA ME	CA	92626	5563	714	4384728		ELOY	OAKLEY	7.72	2.16	86.4
58591	ORANGE COAST COLLEGE, COMMUNITY COLLI	A	8222	JUNIOR COLLEGES	569275	230	10/23/2014 0:00	50	415.85	3725.75	2701 FAIR\	COSTA ME	CA	92626	5563	714	4384728		ELOY	OAKLEY	7.72	2.16	86.4
58591	ORANGE COAST COLLEGE, COMMUNITY COLLI	A	8222	JUNIOR COLLEGES	569575	230	10/29/2014 0:00	50	415.85	3725.75	2701 FAIR\	COSTA ME	CA	92626	5563	714	4384728		ELOY	OAKLEY	7.72	2.16	86.4
58591	ORANGE COAST COLLEGE, COMMUNITY COLLI	A	8222	JUNIOR COLLEGES	569576	31	10/29/2014 0:00	50	415.85	3725.75	2701 FAIR\	COSTA ME	CA	92626	5563	714	4384728		ELOY	OAKLEY	7.72	2.16	86.4
60541	FOUNTAIN VALLEY REGIONAL HOSP,B HANNA	A	8060		547597	32	2/21/2013 0:00	25	413.169	3730.815	17100 EUC	FOUNTAIN	CA	92708	4043	714	9668191		KIRK	BRANTLEY	17	0	2
60541	FOUNTAIN VALLEY REGIONAL HOSP,B HANNA	A	8060		552179	31	6/5/2013 0:00	50	413.169	3730.815	17100 EUC	FOUNTAIN	CA	92708	4043	714	9668191		KIRK	BRANTLEY	17	0	2
60541	FOUNTAIN VALLEY REGIONAL HOSP,B HANNA	A	8060		552180	31	6/5/2013 0:00	50	413.169	3730.815	17100 EUC	FOUNTAIN	CA	92708	4043	714	9668191		KIRK	BRANTLEY	17	0	2
60541	FOUNTAIN VALLEY REGIONAL HOSP,B HANNA	A	8060		573515	31	3/24/2015 0:00	10	413.169	3730.815	17100 EUC	FOUNTAIN	CA	92708	4043	714	9668191		KIRK	BRANTLEY	17	0	2
68159	RADISSON HOTEL NEWPORT BEACH	A	5812	EATING PLACES	539554	32	6/20/2012 0:00	25	419.835	3725.696	4545 MAC/	NEWPORT	CA	92660		949	8330570		DANNY	AKIN	17	0	2
68159	RADISSON HOTEL NEWPORT BEACH	A	5812	EATING PLACES	539555	32	6/20/2012 0:00	23	419.835	3725.696	4545 MAC/	NEWPORT	CA	92660		949	8330570		DANNY	AKIN	17	0	2
68159	RADISSON HOTEL NEWPORT BEACH	A	5812	EATING PLACES	539556	32	6/20/2012 0:00	23	419.835	3725.696	4545 MAC/	NEWPORT	CA	92660		949	8330570		DANNY	AKIN	17	0	2
68159	RADISSON HOTEL NEWPORT BEACH	A	5812	EATING PLACES	539557	32	6/20/2012 0:00	23	419.835	3725.696	4545 MAC/	NEWPORT	CA	92660		949	8330570		DANNY	AKIN	17	0	2
68458	IRVINE OFFICE CO, TOWER 4	A	6512	NONRESIDENTIAL BLDG OPERATORS	542279	32	8/22/2012 0:00	25	418.9	3720.07	660 NEWPI	NEWPORT	CA	92660	6401	949	7291475		BRUCE	SICHLEY	0	0	1
68458	IRVINE OFFICE CO, TOWER 4	A	6512	NONRESIDENTIAL BLDG OPERATORS	568534	32	9/23/2014 0:00	25	418.9	3720.07	660 NEWPI	NEWPORT	CA	92660	6401	949	7291475		BRUCE	SICHLEY	0	0	1
68458	IRVINE OFFICE CO, TOWER 4	A	6512	NONRESIDENTIAL BLDG OPERATORS	579715	230	11/10/2015 0:00	30	418.9	3720.07	660 NEWPI	NEWPORT	CA	92660	6401	949	7291475		BRUCE	SICHLEY	0	0	1
68459	IRVINE OFFICE CO, C/O INSIGNIA ESG.	A	6512	NONRESIDENTIAL BLDG OPERATORS	544880	32	11/14/2012 0:00	25	418.74	3720.07	450-550 NI	NEWPORT	CA	92660	7061	949	7291475		TONY	FURNARI	0	0	0
68459	IRVINE OFFICE CO, C/O INSIGNIA ESG.	A	6512	NONRESIDENTIAL BLDG OPERATORS	544906	230	11/14/2012 0:00	25	418.74	3720.07	450-550 NI	NEWPORT	CA	92660	7061	949	7291475		TONY	FURNARI	0	0	0
68459	IRVINE OFFICE CO, C/O INSIGNIA ESG.	A	6512	NONRESIDENTIAL BLDG OPERATORS	544907	230	11/14/2012 0:00	25	418.74	3720.07	450-550 NI	NEWPORT	CA	92660	7061	949	7291475		TONY	FURNARI	0	0	0
68459	IRVINE OFFICE CO, C/O INSIGNIA ESG.	A	6512	NONRESIDENTIAL BLDG OPERATORS	556267	32	9/17/2013 0:00	25	418.74	3720.07	450-550 NI	NEWPORT	CA	92660	7061	949	7291475		TONY	FURNARI	0	0	0
68459	IRVINE OFFICE CO, C/O INSIGNIA ESG.	A	6512	NONRESIDENTIAL BLDG OPERATORS	556284	32	9/18/2013 0:00	23	418.74	3720.07	450-550 NI	NEWPORT	CA	92660	7061	949	7291475		TONY	FURNARI	0	0	0
68459	IRVINE OFFICE CO, C/O INSIGNIA ESG.	A	6512	NONRESIDENTIAL BLDG OPERATORS	556285	32	9/18/2013 0:00	23	418.74	3720.07	450-550 NI	NEWPORT	CA	92660	7061	949	7291475		TONY	FURNARI	0	0	0
68459	IRVINE OFFICE CO, C/O INSIGNIA ESG.	A	6512	NONRESIDENTIAL BLDG OPERATORS	556288	32	9/18/2013 0:00	23	418.74	3720.07	450-550 NI	NEWPORT	CA	92660	7061	949	7291475		TONY	FURNARI	0	0	0
68459	IRVINE OFFICE CO, C/O INSIGNIA ESG.	A	6512	NONRESIDENTIAL BLDG OPERATORS	556292	32	9/18/2013 0:00	23	418.74	3720.07	450-550 NI	NEWPORT	CA	92660	7061	949	7291475		TONY	FURNARI	0	0	0
68459	IRVINE OFFICE CO, C/O INSIGNIA ESG.	A	6512	NONRESIDENTIAL BLDG OPERATORS	556293	32	9/18/2013 0:00	23	418.74	3720.07	450-550 NI	NEWPORT	CA	92660	7061	949	7291475		TONY	FURNARI	0	0	0
68459	IRVINE OFFICE CO, C/O INSIGNIA ESG.	A	6512	NONRESIDENTIAL BLDG OPERATORS	568705	32	10/1/2014 0:00	25	418.74	3720.07	450-550 NI	NEWPORT	CA	92660	7061	949	7291475		TONY	FURNARI	0	0	0
68459	IRVINE OFFICE CO, C/O INSIGNIA ESG.	A	6512	NONRESIDENTIAL BLDG OPERATORS	568874	32	10/1/2014 0:00	25	418.74	3720.07	450-550 NI	NEWPORT	CA	92660	7061	949	7291475		TONY	FURNARI	0	0	0
68459	IRVINE OFFICE CO, C/O INSIGNIA ESG.	A	6512	NONRESIDENTIAL BLDG OPERATORS	568875	32	10/1/2014 0:00	25	418.74	3720.07	450-550 NI	NEWPORT	CA	92660	7061	949	7291475		TONY	FURNARI	0	0	0
68459	IRVINE OFFICE CO, C/O INSIGNIA ESG.	A	6512	NONRESIDENTIAL BLDG OPERATORS	574800	32	5/5/2015 0:00	23	418.74	3720.07	450-550 NI	NEWPORT	CA	92660	7061	949	7291475		TONY	FURNARI	0	0	0
68459	IRVINE OFFICE CO, C/O INSIGNIA ESG.	A	6512	NONRESIDENTIAL BLDG OPERATORS	574801	32	5/5/2015 0:00	23	418.74	3720.07	450-550 NI	NEWPORT	CA	92660	7061	949	7291475		TONY	FURNARI	0	0	0
71510	ORANGE, COUNTY OF - JOHN WAYNE AIRPOR	A	4581	AIRPORTS/FLYING FIELDS/SVCS	539839	21	6/27/2012 0:00	50	420.36	3727.07	18601 AIRI	SANTA AN/	CA	92707		949	2526269		MARIA	POPE	95	0	13
71510	ORANGE, COUNTY OF - JOHN WAYNE AIRPOR	A	4581	AIRPORTS/FLYING FIELDS/SVCS	543181	32	9/20/2012 0:00	25	420.36	3727.07	18601 AIRI	SANTA AN/	CA	92707		949	2526269		MARIA	POPE	95	0	13
71510	ORANGE, COUNTY OF - JOHN WAYNE AIRPOR	A	4581	AIRPORTS/FLYING FIELDS/SVCS	549127	32	3/28/2013 0:00	25	420.36	3727.07	18601 AIRI	SANTA AN/	CA	92707		949	2526269		MARIA	POPE	95	0	13
71510	ORANGE, COUNTY OF - JOHN WAYNE AIRPOR	A	4581	AIRPORTS/FLYING FIELDS/SVCS	554897	32	7/31/2013 0:00	25	420.36	3727.07	18601 AIRI	SANTA AN/	CA	92707		949	2526269		MARIA	POPE	95	0	13
71510	ORANGE, COUNTY OF - JOHN WAYNE AIRPOR	A	4581	AIRPORTS/FLYING FIELDS/SVCS	567850	31	8/26/2014 0:00	22	420.36	3727.07	18601 AIRI	SANTA AN/	CA	92707		949	2526269		MARIA	POPE	95	0	13
71510	ORANGE, COUNTY OF - JOHN WAYNE AIRPOR	A	4581	AIRPORTS/FLYING FIELDS/SVCS	580185	31	12/3/2015 0:00	22	420.36	3727.07	18601 AIRI	SANTA AN/	CA	92707		949	2526269		MARIA	POPE	95	0	13
80026	FREY ENVIRONMENTAL INC	A	1794	EXCAVATING AND FOUNDATION WORK	547638	32	2/26/2013 0:00	25	0	0	VARIOUS L	NEWPORT	CA	92663		949	7231645		KENT	TUCKER	1	0	0
80026	FREY ENVIRONMENTAL INC	A	1794	EXCAVATING AND FOUNDATION WORK	560715	32	2/13/2014 0:00	25	0	0	VARIOUS L	NEWPORT	CA	92663		949	7231645		KENT	TUCKER	1	0	0
80026	FREY ENVIRONMENTAL INC	A	1794	EXCAVATING AND FOUNDATION WORK	573209	33	3/12/2015 0:00	28	0	0	VARIOUS L	NEWPORT	CA	92663		949	7231645		KENT	TUCKER	1	0	0
80066	LAIRD COATINGS CORPORATION	A	2851	PAINTS AND ALLIED PRODUCTS	570689	32	12/3/2014 0:00	74	404.463	3733.207	15541 CON	HUNTINGT	CA	92649	1601	714	3798888		JENNIFER	MC COY	0	0	5
80246	SEGERSTROM CENTER FOR THE ARTS	A	9999	UNKNOWN	564936	32	4/25/2014 0:00	25	418.42	3727.93	600 TOWN	COSTA ME	CA	92626	1997	714	5562122	280	ROB	MAHLE	5	0	1
81767	BEHR PROCESS CORP	A	2851	PAINTS AND ALLIED PRODUCTS	540321	31	7/10/2012 0:00	50	415.18	3729.71	3400 W GA	SANTA AN/	CA	92704	6421	714	5457101	2304	MICHAEL	BUTLER	0	0	41
81767	BEHR PROCESS CORP	A	2851	PAINTS AND ALLIED PRODUCTS	540324	31	7/10/2012 0:00	50	415.18	3729.71	3400 W GA	SANTA AN/	CA	92704	6421	714	5457101	2304	MICHAEL	BUTLER	0	0	41
81767	BEHR PROCESS CORP	A	2851	PAINTS AND ALLIED PRODUCTS	540326	31	7/10/2012 0:00	50	415.18	3729.71	3400 W GA	SANTA AN/	CA	92704	6421	714	5457101	2304	MICHAEL	BUTLER	0	0	41

Fac ID	Name	Fac Status	SIC Code	SIC Description	Appl Nbr	Appl Statu	Appl Date	Appl Type	UTM East	UTM North	Address	City	State	Zip	Zip Four	Area Code	Phone	Extension	First	Last	CO	SOX	PM10
86987	MARRIOTT CORP,COSTA MESA MARRIOTT SUI	A	7011	HOTELS, MOTELS & TOURIST COURT	559465	32	1/2/2014 0:00	25	418.485	3727.962	500 ANTON	COSTA ME	CA	92626		714	9571100		RICK	STEVENS	5	0	0
88442	600 ANTON BLV ASSOC,SO COAST PLZ TWN C	A	8700		565013	32	4/30/2014 0:00	25	418.31	3727.964	600 ANTON	COSTA ME	CA	92626		714	4358562		MIKE	MCCASHLA	3.288	0.219	0.822
89400	FOUNTAIN VALLEY BODY WORKS INC	A	7538	GENERAL AUTO REPAIR SHOPS	559224	230	12/19/2013 0:00	30	413.923	3729.812	17481 NEV	FOUNTAIN	CA	92708		714	7518812		MIKE	HONRATH	2	0	6
89400	FOUNTAIN VALLEY BODY WORKS INC	A	7538	GENERAL AUTO REPAIR SHOPS	559252	31	12/19/2013 0:00	63	413.923	3729.812	17481 NEV	FOUNTAIN	CA	92708		714	7518812		MIKE	HONRATH	2	0	6
89400	FOUNTAIN VALLEY BODY WORKS INC	A	7538	GENERAL AUTO REPAIR SHOPS	559253	31	12/19/2013 0:00	50	413.923	3729.812	17481 NEV	FOUNTAIN	CA	92708		714	7518812		MIKE	HONRATH	2	0	6
89400	FOUNTAIN VALLEY BODY WORKS INC	A	7538	GENERAL AUTO REPAIR SHOPS	559254	31	12/19/2013 0:00	50	413.923	3729.812	17481 NEV	FOUNTAIN	CA	92708		714	7518812		MIKE	HONRATH	2	0	6
89400	FOUNTAIN VALLEY BODY WORKS INC	A	7538	GENERAL AUTO REPAIR SHOPS	560524	31	2/4/2014 0:00	20	413.923	3729.812	17481 NEV	FOUNTAIN	CA	92708		714	7518812		MIKE	HONRATH	2	0	6
94967	MESA WATER DISTRICT	A	4941	WATER SUPPLY	561626	32	3/6/2014 0:00	25	413.88	3729.13	3596 CADI	COSTA ME	CA	92626		714	5741000		ROBERT	MCVICKER	13	0	0
95067	MESA WATER DISTRICT	A	4941	WATER SUPPLY	561624	32	3/6/2014 0:00	25	413.57	3723.1	1971 PLAC	COSTA ME	CA	92627		714	5741000		ROBERT	MCVICKER	12	0	0
95212	FABRICA	A	2273	CARPETS AND RUGS	547915	51	3/5/2013 0:00	63	415.49	3729.48	3201 S SUS	SANTA AN	CA	92704		714	8506284		PAUL	MCNUTT	45.2	1	76.6
95212	FABRICA	A	2273	CARPETS AND RUGS	547916	51	3/5/2013 0:00	80	415.49	3729.48	3201 S SUS	SANTA AN	CA	92704		714	8506284		PAUL	MCNUTT	45.2	1	76.6
95212	FABRICA	A	2273	CARPETS AND RUGS	566167	26	7/1/2014 0:00	10	415.49	3729.48	3201 S SUS	SANTA AN	CA	92704		714	8506284		PAUL	MCNUTT	45.2	1	76.6
95212	FABRICA	A	2273	CARPETS AND RUGS	567048	32	7/25/2014 0:00	80	415.49	3729.48	3201 S SUS	SANTA AN	CA	92704		714	8506284		PAUL	MCNUTT	45.2	1	76.6
95212	FABRICA	A	2273	CARPETS AND RUGS	570136	26	11/14/2014 0:00	50	415.49	3729.48	3201 S SUS	SANTA AN	CA	92704		714	8506284		PAUL	MCNUTT	45.2	1	76.6
95212	FABRICA	A	2273	CARPETS AND RUGS	570342	50	11/14/2014 0:00	80	415.49	3729.48	3201 S SUS	SANTA AN	CA	92704		714	8506284		PAUL	MCNUTT	45.2	1	76.6
95212	FABRICA	A	2273	CARPETS AND RUGS	572751	21	2/25/2015 0:00	30	415.49	3729.48	3201 S SUS	SANTA AN	CA	92704		714	8506284		PAUL	MCNUTT	45.2	1	76.6
95212	FABRICA	A	2273	CARPETS AND RUGS	572753	21	2/25/2015 0:00	80	415.49	3729.48	3201 S SUS	SANTA AN	CA	92704		714	8506284		PAUL	MCNUTT	45.2	1	76.6
95212	FABRICA	A	2273	CARPETS AND RUGS	574840	26	5/6/2015 0:00	10	415.49	3729.48	3201 S SUS	SANTA AN	CA	92704		714	8506284		PAUL	MCNUTT	45.2	1	76.6
95212	FABRICA	A	2273	CARPETS AND RUGS	575706	32	6/4/2015 0:00	80	415.49	3729.48	3201 S SUS	SANTA AN	CA	92704		714	8506284		PAUL	MCNUTT	45.2	1	76.6
95535	HUNTINGTON BEACH CITY, WATER DIVISION	A			562849	31	3/27/2014 0:00	63	409.69	3730.89	8851 WARI	HUNTINGT	CA	92647		714	5365503		BRAIN	RAGLAND	13	0	1
98334	SANTA ANA UNI SCH DIST, LATHROP INTERME	A	8211	ELEMENTARY & SECONDARY SCHOOLS	554465	32	7/23/2013 0:00	23	419.419	3732.846	1111 S BRC	SANTA AN	CA	92707		714	5585714		JERRY	HILLS	1	0	0
98380	MESA WATER DISTRICT	A	4941	WATER SUPPLY	561625	32	3/6/2014 0:00	25	416.46	3723.89	2340 ORAN	COSTA ME	CA	92627		714	5741000		ROBERT	MCVICKER	33	0	0
103083	SOUTHERN CALIFORNIA BOILER INC	A	7359	EQUIPMENT RENTAL & LEASING,NEC	543820	31	10/23/2012 0:00	10	0	0	VARIOUS L	HUNTINGT	CA	92649		714	8910701		JOHN	CLARKSON	50	0	9
103083	SOUTHERN CALIFORNIA BOILER INC	A	7359	EQUIPMENT RENTAL & LEASING,NEC	543832	230	10/12/2012 0:00	23	0	0	VARIOUS L	HUNTINGT	CA	92649		714	8910701		JOHN	CLARKSON	50	0	9
103083	SOUTHERN CALIFORNIA BOILER INC	A	7359	EQUIPMENT RENTAL & LEASING,NEC	543833	230	10/12/2012 0:00	23	0	0	VARIOUS L	HUNTINGT	CA	92649		714	8910701		JOHN	CLARKSON	50	0	9
103083	SOUTHERN CALIFORNIA BOILER INC	A	7359	EQUIPMENT RENTAL & LEASING,NEC	544794	32	11/16/2012 0:00	23	0	0	VARIOUS L	HUNTINGT	CA	92649		714	8910701		JOHN	CLARKSON	50	0	9
103083	SOUTHERN CALIFORNIA BOILER INC	A	7359	EQUIPMENT RENTAL & LEASING,NEC	544795	32	11/16/2012 0:00	23	0	0	VARIOUS L	HUNTINGT	CA	92649		714	8910701		JOHN	CLARKSON	50	0	9
103083	SOUTHERN CALIFORNIA BOILER INC	A	7359	EQUIPMENT RENTAL & LEASING,NEC	545495	32	12/6/2012 0:00	23	0	0	VARIOUS L	HUNTINGT	CA	92649		714	8910701		JOHN	CLARKSON	50	0	9
103083	SOUTHERN CALIFORNIA BOILER INC	A	7359	EQUIPMENT RENTAL & LEASING,NEC	545496	32	12/6/2012 0:00	23	0	0	VARIOUS L	HUNTINGT	CA	92649		714	8910701		JOHN	CLARKSON	50	0	9
103083	SOUTHERN CALIFORNIA BOILER INC	A	7359	EQUIPMENT RENTAL & LEASING,NEC	545497	32	12/6/2012 0:00	23	0	0	VARIOUS L	HUNTINGT	CA	92649		714	8910701		JOHN	CLARKSON	50	0	9
103083	SOUTHERN CALIFORNIA BOILER INC	A	7359	EQUIPMENT RENTAL & LEASING,NEC	545498	32	12/6/2012 0:00	23	0	0	VARIOUS L	HUNTINGT	CA	92649		714	8910701		JOHN	CLARKSON	50	0	9
103083	SOUTHERN CALIFORNIA BOILER INC	A	7359	EQUIPMENT RENTAL & LEASING,NEC	545499	32	12/6/2012 0:00	23	0	0	VARIOUS L	HUNTINGT	CA	92649		714	8910701		JOHN	CLARKSON	50	0	9
103083	SOUTHERN CALIFORNIA BOILER INC	A	7359	EQUIPMENT RENTAL & LEASING,NEC	547140	32	1/29/2013 0:00	23	0	0	VARIOUS L	HUNTINGT	CA	92649		714	8910701		JOHN	CLARKSON	50	0	9
103083	SOUTHERN CALIFORNIA BOILER INC	A	7359	EQUIPMENT RENTAL & LEASING,NEC	547142	32	1/29/2013 0:00	23	0	0	VARIOUS L	HUNTINGT	CA	92649		714	8910701		JOHN	CLARKSON	50	0	9
103083	SOUTHERN CALIFORNIA BOILER INC	A	7359	EQUIPMENT RENTAL & LEASING,NEC	553963	32	7/5/2013 0:00	23	0	0	VARIOUS L	HUNTINGT	CA	92649		714	8910701		JOHN	CLARKSON	50	0	9
103083	SOUTHERN CALIFORNIA BOILER INC	A	7359	EQUIPMENT RENTAL & LEASING,NEC	558437	230	11/21/2013 0:00	23	0	0	VARIOUS L	HUNTINGT	CA	92649		714	8910701		JOHN	CLARKSON	50	0	9
103083	SOUTHERN CALIFORNIA BOILER INC	A	7359	EQUIPMENT RENTAL & LEASING,NEC	558949	32	12/12/2013 0:00	23	0	0	VARIOUS L	HUNTINGT	CA	92649		714	8910701		JOHN	CLARKSON	50	0	9
103083	SOUTHERN CALIFORNIA BOILER INC	A	7359	EQUIPMENT RENTAL & LEASING,NEC	559286	230	12/24/2013 0:00	22	0	0	VARIOUS L	HUNTINGT	CA	92649		714	8910701		JOHN	CLARKSON	50	0	9
103167	THE GAFFOGLIO FAMILY METAL CRAFTERS INC	A	3711	MOTOR VEHICLES AND CAR BODIES	554567	31	7/25/2013 0:00	63	413.228	3730.104	11161 SLA	FOUNTAIN	CA	92708		714	4442000		MARCELO	GAFFOGLIO	2	0	0
103167	THE GAFFOGLIO FAMILY METAL CRAFTERS INC	A	3711	MOTOR VEHICLES AND CAR BODIES	554568	31	7/25/2013 0:00	63	413.228	3730.104	11161 SLA	FOUNTAIN	CA	92708		714	4442000		MARCELO	GAFFOGLIO	2	0	0
103167	THE GAFFOGLIO FAMILY METAL CRAFTERS INC	A	3711	MOTOR VEHICLES AND CAR BODIES	554569	31	7/25/2013 0:00	63	413.228	3730.104	11161 SLA	FOUNTAIN	CA	92708		714	4442000		MARCELO	GAFFOGLIO	2	0	0
103167	THE GAFFOGLIO FAMILY METAL CRAFTERS INC	A	3711	MOTOR VEHICLES AND CAR BODIES	555238	31	8/13/2013 0:00	63	413.228	3730.104	11161 SLA	FOUNTAIN	CA	92708		714	4442000		MARCELO	GAFFOGLIO	2	0	0
107553	JOHN A THOMAS	A	103		557414	31	10/17/2013 0:00	22	0	0	W ELLIS/EC	HUNTINGT	CA	92648		714	5561834		JOHN A	THOMAS	40.8	12.96	1.92
107553	JOHN A THOMAS	A	103		557415	31	10/17/2013 0:00	22	0	0	W ELLIS/EC	HUNTINGT	CA	92648		714	5561834		JOHN A	THOMAS	40.8	12.96	1.92
107553	JOHN A THOMAS	A	103		557416	31	10/17/2013 0:00	22	0	0	W ELLIS/EC	HUNTINGT	CA	92648		714	5561834		JOHN A	THOMAS	40.8	12.96	1.92
107553	JOHN A THOMAS	A	103		557417	31	10/17/2013 0:00	22	0	0	W ELLIS/EC	HUNTINGT	CA	92648		714	5561834		JOHN A	THOMAS	40.8	12.96	1.92
107553	JOHN A THOMAS	A	103		557418	31	10/17/2013 0:00	22	0	0	W ELLIS/EC	HUNTINGT	CA	92648		714	5561834		JOHN A	THOMAS	40.8	12.96	1.92
107553	JOHN A THOMAS	A	103		557419	31	10/17/2013 0:00	22	0	0	W ELLIS/EC	HUNTINGT	CA	92648		714	5561834		JOHN A	THOMAS	40.8	12.96	1.92
107553	JOHN A THOMAS	A	103		557420	31	10/17/2013 0:00	22	0	0	W ELLIS/EC	HUNTINGT	CA	92648		714	5561834		JOHN A	THOMAS	40.8	12.96	1.92
107553	JOHN A THOMAS	A	103		557421	31	10/17/2013 0:00	22	0	0	W ELLIS/EC	HUNTINGT	CA	92648		714	5561834		JOHN A	THOMAS	40.8	12.96	1.92
107891	ORANGE COAST MEMORIAL MEDICAL CENTER	A	8060		544450	32	10/30/2012 0:00	25	413.38	3729.31	9900-40 TA	FOUNTAIN	CA	92708		714	3787025		BOB	LANK	2.411	0.356	1.807
107891	ORANGE COAST MEMORIAL MEDICAL CENTER	A	8060		549242	31	4/3/2013 0:00	50	413.38	3729.31	9900-40 TA	FOUNTAIN	CA	92708		714	3787025		BOB	LANK	2.411	0.356	1.807
107891	ORANGE COAST MEMORIAL MEDICAL CENTER	A	8060		549243	31	4/3/2013 0:00	50	413.38	3729.31	9900-40 TA	FOUNTAIN	CA	92708		714	3787025		BOB	LANK	2.411	0.356	1.807
107891	ORANGE COAST MEMORIAL MEDICAL CENTER	A	8060		570472	32	11/19/2014 0:00	25	413.38	3729.31	9900-40 TA	FOUNTAIN	CA	92708		714	3787025		BOB	LANK	2.411	0.356	1.807
107891	ORANGE COAST MEMORIAL MEDICAL CENTER	A	8060		570474	32	11/19/2014 0:00	25	413.38	3729.31	9900-40 TA	FOUNTAIN	CA	92708		714	3787025		BOB	LANK	2.411	0.356	1.807
107891	ORANGE COAST MEMORIAL MEDICAL CENTER	A	8060		572392	31	2/11/2015 0:00	10	413.38	3729.31	9900-40 TA	FOUNTAIN	CA	92708		714	3787025		BOB	LANK	2.411	0.356	1.807
111110	BRISTOL FIBERLITE INDUSTRIES, INC	A	3446	ARCHITECTURAL METAL WORK	554203	32	7/16/2013 0:00	56	420.006	3730.306	401 E GOE	SANTA AN	CA	92707		714	5452364		CHARLES	SCHMIDT	6	0	1
111110	BRISTOL FIBERLITE INDUSTRIES, INC	A	3446	ARCHITECTURAL METAL WORK	554204	26	7/16/2013 0:00	50	420.006	3730.306	401 E GOE	SANTA AN	CA	92707		714	5452364		CHARLES	SCHMIDT	6	0	1
111110	BRISTOL FIBERLITE INDUSTRIES, INC	A	3446	ARCHITECTURAL METAL WORK	557526	31	10/23/2013 0:00	63	420.006	3730.306	401 E GOE	SANTA AN	CA	92707		714	5452364		CHARLES	SCHMIDT	6	0	1
111110	BRISTOL FIBERLITE INDUSTRIES, INC	A	3446	ARCHITECTURAL METAL WORK	574096	21	4/8/2015 0:00	74	420.006	3730.306	401 E GOE	SANTA AN	CA	92707		714	5452364		CHARLES	SCHMIDT	6	0	1
112292	FLETCHER JONES MOTORCARS	A			565349	31	6/10/2014 0:00	50	419.645	3723.328	3300 JAME	NEWPORT	CA	92707		949	7183351		LARRY	BUSBY	3	0	4
112292	FLETCHER JONES MOTORCARS	A			567153	26	7/30/2014 0:00	63	419.645	3723.328	3300 JAME	NEWPORT	CA	92707		949	7183351		LARRY	BUSBY	3	0	4
112292	FLETCHER JONES MOTORCARS	A			567154	26	7/30/2014 0:00	63	419.645	3723.328	3300 JAME	NEWPORT	CA	92707		949	7183351		LARRY	BUSBY	3	0	4
112292	FLETCHER JONES MOTORCARS	A			567155	26	7/30/2014 0:00	10	419.645	3723.328	3300 JAME	NEWPORT	CA	92707		949	7183351		LARRY	BUSBY	3	0	4
113160	HILTON COSTA MESA	A	7011	HOTELS, MOTELS & TOURIST COURT	563447	32	4/9/2014 0:00	25	417.91	3727.11	3050 BRIST	COSTA ME	CA	92626		714	4384965		JACOB	VOGELESA	50	0	0
113160	HILTON COSTA MESA	A	7011	HOTELS, MOTELS & TOURIST COURT	563470	52	4/9/2014 0:00	50	417.91	3727.11	3050 BRIST	COSTA ME	CA	92626		714	4384965		JACOB	VOGELESA	50	0	0
113160	HILTON COSTA MESA	A	7011	HOTELS, MOTELS & TOURIST COURT	563471	52	4/9/2014 0:00	80	417.91	3727.11	3050 BRIST	COSTA ME	CA	92626		714	4384965		JACOB	VOGELESA	50	0	0
113318	SIGNATURE COMBS INC.	A	4581	AIRPORTS/FLYING FIELDS/SVCS	558622	31	11/26/2013 0:00	50	419.43	3725.54	19301 CAN	SANTA AN	CA	92707		949	2635837		JULIE	BRODERICI	30	1	1
113318	SIGNATURE COMBS INC.	A	4581	AIRPORTS/FLYING FIELDS/SVCS	560416	31	2/11/2014 0:00	10	419.43	3725.54	19301 CAN	SANTA AN	CA	92707		949	2635837		JULIE	BRODERICI	30	1	1

Fac ID	Name	Fac Status	SIC Code	SIC Description	Appl Nbr	Appl Statu	Appl Date	Appl Type	UTM East	UTM North	Address	City	State	Zip	Zip Four	Area Code	Phone	Extension	First	Last	CO	SOX	PM10
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	539746	52	6/26/2012 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	539747	52	6/26/2012 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	539748	52	6/26/2012 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	539768	52	6/26/2012 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	539769	52	6/26/2012 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	539770	52	6/26/2012 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	540038	21	6/29/2012 0:00	76	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	540255	52	7/17/2012 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	540256	52	7/17/2012 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	540257	52	7/17/2012 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	540258	52	7/17/2012 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	540259	52	7/17/2012 0:00	87	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	540260	52	7/17/2012 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	540261	52	7/17/2012 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	540262	52	7/17/2012 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	543867	31	11/1/2012 0:00	40	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	543868	32	11/1/2012 0:00	76	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	549121	52	3/28/2013 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	576783	21	7/9/2015 0:00	63	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	576784	21	7/9/2015 0:00	63	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	576785	21	7/9/2015 0:00	76	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578073	20	9/9/2015 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578074	20	9/9/2015 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578075	20	9/9/2015 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578076	20	9/9/2015 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578077	20	9/9/2015 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578078	20	9/9/2015 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578079	20	9/9/2015 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578080	20	9/9/2015 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578081	20	9/9/2015 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578082	20	9/9/2015 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578083	20	9/9/2015 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578084	20	9/9/2015 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578085	20	9/9/2015 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578086	20	9/9/2015 0:00	10	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578087	21	9/9/2015 0:00	87	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578207	32	9/15/2015 0:00	16	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578208	230	9/15/2015 0:00	16	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578209	32	9/15/2015 0:00	16	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578210	230	9/15/2015 0:00	16	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578388	32	9/22/2015 0:00	16	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578389	32	9/22/2015 0:00	16	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578390	32	9/22/2015 0:00	16	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578398	32	9/22/2015 0:00	16	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578399	32	9/22/2015 0:00	16	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578400	32	9/22/2015 0:00	16	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578401	32	9/22/2015 0:00	16	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578402	32	9/22/2015 0:00	16	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578403	32	9/22/2015 0:00	16	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578404	32	9/22/2015 0:00	16	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578405	32	9/22/2015 0:00	16	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	578406	32	9/22/2015 0:00	16	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
115389	AES HUNTINGTON BEACH, LLC	A	4911	ELECTRIC SERVICES	580245	21	12/8/2015 0:00	74	409.16	3723.23	21730 NEV	HUNTINGT	CA	92646		562	4937840		TOM	KUNDE	124876	184	1682
120651	HUNTINGTON BEACH HOSPITAL	A	8062	GENERAL MED/SURGICAL HOSPITALS	542343	31	8/24/2012 0:00	50	408.337	3729.622	17772 BEA	HUNTINGT	CA	92647	6899	714	8435094		FRANK	GARAY	41	0	0
120651	HUNTINGTON BEACH HOSPITAL	A	8062	GENERAL MED/SURGICAL HOSPITALS	542344	31	8/24/2012 0:00	50	408.337	3729.622	17772 BEA	HUNTINGT	CA	92647	6899	714	8435094		FRANK	GARAY	41	0	0
120651	HUNTINGTON BEACH HOSPITAL	A	8062	GENERAL MED/SURGICAL HOSPITALS	563007	32	4/1/2014 0:00	25	408.337	3729.622	17772 BEA	HUNTINGT	CA	92647	6899	714	8435094		FRANK	GARAY	41	0	0
120651	HUNTINGTON BEACH HOSPITAL	A	8062	GENERAL MED/SURGICAL HOSPITALS	563982	31	5/1/2014 0:00	50	408.337	3729.622	17772 BEA	HUNTINGT	CA	92647	6899	714	8435094		FRANK	GARAY	41	0	0
125300	CITY OF HUNTINGTON BEACH- WATER OPER.	A			562823	31	3/27/2014 0:00	63	405.81	3728.25	6401 OVER	HUNTINGT	CA	92648		714	3741512		JAY	KLEINHEIN	8	0	0
125300	CITY OF HUNTINGTON BEACH- WATER OPER.	A			562825	31	3/27/2014 0:00	63	405.81	3728.25	6401 OVER	HUNTINGT	CA	92648		714	3741512		JAY	KLEINHEIN	8	0	0
125300	CITY OF HUNTINGTON BEACH- WATER OPER.	A			562827	31	3/27/2014 0:00	63	405.81	3728.25	6401 OVER	HUNTINGT	CA	92648		714	3741512		JAY	KLEINHEIN	8	0	0
125300	CITY OF HUNTINGTON BEACH- WATER OPER.	A			562828	31	3/27/2014 0:00	63	405.81	3728.25	6401 OVER	HUNTINGT	CA	92648		714	3741512		JAY	KLEINHEIN	8	0	0
127513	ONLY CREMATIONS FOR PETS, INC	A	9641	REG OF AGRICULTURAL MARKETING	578224	20	9/11/2015 0:00	10	419.559	3725.382	4263 BIRCI	NEWPORT	CA	92660		949	8521485		GEORGE	KATCHERIA	3	0	4
127592	TOYOTA RACING DEVELOPMENT	A			550695	31	5/1/2013 0:00	60	418.692	3726.664	335 E BAKE	COSTA ME	CA	92626		310	4682283		SEAN	HANNA	149	0	0
127592	TOYOTA RACING DEVELOPMENT	A			550696	31	5/1/2013 0:00	60	418.692	3726.664	335 E BAKE	COSTA ME	CA	92626		310	4682283		SEAN	HANNA	149	0	0
127592	TOYOTA RACING DEVELOPMENT	A			550697	31	5/1/2013 0:00	60	418.692	3726.664	335 E BAKE	COSTA ME	CA	92626		310	4682283		SEAN	HANNA	149	0	0
127592	TOYOTA RACING DEVELOPMENT	A			550698	31	5/1/2013 0:00	10	418.692	3726.664	335 E BAKE	COSTA ME	CA	92626		310	4682283		SEAN	HANNA	149	0	0
127592	TOYOTA RACING DEVELOPMENT	A			550699	31	5/1/2013 0:00	10	418.692	3726.664	335 E BAKE	COSTA ME	CA	92626		310	4682283		SEAN	HANNA	149	0	0
127592	TOYOTA RACING DEVELOPMENT	A			561378	32	3/4/2014 0:00	25	418.692	3726.664	335 E BAKE	COSTA ME	CA	92626		310	4682283		SEAN	HANNA	149	0	0
127592	TOYOTA RACING DEVELOPMENT	A			562850	31	3/28/2014 0:00	50	418.692	3726.664	335 E BAKE	COSTA ME	CA	92626		310	4682283		SEAN	HANNA	149	0	0

Fac ID	Name	Fac Status	SIC Code	SIC Description	Appl Nbr	Appl Statu	Appl Date	Appl Type	UTM East	UTM North	Address	City	State	Zip	Zip Four	Area Code	Phone	Extension	First	Last	CO	SOX	PM10
127592	TOYOTA RACING DEVELOPMENT	A			566731	31	7/17/2014 0:00	63	418.692	3726.664	335 E BAKE	COSTA ME	CA	92626		310	4682283		SEAN	HANNA	149	0	0
127790	BEHR PROCESS CORP, BEHR YALE FACILITY	A	5231	PAINT, GLASS & WALLPAPER STORE	571278	31	12/19/2014 0:00	50	415.06	3730.037	3500 W SE	SANTA AN/	CA	92704		714	5457101		MICHAEL	BUTLER	0	0	9
127790	BEHR PROCESS CORP, BEHR YALE FACILITY	A	5231	PAINT, GLASS & WALLPAPER STORE	571280	31	12/19/2014 0:00	50	415.06	3730.037	3500 W SE	SANTA AN/	CA	92704		714	5457101		MICHAEL	BUTLER	0	0	9
127790	BEHR PROCESS CORP, BEHR YALE FACILITY	A	5231	PAINT, GLASS & WALLPAPER STORE	571281	31	12/19/2014 0:00	50	415.06	3730.037	3500 W SE	SANTA AN/	CA	92704		714	5457101		MICHAEL	BUTLER	0	0	9
129416	WESTIN SOUTH COAST PLAZA	A	9999	UNKNOWN	543219	52	9/26/2012 0:00	60	417.98	3727.97	686 ANTO	COSTA ME	CA	92626		714	6626691		DOUG	LOVELL	54	0	2
129416	WESTIN SOUTH COAST PLAZA	A	9999	UNKNOWN	576033	26	6/12/2015 0:00	10	417.98	3727.97	686 ANTO	COSTA ME	CA	92626		714	6626691		DOUG	LOVELL	54	0	2
130223	CALIBER BODY WORKS INC	A	7532	TOP & BODY REPAIR/PAINT SHOPS	542695	230	9/4/2012 0:00	63	414	3730.22	11528 MAI	FOUNTAIN	CA	92708	4202	909	5916992		IGNACIO	VERDZCO	2	0	0
130223	CALIBER BODY WORKS INC	A	7532	TOP & BODY REPAIR/PAINT SHOPS	542699	230	9/4/2012 0:00	63	414	3730.22	11528 MAI	FOUNTAIN	CA	92708	4202	909	5916992		IGNACIO	VERDZCO	2	0	0
131732	NEWPORT FAB, LLC	A	3674	SEMICONDUCTORS/RELATED DEVICES	544600	21	11/7/2012 0:00	80	419.622	3723.813	4321 JAME	NEWPORT	CA	92660		949	4358257		MARCELO	TREVINO	165	1	46
131732	NEWPORT FAB, LLC	A	3674	SEMICONDUCTORS/RELATED DEVICES	544605	21	11/7/2012 0:00	50	419.622	3723.813	4321 JAME	NEWPORT	CA	92660		949	4358257		MARCELO	TREVINO	165	1	46
131732	NEWPORT FAB, LLC	A	3674	SEMICONDUCTORS/RELATED DEVICES	544606	21	11/7/2012 0:00	50	419.622	3723.813	4321 JAME	NEWPORT	CA	92660		949	4358257		MARCELO	TREVINO	165	1	46
131732	NEWPORT FAB, LLC	A	3674	SEMICONDUCTORS/RELATED DEVICES	544608	21	11/7/2012 0:00	50	419.622	3723.813	4321 JAME	NEWPORT	CA	92660		949	4358257		MARCELO	TREVINO	165	1	46
131732	NEWPORT FAB, LLC	A	3674	SEMICONDUCTORS/RELATED DEVICES	567466	21	8/8/2014 0:00	80	419.622	3723.813	4321 JAME	NEWPORT	CA	92660		949	4358257		MARCELO	TREVINO	165	1	46
131732	NEWPORT FAB, LLC	A	3674	SEMICONDUCTORS/RELATED DEVICES	567467	21	8/8/2014 0:00	50	419.622	3723.813	4321 JAME	NEWPORT	CA	92660		949	4358257		MARCELO	TREVINO	165	1	46
131732	NEWPORT FAB, LLC	A	3674	SEMICONDUCTORS/RELATED DEVICES	567468	21	8/8/2014 0:00	30	419.622	3723.813	4321 JAME	NEWPORT	CA	92660		949	4358257		MARCELO	TREVINO	165	1	46
131732	NEWPORT FAB, LLC	A	3674	SEMICONDUCTORS/RELATED DEVICES	571414	32	1/7/2015 0:00	25	419.622	3723.813	4321 JAME	NEWPORT	CA	92660		949	4358257		MARCELO	TREVINO	165	1	46
131732	NEWPORT FAB, LLC	A	3674	SEMICONDUCTORS/RELATED DEVICES	572590	215	2/19/2015 0:00	50	419.622	3723.813	4321 JAME	NEWPORT	CA	92660		949	4358257		MARCELO	TREVINO	165	1	46
131732	NEWPORT FAB, LLC	A	3674	SEMICONDUCTORS/RELATED DEVICES	572591	215	2/19/2015 0:00	50	419.622	3723.813	4321 JAME	NEWPORT	CA	92660		949	4358257		MARCELO	TREVINO	165	1	46
131732	NEWPORT FAB, LLC	A	3674	SEMICONDUCTORS/RELATED DEVICES	572592	215	2/19/2015 0:00	50	419.622	3723.813	4321 JAME	NEWPORT	CA	92660		949	4358257		MARCELO	TREVINO	165	1	46
131732	NEWPORT FAB, LLC	A	3674	SEMICONDUCTORS/RELATED DEVICES	572593	215	2/19/2015 0:00	80	419.622	3723.813	4321 JAME	NEWPORT	CA	92660		949	4358257		MARCELO	TREVINO	165	1	46
131732	NEWPORT FAB, LLC	A	3674	SEMICONDUCTORS/RELATED DEVICES	572594	215	2/19/2015 0:00	50	419.622	3723.813	4321 JAME	NEWPORT	CA	92660		949	4358257		MARCELO	TREVINO	165	1	46
136183	ORANGE COUNTY TRANSPORTATION AUTHOR	A	4111	LOCAL & SUBURBAN TRANSIT	575983	21	6/12/2015 0:00	30	0	0	4301 W M/	SANTA AN/	CA	92704	6308	714	5605897		TREVOR	JOHNSON	21	0	0
136381	ECOTECH ENVIRONMENTAL, CORPORATION	A			570695	230	12/3/2014 0:00	96	0	0	VARIOUS L	FOUNTAIN	CA	92708		714	4239392		JEFF	GREEN	49	0	0
142065	SEGERSTROM CENTER FOR THE ARTS	A			539719	32	6/21/2012 0:00	25	0	0	615 TOWN	COSTA ME	CA	92626	1918	714	5562122	4010	JEFF	SCHNEIDEI	27	0	3
142065	SEGERSTROM CENTER FOR THE ARTS	A			565411	32	5/27/2014 0:00	25	0	0	615 TOWN	COSTA ME	CA	92626	1918	714	5562122	4010	JEFF	SCHNEIDEI	27	0	3
142592	THE FIRST AMERICAN CORPORATION	A	9999	UNKNOWN	547839	32	3/1/2013 0:00	25	0	0	9 FIRST AI/	SANTA AN/	CA	92707		714	2507660		YVONNE	CABRERA	4	0	0
142592	THE FIRST AMERICAN CORPORATION	A	9999	UNKNOWN	547840	32	3/1/2013 0:00	25	0	0	9 FIRST AI/	SANTA AN/	CA	92707		714	2507660		YVONNE	CABRERA	4	0	0
142592	THE FIRST AMERICAN CORPORATION	A	9999	UNKNOWN	576597	32	6/30/2015 0:00	25	0	0	9 FIRST AI/	SANTA AN/	CA	92707		714	2507660		YVONNE	CABRERA	4	0	0
143700	MIREF I, LLC	A			543619	32	10/5/2012 0:00	25	419.48	3724.69	1500 QUAI	NEWPORT	CA	92660		949	2528844		PEGGY	SANCHEZ	1	0	0
143700	MIREF I, LLC	A			580062	32	12/1/2015 0:00	25	419.48	3724.69	1500 QUAI	NEWPORT	CA	92660		949	2528844		PEGGY	SANCHEZ	1	0	0
143741	DCOR LLC	A	1311	CRUDE PETRO AND NATURAL GAS	550844	20	5/7/2013 0:00	50	403.56	3724.74	OFFSHORE	HUNTINGT	CA	92649		805	5352000		CHRISTINE	WHITE	2818	75	211
143741	DCOR LLC	A	1311	CRUDE PETRO AND NATURAL GAS	550845	20	5/7/2013 0:00	50	403.56	3724.74	OFFSHORE	HUNTINGT	CA	92649		805	5352000		CHRISTINE	WHITE	2818	75	211
143741	DCOR LLC	A	1311	CRUDE PETRO AND NATURAL GAS	550846	21	5/7/2013 0:00	80	403.56	3724.74	OFFSHORE	HUNTINGT	CA	92649		805	5352000		CHRISTINE	WHITE	2818	75	211
143741	DCOR LLC	A	1311	CRUDE PETRO AND NATURAL GAS	555240	20	8/13/2013 0:00	10	403.56	3724.74	OFFSHORE	HUNTINGT	CA	92649		805	5352000		CHRISTINE	WHITE	2818	75	211
143741	DCOR LLC	A	1311	CRUDE PETRO AND NATURAL GAS	562647	32	3/25/2014 0:00	25	403.56	3724.74	OFFSHORE	HUNTINGT	CA	92649		805	5352000		CHRISTINE	WHITE	2818	75	211
143741	DCOR LLC	A	1311	CRUDE PETRO AND NATURAL GAS	563487	20	4/9/2014 0:00	10	403.56	3724.74	OFFSHORE	HUNTINGT	CA	92649		805	5352000		CHRISTINE	WHITE	2818	75	211
143741	DCOR LLC	A	1311	CRUDE PETRO AND NATURAL GAS	567266	20	8/5/2014 0:00	10	403.56	3724.74	OFFSHORE	HUNTINGT	CA	92649		805	5352000		CHRISTINE	WHITE	2818	75	211
147434	FAIRMONT NEWPORT BEACH	A	7011	HOTELS, MOTELS & TOURIST COURT	553627	230	6/26/2013 0:00	23	419.855	3725.619	4500 MAC/	NEWPORT	CA	92660	2010	949	4762001		PERRY	HALFORD	40	0	4
147434	FAIRMONT NEWPORT BEACH	A	7011	HOTELS, MOTELS & TOURIST COURT	553628	32	6/26/2013 0:00	25	419.855	3725.619	4500 MAC/	NEWPORT	CA	92660	2010	949	4762001		PERRY	HALFORD	40	0	4
147434	FAIRMONT NEWPORT BEACH	A	7011	HOTELS, MOTELS & TOURIST COURT	555387	21	8/20/2013 0:00	30	419.855	3725.619	4500 MAC/	NEWPORT	CA	92660	2010	949	4762001		PERRY	HALFORD	40	0	4
147434	FAIRMONT NEWPORT BEACH	A	7011	HOTELS, MOTELS & TOURIST COURT	556210	32	9/13/2013 0:00	23	419.855	3725.619	4500 MAC/	NEWPORT	CA	92660	2010	949	4762001		PERRY	HALFORD	40	0	4
148034	THE ISLAND HOTEL	A	7011	HOTELS, MOTELS & TOURIST COURT	556384	32	9/18/2013 0:00	25	418.76	3720.1	690 NEWPI	NEWPORT	CA	92660		949	7604941		NAJIB	HEDAYAT	35	0	4
155585	DOUBLETREE HOTEL	A			543845	32	10/12/2012 0:00	25	419.77	3729.05	201 E MAC	SANTA AN/	CA	92707		714	8253333		CLAUDIA	ARBAIZA	8	0	0
155585	DOUBLETREE HOTEL	A			543847	31	10/12/2012 0:00	22	419.77	3729.05	201 E MAC	SANTA AN/	CA	92707		714	8253333		CLAUDIA	ARBAIZA	8	0	0
159607	TIAA - CREF - 3 HUTTON CENTRE	A	6552	SUBDIVIDERS & DEVELOPERS, NEC	556412	32	9/24/2013 0:00	25	419.78	3729.02	3 HUTTON	SANTA AN/	CA	92707		714	5458713		DAN	ESPINOZA	1.918	0.142	0.23
159607	TIAA - CREF - 3 HUTTON CENTRE	A	6552	SUBDIVIDERS & DEVELOPERS, NEC	575401	32	5/20/2015 0:00	25	419.78	3729.02	3 HUTTON	SANTA AN/	CA	92707		714	5458713		DAN	ESPINOZA	1.918	0.142	0.23
159607	TIAA - CREF - 3 HUTTON CENTRE	A	6552	SUBDIVIDERS & DEVELOPERS, NEC	579211	32	10/22/2015 0:00	23	419.78	3729.02	3 HUTTON	SANTA AN/	CA	92707		714	5458713		DAN	ESPINOZA	1.918	0.142	0.23
159607	TIAA - CREF - 3 HUTTON CENTRE	A	6552	SUBDIVIDERS & DEVELOPERS, NEC	579212	32	10/22/2015 0:00	23	419.78	3729.02	3 HUTTON	SANTA AN/	CA	92707		714	5458713		DAN	ESPINOZA	1.918	0.142	0.23
163996	HARBOR JUSTICE CTR, NEWPORT BCH, JCC AO	A	9199	GENERAL GOVERNMENT, NEC	543562	32	10/4/2012 0:00	25	420.63	3725.07	4601 JAME	NEWPORT	CA	92660	2527	818	5583411		PRADIP	DESAI	5	0	1
163996	HARBOR JUSTICE CTR, NEWPORT BCH, JCC AO	A	9199	GENERAL GOVERNMENT, NEC	558946	21	12/12/2013 0:00	30	420.63	3725.07	4601 JAME	NEWPORT	CA	92660	2527	818	5583411		PRADIP	DESAI	5	0	1
163996	HARBOR JUSTICE CTR, NEWPORT BCH, JCC AO	A	9199	GENERAL GOVERNMENT, NEC	568629	32	9/25/2014 0:00	25	420.63	3725.07	4601 JAME	NEWPORT	CA	92660	2527	818	5583411		PRADIP	DESAI	5	0	1
166073	BETA OFFSHORE	A	1311	CRUDE PETRO AND NATURAL GAS	568343	32	9/12/2014 0:00	74	406.35	3725.82	OCS LEASE	HUNTINGT	CA	92648		562	6281526		MARINA	ROBERTSO	1511	361	463
167066	ARLON GRAPHICS L.L.C.	A	2672	PAPER COATED & LAMINATED, NEC	545866	32	12/21/2012 0:00	86	414.79	3730.25	2811 S HAI	SANTA AN/	CA	92704	5805	714	4314221		ROBERT	NICHOLSOI	5	0	1
167066	ARLON GRAPHICS L.L.C.	A	2672	PAPER COATED & LAMINATED, NEC	547409	31	2/14/2013 0:00	50	414.79	3730.25	2811 S HAI	SANTA AN/	CA	92704	5805	714	4314221		ROBERT	NICHOLSOI	5	0	1
167066	ARLON GRAPHICS L.L.C.	A	2672	PAPER COATED & LAMINATED, NEC	557375	32	10/24/2013 0:00	86	414.79	3730.25	2811 S HAI	SANTA AN/	CA	92704	5805	714	4314221		ROBERT	NICHOLSOI	5	0	1
167066	ARLON GRAPHICS L.L.C.	A	2672	PAPER COATED & LAMINATED, NEC	557376	31	10/24/2013 0:00	63	414.79	3730.25	2811 S HAI	SANTA AN/	CA	92704	5805	714	4314221		ROBERT	NICHOLSOI	5	0	1
167066	ARLON GRAPHICS L.L.C.	A	2672	PAPER COATED & LAMINATED, NEC	557377	31	10/24/2013 0:00	63	414.79	3730.25	2811 S HAI	SANTA AN/	CA	92704	5805	714	4314221		ROBERT	NICHOLSOI	5	0	1
167066	ARLON GRAPHICS L.L.C.	A	2672	PAPER COATED & LAMINATED, NEC	557378	31	10/24/2013 0:00	63	414.79	3730.25	2811 S HAI	SANTA AN/	CA	92704	5805	714	4314221		ROBERT	NICHOLSOI	5	0	1
167066	ARLON GRAPHICS L.L.C.	A	2672	PAPER COATED & LAMINATED, NEC	557379	31	10/24/2013 0:00	63	414.79	3730.25	2811 S HAI	SANTA AN/	CA	92704	5805	714	4314221		ROBERT	NICHOLSOI	5	0	1
167066	ARLON GRAPHICS L.L.C.	A	2672	PAPER COATED & LAMINATED, NEC	557380	31	10/24/2013 0:00	63	414.79	3730.25	2811 S HAI	SANTA AN/	CA	92704	5805	714	4314221		ROBERT	NICHOLSOI	5	0	1
167066	ARLON GRAPHICS L.L.C.	A	2672	PAPER COATED & LAMINATED, NEC	557381	31	10/24/2013 0:00	50	414.79	3730.25	2811 S HAI	SANTA AN/	CA	92704	5805	714	4314221		ROBERT	NICHOLSOI	5	0	1
167066	ARLON GRAPHICS L.L.C.	A	2672	PAPER COATED & LAMINATED, NEC	557384	230	10/24/2013 0:00	10	414.79	3730.25	2811 S HAI	SANTA AN/	CA	92704	5805	714	4314221		ROBERT	NICHOLSOI	5	0	1
169754	SO CAL HOLDING, LLC	A	1311	CRUDE PETRO AND NATURAL GAS	555370	31	8/20/2013 0:00	10	406.22	3726.28	20101 GOL	HUNTINGT	CA	92648	2628	562	6243314		DIANA	LANG	5284	5	49
169754	SO CAL HOLDING, LLC	A	1311	CRUDE PETRO AND NATURAL GAS	555402	32	8/20/2013 0:00	80	406.22	3726.28	20101 GOL	HUNTINGT	CA	92648	2628	562	6243314		DIANA	LANG	5284	5	49
169754	SO CAL HOLDING, LLC	A	1311	CRUDE PETRO AND NATURAL GAS	556388	32	9/20/2013 0:00	25	406.22	3726.28	20101 GOL	HUNTINGT	CA	92648	2628	562	6243314		DIANA	LANG	5284	5	49
169754	SO CAL HOLDING, LLC	A	1311	CRUDE PETRO AND NATURAL GAS	557681	32	10/29/2013 0:00	25	406.22	3726.28	20101 GOL	HUNTINGT	CA	92648	2628	562	6243314		DIANA	LANG	5284	5	49
169754	SO CAL HOLDING, LLC	A	1311	CRUDE PETRO AND NATURAL GAS	560466	52	2/4/2014 0:00	10	406.22	3726.28	20101 GOL	HUNTINGT	CA	92648	2628	562	6243314		DIANA	LANG	5284	5	49
169754	SO CAL HOLDING, LLC	A	1311	CRUDE PETRO AND NATURAL GAS	560467	51	2/4/2014 0:00	80	406.22	3726.28	20101 GOL	HUNTINGT	CA	92648	2628	562	6243314		DIANA	LANG	5284	5	49

Fac ID	Name	Fac Status	SIC Code	SIC Description	Appl Nbr	Appl Statu	Appl Date	Appl Type	UTM East	UTM North	Address	City	State	Zip	Zip Four	Area Code	Phone	Extension	First	Last	CO	SOX	PM10
169754	SO CAL HOLDING, LLC	A	1311	CRUDE PETRO AND NATURAL GAS	567796	51	8/26/2014 0:00	50	406.22	3726.28	20101 GOL	HUNTINGT	CA	92648	2628	562	6243314		DIANA	LANG	5284	5	49
169754	SO CAL HOLDING, LLC	A	1311	CRUDE PETRO AND NATURAL GAS	567798	51	8/26/2014 0:00	80	406.22	3726.28	20101 GOL	HUNTINGT	CA	92648	2628	562	6243314		DIANA	LANG	5284	5	49
169754	SO CAL HOLDING, LLC	A	1311	CRUDE PETRO AND NATURAL GAS	567799	32	8/26/2014 0:00	25	406.22	3726.28	20101 GOL	HUNTINGT	CA	92648	2628	562	6243314		DIANA	LANG	5284	5	49
169754	SO CAL HOLDING, LLC	A	1311	CRUDE PETRO AND NATURAL GAS	569440	31	10/23/2014 0:00	63	406.22	3726.28	20101 GOL	HUNTINGT	CA	92648	2628	562	6243314		DIANA	LANG	5284	5	49
169754	SO CAL HOLDING, LLC	A	1311	CRUDE PETRO AND NATURAL GAS	570166	26	12/2/2014 0:00	50	406.22	3726.28	20101 GOL	HUNTINGT	CA	92648	2628	562	6243314		DIANA	LANG	5284	5	49
169754	SO CAL HOLDING, LLC	A	1311	CRUDE PETRO AND NATURAL GAS	570167	32	12/2/2014 0:00	80	406.22	3726.28	20101 GOL	HUNTINGT	CA	92648	2628	562	6243314		DIANA	LANG	5284	5	49
169754	SO CAL HOLDING, LLC	A	1311	CRUDE PETRO AND NATURAL GAS	572641	21	2/24/2015 0:00	75	406.22	3726.28	20101 GOL	HUNTINGT	CA	92648	2628	562	6243314		DIANA	LANG	5284	5	49
169961	IRVINE COMPANY	A			544935	32	11/16/2012 0:00	23	418.94	3720.05	650 NEWP	NEWPORT	CA	92660		949	7206100		CHARLES	WILLIAMS	0	0	0
169961	IRVINE COMPANY	A			544937	32	11/16/2012 0:00	23	418.94	3720.05	650 NEWP	NEWPORT	CA	92660		949	7206100		CHARLES	WILLIAMS	0	0	0
169961	IRVINE COMPANY	A			545044	32	11/16/2012 0:00	23	418.94	3720.05	650 NEWP	NEWPORT	CA	92660		949	7206100		CHARLES	WILLIAMS	0	0	0
169961	IRVINE COMPANY	A			553555	230	6/25/2013 0:00	96	418.94	3720.05	650 NEWP	NEWPORT	CA	92660		949	7206100		CHARLES	WILLIAMS	0	0	0
169961	IRVINE COMPANY	A			555000	31	8/2/2013 0:00	96	418.94	3720.05	650 NEWP	NEWPORT	CA	92660		949	7206100		CHARLES	WILLIAMS	0	0	0
173582	CERADYNE, INC. 3M COMPANY	A	3269	POTTERY PRODUCTS, NEC	547379	31	2/12/2013 0:00	40	419.64	3727.58	3163-69 RE	COSTA ME	CA	92626		714	6739288		BRIAN	HERNANDE	0	0	4
173582	CERADYNE, INC. 3M COMPANY	A	3269	POTTERY PRODUCTS, NEC	547381	31	2/12/2013 0:00	40	419.64	3727.58	3163-69 RE	COSTA ME	CA	92626		714	6739288		BRIAN	HERNANDE	0	0	4
173582	CERADYNE, INC. 3M COMPANY	A	3269	POTTERY PRODUCTS, NEC	547382	31	2/12/2013 0:00	40	419.64	3727.58	3163-69 RE	COSTA ME	CA	92626		714	6739288		BRIAN	HERNANDE	0	0	4
173582	CERADYNE, INC. 3M COMPANY	A	3269	POTTERY PRODUCTS, NEC	547384	31	2/12/2013 0:00	40	419.64	3727.58	3163-69 RE	COSTA ME	CA	92626		714	6739288		BRIAN	HERNANDE	0	0	4
173582	CERADYNE, INC. 3M COMPANY	A	3269	POTTERY PRODUCTS, NEC	547385	31	2/12/2013 0:00	40	419.64	3727.58	3163-69 RE	COSTA ME	CA	92626		714	6739288		BRIAN	HERNANDE	0	0	4
173582	CERADYNE, INC. 3M COMPANY	A	3269	POTTERY PRODUCTS, NEC	551663	31	5/22/2013 0:00	30	419.64	3727.58	3163-69 RE	COSTA ME	CA	92626		714	6739288		BRIAN	HERNANDE	0	0	4
173582	CERADYNE, INC. 3M COMPANY	A	3269	POTTERY PRODUCTS, NEC	551664	31	5/22/2013 0:00	30	419.64	3727.58	3163-69 RE	COSTA ME	CA	92626		714	6739288		BRIAN	HERNANDE	0	0	4
173582	CERADYNE, INC. 3M COMPANY	A	3269	POTTERY PRODUCTS, NEC	551665	31	5/22/2013 0:00	30	419.64	3727.58	3163-69 RE	COSTA ME	CA	92626		714	6739288		BRIAN	HERNANDE	0	0	4
173582	CERADYNE, INC. 3M COMPANY	A	3269	POTTERY PRODUCTS, NEC	574111	31	4/9/2015 0:00	63	419.64	3727.58	3163-69 RE	COSTA ME	CA	92626		714	6739288		BRIAN	HERNANDE	0	0	4
177008	HARBOR DISTRIBUTION, LLC	A			561751	230	3/12/2014 0:00	40	404.97	3734.11	5901 BOLS	HUNTINGT	CA	92647	2053	714	7122409		MIKE	VACA	1	0	0
177008	HARBOR DISTRIBUTION, LLC	A			562493	31	4/9/2014 0:00	40	404.97	3734.11	5901 BOLS	HUNTINGT	CA	92647	2053	714	7122409		MIKE	VACA	1	0	0
177008	HARBOR DISTRIBUTION, LLC	A			562494	31	4/9/2014 0:00	40	404.97	3734.11	5901 BOLS	HUNTINGT	CA	92647	2053	714	7122409		MIKE	VACA	1	0	0
177008	HARBOR DISTRIBUTION, LLC	A			567611	31	8/15/2014 0:00	96	404.97	3734.11	5901 BOLS	HUNTINGT	CA	92647	2053	714	7122409		MIKE	VACA	1	0	0
177077	BRE/OC GRIFFIN L.L.C.	A			562553	230	3/25/2014 0:00	40	0	0	5 & 6 HUTT	SANTA AN	CA	92707	5757	714	4126457		RICHARD	LEE	43	0	3
177077	BRE/OC GRIFFIN L.L.C.	A			562554	230	3/25/2014 0:00	40	0	0	5 & 6 HUTT	SANTA AN	CA	92707	5757	714	4126457		RICHARD	LEE	43	0	3
177077	BRE/OC GRIFFIN L.L.C.	A			562555	230	3/25/2014 0:00	40	0	0	5 & 6 HUTT	SANTA AN	CA	92707	5757	714	4126457		RICHARD	LEE	43	0	3
177077	BRE/OC GRIFFIN L.L.C.	A			563524	31	5/7/2014 0:00	40	0	0	5 & 6 HUTT	SANTA AN	CA	92707	5757	714	4126457		RICHARD	LEE	43	0	3
177077	BRE/OC GRIFFIN L.L.C.	A			563526	31	5/7/2014 0:00	40	0	0	5 & 6 HUTT	SANTA AN	CA	92707	5757	714	4126457		RICHARD	LEE	43	0	3
177077	BRE/OC GRIFFIN L.L.C.	A			563527	31	5/7/2014 0:00	40	0	0	5 & 6 HUTT	SANTA AN	CA	92707	5757	714	4126457		RICHARD	LEE	43	0	3
177077	BRE/OC GRIFFIN L.L.C.	A			568867	32	10/7/2014 0:00	25	0	0	5 & 6 HUTT	SANTA AN	CA	92707	5757	714	4126457		RICHARD	LEE	43	0	3
177515	GE POWER AND WATER	A			564685	31	5/28/2014 0:00	10	0	0	150 BAKER	COSTA ME	CA	92626	4503	772	2147397		JAMIE	BURROWS	13	0	3
180663	USPF V 1301 DOVE, LP	A			577723	31	8/25/2015 0:00	40	419.74	3724.84	1301 DOVE	NEWPORT	CA	92660		949	2528844		ROBERT	LEHMAN	1.534	0.17	0.164
180663	USPF V 1301 DOVE, LP	A			577727	32	8/25/2015 0:00	25	419.74	3724.84	1301 DOVE	NEWPORT	CA	92660		949	2528844		ROBERT	LEHMAN	1.534	0.17	0.164
180663	USPF V 1301 DOVE, LP	A			577734	32	8/25/2015 0:00	23	419.74	3724.84	1301 DOVE	NEWPORT	CA	92660		949	2528844		ROBERT	LEHMAN	1.534	0.17	0.164
800318	GRISWOLD INDUSTRIES	A	3492	FLUID PWR VLVS/HOSE FITTINGS	570636	31	12/17/2014 0:00	10	413.56	3722.003	1701-41 PL	COSTA ME	CA	92627	4416	949	7224848		BOB	ROST	3	0	23
800318	GRISWOLD INDUSTRIES	A	3492	FLUID PWR VLVS/HOSE FITTINGS	570638	31	12/17/2014 0:00	50	413.56	3722.003	1701-41 PL	COSTA ME	CA	92627	4416	949	7224848		BOB	ROST	3	0	23
800318	GRISWOLD INDUSTRIES	A	3492	FLUID PWR VLVS/HOSE FITTINGS	573669	26	3/26/2015 0:00	10	413.56	3722.003	1701-41 PL	COSTA ME	CA	92627	4416	949	7224848		BOB	ROST	3	0	23
800318	GRISWOLD INDUSTRIES	A	3492	FLUID PWR VLVS/HOSE FITTINGS	573670	26	3/26/2015 0:00	10	413.56	3722.003	1701-41 PL	COSTA ME	CA	92627	4416	949	7224848		BOB	ROST	3	0	23
800389	SANMINA CORPORATION	A	3672	PRINTED CIRCUIT BOARDS	576605	20	7/2/2015 0:00	10	418.434	3725.588	2950 RED H	COSTA ME	CA	92626		949	6232902		JENNY	LU	2	0	2
800389	SANMINA CORPORATION	A	3672	PRINTED CIRCUIT BOARDS	576606	20	7/2/2015 0:00	50	418.434	3725.588	2950 RED H	COSTA ME	CA	92626		949	6232902		JENNY	LU	2	0	2
800389	SANMINA CORPORATION	A	3672	PRINTED CIRCUIT BOARDS	579754	31	11/12/2015 0:00	50	418.434	3725.588	2950 RED H	COSTA ME	CA	92626		949	6232902		JENNY	LU	2	0	2
800389	SANMINA CORPORATION	A	3672	PRINTED CIRCUIT BOARDS	579794	20	11/12/2015 0:00	10	418.434	3725.588	2950 RED H	COSTA ME	CA	92626		949	6232902		JENNY	LU	2	0	2

Engel, Elyse/SJC

From: Lisa Ramos <lramos1@aqmd.gov>
Sent: Thursday, February 11, 2016 12:23 PM
To: Dunavent, Andrew/SDO
Cc: OB PR Support NA Docs
Subject: Public Records Request #84579,
Attachments: - PR - PR Review Docs - 7/24/2009 - 84579 - - 499283 APPLICATON - - - ANDREW DUNAVENT.pdf

Andrew Dunavent

As per our conversation I have attached the documents that I have available to send you at this time. We are still waiting to see if any other documents get returned on our routing.

Lisa Ramos
South Coast A.Q.M.D
Public Records Unit
909.396.3211

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

Permit No.
G3918
A/N 499283

PERMIT TO OPERATE

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for the annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

ID 94967

Legal Owner
or Operator: MESA CONSOLIDATED WATER DISTRICT, WELL#5
1965 PLACENTIA AVE, ATTN: WATER OPER ASSISTANT
COSTA MESA, CA 92627-3420

Equipment Location: 3596 CADILLAC AVE, COSTA MESA, CA 92626

Equipment Description :

INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. L5790GU, NATURAL GAS FIRED, SPARK IGNITED, FOUR CYCLE, TWELVE CYLINDERS, RICH BURN, NATURALLY ASPIRATED, MAXIMUM RATING AT 625 BHP (EFFECTIVE OPERATING LOAD AT 625 BHP AT 900 RPM), WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. KSA8, AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-21-FT-60, DRIVING A WATER PUMP.

Conditions :

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON-SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.

4. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.

5. THE EQUIPMENT SHALL ONLY USE NATURAL GAS AS FUEL.

6. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 - AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED IN THIS PERMIT.

7. THIS ENGINE SHALL BE OPERATED ONLY AT A SPECIFIC LOAD EQUIVALENT TO 625 BHP AT 900 RPM (EXCEPT DURING START-UP OF SHUTDOWN OPERATION). EVIDENCE OF COMPLIANCE WITH THIS CONDITION SHALL INCLUDE AND NOT BE LIMITED TO, A VISIBLE DISPLAY SHOWING THE RPM RATING OF THE ENGINE WHEN THE ENGINE IS IN OPERATION, WHICH SHALL SHOW AN RPM RATING OF ABOUT 900 RPM (AN ALLOWANCE OF +/-10% IS ACCEPTABLE).

FILE COPY

8. THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	250
NITROGEN OXIDES (NOX)	36
CARBON MONOXIDE (CO)	2000

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

9. EFFECTIVE 7/1/2010, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	30
NITROGEN OXIDES (NOX)	11
CARBON MONOXIDE (CO)	250

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

10. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) - AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

THE OPERATOR SHALL ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NOS. 8 & 9 THROUGH MONITORING THAT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURE:

PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT.

IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750 HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

THE OPERATOR SHALL MAINTAIN RECORDS TO VERIFY COMPLIANCE WITH THIS CONDITION.

11. THIS EQUIPMENT SHALL COMPLY WITH MONITORING, TESTING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 30 MINUTES UNDER THE DEFINED LOAD CONDITION IN CONDITION NO. 7. THE OPERATOR SHALL NOT BE REQUIRED TO CONDUCT THE 15-MINUTE NOX AND CO EMISSIONS TESTS AT THE ACTUAL PEAK LOAD AND AT THE MINIMUM LOAD AS SPECIFIED IN RULE 1110.2 (F)(1)(C)(II).

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) - AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 - AMENDED 2/1/2008.

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

12. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

13. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

14. THE OPERATOR SHALL SUBMIT AN APPLICATION FOR A MODIFICATION OF THIS PERMIT WHENEVER THE WATER PUMP POWER REQUIREMENT IS CHANGED.

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris M Bailey

By Dorris M.Bailey/MS10
7/24/2009

FILE COPY

South Coast Air Quality Management District

Form 400-A

Application For Permit To Construct and Permit To Operate

Mail Application To:
P.O. Box 4944
Diamond Bar, CA 91765

Tel: (909) 396-3385
www.aqmd.gov

Section A: Operator Information

1. Business Name of Operator To Appear On The Permit: Mesa Consolidated Water District

2. Valid AQMD Facility ID (Available on Permit or Invoice issued by AQMD): 94967

3. Owner's Business Name (only if different from Business Name of Operator):

Section B: Equipment Location

4. Equipment Location Address:
For equipment operated at various locations in AQMD's jurisdiction, provide address of initial site

3596 Cadillac Ave
Street Address

Costa Mesa — CA, — 92627 -
City — State — Zip Code

County: ○ Los Angeles ◉ Orange ○ San Bernardino ○ Riverside

Contact Name: Jerry Vilander

Contact Title: Operations Manager Phone: (949) 574-1000

Fax: (949) 574-1033 E-Mail: jerryv@mesawater.org

Section C: Permit Mailing Address

5. Permit and Correspondence Information:
☐ Check here if same as equipment location address

1965 Placentia Ave
Street Address

Costa Mesa — CA, — 92627 -
City — State — Zip Code

Contact Name: Jerry Vilander

Contact Title: Operations Manager Phone: (949) 574-1000

Fax: (949) 574-1033 E-Mail: jerryv@mesawater.org

Section D: Application Type

The facility is in ○ RECLAIM ○ Title V ○ RECLAIM & Title V Program (please check if applicable)

6. Reason for Submitting Application (Select only ONE):

- ○ New Construction (Permit to Construct)
- ○ Equipment Operating Without A Permit or Expired Permit*
- ○ Administrative Change
- ○ Equipment On-Site But Not Constructed or Operational
- ○ Title V Application (Initial, Revisions, Modifications, etc.)
- ○ Compliance Plan
- ○ Facility Permit Amendment
- ○ Registration/Certification
- ○ Streamlined Standard Permit
- ○ Permitted Equipment Altered/ Modified Without Permit Approval*
- ○ Proposed Alteration/Modification to Permitted Equipment
- ◉ Change of Condition For Permit To Operate (6)
- ○ Change of Condition For Permit To Construct
- ○ Change of Location—Moving to New Site

Existing Or Previous Permit/Application Number:
(If you checked any of the items in this column, you MUST provide a existing Permit/ Application Number)
D91047

* A Higher Permit Processing Fee applies to those items with an asterisk (Rule 301 (c) (1) (D)

7. Estimated Start Date of Operation/Construction (MM/DD/YYYY):

8. Description of Equipment:
Replace current Air Fuel Ratio Controller with new Compliance Control MEC-R.

9. Is this equipment portable AND will it be operated at different locations within AQMD's jurisdiction? ◉ No ○ Yes

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each) 0

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less, or a not-for-profit training center?) ◉ No ○ Yes

12. Has a Notice of Violation (NOV) or a Notice To Comply (NC) been issued for this equipment? ◉ No ○ Yes If yes, provide NOV/NC #:

Section E: Facility Business Information

13. What type of business is being conducted at this equipment location? Water Supply Well

14. What is your businesses primary NAICS Code (North American Industrial Classification System)?

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ○ No ◉ Yes

16. Are there any schools (K-12) within a 1000-ft. radius of the equipment physical location? ◉ No ○ Yes

Section F: Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

17. Signature of Responsible Official: [signature]

18. Title: Operations Manager

19. Print Name: Jerry Vilander

20. Date: 5/14/09

Check List
- ☐ Form(s) signed and dated by authorized official
- ☐ Supplemental Equipment Form (400-E-XX or 400-E-GEN)
- ☐ CEQA Form (400-CEQA) attached
- ☐ Payment for permit processing fee attached

Your application will be rejected if any of the above items are missing.

AQMD USE ONLY	APPLICATION/TRACKING # DR 499283	TYPE B C D	EQUIPMENT CATEGORY CODE:	FEE SCHEDULE: $	VALIDATION 6/2/09
ENG. A R DATE	ENG. A R DATE	CLASS I III IV	ASSIGNMENT Unit J Engineer	CHECK/MONEY ORDER # 748	AMOUNT $ 1758.90 Tracking # 8131

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S.C.A.Q.M.D.
ENGINEERING

'09 JUN -2 P1:15

South Coast Air Quality Management District

FORM 400-E-13b

NON-EMERGENCY INTERNAL COMBUSTION ENGINE

Mail Application To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765
Tel: (909) 396-3385
www.aqmd.gov

This form must be accompanied by a completed Application for a Permit to Construct/Operate -Form 400A, Form CEQA, Plot Plan and Stack Form

Permit to be issued to (Business name of operator to appear on permit):
Mesa Consolidated Water District

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site):
3596 Cadillac Ave., Costa Mesa, CA 92627 ◉ Fixed Location ○ Various Locations

Does Applicant hold a valid permit for Portable ICE under CA Statewide Portable Equipment Registration Program? ○ Yes ◉ No
If yes, ICE permit is not required from the South Coast Air Quality Management District.

SECTION A: EQUIPMENT INFORMATION

Internal Combustion Engine

Is the ICE an EPA Certified or Qualifying Non-Road Engine? ◉ Yes ○ No If yes, provide EPA Certificate No. _____ & attach copy

Manufacturer: Waukesha
Model No.: L5790GU
Serial No.: 319835
Date of Manufacture: _____ (mm/dd/yyyy)
For an ICE manufactured after 7/18/94, please provide manufacturer's specification and guarantee.
Manufacturer Maximum Rating: 672.00 BHP @ 900 RPM
Date of Installation: _____ (mm/dd/yyyy)

ICE Function (Check all that apply)

☐ Electrical Generator ☐ Fire Pump ☐ Compressor ☐ Co-Generation
☐ Flood Control ☒ Pump Driver ☐ Other (Specify): _____

Type

◉ Stationary ○ Portable ☐ Intra-facility ☐ Off- Site ☐ Rental ☐ Non-Rental

Fuel

◉ Natural Gas ○ LPG ○ Refinery Gas* ○ Digester Gas* ○ Landfill Gas*
○ Diesel Oil No. 2 ○ Other* : _____
*If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content.

Stand-By Fuel

○ Natural Gas ◉ LPG ○ Refinery Gas* ○ Digester Gas* ○ Landfill Gas*
○ Diesel Oil No. 2 ○ Other* : _____
*If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content.

Cycle Type

○ Two Cycle ◉ Four Cycle

Combustion Type

○ Lean Burn ◉ Rich Burn

No. of Cylinders

○ Four ○ Six ○ Eight ○ Ten ◉ Twelve ○ Sixteen ○ Other _____

Aspiration Type

○ Turbocharged ○ Turbocharged/Aftercooled
◉ Naturally Aspirated ☐ Timing Retarded ≥ 4° (relative to standard timing)

Air Pollution Control (if applicable)

○ Selective Catalytic Reduction (SCR)* ○ No Controls
○ Selective Non-catalytic Reduction (SNCR)* ◉ Air Fuel Ratio Controller
○ Non-selective Catalytic Reduction (NSCR) ○ Other (specify) : _____
* Separate application is required.

Manufacturer: Compliance Controls
Model No.: MECR-21-FT-60

If already permitted, indicate Permit No. _____ Device No. _____

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SECTION B: OPERATION INFORMATION

Fuel Consumption	Maximum Rated load: _____ gal./hr. OR _____ cu. ft./hr		Average Load: _____ gal./hr. OR _____ cu. ft./hr.		
Emissions Data	**Pollutants**	**Maximum Emissions Before Control**		**Maximum Emissions After Control**	
		Gm/Bhp-hr	PPM (15% O2)	Gm/Bhp-hr	PPM (15% O2)
	ROG				330.000
	NOx				59.000
	CO				2000.000
	PM				
	SOx				

Emissions Reference (attach):
- ☐ Manufacturer's Guarantee
- ☐ Catalytic Manufacturer's Guarantee
- ☐ Source Test Data
- ☐ EPA Emission Factors
- ☐ Other (specify): _____

Operating Schedule	Normal:	24 hours/day	7 days/week	48 weeks/yr.
	Maximum:	_____ hours/day	_____ days/week	_____ weeks/yr.

SECTION C: APPLICANT CERTIFICATION STATEMENT

I hereby certify that all information contained herein and information submitted with this application is true and correct.

SIGNATURE OF PREPARER: Leanne Tolley	TITLE OF PREPARER: Assoc. Civil Engr.	PREPARER'S TELEPHONE NUMBER: (949) 631-1291 PREPARER'S E-MAIL ADDRESS: leannet@mesawater.org

CONTACT PERSON FOR INFORMATION ON THIS EQUIPMENT: Jerry Vilander	CONTACT PERSON'S TELEPHONE NUMBER: (949) 574-1000	DATE SIGNED: 5/13/09
E-MAIL ADDRESS: jerryv@mesawater.org	FAX NUMBER: (949) 574-1033	

CONFIDENTIAL INFORMATION

Under the California Public Records Act, all information in your permit application will be considered a matter of public record and may be disclosed to a third party. If you wish to keep certain items as confidential, please complete the following steps:

(a) Make a copy of any page containing confidential information blanked out. Label this page "public copy."
(b) Label the original page "confidential." Circle all confidential items on the page.
(c) Prepare a written justification for the confidentiality of each confidential item. Append this to the confidential copy.

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Serial Number: 319835

South Coast Air Quality Management District

Form 400-CEQA

California Environmental Quality Act (CEQA) Applicability

Mail Application To:
P.O. Box 4944
Diamond Bar, CA 91765

Tel: (909) 396-3385

www.aqmd.gov

The SCAQMD is required by state law, the California Environmental Quality Act (CEQA), to review discretionary permit project applications for potential air quality and other environmental impacts. This form is a screening tool to assist the SCAQMD in clarifying whether or not the project[1] has the potential to generate significant adverse environmental impacts that might require preparation of a CEQA document [CEQA Guidelines §15060(a)].[2] Refer to the attached instructions for guidance in completing this form.[3] For each Form 400-A application, also complete and submit one Form 400-CEQA. If submitting multiple Form 400-A applications for the same project at the same time, only one 400-CEQA form is necessary for the entire project. If you need assistance completing this form, contact Lori Inga at (909) 396-3109.

FACILITY INFORMATION

Business Name of Operator to Appear on the Permit:	Facility ID (6-Digit):
Mesa Consolidated Water District	094967

Project Description:

SCADA System upgrade including the replacement of Air Fuel Ratio Controllers on Non-Emergency Gas Engines.

REVIEW FOR EXEMPTION FROM FURTHER CEQA ACTION

Check "Yes" or "No" as *applicable*

	Yes	No	Is this application for:
A.	○	◉	**A CEQA and/or NEPA document previously or currently prepared that specifically *evaluates* this project?** If yes, a permit cannot be issued until a Final CEQA document and Notice of Determination is submitted.
B.	○	◉	**A request for a change of permittee only (without equipment modifications)?**
C.	○	◉	**Equipment certification or equipment registration** (qualifies for Rule 222)**?**
D.	○	◉	**A functionally identical permit unit replacement with no increase in rating or emissions?**
E.	○	◉	**A change of daily VOC permit limit to a monthly VOC permit limit?**
F.	○	◉	**Equipment damaged as a result of a disaster during state of emergency?**
G.	○	◉	**A Title V** (i.e., Regulation XXX) **permit renewal (without equipment modifications)?**
H.	○	◉	**A Title V administrative permit revision?**
I.	○	◉	**The conversion of an existing permit into an initial Title V permit?**

If **"Yes"** is checked for any question above, your application does not require additional evaluation for CEQA applicability. Skip to page 2, "SIGNATURES" and sign and date this form.

REVIEW OF IMPACTS WHICH MAY TRIGGER CEQA

Complete Sections I-VI by checking "Yes" or "No" as applicable. To avoid delays in processing your application(s), explain all "Yes" responses on a separate sheet and attach it to this form.

	Yes	No	Section I – General
1.	○	◉	**Has this project generated any known public controversy regarding potential adverse impacts that may be generated by the project?** Controversy may be construed as concerns raised by local groups at public meetings; adverse media attention such as negative articles in newspapers or other periodical publications, local news programs, environmental justice issues, etc.
2.	○	◉	**Is this project part of a larger project?**
			Section II – Air Quality
3.	○	◉	**Will there be any demolition, excavating, and/or grading construction activities that encompass an area exceeding 20,000 square feet?**
4.	○	◉	**Does this project include the open outdoor storage of dry bulk solid materials that could generate dust?** If Yes, include a plot plan with the application package.

[1] A "project" means the whole of an action which has a potential for resulting in physical change to the environment, including construction activities, clearing or grading of land, improvements to existing structures, and activities or equipment involving the issuance of a permit. For example, a project might include installation of a new, or modification of an existing internal combustion engine, dry-cleaning facility, boiler, gas turbine, spray coating booth, solvent cleaning tank, etc.

[2] To download the CEQA guidelines, visit http://ceres.ca.gov/env_law/state.html.

[3] To download this form and the instructions, visit http://www.aqmd.gov/ceqa or http://www.aqmd.gov/permit

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	Yes	No	
5.	○	◉	**Would this project result in noticeable off-site odors from activities that may not be subject to SCAQMD permit requirements?** For example, compost materials or other *types of greenwaste* (i.e., lawn clippings, tree trimmings, etc.) have the potential to generate odor complaints subject to Rule 402 – Nuisance.
6.	○	◉	**Does this project cause an increase of emissions from marine vessels, trains and/or airplanes?**
7.	○	◉	**Will the proposed project increase the QUANTITY of hazardous materials stored aboveground onsite or transported by mobile vehicle to or from the site by greater than or equal to the amounts associated with each compound on the attached Table 1?[4]**
			Section III – Water Resources
8.	○	◉	**Will the project increase demand for water at the facility by more than 5,000,000 gallons per day?** The following examples identify some, but not all, types of projects that may result in a "yes" answer to this question: 1) projects that generate steam; 2) projects that use water as part of the air pollution control equipment; 3) projects that require water as part of the production process; 4) projects that require new or expansion of existing sewage treatment facilities; 5) projects where water demand exceeds the capacity of the local water purveyor to supply sufficient water for the project; and 6) projects that require new or expansion of existing water supply facilities.
9.	○	◉	**Will the project require construction of new water conveyance infrastructure?** Examples of such projects are when water demands exceed the capacity of the local water purveyor to supply sufficient water for the project, or require new or modified sewage treatment facilities such that the project requires new water lines, sewage lines, sewage hook-ups, etc.
			Section IV – Transportation/Circulation
10.			**Will the project result in** (Check all that apply)**:**
	○	◉	**a. *the need for more* than 350 new employees?**
	○	◉	**b. an increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round-trips per day?**
	○	◉	**c. increase customer traffic by more than 700 visits per day?**
			Section V – Noise
11.	○	◉	**Will the project include equipment that will generate noise GREATER THAN 90 decibels (dB) at the property line?**
			Section VI – Public Services
12.			**Will the project create a permanent need for new or additional public services in any of the following areas** (Check all that apply)**:**
	○	◉	**a. Solid waste disposal?** Check "No" if the projected potential amount of wastes generated by the project is less than five tons per day.
	○	◉	**b. Hazardous waste disposal?** Check "No" if the projected potential amount of hazardous wastes generated by the project is less than 42 cubic yards per day (or equivalent in pounds).

"REMINDER: For each "Yes" checked in the sections above, attach all pertinent information including but not limited to estimated quantities, volumes, weights, etc."

SIGNATURES

I HEREBY CERTIFY THAT ALL INFORMATION CONTAINED HEREIN AND INFORMATION SUBMITTED WITH THIS APPLICATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. I UNDERSTAND THAT THIS FORM IS A SCREENING TOOL AND THAT THE SCAQMD RESERVES THE RIGHT TO CONSIDER OTHER PERTINENT INFORMATION IN DETERMINING CEQA APPLICABILITY.

SIGNATURE OF RESPONSIBLE OFFICIAL OF FIRM:	TITLE OF RESPONSIBLE OFFICIAL OF FIRM:	
	OperationsManager	
TYPE/OR PRINT NAME OF RESPONSIBLE OFFICIAL OF FIRM:	RESPONSIBLE OFFICIAL'S TELEPHONE NUMBER:	DATE Signed:
Jerry Vilander	(949) 5741-000	5/14/09
SIGNATURE OF PREPARER, IF PREPARED BY PERSON OTHER THAN RESPONSIBLE OFFICIAL OF FIRM:	TITLE OF PREPARER:	
	Associate Civil Engineer	
TYPE OR PRINT NAME OF PREPARER:	PREPARER'S TELEPHONE NUMBER:	DATE Signed:
Leanne Talbott	(949) 6311-291	5/13/09

THIS CONCLUDES FORM 400-CEQA. INCLUDE THIS FORM AND THE ATTACHMENTS WITH FORM 400-A.

[4] Table 1 – Regulated Substances List and Threshold Quantities for Accidental Release Prevention can be found in the Instructions for Form 400-CEQA.

SCAQMD PERMIT PROCESSING SYSTEM (PPS)

FEE DATA - SUMMARY SHEET

Application No :	499283	IRS/SS No:	
Previous Application No:	280194	Previous Permit No:	D91047

Company Name :	MESA CONSOLIDATED WATER DISTRICT, WELL#5
Equipment Street:	3596 CADILLACAVE , COSTA MESA CA 92626
Equipment Desc :	I C E (>500 HP) N-EM STAT NAT GAS ONLY

Facility ID: 94967

Equipment Type :	BASIC			Fee Charged by:	B-CAT
B-CAT NO. :	040002	C-CAT NO:	00	Fee Schedule:	C
Facility Zone :	18	Deemed Compl. Date:	6/10/2009	Public Notice:	NO

Evaluation Type :	CHANGE OF CONDITIONS, (PO)
Disposition :	Approve PO, Recommended by Engineer
Lead Appl. No :	

Small Business: ☐
Higher Fees for Failing to Obtain a Permit: ☐
Identical Permit Unit: ☐

Air quality Analysis			$0.00	Filing Fee Paid:	$0.00
E.I.R			$0.00	Permit Processing Fee Paid:	$1,758.90
Health Risk Assessment			$0.00	Permit Processing Fee Calculated*:	$1,758.90
Significant Project			$0.00	Permit Processing Fee Adjustment:	$0.00
Expedited Processing	Hours:	0.00	$0.00		
Source Test Review	Hours:	0.00	$0.00		
Time & Material	Hours:	0.00	$0.00		
				Total Additional Fee:	$0.00
				Additional Charge:	$0.00

COMMENTS:

RECOMMENDED BY: MARCEL SAULIS DATE: 07/23/2009

REVIEWED BY: _____ DATE: JUL 24 2009

* ADJUSTED FOR SMALL BUSINESS, IDENTICAL EQUIPMENT AND P/O NO P/C PENALTY

N S R D A T A S U M M A R Y S H E E T

Application No:	499283
Application Type:	Change of Conditions
Application Status:	PENDAPPRV
Previous Apps,Dev,Permit #:	280194, 0 - x, NONE

Company Name:	MESA CONSOLIDATED WATER DISTRICT, WELL#5
Company ID:	94967
Address:	3596 CADILLAC AVE,COSTA MESA, CA 92626
RECLAIM:	NO
RECLAIM Zone:	01
Air Basin:	SC
Zone:	18
Title V:	NO

Device ID:	0 - ICE-PPS
Estimated Completion Date:	08-01-2009
Heat Input Capacity:	0 Million BTU/hr
Priority Reserve:	NONE - No Priority Access Requested
Recommended Disposition:	31 - PERMIT TO OPERATE GRANTED
PR Expiration:	
School Within 1000 Feet:	NO
Operating Weeks Per Year:	52
Operating Days Per Week:	7
Monday Operating Hours:	00:00 to 24:00
Tuesday Operating Hours:	00:00 to 24:00
Wednesday Operating Hours:	00:00 to 24:00
Thursday Operating Hours:	00:00 to 24:00
Friday Operating Hours:	00:00 to 24:00
Saturday Operating Hours:	00:00 to 24:00
Sunday Operating Hours:	00:00 to 24:00

Emittant: CO
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.54 lbs/hr
Max Daily: 12.96 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.54 lbs/hr
Max Daily: 12.96 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 13 lbs/day
Annual Emission: 4717.44 lbs/yr
District Exemption: 1301(b)(1)-12/07/1995-General (NSR) - attainment air contaminant

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Emittant: NOX
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 1.02 lbs/hr
Max Daily: 24.48 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 1.02 lbs/hr
Max Daily: 24.48 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 24 lbs/day
Annual Emission: 8910.72 lbs/yr
District Exemption: None

Emittant: PM
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 0 lbs/day
Annual Emission: 0 lbs/yr
District Exemption: None

Emittant:	ROG
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	2.07 lbs/hr
Max Daily:	49.68 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	2.07 lbs/hr
Max Daily:	49.68 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	50 lbs/day
Annual Emission:	18083.52 lbs/yr
District Exemption:	None

Emittant:	SOX
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	0 lbs/day
Annual Emission:	0 lbs/yr
District Exemption:	None

SUPERVISOR'S APPROVAL: ABS SUPERVISOR'S REVIEW DATE: JUL 24 2009

Processed By: msaulis 7/24/2009 4:03:33 PM

ENGINEERING EVALUATION PERMIT TO OPERATE

COMPANY NAME AND ADDRESS

Mesa Consolidated Water District
1965 Placentia Ave.
Costa Mesa, CA 92627

CONTACT: Jerry Vilander, Operations Manager, (949) 574-1000

EQUIPMENT LOCATION

AQMD ID 94967
3596 Cadillac Ave.
Costa Mesa, CA 92627

EQUIPMENT DESCRIPTION

INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. L5790GU, NATURAL GAS FIRED, SPARK IGNITED, FOUR CYCLE, TWELVE CYLINDERS, RICH BURN, NATURALLY ASPIRATED, MAXIMUM RATING AT 625 BHP (EFFECTIVE OPERATING LOAD AT 625 BHP AT 900 RPM), WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. KSA8, AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-21-FT-60, DRIVING A WATER PUMP.

BACKGROUND

Mesa Consolidated Water District (MCWD) submitted an application for an existing engine located at one of their pumping facilities to change the air-to-fuel ratio controller. In addition, the engine operates at a single load which will be identified on the permit. Rule 1110.2 states that source testing is required at actual duty cycle and also at minimum and maximum loads; however, the rule does not require the two additional tests if the permit identifies that the engine operates at one defined load, +/- 10%. Operating the engine at one load is not an uncommon practice for water pump engines as they are required to provide a given flow rate at a constant speed.

The equipment description on the permit (D91047, A/N 280194) identifies the engine as being 594 bhp (at 800 RPM). According to the Water Production Supervisor, the engine is rated at 625 bhp at 900 RPM as indicated on the nameplate. The rule allows variation of +/- 10%, which translates to a rating between 562 to 687 bhp at 810 to 990 RPM. MCWD also submitted an Inspection and Monitoring (I&M) Plan, A/N 486378, in accordance with the requirements of Rule 1110.2 and it is currently in the process of being evaluated.

COMPLIANCE REVIEW

The facility was inspected on 6/2/09 and was found to be operating in compliance at the time of inspection. The District Compliance database was queried and no Notices of Violation or Notices to Comply were found to have been issued to the facility within the last five (5) years.

CALCULATIONS

The request to change the air-to-fuel ratio controller will result in no increase in emissions; therefore, calculations are not required.

RULES EVALUATION

RULE 212-STANDARDS FOR APPROVING PERMITS AND ISSUING PUBLIC NOTICES

Rule 212 requires that a person shall not build, erect, install, alter, or replace any equipment, the use of which may cause the issuance of air contaminants or the use of which may eliminate, reduce, or control the issuance of air contaminants without first obtaining written authorization for such construction from the Executive Officer. Rule 212(c) states that a project requires written notification if there is an emission increase for ANY criteria pollutant in excess of the daily maximums specified in Rule 212(g), if the equipment is located within 1,000 feet of the outer boundary of a school, or if the MICR is equal to or greater than one in a million ($1x10^6$) during a lifetime (70 years) for facilities with more than one permitted unit, source under Regulation XX, or equipment under Regulation XXX, unless the applicant demonstrates to the satisfaction of the Executive Officer that the total facility-wide maximum individual cancer risk is below ten in a million ($10x10^6$) using the risk assessment procedures and toxic air contaminants specified under Rule 1402; or, ten in a million ($10x10^6$) during a lifetime (70 years) for facilities with a single permitted unit, source under Regulation XX, or equipment under Regulation XXX. There is no increase in emissions associated with this project; therefore, a public notice is not required for sections (c)(1), (c)(2) or (c)(3).

RULE 401 - VISIBLE EMISSIONS

This rule limits visible emissions to an opacity of less than 20 percent (Ringlemann No.1), as published by the United States Bureau of Mines. Compliance is expected with well maintained and properly operated equipment.

RULE 402 - NUISANCE

This rule requires that a person not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which cause, or have a natural tendency to cause injury or damage to business or property. The engine is not expected to create a public nuisance based on experience with identical natural gas fired engines. Therefore, compliance with Rule 402 is expected.

RULE 407 – LIQUID AND GASEOUS AIR CONTAMINANTS

This rule limits CO emissions to 2,000 ppmvd and SO_2 emissions to 500 ppmvd, averaged over 15 minutes. For CO, the engine source tested at 49.2 ppmvd @ 15% O2, according to the engineering evaluation for A/N 280194. In addition, regular monitoring and source testing are required for CO to verify continued compliance. Thus the engine is expected to continue to comply with the CO limits of this rule. For SO_2, equipment which complies with Rule 431.1 is exempt from the SO_2 limit in Rule 407. The applicant will be required to comply with Rule 431.1 and thus the SO_2 limit in Rule 407 will not apply.

RULE 431.1-SULFUR CONTENT OF GASEOUS FUELS

The engines will use pipeline quality natural gas which will comply with the 16 ppm sulfur limit, calculated as H2S, specified in this rule. Natural gas will be supplied by the Southern California Gas Company which has a H2S content of less 0.25 gr/100scf, which is equivalent to a concentration of about 4 ppm. It is also much less than the 1 gr/100scf limit typical of pipeline quality natural gas. Compliance is expected.

RULE 1110.2 – EMISSIONS FROM GASEOUS- AND LIQUID FUELED ENGINES

The purpose of Rule 1110.2 is to reduce Oxides of Nitrogen (NOx), Volatile Organic Compounds (VOCs), and Carbon Monoxide (CO) from engines. This rule was recently amended on 2/1/08 that affects the operation of these engines. The following sections discuss the key requirements of this rule as it applies to the equipment:

(d)(1)(B) The engine currently meets the emissions requirements in Table II (of the rule), but will be required to meet the more stringent limits as of 7/1/2010.

Current concentration limits

Item	ppmv @ 15% oxygen
NOx	36
CO	2000
ROG	250

Concentration limits effective 7/1/2010

Item	ppmv @ 15% oxygen
NOx	11
CO	250
ROG	30

(d)(1)(E) The engines are equipped with air to fuel ratio controllers and oxygen sensors for feedback control.

(d)(1)(F) The engine is not considered new per sub-section (v), the engines were installed prior to 2/2008 and they will be treated as "existing", thus section (d)(1)(F) does not apply.

(e)(4) MCWD submitted an I&M Plan application (486378) for this location. To this date the I&M Plan has not been processed; therefore, in accordance with the rule, MCWD must implement the plan that was submitted to the District

(e)(5) The engines are equipped with air fuel ratio controllers.

(f)(1)(B) The engines are equipped with time meters.

(f)(1)(C)(i) Source testing frequency for NOx, CO, and VOC, effective 8/1/08, is required once every 2 years or every 8760 operating hours. If the engines operate less than 2000 hours from the previous test, then testing is once every three years.

(f)(1)(C)(ii) Source testing is to be conducted for at least 60 minutes. However, since the engine only operates at a specified load, +/- 10%; testing at 15 minutes at minimal and 15 minutes at maximum loads would not be required. Therefore, a 30 minute test at the operating load is sufficient. Test must occur at least after 40 hours following a tune up.

(f)(1)(C)(ii) An AQMD approved contractor is required to perform testing.

(f)(1)(C)(iv) Source test protocol to be submitted at least 60 days prior to testing and the protocol has to be approved by the District.

(f)(1)(C)(vi) Source test reports to be submitted within 60 days of the test

(f)(1)(D) This section outlines the requirements of the I&M plan. MCWD submitted an I&M Plan for this facility. The Plan is expected to cover the applicable requirements of this section.

(f)(1)(E) MCWD is required to maintain an operating log for these engines.

NEW SOURCE REVIEW (NSR)

There is no increase in emissions associated with the permit condition changes; therefore, BACT, Modeling, or external offsets are not applicable to the project.

RULE 1401 – NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS

The project will result in no increase in TAC emissions; therefore, this rule is not applicable.

RECOMMENDATION(S)

Issue Permits to Operate with the permit conditions shown below.

PERMIT CONDITIONS

Conditions 1 & 2 are standard conditions.

3. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON-SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.

4. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.

5. THE EQUIPMENT SHALL ONLY USE NATURAL GAS AS FUEL.

6. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 – AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED IN THIS PERMIT.

7. THIS ENGINE SHALL BE OPERATED ONLY AT A SPECIFIC LOAD EQUIVALENT TO 625 BHP AT 900 RPM (EXCEPT DURING START-UP OF SHUTDOWN OPERATION). EVIDENCE OF COMPLIANCE WITH THIS CONDITION SHALL INCLUDE AND NOT BE LIMITED TO, A VISIBLE DISPLAY SHOWING THE RPM RATING OF THE ENGINE WHEN THE ENGINE IS IN OPERATION, WHICH SHALL SHOW AN RPM RATING OF ABOUT 900 RPM (AN ALLOWANCE OF +/-10% IS ACCEPTABLE).

8. THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	250
NITROGEN OXIDES (NOX)	36
CARBON MONOXIDE (CO)	2000

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

9. EFFECTIVE 7/1/2010, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	30
NITROGEN OXIDES (NOX)	11
CARBON MONOXIDE (CO)	250

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

10. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) – AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

THE OPERATOR SHALL ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NOS. 8 & 9 THROUGH MONITORING THAT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURE:

PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT.

IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750 HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

THE OPERATOR SHALL MAINTAIN RECORDS TO VERIFY COMPLIANCE WITH THIS CONDITION.

11. THIS EQUIPMENT SHALL COMPLY WITH MONITORING, TESTING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 30 MINUTES UNDER THE DEFINED LOAD CONDITION IN CONDITION NO. 7. THE OPERATOR SHALL NOT BE REQUIRED TO CONDUCT THE 15-MINUTE NOX AND CO EMISSIONS TESTS AT THE ACTUAL PEAK LOAD AND AT THE MINIMUM LOAD AS SPECIFIED IN RULE 1110.2 (F)(1)(C)(II).

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) – AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 – AMENDED 2/1/2008.

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

12. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

13. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

14. THE OPERATOR SHALL SUBMIT AN APPLICATION FOR A MODIFICATION OF THIS PERMIT WHENEVER THE WATER PUMP POWER REQUIREMENT IS CHANGED.

N S R D A T A S U M M A R Y S H E E T

Application No:	280194
Application Type:	Permit to Operate without prior Permit to Construc
Application Status:	
Previous Apps,Dev,Permit #:	NONE

Company Name:	MESA CONSOLIDATED WATER DISTRICT, WELL#5
Company ID:	94967
Address:	3596 CADILLAC AVE,COSTA MESA, CA 92626
RECLAIM:	NO
RECLAIM Zone:	01
Air Basin:	SC
Zone:	18
Title V:	NO

Device ID:	0 - x
Estimated Completion Date:	11-30-1994
Heat Input Capacity:	0 Million BTU/hr
Priority Reserve:	NONE - No Priority Access Requested
Recommended Disposition:	31 - PERMIT TO OPERATE GRANTED
PR Expiration:	
School Within 1000 Feet:	NO
Operating Weeks Per Year:	52
Operating Days Per Week:	7
Monday Operating Hours:	00:00 to 24:00
Tuesday Operating Hours:	00:00 to 24:00
Wednesday Operating Hours:	00:00 to 24:00
Thursday Operating Hours:	00:00 to 24:00
Friday Operating Hours:	00:00 to 24:00
Saturday Operating Hours:	00:00 to 24:00
Sunday Operating Hours:	00:00 to 24:00

Emittant:	CO
BACT:	
Cost Effectiveness:	
Source Type:	
Emis Increase:	25
Modeling:	
Public Notice:	
CONTROLLED EMISSION	
Max Hourly:	0.52 lbs/hr
Max Daily:	12 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.52 lbs/hr
Max Daily:	12 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	25 lbs/day
Annual Emission:	4571 lbs/yr
District Exemption:	None

Emittant:	NOX
BACT:	
Cost Effectiveness:	
Source Type:	
Emis Increase:	17
Modeling:	
Public Notice:	
CONTROLLED EMISSION	
Max Hourly:	0.72 lbs/hr
Max Daily:	17 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.72 lbs/hr
Max Daily:	17 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	17 lbs/day
Annual Emission:	6286 lbs/yr
District Exemption:	None

Emittant:	PM
BACT:	
Cost Effectiveness:	
Source Type:	
Emis Increase:	0
Modeling:	
Public Notice:	
CONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	0 lbs/day
Annual Emission:	0 lbs/yr
District Exemption:	None

Emittant:	ROG
BACT:	
Cost Effectiveness:	
Source Type:	
Emis Increase:	2
Modeling:	
Public Notice:	
CONTROLLED EMISSION	
Max Hourly:	0.02 lbs/hr
Max Daily:	0 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.02 lbs/hr
Max Daily:	0 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	2 lbs/day
Annual Emission:	148 lbs/yr
District Exemption:	None

Emittant:	SOX
BACT:	
Cost Effectiveness:	
Source Type:	
Emis Increase:	0
Modeling:	
Public Notice:	
CONTROLLED EMISSION	
Max Hourly:	0.001 lbs/hr
Max Daily:	0 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.001 lbs/hr
Max Daily:	0 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	0 lbs/day
Annual Emission:	11 lbs/yr
District Exemption:	None

SUPERVISOR'S APPROVAL: _____ SUPERVISOR'S REVIEW DATE: _____

Processed By: msaulis 7/23/2009 3:30:39 PM

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 East Copley Drive, Diamond Bar, CA 91765

PERMIT TO OPERATE

Permit No.
D91047
A/N 280194

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership. If the billing for annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner or Operator: MESA CONSOLIDATED WATER DISTRICT, WELL#5
PO BOX 5008
COSTA MESA, CA. 92628-5008

ID 094967

Equipment Location: 3596 CADILLAC AVE, COSTA MESA, CA 92628-5008

Equipment Description:

1. INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL L5790G, SPARK IGNITION, NATURAL GAS, TWELVE CYLINDERS, RICH BURN, FOUR STROKE CYCLE, 594 B.H.P., DRIVING A WATER PUMP.
2. CATALYTIC CONVERTER WITH AN EXHAUST GAS MONITOR SYSTEM, CONSISTING OF MANUAL AIR/FUEL RATIO CONTROLLER AND EXHAUST GAS OXYGEN SENSOR.

Conditions:

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS EQUIPMENT SHALL COMPLY WITH RULE 431.1

4. THIS ENGINE SHALL OPERATE IN COMPLIANCE WITH RULE 1110.2.

5. THE OXYGEN CONTENT OF THE EXHAUST GAS ENTERING THE CATALYST SHALL NOT EXCEED 0.5 PERCENT ON A VOLUME BASIS.

6. THE TEMPERATURE OF THE EXHAUST GAS ENTERING THE CATALYST SHALL BE MAINTAINED BETWEEN 750 DEGREES FAHRENHEIT AND 1250 DEGREES FAHRENHEIT.

7. THE TEMPERATURE OF THE EXHAUST GAS AT THE CATALYST OUTLET SHALL NOT EXCEED 1350 DEGREES FAHRENHEIT.

FILE COPY

PERMIT TO OPERATE

CONTINUATION OF PERMIT TO OPERATE

8. A TEMPERATURE INDICATOR SHALL BE INSTALLED AND MAINTAINED UPSTREAM OF THE CATALYST.

9. THE EXHAUST GAS EXITING THE CATALYST SHALL NOT EXCEED THE FOLLOWING LIMITS (AS SPECIFIED BY RULE 1110.2 (c)(2)(B)):

   OXIDES OF NITROGEN AS NO2 IS ~~89~~ 45 PPM
   REACTIVE ORGANIC GASES IS 330 PPM
   CARBON DIOXIDE IS 2000 PPM

10. THE EXHAUST GAS OXYGEN SENSOR SHALL BE REPLACED AT LEAST ONCE A YEAR AND REPLACED IF IT IS FOUND NOT TO BE OPERATING WITHIN THE SPECIFICATIONS SET FORTH BY THE MANUFACTURER OF THE SENSOR.

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris M Bailey

By Dorris M. Bailey/rdo
5/31/1995

FILE COPY

Mesa Consolidated Water District

District Mission: Dedicated to Satisfying our Community's Water Needs

May 28, 2009

South Coast Air Quality Management District
P.O. Box 4944
Diamond Bar, Ca 91765-0944

Subject: ID 94967
Well 5 Permit to Operate Update

Mesa Consolidated Water District (Mesa) is currently in the process of replacing our existing Supervisory Control and Data Acquisition (SCADA) system that manages and controls the water distribution system.

As a part of this project Mesa is replacing our existing air fuel ratio controllers at our Well 5 site. Per conversations with Marcel Saulis at AQMD Mesa is providing completed forms 400-CEQA, 400-A (for each engine) and 400-E-13b (for each engine) and a fee of $1,758.90 to update/renew our existing permits to operate.

If you have any questions please contact me at 949-631-1291.

Sincerely,

Leanne Talbott, P.E.
Associate Civil Engineer

Attachments

c: Roger Demers, MCWD Operations

BOARD OF DIRECTORS

SHAWN DEWANE
President
Division V

FRED R. BOCKMILLER
First Vice President
Division I

JAMES F. ATKINSON
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Division IV

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Division III

PAUL E. SHOENBERGER
Vice President
Division II

LEE PEARL
General Manager

COLEEN L. MONTELEONE
District Secretary

VICTORIA L. BEATLEY
Treasurer/Auditor

BOWIE, ARNESON, WILES & GIANNONE
Legal Counsel

1965 Placentia Avenue ♦ Costa Mesa, California 92627
Telephone (949) 631-1200 ♦ FAX (949) 574-1036
www.mesawater.org

Mesa Consolidated Water District
1965 Placentia Avenue · Costa Mesa, CA · 92627-3420
(949) 574-1022 · FAX (949) 574-1035

Check Number: 000000748

Date: 05/21/2009

SOUTH COAST A.Q.M.D.

P O BOX 4944
DIAMOND BAR, CA 91765-0944

Mesa Consol. Water District — SCAQMD

To: SOUTH COAST A.Q.M.D.

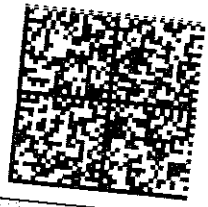
Check Number: 000000748
Date: 05/21/2009

Date	Invoice Number	Description	Amount	Paid Amount
05/25/2009	910092-WELL5	PERMIT TO OPERATE SITE ID94967	$1,758.90	$1,758.90
		TOTALS:	$1,758.90	$1,758.90

Mesa Consolidated
Water District
P.O. Box 5008 • 1965 Placentia Avenue
Costa Mesa, California 92628-5008

ADDRESS SERVICE REQUESTED

You Can Make A Difference...
Be Water Wise!



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05/29/2009

Mailed From 92627

US POSTAGE

FROM www.mesawater.org

Mesa Consolidated Water District

1965 Placentia Avenue
Costa Mesa, CA 92627-3420

RETURN POSTAGE GUARANTEED

TO:

South Coast AQMD
P.O. Box 4944
Diamond Bar, Ca 91765-0944

Engel, Elyse/SJC

From: Lisa Ramos <lramos1@aqmd.gov>
Sent: Thursday, February 11, 2016 12:16 PM
To: Dunavent, Andrew/SDO
Cc: OB PR Support NA Docs
Subject: Public Records Request #84581,
Attachments: ENG - Application Folder - 8/5/2009 - Fac ID: 98380 - Appl# 499282 - Permit# G04005 - Name: MESA CONSOLIDATED WATER D -.pdf; ENG - Application Folder - 8/5/2009 - Fac ID: 98380 - Appl# 499281 - Permit# G04004 - Name: MESA CONSOLIDATED WATER D -.pdf; ENG - Application Folder - 8/5/2009 - Fac ID: 98380 - Appl# 499280 - Permit# G04003 - Name: MESA CONSOLIDATED WATER D -.pdf; - PR - PR Review Docs - 8/5/2009 - 84581 - - 499279 APPL - - - ANDREW DUNAVENT.pdf

Andrew Dunavent

As per our conversation I have attached the documents that I have available to send you at this time. We are still waiting to see if any other documents get returned on our routing.

Lisa Ramos
South Coast A.Q.M.D
Public Records Unit
909.396.3211

ROUTING RECORD

DATE	FROM	TO	ACTION
JUN 04 2009	MYC	MS	III
8/4/09	MS	MBS	PD

REFERENCE TO OTHER APCD RECORDS INCLUDING VARIANCES

MCWD · ID 98380 RESERVOIR 2
ICE # 1 A/N 499279
MASTER FILE

APPL # 499279
I. D. # 98380
MESA CONSOLIDATED WATER DISTRICT
2340 ORANGE AVE
COSTA MESA
ICE
Date: 06/02/09

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

Permit No.
G4002
A/N 499279

PERMIT TO OPERATE

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for the annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner
or Operator:

ID 98380

MESA CONSOLIDATED WATER DISTRICT
1965 PLACENTIA AVE, ATTN: WATER OPER ASSISTANT
COSTA MESA, CA 92627-3420

Equipment Location: 2340 ORANGE AVE, COSTA MESA, CA 92627

Equipment Description :

INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10769/1, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

Conditions :

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON-SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.

4. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.

5. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 – AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED IN THIS PERMIT.

6. THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	33

FILE COPY

NITROGEN OXIDES (NOX)	12
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

7. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	30
NITROGEN OXIDES (NOX)	11
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

8. THE OPERATOR SHALL INSTALL AND MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV). THE EXHAUST GAS OXYGEN SENSOR MV OUTPUT SHALL BE MAINTAINED AS PER THE MANUFACTURER'S SPECIFICATION FOR THE MV READING TO ENSURE A PROPER AIR TO FUEL MIXTURE.

THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY BY MEASURING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

FILE COPY

9. THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL INSPECT AND CLEAN OR, IF NECESSARY, REPLACE THE CATALYST EVERY 8,000 OPERATING HOURS. RECORDS OF THE CATALYST CLEANING OR REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

10. THE OPERATOR OR CONTRACTOR IN CHARGE SHALL MAINTAIN ACCURATE MAINTENANCE RECORDS OF THE DATE OF CATALYST CLEANING OR REPLACEMENT, OXYGEN SENSOR REPLACEMENT, THE TOTAL HOUR READING ON THE TOTAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME, OXYGEN SENSOR READING IN MILLIVOLTS OR PERCENT OXYGEN AND THE CORRESPONDING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

11. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) – AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

THE OPERATOR SHALL ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NOS. 6 & 7 THROUGH MONITORING THAT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURE:

PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT.

IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750 HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

THE OPERATOR SHALL MAINTAIN RECORDS TO VERIFY COMPLIANCE WITH THIS CONDITION.

12. THIS EQUIPMENT SHALL COMPLY WITH MONITORING, TESTING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES. TESTING SHALL BE DONE FOR AT LEAST 30 MINUTES DURING NORMAL OPERATION (ACTUAL DUTY CYCLE). IN ADDITION, TESTING SHALL BE DONE FOR NOX AND CO EMISSIONS FOR AT LEAST 15 MINUTES AT: AN ENGINE'S PEAK LOAD, OR THE MAXIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST, AND: AT ACTUAL MINIMUM LOAD, EXCLUDING IDLE, OR THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) – AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 – AMENDED 2/1/2008.

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

13. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

14. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

By Dorris M.Bailey/MS10
8/5/2009

FILE COPY

South Coast Air Quality Management District

Form 400-A

Application For Permit To Construct and Permit To Operate

Mail Application To:
P.O. Box 4944
Diamond Bar, CA 91765

Tel: (909) 396-3385
www.aqmd.gov

Section A: Operator Information

1. **Business Name of Operator To Appear On The Permit:**
Mesa Consolidated Water District

2. **Valid AQMD Facility ID (Available on Permit or Invoice issued by AQMD):** 98380

3. **Owner's Business Name (only if different from Business Name of Operator):**

Section B: Equipment Location

4. **Equipment Location Address:**
For equipment operated at various locations in AQMD's jurisdiction, provide address of initial site

2340 Orange Ave
Street Address

Costa Mesa | CA | 92627
City | State | Zip Code

County: ○ Los Angeles ◉ Orange ○ San Bernardino ○ Riverside

Contact Name: Jerry Vilander

Contact Title: Operations Manager Phone: (949) 574-1000

Fax: (949) 574-1033 E-Mail: jerryv@mesawater.org

Section C: Permit Mailing Address

5. **Permit and Correspondence Information:**
☐ Check here if same as equipment location address

1965 Placentia Ave
Street Address

Costa Mesa | CA | 92627
City | State | Zip Code

Contact Name: Jerry Vilander

Contact Title: Operations Manager Phone: (949) 574-1000

Fax: (949) 574-1033 E-Mail: jerryv@mesawater.org

Section D: Application Type

The facility is in ○ RECLAIM ○ Title V ○ RECLAIM & Title V Program (please check if applicable)

6. **Reason for Submitting Application (Select only ONE):**

- ○ New Construction (Permit to Construct)
- ○ Equipment Operating Without A Permit or Expired Permit*
- ○ Administrative Change
- ○ Equipment On-Site But Not Constructed or Operational
- ○ Title V Application (Initial, Revisions, Modifications, etc.)
- ○ Compliance Plan
- ○ Facility Permit Amendment
- ○ Registration/Certification
- ○ Streamlined Standard Permit
- ○ Permitted Equipment Altered/ Modified Without Permit Approval*
- ○ Proposed Alteration/Modification to Permitted Equipment
- ◉ Change of Condition For Permit To Operate (W)
- ○ Change of Condition For Permit To Construct
- ○ Change of Location—Moving to New Site

Existing Or Previous Permit/Application Number:
(If you checked any of the items in this column, you MUST provide a existing Permit/ Application Number)
F90137

* A Higher Permit Processing Fee applies to those items with an asterisk (Rule 301 (c) (1) (D)

7. **Estimated Start Date of Operation/Construction (MM/DD/YYYY):**

8. **Description of Equipment:**
Replace current Air Fuel Ratio Controller with Compliance Controls MEC-R.

9. **Is this equipment portable AND will it be operated at different locations within AQMD's jurisdiction?** ◉ No ○ Yes

10. **For Identical equipment, how many additional applications are being submitted with this application?** (Form 400-A required for each) 3

11. **Are you a Small Business as per AQMD's Rule 102 definition?** (10 employees or less and total gross receipts are $500,000 or less, or a not-for-profit training center?) ◉ No ○ Yes

12. **Has a Notice of Violation (NOV) or a Notice To Comply (NC) been issued for this equipment?**
◉ No ○ Yes If yes, provide NOV/NC #:

Section E: Facility Business Information

13. **What type of business is being conducted at this equipment location?**
Water Supply Reservoir

14. **What is your businesses primary NAICS Code** (North American Industrial Classification System)?

15. **Are there other facilities in the SCAQMD jurisdiction operated by the same operator?** ○ No ◉ Yes

16. **Are there any schools (K-12) within a 1000-ft. radius of the equipment physical location?** ◉ No ○ Yes

Section F: Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

17. **Signature of Responsible Official:**

18. **Title:**
Operations Manager

19. **Print Name:**
Jerry Vilander

20. **Date:**
5/14/05

Check List
- ☐ Form(s) signed and dated by authorized official
- ☐ Supplemental Equipment Form (400-E-XX or 400-E-GEN)
- ☐ CEQA Form (400-CEQA) attached
- ☐ Payment for permit processing fee attached

Your application will be rejected if any of the above items are missing.

AQMD USE ONLY	APPLICATION/TRACKING #	TYPE B C D	EQUIPMENT CATEGORY CODE:	FEE SCHEDULE: $	VALIDATION
	499279 OK				6/2/09 MC
ENG. A R DATE	ENG. A R DATE	CLASS I III IV	ASSIGNMENT Unit 5 Engineer	CHECK/MONEY ORDER # 750	AMOUNT $ 2540.74	Tracking # 81330

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1/4

S.C.A.Q.M.D.
ENGINEERING

'09 JUN -2 P1:15

South Coast Air Quality Management District

FORM 400-E-13b
NON-EMERGENCY INTERNAL COMBUSTION ENGINE

Mail Application To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765
Tel: (909) 396-3385
www.aqmd.gov

This form must be accompanied by a completed Application for a Permit to Construct/Operate -Form 400A, Form CEQA, Plot Plan and Stack Form

Permit to be issued to (Business name of operator to appear on permit):
Mesa Consolidated Water District

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site):
2340 Orange Ave., Costa Mesa, CA 92627 (◉) Fixed Location ( ) Various Locations

Does Applicant hold a valid permit for Portable ICE under CA Statewide Portable Equipment Registration Program? ( ) Yes (◉) No
If yes, ICE permit is not required from the South Coast Air Quality Management District.

SECTION A: EQUIPMENT INFORMATION

Internal Combustion Engine

Is the ICE an EPA Certified or Qualifying Non-Road Engine? (◉) Yes ( ) No If yes, provide EPA Certificate No. _____ & attach copy

Manufacturer:	Model No.:
Waukesha	2895G
Serial No.: C-10769/1	**Date of Manufacture:** _____ (mm/dd/yyyy)
Manufacturer Maximum Rating: 369.00 BHP @ 1000 RPM	**Date of Installation:** _____ (mm/dd/yyyy)

For an ICE manufactured after 7/18/94, please provide manufacturer's specification and guarantee.

ICE Function (Check all that apply)
[ ] Electrical Generator [ ] Fire Pump [ ] Compressor [ ] Co-Generation
[ ] Flood Control [x] Pump Driver [ ] Other (Specify): _____

Type
(◉) Stationary ( ) Portable [ ] Intra-facility [ ] Off- Site [ ] Rental [ ] Non-Rental

Fuel
(◉) Natural Gas ( ) LPG ( ) Refinery Gas* ( ) Digester Gas* ( ) Landfill Gas*
( ) Diesel Oil No. 2 ( ) Other* : _____
*If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content.

Stand-By Fuel
( ) Natural Gas (◉) LPG ( ) Refinery Gas* ( ) Digester Gas* ( ) Landfill Gas*
( ) Diesel Oil No. 2 ( ) Other* : _____
*If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content.

Cycle Type
( ) Two Cycle (◉) Four Cycle

Combustion Type
( ) Lean Burn (◉) Rich Burn

No. of Cylinders
( ) Four (◉) Six ( ) Eight ( ) Ten ( ) Twelve ( ) Sixteen ( ) Other _____

Aspiration Type
( ) Turbocharged ( ) Turbocharged/Aftercooled
(◉) Naturally Aspirated [ ] Timing Retarded ≥ 4° (relative to standard timing)

Air Pollution Control (if applicable)
( ) Selective Catalytic Reduction (SCR)* ( ) No Controls
( ) Selective Non-catalytic Reduction (SNCR)* (◉) Air Fuel Ratio Controller
( ) Non-selective Catalytic Reduction (NSCR) ( ) Other (specify) : _____
* Separate application is required.

Manufacturer:	Model No.:
Compliance Controls	MECR-11-FT-60

If already permitted, indicate Permit No. _____ Device No. _____

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SECTION B: OPERATION INFORMATION

Fuel Consumption

Maximum Rated load: _____ gal./hr. OR _____ cu. ft./hr | Average Load: _____ gal./hr. OR 1.200 cu. ft./hr.

Emissions Data

Pollutants	Maximum Emissions Before Control		Maximum Emissions After Control	
	Gm/Bhp-hr	PPM (15% O2)	Gm/Bhp-hr	PPM (15% O2)
ROG				
NOx	1.500			12.000
CO	2.650			76.000
PM				
SOx				

Emissions Reference (attach):
- ☐ Manufacturer's Guarantee
- ☐ Catalytic Manufacturer's Guarantee
- ☐ Source Test Data
- ☐ EPA Emission Factors
- ☐ Other (specify): _____

Operating Schedule

Normal: 6 hours/day 4 days/week 52 weeks/yr.

Maximum: _____ hours/day _____ days/week _____ weeks/yr.

SECTION C: APPLICANT CERTIFICATION STATEMENT

I hereby certify that all information contained herein and information submitted with this application is true and correct.

SIGNATURE OF PREPARER: [signature] | TITLE OF PREPARER: Assoc. Civil Engr.

PREPARER'S TELEPHONE NUMBER: (949) 631-1291

PREPARER'S E-MAIL ADDRESS: leannet@mesawater.org

CONTACT PERSON FOR INFORMATION ON THIS EQUIPMENT: Jerry Vilander

E-MAIL ADDRESS: jerryv@mesawater.org

CONTACT PERSON'S TELEPHONE NUMBER: (949) 574-1000

FAX NUMBER: (949) 574-1033

DATE SIGNED: 5/13/09

CONFIDENTIAL INFORMATION

Under the California Public Records Act, all information in your permit application will be considered a matter of public record and may be disclosed to a third party. If you wish to keep certain items as confidential, please complete the following steps:

(a) Make a copy of any page containing confidential information blanked out. Label this page "public copy."
(b) Label the original page "confidential." Circle all confidential items on the page.
(c) Prepare a written justification for the confidentiality of each confidential item. Append this to the confidential copy.

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Serial Number: C-10769/1

South Coast Air Quality Management District

Form 400-CEQA

California Environmental Quality Act (CEQA) Applicability

Mail Application To:
P.O. Box 4944
Diamond Bar, CA 91765
Tel: (909) 396-3385
www.aqmd.gov

The SCAQMD is required by state law, the California Environmental Quality Act (CEQA), to review discretionary permit project applications for potential air quality and other environmental impacts. This form is a screening tool to assist the SCAQMD in clarifying whether or not the project[1] has the potential to generate significant adverse environmental impacts that might require preparation of a CEQA document [CEQA Guidelines §15060(a)].[2] Refer to the attached instructions for guidance in completing this form.[3] For each Form 400-A application, also complete and submit one Form 400-CEQA. If submitting multiple Form 400-A applications for the same project at the same time, only one 400-CEQA form is necessary for the entire project. If you need assistance completing this form, contact Lori Inga at (909) 396-3109.

FACILITY INFORMATION

Business Name of Operator to Appear on the Permit:	Facility ID (6-Digit):
Mesa Consolidated Water District	098380

Project Description:

SCADA System upgrade including the replacement of Air Fuel Ratio Controllers on Non-Emergency Gas Engines.

REVIEW FOR EXEMPTION FROM FURTHER CEQA ACTION

Check "Yes" or "No" as applicable

	Yes	No	Is this application for:
A.	○	◉	**A CEQA and/or NEPA document previously or currently prepared that specifically evaluates this project?** If yes, a permit cannot be issued until a Final CEQA document and Notice of Determination is submitted.
B.	○	◉	**A request for a change of permittee only (without equipment modifications)?**
C.	○	◉	**Equipment certification or equipment registration** (qualifies for Rule 222)?
D.	○	◉	**A functionally identical permit unit replacement with no increase in rating or emissions?**
E.	○	◉	**A change of daily VOC permit limit to a monthly VOC permit limit?**
F.	○	◉	**Equipment damaged as a result of a disaster during state of emergency?**
G.	○	◉	**A Title V** (i.e., Regulation XXX) **permit renewal (without equipment modifications)?**
H.	○	◉	**A Title V administrative permit revision?**
I.	○	◉	**The conversion of an existing permit into an initial Title V permit?**

If "**Yes**" is checked for any question above, your application does not require additional evaluation for CEQA applicability. Skip to page 2, "SIGNATURES" and sign and date this form.

REVIEW OF IMPACTS WHICH MAY TRIGGER CEQA

Complete Sections I-VI by checking "Yes" or "No" as applicable. To avoid delays in processing your application(s), explain all "Yes" responses on a separate sheet and attach it to this form.

	Yes	No	Section I – General
1.	○	◉	**Has this project generated any known public controversy regarding potential adverse impacts that may be generated by the project?** Controversy may be construed as concerns raised by local groups at public meetings; adverse media attention such as negative articles in newspapers or other periodical publications, local news programs, environmental justice issues, etc.
2.	○	◉	**Is this project part of a larger project?**
			Section II – Air Quality
3.	○	◉	**Will there be any demolition, excavating, and/or grading construction activities that encompass an area exceeding 20,000 square feet?**
4.	○	◉	**Does this project include the open outdoor storage of dry bulk solid materials that could generate dust?** If Yes, include a plot plan with the application package.

[1] A "project" means the whole of an action which has a potential for resulting in physical change to the environment, including construction activities, clearing or grading of land, improvements to existing structures, and activities or equipment involving the issuance of a permit. For example, a project might include installation of a new, or modification of an existing internal combustion engine, dry-cleaning facility, boiler, gas turbine, spray coating booth, solvent cleaning tank, etc.
[2] To download the CEQA guidelines, visit http://ceres.ca.gov/env_law/state.html.
[3] To download this form and the instructions, visit http://www.aqmd.gov/cega or http://www.aqmd.gov/permit

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	Yes	No	
5.	○	◉	**Would this project result in noticeable off-site odors from activities that may not be subject to SCAQMD permit requirements?** For example, compost materials or other types of greenwaste (i.e., lawn clippings, tree trimmings, etc.) have the potential to generate odor complaints subject to Rule 402 – Nuisance.
6.	○	◉	**Does this project cause an increase of emissions from marine vessels, trains and/or airplanes?**
7.	○	◉	**Will the proposed project increase the QUANTITY of hazardous materials stored aboveground onsite or transported by mobile vehicle to or from the site by greater than or equal to the amounts associated with each compound on the attached Table 1?[4]**
			Section III – Water Resources
8.	○	◉	**Will the project increase demand for water at the facility by more than 5,000,000 gallons per day?** The following examples identify some, but not all, types of projects that may result in a "yes" answer to this question: 1) projects that generate steam; 2) projects that use water as part of the air pollution control equipment; 3) projects that require water as part of the production process; 4) projects that require new or expansion of existing sewage treatment facilities; 5) projects where water demand exceeds the capacity of the local water purveyor to supply sufficient water for the project; and 6) projects that require new or expansion of existing water supply facilities.
9.	○	◉	**Will the project require construction of new water conveyance infrastructure?** Examples of such projects are when water demands exceed the capacity of the local water purveyor to supply sufficient water for the project, or require new or modified sewage treatment facilities such that the project requires new water lines, sewage lines, sewage hook-ups, etc.
			Section IV – Transportation/Circulation
10.			**Will the project result in** (Check all that apply)**:**
	○	◉	**a. the need for more than 350 new employees?**
	○	◉	**b. an increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round-trips per day?**
	○	◉	**c. increase customer traffic by more than 700 visits per day?**
			Section V – Noise
11.	○	◉	**Will the project include equipment that will generate noise GREATER THAN 90 decibels (dB) at the property line?**
			Section VI – Public Services
12.			**Will the project create a permanent need for new or additional public services in any of the following areas** (Check all that apply)**:**
	○	◉	**a. Solid waste disposal?** Check "No" if the projected potential amount of wastes generated by the project is less than five tons per day.
	○	◉	**b. Hazardous waste disposal?** Check "No" if the projected potential amount of hazardous wastes generated by the project is less than 42 cubic yards per day (or equivalent in pounds).

REMINDER: *For each "Yes" checked in the sections above, attach all pertinent information including but not limited to estimated quantities, volumes, weights, etc.*

SIGNATURES

I HEREBY CERTIFY THAT ALL INFORMATION CONTAINED HEREIN AND INFORMATION SUBMITTED WITH THIS APPLICATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. I UNDERSTAND THAT THIS FORM IS A SCREENING TOOL AND THAT THE SCAQMD RESERVES THE RIGHT TO CONSIDER OTHER PERTINENT INFORMATION IN DETERMINING CEQA APPLICABILITY.

SIGNATURE OF RESPONSIBLE OFFICIAL OF FIRM:	TITLE OF RESPONSIBLE OFFICIAL OF FIRM:	
	OperationsManager	
TYPE OR PRINT NAME OF RESPONSIBLE OFFICIAL OF FIRM: Jerry Vilander	RESPONSIBLE OFFICIAL'S TELEPHONE NUMBER: (949) 5741-000	DATE Signed: 5/14/09
SIGNATURE OF PREPARER, IF PREPARED BY PERSON OTHER THAN RESPONSIBLE OFFICIAL OF FIRM:	TITLE OF PREPARER: Associate Civil Engineer	
TYPE OR PRINT NAME OF PREPARER: Leanne Talbott	PREPARER'S TELEPHONE NUMBER: (949) 6311-291	DATE Signed: 5/13/09

THIS CONCLUDES FORM 400-CEQA. INCLUDE THIS FORM AND THE ATTACHMENTS WITH FORM 400-A.

[4] Table 1 – Regulated Substances List and Threshold Quantities for Accidental Release Prevention can be found in the Instructions for Form 400-CEQA.

SCAQMD PERMIT PROCESSING SYSTEM (PPS)

FEE DATA - SUMMARY SHEET

Application No :	499279	IRS/SS No:	
Previous Application No:	466597	Previous Permit No:	F90137

Company Name :	MESA CONSOLIDATED WATER DISTRICT
Equipment Street:	2340 ORANGEAVE , COSTA MESA CA 92627
Equipment Desc :	I C E (50-500 HP) N-EM STAT GAS-LPG

Facility ID: 98380

Equipment Type :	BASIC			Fee Charged by:	B-CAT
B-CAT NO. :	040501	C-CAT NO:	00	Fee Schedule:	B
Facility Zone :	18	Deemed Compl. Date:	6/10/2009	Public Notice:	NO

Evaluation Type :	CHANGE OF CONDITIONS, (PO)
Disposition :	Approve PO, Recommended by Engineer
Lead Appl. No :	499279

Small Business: ☐
Higher Fees for Failing to Obtain a Permit: ☐
Identical Permit Unit: ☒

Air quality Analysis			$0.00	Filing Fee Paid:	$0.00
E.I.R			$0.00	Permit Processing Fee Paid:	$1,016.31
Health Risk Assessment			$0.00	Permit Processing Fee Calculated*:	$1,016.31
Significant Project			$0.00	Permit Processing Fee Adjustment:	$0.00
Expedited Processing	Hours:	0.00	$0.00		
Source Test Review	Hours:	0.00	$0.00		
Time & Material	Hours:	0.00	$0.00		
				Total Additional Fee:	$0.00
				Additional Charge:	$0.00

COMMENTS:

RECOMMENDED BY: MARCEL SAULIS DATE: 08/04/2009

REVIEWED BY: _____ DATE: AUG 0 5 2009

* ADJUSTED FOR SMALL BUSINESS, IDENTICAL EQUIPMENT AND P/O NO P/C PENALTY

N S R D A T A S U M M A R Y S H E E T

Application No:	499279
Application Type:	Change of Conditions
Application Status:	PENDAPPRV
Previous Apps,Dev,Permit #:	466597, 0 - ICE-PPS, NONE

Company Name:	MESA CONSOLIDATED WATER DISTRICT
Company ID:	98380
Address:	2340 ORANGE AVE,COSTA MESA, CA 92627
RECLAIM:	NO
RECLAIM Zone:	01
Air Basin:	SC
Zone:	18
Title V:	NO

Device ID:	0 - ICE-PPS
Estimated Completion Date:	08-01-2009
Heat Input Capacity:	0 Million BTU/hr
Priority Reserve:	NONE - No Priority Access Requested
Recommended Disposition:	31 - PERMIT TO OPERATE GRANTED
PR Expiration:	
School Within 1000 Feet:	NO
Operating Weeks Per Year:	52
Operating Days Per Week:	7
Monday Operating Hours:	00:00 to 24:00
Tuesday Operating Hours:	00:00 to 24:00
Wednesday Operating Hours:	00:00 to 24:00
Thursday Operating Hours:	00:00 to 24:00
Friday Operating Hours:	00:00 to 24:00
Saturday Operating Hours:	00:00 to 24:00
Sunday Operating Hours:	00:00 to 24:00

Emittant:	CO
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.49 lbs/hr
Max Daily:	11.76 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.49 lbs/hr
Max Daily:	11.76 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	12 lbs/day
Annual Emission:	4280.64 lbs/yr
District Exemption:	1301(b)(1)-12/07/1995-General (NSR) - attainment air contaminant

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Emittant:	NOX
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	3 lbs/day
Annual Emission:	1048.32 lbs/yr
District Exemption:	None

Emittant:	PM10
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	0 lbs/day
Annual Emission:	0 lbs/yr
District Exemption:	None

Emittant:	ROG
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	3 lbs/day
Annual Emission:	1048.32 lbs/yr
District Exemption:	None

SUPERVISOR'S APPROVAL: ABS SUPERVISOR'S REVIEW DATE: AUG 0 5 2009

Processed By: msaulis 8/4/2009 2:10:29 PM

ENGINEERING EVALUATION PERMIT TO OPERATE

COMPANY NAME AND ADDRESS

Mesa Consolidated Water District
1965 Placentia Ave.
Costa Mesa, CA 92627

CONTACT: Jerry Vilander, Operations Manager, (949) 574-1000

EQUIPMENT LOCATION

AQMD ID 98380
2340 Orange Ave.
Costa Mesa, CA 92627

EQUIPMENT DESCRIPTION

A/N 499279 (MASTER)
INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10769/1, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

A/N 499280
INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10796/4, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

A/N 499281
INTERNAL COMBUSTION ENGINE, NO 2, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10796/2, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

A/N 499282
INTERNAL COMBUSTION ENGINE, NO 4, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10796/3, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

BACKGROUND

Mesa Consolidated Water District (MCWD) submitted applications for existing engines located at one of their pumping facilities, Reservoir 2, to change the air-to-fuel ratio controllers (AFRC). MCWD is in the process of updating their Supervisory Control and Data Acquisition (SCADA) system and as a part of the process; they will be replacing the existing Continental Controls ECV5 to Compliance Controls AFRC. According to the Production Superintendent, the Compliance Controls AFRC are better suited for their SCADA system than the existing AFRC. The four (4) engines located at the site are all identical and the AFRC that will be installed are also identical.

The applications are for change of conditions with no change in emissions; therefore, no NSR requirements will be triggered. MCWD also submitted an Inspection and Monitoring (I&M) Plan, A/N 486376, in accordance with the requirements of Rule 1110.2 and it is currently in the process of being evaluated.

COMPLIANCE REVIEW

The District Compliance database was queried and it revealed that the facility was inspected on 6/2/09 and a Notice of Violation (NOV) P53467 was issued for failure to conduct source tests on three of the four engines per Rule 1110.2. District enforcement staff is monitoring the compliance status of the facility to ensure the NC and NOV are resolved accordingly and the facility complies with District Rules and Regulations.

CALCULATIONS

The request to change the air-to-fuel ratio controller will result in no increase in emissions; therefore, calculations are not required.

RULES EVALUATION

RULE 212-STANDARDS FOR APPROVING PERMITS AND ISSUING PUBLIC NOTICES
Rule 212 requires that a person shall not build, erect, install, alter, or replace any equipment, the use of which may cause the issuance of air contaminants or the use of which may eliminate, reduce, or control the issuance of air contaminants without first obtaining written authorization for such construction from the Executive Officer. Rule 212(c) states that a project requires written notification if there is an

emission increase for ANY criteria pollutant in excess of the daily maximums specified in Rule 212(g), if the equipment is located within 1,000 feet of the outer boundary of a school, or if the MICR is equal to or greater than one in a million ($1x10^6$) during a lifetime (70 years) for facilities with more than one permitted unit, source under Regulation XX, or equipment under Regulation XXX, unless the applicant demonstrates to the satisfaction of the Executive Officer that the total facility-wide maximum individual cancer risk is below ten in a million ($10x10^6$) using the risk assessment procedures and toxic air contaminants specified under Rule 1402; or, ten in a million ($10x10^6$) during a lifetime (70 years) for facilities with a single permitted unit, source under Regulation XX, or equipment under Regulation XXX. There is no increase in emissions associated with this project; therefore, a public notice is not required for sections (c)(1), (c)(2) or (c)(3).

RULE 401 - VISIBLE EMISSIONS

This rule limits visible emissions to an opacity of less than 20 percent (Ringlemann No.1), as published by the United States Bureau of Mines. Compliance is expected with well maintained and properly operated equipment.

RULE 402 - NUISANCE

This rule requires that a person not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which cause, or have a natural tendency to cause injury or damage to business or property. The engines are not expected to create a public nuisance based on experience with identical natural gas fired engines. Therefore, compliance with Rule 402 is expected.

RULE 407 – LIQUID AND GASEOUS AIR CONTAMINANTS

This rule limits CO emissions to 2,000 ppmvd and SO_2 emissions to 500 ppmvd, averaged over 15 minutes. The engines are subject to a CO emission limit of 70 and 76 ppmvd @ 15% O2. Thus the engines are expected to continue to comply with the CO limits of the permit condition and the this rule. For SO_2, equipment which complies with Rule 431.1 is exempt from the SO_2 limit in Rule 407. The applicant will be required to comply with Rule 431.1 and thus the SO_2 limit in Rule 407 will not apply.

RULE 431.1-SULFUR CONTENT OF GASEOUS FUELS

The engines will use pipeline quality natural gas which will comply with the 16 ppm sulfur limit, calculated as H2S, specified in this rule. Natural gas will be supplied by the Southern California Gas Company which has a H2S content of less 0.25 gr/100scf, which is equivalent to a concentration of about 4 ppm. It is also much less than the 1 gr/100scf limit typical of pipeline quality natural gas. Compliance is expected.

RULE 1110.2 – EMISSIONS FROM GASEOUS- AND LIQUID FUELED ENGINES

The purpose of Rule 1110.2 is to reduce Oxides of Nitrogen (NOx), Volatile Organic Compounds (VOCs), and Carbon Monoxide (CO) from engines. This rule was recently amended on 2/1/08 that affects the operation of these engines. The following sections discuss the key requirements of this rule as it applies to the equipment:

(d)(1)(B) The engines are subject to the emission requirements in Table II (of the rule), but will be required to meet the more stringent limits as of 7/1/2011.

Current concentration limits (< 500 bhp)

Item	ppmv @ 15% oxygen
NOx	45
CO	2000
ROG	250

Concentration limits effective 7/1/2011 (< 500 bhp)

Item	ppmv @ 15% oxygen
NOx	11
CO	250
ROG	30

However, the engines are currently subject to BACT emission limits of 12 ppmvd-NOx, 33 ppmvd-ROG, and 70 ppmvd-CO; therefore, by 7/1/2011, the engines will have to meet the NOx and ROG standard of the rule.

(d)(1)(E) The engines are equipped with air to fuel ratio controllers and oxygen sensors for feedback control.

(d)(1)(F) The engines are not considered new per sub-section (v), the engines were installed prior to 2/2008 and they will be treated as "existing", thus section (d)(1)(F) does not apply.

(e)(4) MCWD submitted an I&M Plan application (486376) for this location. To this date the I&M Plan has not been processed; therefore, in accordance with the rule, MCWD must implement the plan that was submitted to the District

(e)(5) The engines are equipped with air fuel ratio controllers.

(f)(1)(B) The engines are equipped with time meters.

(f)(1)(C)(i) Source testing frequency for NOx, CO, and VOC, effective 8/1/08, is required once every 2 years or every 8760 operating hours. If the engines operate less than 2000 hours from the previous test, then testing is once every three years.

(f)(1)(C)(ii) Source testing is to be conducted for at least 60 minutes. Since the engines operate at variable loads, testing at 15 minutes at minimal and 15 minutes at maximum loads are required, in addition to the 30 minute operation at normal load. Testing must occur at least after 40 hours following a tune up.

(f)(1)(C)(ii) An AQMD approved contractor is required to perform testing.

(f)(1)(C)(iv) Source test protocol to be submitted at least 60 days prior to testing and the protocol has to be approved by the District.

(f)(1)(C)(vi) Source test reports to be submitted within 60 days of the test

(f)(1)(D) This section outlines the requirements of the I&M plan. MCWD submitted an I&M Plan for this facility. The Plan is expected to cover the applicable requirements of this section.

(f)(1)(E) MCWD is required to maintain an operating log for these engines.

NEW SOURCE REVIEW (NSR)

There is no increase in emissions associated with the permit condition changes; therefore, BACT, Modeling, or external offsets are not applicable to the project.

RULE 1401 – NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS
The project will result in no increase in TAC emissions; therefore, this rule is not applicable.

RECOMMENDATION(S)

Issue Permits to Operate with the permit conditions shown below.

PERMIT CONDITIONS

Conditions 1 & 2 are standard conditions.

3. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON-SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.

4. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.

5. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 – AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED IN THIS PERMIT.

6. THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	33
NITROGEN OXIDES (NOX)	12
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

7. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	30
NITROGEN OXIDES (NOX)	11
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

8. THE OPERATOR SHALL INSTALL AND MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV). THE EXHAUST GAS OXYGEN SENSOR MV OUTPUT SHALL BE MAINTAINED AS PER THE MANUFACTURER'S SPECIFICATION FOR THE MV READING TO ENSURE A PROPER AIR TO FUEL MIXTURE.

   THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY BY MEASURING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

9. THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL INSPECT AND CLEAN OR, IF NECESSARY, REPLACE THE CATALYST EVERY 8,000 OPERATING HOURS. RECORDS OF THE CATALYST CLEANING OR REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

10. THE OPERATOR OR CONTRACTOR IN CHARGE SHALL MAINTAIN ACCURATE MAINTENANCE RECORDS OF THE DATE OF CATALYST CLEANING OR REPLACEMENT, OXYGEN SENSOR REPLACEMENT, THE TOTAL HOUR READING ON THE TOTAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME, OXYGEN SENSOR READING IN MILLIVOLTS OR PERCENT OXYGEN AND THE CORRESPONDING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

11. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) – AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

    THE OPERATOR SHALL ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NOS. 6 & 7 THROUGH MONITORING THAT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURE:

    PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT.

    IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750

HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

THE OPERATOR SHALL MAINTAIN RECORDS TO VERIFY COMPLIANCE WITH THIS CONDITION.

12. THIS EQUIPMENT SHALL COMPLY WITH MONITORING, TESTING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES. TESTING SHALL BE DONE FOR AT LEAST 30 MINUTES DURING NORMAL OPERATION (ACTUAL DUTY CYCLE). IN ADDITION, TESTING SHALL BE DONE FOR NOX AND CO EMISSIONS FOR AT LEAST 15 MINUTES AT: AN ENGINE'S PEAK LOAD, OR THE MAXIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST, AND: AT ACTUAL MINIMUM LOAD, EXCLUDING IDLE, OR THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) – AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 – AMENDED 2/1/2008.

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

13. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

14. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

PERMIT TO OPERATE

Permit No
F90137
A/N 466597

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership
If the billing for the annual renewal fee (Rule 301 f) is not received by the expiration date, contact the District

ID 98380

Legal Owner
or Operator

MESA CONSOLIDATED WATER DISTRICT
P O BOX 5008 , ATTN WATER OPER ASSISTANT
COSTA MESA, CA 92628-5008

Equipment Location 2340 ORANGE AV ST, COSTA MESA, CA 92627

Equipment Description

INTERNAL COMBUSTION ENGINE, NO 1, WAUKESHA, MODEL NO 2895G, RICH BURN, NATURAL GAS AND LPG FIRED, NATURALLY ASPIRATED, SIX CYLINDERS, FOUR CYCLE, 369 BHP, DRIVING A PUMP, WITH A THREE WAY CATALYTIC CONVERTER, JOHNSON MATTHEY, MODEL NO ES-ASA (1000), AND AN AIR TO FUEL RATIO CONTROLLER, CONTINENTAL CONTROLS, MODEL ECV5

Conditions

1 OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW

2 THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES

3 THIS EQUIPMENT SHALL COMPLY WITH RULE 1110 2

4 THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AUTOMATIC AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER

5 THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES

6 THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, AVERAGED OVER 15 MINUTES (EXCEPT DURING COLD START-UP, NOT TO EXCEED 15 MINUTES)

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANIC COMPOUNDS (VOC)	33
NITROGEN OXIDES	12
CARBON MONOXIDE	76

FILE COPY

7 THE OPERATOR SHALL INSTALL AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL READ IN MILLIVOLTS (MV) THE EXHAUST GAS OXYGEN SENSOR MV OUTPUT SHALL BE MAINTAINED AS PER THE MANUFACTURER'S SPECIFICATION FOR THE MV READING TO INSURE A PROPER AIR TO FUEL MIXTURE

8 THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL INSPECT AND CLEAN OR, IF NECESSARY, REPLACE THE CATALYST EVERY 8,000 OPERATING HOURS RECORDS OF CATALYST CLEANING OR REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST

9 THE OPERATOR OR CONTRACTOR IN CHARGE OF EQUIPMENT OPERATION SHALL MAINTAIN ACCURATE MAINTENANCE RECORDS OF THE DATE OF CATALYST CLEANING OR REPLACEMENT, OXYGEN SENSOR REPLACEMENT, THE TOTAL HOUR READING ON THE NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME, OXYGEN SENSOR READING IN MV OR PERCENT OXYGEN AND THE CORRESPONDING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS

10 THE OPERATOR OR CONTRACTOR IN-CHARGE OF EQUIPMENT OPERATION SHALL SET-UP AND FOLLOW A MAINTENANCE PROGRAM TO ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NO 7 THE MAINTENANCE PROGRAM SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURES

A REPLACEMENT OF THE EXHAUST OXYGEN SENSOR EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINTS SHALL BE RECHECKED AND RESET AS NECESSARY BY MEASURING NOX AND CO EMISSIONS WITH A PORTABLE ANALYZER

RECORDS OF THE ABOVE MAINTENANCE PROCEDURES SHALL BE KEPT IN FILE AND BE MADE AVAILABLE FOR INSPECTION ANY TIME

11 THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL COMPLY WITH MONITORING AND RECORD KEEPING REQUIREMENTS OF RULE 1110 2(F)(1) AS OUTLINED BELOW

A THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME

B PROVIDE SOURCE TEST INFORMATION REGARDING THE EXHAUST GAS, SPECIFICALLY FOR NOX, VOC REPORTED AS NON-METHANE AND NON-ETHANE, AND CO CONCENTRATIONS (CONCENTRATIONS IN PPM BY VOLUME, CORRECTED TO 15 PERCENT OXYGEN ON DRY BASIS) AT LEAST ONCE EVERY THREE YEARS

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C MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES

I TOTAL HOURS OF OPERATION
II TYPE OF GASEOUS FUEL
III FUEL CONSUMPTION (CUBIC FEET) AND,
IV CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(D) OF RULE 1110 2

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME

12 ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR AT LEAST FIVE YEARS AND SHALL BE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES

EXECUTIVE OFFICER

Dorris M Bailey

By Dorris M Bailey/MS10
5/29/2007

FILE COPY

Mesa Consolidated
Water District

District Mission: Dedicated to Satisfying our Community's Water Needs

BOARD OF DIRECTORS

SHAWN DEWANE
President
Division V

FRED R. BOCKMILLER
First Vice President
Division I

JAMES F. ATKINSON
Vice President
Division IV

TRUDY OHLIG-HALL
Vice President
Division III

PAUL E. SHOENBERGER
Vice President
Division II

LEE PEARL
General Manager

COLEEN L. MONTELEONE
District Secretary

VICTORIA L. BEATLEY
Treasurer/Auditor

BOWIE, ARNESON, WILES & GIANNONE
Legal Counsel

May 28, 2009

South Coast Air Quality Management District
P.O. Box 4944
Diamond Bar, Ca 91765-0944

Subject: ID 98380
Reservoir 2 Permit to Operate Update

Mesa Consolidated Water District (Mesa) is currently in the process of replacing our existing Supervisory Control and Data Acquisition (SCADA) system that manages and controls the water distribution system.

As a part of this project Mesa is replacing our existing air fuel ratio controllers at our Reservoir 2 site. Per conversations with Marcel Saulis at AQMD Mesa is providing completed forms 400-CEQA, 400-A (for each engine) and 400-E-13b (for each engine) and a fee of $2,540.79 to update/renew our existing permits to operate.

If you have any questions please contact me at 949-631-1291.

Sincerely,

Leanne Talbott, P.E.
Associate Civil Engineer

Attachments

c: Roger Demers, MCWD Operations

1965 Placentia Avenue ♦ Costa Mesa, California 92627
Telephone (949) 631-1200 ♦ FAX (949) 574-1036
www.mesawater.org

N S R D A T A S U M M A R Y S H E E T

Application No:	466597
Application Type:	Change of Conditions: No Engineering Evaluation/Ad
Application Status:	APPROVED
Previous Apps,Dev,Permit #:	292781, 0 - x, F90137

Company Name:	MESA CONSOLIDATED WATER DISTRICT
Company ID:	98380
Address:	2340 ORANGE AVE,COSTA MESA, CA 92627
RECLAIM:	NO
RECLAIM Zone:	01
Air Basin:	SC
Zone:	18
Title V:	NO

Device ID:	0 - ICE-PPS
Estimated Completion Date:	05-22-2007
Heat Input Capacity:	2.67 Million BTU/hr
Priority Reserve:	NONE - No Priority Access Requested
Recommended Disposition:	31 - PERMIT TO OPERATE GRANTED
PR Expiration:	
School Within 1000 Feet:	NO
Operating Weeks Per Year:	52
Operating Days Per Week:	7
Monday Operating Hours:	00:00 to 24:00
Tuesday Operating Hours:	00:00 to 24:00
Wednesday Operating Hours:	00:00 to 24:00
Thursday Operating Hours:	00:00 to 24:00
Friday Operating Hours:	00:00 to 24:00
Saturday Operating Hours:	00:00 to 24:00
Sunday Operating Hours:	00:00 to 24:00

Emittant:	CO
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.49 lbs/hr
Max Daily:	11.76 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.49 lbs/hr
Max Daily:	11.76 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	12 lbs/day
Annual Emission:	4280.64 lbs/yr
District Exemption:	None

Emittant:	NOX
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	3 lbs/day
Annual Emission:	1048.32 lbs/yr
District Exemption:	None

Emittant:	ROG
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	3 lbs/day
Annual Emission:	1048.32 lbs/yr
District Exemption:	None

SUPERVISOR'S APPROVAL: _____ SUPERVISOR'S REVIEW DATE: _____

Processed By: msaulis 8/4/2009 1:09:48 PM

Mesa Consolidated Water District
1965 Placentia Avenue • Costa Mesa, CA • 92627-3420
(949) 574-1022 • FAX (949) 574-1035

Check Number: 000000750

Date: 05/21/2009

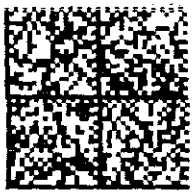
SOUTH COAST A.Q.M.D.

P O BOX 4944
DIAMOND BAR, CA 91765-0944

Mesa Consol. Water District SCAQMD Check Number: 000000750

To: SOUTH COAST A.Q.M.D. Date: 05/21/2009

Date	Invoice Number	Description	Amount	Paid Amount
05/25/2009	910092-RES2	PERMIT TO OPERATE SITE ID98380	$2,540.79	$2,540.79
		TOTALS:	$2,540.79	$2,540.79



Hasler

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05/29/2009

Mailed From 92627

US POSTAGE

ROM www.mesawater.org

Mesa Consolidated Water District

1965 Placentia Avenue
Costa Mesa, CA 92627-3420

RETURN POSTAGE GUARANTEED

):

South Coast AQMD
P.O. Box 4944
Diamond Bar, Ca 91765-0944

ROUTING RECORD

DATE	FROM	TO	ACTION
JUN 0 4 2009	MYL	MS	ID
8/4/09	ms	ABS	AD

REFERENCE TO OTHER APCD RECORDS INCLUDING VARIANCES

MCWD ID 98380 RESERVOIR # 2

ICE # 4 A/N 499282

SEE MASTER FILE A/N 499279

APPL # 499282
I. D: # 98380

MESA CONSOLIDATED WATER DISTRICT
340 ORANGE AVE
COSTA MESA
CE

Date: 06/02/09

ICE

ID 98380

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

PERMIT TO OPERATE

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for the annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner
or Operator: MESA CONSOLIDATED WATER DISTRICT
1965 PLACENTIA AVE, ATTN: WATER OPER ASSISTANT
COSTA MESA, CA 92627-3420

ID 98380

Equipment Location: 2340 ORANGE AVE, COSTA MESA, CA 92627

Equipment Description :

INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10769/3, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

Conditions :

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON-SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.

4. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.

5. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 – AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED IN THIS PERMIT.

6. THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	33

FILE COPY

NITROGEN OXIDES (NOX)	12
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

7. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATTLE ORGANINC COMPOUNDS (VOC)	30
NITROGEN OXIDES (NOX)	11
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

8. THE OPERATOR SHALL INSTALL AND MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV). THE EXHAUST GAS OXYGEN SENSOR MV OUTPUT SHALL BE MAINTAINED AS PER THE MANUFACTURER'S SPECIFICATION FOR THE MV READING TO ENSURE A PROPER AIR TO FUEL MIXTURE.

THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY BY MEASURING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

FILE COPY

9. THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL INSPECT AND CLEAN OR, IF NECESSARY, REPLACE THE CATALYST EVERY 8,000 OPERATING HOURS. RECORDS OF THE CATALYST CLEANING OR REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

10. THE OPERATOR OR CONTRACTOR IN CHARGE SHALL MAINTAIN ACCURATE MAINTENANCE RECORDS OF THE DATE OF CATALYST CLEANING OR REPLACEMENT, OXYGEN SENSOR REPLACEMENT, THE TOTAL HOUR READING ON THE TOTAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME, OXYGEN SENSOR READING IN MILLIVOLTS OR PERCENT OXYGEN AND THE CORRESPONDING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

11. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) – AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

THE OPERATOR SHALL ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NOS. 6 & 7 THROUGH MONITORING THAT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURE:

PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT.

IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750 HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

THE OPERATOR SHALL MAINTAIN RECORDS TO VERIFY COMPLIANCE WITH THIS CONDITION.

12. THIS EQUIPMENT SHALL COMPLY WITH MONITORING, TESTING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

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A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES. TESTING SHALL BE DONE FOR AT LEAST 30 MINUTES DURING NORMAL OPERATION (ACTUAL DUTY CYCLE). IN ADDITION, TESTING SHALL BE DONE FOR NOX AND CO EMISSIONS FOR AT LEAST 15 MINUTES AT: AN ENGINE'S PEAK LOAD, OR THE MAXIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST, AND: AT ACTUAL MINIMUM LOAD, EXCLUDING IDLE, OR THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) – AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 – AMENDED 2/1/2008.

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

13. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

14. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris M Bailey

By Dorris M.Bailey/MS10
8/5/2009

FILE COPY

South Coast Air Quality Management District

Form 400-A

Application For Permit To Construct and Permit To Operate

Mail Application To:
P.O. Box 4944
Diamond Bar, CA 91765

Tel: (909) 396-3385
www.aqmd.gov

Section A: Operator Information

1. Business Name of Operator To Appear On The Permit: Mesa Consolidated Water District

2. Valid AQMD Facility ID (Available on Permit or Invoice issued by AQMD): 98380

3. Owner's Business Name (only if different from Business Name of Operator):

Section B: Equipment Location

4. Equipment Location Address:
For equipment operated at various locations in AQMD's jurisdiction, provide address of initial site

2340 Orange Ave
Street Address

Costa Mesa, CA, 92627
City State Zip Code

County: ○ Los Angeles ◉ Orange ○ San Bernardino ○ Riverside

Contact Name: Jerry Vilander

Contact Title: Operations Manager Phone: (949) 574-1000

Fax: (949) 574-1033 E-Mail: jerryv@mesawater.org

Section C: Permit Mailing Address

5. Permit and Correspondence Information:
☐ Check here if same as equipment location address

1965 Placentia Ave
Street Address

Costa Mesa, CA, 92627
City State Zip Code

Contact Name: Jerry Vilander

Contact Title: Operations Manager Phone: (949) 574-1000

Fax: (949) 574-1033 E-Mail: jerryv@mesawater.org

Section D: Application Type

The facility is in ○ RECLAIM ○ Title V ○ RECLAIM & Title V Program (please check if applicable)

6. Reason for Submitting Application (Select only ONE):

- ○ New Construction (Permit to Construct)
- ○ Equipment Operating Without A Permit or Expired Permit*
- ○ Administrative Change
- ○ Equipment On-Site But Not Constructed or Operational
- ○ Title V Application (Initial, Revisions, Modifications, etc.)
- ○ Compliance Plan
- ○ Facility Permit Amendment
- ○ Registration/Certification
- ○ Streamlined Standard Permit
- ○ Permitted Equipment Altered/ Modified Without Permit Approval*
- ○ Proposed Alteration/Modification to Permitted Equipment
- ◉ (W) Change of Condition For Permit To Operate
- ○ Change of Condition For Permit To Construct
- ○ Change of Location—Moving to New Site

Existing Or Previous Permit/Application Number:
(If you checked any of the items in this column, you MUST provide a existing Permit/ Application Number)
D99419 Inactive

G1150

* A Higher Permit Processing Fee applies to those items with an asterisk (Rule 301 (c) (1) (D)

7. Estimated Start Date of Operation/Construction (MM/DD/YYYY):

8. Description of Equipment:
Replace current Air Fuel Ratio Controller with Compliance Controls MEC-R.

9. Is this equipment portable AND will it be operated at different locations within AQMD's jurisdiction? ◉ No ○ Yes

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each) 3

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less, or a not-for-profit training center?) ◉ No ○ Yes

12. Has a Notice of Violation (NOV) or a Notice To Comply (NC) been issued for this equipment?
◉ No ○ Yes If yes, provide NOV/NC #:

Section E: Facility Business Information

13. What type of business is being conducted at this equipment location?
Water Supply Reservoir

14. What is your businesses primary NAICS Code (North American Industrial Classification System)?

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ○ No ◉ Yes

16. Are there any schools (K-12) within a 1000-ft. radius of the equipment physical location? ◉ No ○ Yes

Section F: Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

17. Signature of Responsible Official:

18. Title: Operations Manager

19. Print Name: Jerry Vilander

20. Date: 5/14/09

Check List
- ☐ Form(s) signed and dated by authorized official
- ☐ Supplemental Equipment Form (400-E-XX or 400-E-GEN)
- ☐ CEQA Form (400-CEQA) attached
- ☐ Payment for permit processing fee attached

Your application will be rejected if any of the above items are missing.

AQMD USE ONLY	APPLICATION/TRACKING #	TYPE B C D	EQUIPMENT CATEGORY CODE:	FEE SCHEDULE: $	VALIDATION
	499282				6/2/09 ML

ENG. A R DATE	ENG. A R DATE	CLASS I III IV	ASSIGNMENT Unit 3 Engineer	CHECK/MONEY ORDER # 758	AMOUNT $2540.75	Tracking # 81330

© South Coast Air Quality Management District, Form 400-A (2006.02)

4/4

S.C.A.Q.M.D.
ENGINEERING

'09 JUN -2 P1:15

South Coast Air Quality Management District

FORM 400-E-13b

NON-EMERGENCY INTERNAL COMBUSTION ENGINE

Mail Application To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765

Tel: (909) 396-3385

www.aqmd.gov

This form must be accompanied by a completed Application for a Permit to Construct/Operate -Form 400A, Form CEQA, Plot Plan and Stack Form

Permit to be issued to (Business name of operator to appear on permit):

Mesa Consolidated Water District

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site):

2340 Orange Ave., Costa Mesa, CA 92627 ◉ Fixed Location ○ Various Locations

Does Applicant hold a valid permit for Portable ICE under CA Statewide Portable Equipment Registration Program? ○ Yes ◉ No
If yes, ICE permit is not required from the South Coast Air Quality Management District.

SECTION A: EQUIPMENT INFORMATION

Internal Combustion Engine

Is the ICE an EPA Certified or Qualifying Non-Road Engine? ◉ Yes ○ No If yes, provide EPA Certificate No. _____ & attach copy

Manufacturer:	Model No.:
Waukesha	2895G
Serial No.: C-10769/3	**Date of Manufacture:** _____ (mm/dd/yyyy)
Manufacturer Maximum Rating: 369.00 BHP @ 1000 RPM	**Date of Installation:** _____ (mm/dd/yyyy)

For an ICE manufactured after 7/18/94, please provide manufacturer's specification and guarantee.

ICE Function (Check all that apply)

☐ Electrical Generator ☐ Fire Pump ☐ Compressor ☐ Co-Generation
☐ Flood Control ☒ Pump Driver ☐ Other (Specify): _____

Type

◉ Stationary ○ Portable ☐ Intra-facility ☐ Off- Site ☐ Rental ☐ Non-Rental

Fuel

◉ Natural Gas ○ LPG ○ Refinery Gas* ○ Digester Gas* ○ Landfill Gas*
○ Diesel Oil No. 2 ○ Other* : _____

*If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content.

Stand-By Fuel

○ Natural Gas ◉ LPG ○ Refinery Gas* ○ Digester Gas* ○ Landfill Gas*
○ Diesel Oil No. 2 ○ Other* : _____

*If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content.

Cycle Type

○ Two Cycle ◉ Four Cycle

Combustion Type

○ Lean Burn ◉ Rich Burn

No. of Cylinders

○ Four ◉ Six ○ Eight ○ Ten ○ Twelve ○ Sixteen ○ Other _____

Aspiration Type

○ Turbocharged ○ Turbocharged/Aftercooled
◉ Naturally Aspirated ☐ Timing Retarded ≥ 4° (relative to standard timing)

Air Pollution Control (if applicable)

○ Selective Catalytic Reduction (SCR)* ○ No Controls
○ Selective Non-catalytic Reduction (SNCR)* ◉ Air Fuel Ratio Controller
○ Non-selective Catalytic Reduction (NSCR) ○ Other (specify) : _____

* Separate application is required.

Manufacturer:	Model No.:
Compliance Controls	MECR-11-FT-60

If already permitted, indicate Permit No. _____ Device No. _____

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SECTION B: OPERATION INFORMATION

Fuel Consumption

Maximum Rated load: _____ gal./hr. OR _____ cu. ft./hr | Average Load: _____ gal./hr. OR 1.200 cu. ft./hr.

Emissions Data

Pollutants	Maximum Emissions Before Control		Maximum Emissions After Control	
	Gm/Bhp-hr	PPM (15% O2)	Gm/Bhp-hr	PPM (15% O2)
ROG				
NOx	1.500			12.000
CO	2.650			76.000
PM				
SOx				

Emissions Reference (attach):
- ☐ Manufacturer's Guarantee
- ☐ Catalytic Manufacturer's Guarantee
- ☐ Source Test Data
- ☐ EPA Emission Factors
- ☐ Other (specify): _____

Operating Schedule

Normal: 6 hours/day 4 days/week 52 weeks/yr.

Maximum: _____ hours/day _____ days/week _____ weeks/yr.

SECTION C: APPLICANT CERTIFICATION STATEMENT

I hereby certify that all information contained herein and information submitted with this application is true and correct.

SIGNATURE OF PREPARER: Leannet Tellez | TITLE OF PREPARER: Assoc. Civil Engr. | PREPARER'S TELEPHONE NUMBER: (949) 631-1291 | PREPARER'S E-MAIL ADDRESS: leannet@mesawater.org

CONTACT PERSON FOR INFORMATION ON THIS EQUIPMENT: Jerry Vilander | E-MAIL ADDRESS: jerryv@mesawater.org | CONTACT PERSON'S TELEPHONE NUMBER: (949) 574-1000 | FAX NUMBER: (949) 574-1033 | DATE SIGNED: 5/13/09

CONFIDENTIAL INFORMATION

Under the California Public Records Act, all information in your *permit application* will be considered a matter of public record and may be disclosed to a third party. If you wish to keep certain items as confidential, please complete the following steps:

(a) Make a copy of any page containing confidential information blanked out. Label this page "public copy."
(b) Label the original page "confidential." Circle all confidential items on the page.
(c) Prepare a written justification for the confidentiality of each confidential item. Append this to the confidential copy.

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Serial Number: C-10769/3

SCAQMD PERMIT PROCESSING SYSTEM (PPS)

FEE DATA - SUMMARY SHEET

Application No :	499282	IRS/SS No:	
Previous Application No:	485755	Previous Permit No:	G1150

Company Name :	MESA CONSOLIDATED WATER DISTRICT	Facility ID:	98380
Equipment Street:	2340 ORANGEAVE , COSTA MESA CA 92627		
Equipment Desc :	I C E (50-500 HP) N-EM STAT GAS-LPG		

Equipment Type :	BASIC			Fee Charged by:	B-CAT
B-CAT NO. :	040501	C-CAT NO:	00	Fee Schedule:	B
Facility Zone :	18	Deemed Compl. Date:	6/10/2009	Public Notice:	NO

Evaluation Type :	CHANGE OF CONDITIONS, (PO)	Small Business:	☐
Disposition :	Approve PO, Recommended by Engineer	Higher Fees for Failing to Obtain a Permit:	☐
Lead Appl. No :	499279	Identical Permit Unit:	☒

Air quality Analysis			$0.00	Filing Fee Paid:	$0.00
E.I.R			$0.00	Permit Processing Fee Paid:	$508.16
Health Risk Assessment			$0.00	Permit Processing Fee Calculated*:	$508.16
Significant Project			$0.00	Permit Processing Fee Adjustment:	$0.00
Expedited Processing	Hours:	0.00	$0.00		
Source Test Review	Hours:	0.00	$0.00		
Time & Material	Hours:	0.00	$0.00		
				Total Additional Fee:	$0.00
				Additional Charge:	$0.00

COMMENTS:

RECOMMENDED BY: MARCEL SAULIS DATE: 08/04/2009

REVIEWED BY: ABS DATE: AUG 05 2009

* ADJUSTED FOR SMALL BUSINESS, IDENTICAL EQUIPMENT AND P/O NO P/C PENALTY

N S R D A T A S U M M A R Y S H E E T

Application No:	499282
Application Type:	Change of Conditions
Application Status:	PENDAPPRV
Previous Apps,Dev,Permit #:	485755, 0 - ICE-PPS, NONE

Company Name:	MESA CONSOLIDATED WATER DISTRICT
Company ID:	98380
Address:	2340 ORANGE AVE,COSTA MESA, CA 92627
RECLAIM:	NO
RECLAIM Zone:	01
Air Basin:	SC
Zone:	18
Title V:	NO

Device ID:	0 - ICE-PPS
Estimated Completion Date:	08-01-2009
Heat Input Capacity:	0 Million BTU/hr
Priority Reserve:	NONE - No Priority Access Requested
Recommended Disposition:	31 - PERMIT TO OPERATE GRANTED
PR Expiration:	
School Within 1000 Feet:	NO
Operating Weeks Per Year:	52
Operating Days Per Week:	7
Monday Operating Hours:	00:00 to 24:00
Tuesday Operating Hours:	00:00 to 24:00
Wednesday Operating Hours:	00:00 to 24:00
Thursday Operating Hours:	00:00 to 24:00
Friday Operating Hours:	00:00 to 24:00
Saturday Operating Hours:	00:00 to 24:00
Sunday Operating Hours:	00:00 to 24:00

Emittant: CO
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.49 lbs/hr
Max Daily: 11.76 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.49 lbs/hr
Max Daily: 11.76 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 12 lbs/day
Annual Emission: 4280.64 lbs/yr
District Exemption: 1301(b)(1)-12/07/1995-General (NSR) - attainment air contaminant

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Emittant: NOX
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.12 lbs/hr
Max Daily: 2.88 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.12 lbs/hr
Max Daily: 2.88 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 3 lbs/day
Annual Emission: 1048.32 lbs/yr
District Exemption: None

Emittant: PM10
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 0 lbs/day
Annual Emission: 0 lbs/yr
District Exemption: None

Emittant:	ROG
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	3 lbs/day
Annual Emission:	1048.32 lbs/yr
District Exemption:	None

Emittant:	SOX
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	0 lbs/day
Annual Emission:	0 lbs/yr
District Exemption:	None

SUPERVISOR'S APPROVAL: _____ SUPERVISOR'S REVIEW DATE: AUG 0 5 2009

Processed By: msaulis 8/4/2009 3:30:31 PM

PERMIT TO OPERATE

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for the annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner
or Operator:

MESA CONSOLIDATED WATER DISTRICT
1965 PLACENTIA AVE, ATTN: WATER OPER ASSISTANT
COSTA MESA, CA 92627-3420

ID 98380

Equipment Location: 2340 ORANGE AVE, COSTA MESA, CA 92627

Equipment Description :

INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10769/3, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

Conditions :

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON-SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.

4. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.

5. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 – AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED IN THIS PERMIT.

SAMPLE

PERMIT TO OPERATE

6. THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	33
NITROGEN OXIDES (NOX)	12
CARBON MONOXIDE (CO)	70

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

7. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	30
NITROGEN OXIDES (NOX)	11
CARBON MONOXIDE (CO)	70

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

8. THE OPERATOR SHALL INSTALL AND MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV). THE EXHAUST GAS OXYGEN SENSOR MV OUTPUT SHALL BE MAINTAINED AS PER THE MANUFACTURER'S SPECIFICATION FOR THE MV READING TO ENSURE A PROPER AIR TO FUEL MIXTURE.

THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY BY MEASURING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

9. THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL INSPECT AND CLEAN OR, IF NECESSARY, REPLACE THE CATALYST EVERY 8,000 OPERATING HOURS. RECORDS OF THE CATALYST CLEANING OR REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

SAMPLE

PERMIT TO OPERATE

10. THE OPERATOR OR CONTRACTOR IN CHARGE SHALL MAINTAIN ACCURATE MAINTENANCE RECORDS OF THE DATE OF CATALYST CLEANING OR REPLACEMENT, OXYGEN SENSOR REPLACEMENT, THE TOTAL HOUR READING ON THE TOTAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME, OXYGEN SENSOR READING IN MILLIVOLTS OR PERCENT OXYGEN AND THE CORRESPONDING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

11. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) – AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

THE OPERATOR SHALL ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NOS. 6 & 7 THROUGH MONITORING THAT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURE:

PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT.

IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750 HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

THE OPERATOR SHALL MAINTAIN RECORDS TO VERIFY COMPLIANCE WITH THIS CONDITION.

SAMPLE

PERMIT TO OPERATE

12. THIS EQUIPMENT SHALL COMPLY WITH MONITORING, TESTING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES. TESTING SHALL BE DONE FOR AT LEAST 30 MINUTES DURING NORMAL OPERATION (ACTUAL DUTY CYCLE). IN ADDITION, TESTING SHALL BE DONE FOR NOX AND CO EMISSIONS FOR AT LEAST 15 MINUTES AT: AN ENGINE'S PEAK LOAD, OR THE MAXIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST, AND: AT ACTUAL MINIMUM LOAD, EXCLUDING IDLE, OR THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) – AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 – AMENDED 2/1/2008.

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

13. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

14. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

SAMPLE

PERMIT TO OPERATE

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

By Dorris M.Bailey/MS10

SAMPLE

ENGINEERING EVALUATION PERMIT TO OPERATE

COMPANY NAME AND ADDRESS

Mesa Consolidated Water District
1965 Placentia Ave.
Costa Mesa, CA 92627

CONTACT: Jerry Vilander, Operations Manager, (949) 574-1000

EQUIPMENT LOCATION

AQMD ID 98380
2340 Orange Ave.
Costa Mesa, CA 92627

EQUIPMENT DESCRIPTION

A/N 499279 (MASTER)
INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10769/1, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

A/N 499280
INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10796/4, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

A/N 499281
INTERNAL COMBUSTION ENGINE, NO 2, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10796/2, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

A/N 499282
INTERNAL COMBUSTION ENGINE, NO 4, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10796/3, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

BACKGROUND

Mesa Consolidated Water District (MCWD) submitted applications for existing engines located at one of their pumping facilities, Reservoir 2, to change the air-to-fuel ratio controllers (AFRC). MCWD is in the process of updating their Supervisory Control and Data Acquisition (SCADA) system and as a part of the process; they will be replacing the existing Continental Controls ECV5 to Compliance Controls AFRC. According to the Production Superintendent, the Compliance Controls AFRC are better suited for their SCADA system than the existing AFRC. The four (4) engines located at the site are all identical and the AFRC that will be installed are also identical.

The applications are for change of conditions with no change in emissions; therefore, no NSR requirements will be triggered. MCWD also submitted an Inspection and Monitoring (I&M) Plan, A/N 486376, in accordance with the requirements of Rule 1110.2 and it is currently in the process of being evaluated.

COMPLIANCE REVIEW

The District Compliance database was queried and it revealed that the facility was inspected on 6/2/09 and a Notice of Violation (NOV) P53467 was issued for failure to conduct source tests on three of the four engines per Rule 1110.2. District enforcement staff is monitoring the compliance status of the facility to ensure the NC and NOV are resolved accordingly and the facility complies with District Rules and Regulations.

CALCULATIONS

The request to change the air-to-fuel ratio controller will result in no increase in emissions; therefore, calculations are not required.

RULES EVALUATION

RULE 212-STANDARDS FOR APPROVING PERMITS AND ISSUING PUBLIC NOTICES
Rule 212 requires that a person shall not build, erect, install, alter, or replace any equipment, the use of which may cause the issuance of air contaminants or the use of which may eliminate, reduce, or control the issuance of air contaminants without first obtaining written authorization for such construction from the Executive Officer. Rule 212(c) states that a project requires written notification if there is an

emission increase for ANY criteria pollutant in excess of the daily maximums specified in Rule 212(g), if the equipment is located within 1,000 feet of the outer boundary of a school, or if the MICR is equal to or greater than one in a million ($1x10^6$) during a lifetime (70 years) for facilities with more than one permitted unit, source under Regulation XX, or equipment under Regulation XXX, unless the applicant demonstrates to the satisfaction of the Executive Officer that the total facility-wide maximum individual cancer risk is below ten in a million ($10x10^6$) using the risk assessment procedures and toxic air contaminants specified under Rule 1402; or, ten in a million ($10x10^6$) during a lifetime (70 years) for facilities with a single permitted unit, source under Regulation XX, or equipment under Regulation XXX. There is no increase in emissions associated with this project; therefore, a public notice is not required for sections (c)(1), (c)(2) or (c)(3).

RULE 401 - VISIBLE EMISSIONS

This rule limits visible emissions to an opacity of less than 20 percent (Ringlemann No.1), as published by the United States Bureau of Mines. Compliance is expected with well maintained and properly operated equipment.

RULE 402 - NUISANCE

This rule requires that a person not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which cause, or have a natural tendency to cause injury or damage to business or property. The engines are not expected to create a public nuisance based on experience with identical natural gas fired engines. Therefore, compliance with Rule 402 is expected.

RULE 407 – LIQUID AND GASEOUS AIR CONTAMINANTS

This rule limits CO emissions to 2,000 ppmvd and SO_2 emissions to 500 ppmvd, averaged over 15 minutes. The engines are subject to a CO emission limit of 70 and 76 ppmvd @ 15% O2. Thus the engines are expected to continue to comply with the CO limits of the permit condition and the this rule. For SO_2, equipment which complies with Rule 431.1 is exempt from the SO_2 limit in Rule 407. The applicant will be required to comply with Rule 431.1 and thus the SO_2 limit in Rule 407 will not apply.

RULE 431.1-SULFUR CONTENT OF GASEOUS FUELS

The engines will use pipeline quality natural gas which will comply with the 16 ppm sulfur limit, calculated as H2S, specified in this rule. Natural gas will be supplied by the Southern California Gas Company which has a H2S content of less 0.25 gr/100scf, which is equivalent to a concentration of about 4 ppm. It is also much less than the 1 gr/100scf limit typical of pipeline quality natural gas. Compliance is expected.

RULE 1110.2 – EMISSIONS FROM GASEOUS- AND LIQUID FUELED ENGINES

The purpose of Rule 1110.2 is to reduce Oxides of Nitrogen (NOx), Volatile Organic Compounds (VOCs), and Carbon Monoxide (CO) from engines. This rule was recently amended on 2/1/08 that affects the operation of these engines. The following sections discuss the key requirements of this rule as it applies to the equipment:

(d)(1)(B) The engines are subject to the emission requirements in Table II (of the rule), but will be required to meet the more stringent limits as of 7/1/2011.

Current concentration limits (< 500 bhp)

Item	ppmv @ 15% oxygen
NOx	45
CO	2000
ROG	250

Concentration limits effective 7/1/2011 (< 500 bhp)

Item	ppmv @ 15% oxygen
NOx	11
CO	250
ROG	30

However, the engines are currently subject to BACT emission limits of 12 ppmvd-NOx, 33 ppmvd-ROG, and 70 ppmvd-CO; therefore, by 7/1/2011, the engines will have to meet the NOx and ROG standard of the rule.

(d)(1)(E) The engines are equipped with air to fuel ratio controllers and oxygen sensors for feedback control.

(d)(1)(F) The engines are not considered new per sub-section (v), the engines were installed prior to 2/2008 and they will be treated as "existing", thus section (d)(1)(F) does not apply.

(e)(4) MCWD submitted an I&M Plan application (486376) for this location. To this date the I&M Plan has not been processed; therefore, in accordance with the rule, MCWD must implement the plan that was submitted to the District

(e)(5) The engines are equipped with air fuel ratio controllers.

(f)(1)(B) The engines are equipped with time meters.

(f)(1)(C)(i) Source testing frequency for NOx, CO, and VOC, effective 8/1/08, is required once every 2 years or every 8760 operating hours. If the engines operate less than 2000 hours from the previous test, then testing is once every three years.

(f)(1)(C)(ii) Source testing is to be conducted for at least 60 minutes. Since the engines operate at variable loads, testing at 15 minutes at minimal and 15 minutes at maximum loads are required, in addition to the 30 minute operation at normal load. Testing must occur at least after 40 hours following a tune up.

(f)(1)(C)(ii) An AQMD approved contractor is required to perform testing.

(f)(1)(C)(iv) Source test protocol to be submitted at least 60 days prior to testing and the protocol has to be approved by the District.

(f)(1)(C)(vi) Source test reports to be submitted within 60 days of the test

(f)(1)(D) This section outlines the requirements of the I&M plan. MCWD submitted an I&M Plan for this facility. The Plan is expected to cover the applicable requirements of this section.

(f)(1)(E) MCWD is required to maintain an operating log for these engines.

NEW SOURCE REVIEW (NSR)

There is no increase in emissions associated with the permit condition changes; therefore, BACT, Modeling, or external offsets are not applicable to the project.

RULE 1401 – NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS
The project will result in no increase in TAC emissions; therefore, this rule is not applicable.

RECOMMENDATION(S)

Issue Permits to Operate with the permit conditions shown below.

PERMIT CONDITIONS

Conditions 1 & 2 are standard conditions.

3. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON-SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.

4. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.

5. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 – AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED IN THIS PERMIT.

6. THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	33
NITROGEN OXIDES (NOX)	12
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

7. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	30
NITROGEN OXIDES (NOX)	11
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

8. THE OPERATOR SHALL INSTALL AND MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV). THE EXHAUST GAS OXYGEN SENSOR MV OUTPUT SHALL BE MAINTAINED AS PER THE MANUFACTURER'S SPECIFICATION FOR THE MV READING TO ENSURE A PROPER AIR TO FUEL MIXTURE.

   THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY BY MEASURING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

9. THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL INSPECT AND CLEAN OR, IF NECESSARY, REPLACE THE CATALYST EVERY 8,000 OPERATING HOURS. RECORDS OF THE CATALYST CLEANING OR REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

10. THE OPERATOR OR CONTRACTOR IN CHARGE SHALL MAINTAIN ACCURATE MAINTENANCE RECORDS OF THE DATE OF CATALYST CLEANING OR REPLACEMENT, OXYGEN SENSOR REPLACEMENT, THE TOTAL HOUR READING ON THE TOTAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME, OXYGEN SENSOR READING IN MILLIVOLTS OR PERCENT OXYGEN AND THE CORRESPONDING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

11. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) – AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

    THE OPERATOR SHALL ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NOS. 6 & 7 THROUGH MONITORING THAT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURE:

    PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT.

    IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750

HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

THE OPERATOR SHALL MAINTAIN RECORDS TO VERIFY COMPLIANCE WITH THIS CONDITION.

12. THIS EQUIPMENT SHALL COMPLY WITH MONITORING, TESTING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES. TESTING SHALL BE DONE FOR AT LEAST 30 MINUTES DURING NORMAL OPERATION (ACTUAL DUTY CYCLE). IN ADDITION, TESTING SHALL BE DONE FOR NOX AND CO EMISSIONS FOR AT LEAST 15 MINUTES AT: AN ENGINE'S PEAK LOAD, OR THE MAXIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST, AND: AT ACTUAL MINIMUM LOAD, EXCLUDING IDLE, OR THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) – AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 – AMENDED 2/1/2008.

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

13. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

14. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

PERMIT TO OPERATE

Permit No.
G1150
A/N 485755

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for the annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

ID 98380

Legal Owner
or Operator:

MESA CONSOLIDATED WATER DISTRICT
1965 PLACENTIA AVE, ATTN: WATER OPER ASSISTANT
COSTA MESA, CA 92627-3420

Equipment Location: 2340 ORANGE AVE, COSTA MESA, CA 92627

Equipment Description :

INTERNAL COMBUSTION ENGINE, NO. 4,WAUKESHA, MODEL NO. 2895G, NATURAL GAS- OR LPG-FUELED, PUMP DRIVER, 6 CYLINDERS, NATURALLY ASPIRATED, 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION UNIT, JOHNSON MATTHEY, MODEL ES-ASA (1000), AND AN AIR TO FUEL RATIO CONTROLLER, CONTINENTAL CONTROLS, MODEL ECV5.

Conditions :

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AUTOMATIC AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITION AT ALL TIMES.

4. THE ENGINE EMISSIONS SHALL NOT EXCEED THE FOLLOWING:

	G/BHP-HR	PPMVD AT 15% O2
REACTIVE ORGANIC COMPOUNDS:	0.15	33
NITROGEN OXIDES:	0.15	12
CARBON MONOXIDE:	0.60	70

5. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)

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REACTIVE ORGANINC COMPOUNDS	30
NITROGEN OXIDES	11
CARBON MONOXIDE	70

6. LPG MAY ONLY BE USED DURING PERIODS OF TESTING AND NATURAL GAS CURTAILMENT.

7. THIS EQUIPMENT SHALL COMPLY WITH RULE 1110.2.

8. THE MINIMUM TEMPERATURE OF THE ENGINE EXHAUST AT THE INLET OF THE NON-SELECTIVE CATALYTIC REDUCTION SYSTEM UNIT SHALL BE AT LEAST 750 DEGREES FAHRENHEIT (EXCEPT DURING THE COLD ENGINE START-UP, NOT TO EXCEED 20 MINUTES).

9. THE MAXIMUM TEMPERATURE OF THE ENGINE EXHAUST AT THE INLET OF THE NON-SELECTIVE CATALYTIC REDUCTION SYSTEM UNIT SHALL NOT EXCEED 1,250 DEGREES FAHRENHEIT (EXCEPT DURING THE COLD ENGINE START-UP, NOT TO EXCEED 20 MINUTES).

10. THE OPERATOR SHALL MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV).

11. DURING THE INITIAL SET-UP OF THE OXYGEN SENSOR, THE OPTIMUM OXYGEN SENSOR SET POINT IN MILLIVOLTS SHALL BE DETERMINED BY COMPARING THE NOX AND CO EMISSION LEVELS AT VARIOUS ENGINE OPERATING LOADS. THE NOX AND CO EMISSION READINGS SHALL BE OBTAINED THROUGH THE USE OF A PORTABLE ANALYZER. THE OPERATOR SHALL KEEP RECORDS OF THE FOLLOWING DATA WHILE OPERATING THE ENGINE IN VARIOUS LOADS DURING THE INITIAL SET-UP:

    A. PRESSURE DROP ACROSS THE CATALYST IN INCHES OF WATER COLUMN,
    B. EQUIVALENT EXHAUST OXYGEN READINGS IN MILLIVOLTS,
    C. INLET AND OUTLET CATALYST TEMPERATURES.

12. THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY.

13. IN ADDITION TO THE INSPECTION MONITORING (I&M) PLAN REQUIRED BY RULE 1110.2 SECTION (F)(1)(D), THE OPERATOR OR CONTRACTOR IN-CHARGE OF EQUIPMENT OPERATION SHALL SET-UP AND FOLLOW A MAINTENANCE PROGRAM TO ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NO. 4. THE MAINTENANCE PROGRAM SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURES:

FILE COPY

PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT

IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750 HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

14. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) - AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

15. THIS EQUIPMENT SHALL COMPLY WITH MONITORING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES DURING NORMAL OPERATIONS (ACTUAL DUTY CYCLE, UNLESS STEADY STATE IS THE NORMAL OPERATING CONDITION), AND A MINIMUM OF 15 MINUTES EACH AT THE MAXIMUM LOAD AND AT THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) - AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF LIQUID AND/OR GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS OR GALLONS OF LIQUID) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQURIED IN SUBPARAGRAPH (F)(1)(D) OF RULE 1110.2

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

16. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

17. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris M Bailey

By Dorris M.Bailey/MS10
12/30/2008

FILE COPY

N S R D A T A S U M M A R Y S H E E T

Application No:	485755
Application Type:	Change of Conditions
Application Status:	APPROVED
Previous Apps,Dev,Permit #:	292785, 0 - x, G1150

Company Name:	MESA CONSOLIDATED WATER DISTRICT
Company ID:	98380
Address:	2340 ORANGE AVE,COSTA MESA, CA 92627
RECLAIM:	NO
RECLAIM Zone:	01
Air Basin:	SC
Zone:	18
Title V:	NO

Device ID:	0 - ICE-PPS
Estimated Completion Date:	12-01-2008
Heat Input Capacity:	0 Million BTU/hr
Priority Reserve:	NONE - No Priority Access Requested
Recommended Disposition:	31 - PERMIT TO OPERATE GRANTED
PR Expiration:	
School Within 1000 Feet:	NO
Operating Weeks Per Year:	52
Operating Days Per Week:	7
Monday Operating Hours:	00:00 to 24:00
Tuesday Operating Hours:	00:00 to 24:00
Wednesday Operating Hours:	00:00 to 24:00
Thursday Operating Hours:	00:00 to 24:00
Friday Operating Hours:	00:00 to 24:00
Saturday Operating Hours:	00:00 to 24:00
Sunday Operating Hours:	00:00 to 24:00

Emittant:	CO
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.49 lbs/hr
Max Daily:	11.76 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.49 lbs/hr
Max Daily:	11.76 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	12 lbs/day
Annual Emission:	4280.64 lbs/yr
District Exemption:	1301(b)(1)-12/07/1995-General (NSR) - attainment air contaminant

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Emittant:	NOX
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	3 lbs/day
Annual Emission:	1048.32 lbs/yr
District Exemption:	None

Emittant:	PM10
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	0 lbs/day
Annual Emission:	0 lbs/yr
District Exemption:	None

Emittant:	ROG
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	3 lbs/day
Annual Emission:	1048.32 lbs/yr
District Exemption:	None

Emittant:	SOX
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	0 lbs/day
Annual Emission:	0 lbs/yr
District Exemption:	None

SUPERVISOR'S APPROVAL: _____ SUPERVISOR'S REVIEW DATE: _____

Processed By: msaulis 8/4/2009 1:11:01 PM

ROUTING RECORD

DATE	FROM	TO	ACTION
JUN 0 4 2009	MYL	MS	III
8/4/09	MS	ASS	PO

REFERENCE TO OTHER APCD RECORDS INCLUDING VARIANCES

MCWD ID 98380 RESERVOIR 2

ICE # 2 A/N 499281

SEE MASTER FILE A/N 499279

APPL # 499281
I. D. # 98380

MESA CONSOLIDATED WATER DISTRICT
2340 ORANGE AVE
COSTA MESA
ICE

Date: 06/02/09

ID 98380

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

PERMIT TO OPERATE

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for the annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

ID 98380

Legal Owner
or Operator: MESA CONSOLIDATED WATER DISTRICT
1965 PLACENTIA AVE, ATTN: WATER OPER ASSISTANT
COSTA MESA, CA 92627-3420

Equipment Location: 2340 ORANGE AVE, COSTA MESA, CA 92627

Equipment Description :

INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10769/2, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

Conditions :

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON-SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.

4. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.

5. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 – AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED IN THIS PERMIT.

6. THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	33

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NITROGEN OXIDES (NOX)	12
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

7. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	30
NITROGEN OXIDES (NOX)	11
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

8. THE OPERATOR SHALL INSTALL AND MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV). THE EXHAUST GAS OXYGEN SENSOR MV OUTPUT SHALL BE MAINTAINED AS PER THE MANUFACTURER'S SPECIFICATION FOR THE MV READING TO ENSURE A PROPER AIR TO FUEL MIXTURE.

THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY BY MEASURING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

FILE COPY

9. THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL INSPECT AND CLEAN OR, IF NECESSARY, REPLACE THE CATALYST EVERY 8,000 OPERATING HOURS. RECORDS OF THE CATALYST CLEANING OR REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

10. THE OPERATOR OR CONTRACTOR IN CHARGE SHALL MAINTAIN ACCURATE MAINTENANCE RECORDS OF THE DATE OF CATALYST CLEANING OR REPLACEMENT, OXYGEN SENSOR REPLACEMENT, THE TOTAL HOUR READING ON THE TOTAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME, OXYGEN SENSOR READING IN MILLIVOLTS OR PERCENT OXYGEN AND THE CORRESPONDING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

11. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) – AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

THE OPERATOR SHALL ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NOS. 6 & 7 THROUGH MONITORING THAT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURE:

PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT.

IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750 HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

THE OPERATOR SHALL MAINTAIN RECORDS TO VERIFY COMPLIANCE WITH THIS CONDITION.

12. THIS EQUIPMENT SHALL COMPLY WITH MONITORING, TESTING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES. TESTING SHALL BE DONE FOR AT LEAST 30 MINUTES DURING NORMAL OPERATION (ACTUAL DUTY CYCLE). IN ADDITION, TESTING SHALL BE DONE FOR NOX AND CO EMISSIONS FOR AT LEAST 15 MINUTES AT: AN ENGINE'S PEAK LOAD, OR THE MAXIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST, AND: AT ACTUAL MINIMUM LOAD, EXCLUDING IDLE, OR THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) – AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 – AMENDED 2/1/2008.

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

13. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

PERMIT TO OPERATE

14. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris M Bailey

By Dorris M.Bailey/MS10
8/5/2009

FILE COPY

South Coast Air Quality Management District

Form 400-A

Application For Permit To Construct and Permit To Operate

Mail Application To:
P.O. Box 4944
Diamond Bar, CA 91765

Tel: (909) 396-3385
www.aqmd.gov

Section A: Operator Information

1. **Business Name of Operator To Appear On The Permit:**
Mesa Consolidated Water District

2. **Valid AQMD Facility ID (Available on Permit or Invoice issued by AQMD):** 98380

3. **Owner's Business Name (only if different from Business Name of Operator):**

Section B: Equipment Location

4. **Equipment Location Address:**
For equipment operated at various locations in AQMD's jurisdiction, provide address of initial site

2340 Orange Ave
Street Address

Costa Mesa, CA, 92627
City State Zip Code

County: ○ Los Angeles ◉ Orange ○ San Bernardino ○ Riverside

Contact Name: Jerry Vilander

Contact Title: Operations Manager Phone: (949) 574-1000

Fax: (949) 574-1033 E-Mail: jerryv@mesawater.org

Section C: Permit Mailing Address

5. **Permit and Correspondence Information:**
☐ Check here if same as equipment location address

1965 Placentia Ave
Street Address

Costa Mesa, CA, 92627
City State Zip Code

Contact Name: Jerry Vilander

Contact Title: Operations Manager Phone: (949) 574-1000

Fax: (949) 574-1033 E-Mail: jerryv@mesawater.org

Section D: Application Type

The facility is in ○ RECLAIM ○ Title V ○ RECLAIM & Title V Program (please check if applicable)

6. **Reason for Submitting Application (Select only ONE):**

- ○ New Construction (Permit to Construct)
- ○ Equipment Operating Without A Permit or Expired Permit*
- ○ Administrative Change
- ○ Equipment On-Site But Not Constructed or Operational
- ○ Title V Application (Initial, Revisions, Modifications, etc.)
- ○ Compliance Plan
- ○ Facility Permit Amendment
- ○ Registration/Certification
- ○ Streamlined Standard Permit
- ○ Permitted Equipment Altered/ Modified Without Permit Approval*
- ○ Proposed Alteration/Modification to Permitted Equipment
- ◉ Change of Condition For Permit To Operate (LO)
- ○ Change of Condition For Permit To Construct
- ○ Change of Location—Moving to New Site

Existing Or Previous Permit/Application Number:
(If you checked any of the items in this column, you MUST provide a existing Permit/ Application Number)
D99418 - Inactive
G1148

* A Higher Permit Processing Fee applies to those items with an asterisk (Rule 301 (c) (1) (D)

7. **Estimated Start Date of Operation/Construction (MM/DD/YYYY):**

8. **Description of Equipment:**
Replace current Air Fuel Ratio Controller with Compliance Controls MEC-R.

9. **Is this equipment portable AND will it be operated at different locations within AQMD's jurisdiction?** ◉ No ○ Yes

10. **For Identical equipment, how many additional applications are being submitted with this application?** (Form 400-A required for each) 3

11. **Are you a Small Business as per AQMD's Rule 102 definition?** (10 employees or less and total gross receipts are $500,000 or less, or a not-for-profit training center?) ◉ No ○ Yes

12. **Has a Notice of Violation (NOV) or a Notice To Comply (NC) been issued for this equipment?**
◉ No ○ Yes If yes, provide NOV/NC #:

Section E: Facility Business Information

13. **What type of business is being conducted at this equipment location?**
Water Supply Reservoir

14. **What is your businesses primary NAICS Code** (North American Industrial Classification System)?

15. **Are there other facilities in the SCAQMD jurisdiction operated by the same operator?** ○ No ◉ Yes

16. **Are there any schools (K-12) within a 1000-ft. radius of the equipment physical location?** ◉ No ○ Yes

Section F: Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

17. **Signature of Responsible Official:**

18. **Title:** Operations Manager

19. **Print Name:** Jerry Vilander

20. **Date:** 5/14/09

Check List
- ☐ Form(s) signed and dated by authorized official
- ☐ Supplemental Equipment Form (400-E-XX or 400-E-GEN)
- ☐ CEQA Form (400-CEQA) attached
- ☐ Payment for permit processing fee attached

Your application will be rejected if any of the above items are missing.

AQMD USE ONLY	APPLICATION/TRACKING #	TYPE	EQUIPMENT CATEGORY CODE:	FEE SCHEDULE:	VALIDATION
	449528 (BK)	B C D		$	6/2/09 MC

ENG. A R DATE	ENG. A R DATE	CLASS I III IV	ASSIGNMENT Unit 5 Engineer	CHECK/MONEY ORDER # 750	AMOUNT $ 2540.79	Tracking # 81330

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3/4

S.C.A.Q.M.D.
ENGINEERING

'09 JUN -2 P1:15

South Coast Air Quality Management District

FORM 400-E-13b
NON-EMERGENCY INTERNAL COMBUSTION ENGINE

Mail Application To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765
Tel: (909) 396-3385
www.aqmd.gov

This form must be accompanied by a completed Application for a Permit to Construc/Operate -Form 400A, Form CEQA, Plot Plan and Stack Form

Permit to be issued to (Business name of operator to appear on permit):
Mesa Consolidated Water District

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site):
2340 Orange Ave., Costa Mesa, CA 92627 (●) Fixed Location ( ) Various Locations

Does Applicant hold a valid permit for Portable ICE under CA Statewide Portable Equipment Registration Program? ( ) Yes (●) No
If yes, ICE permit is not required from the South Coast Air Quality Management District.

SECTION A: EQUIPMENT INFORMATION

Internal Combustion Engine

Is the ICE an EPA Certified or Qualifying Non-Road Engine? (●) Yes ( ) No If yes, provide EPA Certificate No. _____ & attach copy

Manufacturer:	Model No.:
Waukesha	2895G
Serial No.: C-10769/2	**Date of Manufacture:** _____ (mm/dd/yyyy)
Manufacturer Maximum Rating: 369.00 BHP @ 1000 RPM	**Date of Installation:** _____ (mm/dd/yyyy)

For an ICE manufactured after 7/18/94, please provide manufacturer's specification and guarantee.

ICE Function (Check all that apply)
[ ] Electrical Generator [ ] Fire Pump [ ] Compressor [ ] Co-Generation
[ ] Flood Control [x] Pump Driver [ ] Other (Specify): _____

Type
(●) Stationary ( ) Portable [ ] Intra-facility [ ] Off- Site [ ] Rental [ ] Non-Rental

Fuel
(●) Natural Gas ( ) LPG ( ) Refinery Gas* ( ) Digester Gas* ( ) Landfill Gas*
( ) Diesel Oil No. 2 ( ) Other* : _____
*If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content.

Stand-By Fuel
( ) Natural Gas (●) LPG ( ) Refinery Gas* ( ) Digester Gas* ( ) Landfill Gas*
( ) Diesel Oil No. 2 ( ) Other* : _____
*If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content.

Cycle Type
( ) Two Cycle (●) Four Cycle

Combustion Type
( ) Lean Burn (●) Rich Burn

No. of Cylinders
( ) Four (●) Six ( ) Eight ( ) Ten ( ) Twelve ( ) Sixteen ( ) Other _____

Aspiration Type
( ) Turbocharged ( ) Turbocharged/Aftercooled
(●) Naturally Aspirated [ ] Timing Retarded ≥ 4° (relative to standard timing)

Air Pollution Control (if applicable)
( ) Selective Catalytic Reduction (SCR)* ( ) No Controls
( ) Selective Non-catalytic Reduction (SNCR)* (●) Air Fuel Ratio Controller
( ) Non-selective Catalytic Reduction (NSCR) ( ) Other (specify) : _____
* Separate application is required.

Manufacturer:	Model No.:
Compliance Controls	MECR-11-FT-60

If already permitted, indicate Permit No. _____ Device No. _____

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SECTION B: OPERATION INFORMATION

Fuel Consumption	Maximum Rated load: gal./hr. OR cu. ft./hr		Average Load: gal./hr. OR 1.200 cu. ft./hr.		
Emissions Data	Pollutants	Maximum Emissions Before Control		Maximum Emissions After Control	
		Gm/Bhp-hr	PPM (15% O2)	Gm/Bhp-hr	PPM (15% O2)
	ROG				
	NOx	1.500			12.000
	CO	2.650			76.000
	PM				
	SOx				

Emissions Reference (attach):
- ☐ Manufacturer's Guarantee
- ☐ Catalytic Manufacturer's Guarantee
- ☐ Source Test Data
- ☐ EPA Emission Factors
- ☐ Other (specify):

Operating Schedule	Normal:	6 hours/day	4 days/week	52 weeks/yr.
	Maximum:	hours/day	days/week	weeks/yr.

SECTION C: APPLICANT CERTIFICATION STATEMENT

I hereby certify that all information contained herein and information submitted with this application is true and correct.

SIGNATURE OF PREPARER:	TITLE OF PREPARER: Assoc. Civil Engr.	PREPARER'S TELEPHONE NUMBER: (949) 631-1291 PREPARER'S E-MAIL ADDRESS: leannet@mesawater.org
CONTACT PERSON FOR INFORMATION ON THIS EQUIPMENT: Jerry Vilander E-MAIL ADDRESS: jerryv@mesawater.org	CONTACT PERSON'S TELEPHONE NUMBER: (949) 574-1000 FAX NUMBER: (949) 574-1033	DATE SIGNED: 5/13/09

CONFIDENTIAL INFORMATION

Under the California Public Records Act, all information in your permit application will be considered a matter of public record and may be disclosed to a third party. If you wish to keep certain items as confidential, please complete the following steps:

(a) Make a copy of any page containing confidential information blanked out. Label this page "public copy."
(b) Label the original page "confidential." Circle all confidential items on the page.
(c) Prepare a written justification for the confidentiality of each confidential item. Append this to the confidential copy.

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Serial Number: C-10769/2

SCAQMD PERMIT PROCESSING SYSTEM (PPS)

FEE DATA - SUMMARY SHEET

Application No :	499281	IRS/SS No:	
Previous Application No:	485752	Previous Permit No:	G1148

Company Name :	MESA CONSOLIDATED WATER DISTRICT	Facility ID:	98380
Equipment Street:	2340 ORANGEAVE , COSTA MESA CA 92627		
Equipment Desc :	I C E (50-500 HP) N-EM STAT GAS-LPG		

Equipment Type :	BASIC			Fee Charged by:	B-CAT
B-CAT NO. :	040501	C-CAT NO:	00	Fee Schedule:	B
Facility Zone :	18	Deemed Compl. Date:	6/10/2009	Public Notice:	NO

Evaluation Type :	CHANGE OF CONDITIONS, (PO)	Small Business:	☐
Disposition :	Approve PO, Recommended by Engineer	Higher Fees for Failing to Obtain a Permit:	☐
Lead Appl. No :	499279	Identical Permit Unit:	☒

Air quality Analysis			$0.00	Filing Fee Paid:	$0.00
E.I.R			$0.00	Permit Processing Fee Paid:	$508.16
Health Risk Assessment			$0.00	Permit Processing Fee Calculated*:	$508.16
Significant Project			$0.00	Permit Processing Fee Adjustment:	$0.00
Expedited Processing	Hours:	0.00	$0.00		
Source Test Review	Hours:	0.00	$0.00		
Time & Material	Hours:	0.00	$0.00		
				Total Additional Fee:	$0.00
				Additional Charge:	$0.00

COMMENTS:

RECOMMENDED BY: MARCEL SAULIS DATE: 08/04/2009

REVIEWED BY: _____ DATE: AUG 05 2009

* ADJUSTED FOR SMALL BUSINESS, IDENTICAL EQUIPMENT AND P/O NO P/C PENALTY

N S R D A T A S U M M A R Y S H E E T

Application No:	499281
Application Type:	Change of Conditions
Application Status:	PENDAPPRV
Previous Apps,Dev,Permit #:	485752, 0 - ICE-PPS, NONE

Company Name:	MESA CONSOLIDATED WATER DISTRICT
Company ID:	98380
Address:	2340 ORANGE AVE,COSTA MESA, CA 92627
RECLAIM:	NO
RECLAIM Zone:	01
Air Basin:	SC
Zone:	18
Title V:	NO

Device ID:	0 - ICE-PPS
Estimated Completion Date:	08-01-2009
Heat Input Capacity:	0 Million BTU/hr
Priority Reserve:	NONE - No Priority Access Requested
Recommended Disposition:	31 - PERMIT TO OPERATE GRANTED
PR Expiration:	
School Within 1000 Feet:	NO
Operating Weeks Per Year:	52
Operating Days Per Week:	7
Monday Operating Hours:	00:00 to 24:00
Tuesday Operating Hours:	00:00 to 24:00
Wednesday Operating Hours:	00:00 to 24:00
Thursday Operating Hours:	00:00 to 24:00
Friday Operating Hours:	00:00 to 24:00
Saturday Operating Hours:	00:00 to 24:00
Sunday Operating Hours:	00:00 to 24:00

Emittant: CO
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.49 lbs/hr
Max Daily: 11.76 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.49 lbs/hr
Max Daily: 11.76 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 12 lbs/day
Annual Emission: 4280.64 lbs/yr
District Exemption: 1301(b)(1)-12/07/1995-General (NSR) - attainment air contaminant

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Emittant: NOX
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.12 lbs/hr
Max Daily: 2.88 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.12 lbs/hr
Max Daily: 2.88 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 3 lbs/day
Annual Emission: 1048.32 lbs/yr
District Exemption: None

Emittant: PM10
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 0 lbs/day
Annual Emission: 0 lbs/yr
District Exemption: None

Emittant:	ROG
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	3 lbs/day
Annual Emission:	1048.32 lbs/yr
District Exemption:	None

Emittant:	SOX
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	0 lbs/day
Annual Emission:	0 lbs/yr
District Exemption:	None

SUPERVISOR'S APPROVAL: AJS SUPERVISOR'S REVIEW DATE: AUG 0 5 2009

Processed By: msaulis 8/4/2009 2:57:26 PM

PERMIT TO OPERATE

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for the annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner
or Operator:

ID 98380

MESA CONSOLIDATED WATER DISTRICT
1965 PLACENTIA AVE, ATTN: WATER OPER ASSISTANT
COSTA MESA, CA 92627-3420

Equipment Location: 2340 ORANGE AVE, COSTA MESA, CA 92627

Equipment *Description* :

INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10769/2, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

Conditions :

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON-SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.

4. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.

5. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 – AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED IN THIS PERMIT.

SAMPLE

PERMIT TO OPERATE

6. THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	33
NITROGEN OXIDES (NOX)	12
CARBON MONOXIDE (CO)	70

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

7. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	30
NITROGEN OXIDES (NOX)	11
CARBON MONOXIDE (CO)	70

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

8. THE OPERATOR SHALL INSTALL AND MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV). THE EXHAUST GAS OXYGEN SENSOR MV OUTPUT SHALL BE MAINTAINED AS PER THE MANUFACTURER'S SPECIFICATION FOR THE MV READING TO ENSURE A PROPER AIR TO FUEL MIXTURE.

THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY BY MEASURING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

9. THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL INSPECT AND CLEAN OR, IF NECESSARY, REPLACE THE CATALYST EVERY 8,000 OPERATING HOURS. RECORDS OF THE CATALYST CLEANING OR REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

SAMPLE

PERMIT TO OPERATE

10. THE OPERATOR OR CONTRACTOR IN CHARGE SHALL MAINTAIN ACCURATE MAINTENANCE RECORDS OF THE DATE OF CATALYST CLEANING OR REPLACEMENT, OXYGEN SENSOR REPLACEMENT, THE TOTAL HOUR READING ON THE TOTAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME, OXYGEN SENSOR READING IN MILLIVOLTS OR PERCENT OXYGEN AND THE CORRESPONDING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

11. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) – AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

THE OPERATOR SHALL ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NOS. 6 & 7 THROUGH MONITORING THAT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURE:

PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT.

IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750 HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

THE OPERATOR SHALL MAINTAIN RECORDS TO VERIFY COMPLIANCE WITH THIS CONDITION.

SAMPLE

PERMIT TO OPERATE

12. THIS EQUIPMENT SHALL COMPLY WITH MONITORING, TESTING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES. TESTING SHALL BE DONE FOR AT LEAST 30 MINUTES DURING NORMAL OPERATION (ACTUAL DUTY CYCLE). IN ADDITION, TESTING SHALL BE DONE FOR NOX AND CO EMISSIONS FOR AT LEAST 15 MINUTES AT: AN ENGINE'S PEAK LOAD, OR THE MAXIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST, AND: AT ACTUAL MINIMUM LOAD, EXCLUDING IDLE, OR THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) – AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 – AMENDED 2/1/2008.

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

13. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

14. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

SAMPLE

PERMIT TO OPERATE

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

By Dorris M.Bailey/MS10

SAMPLE

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT *ENGINEERING & COMPLIANCE* APPLICATION PROCESSING AND CALCULATIONS	PAGES 8	PAGE NO. 1
	APPL. NO. 499279, 499280, 499281 & 499282	DATE 8/4/2009
	PROCESSED BY M SAULIS	CHECKED BY

ENGINEERING EVALUATION PERMIT TO OPERATE

COMPANY NAME AND ADDRESS

Mesa Consolidated Water District
1965 Placentia Ave.
Costa Mesa, CA 92627

CONTACT: Jerry Vilander, Operations Manager, (949) 574-1000

EQUIPMENT LOCATION

AQMD ID 98380
2340 Orange Ave.
Costa Mesa, CA 92627

EQUIPMENT DESCRIPTION

A/N 499279 (MASTER)
INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10769/1, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

A/N 499280
INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10796/4, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

A/N 499281
INTERNAL COMBUSTION ENGINE, NO 2, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10796/2, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

A/N 499282
INTERNAL COMBUSTION ENGINE, NO 4, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10796/3, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

BACKGROUND

Mesa Consolidated Water District (MCWD) submitted applications for existing engines located at one of their pumping facilities, Reservoir 2, to change the air-to-fuel ratio controllers (AFRC). MCWD is in the process of updating their Supervisory Control and Data Acquisition (SCADA) system and as a part of the process; they will be replacing the existing Continental Controls ECV5 to Compliance Controls AFRC. According to the Production Superintendent, the Compliance Controls AFRC are better suited for their SCADA system than the existing AFRC. The four (4) engines located at the site are all identical and the AFRC that will be installed are also identical.

The applications are for change of conditions with no change in emissions; therefore, no NSR requirements will be triggered. MCWD also submitted an Inspection and Monitoring (I&M) Plan, A/N 486376, in accordance with the requirements of Rule 1110.2 and it is currently in the process of being evaluated.

COMPLIANCE REVIEW

The District Compliance database was queried and it revealed that the facility was inspected on 6/2/09 and a Notice of Violation (NOV) P53467 was issued for failure to conduct source tests on three of the four engines per Rule 1110.2. District enforcement staff is monitoring the compliance status of the facility to ensure the NC and NOV are resolved accordingly and the facility complies with District Rules and Regulations.

CALCULATIONS

The request to change the air-to-fuel ratio controller will result in no increase in emissions; therefore, calculations are not required.

RULES EVALUATION

RULE 212-STANDARDS FOR APPROVING PERMITS AND ISSUING PUBLIC NOTICES
Rule 212 requires that a person shall not build, erect, install, alter, or replace any equipment, the use of which may cause the issuance of air contaminants or the use of which may eliminate, reduce, or control the issuance of air contaminants without first obtaining written authorization for such construction from the Executive Officer. Rule 212(c) states that a project requires written notification if there is an

emission increase for ANY criteria pollutant in excess of the daily maximums specified in Rule 212(g), if the equipment is located within 1,000 feet of the outer boundary of a school, or if the MICR is equal to or greater than one in a million ($1x10^6$) during a lifetime (70 years) for facilities with more than one permitted unit, source under Regulation XX, or equipment under Regulation XXX, unless the applicant demonstrates to the satisfaction of the Executive Officer that the total facility-wide maximum individual cancer risk is below ten in a million ($10x10^6$) using the risk assessment procedures and toxic air contaminants specified under Rule 1402; or, ten in a million ($10x10^6$) during a lifetime (70 years) for facilities with a single permitted unit, source under Regulation XX, or equipment under Regulation XXX. There is no increase in emissions associated with this project; therefore, a public notice is not required for sections (c)(1), (c)(2) or (c)(3).

RULE 401 - VISIBLE EMISSIONS

This rule limits visible emissions to an opacity of less than 20 percent (Ringlemann No.1), as published by the United States Bureau of Mines. Compliance is expected with well maintained and properly operated equipment.

RULE 402 - NUISANCE

This rule requires that a person not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which cause, or have a natural tendency to cause injury or damage to business or property. The engines are not expected to create a public nuisance based on experience with identical natural gas fired engines. Therefore, compliance with Rule 402 is expected.

RULE 407 – LIQUID AND GASEOUS AIR CONTAMINANTS

This rule limits CO emissions to 2,000 ppmvd and SO_2 emissions to 500 ppmvd, averaged over 15 minutes. The engines are subject to a CO emission limit of 70 and 76 ppmvd @ 15% O2. Thus the engines are expected to continue to comply with the CO limits of the permit condition and the this rule. For SO_2, equipment which complies with Rule 431.1 is exempt from the SO_2 limit in Rule 407. The applicant will be required to comply with Rule 431.1 and thus the SO_2 limit in Rule 407 will not apply.

RULE 431.1-SULFUR CONTENT OF GASEOUS FUELS

The engines will use pipeline quality natural gas which will comply with the 16 ppm sulfur limit, calculated as H2S, specified in this rule. Natural gas will be supplied by the Southern California Gas Company which has a H2S content of less 0.25 gr/100scf, which is equivalent to a concentration of about 4 ppm. It is also much less than the 1 gr/100scf limit typical of pipeline quality natural gas. Compliance is expected.

RULE 1110.2 – EMISSIONS FROM GASEOUS- AND LIQUID FUELED ENGINES

The purpose of Rule 1110.2 is to reduce Oxides of Nitrogen (NOx), Volatile Organic Compounds (VOCs), and Carbon Monoxide (CO) from engines. This rule was recently amended on 2/1/08 that affects the operation of these engines. The following sections discuss the key requirements of this rule as it applies to the equipment:

(d)(1)(B) The engines are subject to the emission requirements in Table II (of the rule), but will be required to meet the more stringent limits as of 7/1/2011.

Current concentration limits (< 500 bhp)

Item	ppmv @ 15% oxygen
NOx	45
CO	2000
ROG	250

Concentration limits effective 7/1/2011 (< 500 bhp)

Item	ppmv @ 15% oxygen
NOx	11
CO	250
ROG	30

However, the engines are currently subject to BACT emission limits of 12 ppmvd-NOx, 33 ppmvd-ROG, and 70 ppmvd-CO; therefore, by 7/1/2011, the engines will have to meet the NOx and ROG standard of the rule.

(d)(1)(E) The engines are equipped with air to fuel ratio controllers and oxygen sensors for feedback control.

(d)(1)(F) The engines are not considered new per sub-section (v), the engines were installed prior to 2/2008 and they will be treated as "existing", thus section (d)(1)(F) does not apply.

(e)(4) MCWD submitted an I&M Plan application (486376) for this location. To this date the I&M Plan has not been processed; therefore, in accordance with the rule, MCWD must implement the plan that was submitted to the District

(e)(5) The engines are equipped with air fuel ratio controllers.

(f)(1)(B) The engines are equipped with time meters.

(f)(1)(C)(i) Source testing frequency for NOx, CO, and VOC, effective 8/1/08, is required once every 2 years or every 8760 operating hours. If the engines operate less than 2000 hours from the previous test, then testing is once every three years.

(f)(1)(C)(ii) Source testing is to be conducted for at least 60 minutes. Since the engines operate at variable loads, testing at 15 minutes at minimal and 15 minutes at maximum loads are required, in addition to the 30 minute operation at normal load. Testing must occur at least after 40 hours following a tune up.

(f)(1)(C)(ii) An AQMD approved contractor is required to perform testing.

(f)(1)(C)(iv)Source test protocol to be submitted at least 60 days prior to testing and the protocol has to be approved by the District.

(f)(1)(C)(vi)Source test reports to be submitted within 60 days of the test

(f)(1)(D) This section outlines the requirements of the I&M plan. MCWD submitted an I&M Plan for this facility. The Plan is expected to cover the applicable requirements of this section.

(f)(1)(E) MCWD is required to maintain an operating log for these engines.

NEW SOURCE REVIEW (NSR)

There is no increase in emissions associated with the permit condition changes; therefore, BACT, Modeling, or external offsets are not applicable to the project.

RULE 1401 – NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS
The project will result in no increase in TAC emissions; therefore, this rule is not applicable.

RECOMMENDATION(S)

Issue Permits to Operate with the permit conditions shown below.

PERMIT CONDITIONS

Conditions 1 & 2 are standard conditions.

3. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON-SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.

4. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.

5. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 – AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED IN THIS PERMIT.

6. THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	33
NITROGEN OXIDES (NOX)	12
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

7. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	30
NITROGEN OXIDES (NOX)	11
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

8. THE OPERATOR SHALL INSTALL AND MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV). THE EXHAUST GAS OXYGEN SENSOR MV OUTPUT SHALL BE MAINTAINED AS PER THE MANUFACTURER'S SPECIFICATION FOR THE MV READING TO ENSURE A PROPER AIR TO FUEL MIXTURE.

   THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY BY MEASURING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

9. THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL INSPECT AND CLEAN OR, IF NECESSARY, REPLACE THE CATALYST EVERY 8,000 OPERATING HOURS. RECORDS OF THE CATALYST CLEANING OR REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

10. THE OPERATOR OR CONTRACTOR IN CHARGE SHALL MAINTAIN ACCURATE MAINTENANCE RECORDS OF THE DATE OF CATALYST CLEANING OR REPLACEMENT, OXYGEN SENSOR REPLACEMENT, THE TOTAL HOUR READING ON THE TOTAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME, OXYGEN SENSOR READING IN MILLIVOLTS OR PERCENT OXYGEN AND THE CORRESPONDING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

11. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) – AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

    THE OPERATOR SHALL ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NOS. 6 & 7 THROUGH MONITORING THAT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURE:

    PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT.

    IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750

HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

THE OPERATOR SHALL MAINTAIN RECORDS TO VERIFY COMPLIANCE WITH THIS CONDITION.

12. THIS EQUIPMENT SHALL COMPLY WITH MONITORING, TESTING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES. TESTING SHALL BE DONE FOR AT LEAST 30 MINUTES DURING NORMAL OPERATION (ACTUAL DUTY CYCLE). IN ADDITION, TESTING SHALL BE DONE FOR NOX AND CO EMISSIONS FOR AT LEAST 15 MINUTES AT: AN ENGINE'S PEAK LOAD, OR THE MAXIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST, AND: AT ACTUAL MINIMUM LOAD, EXCLUDING IDLE, OR THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) – AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 – AMENDED 2/1/2008.

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

13. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

14. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

PERMIT TO OPERATE

Permit No.
G1148
A/N 485752

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for the annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

ID 98380

Legal Owner
or Operator: MESA CONSOLIDATED WATER DISTRICT
1965 PLACENTIA AVE, ATTN: WATER OPER ASSISTANT
COSTA MESA, CA 92627-3420

Equipment Location: 2340 ORANGE AVE, COSTA MESA, CA 92627

Equipment Description :

INTERNAL COMBUSTION ENGINE, NO. 2,WAUKESHA, MODEL NO. 2895G, NATURAL GAS- OR LPG-FUELED, PUMP DRIVER, 6 CYLINDERS, NATURALLY ASPIRATED, 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION UNIT, JOHNSON MATTHEY, MODEL ES-ASA (1000), AND AN AIR TO FUEL RATIO CONTROLLER, CONTINENTAL CONTROLS, MODEL ECV5.

Conditions :

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AUTOMATIC AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITION AT ALL TIMES.

4. THE ENGINE EMISSIONS SHALL NOT EXCEED THE FOLLOWING:

	G/BHP-HR	PPMVD AT 15% O2
REACTIVE ORGANIC COMPOUNDS:	0.15	33
NITROGEN OXIDES:	0.15	12
CARBON MONOXIDE:	0.60	70

5. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15%.O2 (DRY)

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REACTIVE ORGANINC COMPOUNDS	30
NITROGEN OXIDES	11
CARBON MONOXIDE	70

6. LPG MAY ONLY BE USED DURING PERIODS OF TESTING AND NATURAL GAS CURTAILMENT.

7. THIS EQUIPMENT SHALL COMPLY WITH RULE 1110.2.

8. THE MINIMUM TEMPERATURE OF THE ENGINE EXHAUST AT THE INLET OF THE NON-SELECTIVE CATALYTIC REDUCTION SYSTEM UNIT SHALL BE AT LEAST 750 DEGREES FAHRENHEIT (EXCEPT DURING THE COLD ENGINE START-UP, NOT TO EXCEED 20 MINUTES).

9. THE MAXIMUM TEMPERATURE OF THE ENGINE EXHAUST AT THE INLET OF THE NON-SELECTIVE CATALYTIC REDUCTION SYSTEM UNIT SHALL NOT EXCEED 1,250 DEGREES FAHRENHEIT (EXCEPT DURING THE COLD ENGINE START-UP, NOT TO EXCEED 20 MINUTES).

10. THE OPERATOR SHALL MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV).

11. DURING THE INITIAL SET-UP OF THE OXYGEN SENSOR, THE OPTIMUM OXYGEN SENSOR SET POINT IN MILLIVOLTS SHALL BE DETERMINED BY COMPARING THE NOX AND CO EMISSION LEVELS AT VARIOUS ENGINE OPERATING LOADS. THE NOX AND CO EMISSION READINGS SHALL BE OBTAINED THROUGH THE USE OF A PORTABLE ANALYZER. THE OPERATOR SHALL KEEP RECORDS OF THE FOLLOWING DATA WHILE OPERATING THE ENGINE IN VARIOUS LOADS DURING THE INITIAL SET-UP:

    A. PRESSURE DROP ACROSS THE CATALYST IN INCHES OF WATER COLUMN,
    B. EQUIVALENT EXHAUST OXYGEN READINGS IN MILLIVOLTS,
    C. INLET AND OUTLET CATALYST TEMPERATURES.

12. THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY.

13. IN ADDITION TO THE INSPECTION MONITORING (I&M) PLAN REQUIRED BY RULE 1110.2 SECTION (F)(1)(D), THE OPERATOR OR CONTRACTOR IN-CHARGE OF EQUIPMENT OPERATION SHALL SET-UP AND FOLLOW A MAINTENANCE PROGRAM TO ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NO. 4. THE MAINTENANCE PROGRAM SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURES:

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PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT

IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750 HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

14. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) - AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

15. THIS EQUIPMENT SHALL COMPLY WITH MONITORING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES DURING NORMAL OPERATIONS (ACTUAL DUTY CYCLE, UNLESS STEADY STATE IS THE NORMAL OPERATING CONDITION), AND A MINIMUM OF 15 MINUTES EACH AT THE MAXIMUM LOAD AND AT THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) - AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF LIQUID AND/OR GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS OR GALLONS OF LIQUID) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQURIED IN SUBPARAGRAPH (F)(1)(D) OF RULE 1110.2

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

16. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

17. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris M Bailey

By Dorris M.Bailey/MS10
12/23/2008

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N S R D A T A S U M M A R Y S H E E T

Application No:	485752
Application Type:	Change of Conditions
Application Status:	APPROVED
Previous Apps,Dev,Permit #:	292782, 0 - x, G1148

Company Name:	MESA CONSOLIDATED WATER DISTRICT
Company ID:	98380
Address:	2340 ORANGE AVE,COSTA MESA, CA 92627
RECLAIM:	NO
RECLAIM Zone:	01
Air Basin:	SC
Zone:	18
Title V:	NO

Device ID:	0 - ICE-PPS
Estimated Completion Date:	12-01-2008
Heat Input Capacity:	0 Million BTU/hr
Priority Reserve:	NONE - No Priority Access Requested
Recommended Disposition:	31 - PERMIT TO OPERATE GRANTED
PR Expiration:	
School Within 1000 Feet:	NO
Operating Weeks Per Year:	52
Operating Days Per Week:	7
Monday Operating Hours:	00:00 to 24:00
Tuesday Operating Hours:	00:00 to 24:00
Wednesday Operating Hours:	00:00 to 24:00
Thursday Operating Hours:	00:00 to 24:00
Friday Operating Hours:	00:00 to 24:00
Saturday Operating Hours:	00:00 to 24:00
Sunday Operating Hours:	00:00 to 24:00

Emittant: CO
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.49 lbs/hr
Max Daily: 11.76 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.49 lbs/hr
Max Daily: 11.76 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 12 lbs/day
Annual Emission: 4280.64 lbs/yr
District Exemption: 1301(b)(1)-12/07/1995-General (NSR) - attainment air contaminant

---

Emittant: NOX
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.12 lbs/hr
Max Daily: 2.88 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.12 lbs/hr
Max Daily: 2.88 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 3 lbs/day
Annual Emission: 1048.32 lbs/yr
District Exemption: None

Emittant: PM10
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 0 lbs/day
Annual Emission: 0 lbs/yr
District Exemption: None

Emittant: ROG
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.12 lbs/hr
Max Daily: 2.88 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.12 lbs/hr
Max Daily: 2.88 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 3 lbs/day
Annual Emission: 1048.32 lbs/yr
District Exemption: None

Emittant: SOX
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 0 lbs/day
Annual Emission: 0 lbs/yr
District Exemption: None

SUPERVISOR'S APPROVAL: _____ SUPERVISOR'S REVIEW DATE: _____

Processed By: msaulis 8/4/2009 1:10:35 PM

J

ROUTING RECORD

DATE	FROM	TO	ACTION
JUN 04 2009	MYL	MS	III
8/4/09	MS	ABS	PO

REFERENCE TO OTHER APCD RECORDS INCLUDING VARIANCES

MCWD ID 98380 REFERENCE #2

ICE # ~~AP~~ 3 A/N 499280

SEE MASTER A/N 499279

APPL # 499280
I. D. # 98380

SA CONSOLIDATED WATER DISTRICT
0 ORANGE AVE
STA MESA

Date: 06/02/09

MESA CONSOLIDATED WATER DISTRICT
ICE

AP499280
ID 98380

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

Permit No.
G4003
~~A/N 499280~~

PERMIT TO OPERATE

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for the annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

ID 98380

Legal Owner
or Operator:

MESA CONSOLIDATED WATER DISTRICT
1965 PLACENTIA AVE, ATTN: WATER OPER ASSISTANT
COSTA MESA, CA 92627-3420

Equipment Location: 2340 ORANGE AVE, COSTA MESA, CA 92627

Equipment Description :

INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10769/4, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

Conditions :

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON-SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.

4. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.

5. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 – AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED IN THIS PERMIT.

6. THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	33

FILE COPY

NITROGEN OXIDES (NOX)	12
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

7. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	30
NITROGEN OXIDES (NOX)	11
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

8. THE OPERATOR SHALL INSTALL AND MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV). THE EXHAUST GAS OXYGEN SENSOR MV OUTPUT SHALL BE MAINTAINED AS PER THE MANUFACTURER'S SPECIFICATION FOR THE MV READING TO ENSURE A PROPER AIR TO FUEL MIXTURE.

THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY BY MEASURING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

PERMIT TO OPERATE

9. THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL INSPECT AND CLEAN OR, IF NECESSARY, REPLACE THE CATALYST EVERY 8,000 OPERATING HOURS. RECORDS OF THE CATALYST CLEANING OR REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

10. THE OPERATOR OR CONTRACTOR IN CHARGE SHALL MAINTAIN ACCURATE MAINTENANCE RECORDS OF THE DATE OF CATALYST CLEANING OR REPLACEMENT, OXYGEN SENSOR REPLACEMENT, THE TOTAL HOUR READING ON THE TOTAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME, OXYGEN SENSOR READING IN MILLIVOLTS OR PERCENT OXYGEN AND THE CORRESPONDING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

11. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) – AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

THE OPERATOR SHALL ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NOS. 6 & 7 THROUGH MONITORING THAT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURE:

PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT.

IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750 HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

THE OPERATOR SHALL MAINTAIN RECORDS TO VERIFY COMPLIANCE WITH THIS CONDITION.

12. THIS EQUIPMENT SHALL COMPLY WITH MONITORING, TESTING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

FILE COPY

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES. TESTING SHALL BE DONE FOR AT LEAST 30 MINUTES DURING NORMAL OPERATION (ACTUAL DUTY CYCLE). IN ADDITION, TESTING SHALL BE DONE FOR NOX AND CO EMISSIONS FOR AT LEAST 15 MINUTES AT: AN ENGINE'S PEAK LOAD, OR THE MAXIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST, AND: AT ACTUAL MINIMUM LOAD, EXCLUDING IDLE, OR THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) – AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 – AMENDED 2/1/2008.

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

13. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

14. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris M Bailey

By Dorris M.Bailey/MS10
8/5/2009

FILE COPY

South Coast Air Quality Management District

Form 400-A

Application For Permit To Construct and Permit To Operate

Mail Application To:
P.O. Box 4944
Diamond Bar, CA 91765

Tel: (909) 396-3385
www.aqmd.gov

Section A: Operator Information

1. Business Name of Operator To Appear On The Permit: Mesa Consolidated Water District

2. Valid AQMD Facility ID (Available on Permit or Invoice issued by AQMD): 98380

3. Owner's Business Name (only if different from Business Name of Operator):

Section B: Equipment Location

4. Equipment Location Address:
For equipment operated at various locations in AQMD's jurisdiction, provide address of initial site

2340 Orange Ave
Street Address

Costa Mesa, CA, 92627
City State Zip Code

County: ○ Los Angeles ◉ Orange ○ San Bernardino ○ Riverside

Contact Name: Jerry Vilander

Contact Title: Operations Manager Phone: (949) 574-1000

Fax: (949) 574-1033 E-Mail: jerryv@mesawater.org

Section C: Permit Mailing Address

5. Permit and Correspondence Information:
☐ Check here if same as equipment location address

1965 Placentia Ave
Street Address

Costa Mesa, CA, 92627
City State Zip Code

Contact Name: Jerry Vilander

Contact Title: Operations Manager Phone: (949) 574-1000

Fax: (949) 574-1033 E-Mail: jerryv@mesawater.org

Section D: Application Type

The facility is in ○ RECLAIM ○ Title V ○ RECLAIM & Title V Program (please check if applicable)

6. Reason for Submitting Application (Select only ONE):

- ○ New Construction (Permit to Construct)
- ○ Equipment Operating Without A Permit or Expired Permit*
- ○ Administrative Change
- ○ Equipment On-Site But Not Constructed or Operational
- ○ Title V Application (Initial, Revisions, Modifications, etc.)
- ○ Compliance Plan
- ○ Facility Permit Amendment
- ○ Registration/Certification
- ○ Streamlined Standard Permit
- ○ Permitted Equipment Altered/ Modified Without Permit Approval*
- ○ Proposed Alteration/Modification to Permitted Equipment
- ◉ Change of Condition For Permit To Operate
- ○ Change of Condition For Permit To Construct
- ○ Change of Location—Moving to New Site

Existing Or Previous Permit/Application Number:
(If you checked any of the items in this column, you MUST provide a existing Permit/ Application Number)
D99432- Inactive
G1149

* A Higher Permit Processing Fee applies to those items with an asterisk (Rule 301 (c) (1) (D)

7. Estimated Start Date of Operation/Construction (MM/DD/YYYY):

8. Description of Equipment:
Replace current Air Fuel Ratio Controller with Compliance Controls MEC-R.

9. Is this equipment portable AND will it be operated at different locations within AQMD's jurisdiction? ◉ No ○ Yes

10. For Identical equipment, how many additional applications are being submitted with this application? (Form 400-A required for each) 3

11. Are you a Small Business as per AQMD's Rule 102 definition? (10 employees or less and total gross receipts are $500,000 or less, or a not-for-profit training center?) ◉ No ○ Yes

12. Has a Notice of Violation (NOV) or a Notice To Comply (NC) been issued for this equipment?
◉ No ○ Yes If yes, provide NOV/NC #:

Section E: Facility Business Information

13. What type of business is being conducted at this equipment location? Water Supply Reservoir

14. What is your businesses primary NAICS Code (North American Industrial Classification System)?

15. Are there other facilities in the SCAQMD jurisdiction operated by the same operator? ○ No ◉ Yes

16. Are there any schools (K-12) within a 1000-ft. radius of the equipment physical location? ◉ No ○ Yes

Section F: Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

17. Signature of Responsible Official:

18. Title: Operations Manager

19. Print Name: Jerry Vilander

20. Date: 5/14/09

Check List
- ☐ Form(s) signed and dated by authorized official
- ☐ Supplemental Equipment Form (400-E-XX or 400-E-GEN)
- ☐ CEQA Form (400-CEQA) attached
- ☐ Payment for permit processing fee attached

Your application will be rejected if any of the above items are missing.

AQMD USE ONLY	APPLICATION/TRACKING # 499280	TYPE B C D	EQUIPMENT CATEGORY CODE:	FEE SCHEDULE: $	VALIDATION 6/2/09 MC
ENG. A R DATE	ENG. A R DATE	CLASS I III IV	ASSIGNMENT Unit J Engineer	CHECK/MONEY ORDER # 750	AMOUNT $2540.79 Tracking # 81330

© South Coast Air Quality Management District, Form 400-A (2006.02)

2/4

S.C.A.Q.M.D.
ENGINEERING
'09 JUN -2 P1:15

South Coast Air Quality Management District

FORM 400-E-13b
NON-EMERGENCY INTERNAL COMBUSTION ENGINE

Mail Application To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765

Tel: (909) 396-3385

www.aqmd.gov

This form must be accompanied by a completed Application for a Permit to Construct/Operate -Form 400A, Form CEQA, Plot Plan and Stack Form

Permit to be issued to (Business name of operator to appear on permit):
Mesa Consolidated Water District

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site):
2340 Orange Ave., Costa Mesa, CA 92627 ◉ Fixed Location ○ Various Locations

Does Applicant hold a valid permit for Portable ICE under CA Statewide Portable Equipment Registration Program? ○ Yes ◉ No
If yes, ICE permit is not required from the South Coast Air Quality Management District.

SECTION A: EQUIPMENT INFORMATION

Internal Combustion Engine

Is the ICE an EPA Certified or Qualifying Non-Road Engine? ◉ Yes ○ No If yes, provide EPA Certificate No. _____ & attach copy

Manufacturer: Waukesha
Model No.: 2895G
Serial No.: C-10769/4
Date of Manufacture: _____ (mm/dd/yyyy)
Date of Installation: _____ (mm/dd/yyyy)
For an ICE manufactured after 7/18/94, please provide manufacturer's specification and guarantee.
Manufacturer Maximum Rating: 369.00 BHP @ 1000 RPM

ICE Function (Check all that apply)

☐ Electrical Generator ☐ Fire Pump ☐ Compressor ☐ Co-Generation
☐ Flood Control ☒ Pump Driver ☐ Other (Specify): _____

Type

◉ Stationary ○ Portable ☐ Intra-facility ☐ Off- Site ☐ Rental ☐ Non-Rental

Fuel

◉ Natural Gas ○ LPG ○ Refinery Gas* ○ Digester Gas* ○ Landfill Gas*
○ Diesel Oil No. 2 ○ Other* : _____

*If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content.

Stand-By Fuel

○ Natural Gas ◉ LPG ○ Refinery Gas* ○ Digester Gas* ○ Landfill Gas*
○ Diesel Oil No. 2 ○ Other* : _____

*If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content.

Cycle Type

○ Two Cycle ◉ Four Cycle

Combustion Type

○ Lean Burn ◉ Rich Burn

No. of Cylinders

○ Four ◉ Six ○ Eight ○ Ten ○ Twelve ○ Sixteen ○ Other _____

Aspiration Type

○ Turbocharged ○ Turbocharged/Aftercooled
◉ Naturally Aspirated ☐ Timing Retarded ≥ 4° (relative to standard timing)

Air Pollution Control (if applicable)

○ Selective Catalytic Reduction (SCR)* ○ No Controls
○ Selective Non-catalytic Reduction (SNCR)* ◉ Air Fuel Ratio Controller
○ Non-selective Catalytic Reduction (NSCR) ○ Other (specify) : _____

* Separate application is required.

Manufacturer: Compliance Controls
Model No.: MECR-11-FT-60

If already permitted, indicate Permit No. _____ Device No. _____

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SECTION B: OPERATION INFORMATION

Fuel Consumption	Maximum Rated load: ____ gal./hr. OR ____ cu. ft./hr		Average Load: ____ gal./hr. OR 1.200 cu. ft./hr.		
Emissions Data	Pollutants	Maximum Emissions Before Control		Maximum Emissions After Control	
		Gm/Bhp-hr	PPM (15% O2)	Gm/Bhp-hr	PPM (15% O2)
	ROG				
	NOx	1.500			12.000
	CO	2.650			76.000
	PM				
	SOx				

Emissions Reference (attach):
- ☐ Manufacturer's Guarantee
- ☐ Catalytic Manufacturer's Guarantee
- ☐ Source Test Data
- ☐ EPA Emission Factors
- ☐ Other (specify):

Operating Schedule	Normal: 6 hours/day	4 days/week	52 weeks/yr.
	Maximum: ____ hours/day	____ days/week	____ weeks/yr.

SECTION C: APPLICANT CERTIFICATION STATEMENT

I hereby certify that all information contained herein and information submitted with this application is true and correct.

SIGNATURE OF PREPARER: Leannet Sellot	TITLE OF PREPARER: Assoc. Civil Engr.	PREPARER'S TELEPHONE NUMBER: (949) 631-1291 PREPARER'S E-MAIL ADDRESS: leannet@mesawater.org

CONTACT PERSON FOR INFORMATION ON THIS EQUIPMENT: Jerry Vilander	CONTACT PERSON'S TELEPHONE NUMBER: (949) 574-1000		DATE SIGNED: 5/13/09
E-MAIL ADDRESS: jerryv@mesawater.org	FAX NUMBER: (949) 574-1033		

CONFIDENTIAL INFORMATION

Under the California Public Records Act, all information in your permit application will be considered a matter of public record and may be disclosed to a third party. If you wish to keep certain items as confidential, please complete the following steps:

(a) Make a copy of any page containing confidential information blanked out. Label this page "public copy."
(b) Label the original page "confidential." Circle all confidential items on the page.
(c) Prepare a written justification for the confidentiality of each confidential item. Append this to the confidential copy.

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Serial Number: C-10769/4

SCAQMD PERMIT PROCESSING SYSTEM (PPS)

FEE DATA - SUMMARY SHEET

Application No :	499280	IRS/SS No:	
Previous Application No:	485754	Previous Permit No:	G1149

Company Name :	MESA CONSOLIDATED WATER DISTRICT			Facility ID:	98380
Equipment Street:	2340 ORANGEAVE , COSTA MESA CA 92627				
Equipment Desc :	I C E (50-500 HP) N-EM STAT GAS-LPG				
Equipment Type :	BASIC			Fee Charged by:	B-CAT
B-CAT NO. :	040501	C-CAT NO:	00	Fee Schedule:	B
Facility Zone :	18	Deemed Compl. Date:	6/10/2009	Public Notice:	NO

Evaluation Type :	CHANGE OF CONDITIONS, (PO)			Small Business:	☐
Disposition :	Approve PO, Recommended by Engineer			Higher Fees for Failing to Obtain a Permit:	☐
Lead Appl. No :	499279			Identical Permit Unit:	☒

Air quality Analysis			$0.00	Filing Fee Paid:	$0.00
E.I.R			$0.00	Permit Processing Fee Paid:	$508.16
Health Risk Assessment			$0.00	Permit Processing Fee Calculated*:	$508.16
Significant Project			$0.00	Permit Processing Fee Adjustment:	$0.00
Expedited Processing	Hours:	0.00	$0.00		
Source Test Review	Hours:	0.00	$0.00		
Time & Material	Hours:	0.00	$0.00		
				Total Additional Fee:	$0.00
				Additional Charge:	$0.00

COMMENTS:

RECOMMENDED BY: MARCEL SAULIS DATE: 08/04/2009

REVIEWED BY: ABS DATE: AUG 0 5 2009

* ADJUSTED FOR SMALL BUSINESS, IDENTICAL EQUIPMENT AND P/O NO P/C PENALTY

N S R D A T A S U M M A R Y S H E E T

Application No:	499280
Application Type:	Change of Conditions
Application Status:	PENDAPPRV
Previous Apps,Dev,Permit #:	485754, 0 - ICE-PPS, NONE

Company Name:	MESA CONSOLIDATED WATER DISTRICT
Company ID:	98380
Address:	2340 ORANGE AVE,COSTA MESA, CA 92627
RECLAIM:	NO
RECLAIM Zone:	01
Air Basin:	SC
Zone:	18
Title V:	NO

Device ID:	0 - ICE-PPS
Estimated Completion Date:	08-01-2009
Heat Input Capacity:	0 Million BTU/hr
Priority Reserve:	NONE - No Priority Access Requested
Recommended Disposition:	31 - PERMIT TO OPERATE GRANTED
PR Expiration:	
School Within 1000 Feet:	NO
Operating Weeks Per Year:	52
Operating Days Per Week:	7
Monday Operating Hours:	00:00 to 24:00
Tuesday Operating Hours:	00:00 to 24:00
Wednesday Operating Hours:	00:00 to 24:00
Thursday Operating Hours:	00:00 to 24:00
Friday Operating Hours:	00:00 to 24:00
Saturday Operating Hours:	00:00 to 24:00
Sunday Operating Hours:	00:00 to 24:00

Emittant: CO
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.49 lbs/hr
Max Daily: 11.76 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.49 lbs/hr
Max Daily: 11.76 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 12 lbs/day
Annual Emission: 4280.64 lbs/yr
District Exemption: 1301(b)(1)-12/07/1995-General (NSR) - attainment air contaminant

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Emittant: NOX
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.12 lbs/hr
Max Daily: 2.88 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.12 lbs/hr
Max Daily: 2.88 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 3 lbs/day
Annual Emission: 1048.32 lbs/yr
District Exemption: None

Emittant: PM10
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 0 lbs/day
Annual Emission: 0 lbs/yr
District Exemption: None

Emittant:	ROG
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	3 lbs/day
Annual Emission:	1048.32 lbs/yr
District Exemption:	None

Emittant:	SOX
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	0 lbs/day
Annual Emission:	0 lbs/yr
District Exemption:	None

SUPERVISOR'S APPROVAL: ABD SUPERVISOR'S REVIEW DATE: AUG 0 5 2009

Processed By: msaulis 8/4/2009 2:40:46 PM

PERMIT TO OPERATE

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for the annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

ID 98380

Legal Owner
or Operator: MESA CONSOLIDATED WATER DISTRICT
1965 PLACENTIA AVE, ATTN: WATER OPER ASSISTANT
COSTA MESA, CA 92627-3420

Equipment Location: 2340 ORANGE AVE, COSTA MESA, CA 92627

Equipment Description :

INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10769/4, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

Conditions :

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON-SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.

4. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.

5. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 – AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED IN THIS PERMIT.

SAMPLE

PERMIT TO OPERATE

6. THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	33
NITROGEN OXIDES (NOX)	12
CARBON MONOXIDE (CO)	70

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

7. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	30
NITROGEN OXIDES (NOX)	11
CARBON MONOXIDE (CO)	70

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

8. THE OPERATOR SHALL INSTALL AND MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV). THE EXHAUST GAS OXYGEN SENSOR MV OUTPUT SHALL BE MAINTAINED AS PER THE MANUFACTURER'S SPECIFICATION FOR THE MV READING TO ENSURE A PROPER AIR TO FUEL MIXTURE.

THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY BY MEASURING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

9. THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL INSPECT AND CLEAN OR, IF NECESSARY, REPLACE THE CATALYST EVERY 8,000 OPERATING HOURS. RECORDS OF THE CATALYST CLEANING OR REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

SAMPLE

PERMIT TO OPERATE

10. THE OPERATOR OR CONTRACTOR IN CHARGE SHALL MAINTAIN ACCURATE MAINTENANCE RECORDS OF THE DATE OF CATALYST CLEANING OR REPLACEMENT, OXYGEN SENSOR REPLACEMENT, THE TOTAL HOUR READING ON THE TOTAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME, OXYGEN SENSOR READING IN MILLIVOLTS OR PERCENT OXYGEN AND THE CORRESPONDING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

11. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) – AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

THE OPERATOR SHALL ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NOS. 6 & 7 THROUGH MONITORING THAT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURE:

PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT.

IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750 HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

THE OPERATOR SHALL MAINTAIN RECORDS TO VERIFY COMPLIANCE WITH THIS CONDITION.

SAMPLE

PERMIT TO OPERATE

12. THIS EQUIPMENT SHALL COMPLY WITH MONITORING, TESTING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES. TESTING SHALL BE DONE FOR AT LEAST 30 MINUTES DURING NORMAL OPERATION (ACTUAL DUTY CYCLE). IN ADDITION, TESTING SHALL BE DONE FOR NOX AND CO EMISSIONS FOR AT LEAST 15 MINUTES AT: AN ENGINE'S PEAK LOAD, OR THE MAXIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST, AND: AT ACTUAL MINIMUM LOAD, EXCLUDING IDLE, OR THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) – AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 – AMENDED 2/1/2008.

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

13. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

14. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

SAMPLE

PERMIT TO OPERATE

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

By Dorris M.Bailey/MS10

SAMPLE

ENGINEERING EVALUATION PERMIT TO OPERATE

COMPANY NAME AND ADDRESS

Mesa Consolidated Water District
1965 Placentia Ave.
Costa Mesa, CA 92627

CONTACT: Jerry Vilander, Operations Manager, (949) 574-1000

EQUIPMENT LOCATION

AQMD ID 98380
2340 Orange Ave.
Costa Mesa, CA 92627

EQUIPMENT DESCRIPTION

A/N 499279 (MASTER)
INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10769/1, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

A/N 499280
INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10796/4, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

A/N 499281
INTERNAL COMBUSTION ENGINE, NO 2, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10796/2, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

A/N 499282
INTERNAL COMBUSTION ENGINE, NO 4, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10796/3, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

BACKGROUND

Mesa Consolidated Water District (MCWD) submitted applications for existing engines located at one of their pumping facilities, Reservoir 2, to change the air-to-fuel ratio controllers (AFRC). MCWD is in the process of updating their Supervisory Control and Data Acquisition (SCADA) system and as a part of the process; they will be replacing the existing Continental Controls ECV5 to Compliance Controls AFRC. According to the Production Superintendent, the Compliance Controls AFRC are better suited for their SCADA system than the existing AFRC. The four (4) engines located at the site are all identical and the AFRC that will be installed are also identical.

The applications are for change of conditions with no change in emissions; therefore, no NSR requirements will be triggered. MCWD also submitted an Inspection and Monitoring (I&M) Plan, A/N 486376, in accordance with the requirements of Rule 1110.2 and it is currently in the process of being evaluated.

COMPLIANCE REVIEW

The District Compliance database was queried and it revealed that the facility was inspected on 6/2/09 and a Notice of Violation (NOV) P53467 was issued for failure to conduct source tests on three of the four engines per Rule 1110.2. District enforcement staff is monitoring the compliance status of the facility to ensure the NC and NOV are resolved accordingly and the facility complies with District Rules and Regulations.

CALCULATIONS

The request to change the air-to-fuel ratio controller will result in no increase in emissions; therefore, calculations are not required.

RULES EVALUATION

RULE 212-STANDARDS FOR APPROVING PERMITS AND ISSUING PUBLIC NOTICES
Rule 212 requires that a person shall not build, erect, install, alter, or replace any equipment, the use of which may cause the issuance of air contaminants or the use of which may eliminate, reduce, or control the issuance of air contaminants without first obtaining written authorization for such construction from the Executive Officer. Rule 212(c) states that a project requires written notification if there is an

emission increase for ANY criteria pollutant in excess of the daily maximums specified in Rule 212(g), if the equipment is located within 1,000 feet of the outer boundary of a school, or if the MICR is equal to or greater than one in a million ($1x10^6$) during a lifetime (70 years) for facilities with more than one permitted unit, source under Regulation XX, or equipment under Regulation XXX, unless the applicant demonstrates to the satisfaction of the Executive Officer that the total facility-wide maximum individual cancer risk is below ten in a million ($10x10^6$) using the risk assessment procedures and toxic air contaminants specified under Rule 1402; or, ten in a million ($10x10^6$) during a lifetime (70 years) for facilities with a single permitted unit, source under Regulation XX, or equipment under Regulation XXX. There is no increase in emissions associated with this project; therefore, a public notice is not required for sections (c)(1), (c)(2) or (c)(3).

RULE 401 - VISIBLE EMISSIONS

This rule limits visible emissions to an opacity of less than 20 percent (Ringlemann No.1), as published by the United States Bureau of Mines. Compliance is expected with well maintained and properly operated equipment.

RULE 402 - NUISANCE

This rule requires that a person not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which cause, or have a natural tendency to cause injury or damage to business or property. The engines are not expected to create a public nuisance based on experience with identical natural gas fired engines. Therefore, compliance with Rule 402 is expected.

RULE 407 – LIQUID AND GASEOUS AIR CONTAMINANTS

This rule limits CO emissions to 2,000 ppmvd and SO_2 emissions to 500 ppmvd, averaged over 15 minutes. The engines are subject to a CO emission limit of 70 and 76 ppmvd @ 15% O2. Thus the engines are expected to continue to comply with the CO limits of the permit condition and the this rule. For SO_2, equipment which complies with Rule 431.1 is exempt from the SO_2 limit in Rule 407. The applicant will be required to comply with Rule 431.1 and thus the SO_2 limit in Rule 407 will not apply.

RULE 431.1-SULFUR CONTENT OF GASEOUS FUELS

The engines will use pipeline quality natural gas which will comply with the 16 ppm sulfur limit, calculated as H2S, specified in this rule. Natural gas will be supplied by the Southern California Gas Company which has a H2S content of less 0.25 gr/100scf, which is equivalent to a concentration of about 4 ppm. It is also much less than the 1 gr/100scf limit typical of pipeline quality natural gas. Compliance is expected.

RULE 1110.2 – EMISSIONS FROM GASEOUS- AND LIQUID FUELED ENGINES

The purpose of Rule 1110.2 is to reduce Oxides of Nitrogen (NOx), Volatile Organic Compounds (VOCs), and Carbon Monoxide (CO) from engines. This rule was recently amended on 2/1/08 that affects the operation of these engines. The following sections discuss the key requirements of this rule as it applies to the equipment:

(d)(1)(B) The engines are subject to the emission requirements in Table II (of the rule), but will be required to meet the more stringent limits as of 7/1/2011.

Current concentration limits (< 500 bhp)

Item	ppmv @ 15% oxygen
NOx	45
CO	2000
ROG	250

Concentration limits effective 7/1/2011 (< 500 bhp)

Item	ppmv @ 15% oxygen
NOx	11
CO	250
ROG	30

However, the engines are currently subject to BACT emission limits of 12 ppmvd-NOx, 33 ppmvd-ROG, and 70 ppmvd-CO; therefore, by 7/1/2011, the engines will have to meet the NOx and ROG standard of the rule.

(d)(1)(E) The engines are equipped with air to fuel ratio controllers and oxygen sensors for feedback control.

(d)(1)(F) The engines are not considered new per sub-section (v), the engines were installed prior to 2/2008 and they will be treated as "existing", thus section (d)(1)(F) does not apply.

(e)(4) MCWD submitted an I&M Plan application (486376) for this location. To this date the I&M Plan has not been processed; therefore, in accordance with the rule, MCWD must implement the plan that was submitted to the District

(e)(5) The engines are equipped with air fuel ratio controllers.

(f)(1)(B) The engines are equipped with time meters.

(f)(1)(C)(i) Source testing frequency for NOx, CO, and VOC, effective 8/1/08, is required once every 2 years or every 8760 operating hours. If the engines operate less than 2000 hours from the previous test, then testing is once every three years.

(f)(1)(C)(ii) Source testing is to be conducted for at least 60 minutes. Since the engines operate at variable loads, testing at 15 minutes at minimal and 15 minutes at maximum loads are required, in addition to the 30 minute operation at normal load. Testing must occur at least after 40 hours following a tune up.

(f)(1)(C)(ii) An AQMD approved contractor is required to perform testing.

(f)(1)(C)(iv) Source test protocol to be submitted at least 60 days prior to testing and the protocol has to be approved by the District.

(f)(1)(C)(vi) Source test reports to be submitted within 60 days of the test

(f)(1)(D) This section outlines the requirements of the I&M plan. MCWD submitted an I&M Plan for this facility. The Plan is expected to cover the applicable requirements of this section.

(f)(1)(E) MCWD is required to maintain an operating log for these engines.

NEW SOURCE REVIEW (NSR)

There is no increase in emissions associated with the permit condition changes; therefore, BACT, Modeling, or external offsets are not applicable to the project.

RULE 1401 – NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS
The project will result in no increase in TAC emissions; therefore, this rule is not applicable.

RECOMMENDATION(S)

Issue Permits to Operate with the permit conditions shown below.

PERMIT CONDITIONS

Conditions 1 & 2 are standard conditions.

3. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON-SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.

4. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.

5. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 – AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED IN THIS PERMIT.

6. THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	33
NITROGEN OXIDES (NOX)	12
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

7. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	30
NITROGEN OXIDES (NOX)	11
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

8. THE OPERATOR SHALL INSTALL AND MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV). THE EXHAUST GAS OXYGEN SENSOR MV OUTPUT SHALL BE MAINTAINED AS PER THE MANUFACTURER'S SPECIFICATION FOR THE MV READING TO ENSURE A PROPER AIR TO FUEL MIXTURE.

   THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY BY MEASURING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

9. THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL INSPECT AND CLEAN OR, IF NECESSARY, REPLACE THE CATALYST EVERY 8,000 OPERATING HOURS. RECORDS OF THE CATALYST CLEANING OR REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

10. THE OPERATOR OR CONTRACTOR IN CHARGE SHALL MAINTAIN ACCURATE MAINTENANCE RECORDS OF THE DATE OF CATALYST CLEANING OR REPLACEMENT, OXYGEN SENSOR REPLACEMENT, THE TOTAL HOUR READING ON THE TOTAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME, OXYGEN SENSOR READING IN MILLIVOLTS OR PERCENT OXYGEN AND THE CORRESPONDING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

11. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) – AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

    THE OPERATOR SHALL ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NOS. 6 & 7 THROUGH MONITORING THAT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURE:

    PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT.

    IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750

HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

THE OPERATOR SHALL MAINTAIN RECORDS TO VERIFY COMPLIANCE WITH THIS CONDITION.

12. THIS EQUIPMENT SHALL COMPLY WITH MONITORING, TESTING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES. TESTING SHALL BE DONE FOR AT LEAST 30 MINUTES DURING NORMAL OPERATION (ACTUAL DUTY CYCLE). IN ADDITION, TESTING SHALL BE DONE FOR NOX AND CO EMISSIONS FOR AT LEAST 15 MINUTES AT: AN ENGINE'S PEAK LOAD, OR THE MAXIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST, AND: AT ACTUAL MINIMUM LOAD, EXCLUDING IDLE, OR THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) – AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 – AMENDED 2/1/2008.

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

13. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

14. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

PERMIT TO OPERATE

Permit No.
G1149
A/N 485754

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for the annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner
or Operator: MESA CONSOLIDATED WATER DISTRICT
1965 PLACENTIA AVE, ATTN: WATER OPER ASSISTANT
COSTA MESA, CA 92627-3420

ID 98380

Equipment Location: 2340 ORANGE AVE, COSTA MESA, CA 92627

Equipment Description :

INTERNAL COMBUSTION ENGINE, NO. 3,WAUKESHA, MODEL NO. 2895G, NATURAL GAS- OR LPG-FUELED, PUMP DRIVER, 6 CYLINDERS, NATURALLY ASPIRATED, 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION UNIT, JOHNSON MATTHEY, MODEL ES-ASA (1000), AND AN AIR TO FUEL RATIO CONTROLLER, CONTINENTAL CONTROLS, MODEL ECV5.

Conditions :

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AUTOMATIC AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITION AT ALL TIMES.

4. THE ENGINE EMISSIONS SHALL NOT EXCEED THE FOLLOWING:

	G/BHP-HR	PPMVD AT 15% O2
REACTIVE ORGANIC COMPOUNDS:	0.15	33
NITROGEN OXIDES:	0.15	12
CARBON MONOXIDE:	0.60	70

5. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)

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REACTIVE ORGANINC COMPOUNDS	30
NITROGEN OXIDES	11
CARBON MONOXIDE	70

6. LPG MAY ONLY BE USED DURING PERIODS OF TESTING AND NATURAL GAS CURTAILMENT.

7. THIS EQUIPMENT SHALL COMPLY WITH RULE 1110.2.

8. THE MINIMUM TEMPERATURE OF THE ENGINE EXHAUST AT THE INLET OF THE NON-SELECTIVE CATALYTIC REDUCTION SYSTEM UNIT SHALL BE AT LEAST 750 DEGREES FAHRENHEIT (EXCEPT DURING THE COLD ENGINE START-UP, NOT TO EXCEED 20 MINUTES).

9. THE MAXIMUM TEMPERATURE OF THE ENGINE EXHAUST AT THE INLET OF THE NON-SELECTIVE CATALYTIC REDUCTION SYSTEM UNIT SHALL NOT EXCEED 1,250 DEGREES FAHRENHEIT (EXCEPT DURING THE COLD ENGINE START-UP, NOT TO EXCEED 20 MINUTES).

10. THE OPERATOR SHALL MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV).

11. DURING THE INITIAL SET-UP OF THE OXYGEN SENSOR, THE OPTIMUM OXYGEN SENSOR SET POINT IN MILLIVOLTS SHALL BE DETERMINED BY COMPARING THE NOX AND CO EMISSION LEVELS AT VARIOUS ENGINE OPERATING LOADS. THE NOX AND CO EMISSION READINGS SHALL BE OBTAINED THROUGH THE USE OF A PORTABLE ANALYZER. THE OPERATOR SHALL KEEP RECORDS OF THE FOLLOWING DATA WHILE OPERATING THE ENGINE IN VARIOUS LOADS DURING THE INITIAL SET-UP:

    A. PRESSURE DROP ACROSS THE CATALYST IN INCHES OF WATER COLUMN,
    B. EQUIVALENT EXHAUST OXYGEN READINGS IN MILLIVOLTS,
    C. INLET AND OUTLET CATALYST TEMPERATURES.

12. THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY.

13. IN ADDITION TO THE INSPECTION MONITORING (I&M) PLAN REQUIRED BY RULE 1110.2 SECTION (F)(1)(D), THE OPERATOR OR CONTRACTOR IN-CHARGE OF EQUIPMENT OPERATION SHALL SET-UP AND FOLLOW A MAINTENANCE PROGRAM TO ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NO. 4. THE MAINTENANCE PROGRAM SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURES:

FILE COPY

PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT

IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750 HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

14. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) - AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

15. THIS EQUIPMENT SHALL COMPLY WITH MONITORING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES DURING NORMAL OPERATIONS (ACTUAL DUTY CYCLE, UNLESS STEADY STATE IS THE NORMAL OPERATING CONDITION), AND A MINIMUM OF 15 MINUTES EACH AT THE MAXIMUM LOAD AND AT THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) - AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF LIQUID AND/OR GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS OR GALLONS OF LIQUID) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQURIED IN SUBPARAGRAPH (F)(1)(D) OF RULE 1110.2

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

16. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

17. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris M Bailey

By Dorris M.Bailey/MS10
12/30/2008

FILE COPY

N S R D A T A S U M M A R Y S H E E T

Application No:	485754
Application Type:	Change of Conditions
Application Status:	APPROVED
Previous Apps,Dev,Permit #:	292784, 0 - x, G1149

Company Name:	MESA CONSOLIDATED WATER DISTRICT
Company ID:	98380
Address:	2340 ORANGE AVE,COSTA MESA, CA 92627
RECLAIM:	NO
RECLAIM Zone:	01
Air Basin:	SC
Zone:	18
Title V:	NO

Device ID:	0 - ICE-PPS
Estimated Completion Date:	12-01-2008
Heat Input Capacity:	0 Million BTU/hr
Priority Reserve:	NONE - No Priority Access Requested
Recommended Disposition:	31 - PERMIT TO OPERATE GRANTED
PR Expiration:	
School Within 1000 Feet:	NO
Operating Weeks Per Year:	52
Operating Days Per Week:	7
Monday Operating Hours:	00:00 to 24:00
Tuesday Operating Hours:	00:00 to 24:00
Wednesday Operating Hours:	00:00 to 24:00
Thursday Operating Hours:	00:00 to 24:00
Friday Operating Hours:	00:00 to 24:00
Saturday Operating Hours:	00:00 to 24:00
Sunday Operating Hours:	00:00 to 24:00

Emittant: CO
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.49 lbs/hr
Max Daily: 11.76 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.49 lbs/hr
Max Daily: 11.76 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 12 lbs/day
Annual Emission: 4280.64 lbs/yr
District Exemption: 1301(b)(1)-12/07/1995-General (NSR) - attainment air contaminant

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Emittant: NOX
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0.12 lbs/hr
Max Daily: 2.88 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0.12 lbs/hr
Max Daily: 2.88 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 3 lbs/day
Annual Emission: 1048.32 lbs/yr
District Exemption: None

Emittant: PM10
BACT:
Cost Effectiveness: NO
Source Type: MINOR
Emis Increase: 0
Modeling: N/A
Public Notice: N/A
CONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
UNCONTROLLED EMISSION
Max Hourly: 0 lbs/hr
Max Daily: 0 lbs/day
CURRENT EMISSION
BACT 30 days Avg: 0 lbs/day
Annual Emission: 0 lbs/yr
District Exemption: None

Emittant:	ROG
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	3 lbs/day
Annual Emission:	1048.32 lbs/yr
District Exemption:	None

Emittant:	SOX
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	0 lbs/day
Annual Emission:	0 lbs/yr
District Exemption:	None

SUPERVISOR'S APPROVAL: _____ SUPERVISOR'S REVIEW DATE: _____

Processed By: msaulis 8/4/2009 1:10:11 PM

Engel, Elyse/SJC

From: Lisa Ramos <lramos1@aqmd.gov>
Sent: Tuesday, February 16, 2016 2:40 PM
To: Dunavent, Andrew/SDO
Cc: OB PR Support NA Docs
Subject: Public Records Request #84581,

Andrew Dunavent

Below are two links to your requested documents. The files were too large to send as email attachments. Both links are for the same documents. The first link requires Active X and the second is an HTML link. While viewing the document you can Right Click and click Save to File to save each file to your computer.

https://onbase-pub.aqmd.gov/sAppNet/FolderPop/FolderPop.aspx?KT275_0_0_0=84581&FT=111&clienttype=activex&chksum=f1ba5cb7e5db420bbf2d00186b5bdb7bfc2a3ba39f3ad10f486b26cb674820e7

https://onbase-pub.aqmd.gov/sAppNet/FolderPop/FolderPop.aspx?KT275_0_0_0=84581&FT=111&clienttype=html&chksum=e57dbe24dbc4441b4a55b77b08ace00a7761e64732f27a37ec01d8a8b8c93ad0

Lisa Ramos
South Coast A.Q.M.D
Public Records Unit
909.396.3211

Information Management
Public Records Unit

Direct Dial (909) 396-3700
Fax:(909) 396-3330

COMPLETION LETTER

February 16, 2016

ANDREW DUNAVENT
CH2M HILL
402W. BROADWAY # SUITE 1450
SAN DIEGO, CA 92101

Ref.: CONTROL NO. 84581
Received 1/21/2016

Re: APPL'S, P/O'S & S/T RPTS FOR MESA WATER DISTRICT, FAC ID #98380, AT 2340 ORANGE AVENUE, COSTA MESA, CA 92627, APPL #'S 499279, 499280, 499281 & 499282.

After a thorough search of this agency's records, the following records were found:
APPL'S, P/O'S & S/T RPTS FOR MESA WATER DISTRICT, FAC ID #98380, AT 2340 ORANGE AVENUE, COSTA MESA, CA 92627, APPL #'S 499279, 499280, 499281 & 499282.

YOUR REQUESTED RECORDS WERE PROVIDED ELECTRONICALLY ON 02/16/2016

If you have any questions, please do not hesitate to contact me, Tuesday through Friday, **8:00 a.m**. to **4:30 p.m.**

Sincerely,

LISA RAMOS x3211
For Colleen Paine
Public Records Coordinator

:lr

ROUTING RECORD

DATE	FROM	TO	ACTION
JUN 04 2009	MYC	MS	III
8/4/09	MS	MBS	PD

REFERENCE TO OTHER APCD RECORDS INCLUDING VARIANCES

MCWD · ID 98380 RESERVOIR 2
ICE # 1 A/N 499279
MASTER FILE

APPL # 499279
I. D. # 98380
MESA CONSOLIDATED WATER DISTRICT
2340 ORANGE AVE
COSTA MESA
ICE
Date: 06/02/09

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

Permit No.
G4002
A/N 499279

PERMIT TO OPERATE

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for the annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

Legal Owner
or Operator:

ID 98380

MESA CONSOLIDATED WATER DISTRICT
1965 PLACENTIA AVE, ATTN: WATER OPER ASSISTANT
COSTA MESA, CA 92627-3420

Equipment Location: 2340 ORANGE AVE, COSTA MESA, CA 92627

Equipment Description :

INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10769/1, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

Conditions :

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON-SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.

4. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.

5. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 – AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED IN THIS PERMIT.

6. THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	33

FILE COPY

NITROGEN OXIDES (NOX)	12
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

7. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	30
NITROGEN OXIDES (NOX)	11
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

8. THE OPERATOR SHALL INSTALL AND MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV). THE EXHAUST GAS OXYGEN SENSOR MV OUTPUT SHALL BE MAINTAINED AS PER THE MANUFACTURER'S SPECIFICATION FOR THE MV READING TO ENSURE A PROPER AIR TO FUEL MIXTURE.

THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY BY MEASURING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

FILE COPY

9. THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL INSPECT AND CLEAN OR, IF NECESSARY, REPLACE THE CATALYST EVERY 8,000 OPERATING HOURS. RECORDS OF THE CATALYST CLEANING OR REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

10. THE OPERATOR OR CONTRACTOR IN CHARGE SHALL MAINTAIN ACCURATE MAINTENANCE RECORDS OF THE DATE OF CATALYST CLEANING OR REPLACEMENT, OXYGEN SENSOR REPLACEMENT, THE TOTAL HOUR READING ON THE TOTAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME, OXYGEN SENSOR READING IN MILLIVOLTS OR PERCENT OXYGEN AND THE CORRESPONDING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

11. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) – AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

THE OPERATOR SHALL ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NOS. 6 & 7 THROUGH MONITORING THAT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURE:

PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT.

IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750 HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

THE OPERATOR SHALL MAINTAIN RECORDS TO VERIFY COMPLIANCE WITH THIS CONDITION.

12. THIS EQUIPMENT SHALL COMPLY WITH MONITORING, TESTING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES. TESTING SHALL BE DONE FOR AT LEAST 30 MINUTES DURING NORMAL OPERATION (ACTUAL DUTY CYCLE). IN ADDITION, TESTING SHALL BE DONE FOR NOX AND CO EMISSIONS FOR AT LEAST 15 MINUTES AT: AN ENGINE'S PEAK LOAD, OR THE MAXIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST, AND: AT ACTUAL MINIMUM LOAD, EXCLUDING IDLE, OR THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) – AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 – AMENDED 2/1/2008.

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

13. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

14. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

By Dorris M.Bailey/MS10
8/5/2009

FILE COPY

South Coast Air Quality Management District

Form 400-A

Application For Permit To Construct and Permit To Operate

Mail Application To:
P.O. Box 4944
Diamond Bar, CA 91765

Tel: (909) 396-3385
www.aqmd.gov

Section A: Operator Information

1. **Business Name of Operator To Appear On The Permit:**
Mesa Consolidated Water District

2. **Valid AQMD Facility ID (Available on Permit or Invoice issued by AQMD):** 98380

3. **Owner's Business Name (only if different from Business Name of Operator):**

Section B: Equipment Location

4. **Equipment Location Address:**
For equipment operated at various locations in AQMD's jurisdiction, provide address of initial site

2340 Orange Ave
Street Address

Costa Mesa | CA | 92627
City | State | Zip Code

County: ○ Los Angeles ◉ Orange ○ San Bernardino ○ Riverside

Contact Name: Jerry Vilander

Contact Title: Operations Manager Phone: (949) 574-1000

Fax: (949) 574-1033 E-Mail: jerryv@mesawater.org

Section C: Permit Mailing Address

5. **Permit and Correspondence Information:**
☐ Check here if same as equipment location address

1965 Placentia Ave
Street Address

Costa Mesa | CA | 92627
City | State | Zip Code

Contact Name: Jerry Vilander

Contact Title: Operations Manager Phone: (949) 574-1000

Fax: (949) 574-1033 E-Mail: jerryv@mesawater.org

Section D: Application Type

The facility is in ○ RECLAIM ○ Title V ○ RECLAIM & Title V Program (please check if applicable)

6. **Reason for Submitting Application (Select only ONE):**

- ○ New Construction (Permit to Construct)
- ○ Equipment Operating Without A Permit or Expired Permit*
- ○ Administrative Change
- ○ Equipment On-Site But Not Constructed or Operational
- ○ Title V Application (Initial, Revisions, Modifications, etc.)
- ○ Compliance Plan
- ○ Facility Permit Amendment
- ○ Registration/Certification
- ○ Streamlined Standard Permit
- ○ Permitted Equipment Altered/ Modified Without Permit Approval*
- ○ Proposed Alteration/Modification to Permitted Equipment
- ◉ Change of Condition For Permit To Operate (W)
- ○ Change of Condition For Permit To Construct
- ○ Change of Location—Moving to New Site

Existing Or Previous Permit/Application Number:
(If you checked any of the items in this column, you MUST provide a existing Permit/ Application Number)
F90137

* A Higher Permit Processing Fee applies to those items with an asterisk (Rule 301 (c) (1) (D)

7. **Estimated Start Date of Operation/Construction (MM/DD/YYYY):**

8. **Description of Equipment:**
Replace current Air Fuel Ratio Controller with Compliance Controls MEC-R.

9. **Is this equipment portable AND will it be operated at different locations within AQMD's jurisdiction?** ◉ No ○ Yes

10. **For Identical equipment, how many additional applications are being submitted with this application?** (Form 400-A required for each) 3

11. **Are you a Small Business as per AQMD's Rule 102 definition?** (10 employees or less and total gross receipts are $500,000 or less, or a not-for-profit training center?) ◉ No ○ Yes

12. **Has a Notice of Violation (NOV) or a Notice To Comply (NC) been issued for this equipment?**
◉ No ○ Yes If yes, provide NOV/NC #:

Section E: Facility Business Information

13. **What type of business is being conducted at this equipment location?**
Water Supply Reservoir

14. **What is your businesses primary NAICS Code** (North American Industrial Classification System)?

15. **Are there other facilities in the SCAQMD jurisdiction operated by the same operator?** ○ No ◉ Yes

16. **Are there any schools (K-12) within a 1000-ft. radius of the equipment physical location?** ◉ No ○ Yes

Section F: Authorization/Signature

I hereby certify that all information contained herein and information submitted with this application is true and correct.

17. **Signature of Responsible Official:**

18. **Title:**
Operations Manager

19. **Print Name:**
Jerry Vilander

20. **Date:**
5/14/05

Check List
- ☐ Form(s) signed and dated by authorized official
- ☐ Supplemental Equipment Form (400-E-XX or 400-E-GEN)
- ☐ CEQA Form (400-CEQA) attached
- ☐ Payment for permit processing fee attached

Your application will be rejected if any of the above items are missing.

AQMD USE ONLY	APPLICATION/TRACKING #	TYPE B C D	EQUIPMENT CATEGORY CODE:	FEE SCHEDULE: $	VALIDATION
	499279 OK				6/2/09 MC
ENG. A R DATE	ENG. A R DATE	CLASS I III IV	ASSIGNMENT Unit 5 Engineer	CHECK/MONEY ORDER # 750	AMOUNT $ 2540.74	Tracking # 81330

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1/4

S.C.A.Q.M.D.
ENGINEERING

'09 JUN -2 P1:15

South Coast Air Quality Management District

FORM 400-E-13b
NON-EMERGENCY INTERNAL COMBUSTION ENGINE

Mail Application To:
SCAQMD
P.O. Box 4944
Diamond Bar, CA 91765
Tel: (909) 396-3385
www.aqmd.gov

This form must be accompanied by a completed Application for a Permit to Construct/Operate -Form 400A, Form CEQA, Plot Plan and Stack Form

Permit to be issued to (Business name of operator to appear on permit):
Mesa Consolidated Water District

Address where the equipment will be operated (for equipment which will be moved to various location in AQMD's jurisdiction, please list the initial location site):
2340 Orange Ave., Costa Mesa, CA 92627 (◉) Fixed Location ( ) Various Locations

Does Applicant hold a valid permit for Portable ICE under CA Statewide Portable Equipment Registration Program? ( ) Yes (◉) No
If yes, ICE permit is not required from the South Coast Air Quality Management District.

SECTION A: EQUIPMENT INFORMATION

Internal Combustion Engine

Is the ICE an EPA Certified or Qualifying Non-Road Engine? (◉) Yes ( ) No If yes, provide EPA Certificate No. _____ & attach copy

Manufacturer:	Model No.:
Waukesha	2895G
Serial No.: C-10769/1	**Date of Manufacture:** _____ (mm/dd/yyyy)
Manufacturer Maximum Rating: 369.00 BHP @ 1000 RPM	**Date of Installation:** _____ (mm/dd/yyyy)

For an ICE manufactured after 7/18/94, please provide manufacturer's specification and guarantee.

ICE Function (Check all that apply)
[ ] Electrical Generator [ ] Fire Pump [ ] Compressor [ ] Co-Generation
[ ] Flood Control [x] Pump Driver [ ] Other (Specify): _____

Type
(◉) Stationary ( ) Portable [ ] Intra-facility [ ] Off- Site [ ] Rental [ ] Non-Rental

Fuel
(◉) Natural Gas ( ) LPG ( ) Refinery Gas* ( ) Digester Gas* ( ) Landfill Gas*
( ) Diesel Oil No. 2 ( ) Other* : _____
*If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content.

Stand-By Fuel
( ) Natural Gas (◉) LPG ( ) Refinery Gas* ( ) Digester Gas* ( ) Landfill Gas*
( ) Diesel Oil No. 2 ( ) Other* : _____
*If Digester Gas, Landfill Gas, Refinery Gas, and/or Other are checked, attach fuel analysis indicating higher heating value and sulfur content.

Cycle Type
( ) Two Cycle (◉) Four Cycle

Combustion Type
( ) Lean Burn (◉) Rich Burn

No. of Cylinders
( ) Four (◉) Six ( ) Eight ( ) Ten ( ) Twelve ( ) Sixteen ( ) Other _____

Aspiration Type
( ) Turbocharged ( ) Turbocharged/Aftercooled
(◉) Naturally Aspirated [ ] Timing Retarded ≥ 4° (relative to standard timing)

Air Pollution Control (if applicable)
( ) Selective Catalytic Reduction (SCR)* ( ) No Controls
( ) Selective Non-catalytic Reduction (SNCR)* (◉) Air Fuel Ratio Controller
( ) Non-selective Catalytic Reduction (NSCR) ( ) Other (specify) : _____
* Separate application is required.

Manufacturer:	Model No.:
Compliance Controls	MECR-11-FT-60

If already permitted, indicate Permit No. _____ Device No. _____

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SECTION B: OPERATION INFORMATION

Fuel Consumption

Maximum Rated load: _____ gal./hr. OR _____ cu. ft./hr | Average Load: _____ gal./hr. OR 1.200 cu. ft./hr.

Emissions Data

Pollutants	Maximum Emissions Before Control		Maximum Emissions After Control	
	Gm/Bhp-hr	PPM (15% O2)	Gm/Bhp-hr	PPM (15% O2)
ROG				
NOx	1.500			12.000
CO	2.650			76.000
PM				
SOx				

Emissions Reference (attach):
- ☐ Manufacturer's Guarantee
- ☐ Catalytic Manufacturer's Guarantee
- ☐ Source Test Data
- ☐ EPA Emission Factors
- ☐ Other (specify): _____

Operating Schedule

Normal: 6 hours/day 4 days/week 52 weeks/yr.

Maximum: _____ hours/day _____ days/week _____ weeks/yr.

SECTION C: APPLICANT CERTIFICATION STATEMENT

I hereby certify that all information contained herein and information submitted with this application is true and correct.

SIGNATURE OF PREPARER: [signature] | TITLE OF PREPARER: Assoc. Civil Engr.

PREPARER'S TELEPHONE NUMBER: (949) 631-1291

PREPARER'S E-MAIL ADDRESS: leannet@mesawater.org

CONTACT PERSON FOR INFORMATION ON THIS EQUIPMENT: Jerry Vilander

E-MAIL ADDRESS: jerryv@mesawater.org

CONTACT PERSON'S TELEPHONE NUMBER: (949) 574-1000

FAX NUMBER: (949) 574-1033

DATE SIGNED: 5/13/09

CONFIDENTIAL INFORMATION

Under the California Public Records Act, all information in your permit application will be considered a matter of public record and may be disclosed to a third party. If you wish to keep certain items as confidential, please complete the following steps:

(a) Make a copy of any page containing confidential information blanked out. Label this page "public copy."
(b) Label the original page "confidential." Circle all confidential items on the page.
(c) Prepare a written justification for the confidentiality of each confidential item. Append this to the confidential copy.

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Serial Number: C-10769/1

South Coast Air Quality Management District

Form 400-CEQA

California Environmental Quality Act (CEQA) Applicability

Mail Application To:
P.O. Box 4944
Diamond Bar, CA 91765
Tel: (909) 396-3385
www.aqmd.gov

The SCAQMD is required by state law, the California Environmental Quality Act (CEQA), to review discretionary permit project applications for potential air quality and other environmental impacts. This form is a screening tool to assist the SCAQMD in clarifying whether or not the project[1] has the potential to generate significant adverse environmental impacts that might require preparation of a CEQA document [CEQA Guidelines §15060(a)].[2] Refer to the attached instructions for guidance in completing this form.[3] For each Form 400-A application, also complete and submit one Form 400-CEQA. If submitting multiple Form 400-A applications for the same project at the same time, only one 400-CEQA form is necessary for the entire project. If you need assistance completing this form, contact Lori Inga at (909) 396-3109.

FACILITY INFORMATION

Business Name of Operator to Appear on the Permit:	Facility ID (6-Digit):
Mesa Consolidated Water District	098380

Project Description:

SCADA System upgrade including the replacement of Air Fuel Ratio Controllers on Non-Emergency Gas Engines.

REVIEW FOR EXEMPTION FROM FURTHER CEQA ACTION

Check "Yes" or "No" as applicable

	Yes	No	Is this application for:
A.	○	◉	**A CEQA and/or NEPA document previously or currently prepared that specifically evaluates this project?** If yes, a permit cannot be issued until a Final CEQA document and Notice of Determination is submitted.
B.	○	◉	**A request for a change of permittee only (without equipment modifications)?**
C.	○	◉	**Equipment certification or equipment registration** (qualifies for Rule 222)?
D.	○	◉	**A functionally identical permit unit replacement with no increase in rating or emissions?**
E.	○	◉	**A change of daily VOC permit limit to a monthly VOC permit limit?**
F.	○	◉	**Equipment damaged as a result of a disaster during state of emergency?**
G.	○	◉	**A Title V** (i.e., Regulation XXX) **permit renewal (without equipment modifications)?**
H.	○	◉	**A Title V administrative permit revision?**
I.	○	◉	**The conversion of an existing permit into an initial Title V permit?**

If "**Yes**" is checked for any question above, your application does not require additional evaluation for CEQA applicability. Skip to page 2, "SIGNATURES" and sign and date this form.

REVIEW OF IMPACTS WHICH MAY TRIGGER CEQA

Complete Sections I-VI by checking "Yes" or "No" as applicable. To avoid delays in processing your application(s), explain all "Yes" responses on a separate sheet and attach it to this form.

	Yes	No	Section I – General
1.	○	◉	**Has this project generated any known public controversy regarding potential adverse impacts that may be generated by the project?** Controversy may be construed as concerns raised by local groups at public meetings; adverse media attention such as negative articles in newspapers or other periodical publications, local news programs, environmental justice issues, etc.
2.	○	◉	**Is this project part of a larger project?**
			Section II – Air Quality
3.	○	◉	**Will there be any demolition, excavating, and/or grading construction activities that encompass an area exceeding 20,000 square feet?**
4.	○	◉	**Does this project include the open outdoor storage of dry bulk solid materials that could generate dust?** If Yes, include a plot plan with the application package.

[1] A "project" means the whole of an action which has a potential for resulting in physical change to the environment, including construction activities, clearing or grading of land, improvements to existing structures, and activities or equipment involving the issuance of a permit. For example, a project might include installation of a new, or modification of an existing internal combustion engine, dry-cleaning facility, boiler, gas turbine, spray coating booth, solvent cleaning tank, etc.
[2] To download the CEQA guidelines, visit http://ceres.ca.gov/env_law/state.html.
[3] To download this form and the instructions, visit http://www.aqmd.gov/cega or http://www.aqmd.gov/permit

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	Yes	No	
5.	○	◉	**Would this project result in noticeable off-site odors from activities that may not be subject to SCAQMD permit requirements?** For example, compost materials or other types of greenwaste (i.e., lawn clippings, tree trimmings, etc.) have the potential to generate odor complaints subject to Rule 402 – Nuisance.
6.	○	◉	**Does this project cause an increase of emissions from marine vessels, trains and/or airplanes?**
7.	○	◉	**Will the proposed project increase the QUANTITY of hazardous materials stored aboveground onsite or transported by mobile vehicle to or from the site by greater than or equal to the amounts associated with each compound on the attached Table 1?[4]**
			Section III – Water Resources
8.	○	◉	**Will the project increase demand for water at the facility by more than 5,000,000 gallons per day?** The following examples identify some, but not all, types of projects that may result in a "yes" answer to this question: 1) projects that generate steam; 2) projects that use water as part of the air pollution control equipment; 3) projects that require water as part of the production process; 4) projects that require new or expansion of existing sewage treatment facilities; 5) projects where water demand exceeds the capacity of the local water purveyor to supply sufficient water for the project; and 6) projects that require new or expansion of existing water supply facilities.
9.	○	◉	**Will the project require construction of new water conveyance infrastructure?** Examples of such projects are when water demands exceed the capacity of the local water purveyor to supply sufficient water for the project, or require new or modified sewage treatment facilities such that the project requires new water lines, sewage lines, sewage hook-ups, etc.
			Section IV – Transportation/Circulation
10.			**Will the project result in** (Check all that apply)**:**
	○	◉	**a. the need for more than 350 new employees?**
	○	◉	**b. an increase in heavy-duty transport truck traffic to and/or from the facility by more than 350 truck round-trips per day?**
	○	◉	**c. increase customer traffic by more than 700 visits per day?**
			Section V – Noise
11.	○	◉	**Will the project include equipment that will generate noise GREATER THAN 90 decibels (dB) at the property line?**
			Section VI – Public Services
12.			**Will the project create a permanent need for new or additional public services in any of the following areas** (Check all that apply)**:**
	○	◉	**a. Solid waste disposal?** Check "No" if the projected potential amount of wastes generated by the project is less than five tons per day.
	○	◉	**b. Hazardous waste disposal?** Check "No" if the projected potential amount of hazardous wastes generated by the project is less than 42 cubic yards per day (or equivalent in pounds).

REMINDER: *For each "Yes" checked in the sections above, attach all pertinent information including but not limited to estimated quantities, volumes, weights, etc.*

SIGNATURES

I HEREBY CERTIFY THAT ALL INFORMATION CONTAINED HEREIN AND INFORMATION SUBMITTED WITH THIS APPLICATION IS TRUE AND CORRECT TO THE BEST OF MY KNOWLEDGE. I UNDERSTAND THAT THIS FORM IS A SCREENING TOOL AND THAT THE SCAQMD RESERVES THE RIGHT TO CONSIDER OTHER PERTINENT INFORMATION IN DETERMINING CEQA APPLICABILITY.

SIGNATURE OF RESPONSIBLE OFFICIAL OF FIRM:	TITLE OF RESPONSIBLE OFFICIAL OF FIRM:	
	OperationsManager	
TYPE OR PRINT NAME OF RESPONSIBLE OFFICIAL OF FIRM: Jerry Vilander	RESPONSIBLE OFFICIAL'S TELEPHONE NUMBER: (949) 5741-000	DATE Signed: 5/14/09
SIGNATURE OF PREPARER, IF PREPARED BY PERSON OTHER THAN RESPONSIBLE OFFICIAL OF FIRM:	TITLE OF PREPARER: Associate Civil Engineer	
TYPE OR PRINT NAME OF PREPARER: Leanne Talbott	PREPARER'S TELEPHONE NUMBER: (949) 6311-291	DATE Signed: 5/13/09

THIS CONCLUDES FORM 400-CEQA. INCLUDE THIS FORM AND THE ATTACHMENTS WITH FORM 400-A.

[4] Table 1 – Regulated Substances List and Threshold Quantities for Accidental Release Prevention can be found in the Instructions for Form 400-CEQA.

SCAQMD PERMIT PROCESSING SYSTEM (PPS)

FEE DATA - SUMMARY SHEET

Application No :	499279	IRS/SS No:	
Previous Application No:	466597	Previous Permit No:	F90137

Company Name :	MESA CONSOLIDATED WATER DISTRICT
Equipment Street:	2340 ORANGEAVE , COSTA MESA CA 92627
Equipment Desc :	I C E (50-500 HP) N-EM STAT GAS-LPG

Facility ID: 98380

Equipment Type :	BASIC			Fee Charged by:	B-CAT
B-CAT NO. :	040501	C-CAT NO:	00	Fee Schedule:	B
Facility Zone :	18	Deemed Compl. Date:	6/10/2009	Public Notice:	NO

Evaluation Type :	CHANGE OF CONDITIONS, (PO)
Disposition :	Approve PO, Recommended by Engineer
Lead Appl. No :	499279

Small Business: ☐
Higher Fees for Failing to Obtain a Permit: ☐
Identical Permit Unit: ☒

Air quality Analysis			$0.00	Filing Fee Paid:	$0.00
E.I.R			$0.00	Permit Processing Fee Paid:	$1,016.31
Health Risk Assessment			$0.00	Permit Processing Fee Calculated*:	$1,016.31
Significant Project			$0.00	Permit Processing Fee Adjustment:	$0.00
Expedited Processing	Hours:	0.00	$0.00		
Source Test Review	Hours:	0.00	$0.00		
Time & Material	Hours:	0.00	$0.00		
				Total Additional Fee:	$0.00
				Additional Charge:	$0.00

COMMENTS:

RECOMMENDED BY: MARCEL SAULIS DATE: 08/04/2009

REVIEWED BY: _____ DATE: AUG 0 5 2009

* ADJUSTED FOR SMALL BUSINESS, IDENTICAL EQUIPMENT AND P/O NO P/C PENALTY

N S R D A T A S U M M A R Y S H E E T

Application No:	499279
Application Type:	Change of Conditions
Application Status:	PENDAPPRV
Previous Apps,Dev,Permit #:	466597, 0 - ICE-PPS, NONE

Company Name:	MESA CONSOLIDATED WATER DISTRICT
Company ID:	98380
Address:	2340 ORANGE AVE,COSTA MESA, CA 92627
RECLAIM:	NO
RECLAIM Zone:	01
Air Basin:	SC
Zone:	18
Title V:	NO

Device ID:	0 - ICE-PPS
Estimated Completion Date:	08-01-2009
Heat Input Capacity:	0 Million BTU/hr
Priority Reserve:	NONE - No Priority Access Requested
Recommended Disposition:	31 - PERMIT TO OPERATE GRANTED
PR Expiration:	
School Within 1000 Feet:	NO
Operating Weeks Per Year:	52
Operating Days Per Week:	7
Monday Operating Hours:	00:00 to 24:00
Tuesday Operating Hours:	00:00 to 24:00
Wednesday Operating Hours:	00:00 to 24:00
Thursday Operating Hours:	00:00 to 24:00
Friday Operating Hours:	00:00 to 24:00
Saturday Operating Hours:	00:00 to 24:00
Sunday Operating Hours:	00:00 to 24:00

Emittant:	CO
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.49 lbs/hr
Max Daily:	11.76 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.49 lbs/hr
Max Daily:	11.76 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	12 lbs/day
Annual Emission:	4280.64 lbs/yr
District Exemption:	1301(b)(1)-12/07/1995-General (NSR) - attainment air contaminant

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Emittant:	NOX
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	3 lbs/day
Annual Emission:	1048.32 lbs/yr
District Exemption:	None

Emittant:	PM10
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0 lbs/hr
Max Daily:	0 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	0 lbs/day
Annual Emission:	0 lbs/yr
District Exemption:	None

Emittant:	ROG
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	3 lbs/day
Annual Emission:	1048.32 lbs/yr
District Exemption:	None

SUPERVISOR'S APPROVAL: ABS SUPERVISOR'S REVIEW DATE: AUG 0 5 2009

Processed By: msaulis 8/4/2009 2:10:29 PM

ENGINEERING EVALUATION PERMIT TO OPERATE

COMPANY NAME AND ADDRESS

Mesa Consolidated Water District
1965 Placentia Ave.
Costa Mesa, CA 92627

CONTACT: Jerry Vilander, Operations Manager, (949) 574-1000

EQUIPMENT LOCATION

AQMD ID 98380
2340 Orange Ave.
Costa Mesa, CA 92627

EQUIPMENT DESCRIPTION

A/N 499279 (MASTER)
INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10769/1, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

A/N 499280
INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10796/4, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

A/N 499281
INTERNAL COMBUSTION ENGINE, NO 2, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10796/2, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

A/N 499282
INTERNAL COMBUSTION ENGINE, NO 4, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10796/3, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

BACKGROUND

Mesa Consolidated Water District (MCWD) submitted applications for existing engines located at one of their pumping facilities, Reservoir 2, to change the air-to-fuel ratio controllers (AFRC). MCWD is in the process of updating their Supervisory Control and Data Acquisition (SCADA) system and as a part of the process; they will be replacing the existing Continental Controls ECV5 to Compliance Controls AFRC. According to the Production Superintendent, the Compliance Controls AFRC are better suited for their SCADA system than the existing AFRC. The four (4) engines located at the site are all identical and the AFRC that will be installed are also identical.

The applications are for change of conditions with no change in emissions; therefore, no NSR requirements will be triggered. MCWD also submitted an Inspection and Monitoring (I&M) Plan, A/N 486376, in accordance with the requirements of Rule 1110.2 and it is currently in the process of being evaluated.

COMPLIANCE REVIEW

The District Compliance database was queried and it revealed that the facility was inspected on 6/2/09 and a Notice of Violation (NOV) P53467 was issued for failure to conduct source tests on three of the four engines per Rule 1110.2. District enforcement staff is monitoring the compliance status of the facility to ensure the NC and NOV are resolved accordingly and the facility complies with District Rules and Regulations.

CALCULATIONS

The request to change the air-to-fuel ratio controller will result in no increase in emissions; therefore, calculations are not required.

RULES EVALUATION

RULE 212-STANDARDS FOR APPROVING PERMITS AND ISSUING PUBLIC NOTICES
Rule 212 requires that a person shall not build, erect, install, alter, or replace any equipment, the use of which may cause the issuance of air contaminants or the use of which may eliminate, reduce, or control the issuance of air contaminants without first obtaining written authorization for such construction from the Executive Officer. Rule 212(c) states that a project requires written notification if there is an

emission increase for ANY criteria pollutant in excess of the daily maximums specified in Rule 212(g), if the equipment is located within 1,000 feet of the outer boundary of a school, or if the MICR is equal to or greater than one in a million ($1x10^6$) during a lifetime (70 years) for facilities with more than one permitted unit, source under Regulation XX, or equipment under Regulation XXX, unless the applicant demonstrates to the satisfaction of the Executive Officer that the total facility-wide maximum individual cancer risk is below ten in a million ($10x10^6$) using the risk assessment procedures and toxic air contaminants specified under Rule 1402; or, ten in a million ($10x10^6$) during a lifetime (70 years) for facilities with a single permitted unit, source under Regulation XX, or equipment under Regulation XXX. There is no increase in emissions associated with this project; therefore, a public notice is not required for sections (c)(1), (c)(2) or (c)(3).

RULE 401 - VISIBLE EMISSIONS

This rule limits visible emissions to an opacity of less than 20 percent (Ringlemann No.1), as published by the United States Bureau of Mines. Compliance is expected with well maintained and properly operated equipment.

RULE 402 - NUISANCE

This rule requires that a person not discharge from any source whatsoever such quantities of air contaminants or other material which cause injury, detriment, nuisance, or annoyance to any considerable number of persons or to the public, or which cause, or have a natural tendency to cause injury or damage to business or property. The engines are not expected to create a public nuisance based on experience with identical natural gas fired engines. Therefore, compliance with Rule 402 is expected.

RULE 407 – LIQUID AND GASEOUS AIR CONTAMINANTS

This rule limits CO emissions to 2,000 ppmvd and SO_2 emissions to 500 ppmvd, averaged over 15 minutes. The engines are subject to a CO emission limit of 70 and 76 ppmvd @ 15% O2. Thus the engines are expected to continue to comply with the CO limits of the permit condition and the this rule. For SO_2, equipment which complies with Rule 431.1 is exempt from the SO_2 limit in Rule 407. The applicant will be required to comply with Rule 431.1 and thus the SO_2 limit in Rule 407 will not apply.

RULE 431.1-SULFUR CONTENT OF GASEOUS FUELS

The engines will use pipeline quality natural gas which will comply with the 16 ppm sulfur limit, calculated as H2S, specified in this rule. Natural gas will be supplied by the Southern California Gas Company which has a H2S content of less 0.25 gr/100scf, which is equivalent to a concentration of about 4 ppm. It is also much less than the 1 gr/100scf limit typical of pipeline quality natural gas. Compliance is expected.

RULE 1110.2 – EMISSIONS FROM GASEOUS- AND LIQUID FUELED ENGINES

The purpose of Rule 1110.2 is to reduce Oxides of Nitrogen (NOx), Volatile Organic Compounds (VOCs), and Carbon Monoxide (CO) from engines. This rule was recently amended on 2/1/08 that affects the operation of these engines. The following sections discuss the key requirements of this rule as it applies to the equipment:

(d)(1)(B) The engines are subject to the emission requirements in Table II (of the rule), but will be required to meet the more stringent limits as of 7/1/2011.

Current concentration limits (< 500 bhp)

Item	ppmv @ 15% oxygen
NOx	45
CO	2000
ROG	250

Concentration limits effective 7/1/2011 (< 500 bhp)

Item	ppmv @ 15% oxygen
NOx	11
CO	250
ROG	30

However, the engines are currently subject to BACT emission limits of 12 ppmvd-NOx, 33 ppmvd-ROG, and 70 ppmvd-CO; therefore, by 7/1/2011, the engines will have to meet the NOx and ROG standard of the rule.

(d)(1)(E) The engines are equipped with air to fuel ratio controllers and oxygen sensors for feedback control.

(d)(1)(F) The engines are not considered new per sub-section (v), the engines were installed prior to 2/2008 and they will be treated as "existing", thus section (d)(1)(F) does not apply.

(e)(4) MCWD submitted an I&M Plan application (486376) for this location. To this date the I&M Plan has not been processed; therefore, in accordance with the rule, MCWD must implement the plan that was submitted to the District

(e)(5) The engines are equipped with air fuel ratio controllers.

(f)(1)(B) The engines are equipped with time meters.

(f)(1)(C)(i) Source testing frequency for NOx, CO, and VOC, effective 8/1/08, is required once every 2 years or every 8760 operating hours. If the engines operate less than 2000 hours from the previous test, then testing is once every three years.

(f)(1)(C)(ii) Source testing is to be conducted for at least 60 minutes. Since the engines operate at variable loads, testing at 15 minutes at minimal and 15 minutes at maximum loads are required, in addition to the 30 minute operation at normal load. Testing must occur at least after 40 hours following a tune up.

(f)(1)(C)(ii) An AQMD approved contractor is required to perform testing.

(f)(1)(C)(iv) Source test protocol to be submitted at least 60 days prior to testing and the protocol has to be approved by the District.

(f)(1)(C)(vi) Source test reports to be submitted within 60 days of the test

(f)(1)(D) This section outlines the requirements of the I&M plan. MCWD submitted an I&M Plan for this facility. The Plan is expected to cover the applicable requirements of this section.

(f)(1)(E) MCWD is required to maintain an operating log for these engines.

NEW SOURCE REVIEW (NSR)

There is no increase in emissions associated with the permit condition changes; therefore, BACT, Modeling, or external offsets are not applicable to the project.

RULE 1401 – NEW SOURCE REVIEW OF TOXIC AIR CONTAMINANTS
The project will result in no increase in TAC emissions; therefore, this rule is not applicable.

RECOMMENDATION(S)

Issue Permits to Operate with the permit conditions shown below.

PERMIT CONDITIONS

Conditions 1 & 2 are standard conditions.

3. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON-SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.

4. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.

5. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 – AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED IN THIS PERMIT.

6. THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	33
NITROGEN OXIDES (NOX)	12
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

7. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	30
NITROGEN OXIDES (NOX)	11
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

8. THE OPERATOR SHALL INSTALL AND MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV). THE EXHAUST GAS OXYGEN SENSOR MV OUTPUT SHALL BE MAINTAINED AS PER THE MANUFACTURER'S SPECIFICATION FOR THE MV READING TO ENSURE A PROPER AIR TO FUEL MIXTURE.

   THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY BY MEASURING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

9. THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL INSPECT AND CLEAN OR, IF NECESSARY, REPLACE THE CATALYST EVERY 8,000 OPERATING HOURS. RECORDS OF THE CATALYST CLEANING OR REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

10. THE OPERATOR OR CONTRACTOR IN CHARGE SHALL MAINTAIN ACCURATE MAINTENANCE RECORDS OF THE DATE OF CATALYST CLEANING OR REPLACEMENT, OXYGEN SENSOR REPLACEMENT, THE TOTAL HOUR READING ON THE TOTAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME, OXYGEN SENSOR READING IN MILLIVOLTS OR PERCENT OXYGEN AND THE CORRESPONDING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

11. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) – AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

    THE OPERATOR SHALL ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NOS. 6 & 7 THROUGH MONITORING THAT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURE:

    PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT.

    IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750

HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

THE OPERATOR SHALL MAINTAIN RECORDS TO VERIFY COMPLIANCE WITH THIS CONDITION.

12. THIS EQUIPMENT SHALL COMPLY WITH MONITORING, TESTING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES. TESTING SHALL BE DONE FOR AT LEAST 30 MINUTES DURING NORMAL OPERATION (ACTUAL DUTY CYCLE). IN ADDITION, TESTING SHALL BE DONE FOR NOX AND CO EMISSIONS FOR AT LEAST 15 MINUTES AT: AN ENGINE'S PEAK LOAD, OR THE MAXIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST, AND: AT ACTUAL MINIMUM LOAD, EXCLUDING IDLE, OR THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) – AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 – AMENDED 2/1/2008.

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

13. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

14. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT
21865 Copley Drive, Diamond Bar, CA 91765

PERMIT TO OPERATE

Permit No
F90137
A/N 466597

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership
If the billing for the annual renewal fee (Rule 301 f) is not received by the expiration date, contact the District

ID 98380

Legal Owner
or Operator

MESA CONSOLIDATED WATER DISTRICT
P O BOX 5008 , ATTN WATER OPER ASSISTANT
COSTA MESA, CA 92628-5008

Equipment Location 2340 ORANGE AV ST, COSTA MESA, CA 92627

Equipment Description

INTERNAL COMBUSTION ENGINE, NO 1, WAUKESHA, MODEL NO 2895G, RICH BURN, NATURAL GAS AND LPG FIRED, NATURALLY ASPIRATED, SIX CYLINDERS, FOUR CYCLE, 369 BHP, DRIVING A PUMP, WITH A THREE WAY CATALYTIC CONVERTER, JOHNSON MATTHEY, MODEL NO ES-ASA (1000), AND AN AIR TO FUEL RATIO CONTROLLER, CONTINENTAL CONTROLS, MODEL ECV5

Conditions

1 OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW

2 THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES

3 THIS EQUIPMENT SHALL COMPLY WITH RULE 1110 2

4 THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AUTOMATIC AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER

5 THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES

6 THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, AVERAGED OVER 15 MINUTES (EXCEPT DURING COLD START-UP, NOT TO EXCEED 15 MINUTES)

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANIC COMPOUNDS (VOC)	33
NITROGEN OXIDES	12
CARBON MONOXIDE	76

FILE COPY

7 THE OPERATOR SHALL INSTALL AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL READ IN MILLIVOLTS (MV) THE EXHAUST GAS OXYGEN SENSOR MV OUTPUT SHALL BE MAINTAINED AS PER THE MANUFACTURER'S SPECIFICATION FOR THE MV READING TO INSURE A PROPER AIR TO FUEL MIXTURE

8 THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL INSPECT AND CLEAN OR, IF NECESSARY, REPLACE THE CATALYST EVERY 8,000 OPERATING HOURS RECORDS OF CATALYST CLEANING OR REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST

9 THE OPERATOR OR CONTRACTOR IN CHARGE OF EQUIPMENT OPERATION SHALL MAINTAIN ACCURATE MAINTENANCE RECORDS OF THE DATE OF CATALYST CLEANING OR REPLACEMENT, OXYGEN SENSOR REPLACEMENT, THE TOTAL HOUR READING ON THE NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME, OXYGEN SENSOR READING IN MV OR PERCENT OXYGEN AND THE CORRESPONDING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS

10 THE OPERATOR OR CONTRACTOR IN-CHARGE OF EQUIPMENT OPERATION SHALL SET-UP AND FOLLOW A MAINTENANCE PROGRAM TO ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NO 7 THE MAINTENANCE PROGRAM SHALL INCLUDE, BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURES

A REPLACEMENT OF THE EXHAUST OXYGEN SENSOR EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINTS SHALL BE RECHECKED AND RESET AS NECESSARY BY MEASURING NOX AND CO EMISSIONS WITH A PORTABLE ANALYZER

RECORDS OF THE ABOVE MAINTENANCE PROCEDURES SHALL BE KEPT IN FILE AND BE MADE AVAILABLE FOR INSPECTION ANY TIME

11 THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL COMPLY WITH MONITORING AND RECORD KEEPING REQUIREMENTS OF RULE 1110 2(F)(1) AS OUTLINED BELOW

A THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME

B PROVIDE SOURCE TEST INFORMATION REGARDING THE EXHAUST GAS, SPECIFICALLY FOR NOX, VOC REPORTED AS NON-METHANE AND NON-ETHANE, AND CO CONCENTRATIONS (CONCENTRATIONS IN PPM BY VOLUME, CORRECTED TO 15 PERCENT OXYGEN ON DRY BASIS) AT LEAST ONCE EVERY THREE YEARS

FILE COPY

C MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES

I TOTAL HOURS OF OPERATION
II TYPE OF GASEOUS FUEL
III FUEL CONSUMPTION (CUBIC FEET) AND,
IV CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(D) OF RULE 1110 2

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME

12 ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR AT LEAST FIVE YEARS AND SHALL BE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES

EXECUTIVE OFFICER

Dorris M Bailey

By Dorris M Bailey/MS10
5/29/2007

FILE COPY

Mesa Consolidated
Water District

District Mission: Dedicated to Satisfying our Community's Water Needs

May 28, 2009

South Coast Air Quality Management District
P.O. Box 4944
Diamond Bar, Ca 91765-0944

Subject: ID 98380
Reservoir 2 Permit to Operate Update

Mesa Consolidated Water District (Mesa) is currently in the process of replacing our existing Supervisory Control and Data Acquisition (SCADA) system that manages and controls the water distribution system.

As a part of this project Mesa is replacing our existing air fuel ratio controllers at our Reservoir 2 site. Per conversations with Marcel Saulis at AQMD Mesa is providing completed forms 400-CEQA, 400-A (for each engine) and 400-E-13b (for each engine) and a fee of $2,540.79 to update/renew our existing permits to operate.

If you have any questions please contact me at 949-631-1291.

Sincerely,

Leanne Talbott, P.E.
Associate Civil Engineer

Attachments

c: Roger Demers, MCWD Operations

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Legal Counsel

1965 Placentia Avenue ♦ Costa Mesa, California 92627
Telephone (949) 631-1200 ♦ FAX (949) 574-1036
www.mesawater.org

N S R D A T A S U M M A R Y S H E E T

Application No:	466597
Application Type:	Change of Conditions: No Engineering Evaluation/Ad
Application Status:	APPROVED
Previous Apps,Dev,Permit #:	292781, 0 - x, F90137

Company Name:	MESA CONSOLIDATED WATER DISTRICT
Company ID:	98380
Address:	2340 ORANGE AVE,COSTA MESA, CA 92627
RECLAIM:	NO
RECLAIM Zone:	01
Air Basin:	SC
Zone:	18
Title V:	NO

Device ID:	0 - ICE-PPS
Estimated Completion Date:	05-22-2007
Heat Input Capacity:	2.67 Million BTU/hr
Priority Reserve:	NONE - No Priority Access Requested
Recommended Disposition:	31 - PERMIT TO OPERATE GRANTED
PR Expiration:	
School Within 1000 Feet:	NO
Operating Weeks Per Year:	52
Operating Days Per Week:	7
Monday Operating Hours:	00:00 to 24:00
Tuesday Operating Hours:	00:00 to 24:00
Wednesday Operating Hours:	00:00 to 24:00
Thursday Operating Hours:	00:00 to 24:00
Friday Operating Hours:	00:00 to 24:00
Saturday Operating Hours:	00:00 to 24:00
Sunday Operating Hours:	00:00 to 24:00

Emittant:	CO
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.49 lbs/hr
Max Daily:	11.76 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.49 lbs/hr
Max Daily:	11.76 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	12 lbs/day
Annual Emission:	4280.64 lbs/yr
District Exemption:	None

Emittant:	NOX
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	3 lbs/day
Annual Emission:	1048.32 lbs/yr
District Exemption:	None

Emittant:	ROG
BACT:	
Cost Effectiveness:	NO
Source Type:	MINOR
Emis Increase:	0
Modeling:	N/A
Public Notice:	N/A
CONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
UNCONTROLLED EMISSION	
Max Hourly:	0.12 lbs/hr
Max Daily:	2.88 lbs/day
CURRENT EMISSION	
BACT 30 days Avg:	3 lbs/day
Annual Emission:	1048.32 lbs/yr
District Exemption:	None

SUPERVISOR'S APPROVAL: _____ SUPERVISOR'S REVIEW DATE: _____

Processed By: msaulis 8/4/2009 1:09:48 PM

Mesa Consolidated Water District
1965 Placentia Avenue • Costa Mesa, CA • 92627-3420
(949) 574-1022 • FAX (949) 574-1035

Check Number: 000000750

Date: 05/21/2009

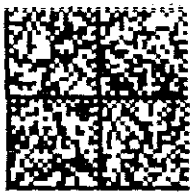
SOUTH COAST A.Q.M.D.

P O BOX 4944
DIAMOND BAR, CA 91765-0944

Mesa Consol. Water District SCAQMD Check Number: 000000750

To: SOUTH COAST A.Q.M.D. Date: 05/21/2009

Date	Invoice Number	Description	Amount	Paid Amount
05/25/2009	910092-RES2	PERMIT TO OPERATE SITE ID98380	$2,540.79	$2,540.79
		TOTALS:	$2,540.79	$2,540.79



Hasler

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$01.220

05/29/2009

Mailed From 92627

US POSTAGE

ROM www.mesawater.org

Mesa Consolidated Water District

1965 Placentia Avenue
Costa Mesa, CA 92627-3420

RETURN POSTAGE GUARANTEED

):

South Coast AQMD
P.O. Box 4944
Diamond Bar, Ca 91765-0944

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DISTRICT®

Dedicated to
Satisfying our Community's
Water Needs

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Bowie, Arneson, Wiles & Giannone
Legal Counsel

1965 Placentia Avenue
Costa Mesa, CA 92627
tel 949.631.1200
fax 949.574.1036
info@MesaWater.org
MesaWater.org

December 22, 2015

Ms. Cher Snyder
Senior Enforcement Manager
South Coast Air Quality Management District
21865 East Copley Drive
Diamond Bar, CA 91765

Subject: 2015 Source Test Report Submittal
(Facility ID 98380, A/N 499282)

Dear Ms. Snyder:

Enclosed please find a copy of the source test report for water-pumping engine located at Reservoir II (2340 Orange Ave., Costa Mesa, CA). This report is being submitted to satisfy the requirements of Rule 1110.2, subparagraph (f)(1)(C). The source test was performed on October 28, 2015.

Should you have any questions or concerns, please contact me at (949) 207-5491.

Sincerely,

Kaying Lee
Water Quality and Compliance Supervisor

cc: Tracy E. Manning, Assistant Operations Manager, Mesa Water District
Compliance Files

Enclosures:
1. Almega Environmental – Source Test Report for Reservoir II Engine 4

Almega
ENVIRONMENTAL

December 17, 2015

Ms. Kaying Lee
Water Quality and Compliance Supervisor
Mesa Water District
1965 Placentia Ave
Costa Mesa, CA 92627-3420

Sub: Rule 1110.2 Source Test Report of an Internal Combustion Engine (ICE #4) at Mesa Water District, Reservoir II (Facility ID: 98380).

Dear Ms. Lee:

Please find enclosed two hard copies of the subject source test report accompanying a CD-ROM. Testing was conducted on October 28, 2015. Additionally, a copy of this report has been sent to you electronically.

If you have any questions or comments regarding the enclosed package, please contact Mr. Charles Figueroa or myself at 714-889-4000.

Sincerely,

Surya Adhikari
Project Manager

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SOURCE TEST REPORT

Rule 1110.2 Emissions Testing of an Internal Combustion Engine (ICE #4) at Mesa Water District - Reservoir II for NOx, CO, and VOC

Prepared for:

Mesa Water District
1965 Placentia Ave
Costa Mesa, CA 92627

Equipment Location:

Reservoir II
2340 Orange Avenue
Costa Mesa, CA 92627

Facility ID: 98380

Test Dates: October 28, 2015
Report Date: December 16, 2015

Project: 9840-ICE #4

Prepared by:

Almega Environmental & Technical Services
10602 Walker Street
Cypress, CA 90630

Prepared by: _____
Surya Adhikari, Project Manager

Reviewed by: _____
Charles Figueroa, Sr. Project Manager

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1.0 EXECUTIVE SUMMARY

Key project information is provided in the summary below. Test results are summarized in Tables 1-1.

Customer	Mesa Water District 1965 Placentia Avenue Costa Mesa, CA 92627 Contact: Ms. Kaying Lee, tel. (949) 207-5491
Equipment Location	Reservoir II 2340 Orange Ave Costa Mesa, CA 92627
Facility ID	98380
Permit Numbers	G4003 (ICE No. 4)
Equipment	Rich Burn Natural Gas Fired Internal Combustion Engine (ICE)
Test Objective	Measure emissions of NO_X, CO, and VOC to demonstrate the compliance with SCAQMD Rule 1110.2 (f) (1) (C) and applicable permit requirements
Test Requested by	Ms. Kaying Lee of Mesa Water District
Test Dates	October 28, 2015
Testing Firm	Almega Environmental & Technical Services 10602 Walker Street Cypress, CA 90630 Contact: Surya Adhikari, tel. (714) 889-4000
Test Personnel	Tim Ta and Dean Yonemori of Almega Environmental & Technical Services
Regulatory Agency	South Coast Air Quality Management District (SCAQMD) 21865 East Copley Drive Diamond Bar, CA 91765-4182 Contact: Mr. Marcel Saulis, tel. (909) 396-3093
Measurements CEMS: NO_X, CO, O_2,and CO_2 VOC, as TGNMO	 SCAQMD Method 100.1 SCAQMD Method 25.3

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TABLE 1-1. SUMMARY OF RESULTS

Facility: Mesa Water
City, State: Costa Mesa, CA
Unit Tested: Reservoir II- Engine #4

Parameter	Units	TEST RESULTS				Permit Limit(s)
		1-Maximum	1-Normal	1-Minimum[1]	2-Minimum	
Test Date:	mm/dd/yy	10/28/15	10/28/15	10/28/15	10/28/15	
Start Time:	hh:mm	10:42	11:21	12:15	13:40	
End Time:	hh:mm	10:57	11:51	12:30	13:55	
SCAQMD Method 100.1 - CEMS						
Stack Diluent Gases						
Oxygen (O_2) Content, as found	dry %	-0.02	0.01	0.27	0.07	
Oxygen (O_2) Content, "<"	dry %	< 2.00	< 2.00	< 2.00	< 2.00	
Carbon Dioxide (CO_2) Content	dry %	12.04	12.06	11.89	11.99	
Pollutant Gases						
NOx Emissions						
Concentration, measured	ppmv	<10.0	<10.0	>50	27.6	
Concentration @ 15% O_2 (w/as found O2)	ppmv corr.	<2.82	<2.82	>14.2	7.82	**11 ppmv**
Concentration @ 15% O_2 (w/"<" O2)	ppmv corr.	<3.12	<3.12	>15.5	< 8.62	
Mass Emission Rate	lb/hr	< 0.026	< 0.018	>0.070	0.039	
Mass Emission Rate	lb/mmscf	< 11.0	< 11.0	>55	30.5	
CO Emissions						
Concentration, measured	ppmv	104	150	32.9	148	
Concentration @ 15% O_2 (w/as found O2)	ppmv corr.	29.4	42.5	9.40	41.8	**76 ppmv**
Concentration @ 15% O_2 (w/"<" O2)	ppmv corr.	<32.6	<47.0	<10.3	<46.1	
Mass Emission Rate	lb/hr	0.16	0.17	0.028	0.13	
Mass Emission Rate	lb/mmscf	69.9	101	22.3	99.3	
VOC Emissions[2]						
Concentration, measured	ppmv	--	65.7	--	--	
Concentration @ 15% O_2 (w/tank O2)	ppmv corr.	--	18.9	--	--	**30 ppmv**
Mass Emission Rate	lb/hr as CH_4	--	0.042	--	--	
Mass Emission Rate	lb/mmscf	--	25.1	--	--	
Process Data						
Actual RPM	rpm	981	883	799	796	
Maximum RPM	rpm	1,000	1,000	1,000	1,000	
% of RPM (% load)	%	98.1	88.3	79.9	79.6	
Fuel Usage	scfh	2,322	1,674	1,271	1,266	
Stack Flow Rate, Calc.	dscfm	351	253	195	192	
Firing Rate, Calc.	mmbtu/hr	2.44	1.76	1.33	1.33	
Catalyst Temperature, Inlet	degree F	991	933	863	855	
Catalyst Temperature, Outlet	degree F	1,017	969	905	894	
Engine Operating hours	hrs	17,625	--	--	--	
Operating hours since last source test	hrs	1,569	--	--	--	
AFRC Actual	v	0.795	0.795	0.800	0.770	
AFRC Faults/Alarms	none	none	none	none	none	

"<" - Result is below the reporting limit (20% of analyzer range) and is thus reported as less-than ("<") this limit.

[1] NOx concentration was out of analytical range (>50 ppm).

[2] Relative precision between runs is greater than 20%. Maximum result is reported.

2.0 INTRODUCTION

Almega Environmental & Technical Services (Almega) has been contracted by Mesa Water District (Mesa Water) to conduct stationary source emissions testing of four natural gas fired Internal Combustion Engines (ICEs Nos. 1, 2, 3 & 4) located at Mesa Water Reservoir II, 2340 Orange Avenue, in Costa Mesa, California. The purpose of the test was to measure the emissions from the exhaust of each ICEs for oxides of nitrogen (NOx), carbon monoxide (CO), oxygen (O_2), carbon dioxide (CO_2), and volatile organic compounds (VOC) to demonstrate compliance with the South Coast Air Quality Management District (SCAQMD) Rule 1110.2 (f)(1)(C) and applicable SCAQMD Permit to operate for each engine.

This test report reflects only the testing conducted on an Internal Combustion Engine (ICE No. 4) located at Mesa Water Reservoir II.

Table 2-1 describes the test matrix employed during the testing:

Table 2-1. TEST MATRIX

Criteria	Test Method	Run Time	Number of Test Runs*	Location	Applicable Requirement
NOx, CO, O_2, and CO_2	SCAQMD M 100.1	≥30 Min.	1 Normal load	Exhaust Stack	SCAQMD Rule 1110.2
NOx, CO, O_2, and CO_2	SCAQMD M 100.1	≥15 Min.	2 Minimum & 1 Maximum load	Exhaust Stack	SCAQMD Rule 1110.2
VOC (TGNMO)	SCAQMD M 25.3	≥30 Min.	1 Normal load	Exhaust Stack	SCAQMD Rule 1110.2

* Two test runs were conducted at minimum operating condition (first test exceeded the allowed limit for NOx emissions where as the second test documented the compliance with the permitted limit for NOx emissions).

On October 28, 2015, Almega performed the source testing while the ICE No.4 was operated at maximum, normal, and minimum operating load conditions. Sampling was performed at the exhaust of engine. Testing was conducted as specified in the reference methods and approved test protocol evaluation dated February 6, 2015.

2.1 Document Outline

This report is organized as follows. Section 1.0 is a summary of the project and test results. Section 2.0 describes the project, its objectives and approach. Section 3.0 discusses test results. Section 4.0 describes the equipment tested and applicable sampling locations. Section 5.0 describes the sampling and analysis procedures used to conduct the testing. And Section 6.0 describes Quality Assurance and Quality Control activities performed. The Appendices contain test results, calculated data, raw field data, facility process and test data, calibration records, certification documents, laboratory data package, and source test protocol.

3.0 TEST RESULTS AND DISCUSSION

The testing was conducted after the arrival of Almega's test personnel and set-up of test equipment. The source was operated by plant personnel during testing activities. The test program was coordinated by Ms. Kaying Lee of Mesa Water.

3.1 Test Discussion

Test results are summarized in Table 1-1 and discussed below.

The test results for NOx, CO, and VOC emissions from the Internal Combustion Engine (ICE No. 4) meet the concentration limits imposed by the applicable SCAQMD permit to operate and SCAQMD Rule 1110.2.

Operating parameters such as fuel type, fuel flow rate, engine revolutions per minute (RPM), non-selective catalytic reduction (NSCR) catalyst inlet/outlet temperature, air-to-fuel ratio controller (AFRC) alarms, AFRC actual values, engine elapsed time, and hours since last source test are summarized in Table 1-1 and detailed information can be found in Appendix F.

During the minimum load test, the NOx concentration was found to be over the allowable limit and out of analytical range (>50 ppm). The facility made AFRC set point adjustment and documented compliance as required by SCAQMD Rule 1110.2 (f)(1)(C)(ii).

The duplicate VOC results deviated by more than 20% of the average; therefore the maximum result of the pair was reported as is allowed per the method to satisfy the "worst case". Additionally, the reported total VOC concentration by SCAQMD Method 25.3 exceeded the method applicability limit of 50 ppmv. However, in this instance, when stack exhausts contain high concentrations of carbon dioxide and moisture (i.e., when the moisture percentage multiplied by the carbon dioxide percentage exceeds 100), the use of Method 25.3 for VOC concentrations greater than 50 ppmv is more appropriate per the guidance provided in SCAQMD Rule 1110.2 Standard Source Test Protocol. Therefore, the VOC measured by Method 25.3 should be valid.

3.1.1 Others

- All measured concentrations were corrected for bias zero and bias calibration drifts according to SCAQMD Method 100.1 (See Appendix C1).

- All instruments performed properly during testing and their performance specifications were within the allowable limits specified in Method 100.1 (See Appendix C1).

- An NO_2 to NO converter efficiency check was performed on the reference method NOx analyzer prior to the test. The average converter efficiency was greater than 90% (See Appendix E).

- The CEMS conditioner dew point was maintained below 37°F (See Appendix F).

- CEMS probe was traversed across the stack to ensure that sample from multiple points is collected for the representative sampling. Sampling was performed by traversing the CEMS probe along one cross- sectional axis of the stack, using three points at 16.7, 50, and 83.3 percent of the stack diameter (See Appendix C2 and C3).

- During the test, when the measured concentrations fell below the quantifiable limit of SCAQMD Method 100.1, the minimum reporting limit (20% of the analytical range) was reported according to Method 100.1. A low-level NOx calibration gas (2.464 ppmv) was injected to verify the analyzer accuracy at the lower level.

- Rich burn engines are characterized by low O_2 measurements and therefore NOx and CO concentrations were corrected to 15% O_2 by using the "as found" oxygen concentration to evaluate the concentration limits for these parameters. NOx and CO concentrations are also reported at 15% O_2 using the reporting limit of the oxygen CEMS analysis per Method 100.1.

- The VOC concentration was corrected to 15% O_2 by using the Method 25.3/10.1 measured oxygen which is a better indicator for compliance.

- A comparative analysis of O_2, CO_2, and CO between the Method 25.3/M10.1 and M100.1 results is tabulated in Appendix D1 per the Rule 1110.2 standard source test protocol requirement. This comparison shows the Method 25.3 samples were properly collected and adequately represent the exhausts gas constituents.

- Because the totalizing fuel meter did not update a minimum of ten volumetric units during the test period to obtain a read at each interval, fuel flow rate was quantified based on timing of the rotating dial which was recorded for minimum of 60 seconds during each operating loads. The stack flow rate was calculated via EPA Method 19 using the CO_2 based F-Factor.

Testing was performed as specified in the reference methods and approved test protocol. No modifications to proposed sampling and analysis procedures other than noted above were required.

3.2 Test Chronology

Testing for NOx, CO, O_2, CO_2, and VOC was conducted. The following are reported:

Parameter-Measurement	Test Date & Time
NOx, CO, O_2, and CO_2	Maximum Load: October 28, 2015 (10:42-10:57)
NOx, CO, O_2, CO_2, and VOC	Normal Load: October 28, 2015 (11:21-11:51)
NOx, CO, O_2, and CO_2	Minimum Load (1): October 28, 2015 (12:15-12:30)
NOx, CO, O_2, and CO_2	Minimum Load (2): October 28, 2015 (13:40-13:55)

4.0 EQUIPMENT AND PROCESS DESCRIPTION

Mesa Water District's primary purpose is to manage and deliver water and water-related services to customers within its service area. Mesa Water distributes a combination of imported water and local groundwater to approximately 23,500 retail accounts (population of over 108,000) in an 18-square-mile area, which includes the city of Costa Mesa, parts of Newport Beach, and unincorporated areas of Orange County, including the John Wayne Airport. Mesa Water District owns and operates four internal combustion engines for operations at the Reservoir II facility in Costa Mesa, California. These engines are used to drive water pumps. The equipment tested is described below.

4.1 Equipment Description

Internal Combustion Engine, Waukesha, Model No. 2895G, Serial No. C-10769/3, natural gas fired, spark ignited, four cycle, six cylinders, rich burn, naturally aspirated, rated at 369 BHP with a non-selective catalytic reduction catalyst, Johnson Matthey Model No. ES-ASA(1000), and an air-fuel ratio controller, Compliance Controls, Model MECR-11-FT-60, driving a water pump.

4.2 Operating Conditions During Test

The IC engine was operated continuously during the test period. Source testing was performed at maximum, normal, and minimum operating loads, as required by Rule 1110.2. Process parameters are summarized in Table 1-1 and detailed information can be found in Appendix F.

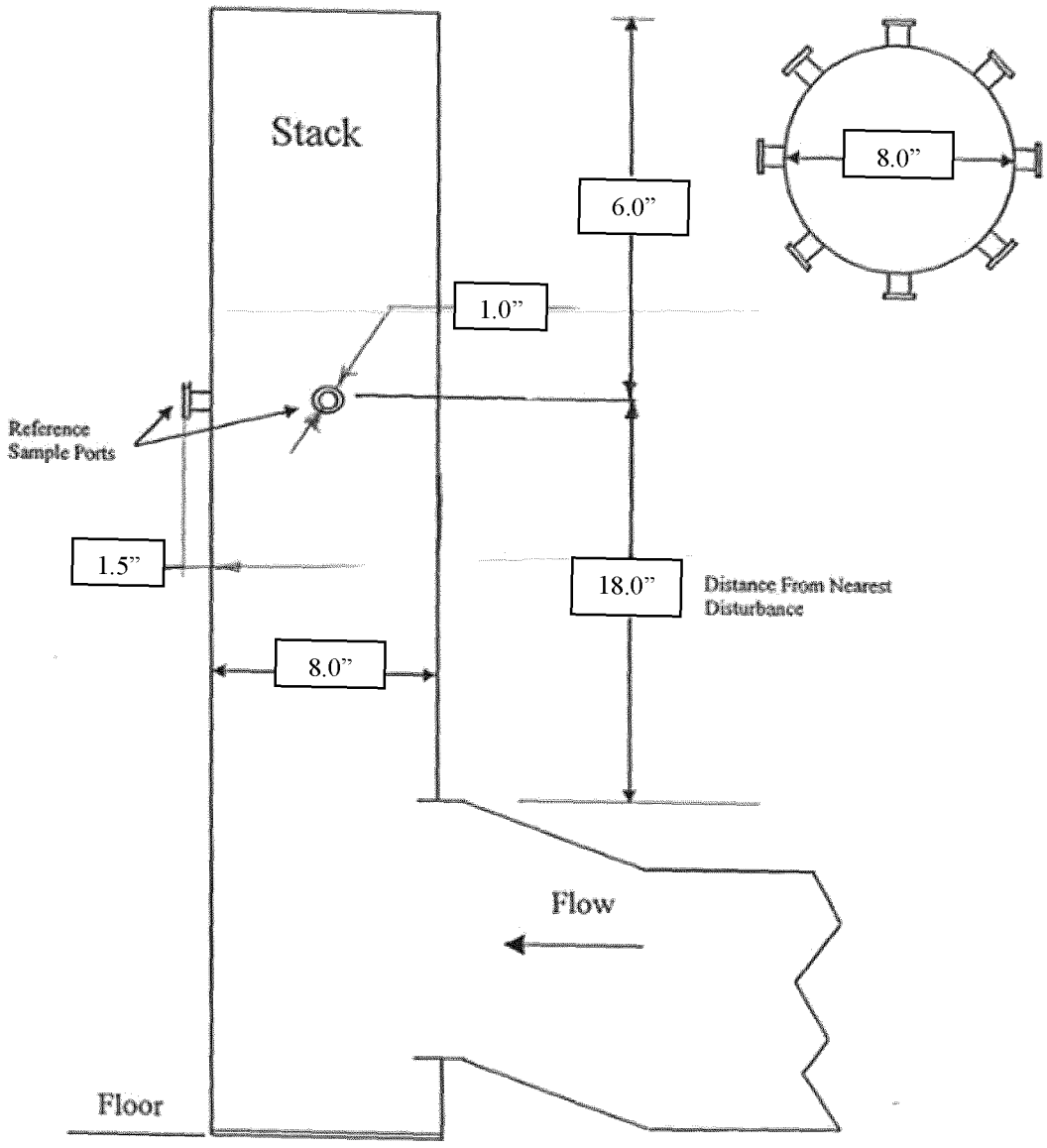
4.3 Sampling Locations

The reference method sampling locations are located on the exhaust stack. A general schematic of the stack with sampling locations are shown in Figure 4.1. The reference method sampling locations meet the following specifications:

Sampling Location Configuration for Reference Method CEMS Probe:	
Upstream	6 in. (0.75 duct diameter)
Downstream	18 in. (2.25 duct diameter)
Port Length	1.5 in. (measured from outside wall)
Port Inside Diameter	1.0 in
Number of sampling ports	2 (located at 90° intervals)
Stack Diameter	8.0 in. (internal diameter)

Sampling locations meet the requirements of SCAQMD Method 1.2.

Figure 4-1. General Stack Schematic



5.0 SAMPLING AND ANALYTICAL PROCEDURES

Test measurements were performed according to sampling and analysis procedures promulgated by the South Coast Air Quality Management District (SCAQMD), California Air Resources Board (CARB), or US Environmental Protection Agency (EPA). The sampling and analysis procedures used for this test program are summarized below. Any modifications or deviations not addressed herein are discussed in Section 3 of this report.

5.1 SCAQMD Method 100.1 – Continuous Monitoring of Gaseous Emissions, CEMS
5.2 SCAQMD Method 25.3 – VOC, as TGNMO

5.1 SCAQMD Method 100.1 - Continuous Monitoring of Gaseous Emissions, CEMS

In this method, gaseous components of the stack gas (e.g. NO_X, CO, O_2, and CO_2) are measured continuously according to SCAQMD Method 100.1 using Almega's mobile continuous emissions monitoring system (CEMS). Figure 5-1 is a schematic of Almega's CEMS.

The CEMS extracts and conditions a representative stack gas sample and analyzes the gas using one or more analytical instruments. Typical CEMS instrumentation is described in Table 5-1. The extraction and conditioning system consists of a stainless steel heated probe, a short heated TFE sample line, a conditioning system, a TFE-diaphragm pump and a TFE transport (sample) line. The sample conditioning system, consists of water knockout impingers and/or a thermoelectric condenser, removes moisture before the gas is delivered to the analyzers. Sample flow and delivery are controlled using a flow control panel that includes valves, pressure gauges, and flow meters (rotameters). The flow control panel allows the user to deliver sample gas to any and all instruments. Instrument readings are recorded using a real-time strip chart and an electronic data acquisition system (DAS). Other pertinent data such as calibration gas cylinder numbers and concentrations, test location, dates, times, and operator identification are also recorded on the strip chart and on the field data form.

Sampling included pretest and post-test calibration and bias checks for each sampling run. Raw concentration data were corrected for sampling system bias according to Method 100.1 using the following equation:

$$C_{CORR} = C_{MA} \times \frac{(C_i - BIAS_{ZERO})}{(BIAS_{SPAN} - BIAS_{ZERO})}$$

Where:
C_{CORR} = Concentration, corrected for drift and bias
C_i = Average measured concentration (raw value)
$BIAS_{ZERO}$ = Average instrument response during zero bias check
C_{MA} = Certified concentration of applicable span gas
$BIAS_{SPAN}$ = Average instrument response during span bias check

The following QA/QC activities were performed during testing.

- Prior to testing, each individual analyzer was calibrated (adjusted) by introducing zero, hi-span and mid-span gases directly into each analyzer and by making corresponding adjustments.

- Prior to testing, calibration error, linearity and system bias checks were performed on each analyzer. Calibration error and linearity checks were performed by injecting known calibration gases directly to each instrument. Injecting calibration gases at the sampling-probe/junction or at the sampling probe tip performs system bias checks.

- The system response time for each parameter was determined at the moment when the calibration gas for the bias check reached 95% of its expected concentration value.

- A leak check was conducted before sampling and periodically thereafter to ensure that no leakage occurs in the entire sampling apparatus. The leak check was performed on the vacuum side by sealing the probe tip and increasing vacuum to above 20 inches of mercury. After the vacuum stabilizes, it should hold constantly at about 20 in. Hg. On the pressure side, the pressure gauge indicator should drop to zero and flow to each individual rotameter also should drop to zero to indicate a successful leak check.

- Calibration gases used to span instrumentation conform to EPA Protocol 1. Certificates of analysis for calibration gases are included in the report.

- An NO_2-to-NO conversion efficiency (CE) check was performed according to the procedure in Method 100.1. The result of the CE check is included in the report.

Figure 5-1. Continuous Emissions Monitoring System

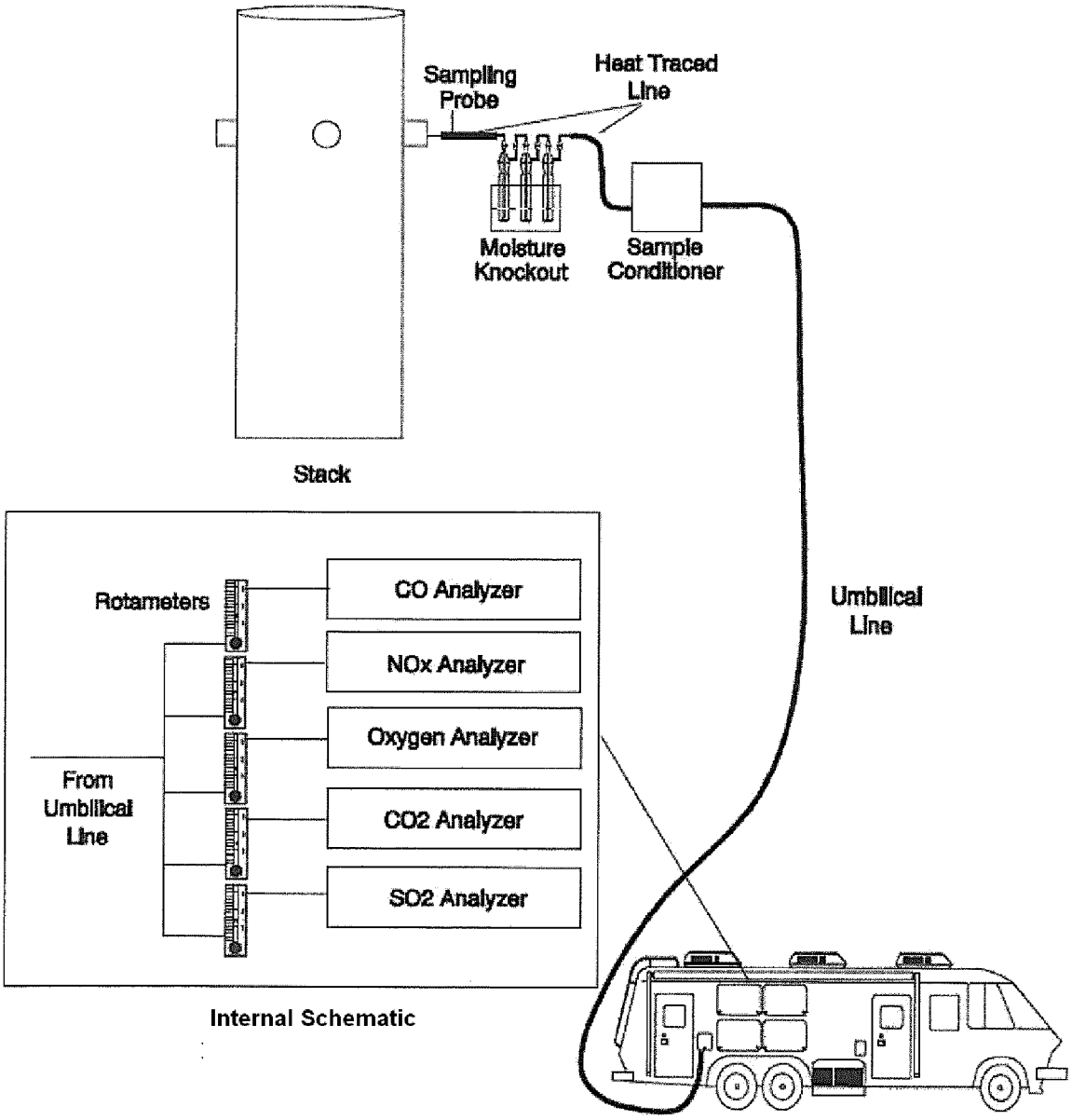


TABLE 5-1. ALMEGA CEMS – GENERAL EQUIPMENT SPECIFICATIONS

ANALYZERS					
Specification	**O2**	**CO2**	**NOx**	**CO**	**SO2**
Manufacturer	Teledyne	Servomex	T-API	Thermo Electron	Western Research
Model	326RA	1400B	200AH	48C	921
Analytical Principle	E-Chemical Cell	NDIR	Chemiluminescent	NDIR-GCC	NDUV
Ranges	%: 0-5, -10, -25	%: 0-5, -10, -20	ppmv: 0-2.5, -10, -25, -50, -100, -250, -1,000	ppmv: 0-25, -50, -100, -200, -500, -1k, x10	ppmv: 0-10, -25, -50, -100, -200, -300
Accuracy, % of Full Scale	+/- 1%	+/- 1%	+/- 1%	+/- 1%	+ 0.5%
Repeatability, % of Full Scale	0.5%	0.5%	0.5%	0.5%	0.5%
Sensitivity, % of Full Scale	0.5%	0.5%	0.5%	0.5%	<2% of Range
Zero/Span Drift, % of Full Scale	+/- 1%, in 24 Hrs	+/- 1%, in 24 Hrs	+/- 1%, in 24 Hrs	+/- 1%, in 24 Hrs	-
Response Time	3 Seconds	<2 Seconds	1.7 Seconds	<2.0 Seconds	30 seconds
Linearity, % of Full Scale	< 1%	< 1%	< 1%	< 1%	< 1%
Output	1V DC, 5V DC	0.1V DC, 1V DC	1V DC, 10V DC	1V DC, 10V DC	0-1V DC

OTHER CEMS EQUIPMENT				
Specification	**Sample Conditioner**		**Strip Chart Recorder**	
System used	Primary	Back-up	System used	Primary
Manufacturer	Almega	Universal	Manufacturer	Yokogawa
Model	(in-house)	Model 1090	Model	Model HR 2400
Principle	Refrigeration	Refrigeration	Pen Response	3 sec.
Max. Inlet Temperature	>700 F	500 F	Input Voltage	user-selectable
Max. Inlet Pressure	50 psi	50 psi	Chart Speed	user-selectable
Max. Flow Rate	10 SCFH	7.0 Lpm	Chart Width	10 inches
Max. Water Concentration	50%	50%	Output	user-selectable
Outlet Dew-Point Temperature	< 37 F	35 F +/- 2 F	No. of Channels	30 user-select. 30 calc'd
Dew-Point Stability		+/- 0.5 F	Colors	10 color, user-selectable

5.2 SCAQMD Method 25.3 – VOC, as TGNMO

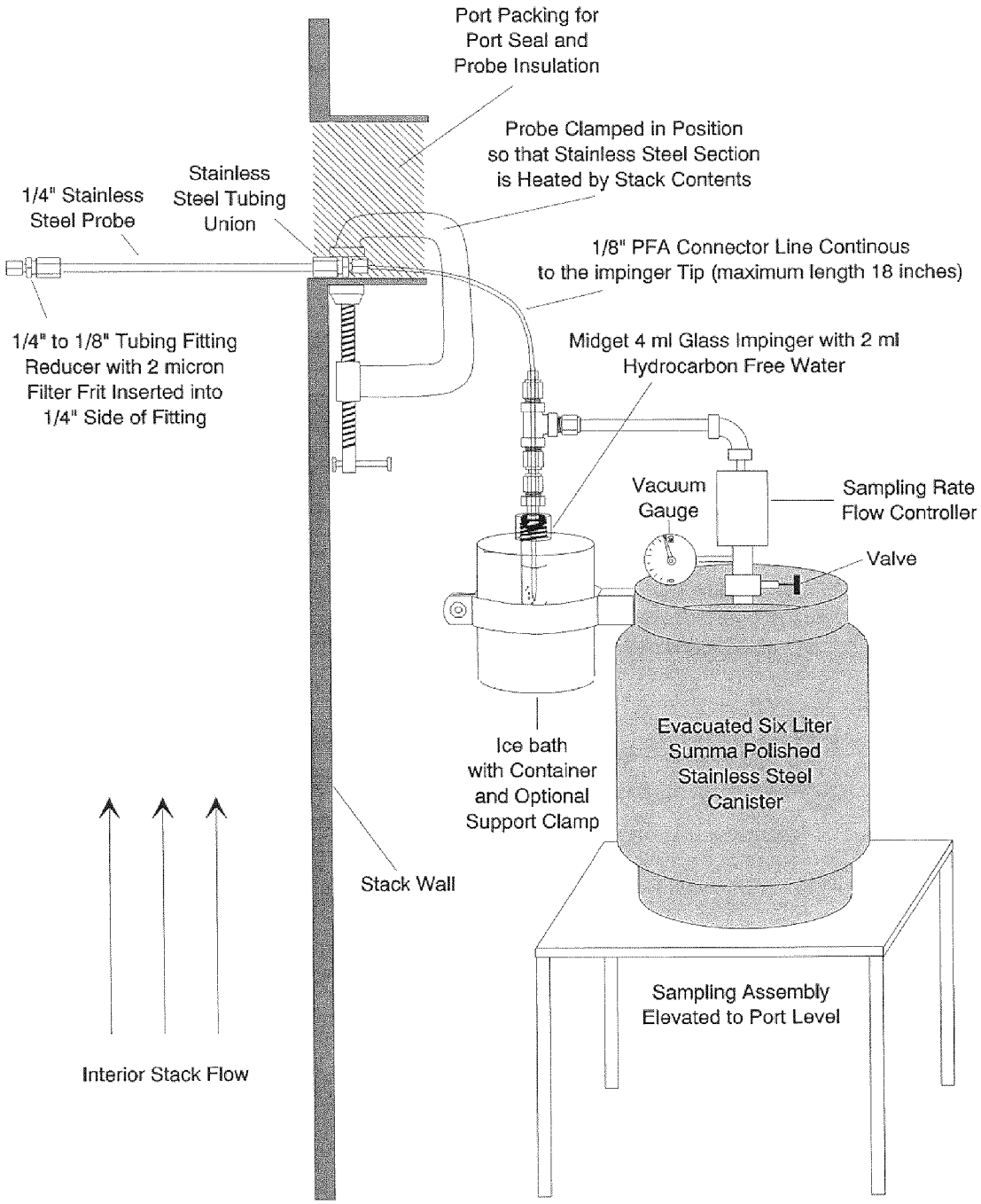
This method applies to the measurement of low-concentration (≤ 50 ppmv) Volatile Organic Compounds (VOC) or total gaseous non-methane organics (TGNMO) as carbon in source emissions. In this Method, gaseous samples are withdrawn from the gas stream at a constant rate through duplicate chilled condensate traps and collected in evacuated sample tanks. The sampling system is depicted in Figure 5-2. Each sampling train (there are two) consisted of an in-stack filter (optional), sample probe, water-chilled mini-impinger, a flow control system, and an evacuated sample tank. The flow controller incorporated a combination vacuum/pressure gauge, which was connected directly to the canister. The TGNMO was determined by combining the analytical results obtained from independent analyses of the condensate traps (condensable fraction) and the sample tanks (gaseous fraction).

Prior to testing, the sampling system was pre-cleaned and evacuated in preparation for sample collection. On-site, the sampling system was leak-checked and the impingers were placed in an ice-slurry (the impingers are chilled for at least 30 minutes prior to sampling). Then the sample probe was placed in the stack, facing downstream to prevent collection of particulate matter. Pretest data was recorded and the sample valve was opened. The flow controller was based on a critical orifice that was preset to flow at a rate of 80-cc/min ± 15%. Periodically, sampling train readings (i.e. tank vacuum) were recorded on the field data sheet. Sampling was stopped when 1/2 hour had elapsed. Then, the sampling train was removed from the stack and a leak check was performed. Samples were logged in and delivered to the laboratory for analysis.

The analytical system consisted of two major sub-systems: a total organic carbon (TOC) analyzer capable of differentiating between total carbon (TC) and inorganic carbon (IC) and a non-methane organics (NMO) analyzer. The NMO analyzer was a gas chromatograph (GC) with back flush capability for NMO analysis and was equipped with an oxidation catalyst, reduction catalyst, and flame ionization detector (FID). The system for the recovery and conditioning of the organics captured in the condensate trap consisted of a heat source, oxidation catalyst, non-dispersive infrared (NDIR) CO_2 analyzer and an intermediate collection vessel (ICV). Analyses were performed as follows.

NMO collected in the water impinger were analyzed in the TOC analyzer. The TOC analyzer determined both TC and IC. And the TOC was calculated as the difference between TC and IC.
The organic content of the sample fraction collected in the sampling tank was measured by injecting a gas sample into the GC to separate the NMO from carbon monoxide (CO), CO_2 and CH_4. The NMO were oxidized to CO_2, reduced to CH_4, and measured by the FID. In this manner, the variable response of the FID (associated with different type of organic compounds) was eliminated. The sampling apparatus and sample analysis services were provided by Almega, which is a SCAQMD-approved laboratory.

Figure 5-2. Sampling Apparatus for TGNMO per SCAQMD Method 25.3
(Figure shows one train – actual method was run in duplicates simultaneously.)



6.0 QUALITY ASSURANCE AND QUALITY CONTROL

Almega applies stringent quality assurance and quality control (QA/QC) procedures to ensure the validity of measurements for all test methods. The following section discusses general and project-specific QA/QC measures.

6.1 General QA/QC

Almega's QA/QC procedures follow guidelines from the "Quality Assurance Handbook for Air Pollution Measurement Systems," Volumes I through III. And, procedures for pretest preparation and calibration of sampling equipment are followed. Standardized written procedures, calculator programs, and computer spreadsheets are used for test planning, pre-survey, equipment checklist, preliminary calculations, testing, data analysis, and reporting. Pretest equipment preparation and maintenance include organization of the following equipment prior to testing:

- Mobile RM CEM test van: Check fluids, fuel, mechanical conditions, verify operation of CEM instruments, sample lines and sample conditioner prior to the date of the source test.

- Sampling Equipment: Check meter boxes, pitot tubes, manometers and thermocouples to ensure in good working conditions and in proper calibrations. Pre-clean sampling trains and seal all openings prior to use.

Calibrations are performed in accordance with Chapter III of the SCAQMD Source Test Manual (March 1989). Table 6-1 shows the test equipment calibration schedules. Table 6-2 shows the test equipment maintenance schedules.

6.2 Project-Specific QA/QC

This project included specific QA/QC activities required to validate the test results. These QA/QC activities are based on the test methods discussed in Section 5 and generally acceptable test procedures. Reference Methods used for source testing are promulgated by the South Coast Air Quality Management District (SCAQMD), the California Air Resource Board (CARB), or the US Environmental Protection Agency (EPA). Any deviations from published Methods are approved in advance by the regulatory agency (i.e. SCAQMD), prior to implementation if possible. Project-specific QA/QC activities and results that may impact test results are discussed in Section 3.

TABLE 6-1. TEST EQUIPMENT CALIBRATION SCHEDULE

Equipment	Calibration Period	Standard or Method of Calibration
Thermocouples	6 Months and 2 Months	Mercury Thermometer, three point (ice, boiling water, hot oil)
Dry Gas Meters	6 Months and 2 Months	Critical orifice
Field Barometers	6 Months, Check prior to usage	Mercury Barometer
S-Type Pitot	6 Months Check prior to usage	EPA Method 2, Measure physical configuration. Reshape pitot tips or calibrate if configuration does not meet the limits.
Pressure gauges	6 Months 2 Months	Five-point calibration against manometer Three-point check
Temp. Meters	6 Months	Precision Potentiometer
CEM Systems	Bimonthly, or as needed	Specified by Manufacturer

TABLE 6-2. TEST EQUIPMENT MAINTENANCE

Equipment	Check For	Correction	Frequency
CEM Systems	Absence of malfunction, noise, drift, conversion efficiency for NOx analyzer	As required by the manufacture, or depending on performance	Bimonthly
Pumps	Absence of leakage, flow, proper vacuum	Replace parts, inspect, clean	300 hours of usage
Flow Devices	Levelling, zeroing, obstruction, deformation	Clean, replace, or re-calibrate	300 hours of usage
Calibration Gases	Expiration date, tank pressure	Re-certify, order new gases	2 months and prior to field testing
Regulators	Malfunction, Gauge precision	Repair or replace	3 months and prior to field testing
Gas Divider	Malfunction, precision	Repair or replace	Monthly and before field testing
Condensers	Leakage, temperature	Repair or replace	Monthly and before field testing
Heated lines	Leakage, temperature, cleanliness	Repair, replace, clean	Monthly and before field testing

APPENDICES

APPENDIX A

GENERAL CALCULATIONS AND FORMULAE

GENERAL CALCULATIONS

Standard conditions: 29.92 in. Hg, 60°F

Gas Moisture at standard conditions (scf): $V_{WTR} = K2*V_{COND}$
K2 = 0.04707 @ 68 °F, 0.0464 @ 60°F

Sample volume at standard conditions (scf):
Vmstd =K1*Vmacf*Ym*(Pbar+dH/13.6)/(Tm+460)
K1 = 17.64 @ 68°F, 17.38 @ 60°F

Percent of water: $\%H_2O = 100*Vmstd/(Vmstd+Vwtr)$

Dry molecular weight: $M_d = (44*\%CO_2+32*\%O_2+28*(\%N_2+\%CO))/100$

Wet molecular weight: $M_w = M_d*(1-\%H_2O/100)+18*(\%H_2O/100)$

Stack gas pressure (In. Hg): $P_{stk} = P_{bar}+P_{sta}/13.6$

Average velocity head: Ave. $dP = \{SQRT\ (dP)\}^2$

Stack gas velocity (fps): $V = 85.49*C_p*SQRT(dP)*SQRT((T_S+460)/(P_{STK}*M_w))$

Percent of excess air: $\%EXCA = 100*(\%O_2-0.5\%CO)/(0.264(\%N_2-(\%O_2-0.5\%CO)))$

Stack gas flow (dscfm): $Q_{STK} = 60(1-\%H_2O/100)*V*A*(528/(T_s+460))*P_{stk}/29.92$

Concentration at 3% O_2: $PPM\ @\ 3\%\ O_2 = PPM_{measured}*17.9/(20.9-\%O_2)$

Emissions lb/MMBtu:

lb/MMBtu = lb/hr /HI (heat input rate in MMBtu/hr)

Emissions lb/hr:
lb/hr = $PPM*10^{-6}*((MW\ lb/lb\text{-}mole)/SV)*dscfm\ *60$
MMBtu/hr = facility fuel usage (scfh)*HHV (1050 Btu/scf)* 10^{-6}

CALCULATIONS FOR METHOD 100.1:

Corrected PPM = $(PPM_{measured}-C_o)*C_{ma}/(C_m-C_o)$

Where: C_o = Average of initial and final bias zeros
C_m = Average of initial and final bias calibrations
C_{ma} = Certified gas value used for the bias calibration.

GENERAL CALCULATIONS – continued

CALCULATIONS FOR METHOD 100.1, continued

Calibration Error=	100*(Certified value-Analyzer response)/Analyzer range
Percent Bias=	100*(Direct Analyzer response-Bias response)/Analyzer range
System Zero/Span Drifts=	100*(Final-Initial)/Analyzer range
Linearity=	100*(Analyzer mid. gas response-Predicted value)/range

Where the Predictive Value for the mid gas is found by a straight line drawn between the span gas and zero gas calibration points which can be calculated from the straight line equation, Y=mx+b where m is the slope of the line and b is the Y-intercept. The calculation is done by a computer spreadsheet for Method 100.1.

DEFINITIONS

A:	Stack cross area, square feet
Cp:	Pitot coefficient
@H:	Orifice pressure, in. H_2O
MW:	Molecular weight
Md:	Dry molecular weight of flue gas
Mw:	Wet molecular weight of flue gas
Pbar:	Barometric pressure, in. Hg
Psta:	Static pressure, in. H_2O
Pstk:	Stack pressure, in. Hg
P:	Stack differential pressure, in. H_2O
Qstk:	Stack gas flow, scfm
Tm:	Meter temperature, °F
Ts:	Stack gas temperature, °F
Vcond:	Volume of water condensation, ml
Vm:	Meter volume, acf
Vmstd:	Sample gas at standard conditions, scf
Vwtr:	Water vapor volume, scf
Ym:	Meter correction factor
SV:	Specific molar volume, 379.5 dscf/lb-mole at 60°F, or 385.3 dscf/lb-mole at 68°F
FF:	Fuel flow rate (scf/hr)
Fd:	Dry fuel factor, for natural gas Fd=8710 dscf/MMBtu at 68°F

APPENDIX B

APPROVALS AND CERTIFICATIONS

Appendix B1

SCAQMD and CARB Testing Approvals

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 - www.aqmd.gov

Almega
ENVIRONMENTAL

June 10, 2015

Mr. John W. Phillips
Almega Environmental
10602 Walker Street
Cypress, CA 90630

Subject: LAP Approval Notice
Reference # 93LA0827

Dear Mr. Phillips:

We completed our review of the renewal application you submitted for approval under the South Coast Air Quality Management District's Laboratory Approval Program (SCAQMD LAP). We are pleased to inform you that your firm is approved for the period beginning June 30, 2015, and ending June 30, 2016 for the following methods, subject to the requirements in the LAP Conditions For Approval Agreement and conditions listed in the attachment to this letter:

SCAQMD Methods 1-4	SCAQMD Method 7.1
SCAQMD Method 10.1	SCAQMD Rule 1121/ 1146.2 Protocols
SCAQMD Method 100.1	SCAQMD Rule 1420/1420.1 – (Lead) Source Sampling
SCAQMD Method 25.1 (Sampling)	SCAQMD Rule 1420/1420.1 – (Lead) Ambient Sampling
SCAQMD Method 25.1 (Analysis)	SCAQMD Rule 462 Testing
SCAQMD Method 25.3 (Analysis)	ASTM D6522-00/ USEPA CTM-030
SCAQMD Methods 5.1 and 6.1	

Thank you for participating in the SCAQMD LAP. Your cooperation helps us to achieve the goal of the LAP: to maintain high standards of quality in the sampling and analysis of source emissions. You may direct any questions or information to LAP Coordinator, Glenn Kasai. He may be reached by telephone at (909) 396-2271, or via e-mail at gkasai@aqmd.gov.

Sincerely,

Rudy Eden, Senior Manager
Laboratory Services &
Source Test Engineering

RE:GK/gk

cc: Dipankar Sarkar

150610 LapRenewal.doc

ATTACHMENT

Conditions For Almega Environmental's LAP Approval

1) Almega shall adhere to the following requirements when conducting portable analyzer tests using CTM-030 or ASTM D6522:
   a) Deviations to CTM-030 or ASTM D6522 shall be documented in the Test Critique section of the test report;
   b) The test report shall be formatted and organized in a manner consistent with the example portable analyzer test report, dated September 24, 2011, and the District Source Test Manual, Chapter II; and,
   c) NO_2 measurements may be quantified to 10% of the NO_2 span under the following conditions:
      - Calibrations shall be conducted per Sections 7.3 and 7.6 of CTM-030 at the span, mid-span (40-60% of span), low-span (10% of span), and zero level. The low-span calibration shall satisfy the requirements in Section 4.2 of CTM-030;
      - A linearity check shall be conducted once every five days using the low-span calibration gas; and,
      - If the measured NO_2 emission is less than 10% of the NO_2 span, it shall be reported as less than 10% of the span, and added to the NO emission to determine the total NOx concentration.

State of California

Air Resources Board

Approved Independent Contractor

Almega Environmental & Technical Services

This is to certify that the company listed above has been approved by the Air Resources Board to perform compliance testing pursuant to California Code of Regulations, Title 17, Section 91207, until June 30, 2016, for the following methods listed below:

ARB Source Test Methods:

1, 2, 3, 4, 5, 8

100 (CO, CO_2, NO_x, O_2, SO_2)

Dr. Michael T. Benjamin, Chief
Monitoring and Laboratory Division

State of California

Air Resources Board

Approved Independent Contractor

Almega Environmental & Technical Services

This is to certify that the company listed above has been approved by the Air Resources Board to perform compliance testing pursuant to California Code of Regulations, Title 17, Section 91207, until June 30, 2016, for the method listed below:

Visible Emissions Evaluation

Dr. Michael T. Benjamin, Chief
Monitoring and Laboratory Division

Appendix B2

Certification of No Conflict-of-Interest

Certification of No Conflict-of-Interest

Almega Environmental & Technical Services
10602 Walker Street
Cypress, CA 90630

I certify that I am responsible for the testing operations of Almega and am authorized to sign this certificate on the Company's behalf.

Almega may conduct tests as an independent tester pursuant to SCAQMD Rule 304(k). I further certify that Almega has no conflict-of-interests, and is not related or owned in any way to the company being tested.

Company being tested:	Mesa Water
Facility ID No.:	98380
Permit Numbers:	G4003
Signature:	
Name (printed or typed):	Surya Adhikari
Title:	Project Manager
Date:	December 17, 2015

APPENDIX C

CONTINUOUS MONITORING OF GASEOUS EMISSIONS, CEMS

Appendix C1

CEMS – Results and Calculations

Reference Method Data Summary

Facility: Mesa Water
Location: Costa Mesa, CA
Source: Reservoir II- Engine #4

Run Information				Flue Gas Information			Pollutant 1: NOx (MW: 46 lb/lb-mole)			Pollutant 2: CO (MW: 28 lb/lb-mole)		
Run No.	Test Date	Start Time	End Time	O2 dry % as found	O2 dry % "<"	CO2 dry %	dry ppm	dry ppm @15%O2	dry ppm @15%O2	dry ppm	dry ppm @15%O2	dry ppm @15%O2
1-Maximum	10/28/15	10:42	10:57	-0.02	<2.00	12.04	<10.0	< 2.82	< 3.12	104.39	29.4	< 32.6
1-Normal	10/28/15	11:21	11:51	0.01	<2.00	12.06	<10.0	< 2.82	< 3.12	150.48	42.5	< 47.0
1-Minimum[1]	10/28/15	12:15	12:30	0.27	<2.00	11.89	>50	> 14.21	> 15.51	32.87	9.40	< 10.3
2-Minimum	10/28/15	13:40	13:55	0.07	<2.00	11.99	27.6	< 7.82	< 8.62	147.52	41.8	< 46.1

Note: "<"- Not detected (below 20% of analytical range), reporting limit is reported per SCAQMD Method 100.1.

[1] NOx concentration was out of analytical range (>50 ppm).

Almega ENVIRONMENTAL

Facility: **Mesa Water** Run No.: **1-Maximum**
Location: **Costa Mesa, CA** Test Date: **10/28/15**
Source: **Reservoir II- Engine #4** Run Start Time: **10:42**
Run End Time: **10:57**

TEST DATA		Pollutant 1	Pollutant 2	Diluent 1	Diluent 2
VARIABLE	DESCRIPTION	NOx	CO	O2	CO2
A	ANALYTICAL RANGE	**50**	**500**	**10**	**20**
	Unit of Measurement	**ppmd**	**ppmd**	**% dry**	**% dry**
	CALIBRATION GAS INFORMATION				
B	Zero Gas	**0.00**	**0.00**	**0.00**	**0.00**
C'	Low Gas Concentration	**2.464**			
	Low Gas Cylinder S/N:	CC415555			
C	Mid Gas Concentration	**22.57**	**225.3**	**4.46**	**9.00**
	Mid Gas Cylinder S/N:	SG9176626	SG9134859	CC35750	CC35750
D	High Gas Concentration	**45.77**	**453.0**	**8.717**	**17.99**
	High Gas Cylinder S/N:	SG9163220BAL	CC126346	CC326754	CC326754
	Primary Gas Cylinder S/N:				
E	UPSCALE CALIBRATION GAS USED	**22.57**	**225.30**	**4.46**	**9.00**
	L=Low, M=Mid, H=High	**M**	**M**	**M**	**M**
	INITIAL CALIBRATION ERROR TEST				
F	Zero Gas Response	**0.01**	**0.10**	**0.00**	**0.04**
G	Mid Gas Response	**22.97**	**229.37**	**4.46**	**8.88**
H	High Gas Reponse	**45.81**	**454.17**	**8.74**	**17.98**
	INITIAL SYSTEM CALIBRATION CHECK				
I	Zero Gas Response	**0.05**	**0.10**	**0.02**	**0.05**
J'	Upscale Gas Response	**22.65**	**229.40**	**4.45**	**8.85**
	FINAL SYSTEM CALIBRATION CHECK				
K	Zero Gas Response	**0.19**	**0.00**	**0.06**	**0.07**
L'	Upscale Gas Response	**22.90**	**227.33**	**4.49**	**8.86**
	FINAL CALIBRATION ERROR CHECK				
M	Zero Gas Response	**0.00**	**0.10**	**0.05**	**0.02**
N	Low Gas Response	**2.53**			
N'	Mid Gas Response	**23.01**	**227.95**	**4.47**	**8.88**
O	High Gas Reponse	**45.90**	**452.42**	**8.72**	**17.96**
		x		***x***	
P	AS MEASURED FLUE GAS CONCENTRATION	**1.93**	**105.84**	**0.02**	**11.83**

CALCULATIONS						FORMULA
	AVERAGE SYSTEM CALIBRATION					
Q	Zero Response	0.12	0.05	0.04	0.06	(I+K)/2
R	Upscale Response	22.78	228.37	4.47	8.86	(J+L)/2
		x		***x***		
S	CORRECTED CONC.	1.80	104.39	-0.02	12.04	E*(P-Q)/(R-Q)

QA/QC CALCULATIONS						
	CALIBRATION GAS SELECTION, % of Range	***x***				
	Low Gas	4.93				C'*100/A
	Mid Gas	45.1	45.1	44.6	45.0	C*100/A
	High Gas	91.5	90.6	87.2	90.0	D*100/A
	CALIBRATION ERROR, % of Range					
	Initial Zero Gas Error	0.02	0.02	0.00	0.20	(F-B)*100/A
	Initial Mid Gas Error	0.80	0.81	0.00	-0.60	(G-C)*100/A
	Initial High Gas Error	0.08	0.23	0.23	-0.05	(H-D)*100/A
	Final Zero Gas Error	0.00	0.02	0.50	0.10	(M-B)*100/A
	Final Low Gas Error	0.13				(N'-C')*100/A
	Final Mid Gas Error	0.88	0.53	0.10	-0.60	(N-C)*100/A
	Final High Gas Error	0.26	-0.12	-0.01	-0.15	(O-D)*100/A
	LINEARITY, % of Range					
	Initial	0.75	0.69	-0.12	-0.67	{(G-F)-[(H-F)*C]/D}*100/A
	Final	0.75	0.58	-0.14	-0.57	{(N-M)-[(O-M)*C]/D}*100/A
	SAMPLING SYSTEM BIAS, % of Range					
	Initial Zero Gas Bias	0.08	0.00	0.20	0.05	(I-F)*100/A
	Initial Upscale Gas Bias	-0.64	0.01	-0.10	-0.15	(J-G[or G', or H]*100/A
	Final Zero Gas Bias	0.38	-0.02	0.10	0.25	(K-M)*100/A
	Final Upscale Gas Bias	-0.22	-0.12	0.20	-0.10	(L-N[or N', or O]*100/A
	CALIBRATION DRIFT, % of Range					
	Zero	0.28	-0.02	0.40	0.10	(K-I)*100/A
	Upscale	0.50	-0.41	0.40	0.05	(L'-J')*100/A

Facility: **Mesa Water** Run No.: **1-Normal**
Location: **Costa Mesa, CA** Test Date: **10/28/15**
Source: **Reservoir II- Engine #4** Run Start Time: **11:21**
Run End Time: **11:51**

TEST DATA		Pollutant 1	Pollutant 2	Diluent 1	Diluent 2
VARIABLE	DESCRIPTION	NOx	CO	O2	CO2
A	ANALYTICAL RANGE	**50**	**500**	**10**	**20**
	Unit of Measurement	**ppmd**	**ppmd**	**% dry**	**% dry**
	CALIBRATION GAS INFORMATION	***x***			
B	Zero Gas	**0.00**	**0.00**	**0.00**	**0.00**
C'	Low Gas Concentration	**2.464**			
	Low Gas Cylinder S/N:	**CC415555**			
C	Mid Gas Concentration	**22.57**	**225.3**	**4.460**	**9.000**
	Mid Gas Cylinder S/N:	SG9176626	SG9134859	CC35750	CC35750
D	High Gas Concentration	**45.77**	**453.0**	**8.717**	**17.99**
	High Gas Cylinder S/N:	SG9163220BAL	CC126346	CC326754	CC326754
	Primary Gas Cylinder S/N:				
E	UPSCALE CALIBRATION GAS USED	**22.57**	**225.30**	**4.46**	**9.00**
	L=Low, M=Mid, H=High	**M**	**M**	**M**	**M**
	INITIAL CALIBRATION ERROR TEST				
F	Zero Gas Response	**0.01**	**0.10**	**0.00**	**0.04**
G	Mid Gas Response	**22.97**	**229.37**	**4.46**	**8.88**
H	High Gas Reponse	**45.81**	**454.17**	**8.74**	**17.98**
	INITIAL SYSTEM CALIBRATION CHECK				
I	Zero Gas Response	**0.05**	**0.10**	**0.02**	**0.05**
J'	Upscale Gas Response	**22.65**	**229.40**	**4.45**	**8.85**
	FINAL SYSTEM CALIBRATION CHECK				
K	Zero Gas Response	**0.19**	**0.00**	**0.06**	**0.07**
L'	Upscale Gas Response	**22.90**	**227.33**	**4.49**	**8.86**
	FINAL CALIBRATION ERROR CHECK				
M	Zero Gas Response	**0.00**	**0.10**	**0.05**	**0.02**
N'	Low Gas Response	**2.53**			
N	Mid Gas Response	**23.01**	**227.95**	**4.47**	**8.88**
O	High Gas Reponse	**45.90**	**452.42**	**8.72**	**17.96**
		x		***x***	
P	AS MEASURED FLUE GAS CONCENTRATION	**0.80**	**152.54**	**0.05**	**11.84**

CALCULATIONS						FORMULA
	AVERAGE SYSTEM CALIBRATION					
Q	Zero Response	0.12	0.05	0.04	0.06	(I+K)/2
R	Upscale Response	22.78	228.37	4.47	8.86	(J+L)/2
		x		***x***		
S	CORRECTED CONC.	0.68	150.48	0.01	12.06	E*(P-Q)/(R-Q)

QA/QC CALCULATIONS

CALIBRATION GAS SELECTION, % of Range	***x***				
Low Gas	4.93				C'*100/A
Mid Gas	45.1	45.1	44.6	45.0	C*100/A
High Gas	91.5	90.6	87.2	90.0	D*100/A
CALIBRATION ERROR, % of Range					
Initial Zero Gas Error	0.02	0.02	0.00	0.20	(F-B)*100/A
Initial Mid Gas Error	0.80	0.81	0.00	-0.60	(G-C)*100/A
Initial High Gas Error	0.08	0.23	0.23	-0.05	(H-D)*100/A
Final Zero Gas Error	0.00	0.02	0.50	0.10	(M-B)*100/A
Final Low Gas Error	0.13				(N'-C')*100/A
Final Mid Gas Error	0.88	0.53	0.10	-0.60	(N-C)*100/A
Final High Gas Error	0.26	-0.12	-0.01	-0.15	(O-D)*100/A
LINEARITY, % of Range					
Initial	0.75	0.69	-0.12	-0.67	{(G-F)-[(H-F)*C]/D}*100/A
Final	0.75	0.58	-0.14	-0.57	{(N-M)-[(O-M)*C]/D}*100/A
SAMPLING SYSTEM BIAS, % of Range					
Initial Zero Gas Bias	0.08	0.00	0.20	0.05	(I-F)*100/A
Initial Upscale Gas Bias	-0.64	0.01	-0.10	-0.15	(J-G[or G', or H]*100/A
Final Zero Gas Bias	0.38	-0.02	0.10	0.25	(K-M)*100/A
Final Upscale Gas Bias	-0.22	-0.12	0.20	-0.10	(L-N[or N', or O]*100/A
CALIBRATION DRIFT, % of Range					
Zero	0.28	-0.02	0.40	0.10	(K-I)*100/A
Upscale	0.50	-0.41	0.40	0.05	(L'-J')*100/A

Almega ENVIRONMENTAL

Facility: **Mesa Water** Run No.: **1-Minimum**
Location: **Costa Mesa, CA** Test Date: **10/28/15**
Source: **Reservoir II- Engine #4** Run Start Time: **12:15**
Run End Time: **12:30**

TEST DATA		Pollutant 1	Pollutant 2	Diluent 1	Diluent 2	
VARIABLE	DESCRIPTION	NOx	CO	O2	CO2	
A	ANALYTICAL RANGE	**50**	**500**	**10**	**20**	
	Unit of Measurement	**ppmd**	**ppmd**	**% dry**	**% dry**	
	CALIBRATION GAS INFORMATION	***x***				
B	Zero Gas	**0.00**	**0.00**	**0.00**	**0.00**	
C'	Low Gas Concentration	**2.464**				
	Low Gas Cylinder S/N:	**CC415555**				
C	Mid Gas Concentration	**22.57**	**225.3**	**4.460**	**9.000**	
	Mid Gas Cylinder S/N:	SG9176626	SG9134859	CC35750	CC35750	
D	High Gas Concentration	**45.77**	**453.0**	**8.717**	**17.99**	
	High Gas Cylinder S/N:	SG9163220BAL	CC126346	CC326754	CC326754	
	Primary Gas Cylinder S/N:					
E	UPSCALE CALIBRATION GAS USED	**22.57**	**225.30**	**4.46**	**9.00**	
	L=Low, M=Mid, H=High	**M**	**M**	**M**	**M**	
	INITIAL CALIBRATION ERROR TEST					
F	Zero Gas Response	**0.01**	**0.10**	**0.00**	**0.04**	
G	Mid Gas Response	**22.97**	**229.37**	**4.46**	**8.88**	
H	High Gas Reponse	**45.81**	**454.17**	**8.74**	**17.98**	
	INITIAL SYSTEM CALIBRATION CHECK					
I	Zero Gas Response	**0.05**	**0.10**	**0.02**	**0.05**	
J'	Upscale Gas Response	**22.65**	**229.40**	**4.45**	**8.85**	
	FINAL SYSTEM CALIBRATION CHECK					
K	Zero Gas Response	**0.19**	**0.00**	**0.06**	**0.07**	
L'	Upscale Gas Response	**22.90**	**227.33**	**4.49**	**8.86**	
	FINAL CALIBRATION ERROR CHECK					
M	Zero Gas Response	**0.00**	**0.10**	**0.05**	**0.02**	
N'	Low Gas Response	**2.53**				
N	Mid Gas Response	**23.01**	**227.95**	**4.47**	**8.88**	
O	High Gas Reponse	**45.90**	**452.42**	**8.72**	**17.96**	
		x	***x***	***x***		
P	AS MEASURED FLUE GAS CONCENTRATION	**>50**	**33.36**	**0.31**	**11.68**	

CALCULATIONS						FORMULA
	AVERAGE SYSTEM CALIBRATION					
Q	Zero Response	0.12	0.05	0.04	0.06	(I+K)/2
R	Upscale Response	22.78	228.37	4.47	8.86	(J+L)/2
		x	***x***	***x***		
S	CORRECTED CONC.	>50	32.87	0.27	11.89	E*(P-Q)/(R-Q)

QA/QC CALCULATIONS

CALIBRATION GAS SELECTION, % of Range	***x***				
Low Gas	4.9				C'*100/A
Mid Gas	45.1	45.1	44.6	45.0	C*100/A
High Gas	91.5	90.6	87.2	90.0	D*100/A
CALIBRATION ERROR, % of Range					
Initial Zero Gas Error	0.02	0.02	0.00	0.20	(F-B)*100/A
Initial Mid Gas Error	0.80	0.81	0.00	-0.60	(G-C)*100/A
Initial High Gas Error	0.08	0.23	0.23	-0.05	(H-D)*100/A
Final Zero Gas Error	0.00	0.02	0.50	0.10	(M-B)*100/A
Final Low Gas Error	0.13				(N'-C')*100/A
Final Mid Gas Error	0.88	0.53	0.10	-0.60	(N-C)*100/A
Final High Gas Error	0.26	-0.12	-0.01	-0.15	(O-D)*100/A
LINEARITY, % of Range					
Initial	0.75	0.69	-0.12	-0.67	{(G-F)-[(H-F)*C]/D}*100/A
Final	0.75	0.58	-0.14	-0.57	{(N-M)-[(O-M)*C]/D}*100/A
SAMPLING SYSTEM BIAS, % of Range					
Initial Zero Gas Bias	0.08	0.00	0.20	0.05	(I-F)*100/A
Initial Upscale Gas Bias	-0.64	0.01	-0.10	-0.15	(J-G[or G', or H]*100/A
Final Zero Gas Bias	0.38	-0.02	0.10	0.25	(K-M)*100/A
Final Upscale Gas Bias	-0.22	-0.12	0.20	-0.10	(L-N[or N', or O]*100/A
CALIBRATION DRIFT, % of Range					
Zero	0.28	-0.02	0.40	0.10	(K-I)*100/A
Upscale	0.50	-0.41	0.40	0.05	(L'-J')*100/A

Facility: **Mesa Water** Run No.: **2-Minimum**
Location: **Costa Mesa, CA** Test Date: **10/28/15**
Source: **Reservoir II- Engine #4** Run Start Time: **13:40**
Run End Time: **13:55**

TEST DATA		Pollutant 1	Pollutant 2	Diluent 1	Diluent 2	
VARIABLE	DESCRIPTION	NOx	CO	O2	CO2	
A	ANALYTICAL RANGE	**50**	**500**	**10**	**20**	
	Unit of Measurement	**ppmd**	**ppmd**	**% dry**	**% dry**	
	CALIBRATION GAS INFORMATION	***x***				
B	Zero Gas	**0.00**	**0.00**	**0.00**	**0.00**	
C'	Low Gas Concentration	**2.464**				
	Low Gas Cylinder S/N:	**CC415555**				
C	Mid Gas Concentration	**22.57**	**225.3**	**4.460**	**9.000**	
	Mid Gas Cylinder S/N:	SG9176626	SG9134859	CC35750	CC35750	
D	High Gas Concentration	**45.77**	**453.0**	**8.717**	**17.99**	
	High Gas Cylinder S/N:	SG9163220BAL	CC126346	CC326754	CC326754	
	Primary Gas Cylinder S/N:					
E	UPSCALE CALIBRATION GAS USED	**22.57**	**225.30**	**4.46**	**9.00**	
	L=Low, M=Mid, H=High	**M**	**M**	**M**	**M**	
	INITIAL CALIBRATION ERROR TEST					
F	Zero Gas Response	**0.01**	**0.10**	**0.00**	**0.04**	
G	Mid Gas Response	**22.97**	**229.37**	**4.46**	**8.88**	
H	High Gas Reponse	**45.81**	**454.17**	**8.74**	**17.98**	
	INITIAL SYSTEM CALIBRATION CHECK					
I	Zero Gas Response	**0.19**	**0.00**	**0.06**	**0.07**	
J'	Upscale Gas Response	**22.90**	**227.33**	**4.49**	**8.86**	
	FINAL SYSTEM CALIBRATION CHECK					
K	Zero Gas Response	**0.01**	**0.00**	**0.06**	**0.07**	
L'	Upscale Gas Response	**22.65**	**228.70**	**4.48**	**8.83**	
	FINAL CALIBRATION ERROR CHECK					
M	Zero Gas Response	**0.00**	**0.10**	**0.05**	**0.02**	
N'	Low Gas Response	**2.53**				
N	Mid Gas Response	**23.01**	**227.95**	**4.47**	**8.88**	
O	High Gas Reponse	**45.90**	**452.42**	**8.72**	**17.96**	
				x		
P	AS MEASURED FLUE GAS CONCENTRATION	**27.83**	**149.30**	**0.13**	**11.76**	

CALCULATIONS						
	AVERAGE SYSTEM CALIBRATION					FORMULA
Q	Zero Response	0.10	0.00	0.06	0.07	(I+K)/2
R	Upscale Response	22.78	228.02	4.49	8.85	(J+L)/2
				x		
S	CORRECTED CONC.	27.60	147.52	0.07	11.99	E*(P-Q)/(R-Q)

QA/QC CALCULATIONS

CALIBRATION GAS SELECTION, % of Range	***x***				
Low Gas	4.9				C'*100/A
Mid Gas	45.1	45.1	44.6	45.0	C*100/A
High Gas	91.5	90.6	87.2	90.0	D*100/A
CALIBRATION ERROR, % of Range					
Initial Zero Gas Error	0.02	0.02	0.00	0.20	(F-B)*100/A
Initial Mid Gas Error	0.80	0.81	0.00	-0.60	(G-C)*100/A
Initial High Gas Error	0.08	0.23	0.23	-0.05	(H-D)*100/A
Final Zero Gas Error	0.00	0.02	0.50	0.10	(M-B)*100/A
Final Low Gas Error	0.13				(N'-C')*100/A
Final Mid Gas Error	0.88	0.53	0.10	-0.60	(N-C)*100/A
Final High Gas Error	0.26	-0.12	-0.01	-0.15	(O-D)*100/A
LINEARITY, % of Range					
Initial	0.75	0.69	-0.12	-0.67	{(G-F)-[(H-F)*C]/D}*100/A
Final	0.75	0.58	-0.14	-0.57	{(N-M)-[(O-M)*C]/D}*100/A
SAMPLING SYSTEM BIAS, % of Range					
Initial Zero Gas Bias	0.36	-0.02	0.60	0.15	(I-F)*100/A
Initial Upscale Gas Bias	-0.14	-0.41	0.30	-0.10	(J-G[or G', or H]*100/A
Final Zero Gas Bias	0.02	-0.02	0.10	0.25	(K-M)*100/A
Final Upscale Gas Bias	-0.72	0.15	0.10	-0.25	(L-N[or N', or O]*100/A
CALIBRATION DRIFT, % of Range					
Zero	-0.36	0.00	0.00	0.00	(K-I)*100/A
Upscale	-0.50	0.27	-0.10	-0.15	(L'-J')*100/A

AETS CEMS Data -- Run-by-Run Basis
Engine No.4

	1-Maximum				
	Time	NOx	CO	O2	CO2
#	AVG	1.93	105.84	0.02	11.83
1	10:42	1.63	119.73	0.02	11.79
2	10:43	1.70	114.35	0.02	11.80
3	10:44	1.80	108.45	0.02	11.81
4	10:45	1.85	103.39	0.02	11.81
5	10:46	1.87	105.90	0.02	11.81
6	10:47	2.03	102.19	0.02	11.82
7	10:48	1.96	104.06	0.02	11.82
8	10:49	1.94	103.58	0.02	11.83
9	10:50	1.93	104.88	0.02	11.83
10	10:51	2.06	105.37	0.02	11.83
11	10:52	2.19	103.95	0.02	11.84
12	10:53	1.94	105.52	0.02	11.84
13	10:54	1.97	102.37	0.02	11.84
14	10:55	2.04	101.05	0.02	11.85
15	10:56	1.81	102.21	0.02	11.85
16	10:57	2.09	106.47	0.02	11.85

AETS CEMS Data -- Run-by-Run Basis
Engine No.4

	1-Normal				
	Time	NOx	CO	O2	CO2
#	AVG	0.80	152.54	0.05	11.84
1	11:21	1.25	146.94	0.05	11.81
2	11:22	1.08	154.34	0.05	11.82
3	11:23	1.02	153.98	0.05	11.82
4	11:24	0.94	155.89	0.05	11.83
5	11:25	0.92	159.05	0.05	11.83
6	11:26	1.11	149.04	0.05	11.83
7	11:27	1.01	143.71	0.05	11.84
8	11:28	0.95	152.03	0.05	11.84
9	11:29	0.91	158.18	0.05	11.84
10	11:30	0.78	169.47	0.05	11.84
11	11:31	0.79	166.00	0.05	11.84
12	11:32	0.73	151.48	0.05	11.84
13	11:33	0.71	154.63	0.05	11.84
14	11:34	0.83	148.31	0.05	11.85
15	11:35	0.78	144.71	0.05	11.84
16	11:36	0.72	155.14	0.05	11.85
17	11:37	0.72	147.93	0.05	11.85
18	11:38	0.75	145.27	0.05	11.84
19	11:39	0.71	153.48	0.06	11.85
20	11:40	0.72	146.89	0.06	11.85
21	11:41	0.69	148.89	0.06	11.85
22	11:42	0.75	148.05	0.06	11.85
23	11:43	0.60	164.44	0.06	11.85
24	11:44	0.59	177.02	0.06	11.85
25	11:45	0.72	154.12	0.06	11.85
26	11:46	0.70	141.77	0.06	11.85
27	11:47	0.69	148.19	0.06	11.85
28	11:48	0.72	140.72	0.06	11.86
29	11:49	0.66	147.08	0.06	11.86
30	11:50	0.69	152.65	0.06	11.86
31	11:51	0.67	149.47	0.06	11.85

AETS CEMS Data -- Run-by-Run Basis
Engine No.4

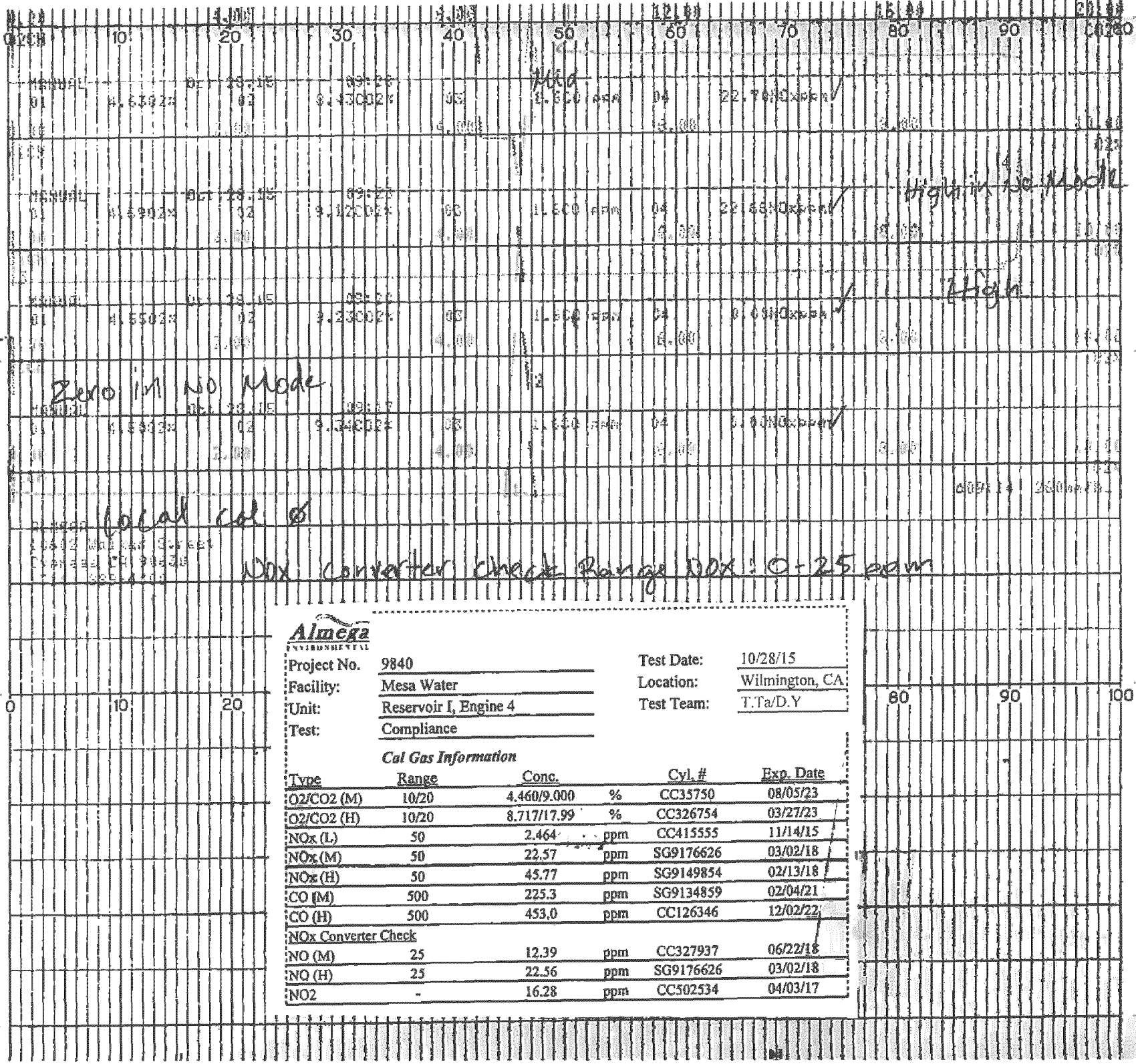
	1-Minimum				
	Time	NOx	CO	O2	CO2
#	AVG	>50	33.36	0.31	11.68
1	12:15:02	>50	72.95	0.29	11.66
2	12:16:02	>50	27.77	0.29	11.67
3	12:17:02	>50	22.17	0.29	11.67
4	12:18:02	>50	17.41	0.31	11.67
5	12:19:02	>50	16.61	0.31	11.67
6	12:20:02	>50	22.59	0.32	11.66
7	12:21:02	>50	9.52	0.32	11.67
8	12:22:02	>50	20.11	0.32	11.67
9	12:23:02	>50	29.81	0.32	11.67
10	12:24:02	>50	28.67	0.32	11.67
11	12:25:02	>50	26.30	0.32	11.68
12	12:26:02	>50	36.87	0.31	11.69
13	12:27:02	>50	50.43	0.31	11.69
14	12:28:02	>50	48.50	0.30	11.70
15	12:29:02	>50	49.83	0.30	11.70
16	12:30:02	>50	54.18	0.29	11.71

AETS CEMS Data -- Run-by-Run Basis
Engine No.4

	2-Minimum				
	Time	NOx	CO	O2	CO2
#	AVG	27.83	149.30	0.13	11.76
1	13:40	13.69	158.18	0.13	11.74
2	13:41	13.29	166.14	0.13	11.75
3	13:42	13.34	163.23	0.13	11.75
4	13:43	15.23	154.31	0.13	11.75
5	13:44	26.91	140.62	0.14	11.75
6	13:45	39.62	143.32	0.14	11.75
7	13:46	38.46	146.11	0.14	11.76
8	13:47	35.55	145.10	0.13	11.76
9	13:48	35.94	145.78	0.13	11.77
10	13:49	34.86	140.47	0.13	11.77
11	13:50	31.53	145.37	0.13	11.77
12	13:51	29.91	152.49	0.13	11.77
13	13:52	29.69	146.28	0.13	11.77
14	13:53	28.67	149.01	0.13	11.77
15	13:54	29.21	146.65	0.13	11.77
16	13:55	29.33	145.71	0.14	11.77

Appendix C2

CEMS – Strip Chart

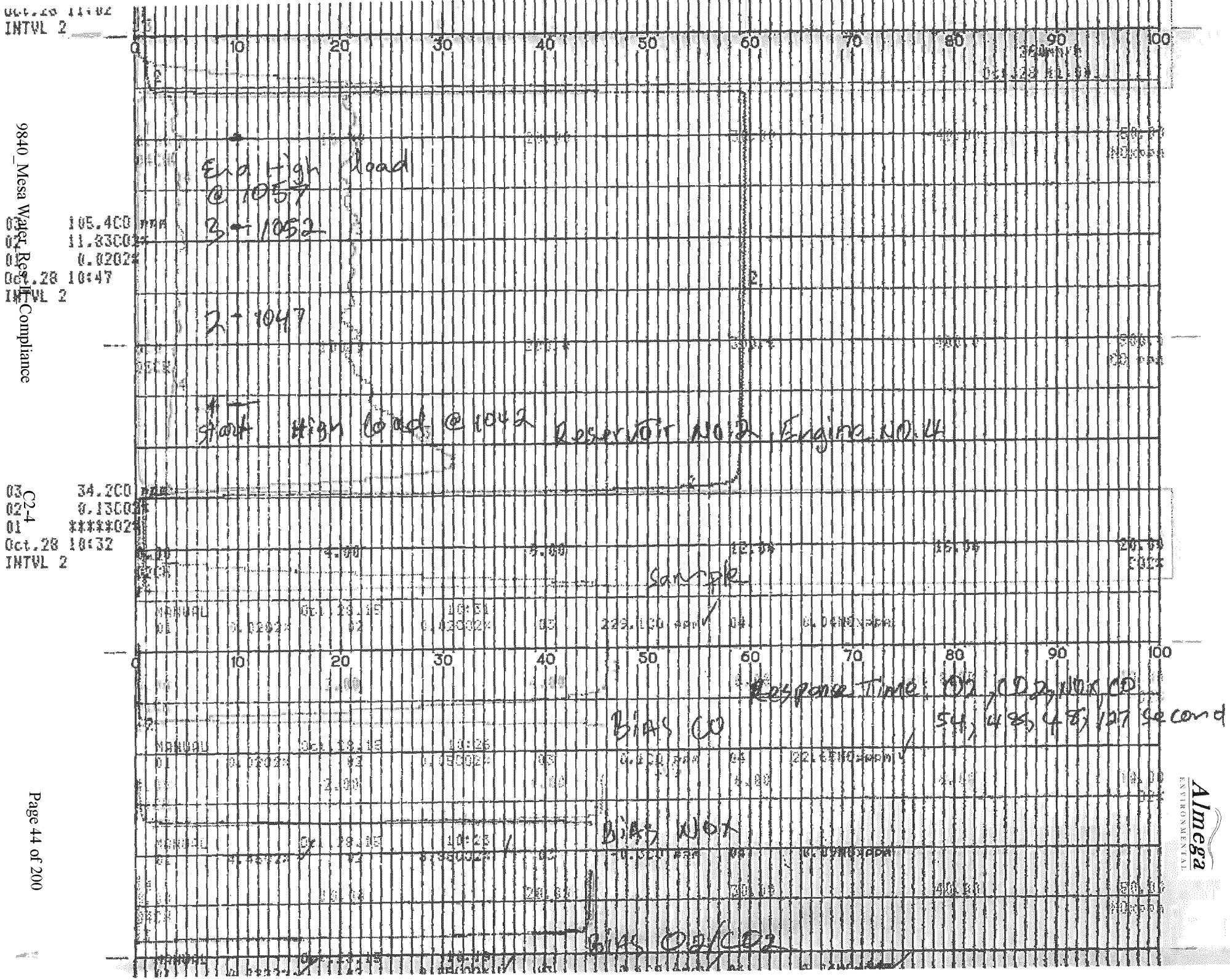


Almega ENVIRONMENTAL

Project No.	9840	Test Date:	10/28/15
Facility:	Mesa Water	Location:	Wilmington, CA
Unit:	Reservoir I, Engine 4	Test Team:	T.Ta/D.Y
Test:	Compliance		

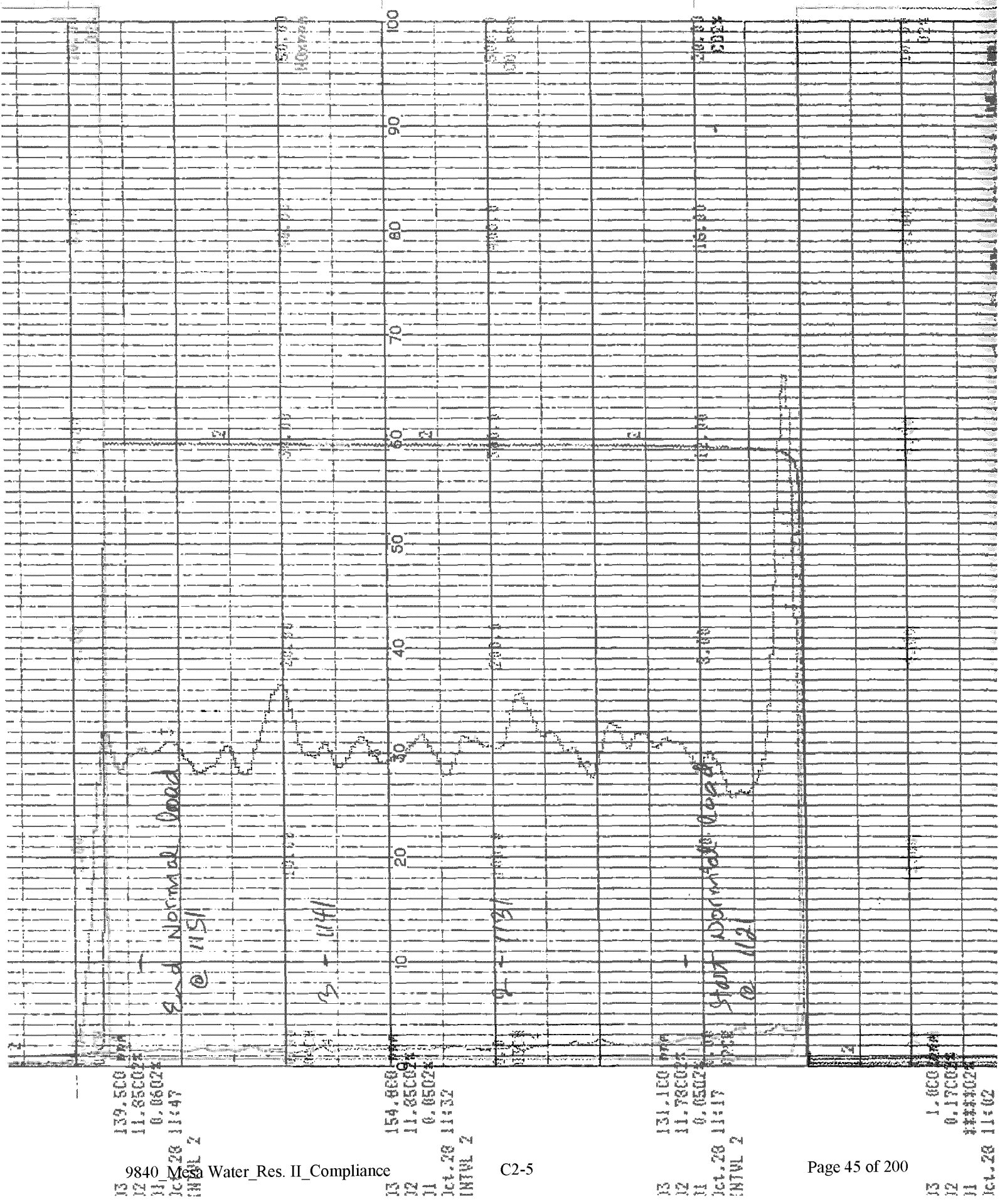
Cal Gas Information

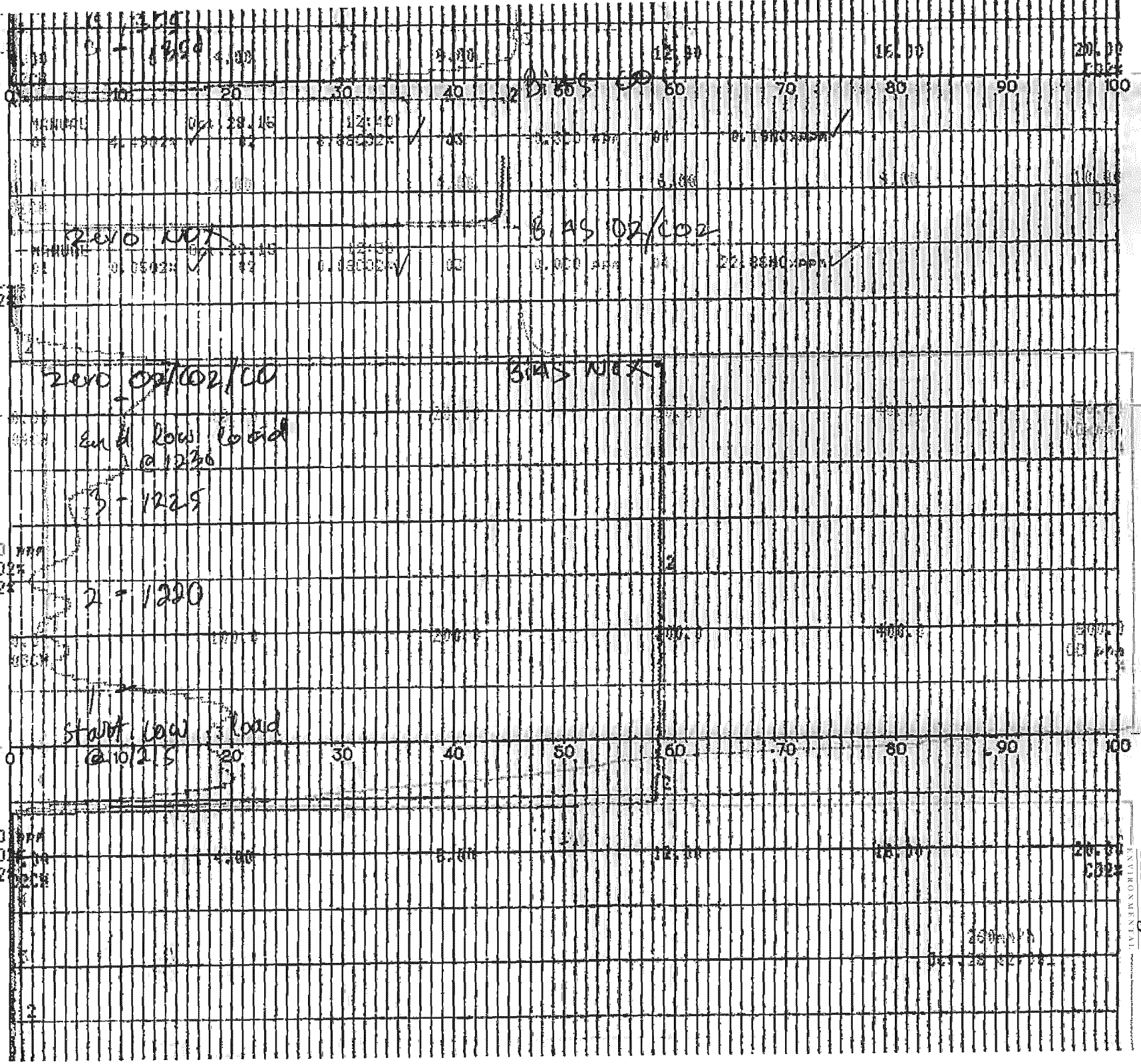
Type	Range	Conc.		Cyl. #	Exp. Date
O2/CO2 (M)	10/20	4.460/9.000	%	CC35750	08/05/23
O2/CO2 (H)	10/20	8.717/17.99	%	CC326754	03/27/23
NOx (L)	50	2.464	ppm	CC415555	11/14/15
NOx (M)	50	22.57	ppm	SG9176626	03/02/18
NOx (H)	50	45.77	ppm	SG9149854	02/13/18
CO (M)	500	225.3	ppm	SG9134859	02/04/21
CO (H)	500	453.0	ppm	CC126346	12/02/22
NOx Converter Check					
NO (M)	25	12.39	ppm	CC327937	06/22/18
NO (H)	25	22.56	ppm	SG9176626	03/02/18
NO2	-	16.28	ppm	CC502534	04/03/17

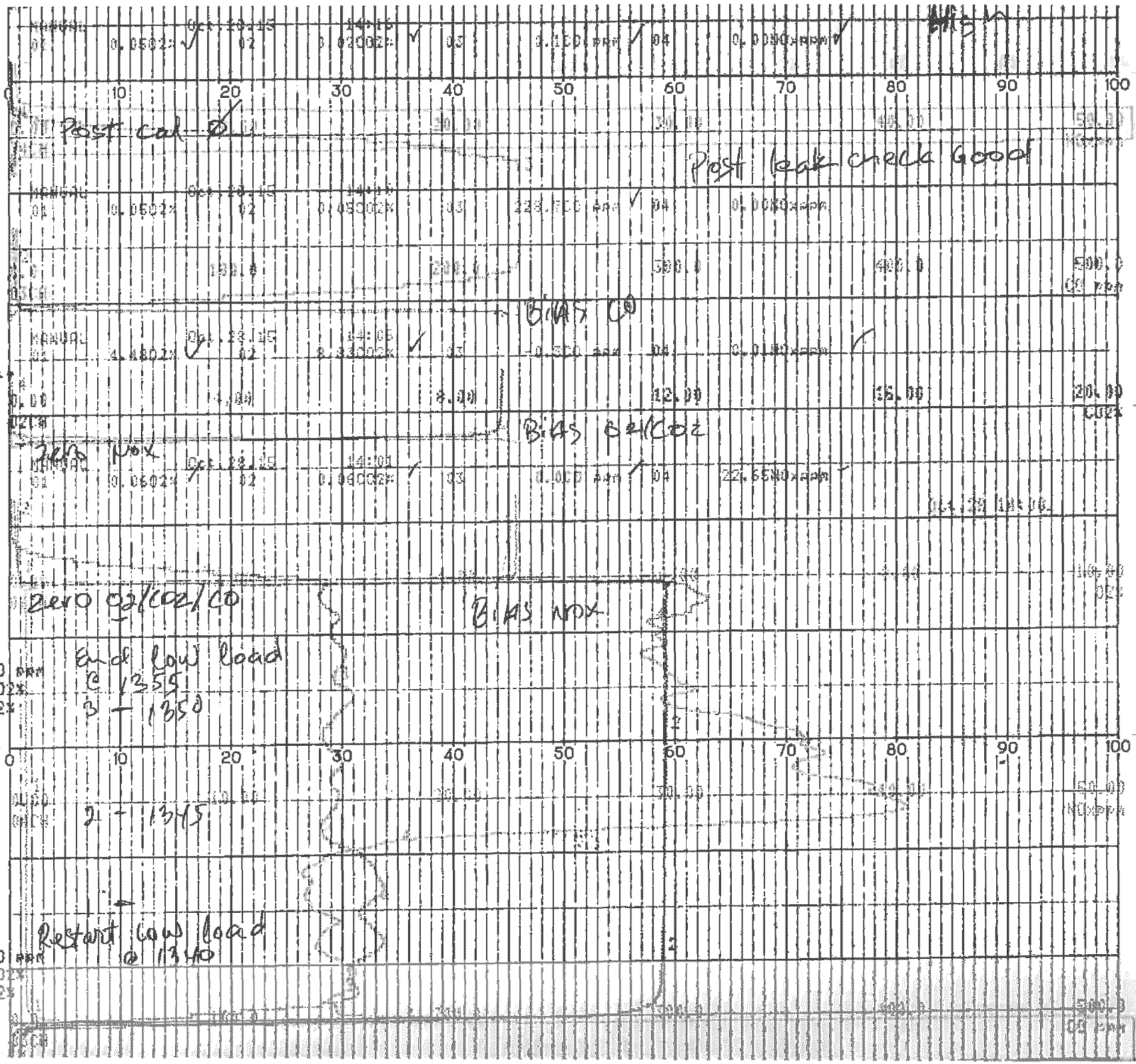


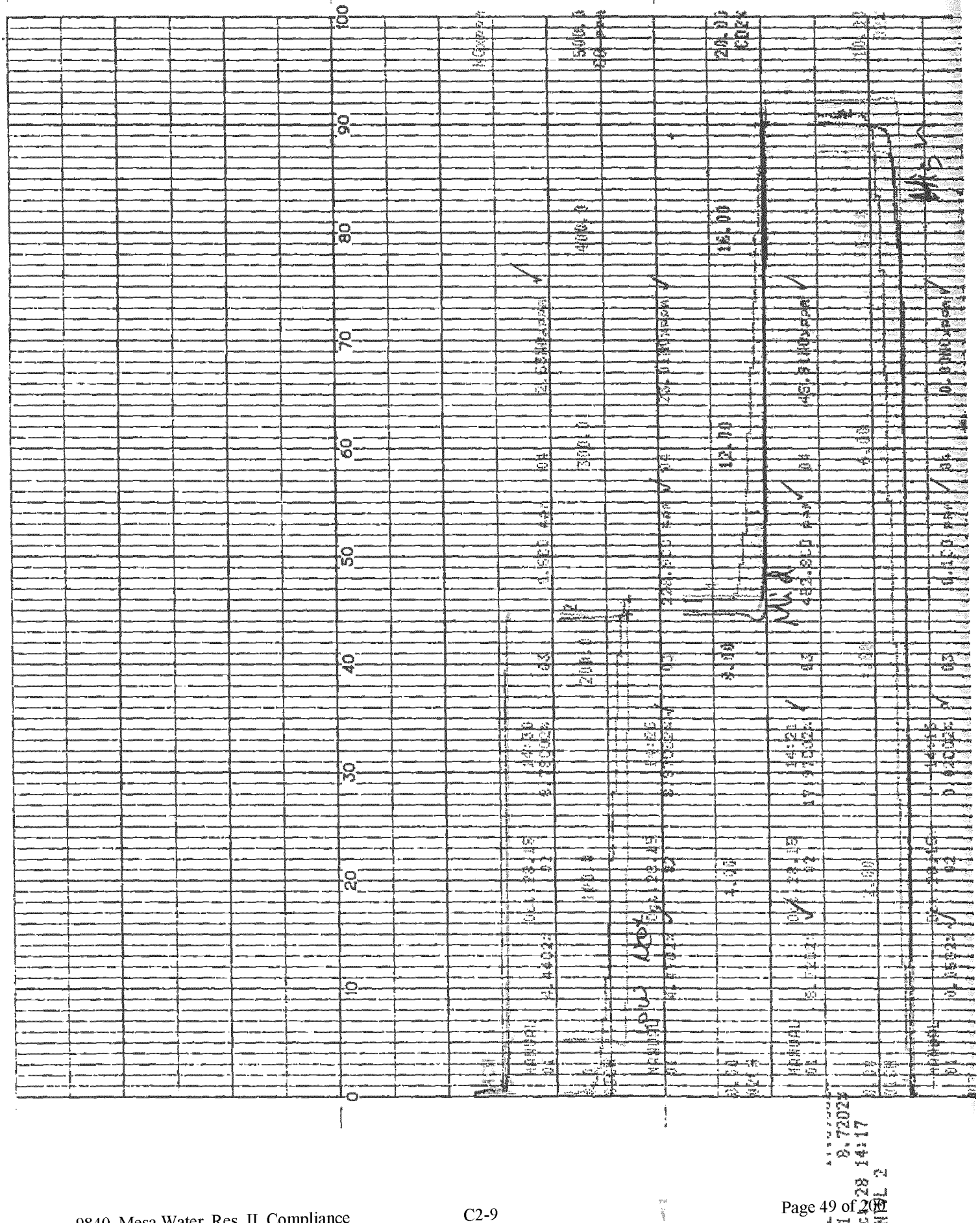
Oct.28 11:02
INTVL 2
End High load
@ 1057
3 - 1052
03 105.4CO ppm
02 11.83CO2%
01 0.02O2%
Oct.28 10:47
INTVL 2
2 - 1047
start High load @ 1042
Reservoir NO.2, Engine NO.4
03 34.2CO ppm
02 0.13CO2%
01 *****O2%
Oct.28 10:32
INTVL 2
sample
Response Time: O2, CO2, NOx, CO
54, 48, 48, 127 second
Bias CO
Bias NOx
Bias O2/CO2

C2-4


100
90
80
70
60
50
40
30
20
10
0
End Normal load @ 1151
3 - 1141
2 - 1131
Start Normal load @ 1121
139.5C0
11.85C02
0.06C02
Oct.28 11:47
INTVL 2
154.8C0
11.85C02
0.05C02
Oct.28 11:32
INTVL 2
131.1C0
11.78C02
0.05C02
Oct.28 11:17
INTVL 2
1.0C0
0.17C02
Oct.28 11:02


Zero NOX
Bias O2/CO2
Zero O2/CO2/CO
End Low Load @ 1230
3 - 1225
Bias NOX
2 - 1220
Start Low Load @ 1012 5
0.0602%
Oct.28 12:32
INTVL 2
13.4CO ppm
11.67CO2%
0.31O2%
Oct.28 12:17
INTVL 2
0.5CO ppm
0.14CO2%
*****O2%
Oct.28 12:02
INTVL 2


Post cal
Post leak check Good
+ BIAS CO
+ BIAS CO2
Zero NOx
BIAS NOx
Zero O2/CO2/CO
End low load
@ 1355
3 - 1350
2 - 1345
Restart low load
@ 1340
0
10
20
30
40
50
60
70
80
90
100
Oct.28 14:02
INTVL 2
Oct.28 13:47
INTVL 2
Oct.28 13:32
INTVL 2



Appendix C3

CEMS –DAS One-Minute Data

Reference Method CEMS DAS Data

Client	**Mesa Water**
Location	**Costa Mesa, CA**
Unit	**Reservoir II, Engine No. 4**
Date/Time	**10/28/2015 9:14**
Job Number	**9840**

Date	Time	O2%	CO2%	CO ppm	NOxppm	
10/28/2015	9:15:01	4.46	9.46	1.60	4.93	
10/28/2015	9:16:01	4.47	9.41	1.60	0.00	**Internal Calibration**
10/28/2015	9:17:01	4.49	9.37	1.60	0.00	**Zero**
10/28/2015	9:18:01	4.51	9.33	1.60	0.00	
10/28/2015	9:19:01	4.52	9.29	1.60	0.00	
10/28/2015	9:20:01	4.54	9.26	1.60	0.00	**Zero in NO Mode**
10/28/2015	9:21:01	4.55	9.22	1.60	12.09	
10/28/2015	9:22:01	4.56	9.18	1.60	22.61	
10/28/2015	9:23:01	4.58	9.15	1.60	22.64	**High**
10/28/2015	9:24:01	4.60	9.11	1.60	22.66	
10/28/2015	9:25:01	4.61	9.07	1.60	22.68	
10/28/2015	9:26:01	4.62	8.52	1.60	22.68	**High in NO Mode**
10/28/2015	9:28:01	4.65	8.40	1.60	12.46	
10/28/2015	9:29:01	4.67	8.36	1.60	12.54	
10/28/2015	9:30:01	4.68	8.33	1.60	12.55	**Mid**
10/28/2015	9:31:01	4.69	8.30	1.60	12.52	
10/28/2015	9:32:01	4.71	8.26	1.60	12.45	
10/28/2015	9:33:01	4.72	8.23	1.60	12.45	**Mid in NO Mode**
10/28/2015	9:34:01	4.74	8.19	1.60	5.91	
10/28/2015	9:35:01	4.75	8.16	1.60	0.04	
10/28/2015	9:36:01	4.77	8.13	1.45	0.04	
10/28/2015	9:37:01	4.78	8.10	1.60	0.02	**NO2 in NO Mode**
10/28/2015	9:38:01	4.79	8.08	1.60	8.74	
10/28/2015	9:39:01	4.81	8.05	1.60	15.34	
10/28/2015	9:40:01	4.82	8.02	1.60	15.30	**NO2 in NOx Mode**
10/28/2015	9:41:01	4.83	8.00	1.60	7.78	
10/28/2015	9:42:01	4.85	7.97	1.60	0.01	
	Change Range NOx : 0-50 ppm					
10/28/2015	10:02:02	2.19	3.20	204.16	9.16	
10/28/2015	10:03:02	0.00	0.06	50.93	0.04	**Internal Calibration**
10/28/2015	10:04:02	0.00	0.05	1.12	0.01	
10/28/2015	10:05:02	0.00	0.04	0.10	0.01	**Zero**
10/28/2015	10:06:02	4.06	7.92	30.23	23.35	
10/28/2015	10:07:02	8.73	17.81	325.63	45.49	
10/28/2015	10:08:02	8.74	17.95	450.92	45.72	
10/28/2015	10:09:02	8.74	17.96	453.62	45.77	
10/28/2015	10:10:02	8.74	17.98	454.17	45.81	**High**
10/28/2015	10:11:02	6.64	13.13	434.61	34.01	

Reference Method CEMS DAS Data

Client	**Mesa Water**
Location	**Costa Mesa, CA**
Unit	**Reservoir II, Engine No. 4**
Date/Time	**10/28/2015 9:14**
Job Number	**9840**

Date	Time	O2%	CO2%	CO ppm	NOxppm	
10/28/2015	10:12:02	4.45	8.75	288.85	22.95	
10/28/2015	10:13:02	4.46	8.88	230.90	22.97	
10/28/2015	10:14:02	4.46	8.88	229.37	22.97	**Mid**
10/28/2015	10:15:02	143.11	6.41	211.99	14.25	
10/28/2015	10:16:02	323.82	0.40	72.29	2.59	
10/28/2015	10:17:02	23.34	0.10	4.57	1.32	**System Calibration**
10/28/2015	10:18:02	0.03	0.06	0.45	0.05	
10/28/2015	10:19:02	0.02	0.05	0.10	0.05	**Bias Zero**
10/28/2015	10:20:02	2.74	5.36	0.10	0.06	
10/28/2015	10:21:02	4.45	8.82	-0.19	0.08	
10/28/2015	10:22:02	4.45	8.84	-0.30	0.08	
10/28/2015	10:23:02	4.45	8.85	-0.30	0.08	**Bias O2/CO2**
10/28/2015	10:24:02	1.78	3.55	-0.21	13.46	
10/28/2015	10:25:02	0.02	0.07	0.05	22.63	
10/28/2015	10:26:02	0.03	0.06	0.00	22.65	**Bias NOx**
10/28/2015	10:27:02	0.02	0.05	12.61	11.50	
10/28/2015	10:28:02	0.02	0.04	157.76	0.08	
10/28/2015	10:29:02	0.02	0.03	227.04	0.05	
10/28/2015	10:30:02	0.03	0.03	228.92	0.04	
10/28/2015	10:31:02	0.03	0.03	229.40	0.03	**Bias CO**
10/28/2015	10:32:02	109.15	0.06	220.62	0.04	
10/28/2015	10:33:02	323.82	0.13	86.36	0.04	
10/28/2015	10:34:02	323.82	0.13	6.36	0.03	
10/28/2015	10:35:02	323.82	0.13	1.06	0.04	
10/28/2015	10:36:02	323.82	0.13	1.04	0.04	
10/28/2015	10:37:02	249.46	1.17	2.76	0.30	
10/28/2015	10:38:02	0.38	11.36	83.60	1.52	
10/28/2015	10:39:02	0.02	11.75	151.92	1.43	
10/28/2015	10:40:02	0.02	11.77	143.66	1.47	**Reservoir II, Engine No. 4**
10/28/2015	10:41:02	0.02	11.78	131.63	1.52	**Maximum Load**
10/28/2015	10:42:02	0.02	11.79	119.73	1.63	**Test Start/In to Out/TP-1**
10/28/2015	10:43:02	0.02	11.80	114.35	1.70	
10/28/2015	10:44:02	0.02	11.81	108.45	1.80	
10/28/2015	10:45:02	0.02	11.81	103.39	1.85	
10/28/2015	10:46:02	0.02	11.81	105.90	1.87	
10/28/2015	10:47:02	0.02	11.82	102.19	2.03	**TP-2**
10/28/2015	10:48:02	0.02	11.82	104.06	1.96	
10/28/2015	10:49:02	0.02	11.83	103.58	1.94	

Reference Method CEMS DAS Data

Client	**Mesa Water**
Location	**Costa Mesa, CA**
Unit	**Reservoir II, Engine No. 4**
Date/Time	**10/28/2015 9:14**
Job Number	**9840**

Date	Time	O2%	CO2%	CO ppm	NOxppm	
10/28/2015	10:50:02	0.02	11.83	104.88	1.93	
10/28/2015	10:51:02	0.02	11.83	105.37	2.06	
10/28/2015	10:52:02	0.02	11.84	103.95	2.19	**TP-3**
10/28/2015	10:53:02	0.02	11.84	105.52	1.94	
10/28/2015	10:54:02	0.02	11.84	102.37	1.97	
10/28/2015	10:55:02	0.02	11.85	101.05	2.04	
10/28/2015	10:56:02	0.02	11.85	102.21	1.81	
10/28/2015	10:57:02	0.02	11.85	106.47	2.09	**End Maximum Load**
10/28/2015	10:58:02	0.02	11.85	104.90	1.80	
10/28/2015	10:59:02	0.01	11.85	103.44	1.86	
10/28/2015	11:00:02	205.30	5.48	111.17	0.77	
10/28/2015	11:01:02	323.82	0.22	55.28	0.02	
10/28/2015	11:02:02	323.82	0.19	4.11	0.01	
10/28/2015	11:03:02	323.82	0.18	1.00	0.00	
10/28/2015	11:04:02	323.82	0.16	1.00	0.00	
10/28/2015	11:05:02	323.82	0.15	1.00	0.00	
10/28/2015	11:06:02	323.82	0.14	1.00	0.00	
10/28/2015	11:07:02	323.82	0.14	1.00	0.01	
10/28/2015	11:08:02	323.82	0.14	1.00	0.00	
10/28/2015	11:09:02	323.82	0.13	1.00	0.00	
10/28/2015	11:10:02	323.82	0.13	1.00	0.01	
10/28/2015	11:11:02	323.82	0.13	1.00	0.02	
10/28/2015	11:12:02	323.82	0.12	1.00	0.02	
10/28/2015	11:13:02	323.82	0.12	1.00	0.04	
10/28/2015	11:14:02	323.82	0.12	1.00	0.05	
10/28/2015	11:15:02	87.60	8.79	131.47	1.55	
10/28/2015	11:16:02	0.09	11.73	280.57	1.76	
10/28/2015	11:17:02	0.06	11.77	151.93	1.57	
10/28/2015	11:18:02	0.05	11.78	130.73	1.47	
10/28/2015	11:19:02	0.05	11.80	133.31	1.41	
10/28/2015	11:20:02	0.05	11.80	146.12	1.28	**Normal Load**
10/28/2015	11:21:02	0.05	11.81	146.94	1.25	**Test Start/In to Out/TP-1**
10/28/2015	11:22:02	0.05	11.82	154.34	1.08	
10/28/2015	11:23:02	0.05	11.82	153.98	1.02	
10/28/2015	11:24:02	0.05	11.83	155.89	0.94	
10/28/2015	11:25:02	0.05	11.83	159.05	0.92	
10/28/2015	11:26:02	0.05	11.83	149.04	1.11	
10/28/2015	11:27:02	0.05	11.84	143.71	1.01	

Reference Method CEMS DAS Data

Client	**Mesa Water**
Location	**Costa Mesa, CA**
Unit	**Reservoir II, Engine No. 4**
Date/Time	**10/28/2015 9:14**
Job Number	**9840**

Date	Time	O2%	CO2%	CO ppm	NOxppm	
10/28/2015	11:28:02	0.05	11.84	152.03	0.95	
10/28/2015	11:29:02	0.05	11.84	158.18	0.91	
10/28/2015	11:30:02	0.05	11.84	169.47	0.78	
10/28/2015	11:31:02	0.05	11.84	166.00	0.79	**TP-2**
10/28/2015	11:32:02	0.05	11.84	151.48	0.73	
10/28/2015	11:33:02	0.05	11.84	154.63	0.71	
10/28/2015	11:34:02	0.05	11.85	148.31	0.83	
10/28/2015	11:35:02	0.05	11.84	144.71	0.78	
10/28/2015	11:36:02	0.05	11.85	155.14	0.72	
10/28/2015	11:37:02	0.05	11.85	147.93	0.72	
10/28/2015	11:38:02	0.05	11.84	145.27	0.75	
10/28/2015	11:39:02	0.06	11.85	153.48	0.71	
10/28/2015	11:40:02	0.06	11.85	146.89	0.72	
10/28/2015	11:41:02	0.06	11.85	148.89	0.69	**TP-3**
10/28/2015	11:42:02	0.06	11.85	148.05	0.75	
10/28/2015	11:43:02	0.06	11.85	164.44	0.60	
10/28/2015	11:44:02	0.06	11.85	177.02	0.59	
10/28/2015	11:45:02	0.06	11.85	154.12	0.72	
10/28/2015	11:46:02	0.06	11.85	141.77	0.70	
10/28/2015	11:47:02	0.06	11.85	148.19	0.69	
10/28/2015	11:48:02	0.06	11.86	140.72	0.72	
10/28/2015	11:49:02	0.06	11.86	147.08	0.66	
10/28/2015	11:50:02	0.06	11.86	152.65	0.69	
10/28/2015	11:51:02	0.06	11.85	149.47	0.67	**End Normal Load**
10/28/2015	11:52:02	0.06	11.86	146.46	0.74	
10/28/2015	11:53:02	11.86	11.35	149.04	0.60	
10/28/2015	11:54:02	323.82	0.42	102.44	0.03	
10/28/2015	11:55:02	323.82	0.20	13.61	0.00	
10/28/2015	11:56:02	323.82	0.19	0.82	0.00	
10/28/2015	11:57:02	323.82	0.17	0.75	0.00	
10/28/2015	11:58:02	323.82	0.16	0.80	0.00	
10/28/2015	11:59:02	323.82	0.15	0.58	0.00	
10/28/2015	12:00:02	323.82	0.15	0.92	0.00	
10/28/2015	12:01:02	323.82	0.14	0.68	0.00	
10/28/2015	12:02:02	323.82	0.14	0.50	0.00	
10/28/2015	12:03:02	323.82	0.14	0.50	0.00	
10/28/2015	12:04:02	323.82	0.13	0.50	0.00	
10/28/2015	12:05:02	323.82	0.13	0.50	0.00	

Reference Method CEMS DAS Data

Client	**Mesa Water**
Location	**Costa Mesa, CA**
Unit	**Reservoir II, Engine No. 4**
Date/Time	**10/28/2015 9:14**
Job Number	**9840**

Date	Time	O2%	CO2%	CO ppm	NOxppm	
10/28/2015	12:06:02	323.82	0.12	0.50	0.00	
10/28/2015	12:07:02	323.82	0.12	0.50	0.00	
10/28/2015	12:08:02	323.82	0.12	0.50	0.00	
10/28/2015	12:09:02	152.35	6.20	9.16	3.93	
10/28/2015	12:10:02	0.30	11.62	76.83	16.70	
10/28/2015	12:11:02	0.27	11.65	96.86	25.76	
10/28/2015	12:12:02	0.29	11.65	91.35	38.46	
10/28/2015	12:13:02	0.28	11.67	89.15	200.62	
10/28/2015	12:14:02	0.29	11.67	96.19	323.82	
10/28/2015	12:15:02	0.29	11.66	72.95	323.82	**Start Minimum Load**
10/28/2015	12:16:02	0.29	11.67	27.77	323.82	**In to Out**
10/28/2015	12:17:02	0.29	11.67	22.17	323.82	**NOx above the range**
10/28/2015	12:18:02	0.31	11.67	17.41	323.82	**>50 ppmv**
10/28/2015	12:19:02	0.31	11.67	16.61	323.82	
10/28/2015	12:20:02	0.32	11.66	22.59	323.82	
10/28/2015	12:21:02	0.32	11.67	9.52	323.82	
10/28/2015	12:22:02	0.32	11.67	20.11	323.82	
10/28/2015	12:23:02	0.32	11.67	29.81	323.82	
10/28/2015	12:24:02	0.32	11.67	28.67	323.82	
10/28/2015	12:25:02	0.32	11.68	26.30	323.82	
10/28/2015	12:26:02	0.31	11.69	36.87	323.82	
10/28/2015	12:27:02	0.31	11.69	50.43	323.82	
10/28/2015	12:28:02	0.30	11.70	48.50	323.82	
10/28/2015	12:29:02	0.30	11.70	49.83	323.82	
10/28/2015	12:30:02	0.29	11.71	54.18	323.82	**End Minimum Load**
10/28/2015	12:31:02	0.29	11.71	63.35	323.82	
10/28/2015	12:32:02	0.25	7.98	68.55	279.39	
10/28/2015	12:33:02	0.06	0.13	36.22	23.68	
10/28/2015	12:34:02	0.06	0.09	4.54	23.10	**System Calibration**
10/28/2015	12:35:02	0.06	0.08	0.07	22.97	
10/28/2015	12:36:02	0.06	0.07	0.00	22.90	**Bias NOx**
10/28/2015	12:37:02	2.44	4.75	0.00	10.70	**Zero O2/CO2/CO**
10/28/2015	12:38:02	4.49	8.83	-0.26	0.29	
10/28/2015	12:39:02	4.49	8.85	-0.30	0.23	
10/28/2015	12:40:02	4.49	8.86	-0.30	0.19	**Bias O2/CO2**
10/28/2015	12:41:02	2.06	4.00	16.16	0.14	**Zero NOx**
10/28/2015	12:42:02	0.06	0.09	153.93	0.07	
10/28/2015	12:43:02	0.05	0.07	222.19	0.07	

Reference Method CEMS DAS Data

Client	**Mesa Water**
Location	**Costa Mesa, CA**
Unit	**Reservoir II, Engine No. 4**
Date/Time	**10/28/2015 9:14**
Job Number	**9840**

Date	Time	O2%	CO2%	CO ppm	NOxppm	
10/28/2015	12:44:02	0.05	0.05	226.68	0.05	
10/28/2015	12:45:02	0.05	0.05	227.33	0.05	**Bias CO**
10/28/2015	12:46:02	113.75	0.07	220.34	0.09	
10/28/2015	12:47:02	323.82	0.17	96.62	0.12	
10/28/2015	12:48:02	323.82	0.17	7.87	0.12	**Facility made**
10/28/2015	12:49:02	323.82	0.17	0.68	0.11	**AFRC set point**
10/28/2015	12:50:02	323.82	0.16	0.50	0.11	**adjustment**
10/28/2015	12:51:02	323.82	0.16	0.50	0.10	
10/28/2015	12:52:02	323.82	0.16	0.50	0.11	**Probe out of stack**
10/28/2015	12:53:02	323.82	0.16	0.50	0.10	**to prevent**
10/28/2015	12:54:02	323.82	0.16	0.50	0.10	**contamination**
10/28/2015	12:55:02	323.82	0.16	0.50	0.11	
10/28/2015	12:56:02	323.82	0.16	0.50	0.10	
10/28/2015	12:57:02	323.82	0.15	0.50	0.11	
10/28/2015	12:58:02	323.82	0.15	0.50	0.09	
10/28/2015	12:59:02	323.82	0.15	0.50	0.10	
10/28/2015	13:00:02	323.82	0.15	0.50	0.09	
10/28/2015	13:01:02	323.82	0.15	0.50	0.09	
10/28/2015	13:02:02	323.82	0.14	0.50	0.08	
10/28/2015	13:03:02	323.82	0.14	0.50	0.07	
10/28/2015	13:04:02	323.82	0.14	0.50	0.08	
10/28/2015	13:05:02	323.82	0.14	0.50	0.06	
10/28/2015	13:06:02	323.82	0.14	0.50	0.05	
10/28/2015	13:07:02	323.82	0.14	0.50	0.05	
10/28/2015	13:08:02	323.82	0.14	0.50	0.05	
10/28/2015	13:09:02	323.82	0.13	0.50	0.04	
10/28/2015	13:10:02	323.82	0.13	0.50	0.03	
10/28/2015	13:11:02	323.82	0.13	0.50	0.02	
10/28/2015	13:12:02	323.82	0.13	0.50	0.03	
10/28/2015	13:13:02	323.82	0.13	0.50	0.02	
10/28/2015	13:14:02	323.82	0.14	0.50	0.02	
10/28/2015	13:15:02	323.82	0.14	0.50	0.02	
10/28/2015	13:16:02	323.82	0.14	0.50	0.01	
10/28/2015	13:17:02	323.82	0.14	0.50	0.01	
10/28/2015	13:18:02	323.82	0.14	0.50	0.03	
10/28/2015	13:19:02	323.82	0.14	0.50	0.02	
10/28/2015	13:20:02	323.82	0.15	0.50	0.02	
10/28/2015	13:21:02	323.82	0.15	0.50	0.03	

Reference Method CEMS DAS Data

Client	**Mesa Water**
Location	**Costa Mesa, CA**
Unit	**Reservoir II, Engine No. 4**
Date/Time	**10/28/2015 9:14**
Job Number	**9840**

Date	Time	O2%	CO2%	CO ppm	NOxppm	
10/28/2015	13:22:02	323.82	0.15	0.50	0.03	
10/28/2015	13:23:02	323.82	0.15	0.50	0.04	
10/28/2015	13:24:02	323.82	0.15	0.50	0.04	
10/28/2015	13:25:02	323.82	0.15	0.50	0.04	
10/28/2015	13:26:02	323.82	0.15	0.50	0.04	
10/28/2015	13:27:02	323.82	0.15	0.50	0.05	
10/28/2015	13:28:02	323.82	0.15	0.50	0.05	
10/28/2015	13:29:02	323.82	0.15	0.50	0.05	
10/28/2015	13:30:02	323.82	0.16	0.50	0.05	
10/28/2015	13:31:02	323.82	0.16	0.50	0.05	
10/28/2015	13:32:02	323.82	0.16	0.50	0.05	
10/28/2015	13:33:02	323.82	0.16	0.50	0.05	
10/28/2015	13:34:02	50.52	5.91	34.63	10.52	
10/28/2015	13:35:02	0.15	11.58	139.67	14.48	**Probe in**
10/28/2015	13:36:02	0.14	11.69	154.03	15.20	**to check emissions**
10/28/2015	13:37:02	0.14	11.71	154.59	14.99	
10/28/2015	13:38:02	0.13	11.72	165.52	13.81	
10/28/2015	13:39:02	0.13	11.73	162.20	14.30	**Restart Minimum Load**
10/28/2015	13:40:02	0.13	11.74	158.18	13.69	**Test Start/In to Out/TP-1**
10/28/2015	13:41:02	0.13	11.75	166.14	13.29	
10/28/2015	13:42:02	0.13	11.75	163.23	13.34	
10/28/2015	13:43:02	0.13	11.75	154.31	15.23	
10/28/2015	13:44:02	0.14	11.75	140.62	26.91	
10/28/2015	13:45:02	0.14	11.75	143.32	39.62	**TP-2**
10/28/2015	13:46:02	0.14	11.76	146.11	38.46	
10/28/2015	13:47:02	0.13	11.76	145.10	35.55	
10/28/2015	13:48:02	0.13	11.77	145.78	35.94	
10/28/2015	13:49:02	0.13	11.77	140.47	34.86	
10/28/2015	13:50:02	0.13	11.77	145.37	31.53	**TP-3**
10/28/2015	13:51:02	0.13	11.77	152.49	29.91	
10/28/2015	13:52:02	0.13	11.77	146.28	29.69	
10/28/2015	13:53:02	0.13	11.77	149.01	28.67	
10/28/2015	13:54:02	0.13	11.77	146.65	29.21	
10/28/2015	13:55:02	0.14	11.77	145.71	29.33	**End Minimum Load**
10/28/2015	13:56:02	0.13	11.78	140.79	30.92	
10/28/2015	13:57:02	0.13	6.95	136.19	26.41	
10/28/2015	13:58:02	0.07	0.13	57.82	22.64	
10/28/2015	13:59:02	0.06	0.09	5.73	22.66	

Reference Method CEMS DAS Data

Client	**Mesa Water**
Location	**Costa Mesa, CA**
Unit	**Reservoir II, Engine No. 4**
Date/Time	**10/28/2015 9:14**
Job Number	**9840**

Date	Time	O2%	CO2%	CO ppm	NOxppm	
10/28/2015	14:00:02	0.06	0.08	0.03	22.67	**System Calibration**
10/28/2015	14:01:02	0.06	0.07	0.00	22.65	**Bias NOx**
10/28/2015	14:02:02	2.35	4.55	0.00	11.04	**Zero O2/CO2/CO**
10/28/2015	14:03:02	4.47	8.80	-0.17	0.03	
10/28/2015	14:04:02	4.48	8.82	-0.30	0.02	
10/28/2015	14:05:02	4.48	8.83	-0.30	0.01	**Bias O2/CO2**
10/28/2015	14:06:02	3.00	5.91	4.06	0.01	**Zero NOx**
10/28/2015	14:07:02	0.07	0.11	121.76	0.00	
10/28/2015	14:08:02	0.05	0.07	217.75	0.00	
10/28/2015	14:09:02	0.05	0.06	228.36	0.00	
10/28/2015	14:10:02	0.05	0.05	228.70	0.00	**Bias CO**
10/28/2015	14:11:02	0.03	0.06	226.00	0.00	
10/28/2015	14:12:02	115.35	0.08	183.62	0.05	
10/28/2015	14:13:02	323.82	0.12	70.78	0.01	
10/28/2015	14:14:02	114.44	0.07	6.06	0.03	**Post Internal Calibration**
10/28/2015	14:15:02	0.06	0.03	0.40	0.00	
10/28/2015	14:16:02	0.05	0.02	0.10	0.00	**Zero**
10/28/2015	14:17:02	3.78	7.08	23.56	21.92	
10/28/2015	14:18:02	8.70	17.73	317.71	46.01	
10/28/2015	14:19:02	8.72	17.92	449.99	45.93	
10/28/2015	14:20:02	8.72	17.94	452.25	45.91	
10/28/2015	14:21:02	8.72	17.96	452.42	45.90	**High**
10/28/2015	14:22:02	6.53	13.11	431.79	33.36	
10/28/2015	14:23:02	4.47	8.83	287.18	23.01	
10/28/2015	14:24:02	4.47	8.88	229.65	23.01	
10/28/2015	14:25:02	4.47	8.88	228.62	23.01	
10/28/2015	14:26:02	4.47	8.88	227.95	23.01	**Mid**
10/28/2015	14:27:02	4.43	8.86	219.18	11.93	
10/28/2015	14:28:02	4.41	8.83	85.43	2.46	**Low NOx**
10/28/2015	14:29:03	4.42	8.81	5.53	2.53	**2.464ppm injection**
10/28/2015	14:30:02	4.44	8.79	0.82	2.53	**Low NOx**
10/28/2015	14:31:02	1.98	3.95	1.98	1.17	
10/28/2015	14:32:02	0.03	0.08	2.77	0.04	

APPENDIX D

VOC, as TGNMO

Appendix D1

VOC, as TGNMO – Results and Calculations

Almega ENVIRONMENTAL

SOURCE TEST RESULTS

Facility: Mesa Water
City: Costa Mesa CA
Source: Reservoir II - Engine #4
Test Date: 10/28/15

Parameter	Units	Reservoir II - Engine #4		
		1A	1B	AVG
Sampling Method		25.3	25.3	**25.3**
Standard Temperature	deg. F	60	60	**60**
Stack Gas Parameters				
Barometric Pressure	in. Hg	29.83	29.83	**29.83**
O_2 Content	%,dry	0.70	0.40	**0.55**
CO_2 content	%,dry	11.7	11.8	**11.8**
TGNMO, as Methane *				
CONCENTRATION measured as Methane	ppmv	25.5	65.7	** **65.7**
Concentration @15%O2	ppmv corr.	7.45	18.9	** **18.9**

* corrected based on carbon number: Methane = 1

**Relative precision between runs is greater than 20%. Maximum result is reported.

Almega ENVIRONMENTAL

Test Data Reduction and Calculations for Method 25.3

Facility:	Mesa Water	Operator:	DY
City:	Costa Mesa CA	Entered by:	TG
Source:	Reservoir II - Engine #4	Checked by:	SA
Location:	Exhaust Stack		

DATA ENTRY		Symbol	Units	Test No. 1A	Test No. 1B
Run Data:	Test Date	**	m/d/y	10/28/15	10/28/15
	Start Time	**	hh:mm	11:21	11:21
	End Time	**	hh:mm	11:51	11:51
Standard Temperature		**	deg. F	60	60
Standard Pressure		**	in. Hg	29.92	29.92
Molar Volume of Air at Standard Conditions		Vmol	dscM	23.68	23.68
Calculation Factor K1 for Standard Corrections		X1	deg./in. Hg	17.38	17.38
Barometric Pressure		Ps	in. Hg	29.83	29.83
Mol. Wt.:	TGNMO, as Methane *	MWi	g/g-mole	16	16
	METHANE	MW1	g/g-mole	16	16

LABORATORY DATA		Symbol	Units	1A	1B
Canister (tank):	VACUUM, Initial	P1	mm Hg	-761	-761
	VACUUM, Final	P2	mm Hg	-409	-463
	VOLUME of Gas Sample	Vtank	Liters	2.720	2.303
Concentration:	OXYGEN	O_2	%,dry	0.70	0.40
	CARBON DIOXIDE	CO_2	%,dry	11.7	11.8
	TGNMO, as Methane	Ci,t	ppmv	12.30	24.50
	METHANE	C1,t	ppmv	128	128
	ETHANE	C2,t	ppmv	< 2.00	< 2.00
Condensate:	VOLUME of Condensate Sample	Vimp	mL	2.00	2.00
	TGNMO, as Methane	Ci,c	ppmv	11.19	36.04

TEST RESULTS		Symbol	Units	1A	1B
TGNMO, as Methane *					
CONCENTRATION, measured as Methane		Ci	ppmv	23.49	60.54
	corrected for bias factor of 1.086	Ci'	ppmv	25.51	65.75
	TGNMO, as Methane *	**Ci,x**	**ppmv**	**25.51**	**65.75**
	corrected to 15% O2	Ci,corr	ppmv	7.45	18.92
	= [Ci,x]x(20.9-[O2,ref])/(20.9-[%O2])				

NOTE: * corrected based on carbon number: Methane = 1

CO/CO2/O2 Comparision for M100.1/M10.1

	Avg Test Results-Engine #4		
Comparitive Analysis	O2%	CO ppmv	CO2%
Method 25.3/10.1	0.55	144.8	11.75
Method 100.1	0.01	150.5	12.06
RPD, %	na	3.88	2.58

Note: O2 is <20% (2% of 10% span range) for Method 100.1.

Appendix D2

VOC, as TGNMO – Field Data

Almega
ENVIRONMENTAL

VOC FIELD DATA SHEET - SCAQMD METHOD 25.3

Date: 10/28/15 Test No.: Run 1 Normal (mid) Load
Client: Mesa Water Barometric Pressure (in. Hg): 29.83
Unit: Reservoir #2 Eng 4 Pretest Leak Check:
Operator Name: DY A: ✓ B: ✓
Fuel: Natural Gas Post-test Leak check:
Location: Outlet A: ✓ B: ✓

		SAMPLE A		SAMPLE B	
		Tank #5084 Trap # 16 Control ID: 14		W0010 Tank #~~A-120~~ Trap # 17 Control ID: 37 23	
Time 24 Hours	Start Time	Flow ml/min.	Vacuum inch Hg	Flow ml/min. XY	Vacuum inch Hg
0	11:21	N/A	28.0	N/A	29.0
10		|	24.0	|	25.5
20		|	19.5	|	21.0
30		|	15.0	|	17.0
40					
50	End Time				
60	11:51				

Appendix D3

VOC, as TGNMO – Laboratory Data

SCAQMD M25.3

Almega
ENVIRONMENTAL

LABORATORY REPORT

Non-Methane Non-Ethane Organic compound Emissions by SCAQMD Method 25.3 (TCA/FID)

Client: Mesa
Project No.: c9840
Unit Tested: Resevoir #2 - Engine #4
Sampling Date: 28-Oct-15
Analyzed Date: 2-Nov-15
Lab No: A 152

Client Sample ID	Lab ID	Almega Sample ID		Total* NMNEO ppm	NMNEO ppm condensable	NMNEO ppm noncondensable	CH_4 ppm	C_2H_6 ppm	CO_2 % v/v by TCD	O_2 % v/v by TCD
		Tank	Trap							
Run1 - Eng4 - A	A 152 - 011 A	S084	16	**23.5**	11 2	12.3	128	ND	11 7	0 7
Run 1 - Eng 4 - B	A 152 - 011 B	W0010	17	**60.5**	36.0	24 5	128	ND	11 8	0 4
Detection Limit					1	2	2	2	0 3	0.3

* NOTE - the BIAS FACTOR (of 1 086) is NOT applied in these results
ND=Not Detected

Water Blank, ppmC 0.00

TGNMNEO concentration values are reported in ppm (v/v) as Methane (carbon#=1)

The sample cylinder is analyzed for NMNEO, CO, CH_4, CO_2 and C_2H_6. It is then directed to a separation column where all heavy organics (C_3+) separate from the light organics (CO, CO_2, CH_4 and C_2H_6). The light organics are then passed through a reduction catalyst to convert CO and CO_2 to CH_4, and are then directed to a FID for detection and quantification. The heavy organics are backflushed off the holding column, passed through an oxidation catalyst, which convert all organics to CO_2, then through a reduction catalyst to convert CO_2 to CH_4 and then to a FID for detection and quantification

Reviewed by: DW

Almega Environmental & Technical Services
10602 Walker Street, Cypress, CA 90630
Phone 714-889-4000 Fax 714-889-7030
www.almegaeny.com

CALCULATIONS

Almega ENVIRONMENTAL

Client: Mesa — Lab No.: A 152
Project No.: c9840
Unit Tested: Resevoir #2 - Engine #4
Sampling Date: 28-Oct-15
Date tested: 2-Nov-15

Parameter	Symbol	Units	Run #1 A	Run #1 B
Sample ID			Run1 - Eng4 - A	Run 1 - Eng 4 - B
Lab ID			A 152 - 011 A	A 152 - 011 B
Sample Tank				
Tank No			S084	W0010
Sample Tank Volume	V_T	L	6.000	6.000
Barometric Pressure	P_b	mm Hg	763	763
Pre-test Pressure	P_{TI}	mm Hg (abs)	2	2
Pre-test Temperature	t_{TI}	°C	22	22
Abs. Pre-test Temperature	T_{TI}	°K	295	295
Post-test Pressure	P_{TS}	mm Hg (abs)	354	300
Post-test Temperature	t_{TS}	°C	22	22
Abs. Post-test Temperature	T_{TS}	°K	295	295
Final Pressure	P_{TF}	mm Hg (abs)	932	936
Abs.Final Temperature	T_{TF}	°K	293	293
Dilution Factor	DF_t		2.67	3.16
Concentration Methane	C_{CH4}	ppm	48.14	40.63
Concentration Carbon Monoxide	C_{CO}	ppm	54.64	45.47
NMNEO (noncond)	C_{SA}	ppm	**4.62**	**7.74**
Sample Volume	Vs	L	2.720	2.303
Methane in Tank(C_{CH4}*DF_T)	C_{CH4T}	ppm	**128.3**	**128.5**
Carbon Monoxide in Tank(C_{CO}*DF_T)	C_{COT}	ppm	**145.7**	**143.8**
NMNEO (noncond)	C_{SAT}	ppm	**12.33**	**24.47**
Condensate Recovery - Trap				
Sample ID			Run1 - Eng4 - A	Run 1 - Eng 4 - B
Trap No			16	17
Lab No.:			A 152 - 012 A	A 152 - 012 B
Sample Impinger Volume	V_{IMP}	ml	2.0	2.0
Sample Volume	V_S	L	2.720	2.303
TC Concentration	C_{TC}	mg/L	69.133	68.533
IC Concentration	C_{IC}	mg/L	61.420	47.500
TOC Concentration	C_{TOC}	mg/L	7.713	21.033
NMNEO, Condensable	C_T	ppm	**11.19**	**36.04**
TNMNEOC (Csa+C_T)	C	ppmC	**23.51**	**60.51**

Calculations

$V_S=k_1*V_T*(P_{TS}/T_{TS} - P_{TI}/T_{TI})$
k_1 = (273+15.56)/760=0.3799
C_{SAT}= DF * C_{SA}
C_{CH4T} = DF * C_{CH4}

$DF=(P_{TF}/T_{TF})/(P_{TS}/T_{TS} - P_{TF}/T_{TI})$
C_T =(C_{TOC} * V_{IMP} * V_{ID})/(V_S*A_C)
V_{ID} =23.6902 L/mole

QA/QC SUMMARY
(Repeat Analysis)

Almega ENVIRONMENTAL

Client Project No.: c9840 Lab No.: A 152
Sampling Date: 28-Oct-15 Analyzed Date: 2-Nov-15
Run #1 A

Analyte	Sample ID	Area Count #1	Area Count #2	Area % diff (±20%)	Conc # 1	Conc # 2	Mean Conc ppm	% diff from Mean
Tank Analysis								
CO	A 152 - 011 A	205884	205105	0.38	54.7	54.5	**54.6**	0.38
CH4	A 152 - 011 A	187353	185463	1.01	48.4	47.9	**48.1**	1.01
CO2*	A 152 - 011 A	256784	256360	0.17	4.4	4.4	**4.4**	0.17
O2*	A 152 - 011 A	52660	52293	0.70	0.3	0.3	**0.3**	0.70
C2H6	A 152 - 011 A	ND	ND	ND	ND	ND	**ND**	ND
NMNEO	A 152 - 011 A	14861	15609	-5.03	4.51	4.74	**4.62**	-4.91

Analyte	Sample ID	Conc # 1	Conc # 2	Conc # 3	Mean Conc ppm	COV 10%	
Trap Analysis							
TC	A 152 - 012 A	32.67	35.22	35.81	**69.13**	4.78	DF=2
IC	A 152 - 012 A	30.96	31.15	30.02	**61.42**	1.95	

Run #1 B

Analyte	Sample ID	Area Count #1	Area Count #2	Area % diff (±20%)	Conc # 1	Conc # 2	Mean Conc ppm	% diff from Mean
Tank Analysis								
CO	A 152 - 011 B	170929	171064	-0.08	45.4	45.5	**45.5**	-0.08
CH4	A 152 - 011 B	157938	156744	0.76	40.8	40.5	**40.6**	0.76
CO2*	A 152 - 011 B	219437	216715	1.24	3.8	3.7	**3.7**	1.25
O2*	A 152 - 011 B	24426	24685	-1.06	0.1	0.1	**0.1**	-1.05
C2H6	A 152 - 011 B	ND	ND	ND	ND	ND	**ND**	ND
NMNEO	A 152 - 011 B	24831	26163	-5.36	7.54	7.94	**7.74**	-5.22

Analyte	Sample ID	Conc # 1	Conc # 2	Conc # 3	Mean Conc ppm	COV 10%	
Trap Analysis							
TC	A 152 - 012 B	33.62	34.48	34.70	**68.53**	1.63	DF=2
IC	A 152 - 012 B	23.75	23.75	23.75	**47.50**	0.01	

Water blank
TC -0.030
IC -0.020
TOC **0.00**
* - by GC/TCD

$Conc_{CO}$ in tank = $MeanConc_{CO}$ * DF
$Conc_{CO2}$ in tank = $MeanConc_{CO2}$ * DF
$Conc_{O2}$ in tank = $MeanConc_{O2}$ * DF
$Conc_{C2H6}$ in tank = $MeanConc_{C2H6}$ * DF

SAMPLE INVENTORY REPORT

Method 25.3 Sampling Train

Project No.:	c9840	Lab No.:	A 152
Client:	Mesa	Sampling Date:	28-Oct-15

Laboratory ID	Client ID	Component ID	
Run #1 A			
A 152 - 011 A	Run1 - Eng4 - A	Tank #	S084
A 152 - 012 A	Run1 - Eng4 - A	Impinger	16
Run #1 B			
A 152 - 011 B	Run 1 - Eng 4 - B	Tank #	W0010
A 152 - 012 B	Run 1 - Eng 4 - B	Impinger	17

Lab # A152

Almega ENVIRONMENTAL

CHAIN OF CUSTODY RECORDS

INVOICE TO: _____

ATTN: _____

REPORT TO:

PO # _____

ALMEGA Environmental & Technical Services
10602 Walker St.
Cypress, CA 90630
(714) 889-4000 Fax (714) 889-7030
lab@almegaenv.com
Contact:

Turnaround Time
Standard: Other:
Rush:
Depends on # of Samples
5 - 10 days _____
3 - 7 days _____

Job # 9840 | Unit # Res. 2 Eng. 4 | Client: Mesa Water | Location: Costa Mesa, CA

Samplers: (Signature) [signature]

Project Manager: Tim Ta

Unit Information: Reservoir #2 Engine #4 Normal (mid) Load

ANALYSIS REQUESTED: M25.3

Return or Dispose

Sample Date	Sample Time	Sample Identification	Lab Sample #	Type Of Sample: LIQUID	GAS	SOLID	No of Container	M25.3					REMARKS
10/28/15	11:21	Run1-Eng4-A	A152-011A/012A	1	1		2	✓					T-5034 / V-16
11	11	Run1-Eng4-B	-011B/012B	1	1		2	✓					T-W0010 / V-17

Relinquished by:	Received by:	Relinquished by:	Received by:
[signature]	[signature]		
Date: 10/28/15 Time 15:30	Date: 10/28/15 Time: 15:32	Date: Time:	Date: Time
Relinquished by:	Received by:	Relinquished by:	Received by:
Date: Time	Date: Time:	Date: Time:	Date: Time

Almega
ENVIRONMENTAL

Standard Receipt
Sample LOG in Checklist

Project No: 9840 Method: m25.3

Lab ID: A152

Sampling Date: 10/28 Location: Mesa Int:

Date & Time Rc'd: 10/28/14 15:32 Location: LAB Int: DW

Arrived By: (circle) FedEx UPS Drop Off (Int) DW Other

Condition of Package(s): (comment): OK Package Type: Box (Cooler) Other:

Number of Sample Container(s): 2 Correct Containers (per Method): (Y) N

Preservation: (circle) (ICE) DryICE ICEPacks None

Sample Conditions:

Sample Temp (C): 5.9 Ambient Temp (C): 22

Sample Temp (C): Filter Condition:

PH : Components Sealed: (Y) N

Sample Recovery Completed On: (date & time)

Recovered In: (circle) (Field) Lab Other Silica Gel Condition:

Tedlar Bags - Condensation: Y N

Comments: - water in vial bag

Container(s) Requested: Glass Plastic

Additional Comments:

APPENDIX E

QUALITY ASSURANCE AND QUALITY CONTROL (QA/QC)

Appendix E1

CEMS Calibration Gas Certificates

PRAXAIR

Almega ENVIRONMENTAL

Praxair
5700 South Alameda Street
Los Angeles, CA 90058
Tel: (323) 585-2154 Fax:(714) 542-6689
PGVPID: F22015

DocNumber: 000082724

CERTIFICATE OF ANALYSIS / EPA PROTOCOL GAS

Customer & Order Information:

PRAXAIR WHSE SIGNAL HILL
2677 SIGNAL PARKWAY
SIGNAL HILL CA 907550

Praxair Order Number: 32010813
Customer P. O. Number: 05655758
Customer Reference Number:

Fill Date 7/30/2015
Part Number: NI CD9018E-AS
Lot Number 109521107
Cylinder Style & Outlet: AS CGA 580
Cylinder Pressure & Volume: 2000 psig 140 cu ft

Certified Concentration:

Expiration Date:	8/5/2023	NIST Traceable Analytical Uncertainty:
Cylinder Number:	CC35750	
9.00 %	CARBON DIOXIDE	± 0.4 %
4.46 %	OXYGEN	± 0.4 %
Balance	NITROGEN	

Certification Information: *Certification Date:* 8/5/2015 *Term:* 96 Months *Expiration Date:* 8/5/2023

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.

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: 9.00 %
Instrument Used: Horiba VIA-510 S/N 2807014
Analytical Method: NDIR
Last Multipoint Calibration: 7/13/2015

First Analysis Data: Date: 8/5/2015

Z: 0	R: 9.87	C: 9	Conc:	9	
R: 9.87	Z: 0	C: 8.99	Conc:	8.99	
Z: 0	C: 9	R: 9.87	Conc:	9	
UOM: %		Mean Test Assay:		8.997 %	

Reference Standard Type: GMIS
Ref. Std. Cylinder #: SA17695
Ref. Std. Conc: 9.87%
Ref. Std. Traceable to SRM #: 1674b
SRM Sample #: 7-H-07
SRM Cylinder #: FF10831

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: 4.5 %
Certified Concentration: 4.46 %
Instrument Used: OXYMAT 5E
Analytical Method: PARAMAGNETIC
Last Multipoint Calibration: 7/24/2015

First Analysis Data: Date: 8/5/2015

Z: 0	R: 5	C: 4.46	Conc:	4.46	
R: 5	Z: 0	C: 4.46	Conc:	4.46	
Z: 0	C: 4.46	R: 5	Conc:	4.46	
UOM: %		Mean Test Assay:		4.46 %	

Reference Standard Type: GMIS
Ref. Std. Cylinder #: CC240877
Ref. Std. Conc: 5.00%
Ref. Std. Traceable to SRM #: 2658a
SRM Sample #: 72-D-26
SRM Cylinder #: CALD16882

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: Ying Yu

Certified by: Jack Fu(rm)
Jack Fu

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.

Airgas

Almega ENVIRONMENTAL

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Airgas Specialty Gases
11711 S. Alameda Street
Los Angeles , CA 90059
323-568-2208 Fax 323-567-3668
Airgas.com

Part Number:	E03NI73E15A3831	Reference Number:	48-124484518-1
Cylinder Number:	CC326754	Cylinder Volume:	156.4 CF
Laboratory:	ASG - Los Angeles - CA	Cylinder Pressure:	2015 PSIG
PGVP Number:	B32015	Valve Outlet:	590
Gas Code:	CO2,O2,BALN	Certification Date:	Mar 27, 2015

Expiration Date: Mar 27, 2023

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	8.750 %	8.717 %	G1	+/- 0.4% NIST Traceable	03/27/2015
CARBON DIOXIDE	18.00 %	17.99 %	G1	+/- 0.6% NIST Traceable	03/27/2015
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	09060206	CC262089	9.961 % OXYGEN/NITROGEN	+/- 0.3%	Nov 08, 2018
NTRM	13060814	CC416638	24.04 % CARBON DIOXIDE/NITROGEN	+/- 0.6%	May 16, 2019

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
SIEMENS 6E CO2	NDIR	Mar 27, 2015
SIEMENS OXYMAT 6	PARAMAGNETIC	Mar 17, 2015

Triad Data Available Upon Request

Approved for Release

Airgas

Almega ENVIRONMENTAL

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Airgas Specialty Gases
11711 South Alameda Street
Los Angeles, CA 90059
(323) 568-2203 Fax: (323) 567-3686
www.airgas.com

Part Number:	E02NI99E15AC008	Reference Number:	48-124341774-1
Cylinder Number:	CC415555	Cylinder Volume:	144 Cu.Ft.
Laboratory:	ASG - Los Angeles - CA	Cylinder Pressure:	2015 PSIG
PGVP Number:	B32012	Valve Outlet:	660
Gas Code:	NO	Analysis Date:	Nov 14, 2012

Expiration Date: Nov 14, 2015

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
NOX	2.500 PPM	2.464 PPM	G1	+/- 1% NIST Traceable
NITRIC OXIDE	2.500 PPM	2.341 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	120611	CC281035	9.76PPM NITRIC OXIDE/NITROGEN	Jan 30, 2015
NTRM	120611NOx	CC281035-NOx	9.79PPM NOX/NITROGEN	Jan 30, 2015

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Thermo 42-iLS 1115848421 NO	Chemiluminescence	Nov 12, 2012
Thermo 42-iLS 1115848421 NOx	Chemiluminescence	Nov 12, 2012

Triad Data Available Upon Request

Notes:

Approved for Release

Airgas

Almega ENVIRONMENTAL

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Airgas Specialty Gases
11711 S. Alameda Street
Los Angeles , CA 90059
323-568-2208 Fax 323-567-3686
Airgas.com

Part Number:	E02NI99E15AC3G9	Reference Number:	48-124498379-1
Cylinder Number:	CC327937	Cylinder Volume:	144.3 CF
Laboratory:	ASG - Los Angeles - CA	Cylinder Pressure:	2015 PSIG
PGVP Number:	B32015	Valve Outlet:	660
Gas Code:	NO,NOX,BALN	Certification Date:	Jun 22, 2015

Expiration Date: Jun 22, 2018

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
NOX	12.00 PPM	12.50 PPM	G1	+/- 1.0% NIST Traceable	06/15/2015, 06/22/2015
NITRIC OXIDE	12.00 PPM	12.39 PPM	G1	+/- 1.0% NIST Traceable	06/15/2015, 06/22/2015
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061606	CC280967	20.23 PPM NITRIC OXIDE/NITROGEN	+/- 0.9%	Apr 27, 2018
NTRM	12061606	CC280967-NOx	20.28 PPM NOx/NITROGEN	+/- 0.9%	Apr 27, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Thermo 42-iLS 1115848421 NO	Chemiluminescence	Jun 12, 2015
Thermo 42-iLS 1115848421 NOx	Chemiluminescence	Jun 12, 2015

Triad Data Available Upon Request

Approved for Release

Airgas

Almega ENVIRONMENTAL

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Airgas Specialty Gases
11711 S. Alameda Street
Los Angeles , CA 90059
323-568-2208 Fax. 323-567-3686
Airgas.com

Part Number:	E02NI99E15AC1S8	Reference Number:	48-124479453-1
Cylinder Number:	SG9176626	Cylinder Volume:	144.3 CF
Laboratory:	ASG - Los Angeles - CA	Cylinder Pressure:	2015 PSIG
PGVP Number:	B32015	Valve Outlet:	660
Gas Code:	NO,NOX,BALN	Certification Date:	Mar 02, 2015

Expiration Date: Mar 02, 2018

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
NOX	23.00 PPM	22.57 PPM	G1	+/- 1.0% NIST Traceable	02/23/2015, 03/02/2015
NITRIC OXIDE	23.00 PPM	22.56 PPM	G1	+/- 1.0% NIST Traceable	02/23/2015, 03/02/2015
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12061606	CC280967	20.23 PPM NITRIC OXIDE/NITROGEN	+/- 0.9%	Apr 11, 2015
NTRM	12061606	CC280967-NOx	20.28 PPM NOx/NITROGEN	+/- 0.9%	Apr 11, 2015

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Thermo 42-iLS 1115848421 NO	Chemiluminescence	Feb 10, 2015
Thermo 42-iLS 1115848421 NOx	Chemiluminescence	Feb 10, 2015

Triad Data Available Upon Request

Approved for Release

Airgas

Almega ENVIRONMENTAL

CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Airgas Specialty Gases
11711 S. Alameda Street
Los Angeles , CA 90059
323-566-2208 Fax 323-567-3666
www.airgas.com

Part Number:	E02NI99E15AC0D7	Reference Number:	48-124475446-1
Cylinder Number:	SG9163220BAL	Cylinder Volume:	144.3 CF
Laboratory:	ASG - Los Angeles - CA	Cylinder Pressure:	2015 PSIG
PGVP Number:	B32015	Valve Outlet:	660
Gas Code:	NO,NOX,BALN	Certification Date:	Feb 13, 2015

Expiration Date: Feb 13, 2018

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
NOX	45.00 PPM	45.77 PPM	G1	+/- 1.0% NIST Traceable	02/06/2015, 02/13/2015
NITRIC OXIDE	45.00 PPM	45.53 PPM	G1	+/- 1.0% NIST Traceable	02/06/2015, 02/13/2015
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	13061213	CC403886	49.40 PPM NITRIC OXIDE/NITROGEN	+/- 0.8%	Nov 19, 2019
PRM	12326	580179	10.01 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Oct 15, 2014
NTRM	13061216	CC403894	49.40 PPM NITRIC OXIDE/NITROGEN	+/- 0.8%	Nov 19, 2019
GMIS	1211201301	CC501041	4.950 PPM NITROGEN DIOXIDE/NITROGEN	+/- 2.0%	Dec 11, 2016

The SRM, PRM or RGM noted above **is** only **in** reference to the **GMIS** used **in** the assay **and** not part **of** the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801551 NO	FTIR	Jan 20, 2015
Nicolet 6700 AHR0801551 NO2	FTIR	Jan 16, 2015

Triad Data Available Upon Request

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Airgas

Almega ENVIRONMENTAL

Airgas Specialty Gases
11711 South Alameda Street
Los Angeles, CA 90059
(323) 588-2203 Fax: (323) 567-3886
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02NI99E15A0496	Reference Number:	48-124357641-1
Cylinder Number:	SG9134859	Cylinder Volume:	144.3 CF
Laboratory:	ASG - Los Angeles - CA	Cylinder Pressure:	2015 PSIG
PGVP Number:	B32013	Valve Outlet:	350
Gas Code:	CO	Analysis Date:	Feb 04, 2013

Expiration Date: Feb 04, 2021

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
CARBON MONOXIDE	225.0 PPM	225.3 PPM	G1	+/- 1% NIST Traceable
NITROGEN	Balance			

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Expiration Date
NTRM	120603	CC353970	249.3 PPM CARBON MONOXIDE/NITROGEN	Oct 26, 2017

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AMP0900118 CO	FTIR	Jan 08, 2013

Triad Data Available Upon Request

Notes:

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Airgas

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CERTIFICATE OF ANALYSIS

Grade of Product: EPA Protocol

Airgas Specialty Gases
11711 S. Alameda Street
Los Angeles , CA 90059
323-568-2208 Fax: 323-567-3886
www.airgas.com

Part Number:	E02NI99E15A0499	Reference Number:	48-124465925-1
Cylinder Number:	CC126346	Cylinder Volume:	144.3 CF
Laboratory:	ASG - Los Angeles - CA	Cylinder Pressure:	2015 PSIG
PGVP Number:	B32014	Valve Outlet:	350
Gas Code:	CO,BALN	Certification Date:	Dec 02, 2014

Expiration Date: Dec 02, 2022

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
CARBON MONOXIDE	450.0 PPM	453.0 PPM	G1	+/- 0.7% NIST Traceable	12/02/2014
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
NTRM	12062425	CC366875	487.1 PPM CARBON MONOXIDE/NITROGEN	+/- 0.6%	Jun 22, 2018

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AMP0900118 CO	FTIR	Nov 21, 2014

Triad Data Available Upon Request

Approved for Release

Airgas

Almega ENVIRONMENTAL

Airgas Specialty Gases
11711 S. Alameda Street
Los Angeles, CA 90059
(323) 568-2208 Fax: (323) 567-3688
www.airgas.com

CERTIFICATE OF ANALYSIS
Grade of Product: EPA Protocol

Part Number:	E02NI99E15W4BQ4	Reference Number:	48-124423927-4
Cylinder Number:	CC502534	Cylinder Volume:	CF
Laboratory:	ASG - Los Angeles - CA	Cylinder Pressure:	
PGVP Number:	B32014	Valve Outlet:	660
Gas Code:	NO2,BALN	Certification Date:	Mar 27, 2014

Expiration Date: Apr 03, 2017

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
NITROGEN DIOXIDE	16.50 PPM	16.28 PPM	G1	+/- 2.0% NIST Traceable	03/27/2014, 04/03/2014
NITROGEN	Balance				

CALIBRATION STANDARDS

Type	Lot ID	Cylinder No	Concentration	Uncertainty	Expiration Date
GMIS	1211201301	CC500610	14.91 PPM NITROGEN DIOXIDE/NITROGEN	+/- 1.6%	Dec 11, 2016
PRM	12329	726612	25.02 PPM NITROGEN DIOXIDE/NITROGEN	+/- 1.5%	Oct 15, 2014

The SRM, PRM or RGM noted above is only in reference to the GMIS used in the assay and not part of the analysis.

ANALYTICAL EQUIPMENT

Instrument/Make/Model	Analytical Principle	Last Multipoint Calibration
Nicolet 6700 AHR0801551 NO2	FTIR	Mar 13, 2014

Triad Data Available Upon Request

Permanent Notes:OXYGEN ADDED TO MAINTAIN STABILITY

Notes:

Approved for Release

Appendix E2

Miscellaneous QA/QC

Facility: Mesa Water
City: Costa Mesa, CA
Source: Reservoir II- Engine #4
Date: 10/28/15
Operator: T.Ta/DY

NO2-to-NO CONVERTER EFFICIENCY CALCULATION

NO2 CONCENTRATION (Co):	(CYL# CC502534)	16.28
AUDIT GAS WITH NO MODE (C1):		0.02
AUDIT GAS WITH NOx MODE (C2):		15.30

CALCULATIONS:
D1=|C2-C1|= 15.28

% CONVERTER EFFICIENCY: %CE=D1*100/Co= 93.9

Acceptance Criteria* **(Yes/No)**

% Converter Efficiency > 90% : yes

STATUS: PASS

* NO2-to-NO Conversion Efficiency must be greater than 90%.

Almega ENVIRONMENTAL

Facility:	**Mesa Water**	Run No.:	**1**
Location:	**Costa Mesa, CA**	Test Date:	**10/28/15**
Source:	**Reservoir II- Engine #4**	Test:	**NOx Converter Check**

TEST DATA

VARIABLE	DESCRIPTION	Pollutant 1 NO
A	ANALYTICAL RANGE	**25**
	Unit of Measurement	**ppmd**
	CALIBRATION GAS INFORMATION	
B	Zero Gas	**0.00**
C	Mid Gas Concentration	**12.39**
	Mid Gas Cylinder S/N:	CC327937
D	High Gas Concentration	**22.56**
	High Gas Cylinder S/N:	SG9176626
	Primary Gas Cylinder S/N:	
	INITIAL CALIBRATION ERROR TEST	
F	Zero Gas Response	**0.00**
G	Mid Gas Response	**12.45**
H	High Gas Reponse	**22.68**

QA/QC CALCULATIONS

CALIBRATION GAS SELECTION, % of Range		
Low Gas		C'*100/A
Mid Gas	49.6	C*100/A
High Gas	90.2	D*100/A
CALIBRATION ERROR, % of Range		
Initial Zero Gas Error	0.00	(F-B)*100/A
Initial Low Gas Error		(G'-C')*100/A
Initial Mid Gas Error	0.24	(G-C)*100/A
Initial High Gas Error	0.48	(H-D)*100/A
LINEARITY, % of Range		
Initial	-0.02	{(G-F)-[(H-F)*C]/D}*100/A

APPENDIX F

FACILITY PROCESS DATA

Almega ENVIRONMENTAL

EPA Method 19 - Stack Gas Flow Rate Using F-Factor

Facility: Mesa Water
Location: Costa Mesa, CA
Unit: Reservoir II- Engine #4

Parameter	Units	Test Results			
		1-Maximum	1-Normal	1-Minimum	2-Minimum
TEST INFORMATION					
Test Date:		10/28/15	10/28/15	10/28/15	10/28/15
Start Time:	hh:mm	10:42	11:21	12:15	13:40
End Time:	hh:mm	10:57	11:51	12:30	13:55
FACILITY FUEL DATA					
Compensated Fuel Meter?	(Y/N)	n	n		n
Fuel Line Pressure, Pf	psig	5.90	5.90	5.90	5.90
Fuel Line Temperature, Tf	deg.F	86.0	88.5	90.5	92.5
Uncorrected Fuel Flow Rate	cfm	29.0	21.0	16.0	16.0
Corrected Fuel Flow Rate, Qf,corr	**scfm**	**38.7**	**27.9**	**21.2**	**21.1**
FUEL GAS CHARACTERISTICS					
Dry CO2-based F-Factor, Fc	dscf/MMBtu	1,040	1,040	1,040	1,040
Heating Value, HV	Btu/scf	1,050	1,050	1,050	1,050
STACK GAS MEASUREMENTS					
Stack Gas CO2 Concentration, CO2	%	12.04	12.06	11.89	11.99
CALCULATED DATA					
Firing Rate (Heat Input), FR	**MMBtu/hr**	**2.44**	**1.76**	**1.33**	**1.33**
Stack Gas Flow Rate, Qsd	**dscfm**	**351**	**253**	**195**	**192**

Comments: Qf,corr = 520 / 14.7 * (14.7+Pf) / (460+Tf) *cfm

FR = Qf, corr*60*HV/1000000

$Q_{sd} = F_c (H/60)(100/CO_2)$

Fuel flow rate (cfm) was quantified by timing a rotating test dial for over one minute.

Almega
ENVIRONMENTAL

Internal Combustion Engine Data Sheet

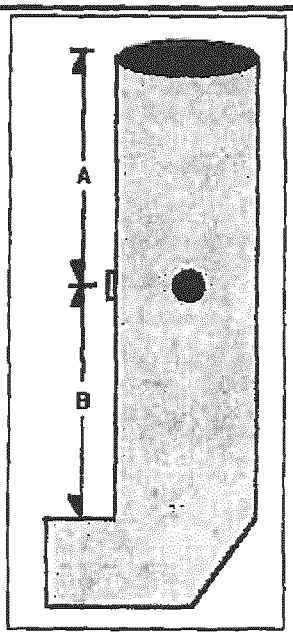
Client : Mesa Water
Site : Costa Mesa, CA
Unit : Reservoir #2 Engine #4 High Load

Date : 10/28/15
Job # : 9840
Lab # :

Manufacturer:
S/N:
Permit Number:
Horespower: Rated: Tested:
RPM: Rated: Tested:

Engine Type: ( ) Rich Burn ( ) Turbo / Supercharged
( ) Lean Burn ( ) Clean Burn
( ) 2 Stroke ( ) EGR Equipped
( ) 4 Stroke ( ) PSC System
( ) Other Specify:

Annual Engine Hours:
Fuel Type:
Hours since last Test:
Control Device Data
Type: Stack Diameter: 8"
Make: "A" Distance: 6"
Model: "B" Distance: 18"
S / N: Port Size: 1"
Hours: M or E:
Inlet: Outlet: deg, F Offset: 1.5"



Timing 20°

GPM	3900		3980
~~Hrs.~~Engine ~~Load:~~	Run 1: 17624.9	Run 2:	Run 3: 17625. Run 4:
RPM:	981		981
10:42 O2 mv:	0.79		0.80
10:57 Cat. In ~~Fuel Supply:~~	991		991
Cat. Out ~~Fuel Return:~~	1015		1018
Discharge ~~Press.~~ ~~kW-hr.~~	67		66
~~AFRC Set~~ LB/BG Purge	1.034		1.034
Notes: ~~AFRC Out~~ LB Sensor	1.030		1.036
Gas Meter Temp	85		87
Fuel Usage	29		29
Fuel Press.	5.9		5.9
~~Gas Meter Read~~			20503XXX

Almega ENVIRONMENTAL

Almega ENVIRONMENTAL

Internal Combustion Engine Data Sheet

Client : Mesa Water
Site : Costa Mesa, CA
Unit : Reservoir #2 Engine #4 Mid Load

Date : 10/28/15
Job # : 9840
Lab # :

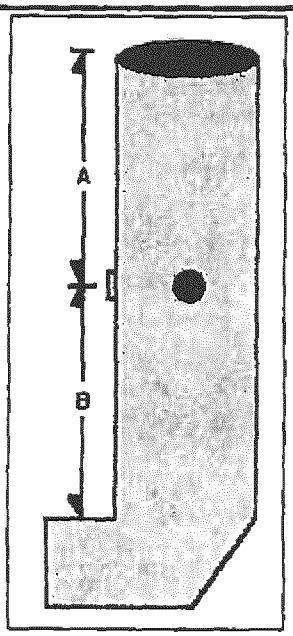
Manufacturer:
S/N:
Permit Number:
Horespower: Rated: Tested:
RPM: Rated: Tested:

Engine Type:
( ) Rich Burn
( ) Lean Burn
( ) 2 Stroke
( ) 4 Stroke
( ) Other Specify:
( ) Turbo / Supercharged
( ) Clean Burn
( ) EGR Equipped
( ) PSC System

Annual Engine Hours:
Fuel Type:
Hours since last Test:

Control Device Data

Type:
Stack Diameter: 8"
Make:
"A" Distance: 6"
Model:
"B" Distance: 18"
S / N:
Port Size: 1"
Hours:
M or F:
Inlet: Outlet: deg, F
Offset: 1.5"



GPM		2900		3000
Timing 20°	Hrs. Engine ~~Load:~~ Run 1:	Run 2: 17625.6	Run 3:	Run 4: 17626.1
	RPM:	882		883
11:21	O2 mv:	0.81		0.78
11:51	Cat. In ~~Fuel Supply:~~	933		932
	Cat. Out ~~Fuel Return:~~	971		967
	Discharge Press. ~~kW hr.~~	65		65
	~~AFRC Set~~ LB/RB Target	1.037		1.037
Notes:	~~AFRC Out~~ LB Sensor SM	1.035		1.039
	Gas Meter Temp	87		90
	Fuel Usage	21		21
	Fuel Press.	5.9		5.9
	Gas Meter Read	20504xxx		20504xxx

55

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Internal Combustion Engine Data Sheet

Client : Mesa Water
Site : Costa Mesa, CA
Unit : Reservoir #2 Engine #4 Low Run#2

Date : 10/28/15
Job # : 9840
Lab # :

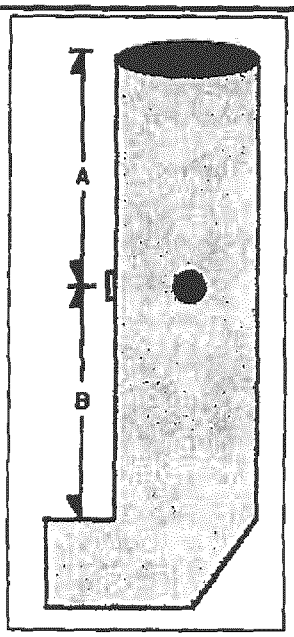
Manufacturer:
S/N:
Permit Number:
Horespower: Rated: Tested:
RPM: Rated: Tested:

Engine Type:
( ) Rich Burn
( ) Lean Burn
( ) 2 Stroke
( ) 4 Stroke
( ) Other Specify:
( ) Turbo / Supercharged
( ) Clean Burn
( ) EGR Equipped
( ) PSC System

Annual Engine Hours:
Fuel Type:
Hours since last Test:

Control Device Data

Type:
Stack Diameter: 8"
Make:
"A" Distance: 6"
Model:
"B" Distance: 18"
S / N:
Port Size: 1"
Hours:
M or F:
Inlet: Outlet: deg, F
Offset: 1.5"



GPM		1800		1870
Hrs. Engine ~~Load:~~	Run 1:	Run 2: 17627.9	Run 3:	Run 4: 17628.1
RPM:		799		793
O2 mv:		0.75		0.79
Cat. In ~~Fuel Supply:~~		856		853
Cat. Out ~~Fuel Return:~~		895		893
Discharge Press. ~~KW hr.~~		66		63
~~AFRC Set~~ LB/RB Target		1.035		1.035
~~AFRC Out~~ LB sensor		1.030		1.037
Gas Meter Temp		90		95
Fuel Usage		16		16
Fuel Press.		5.9		5.9
Gas Meter Reed		20506xxx		20506xxx

Timing 20°
13:40
13:55

Notes:

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Internal Combustion Engine Data Sheet

Client : Mesa Water
Site : Costa Mesa, CA
Unit : Reservoir #2 Engine #4 Low Load

Failed

Date : 10/28/15
Job # : 9840
Lab # :

Manufacturer:
S/N:
Permit Number:
Horespower: Rated: Tested:
RPM: Rated: Tested:

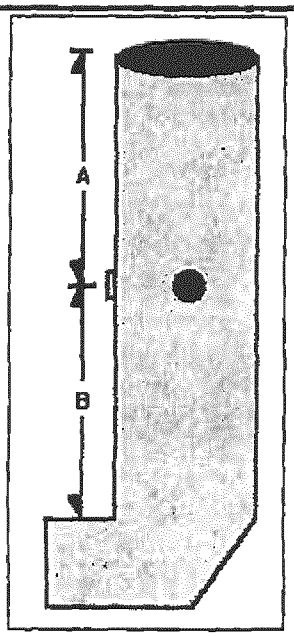
Engine Type:
( ) Rich Burn
( ) Lean Burn
( ) 2 Stroke
( ) 4 Stroke
( ) Other Specify:
( ) Turbo / Supercharged
( ) Clean Burn
( ) EGR Equipped
( ) PSC System

Annual Engine Hours:
Fuel Type:
Hours since last Test:

Control Device Data

Type:
Make:
Model:
S / N:
Hours:
Inlet: Outlet: deg, F

Stack Diameter: 8"
"A" Distance: 6"
"B" Distance: 18"
Port Size: 1"
M or F:
Offset: 1.5"



Timing 20°
12:15
12:30

	Run 1:	Run 2:	Run 3:	Run 4:
GPM	1730			1710
Hrs. Engine ~~Load~~	17626.5			17626.7
RPM:	799			799
O2 mv:	0.80			0.80
Cat. In ~~Fuel Supply~~:	865			861
Cat. Out ~~Fuel Return~~:	912			897
Discharge Press. ~~kW hr.~~	67			66
~~AFRC Set~~ LB/LB Target	1.033			1.033
Notes: ~~AFRC Out~~ LB Sensor #	1.033			1.036
Gas Meter Temp	94			87
Fuel Usage	~~20505~~ 16			16
Fuel Press.	5.9			5.9
Gas Meter Read	20505xxx			20505xxx

Reservoir #2

Environmental Test Conditions

Engine # 7

Almega ENVIRONMENTAL

Run 1 - Normal					cond. Temp. (°F)
Date	Time	Ambient Temp.	Relative Humidity	Barometric Pressure	
10/28/15	11:21	72	57	29.83	35
"	11:35	72	57	29.83	35
"	11:51	72	57	29.83	36

Run 1 - High					
Date	Time	Ambient Temp.	Relative Humidity	Barometric Pressure	
10/28/15	10:42	72	63	29.83	35
"	10:50	72	63	29.83	36
"	10:57	72	63	29.83	36

Run 1 - Low Failed					
Date	Time	Ambient Temp.	Relative Humidity	Barometric Pressure	
10/28/15	12:15	75	47	29.83	36
"	12:22	75	47	29.83	35
"	12:30	75	47	29.83	35

Run 2 - Low

10/28/15	13:40	75	62	29.83	35
"	13:47	75	62	29.83	35
"	13:55	75	62	29.83	35

APPENDIX G

SCAQMD PERMITS TO OPERATE

PERMIT TO OPERATE

This initial permit must be renewed ANNUALLY unless the equipment is moved, or changes ownership.
If the billing for the annual renewal fee (Rule 301.f) is not received by the expiration date, contact the District.

ID 98380

Legal Owner
or Operator: MESA CONSOLIDATED WATER DISTRICT
1965 PLACENTIA AVE, ATTN: WATER OPER ASSISTANT
COSTA MESA, CA 92627-3420

Equipment Location: 2340 ORANGE AVE, COSTA MESA, CA 92627

Equipment Description :

INTERNAL COMBUSTION ENGINE, WAUKESHA, MODEL NO. 2895G, SERIAL NO. C-10769/3, NATURAL GAS/LPG FIRED, SPARK IGNITED, FOUR CYCLE, SIX CYLINDERS, RICH BURN, NATURALLY ASPIRATED, RATED AT 369 BHP, WITH A NON-SELECTIVE CATALYTIC REDUCTION CONVERTER, JOHNSON MATTHEY, MODEL NO. ES-ASA(1000), AND AN AIR/FUEL RATIO CONTROLLER, COMPLIANCE CONTROLS, MODEL MECR-11-FT-60, DRIVING A WATER PUMP.

Conditions :

1. OPERATION OF THIS EQUIPMENT SHALL BE CONDUCTED IN ACCORDANCE WITH ALL DATA AND SPECIFICATIONS SUBMITTED WITH THE APPLICATION UNDER WHICH THIS PERMIT IS ISSUED UNLESS OTHERWISE NOTED BELOW.

2. THIS EQUIPMENT SHALL BE PROPERLY MAINTAINED AND KEPT IN GOOD OPERATING CONDITION AT ALL TIMES.

3. THIS ENGINE SHALL NOT BE OPERATED UNLESS ITS EXHAUST IS VENTED TO THE AIR POLLUTION CONTROL DEVICE, THE NON-SELECTIVE CATALYTIC CONVERTER (NSCR), WHICH IS IN FULL OPERATION AND WHICH IS IN GOOD OPERATING CONDITION AT ALL TIMES.

4. THIS ENGINE SHALL NOT BE OPERATED WITHOUT THE USE OF AN AIR TO FUEL RATIO CONTROLLER WHICH SHALL BE MAINTAINED AND KEPT IN PROPER OPERATING CONDITIONS AT ALL TIMES AS SPECIFIED BY THE MANUFACTURER.

5. THIS ENGINE SHALL BE OPERATED IN COMPLIANCE WITH ALL APPLICABLE REQUIREMENTS OF RULE 1110.2 – AMENDED 2/1/2008, WHETHER OR NOT EXPLICITLY STATED IN THIS PERMIT.

6. THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	33

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NITROGEN OXIDES (NOX)	12
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

7. EFFECTIVE 7/1/2011, THE EMISSIONS FROM THIS ENGINE SHALL NOT EXCEED THE FOLLOWING LIMITS, (EXCEPT DURING COLD START-UP, NOT TO EXCEED 20 MINUTES):

COMPOUND	PPMV @ 15% O2 (DRY)
VOLATILE ORGANINC COMPOUNDS (VOC)	30
NITROGEN OXIDES (NOX)	11
CARBON MONOXIDE (CO)	76

NOX AND CO SHALL BE AVERAGED OVER 15 MINUTES. VOC SHALL BE AVERAGED OVER THE SAMPLING TIME REQUIRED BY THE TEST METHOD.

8. THE OPERATOR SHALL INSTALL AND MAINTAIN AN EXHAUST GAS OXYGEN SENSOR THAT MONITORS THE EXHAUST GAS OXYGEN CONCENTRATION. THE DISPLAY OF THE EXHAUST GAS OXYGEN CONCENTRATION SHALL BE READ IN MILLIVOLTS (MV). THE EXHAUST GAS OXYGEN SENSOR MV OUTPUT SHALL BE MAINTAINED AS PER THE MANUFACTURER'S SPECIFICATION FOR THE MV READING TO ENSURE A PROPER AIR TO FUEL MIXTURE.

THE OXYGEN SENSOR SHALL BE REPLACED AFTER EVERY 2,000 OPERATING HOURS OR WHEN AN "OXYGEN SENSOR FAILURE" WARNING FROM THE ENGINE CONTROL SYSTEM IS RECEIVED, WHICHEVER IS EARLIER. ONCE THE NEW OXYGEN SENSOR IS INSTALLED, THE EXHAUST OXYGEN SET POINT SHALL BE RECHECKED AND RESET AS NECESSARY BY MEASURING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

FILE COPY

9. THE OPERATOR OR CONTRACTOR-IN-CHARGE OF EQUIPMENT OPERATION SHALL INSPECT AND CLEAN OR, IF NECESSARY, REPLACE THE CATALYST EVERY 8,000 OPERATING HOURS. RECORDS OF THE CATALYST CLEANING OR REPLACEMENT SHALL BE MAINTAINED AND MADE AVAILABLE TO DISTRICT PERSONNEL UPON REQUEST.

10. THE OPERATOR OR CONTRACTOR IN CHARGE SHALL MAINTAIN ACCURATE MAINTENANCE RECORDS OF THE DATE OF CATALYST CLEANING OR REPLACEMENT, OXYGEN SENSOR REPLACEMENT, THE TOTAL HOUR READING ON THE TOTAL NON-RESETTABLE TOTALIZING TIME METER TO DETERMINE THE ENGINE ELAPSED OPERATING TIME, OXYGEN SENSOR READING IN MILLIVOLTS OR PERCENT OXYGEN AND THE CORRESPONDING NOX AND CO EMISSIONS, AND RECORDS OF ENGINE TUNE-UPS.

11. THE OPERATOR SHALL SUBMIT AN INSPECTION AND MONITORING (I&M) PLAN PURSUANT TO RULE 1110.2 (E)(4) AND (F)(1)(D) – AMENDED 2/1/2008. THE OPERATOR SHALL IMPLEMENT THE APPROVED I&M PLAN OR THE I&M PLAN AS SUBMITTED IF THE PLAN IS NOT YET APPROVED BY 12/1/2008.

THE OPERATOR SHALL ENSURE THAT THE EMISSIONS FROM THE ENGINE WILL CONTINUE TO COMPLY WITH THE LIMITS IN CONDITION NOS. 6 & 7 THROUGH MONITORING THAT SHALL INCLUDE BUT NOT BE LIMITED TO, THE FOLLOWING PROCEDURE:

PERIODIC TESTING OF NOX AND CO EMISSIONS USING A PORTABLE ANALYZER. EMISSION READINGS SHALL BE TAKEN AT THE POST-CATALYST EXHAUST EVERY MINUTE FOR 15 MINUTES. THE TESTS SHALL BE CONDUCTED WHEN THE ENGINE IS OPERATING AT NORMAL CONDITION AND SHALL BE DONE AT LEAST ONCE EVERY WEEK OR EVERY 150 HOURS OF ENGINE OPERATION WHICHEVER OCCURS LATER. THE TESTS SHALL BE CONDUCTED BY THE OPERATOR WHO HAS COMPLETED AN AQMD TRAINING PROGRAM AND RECEIVED A CERTIFICATION ISSUED BY THE DISTRICT.

IF THE ENGINE IS IN COMPLIANCE FOR THREE CONSECUTIVE EMISSIONS CHECKS, WITHOUT ANY ADJUSTMENTS TO THE OXYGEN SENSOR SET POINTS, THEN THE ENGINES NOX AND CO EMISSIONS MAY BE CHECKED MONTHLY OR EVERY 750 HOURS OF ENGINE OPERATION WHICHEVER IS LATER, UNTIL THERE IS A NONCOMPLIANT EMISSIONS CHECK OR THE OXYGEN SENSOR IS REPLACED.

THE OPERATOR SHALL MAINTAIN RECORDS TO VERIFY COMPLIANCE WITH THIS CONDITION.

12. THIS EQUIPMENT SHALL COMPLY WITH MONITORING, TESTING AND RECORD KEEPING REQUIREMENTS OF RULE 1110.2(F)(1) AS OUTLINED BELOW:

FILE COPY

A. THE ENGINE SHALL HAVE AN OPERATIONAL NON-RESETTABLE TOTALIZING TIME METER (DISPLAY READING SHALL BE READILY AVAILABLE) TO DETERMINE THE ENGINE ELAPSED OPERATING TIME.

B. CONDUCT SOURCE TESTING FOR NOX, CO AND VOC REPORTED AS CARBON (CONCENTRATION IN PPM BY VOLUME, CORRECTED TO 15% OXYGEN ON A DRY BASIS) AT LEAST ONCE EVERY TWO YEARS, OR EVERY 8760 OPERATING HOURS, WHICHEVER OCCURS FIRST. THE SOURCE TEST FREQUENCY MAY BE REDUCED TO ONCE EVERY THREE YEARS IF THE ENGINE HAS OPERATED LESS THAN 2000 HOURS SINCE THE LAST SOURCE TEST.

C. THE SOURCE TEST SHALL BE CONDUCTED FOR A MINIMUM OF 60 MINUTES. TESTING SHALL BE DONE FOR AT LEAST 30 MINUTES DURING NORMAL OPERATION (ACTUAL DUTY CYCLE). IN ADDITION, TESTING SHALL BE DONE FOR NOX AND CO EMISSIONS FOR AT LEAST 15 MINUTES AT: AN ENGINE'S PEAK LOAD, OR THE MAXIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST, AND: AT ACTUAL MINIMUM LOAD, EXCLUDING IDLE, OR THE MINIMUM LOAD THAT CAN BE PRACTICALLY ACHIEVED DURING THE TEST.

D. THE OPERATOR SHALL ONLY USE A SOURCE TEST CONTRACTOR THAT IS APPROVED BY THE EXECUTIVE OFFICER UNDER THE DISTRICT'S LABORATORY APPROVAL PROGRAM (LAP) FOR THE NECESSARY TEST METHODS, THE OPERATOR SHALL COMPLY WITH THE PROCEDURES STATED IN RULE 1110.2(F)(1)(C)(IV) THROUGH (VII) – AMENDED 2/1/2008, REGARDING THE SUBMITTAL OF THE SOURCE TEST PROTOCOL, SOURCE TEST REPORTS AND UTILITIES FOR SAMPLING AND TESTING EQUIPMENT.

E. MAINTAIN A MONTHLY OPERATING ENGINE LOG THAT INCLUDES:

I. TOTAL HOURS OF OPERATION
II. TYPE OF GASEOUS FUEL
III. FUEL CONSUMPTION (CUBIC FEET OF GAS) AND,
IV. CUMULATIVE HOURS OF OPERATION SINCE THE LAST SOURCE TEST REQUIRED IN SUBPARAGRAPH (F)(1)(C) OF RULE 1110.2 – AMENDED 2/1/2008.

THE LOG SHALL BE AVAILABLE FOR INSPECTION AT ANY TIME.

13. THE OPERATOR SHALL COMPLY WITH THE REPORTING REQUIREMENTS OF RULE 1110.2(F)(1)(H)(I) THROUGH (III) PERTAINING TO ANY EQUIPMENT BREAKDOWN THAT RESULTS IN EMISSIONS IN EXCESS OF RULE OR PERMIT EMISSION LIMITS.

FILE COPY

14. ALL RECORDS REQUIRED BY THIS PERMIT SHALL BE RETAINED AT THE FACILITY FOR A MINIMUM OF FIVE YEARS AND SHALL BE MADE AVAILABLE TO ANY DISTRICT PERSONNEL UPON REQUEST.

NOTICE

IN ACCORDANCE WITH RULE 206, THIS PERMIT TO OPERATE OR COPY SHALL BE POSTED ON OR WITHIN 8 METERS OF THE EQUIPMENT.

THIS PERMIT DOES NOT AUTHORIZE THE EMISSION OF AIR CONTAMINANTS IN EXCESS OF THOSE ALLOWED BY DIVISION 26 OF THE HEALTH AND SAFETY CODE OF THE STATE OF CALIFORNIA OR THE RULES OF THE AIR QUALITY MANAGEMENT DISTRICT. THIS PERMIT CANNOT BE CONSIDERED AS PERMISSION TO VIOLATE EXISTING LAWS, ORDINANCES, REGULATIONS OR STATUTES OF OTHER GOVERNMENT AGENCIES.

EXECUTIVE OFFICER

Dorris M Bailey

By Dorris M.Bailey/MS10
8/5/2009

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APPENDIX H

SCAQMD CHECKLIST FOR SOURCE TEST REPORTS

SOUTH COAST AIR QUALITY MANAGEMENT DISTRICT

ENGINEERING FORM
CHECK LIST FOR SOURCE TEST REPORTS

Please check off all the following items to verify that the information is provided in the source test report, and then send the checklist along with the source test report.

[X] Brief description of the equipment tested.

[X] Brief process description, including maximum and normal operating temperatures, pressures, through-put, etc.

[X] Operating conditions under which test was performed.

[X] Process schematic diagram showing the ports and sampling locations, including the dimensions of the ducts/stacks at the sampling locations, along with upstream and downstream locations, and distances of flow disturbances, (e.g. elbows, tees, fans, dampers) from the sampling locations (upstream and downstream).

[X] Field and laboratory data forms, strip charts and analyses.

[X] Brief description of sampling and analytical methods for each gaseous and particulate constituent measured.

[X] Calculations for volumetric flow rates and emission rates.

[X] Description of calibration and quality assurance procedures.

[X] Determination that the testing laboratory qualifies as an "independent testing laboratory" under Rule 304 (no conflict of interest).

ATTACHMENTS

Attachment 1
Laboratory Reports and Data Packages for
TGNMO per SCAQMD Method 25.3

Almega
ENVIRONMENTAL

LABORATORY REPORT

Non-Methane Non-Ethane Organic compound Emissions by SCAQMD Method 25.3 (TCA/FID)

Client: Mesa
Project No.: c9840
Unit Tested: Resevoir #2 - Engine #4
Sampling Date: 28-Oct-15
Analyzed Date: 2-Nov-15
Lab No: A 152

Client Sample ID	Lab ID	Almega Sample ID		Total* NMNEO ppm	NMNEO ppm condensable	NMNEO ppm noncondensable	CH_4 ppm	C_2H_6 ppm	CO_2 % v/v by TCD	O_2 % v/v by TCD
		Tank	Trap							
Run1 - Eng4 - A	A 152 - 011 A	S084	16	**23.5**	11 2	12.3	128	ND	11 7	0 7
Run 1 - Eng 4 - B	A 152 - 011 B	W0010	17	**60.5**	36.0	24 5	128	ND	11 8	0 4
Detection Limit					1	2	2	2	0 3	0.3

* NOTE - the BIAS FACTOR (of 1 086) is NOT applied in these results
ND=Not Detected

Water Blank, ppmC 0.00

TGNMNEO concentration values are reported in ppm (v/v) as Methane (carbon#=1)

The sample cylinder is analyzed for NMNEO, CO, CH_4, CO_2 and C_2H_6. It is then directed to a separation column where all heavy organics (C_3+) separate from the light organics (CO, CO_2, CH_4 and C_2H_6). The light organics are then passed through a reduction catalyst to convert CO and CO_2 to CH_4, and are then directed to a FID for detection and quantification. The heavy organics are backflushed off the holding column, passed through an oxidation catalyst, which convert all organics to CO_2, then through a reduction catalyst to convert CO_2 to CH_4 and then to a FID for detection and quantification

Reviewed by: DW

CALCULATIONS

Almega ENVIRONMENTAL

Client:	Mesa		Lab No.: A 152
Project No.:	c9840		
Unit Tested:	Resevoir #2 - Engine #4		
Sampling Date:	28-Oct-15		
Date tested:	2-Nov-15		

Parameter	Symbol	Units	Run #1 A	Run #1 B
Sample ID			Run1 - Eng4 - A	Run 1 - Eng 4 - B
Lab ID			A 152 - 011 A	A 152 - 011 B
Sample Tank				
Tank No			S084	W0010
Sample Tank Volume	V_T	L	6.000	6.000
Barometric Pressure	P_b	mm Hg	763	763
Pre-test Pressure	P_{TI}	mm Hg (abs)	2	2
Pre-test Temperature	t_{TI}	°C	22	22
Abs. Pre-test Temperature	T_{TI}	°K	295	295
Post-test Pressure	P_{TS}	mm Hg (abs)	354	300
Post-test Temperature	t_{TS}	°C	22	22
Abs. Post-test Temperature	T_{TS}	°K	295	295
Final Pressure	P_{TF}	mm Hg (abs)	932	936
Abs.Final Temperature	T_{TF}	°K	293	293
Dilution Factor	DF_t		2.67	3.16
Concentration Methane	C_{CH4}	ppm	48.14	40.63
Concentration Carbon Monoxide	C_{CO}	ppm	54.64	45.47
NMNEO (noncond)	C_{SA}	ppm	**4.62**	**7.74**
Sample Volume	Vs	L	2.720	2.303
Methane in Tank(C_{CH4}*DF_T)	C_{CH4T}	ppm	**128.3**	**128.5**
Carbon Monoxide in Tank(C_{CO}*DF_T)	C_{COT}	ppm	**145.7**	**143.8**
NMNEO (noncond)	C_{SAT}	ppm	**12.33**	**24.47**
Condensate Recovery - Trap				
Sample ID			Run1 - Eng4 - A	Run 1 - Eng 4 - B
Trap No			16	17
Lab No.:			A 152 - 012 A	A 152 - 012 B
Sample Impinger Volume	V_{IMP}	ml	2.0	2.0
Sample Volume	V_S	L	2.720	2.303
TC Concentration	C_{TC}	mg/L	69.133	68.533
IC Concentration	C_{IC}	mg/L	61.420	47.500
TOC Concentration	C_{TOC}	mg/L	7.713	21.033
NMNEO, Condensable	C_T	ppm	**11.19**	**36.04**
TNMNEOC (Csa+C_T)	C	ppmC	**23.51**	**60.51**

Calculations

$V_S=k_1*V_T*(P_{TS}/T_{TS} - P_{TI}/T_{TI})$

k_1 = (273+15.56)/760=0.3799

C_{SAT}= DF * C_{SA}

C_{CH4T} = DF * C_{CH4}

$DF=(P_{TF}/T_{TF})/(P_{TS}/T_{TS} - P_{TF}/T_{TI})$

C_T =(C_{TOC} * V_{IMP} * V_{ID})/(V_S*A_C)

V_{ID} =23.6902 L/mole

QA/QC SUMMARY
(Repeat Analysis)

Almega ENVIRONMENTAL

Client Project No.: c9840 Lab No.: A 152
Sampling Date: 28-Oct-15 Analyzed Date: 2-Nov-15
Run #1 A

Analyte	Sample ID	Area Count #1	Area Count #2	Area % diff (±20%)	Conc # 1	Conc # 2	Mean Conc ppm	% diff from Mean
Tank Analysis								
CO	A 152 - 011 A	205884	205105	0.38	54.7	54.5	**54.6**	0.38
CH4	A 152 - 011 A	187353	185463	1.01	48.4	47.9	**48.1**	1.01
CO2*	A 152 - 011 A	256784	256360	0.17	4.4	4.4	**4.4**	0.17
O2*	A 152 - 011 A	52660	52293	0.70	0.3	0.3	**0.3**	0.70
C2H6	A 152 - 011 A	ND	ND	ND	ND	ND	**ND**	ND
NMNEO	A 152 - 011 A	14861	15609	-5.03	4.51	4.74	**4.62**	-4.91

Analyte	Sample ID	Conc # 1	Conc # 2	Conc # 3	Mean Conc ppm	COV 10%	
Trap Analysis							
TC	A 152 - 012 A	32.67	35.22	35.81	**69.13**	4.78	DF=2
IC	A 152 - 012 A	30.96	31.15	30.02	**61.42**	1.95	

Run #1 B

Analyte	Sample ID	Area Count #1	Area Count #2	Area % diff (±20%)	Conc # 1	Conc # 2	Mean Conc ppm	% diff from Mean
Tank Analysis								
CO	A 152 - 011 B	170929	171064	-0.08	45.4	45.5	**45.5**	-0.08
CH4	A 152 - 011 B	157938	156744	0.76	40.8	40.5	**40.6**	0.76
CO2*	A 152 - 011 B	219437	216715	1.24	3.8	3.7	**3.7**	1.25
O2*	A 152 - 011 B	24426	24685	-1.06	0.1	0.1	**0.1**	-1.05
C2H6	A 152 - 011 B	ND	ND	ND	ND	ND	**ND**	ND
NMNEO	A 152 - 011 B	24831	26163	-5.36	7.54	7.94	**7.74**	-5.22

Analyte	Sample ID	Conc # 1	Conc # 2	Conc # 3	Mean Conc ppm	COV 10%	
Trap Analysis							
TC	A 152 - 012 B	33.62	34.48	34.70	**68.53**	1.63	DF=2
IC	A 152 - 012 B	23.75	23.75	23.75	**47.50**	0.01	

Water blank	
TC	-0.030
IC	-0.020
TOC	**0.00**

$Conc_{CO}$ in tank = $MeanConc_{CO}$ * DF
$Conc_{CO2}$ in tank = $MeanConc_{CO2}$ * DF
$Conc_{O2}$ in tank = $MeanConc_{O2}$ * DF
$Conc_{C2H6}$ in tank = $MeanConc_{C2H6}$ * DF

* - by GC/TCD

SAMPLE INVENTORY REPORT

Method 25.3 Sampling Train

Project No.:	c9840	Lab No.:	A 152
Client:	Mesa	Sampling Date:	28-Oct-15

Laboratory ID	Client ID	Component ID	
Run #1 A			
A 152 - 011 A	Run1 - Eng4 - A	Tank #	S084
A 152 - 012 A	Run1 - Eng4 - A	Impinger	16
Run #1 B			
A 152 - 011 B	Run 1 - Eng 4 - B	Tank #	W0010
A 152 - 012 B	Run 1 - Eng 4 - B	Impinger	17

Lab # A152

Almega ENVIRONMENTAL

CHAIN OF CUSTODY RECORDS

INVOICE TO: _____

ATTN: _____

REPORT TO:

PO # _____

ALMEGA Environmental & Technical Services
10602 Walker St.
Cypress, CA 90630
(714) 889-4000 Fax (714) 889-7030
lab@almegaenv.com
Contact:

Turnaround Time
Standard: Other:
Rush:
Depends on # of Samples
5 - 10 days _____
3 - 7 days _____

Job # 9840 | Unit # Res. 2 Eng. 4 | Client: Mesa Water | Location: Costa Mesa, CA

Samplers: (Signature) [signature]

Project Manager: Tim Ta

Unit Information: Reservoir #2 Engine #4 Normal (mid) Load

ANALYSIS REQUESTED: M25.3

Return or Dispose

Sample Date	Sample Time	Sample Identification	Lab Sample #	Type Of Sample: LIQUID	GAS	SOLID	No of Container	M25.3					REMARKS
10/28/15	11:21	Run1-Eng4-A	A152-011A/012A	1	1		2	✓					T-5034 / V-16
11	11	Run1-Eng4-B	-011B/012B	1	1		2	✓					T-W0010 / V-17

Relinquished by:	Received by:	Relinquished by:	Received by:
[signature]	[signature]		
Date: 10/28/15 Time 15:30	Date: 10/28/15 Time: 15:32	Date: Time:	Date: Time
Relinquished by:	Received by:	Relinquished by:	Received by:
Date: Time	Date: Time:	Date: Time:	Date: Time

Almega ENVIRONMENTAL

Almega
ENVIRONMENTAL

Standard Receipt
Sample LOG in Checklist

Project No: 9840 Method: m25.3

Lab ID: A152

Sampling Date: 10/28 Location: Mesa Int:

Date & Time Rc'd: 10/28/14 15:32 Location: LAB Int: DW

Arrived By: (circle) FedEx UPS Drop Off (Int) DW Other

Condition of Package(s): (comment): OK Package Type: Box (Cooler) Other:

Number of Sample Container(s): 27 Correct Containers (per Method): (Y) N

Preservation: (circle) (ICE) DryICE ICEPacks None

Sample Conditions:

Sample Temp (C): 5.9 Ambient Temp (C): 22

Sample Temp (C): Filter Condition:

PH : Components Sealed: (Y) N

Sample Recovery Completed On: (date & time)

Recovered In: (circle) (Field) Lab Other Silica Gel Condition:

Tedlar Bags - Condensation: Y N

Comments: - water in vial bag

Container(s) Requested: Glass Plastic

Additional Comments:

CHROMATOGRAM

TEST SAMPLES

Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\nov_15\11-2-2015, 12;27;59, a 152 - 011 a.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : A 152 - 011 A

Injection Date: 11/2/2015 12:27 PM Calculation Date: 11/2/2015 3:15 PM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: DATAPART1 Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

**Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	52.1352	1.875	-0.055	205884	BV	2.8	
2	Methane	47.9357	2.253	-0.047	187353	VB	3.7	
3	Carbon Dioxi	30558.2891	3.367	-0.102	119453928	BB	11.1	C
4	Ethane		7.489					M
5	NMOC	4.4778	12.313	-0.011	14861	BB	83.6	
	Totals:	30662.8378		-0.215	119862026			

Status Codes:
M - Missing peak
C - Out of calibration range

Total Unidentified Counts : 0 counts

Detected Peaks: 4 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -217 microVolts LSB: 1 microVolts

Noise (used): 23 microVolts - monitored before this run

Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Calib. out of range; No Recovery Action Specified

Original Notes:

c9840 Mesa

Appended Notes:

c9840 Mesa

****

Almega ENVIRONMENTAL

Title : SCAQMD Methods 25.m
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\nov_15\11-2-2015, 12;27;59, a 152 - 011 a.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : A 152 - 011 A

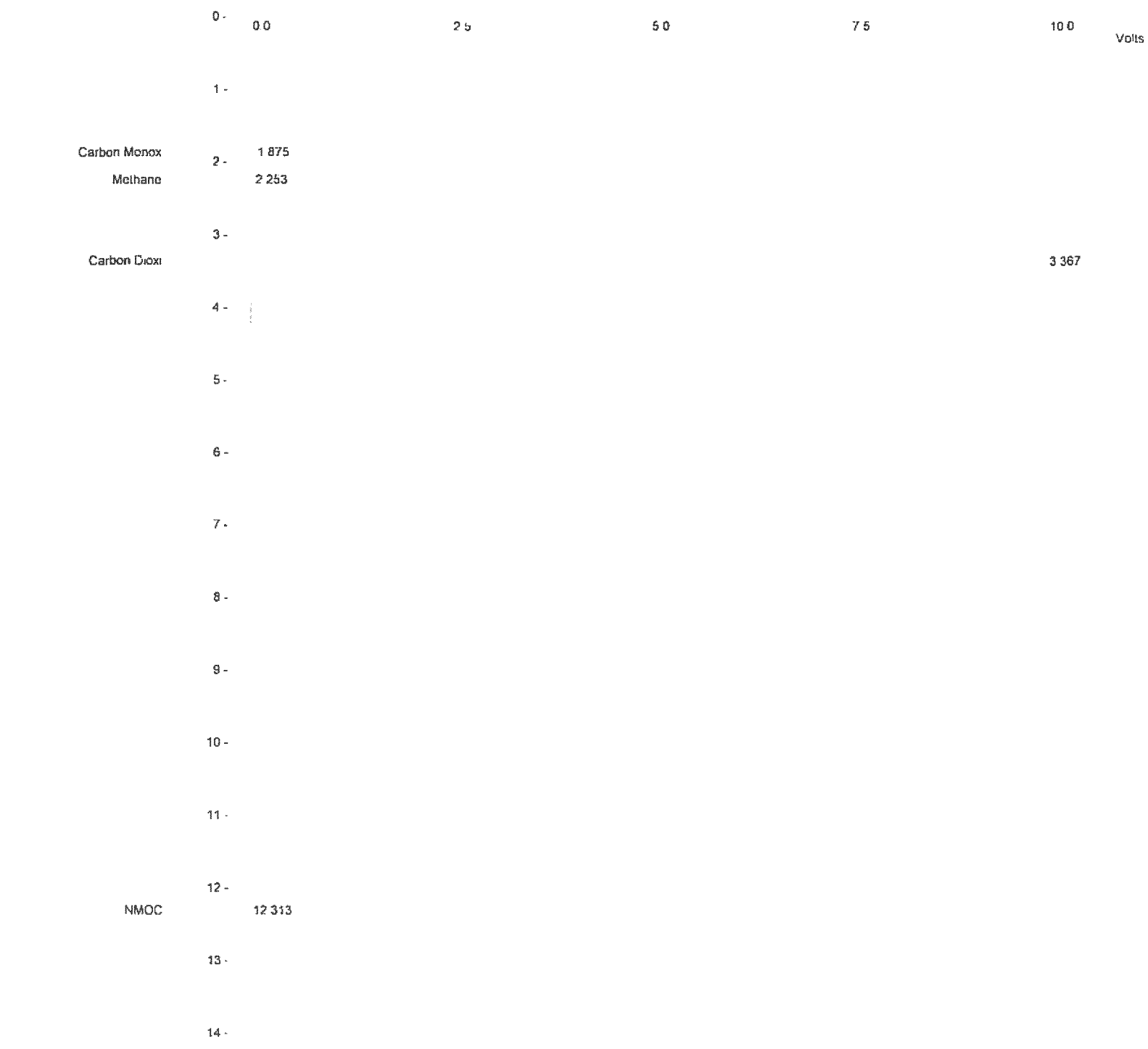
Almega ENVIRONMENTAL

Injection Date: 11/2/2015 12:27 PM Calculation Date: 11/2/2015 3:15 PM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: DATAPART1 Bus Address : 99
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Chart Speed = 1.33 cm/min Attenuation = 4728 Zero Offset = 2%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\nov_15\11-2-2015, 12;56;06, a 152 - 011 a dup.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : A 152 - 011 A dup

Injection Date: 11/2/2015 12:56 PM Calculation Date: 11/2/2015 3:20 PM

Operator : Douglass
Workstation: DATAPART1
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

**Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	51.9381	1.888	-0.042	205105	BV	2.8	
2	Methane	47.4523	2.267	-0.033	185463	VB	3.8	
3	Carbon Dioxi	30525.0547	3.380	-0.089	119324008	BB	11.0	C
4	Ethane		7.489					M
5	NMOC	4.7031	12.340	0.016	15609	BB	82.0	
	Totals:	30629.1482		-0.148	119730185			

Status Codes:
M - Missing peak
C - Out of calibration range

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 1 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -200 microVolts LSB: 1 microVolts

Noise (used): 21 microVolts - monitored before this run

Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Calib. out of range; No Recovery Action Specified

Original Notes:

c9840 Mesa

Appended Notes:

c9840 Mesa

****

Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\nov 15\11-2-2015, 12;56;06, a 152 - 011 a dup.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : A 152 - 011 A dup

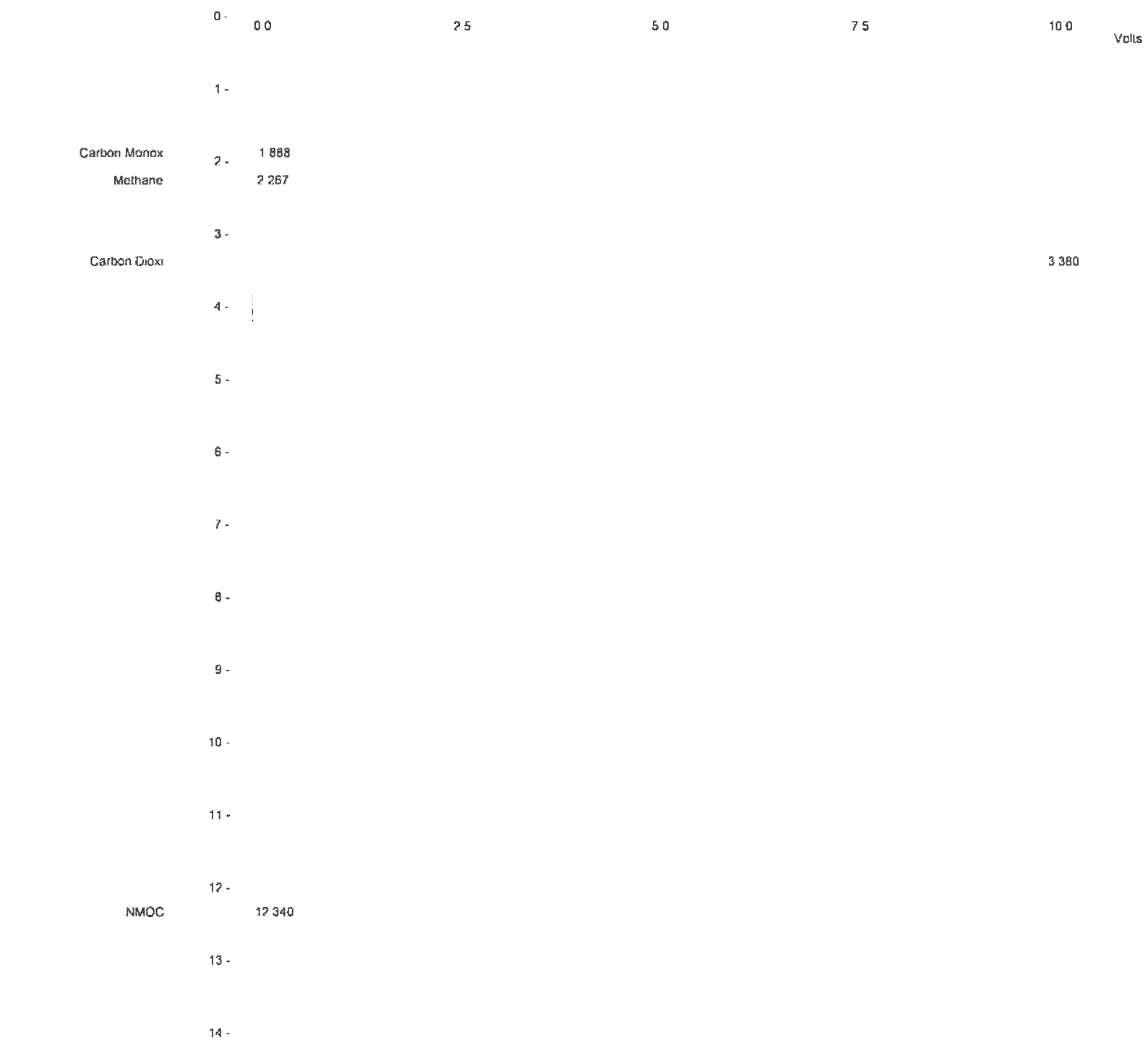
Almega
ENVIRONMENTAL

Injection Date: 11/2/2015 12:56 PM Calculation Date: 11/2/2015 3:20 PM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: CHIAPARI Bus Address : 96
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : A = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3595-D6B-21E1 **

Chart Speed = 1.32 cm/min Attenuation = 4729 Zero Offset = 2%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\nov_15\11-2-2015, 13;40;47, a 152 - 011 b.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : A 152 - 011 B

Injection Date: 11/2/2015 1:40 PM Calculation Date: 11/2/2015 3:20 PM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: DATAPART1 Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

**Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	43.2838	1.881	-0.049	170929	BV	3.0	
2	Methane	40.4097	2.259	-0.041	157938	VP	3.7	
3	Carbon Dioxi	28113.4707	3.356	-0.113	109897008	PB	10.1	C
4	Ethane		7.489					M
5	NMOC	7.4820	12.327	0.003	24831	BB	82.4	
	Totals:	28204.6462		-0.200	110250706			

Status Codes:
M - Missing peak
C - Out of calibration range

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 1 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -102 microVolts LSB: 1 microVolts

Noise (used): 20 microVolts - monitored before this run

Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Calib. out of range; No Recovery Action Specified

Original Notes:

c9840 Mesa

Appended Notes:

c9840 Mesa

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Almega ENVIRONMENTAL

Title : SCAQMD Methods 25.x
Run File : \\almega21\fileserver\laboratory\gc chromatograms\2015\nov_15\11-2-2015, 13;40;47, a 152 - 011 b.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : A 152 - 011 B

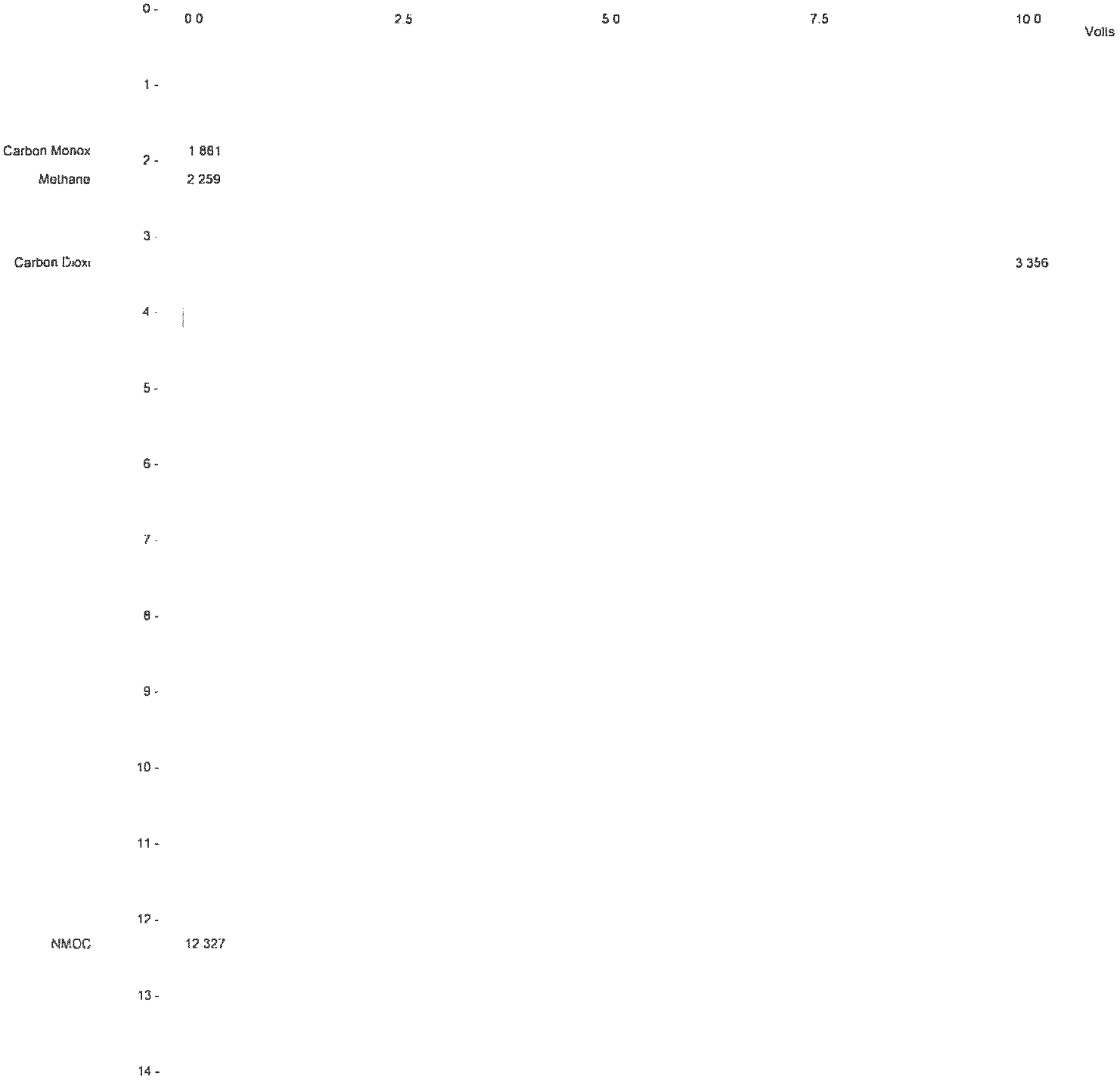
Almega ENVIRONMENTAL

Injection Date: 11/2/2015 1:40 PM Calculation Date: 11/2/2015 3:20 PM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: DATAPART1 Bus Address : 66
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 * Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3586-06B-21E1 **

Chart Speed = 1.32 cm/min Attenuation = 4728 Zero Offset = 2%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



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Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\nov_15\11-2-2015, 14;37;40, a 152 - 011 b dup.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : A 152 - 011 B dup

Injection Date: 11/2/2015 2:37 PM Calculation Date: 11/2/2015 3:20 PM

Operator : Douglass
Workstation: DATAPART1
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	43.3180	1.916	-0.014	171064	BV	2.8	
2	Methane	40.1043	2.295	-0.005	156744	VB	3.8	
3	Carbon Dioxi	28177.5234	3.401	-0.068	110147392	BB	10.2	C
4	Ethane		7.489					M
5	NMOC	7.8833	12.367	0.043	26163	BB	81.9	
	Totals:	28268.8290		-0.044	110501363			

Status Codes:
M - Missing peak
C - Out of calibration range

Total Unidentified Counts : 0 counts

Detected Peaks: 4 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -132 microVolts LSB: 1 microVolts

Noise (used): 13 microVolts - monitored before this run

Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Calib. out of range; No Recovery Action Specified

Original Notes:

c9840 Mesa

Appended Notes:

c9840 Mesa

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Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\nov_15\11-2-2015, 14;37;40, a 152 - 011 b dup.run
Method File : c:\documents\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.cmp
Sample ID : A 152 - 011 B dup

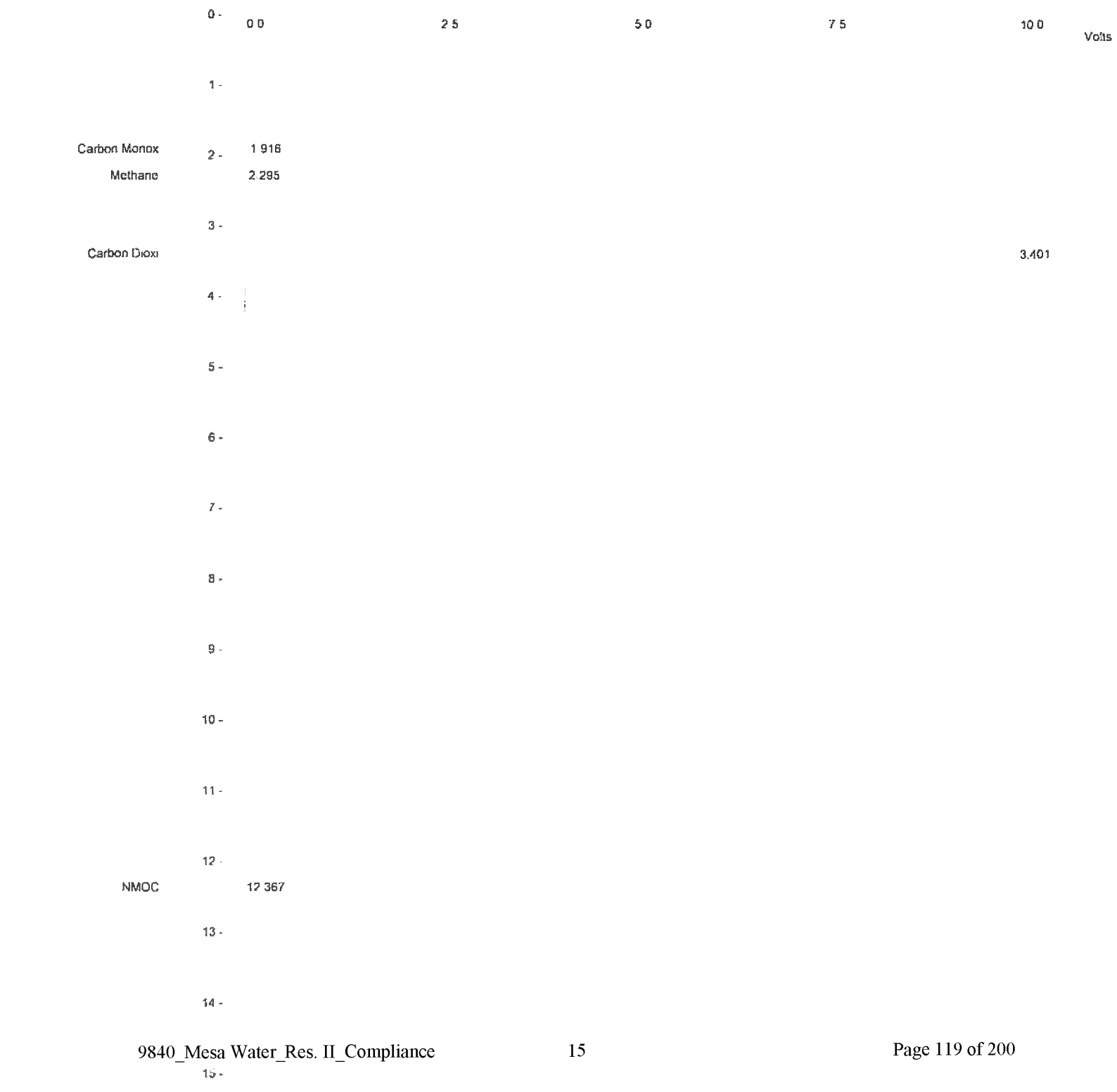
Almega ENVIRONMENTAL

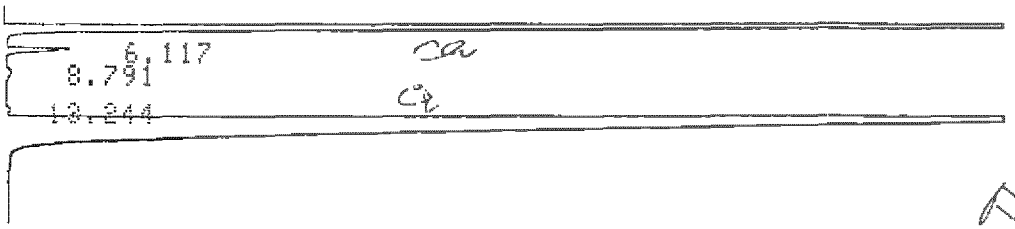
Injection Date: 11/2/2015 3:37 PM Calculation Date: 11/2/2015 3:20 PM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: DATAPART1 Bus Address : 98
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Chart Speed = 1.32 cm/min Attenuation = 4726 Zero Offset = 2%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



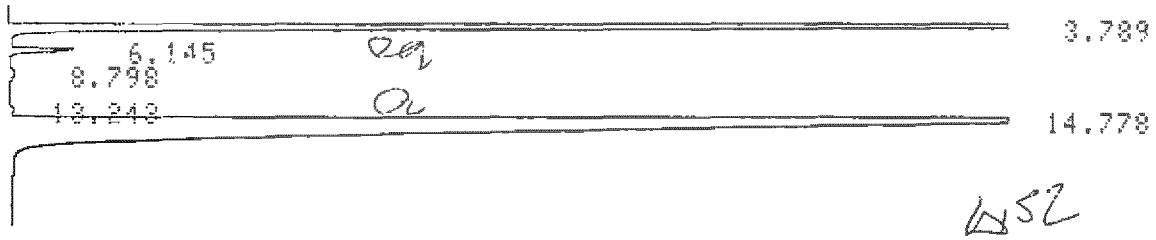


AS2
-011A

CHROMATOGRAM 1 MEMORIZED

C-R5A CHROMATOPAC
CHANNEL NO 1 FILE 0
SAMPLE NO 0 METHOD 41
REPORT NO 454

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.772	8108298			35.2542	
2	6.117	256784			1.1165	
3	8.791	72232			0.3141	
4	13.244	52660			0.229	
5	14.783	14509574	V		63.0863	
	TOTAL	22999546			100	

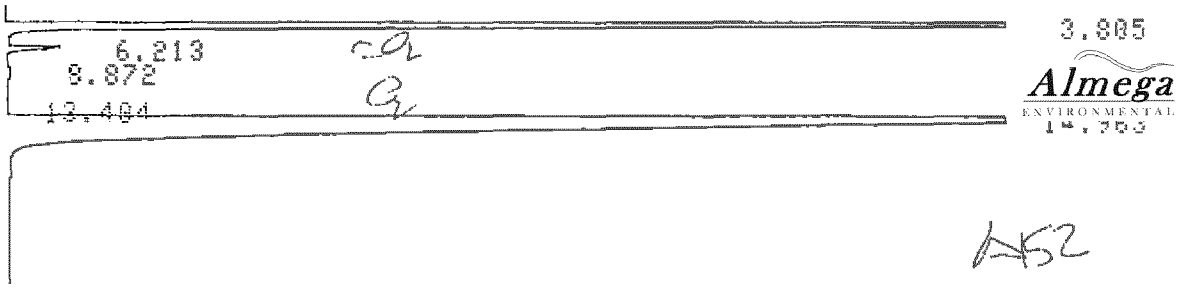


AS2
-011A
dup

CHROMATOGRAM 1 MEMORIZED

C-R5A CHROMATOPAC
CHANNEL NO 1 FILE 0
SAMPLE NO 0 METHOD 41
REPORT NO 455

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.789	8096534			35.2267	
2	6.145	256360			1.1154	
3	8.798	72057			0.3135	
4	13.243	52293			0.2275	
5	14.778	14506844	V		63.1169	
	TOTAL	22984086			100	

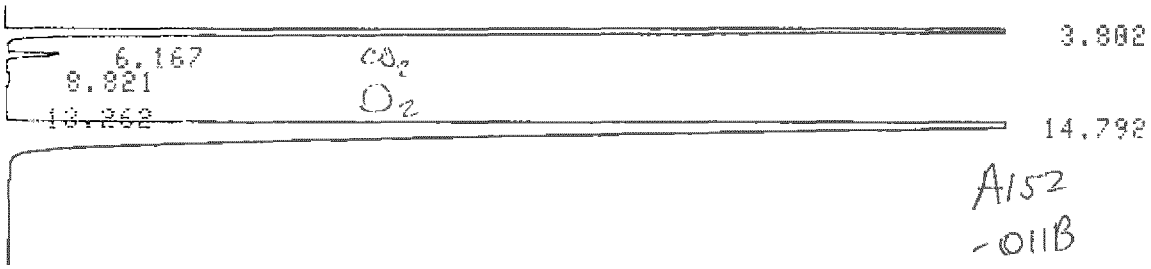


A52
-011B

CHROMATOGRAM 1 MEMORIZED

C-R5A CHROMATOPAC
CHANNEL NO 1 FILE 0
SAMPLE NO 0 METHOD 41
REPORT NO 456

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.805	8185863			34.8809	
2	6.213	219437			0.935	
3	8.872	60366			0.2572	
4	13.404	24426			0.1041	
5	14.963	14977974	V		63.8228	
	TOTAL	23468064			100	



A152
-011B
dup

CHROMATOGRAM 1 MEMORIZED

C-R5A CHROMATOPAC
CHANNEL NO 1 FILE 0
SAMPLE NO 0 METHOD 41
REPORT NO 457

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.802	8144031			35.2696	
2	6.167	216715			0.9385	
3	8.821	60261			0.261	
4	13.262	24685			0.1069	
5	14.792	14645100	V		63.424	
	TOTAL	23090790			100	

QAQC

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Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\oct_15\11-2-2015, 09;42;49, lab air.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : lab air

Injection Date: 11/2/2015 9:42 AM Calculation Date: 11/2/2015 11:35 AM

Operator : Douglass
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	11.1415	1.895	-0.035	43998	BV	3.8	
2	Methane	4.0571	2.300	0.000	15857	VV	4.2	
3	Carbon Dioxi	494.1358	3.455	-0.014	1931602	VB	8.0	
4	Ethane		7.489					M
5	NMOC		12.324					M
	Totals:	509.3344		-0.049	1991457			

Status Codes:
M - Missing peak

Total Unidentified Counts : 0 counts

Detected Peaks: 4 Rejected Peaks: 1 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -454 microVolts LSB: 1 microVolts

Noise (used): 28 microVolts - monitored before this run

Stream: 1 Injection Number: 2 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

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Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\oct_15\11-2-2015, 09;42;49, lab air.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : lab air

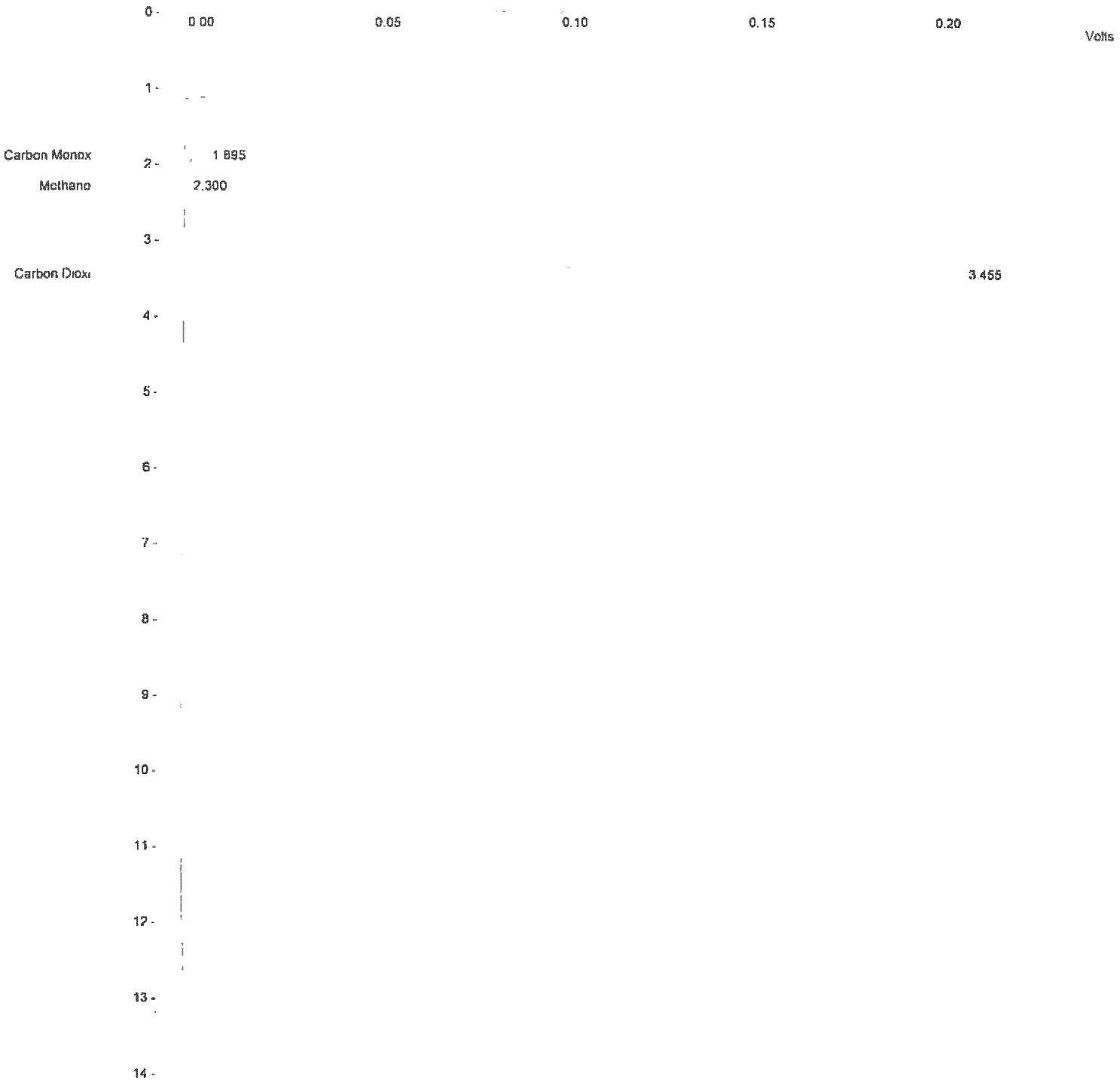
Almega ENVIRONMENTAL

Injection Date: 11/2/2015 9:42 AM Calculation Date: 11/2/2015 11:35 AM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Chart Speed = 1.32 cm/min Attenuation = 105 Zero Offset = 2%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



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Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\oct_15\11-2-2015, 10;11;03, n2 blank 91187.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : n2 blank 91187

Injection Date: 11/2/2015 10:11 AM Calculation Date: 11/2/2015 11:35 AM

Operator : Douglass
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	0.3142	1.897	-0.033	1241	BB	3.4	
2	Methane		2.300					M
3	Carbon Dioxi	0.4290	3.437	-0.032	1677	BB	8.6	
4	Ethane		7.489					M
5	NMOC		12.324					M
	Totals:	0.7432		-0.065	2918			

Status Codes:
M - Missing peak

Total Unidentified Counts : 0 counts

Detected Peaks: 3 Rejected Peaks: 1 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -323 microVolts LSB: 1 microVolts

Noise (used): 32 microVolts - monitored before this run

Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

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21
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Title : SCAQMD Methods 25.m
Run File : \\almega01\fileserver\laboratory\gc cnromatograms\2015\oct_15\11-2-2015, 10;11;03, n2 blank 91187.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : n2 blank 91187

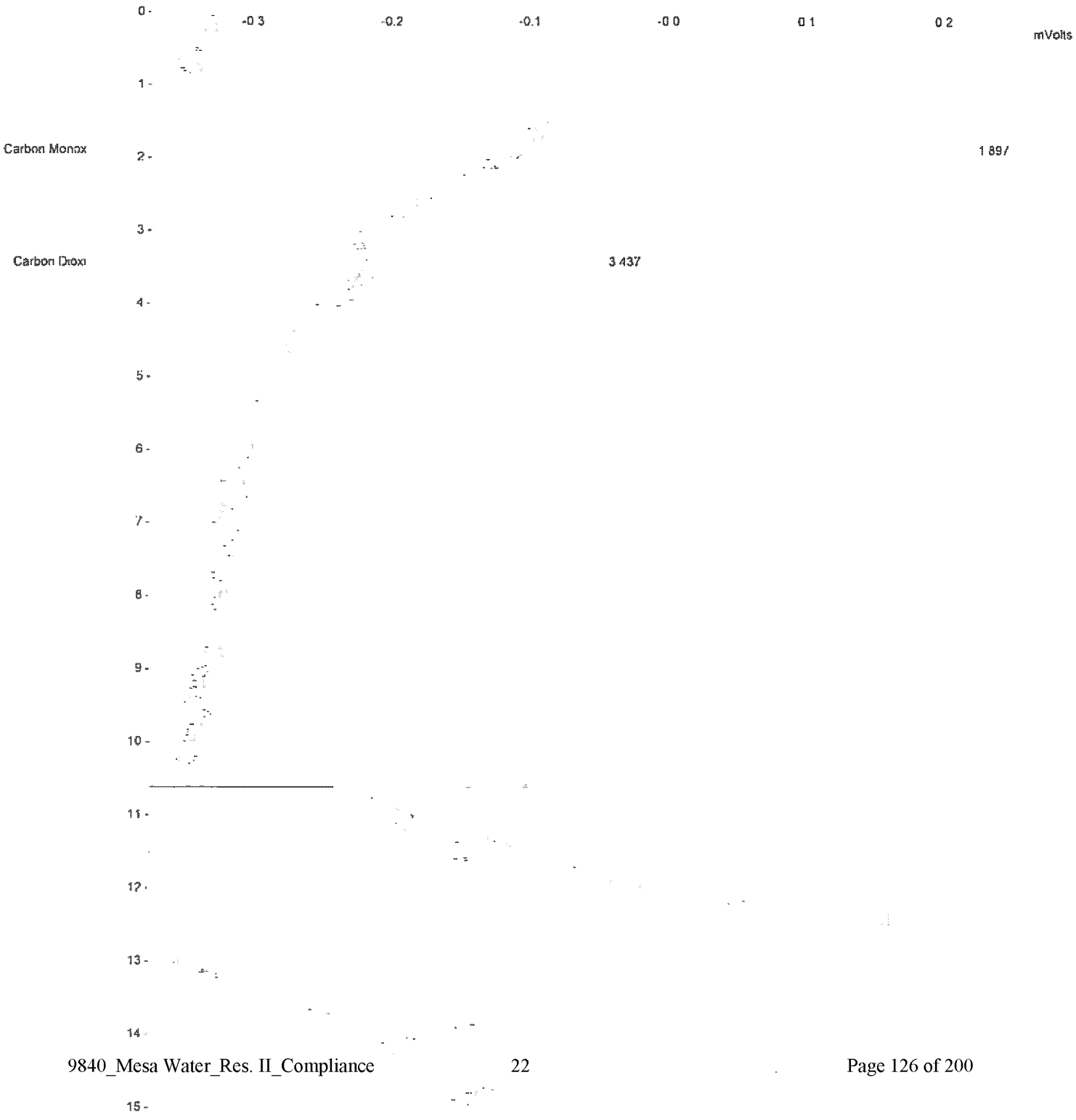
Almega ENVIRONMENTAL

Injection Date: 11/2/2015 10:11 AM Calculation Date: 11/2/2015 11:35 AM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

* Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Chart Speed = 1.32 cm/min Attenuation = 1 Zero Offset = 14%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\oct_15\11-2-2015, 11;07;09, 100ppm mix.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : 100ppm mix

Injection Date: 11/2/2015 11:07 AM Calculation Date: 11/2/2015 11:36 AM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	90.8336	1.911	-0.019	358705	BV	3.0	
2	Methane	97.3109	2.289	-0.011	380332	VB	3.8	
3	Carbon Dioxi	96.8437	3.436	-0.033	378567	BB	7.9	
4	Ethane	96.1387	7.413	-0.076	374437	BB	21.9	
5	NMOC	99.3305	12.340	0.016	329658	BB	17.3	
	Totals:	480.4574		-0.123	1821699			

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -148 microVolts LSB: 1 microVolts

Noise (used): 23 microVolts - monitored before this run

Stream: 1 Injection Number: 2 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

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9841 Irvine Center Drive, Irvine, CA 92618 Tel: (949) 753-0223 Fax: (949) 753-0224 Email: info@almega.com

Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\oct_15\11-2-2015, 11;07;09, 100ppm mix.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : 100ppm mix

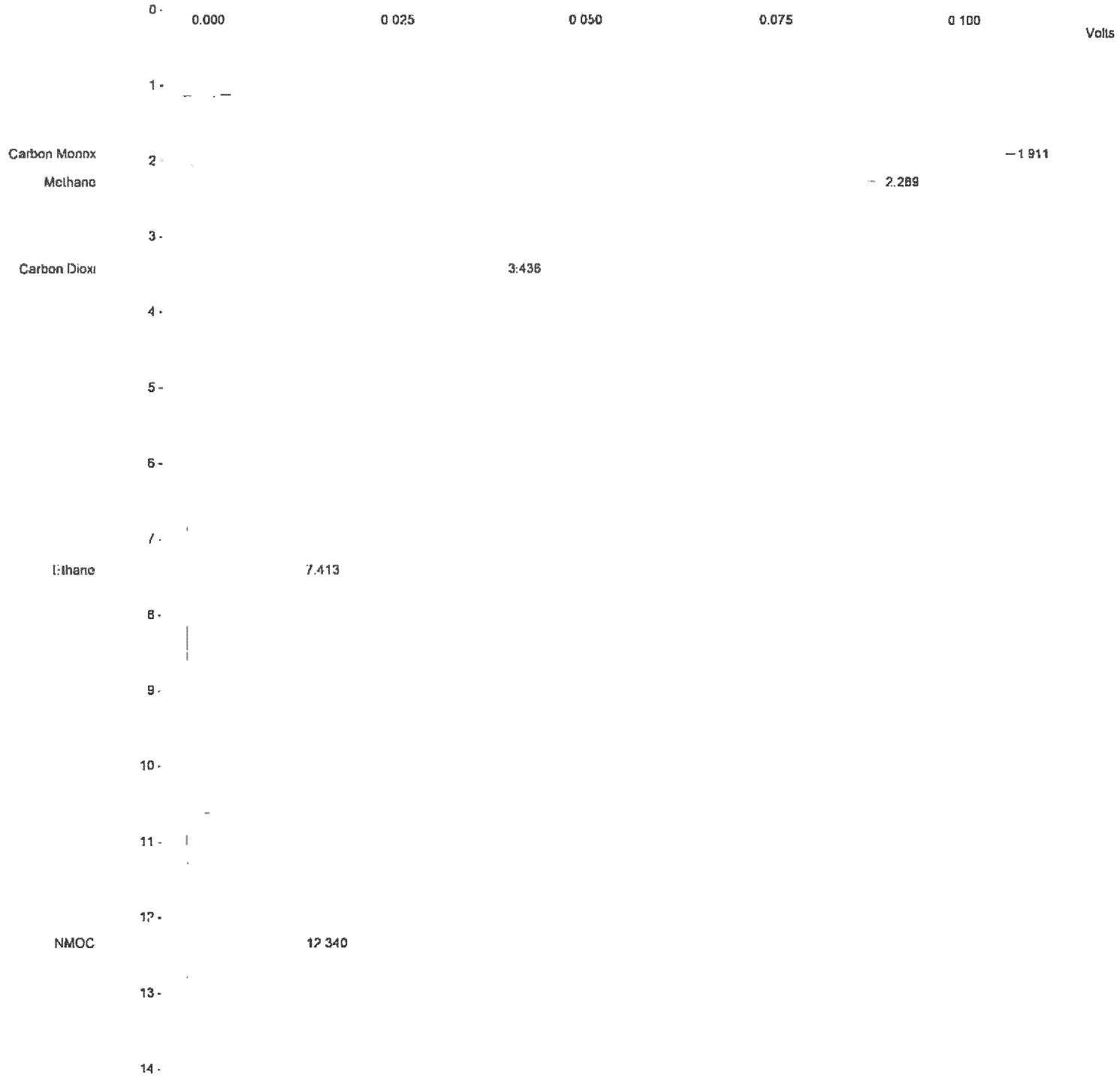
Almega ENVIRONMENTAL

Injection Date: 11/2/2015 11:07 AM Calculation Date: 11/2/2015 11:36 AM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Chart Speed = 1.32 cm/min Attenuation = 51 Zero Offset = 2%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



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Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\oct_15\11-2-2015, 11;35;14, 100ppm mix.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : 100ppm mix

Injection Date: 11/2/2015 11:35 AM Calculation Date: 11/2/2015 11:36 AM

Operator : Douglass
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	90.9992	1.896	-0.034	359359	BV	3.0	
2	Methane	97.8910	2.275	-0.025	382599	VP	3.8	
3	Carbon Dioxi	97.3761	3.420	-0.049	380648	PB	7.9	
4	Ethane	96.1319	7.396	-0.093	374411	BB	21.8	
5	NMOC	100.2486	12.313	-0.011	332705	BB	17.4	
	Totals:	482.6468		-0.212	1829722			

Total Unidentified Counts : 0 counts

Detected Peaks: 6 Rejected Peaks: 1 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -196 microVolts LSB: 1 microVolts

Noise (used): 14 microVolts - monitored before this run

Stream: 1 Injection Number: 3 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

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Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\oct_15\11-2-2015, 11;35;14, 100ppm mix.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : 100ppm mix

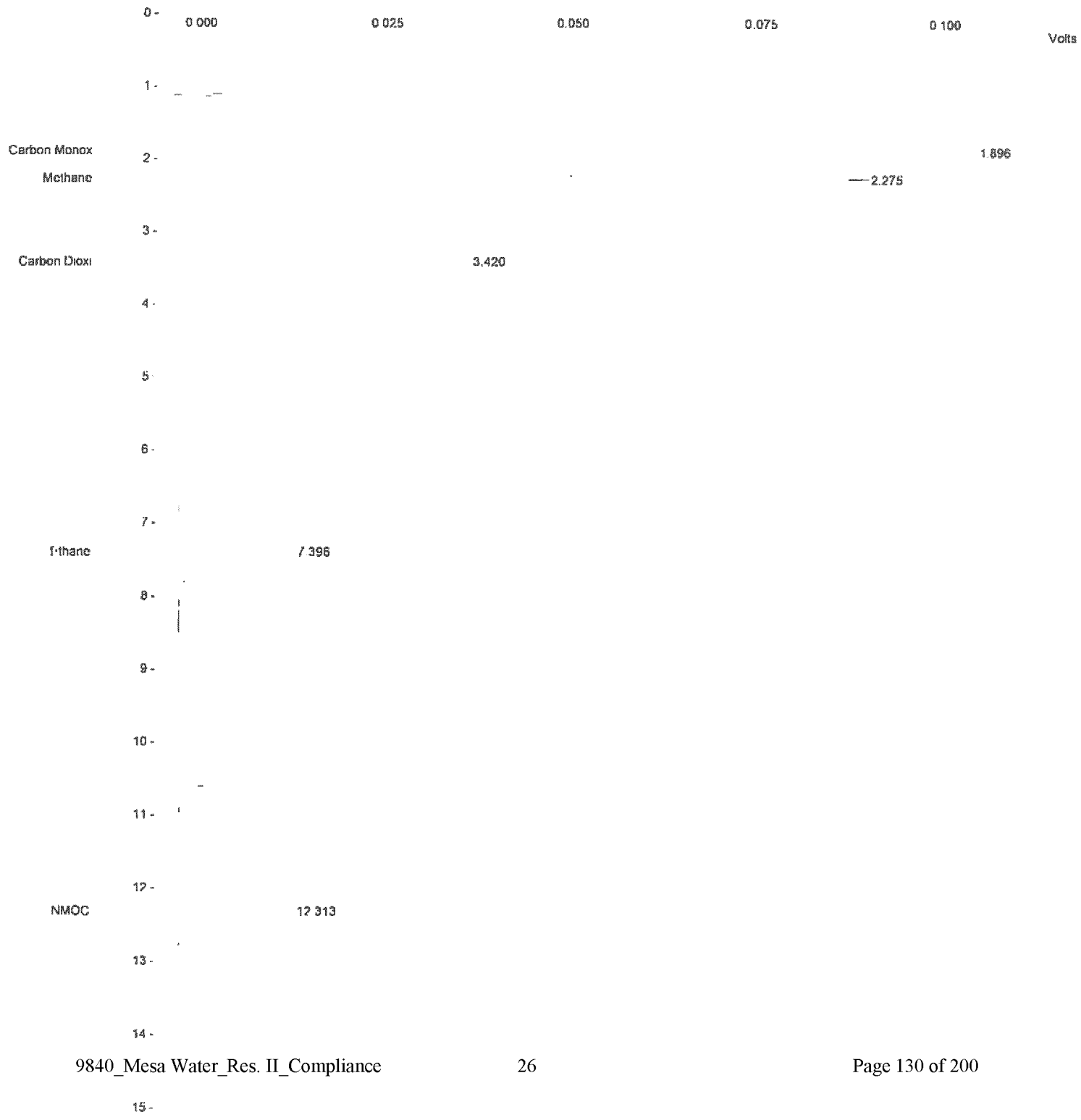
Almega ENVIRONMENTAL

Injection Date: 11/2/2015 11:35 AM Calculation Date: 11/2/2015 11:36 AM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Chart Speed = 1.32 cm/min Attenuation = 50 Zero Offset = 2%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\oct_15\11-2-2015, 12;03;22, n2 blank a164.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : n2 blank A164

Injection Date: 11/2/2015 12:03 PM Calculation Date: 11/2/2015 11:35 AM

Operator : Douglass
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	0.6288	1.889	-0.041	2483	BB	4.0	
2	Methane		2.300					M
3	Carbon Dioxi	1.2752	3.417	-0.052	4985	BB	8.1	
4	Ethane		7.489					M
5	NMOC		12.324					M
	Totals:	1.9040		-0.093	7468			

Status Codes:
M - Missing peak

Total Unidentified Counts : 0 counts

Detected Peaks: 3 Rejected Peaks: 1 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -175 microVolts LSB: 1 microVolts

Noise (used): 30 microVolts - monitored before this run

Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

Almega ENVIRONMENTAL

Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\oct_15\11-2-2015, 12;03;22, n2 blank a164.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : n2 blank A164

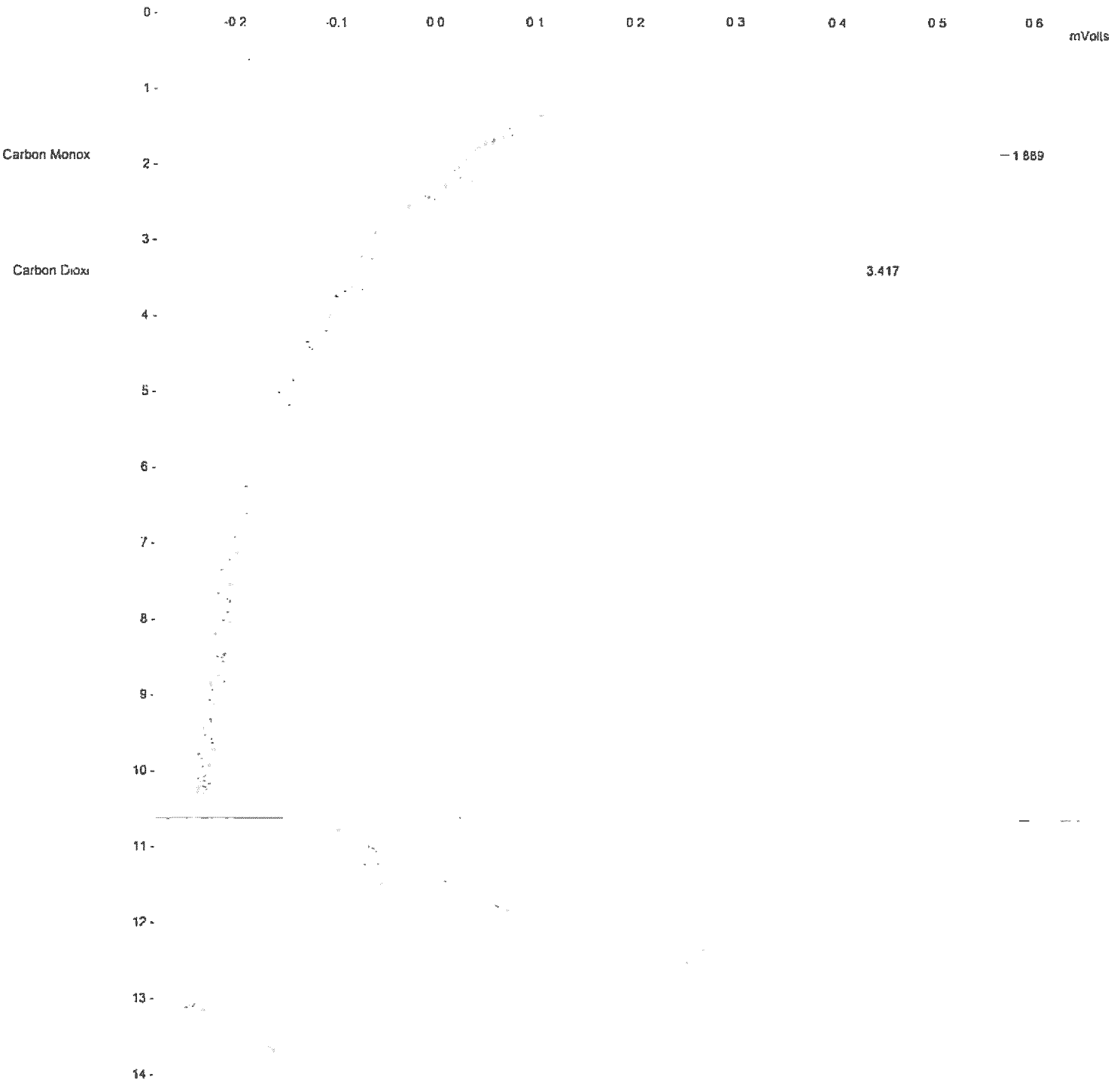
Almega ENVIRONMENTAL

Injection Date: 11/2/2015 12:03 PM Calculation Date: 11/2/2015 11:35 AM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 38
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3508-D6B-21E1 **

Chart Speed = 1.32 cm/min Attenuation = 1 Zero Offset = 10%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



Print Date: Tue Nov 03 13:38:52 2015 Page 1 of 1

Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\nov_15\11-2-2015, 19;21;17, 5ppm mix.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : 5ppm mix

Injection Date: 11/2/2015 7:21 PM Calculation Date: 11/3/2015 1:38 PM

Operator : Douglass
Workstation: DATAPART1
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	5.2247	1.909	-0.021	20632	BV	3.0	
2	Methane	4.9558	2.284	-0.016	19369	VB	3.8	
3	Carbon Dioxi	6.2323	3.433	-0.036	24362	BB	8.0	
4	Ethane	4.6720	7.392	-0.097	18196	BB	21.4	
5	NMOC	7.9568	11.940	-0.384	26407	BB	20.0	
	Totals:	29.0416		-0.554	108966			

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -174 microVolts LSB: 1 microVolts

Noise (used): 17 microVolts - monitored before this run

Stream: 3 Injection Number: 4 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\nov_15\11-2-2015, 19;21;17, 5ppm mix.run
Method File : c:\docume~1\douglass\locals~1\temp\~11-2-2015, 09;42;49, lab air-2.tmp
Sample ID : 5ppm mix

Almega ENVIRONMENTAL

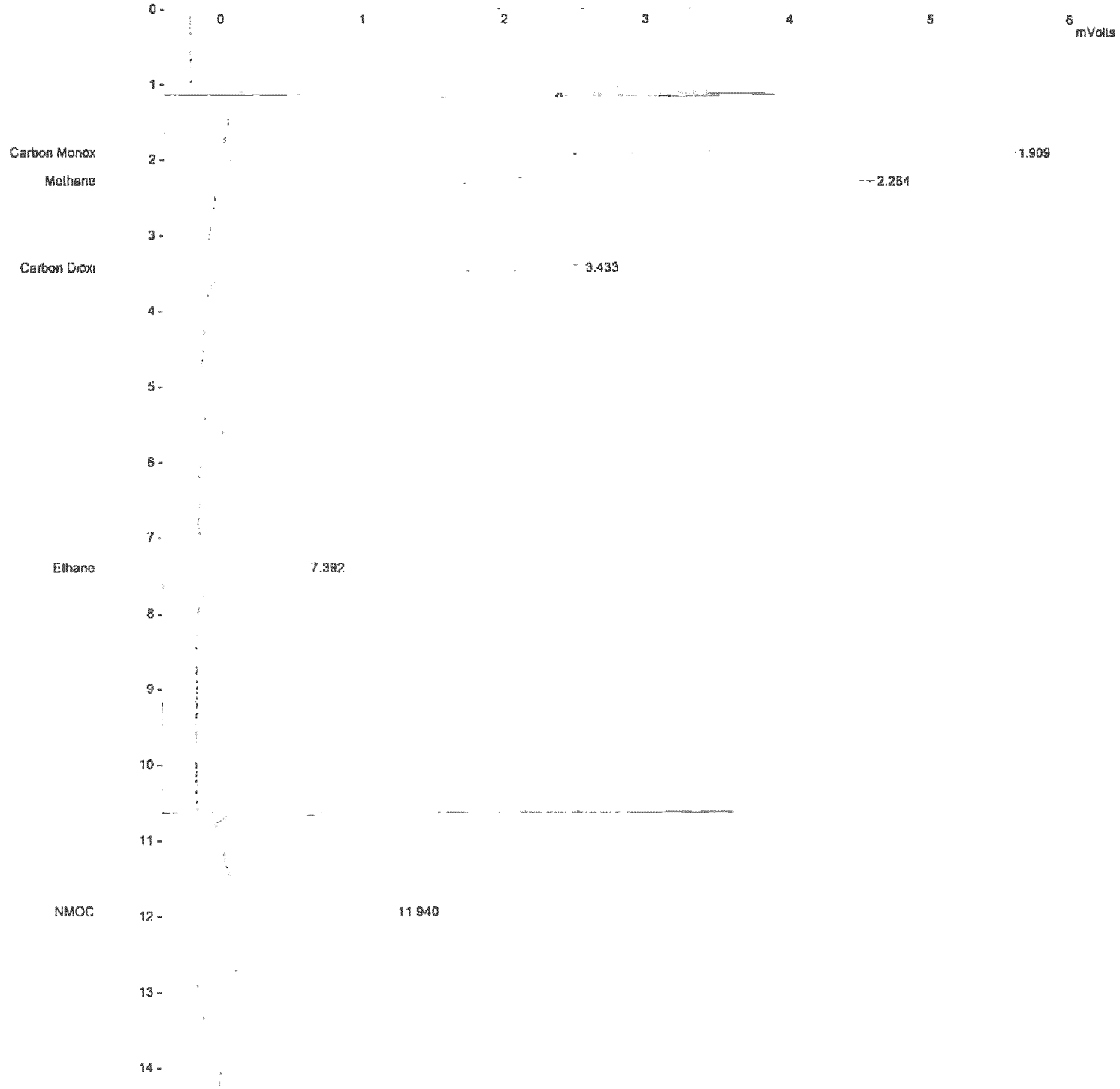
Injection Date: 11/2/2015 7:21 PM Calculation Date: 11/3/2015 1:38 PM

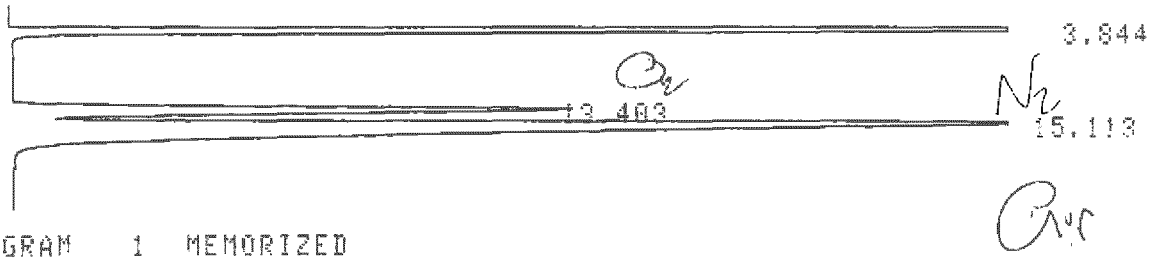
Operator : Douglass
Workstation: DATAPART1
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Chart Speed = 1.32 cm/min Attenuation = 2 Zero Offset = 7%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00

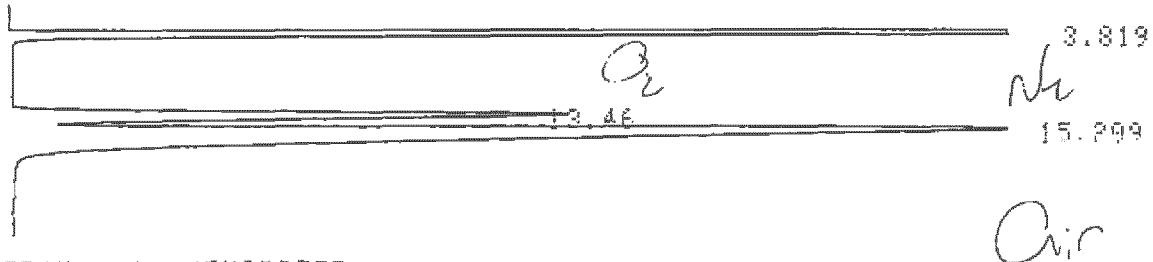




CHROMATOGRAM 1 MEMORIZED

C-R5A CHROMATOPAC
CHANNEL NO 1 FILE 0
SAMPLE NO 0 METHOD 41
REPORT NO 450

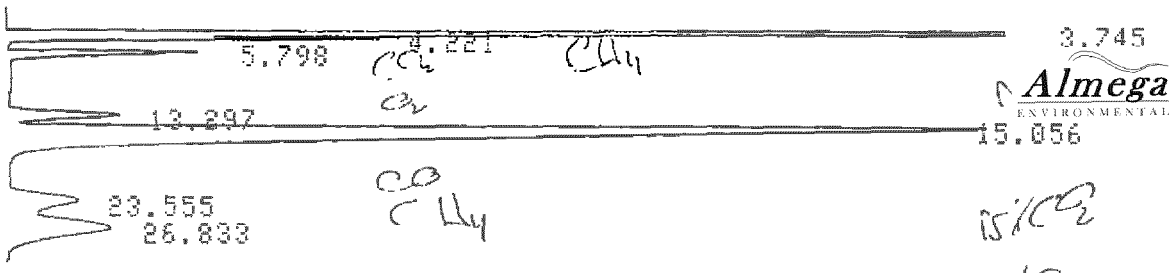
PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.844	8910140			35.835	
2	13.403	4071150			16.3734	
3	15.113	11883050	V		47.7915	
	TOTAL	24864338			100	



CHROMATOGRAM 1 MEMORIZED

C-R5A CHROMATOPAC
CHANNEL NO 1 FILE 0
SAMPLE NO 0 METHOD 41
REPORT NO 451

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.819	3893444			35.409	
2	13.46	4124963			16.4234	
3	15.209	12097945	V		48.1676	
	TOTAL	25116352			100	

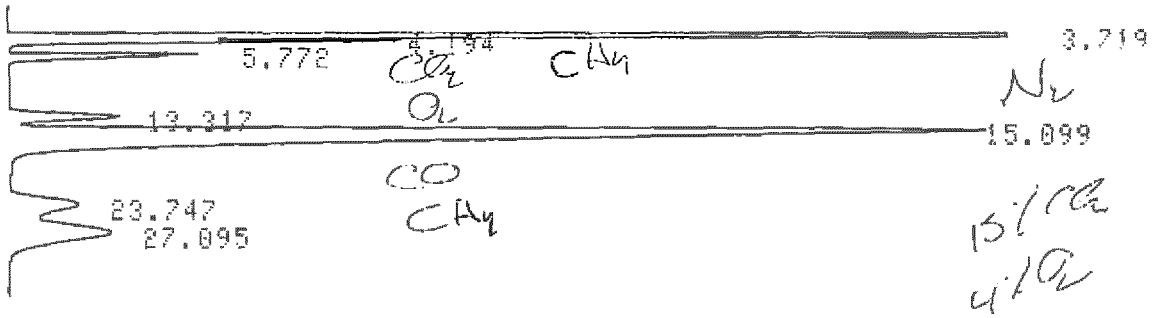


CHROMATOGRAM 1 MEMORIZED

C-R5A CHROMATOPAC

CHANNEL NO	1			FILE	0	
SAMPLE NO	0			METHOD	41	
REPORT NO	452					

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.745	6869031			29.4905	
2	4.221	1074097	V		4.6114	
3	5.798	869447			3.7328	
4	13.297	792302			3.4016	
5	15.056	10792760	V		46.3361	
6	23.555	1018656			4.3733	
7	26.833	1876060	V		8.0544	
	TOTAL	23292350			100	

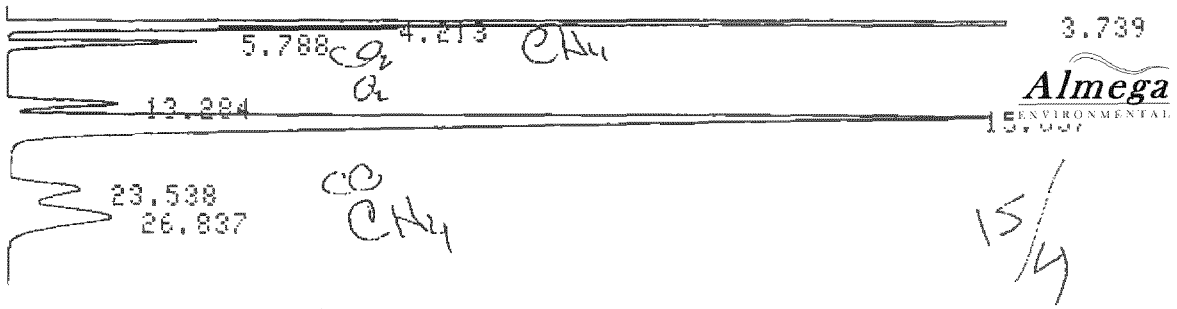


CHROMATOGRAM 1 MEMORIZED

C-R5A CHROMATOPAC

CHANNEL NO	1			FILE	0	
SAMPLE NO	0			METHOD	41	
REPORT NO	453					

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.719	6888625			29.2148	
2	4.194	1075593	V		4.5616	
3	5.772	877867	V		3.723	
4	13.317	807503			3.4246	
5	15.099	10959749	V		46.4805	
6	23.747	1050662			4.4559	
7	27.095	1919244	V		8.1395	
	TOTAL	23579240			100	



CHROMATOGRAM 1 MEMORIZED

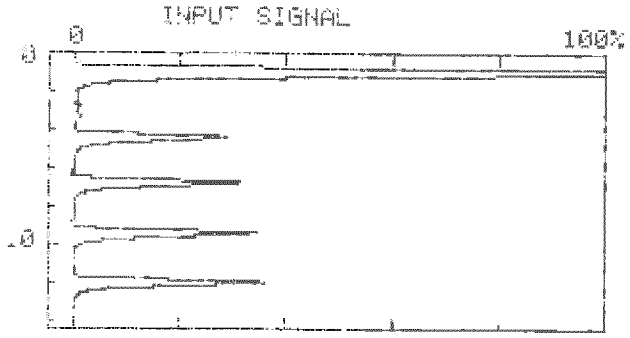
C-R5A CHROMATOPAC

CHANNEL NO	1	FILE	0
SAMPLE NO	0	METHOD	41
REPORT NO	472		

PKNO	TIME	AREA	MK	IDNO	CONC	NAME
1	3.739	6946027			29.5968	
2	4.213	1070416	V		4.561	
3	5.788	881551	V		3.7563	
4	13.284	800981			3.413	
5	15.037	10841218	V		46.1941	
6	23.538	1035539			4.4124	
7	26.837	1893099	V		8.0664	
	TOTAL	23468826			100	

TOC ANALYSIS

on the TRAPS



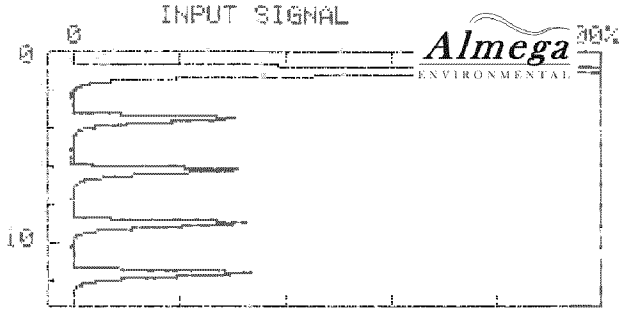
TIME [min]

SAMPLE# 8 TC
[× 1, 27µl, C# 14, #WASH 2, SP 0min]

	#	AREA	ppm	C#	µl	RG
	1	60559	30.81			H
	2	13026	30.07		16	
	3	14141	32.67			
	4	15234	35.22			
+	5	15489	35.81			

MN	14954	34.57
SD	716	1.670
CV	4.78 %	
COR CONC DIL	34.57 [× 1.0]	
COR CONC INJ	34.57 [× 1.0]	

DATE 11(NOV)-02-2015 13:35



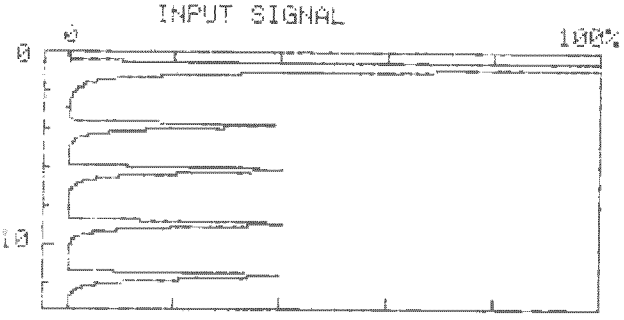
TIME [min]

SAMPLE# 9 TC
[× 1, 27µl, C# 14, #WASH 2, SP 0min]

	#	AREA	ppm	C#	µl	RG
	1	63529	32.34			H
	2	14550	33.62		16	
	3	14330	33.11			
	4	14916	34.48			
+	5	15010	34.70			

MN	14825	34.27
SD	243	0.566
CV	1.63 %	
COR CONC DIL	34.27 [× 1.0]	
COR CONC INJ	34.27 [× 1.0]	

DATE 11(NOV)-02-2015 14:12



TIME [min]

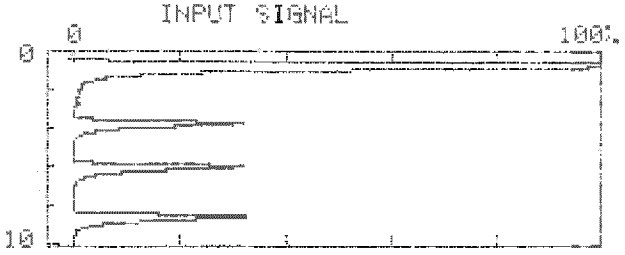
SAMPLE# 8 IC
[× 1, 33µl, C# 13, #WASH 2, SP 0min]

	#	AREA	ppm	C#	µl	RG
	1	78757	28.25			H
	2	16893	29.44		15	
	3	17761	30.96			
	4	17867	31.15			
+	5	17224	30.02			

MN	17617	30.71
SD	344	0.602
CV	1.95 %	
COR CONC DIL	30.71 [× 1.0]	
COR CONC INJ	30.71 [× 1.0]	

SAMPLE# 8 TOC(TC-IC) 3.860 ppm

DATE 11(NOV)-02-2015 13:54



TIME [min]

SAMPLE# 9 IC
[× 1, 33µl, C# 13, #WASH 2, SP 0min]

	#	AREA	ppm	C#	µl	RG
	1	62410	24.88			H
	2	13640	23.75		15	
	3	13639	23.75			
	4	13635	23.75			

MN	13638	23.75
SD	2	0.004
CV	0.01 %	
COR CONC DIL	23.75 [× 1.0]	
COR CONC INJ	23.75 [× 1.0]	

SAMPLE# 9 TOC(TC-IC) 10.52 ppm

DATE 11(NOV)-02-2015 14:24

Almega Environmental Technical Services

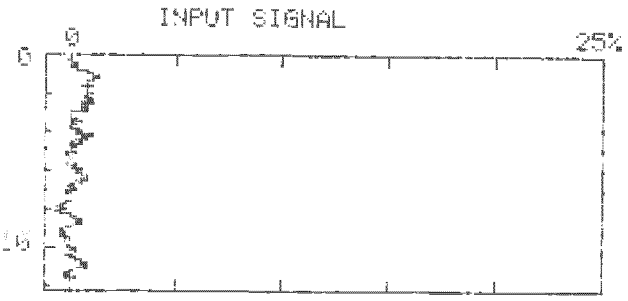
Almega ENVIRONMENTAL

SCAQMD Method 25.3
TOC Analysis on the Trap

Calibration Curve No.: TC IC Page: # 55

	No	Sample ID	Date	Sample Volume, ml Initial	Sample Volume, ml Final	Dilution Factor	Concentration, ppmC TC	Concentration, ppmC IC	Concentration, ppmC TOC
	1	Blank	11/2	—	—	1	0.00	.051	-.001
	2	K Std		—	—	1	9.129	.262	8.867
	3	IC Std		—	—	1	4.729	4.019	10.710
	4	LCS		—	—	1	5.651	.372	5.279
	5	Blank		—	—	1	-0.03	-0.02	-0.00
114	6	A155 -032A		4	4	1	4.144	1.242	2.902
115	7	-032B		4	4	1	8.054	1.817	6.237
16	8	A152 -012A		2	4	2	34.57	30.71	3.860
17	9	-012B		2	4	2	34.27	23.75	10.52
36	10	A154 111		2	4	2	4.201	2.487	1.714
37	11	112		2	4	2	2.861	2.069	.792
40	12	113		2	4	2	2.385	1.985	.400
41	13	114		2	4	2	2.437	1.974	.463
	14	LCS		-	-	1	5.667	.289	5.378
	15								
	16								
	17								
	18								
	19								
	20								
	21								

Comments

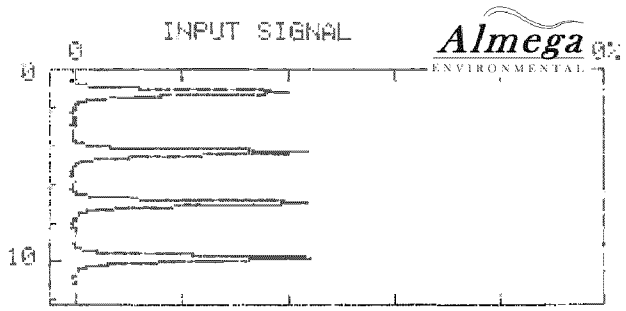


TIME [min]

SAMPLE# 1 TC
[x 1, 27µl, C# 14, #WASH 2, SP 0min]

	#	AREA	ppm	C#	µl	RG
	1-	932	0.242			
	2	422	-0.01			
	3-	355	-0.05			
+	4	468	0.004			
+	5	474	0.007			
	MN	454	-0.00			
	SD	28	0.014			
	CV	6.25 %				
	COR CONC DIL	-0.00 [x 1.0]				
	COR CONC INJ	-0.00 [x 1.0]				

DATE 11(NOV)-02-2015 09:42

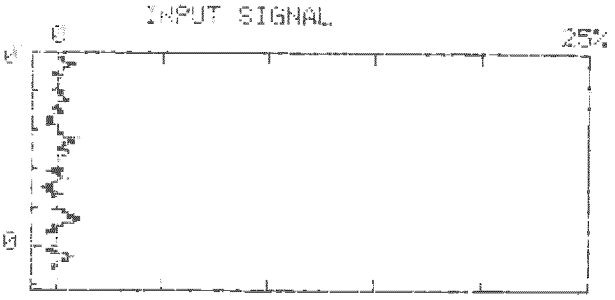


TIME [min]

SAMPLE# 2 TC
[x 1, 27µl, C# 14, #WASH 2, SP 0min]

	#	AREA	ppm	C#	µl	RG
	1-	16994	8.455			
	2	18411	9.180			
	3	18195	9.070			
+	4	18324	9.136			
	MN	18310	9.129			
	SD	108	0.055			
	CV	0.59 %				
	COR CONC DIL	9.129 [x 1.0]				
	COR CONC INJ	9.129 [x 1.0]				

DATE 11(NOV)-02-2015 10:25



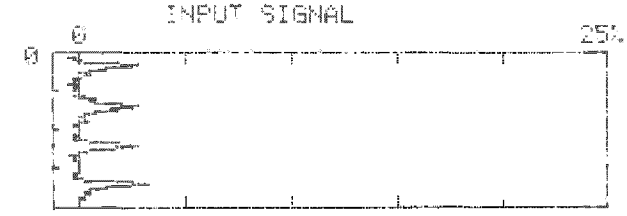
TIME [min]

SAMPLE# 1 IC
[x 1, 33µl, C# 13, #WASH 2, SP 0min]

	#	AREA	ppm	C#	µl	RG
	1-	240	-0.03			
	2	463	0.053			
	3-	28	-0.11			
+	4-	62	-0.09			
+	5	494	0.065			
+	6	416	0.035			
	MN	457	0.051			
	SD	39	0.015			
	CV	8.58 %				
	COR CONC DIL	0.051 [x 1.0]				
	COR CONC INJ	0.051 [x 1.0]				

SAMPLE# 1 TOC(TC-IC) -0.05 ppm

DATE 11(NOV)-02-2015 10:11



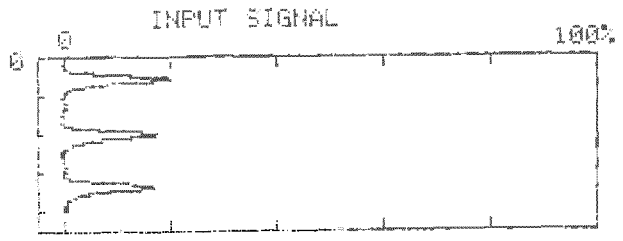
TIME [min]

SAMPLE# 2 IC
[x 1, 33µl, C# 13, #WASH 2, SP 0min]

	#	AREA	ppm	C#	µl	RG
	1-	1184	0.328			
	2	1100	0.296			
	3	1008	0.261			
+	4	925	0.229			
	MN	1011	0.262			
	SD	97	0.033			
	CV	9.65 %				
	COR CONC DIL	0.262 [x 1.0]				
	COR CONC INJ	0.262 [x 1.0]				

SAMPLE# 2 TOC(TC-IC) 8.867 ppm

DATE 11(NOV)-02-2015 10:37

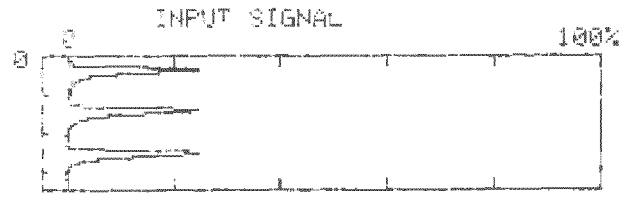


TIME [min]

SAMPLE# 3 TC
[× 1, 27µl, C# 14, #WASH 2, SP 0min]

#	AREA	ppm	C#	µl	RS
1	10125	4.945			
2	9724	4.740			
3	9263	4.504			
MN	9704	4.729			
SD	431	0.220			
CV	4.44 %				
COR CONC DIL	4.729 [× 1.0]				
COR CONC INJ	4.729 [× 1.0]				

DATE 11(NOV)-02-2015 10:48



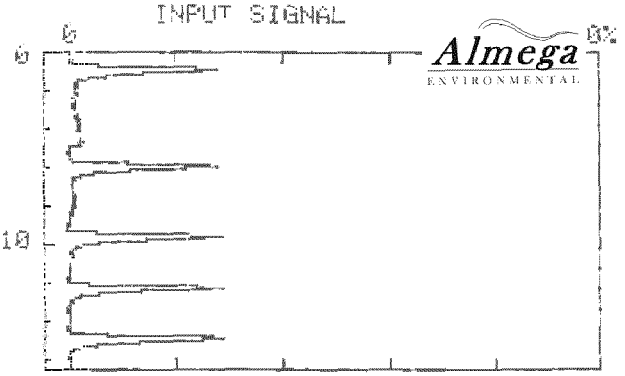
TIME [min]

SAMPLE# 3 IC
[× 1, 33µl, C# 13, #WASH 2, SP 0min]

#	AREA	ppm	C#	µl	RS
1	10425	3.922			
2	10965	4.139			
3	10608	3.995			
MN	10666	4.019			
SD	274	0.110			
CV	2.57 %				
COR CONC DIL	4.019 [× 1.0]				
COR CONC INJ	4.019 [× 1.0]				

SAMPLE# 3 TOC(TC-IC) 0.710 ppm

DATE 11(NOV)-02-2015 10:57



TIME [min]

SAMPLE# 4 TC
[× 1, 27µl, C# 14, #WASH 2, SP 0min]

#	AREA	ppm	C#	µl	RS
1	-12533	6.175T			
2	-12202	6.006			
3	11508	5.651			
+ 4	11487	5.641			
+ 5	11529	5.662			
MN	11508	5.651			
SD	21	0.010			
CV	0.19 %				
COR CONC DIL	5.651 [× 1.0]				
COR CONC INJ	5.651 [× 1.0]				

DATE 11(NOV)-02-2015 11:16



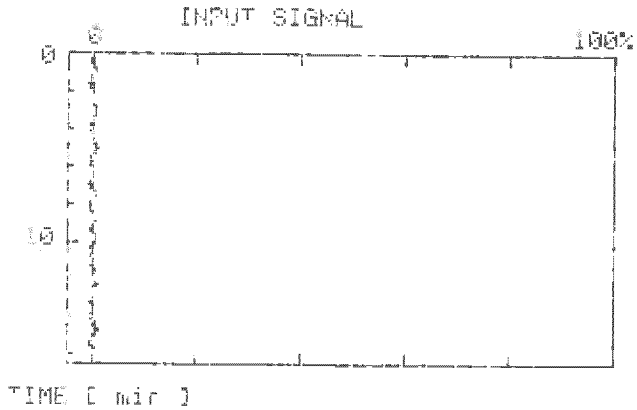
TIME [min]

SAMPLE# 4 IC
[× 1, 33µl, C# 13, #WASH 2, SP 0min]

#	AREA	ppm	C#	µl	RS
1	1230	0.345			
2	1293	0.371			
3	1370	0.399			
MN	1299	0.372			
SD	70	0.026			
CV	5.38 %				
COR CONC DIL	0.372 [× 1.0]				
COR CONC INJ	0.372 [× 1.0]				

SAMPLE# 4 TOC(TC-IC) 5.279 ppm

DATE 11(NOV)-02-2015 11:24

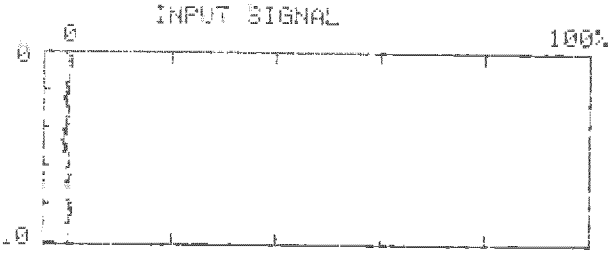


SAMPLE# 5 TC
[x 1, 27µl, C# 14, #WASH 2, SP 0min]

#	AREA	ppm	C# µl RG
1-	290	-0.08	
2	440	-0.00	
3	337	-0.06	
+ 4-	537	0.040	
+ 5	370	-0.04	
+ 6-	713	0.132	
+ 7-	1041	0.298	
MN	382	-0.03	
SD	52	0.027	

CV 13.7 %
COR CONC DIL -0.03 [x 1.0]
COR CONC INJ -0.03 [x 1.0]

DATE 11(NOV)-02-2015 12:18



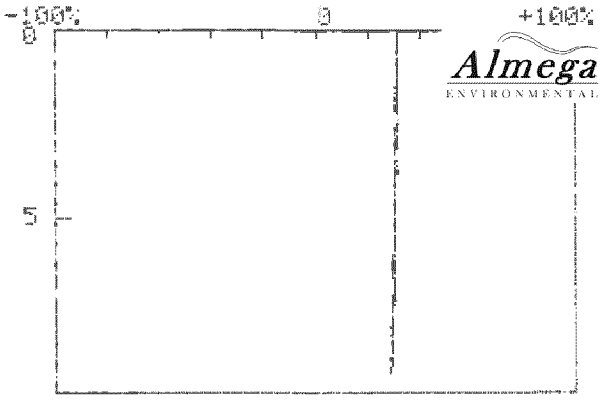
SAMPLE# 5 IC
[x 1, 33µl, C# 13, #WASH 2, SP 0min]

#	AREA	ppm	C# µl RG
1-	126	-0.07	
2	266	-0.02	
3-	55	-0.10	
+ 4	229	-0.03	
+ 5	291	-0.01	
MN	262	-0.02	
SD	31	0.011	

CV 11.9 %
COR CONC DIL -0.02 [x 1.0]
COR CONC INJ -0.02 [x 1.0]

SAMPLE# 5 TOC(TC-IC) -0.00 ppm

DATE 11(NOV)-02-2015 12:29



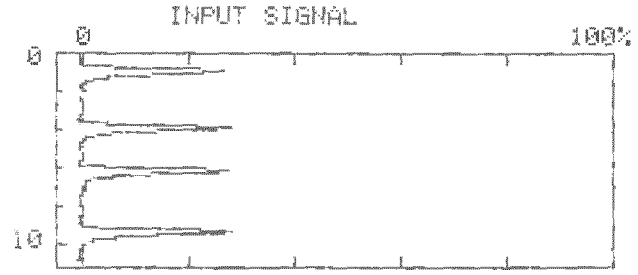
RANGE : x1
[READY]
TC FURNACE TEMP : OK 679°C
DEHUMIDIFIER TEMP : OK 1.1°C
BASELINE POSITION : OK
BASELINE FLUCTUATION: OK
BASELINE NOISE : OK

DATE 11(NOV)-02-2015 08:52

TOC-5000 DATA REPORT
DATE 11(NOV)-02-2015 16:54

SPL#	TC,ppm	RMK	IC,ppm	RMK	TOC,ppm
1	-0.00	14****	0.051	13****	-0.05
2	9.129	14****	0.262	13****	8.867
3	4.729	14****	4.019	13****	0.710
4	5.651	14****	0.372	13****	5.279
5	-0.03	14****	-0.02	13****	-0.00
6	4.144	14****	1.242	13****	2.902
7	8.054	14****	1.817	13****	6.237
8	34.57	16*H**	30.71	15*H**	3.860
9	34.27	16*H**	23.75	15*H**	10.52
10	4.201	14****	2.487	13****	1.714
11	2.861	14****	2.069	13****	0.792
12	2.385	14****	1.985	13****	0.400
13	2.437	14****	1.974	13****	0.463
14	5.667	14****	0.289	13****	5.378

ANALYST :
SAMPLE :

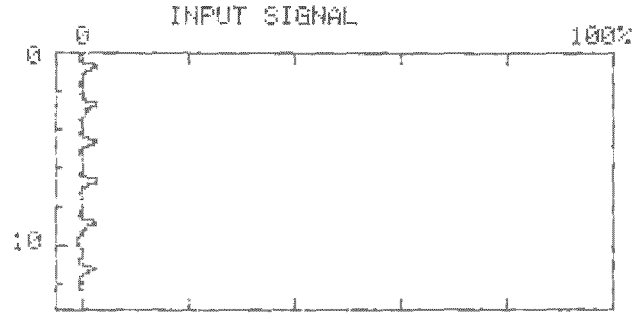


TIME [min]

SAMPLE# 14 TC
[x 1, 27µl, C# 14, #WASH 2, SP 0min]

	#	AREA	PPM	C#	µl	RG
	1	10369	5.069			
	2	11437	5.615			
	3	11831	5.817			
+	4	11347	5.569			
	MN	11538	5.667			
	SD	257	0.131			
	CV	2.23 %				
	COR CONC DIL		5.667 [x 1.0]			
	COR CONC INJ		5.667 [x 1.0]			

DATE 11(NOV)-02-2015 16:37



TIME [min]

SAMPLE# 14 IC
[x 1, 33µl, C# 13, #WASH 2, SP 0min]

	#	AREA	PPM	C#	µl	RG
	3	1008	0.225			
+	4	1083	0.289			
+	5	1383	0.404			
+	6	1152	0.316			
	MN	1082	0.289			
	SD	70	0.026			
	CV	6.51 %				
	COR CONC DIL		0.289 [x 1.0]			
	COR CONC INJ		0.289 [x 1.0]			

SAMPLE# 14 TOC(TC-IC) 5.378 PPM

DATE 11(NOV)-02-2015 16:53

TANK PREPARATION

TANK PREPARATIONS

Client:	Mesa	Lab No.:	A 152
Project No.:	c9840		
Unit Tested:	Resevoir #2 - Engine #4		
Sampling Date:	28-Oct-15		
Date pressurized:	28-Oct-15		

Tank ID	Sample ID	Pre-test pressure mm Hg		Post-test pressure mm Hg	Final Pressure	Comments
		1	2			
S084	A 152 - 011 A	-758	-758	-406	172	Run #1 A
W0010	A 152 - 011 B	-758	-758	-460	176	Run #1 B

* - Post -test Pressure is less then 200 mm Hg.

CALIBRATIONS

11-Jun-15
Current

	100 ppm mix					1000 ppm mix					2000 ppm mix						
	conc	area 1	area 2	RF 1	RF 2	conc	area 1	area 2	RF 1	RF 2	conc	area 1	area 2	RF 1	RF 2	Ave	RSD
Carbon Monoxide	101 08	370255	370534	2 73E-04	2 73E-04	1000.4	3675579	3677664	2.72E-04	2.72E-04	2006.8	7837647	7847982	2 56E-04	2 56E-04	**2.67E-04**	**0.3**
Methane	101.92	404558	404178	2 52E-04	2 52E-04	1001.8	3996870	3999636	2.51E-04	2.50E-04	2010	7841024	7848899	2.56E-04	2 56E-04	**2.53E-04**	**-4.9**
Carbon Dioxide	104 3	398920	398859	2 61E-04	2 61E-04	1002	3952298	3958485	2 54E-04	2 53E-04	1999	7759139	7771729	2.58E-04	2 57E-04	**2.57E-04**	**3.3**
Ethane	97 06	401612	402485	2 42E-04	2 41E-04	1004	3918356	3915213	2 56E-04	2.56E-04	2015	7841898	7841835	2.57E-04	2 57E-04	**2.52E-04**	**5.5**
TGNMO	101 9	344008	342942	2.96E-04	2 97E-04	1002	3288823	3284294	3 05E-04	3 05E-04	2002	6488336	6473601	3 09E-04	3 09E-04	**3.03E-04**	**14.0**
	Average	**387275**	**387116**	**2.63E-04**	**2.63E-04**	Average	**3766385**	**3767058.4**	**2.67E-04**	**2.67E-04**	Average	**7553609**	**7556809**	**2.67E-04**	**2.67E-04**		
			Average	**2.63E-04**				Average	**2.67E-04**				Average	**2.67E-04**			
	RSD%			**1.2**					**-0.5**					**0.4**			

Average **2.66E-04**

RSD, %

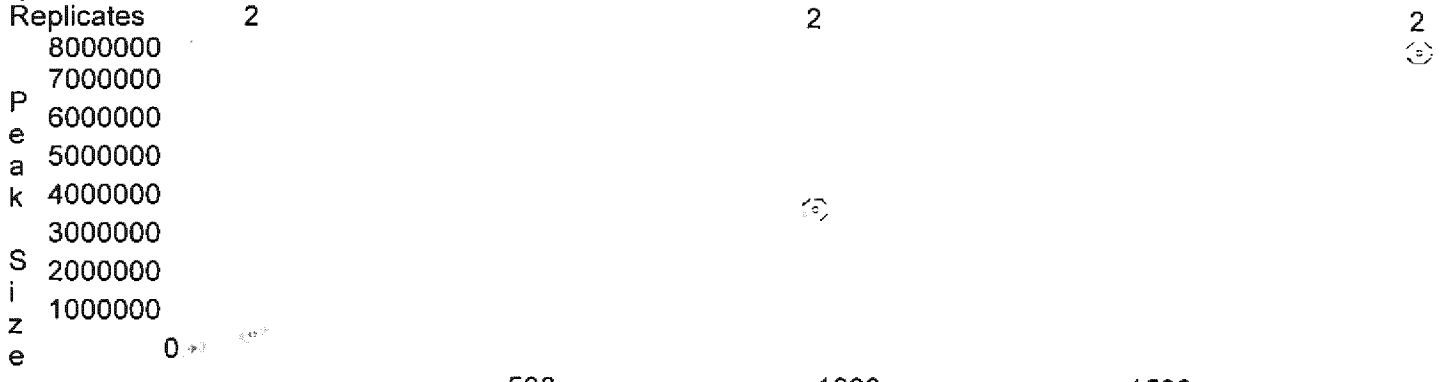
RSD_{CO} =	4.278	r_{CO} =	0.99911
RSD_{CH4} =	0.724	r_{CH4} =	0.99997
RSD_{CO2} =	1 504	r_{CO2} =	0.99995
RSD_{C2H6} =	1.435	r_{C2H6} =	1.00000
RSD_{NMOC} =	3.459	r_{NMOC} =	0.99999

Almega ENVIRONMENTAL

Almega ENVIRONMENTAL

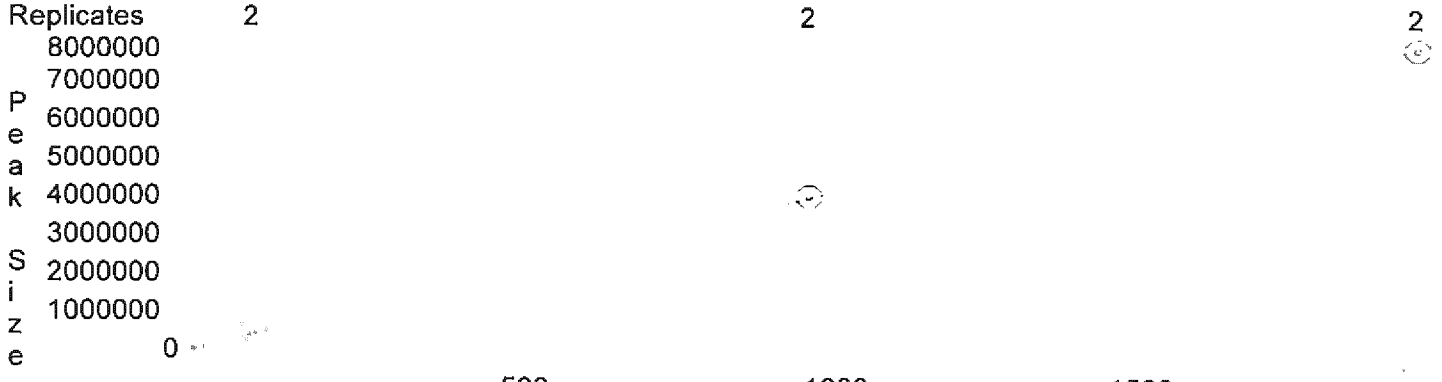
Carbon Monoxide

External Standard Analysis
Curve Type: Linear
Origin: Force
y = +3.890797e+003x
Resp. Fact. RSD: 4.278%
Coeff. Det.(r^2): 0.998216



Methane

External Standard Analysis
Curve Type: Linear
Origin: Force
y = +3.890298e+003x
Resp. Fact. RSD: 0.7244%
Coeff. Det.(r^2): 0.999947



Carbon Dioxide

External Standard Analysis
Curve Type: Linear
Origin: Force
y = +3.885038e+003x
Resp. Fact. RSD: 1.504%
Coeff. Det.(r^2): 0.999910

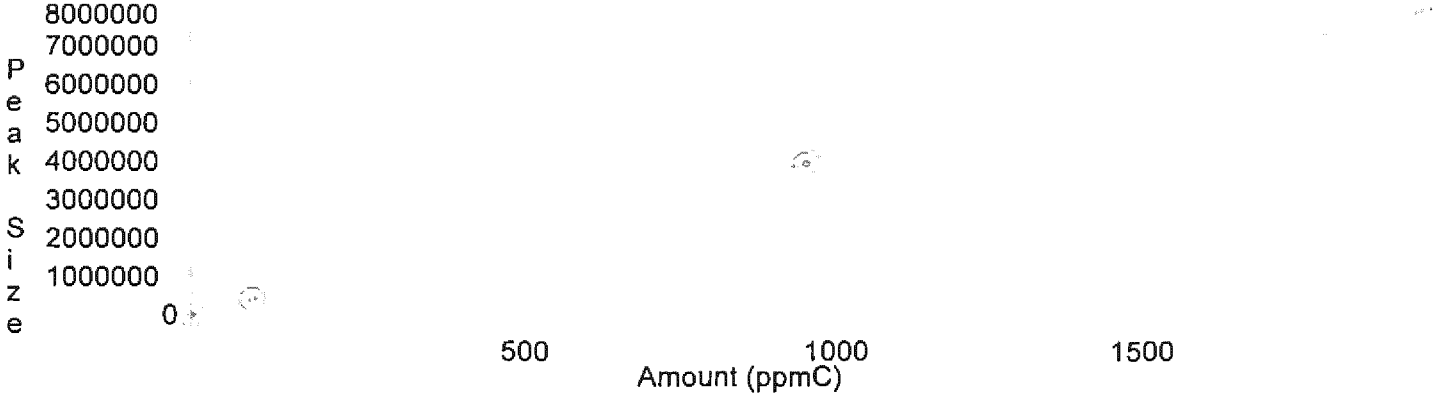


Ethane

External Standard Analysis
Curve Type: Linear
Origin: Force
y = +3.872272e+003x

Resp. Fact. RSD: 1.435%
Coeff. Det.(r^2): 0.999994

Replicates 2 2 2

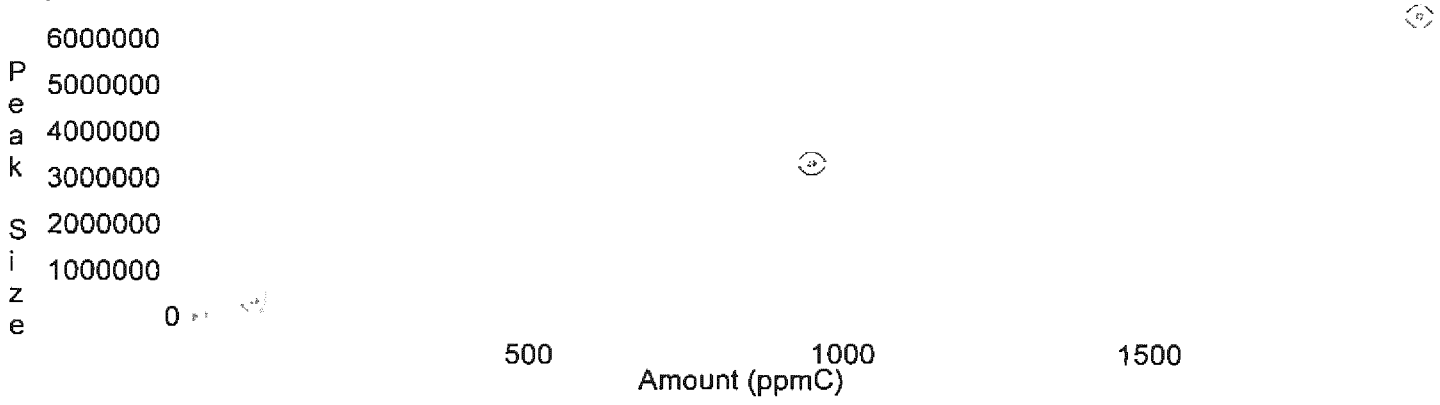


NMOC

External Standard Analysis
Curve Type: Linear
Origin: Force
y = +3.232029e+003x

Resp. Fact. RSD: 3.459%
Coeff. Det.(r^2): 0.999986

Replicates 2 2 2



Print Date: Fri Jun 12 11:02:09 2015 Page 1 of 1

Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\june_15\6-11-2015, 10;31;00, lab air.run
Method File : c:\docume~1\douglass\locals~1\temp\~6-8-2015, 09;42;15, lab air-2.tmp
Sample ID : lab air

Injection Date: 6/11/2015 10:31 AM Calculation Date: 6/11/2015 3:11 PM

Operator : Douglass
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	100.4453	1.889	-0.041	396662	BB	3.8	
2	Methane	1.5123	2.283	0.012	5911	TS	0.0	
3	Carbon Dioxi	496.0579	3.429	-0.040	1939116	BB	7.9	
4	Ethane		7.489					M
5	NMOC		12.324					M
	Totals:	598.0155		-0.069	2341689			

Status Codes:
M = Missing peak

Total Unidentified Counts : 0 counts

Detected Peaks: 4 Rejected Peaks: 1 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -246 microVolts LSB: 1 microVolts

Noise (used): 51 microVolts - monitored before this run

Stream: 1 Injection Number: 2 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\june_15\6-11-2015, 10;31;00, lab air.run
Method File : c:\docume~1\douglass\locals~1\temp\~6-8-2015, 09;42;15, lab air-2.tmp
Sample ID : lab air

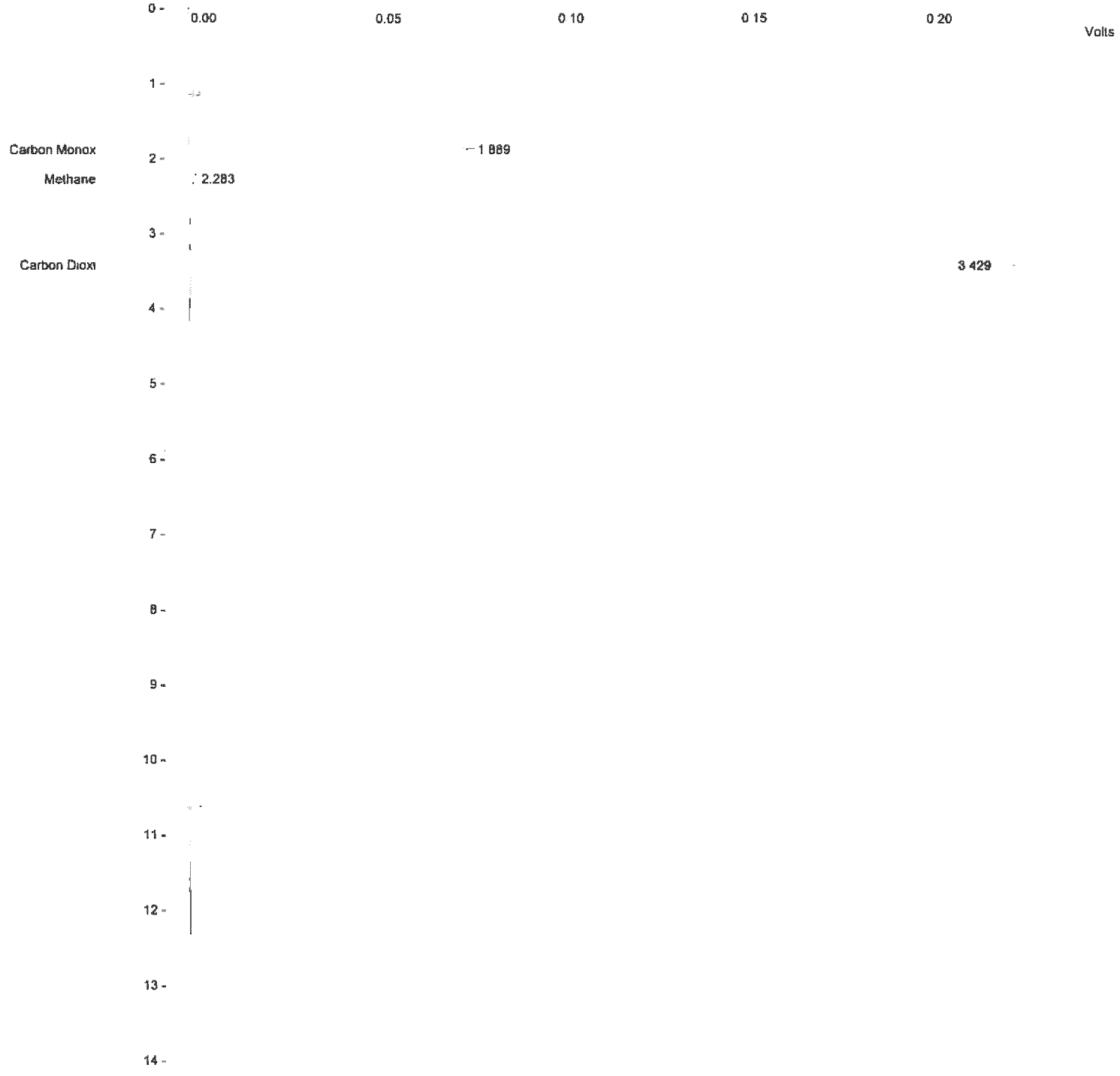
Almega ENVIRONMENTAL

Injection Date: 6/11/2015 10:31 AM Calculation Date: 6/11/2015 3:11 PM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Chart Speed = 1.32 cm/min Attenuation = 106 Zero Offset = 2%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\june_15\6-11-2015, 10;59;03, n2 blank w0100.run
Method File : c:\docume~1\douglass\locals~1\temp\~6-8-2015, 09;42;15, lab_air-2.tmp
Sample ID : n2 blank w0100

Injection Date: 6/11/2015 10:59 AM Calculation Date: 6/11/2015 3:11 PM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

**Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	0.5921	1.904	-0.026	2338	BB	3.8	
2	Methane		2.271					M
3	Carbon Dioxi	0.9205	3.435	-0.034	3598	BB	8.3	
4	Ethane		7.489					M
5	NMOC		12.324					M
	Totals:	1.5126		-0.060	5936			

Status Codes:
M - Missing peak

Total Unidentified Counts : 0 counts

Detected Peaks: 3 Rejected Peaks: 1 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -259 microVolts LSB: 1 microVolts

Noise (used): 33 microVolts - monitored before this run

Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\june_15\6-11-2015, 10;59;03, n2 blank w0100.run
Method File : c:\docume~1\douglass\locals~1\temp\~6-8-2015, 09;42;15, lab air-2.tmp
Sample ID : n2 blank w0100

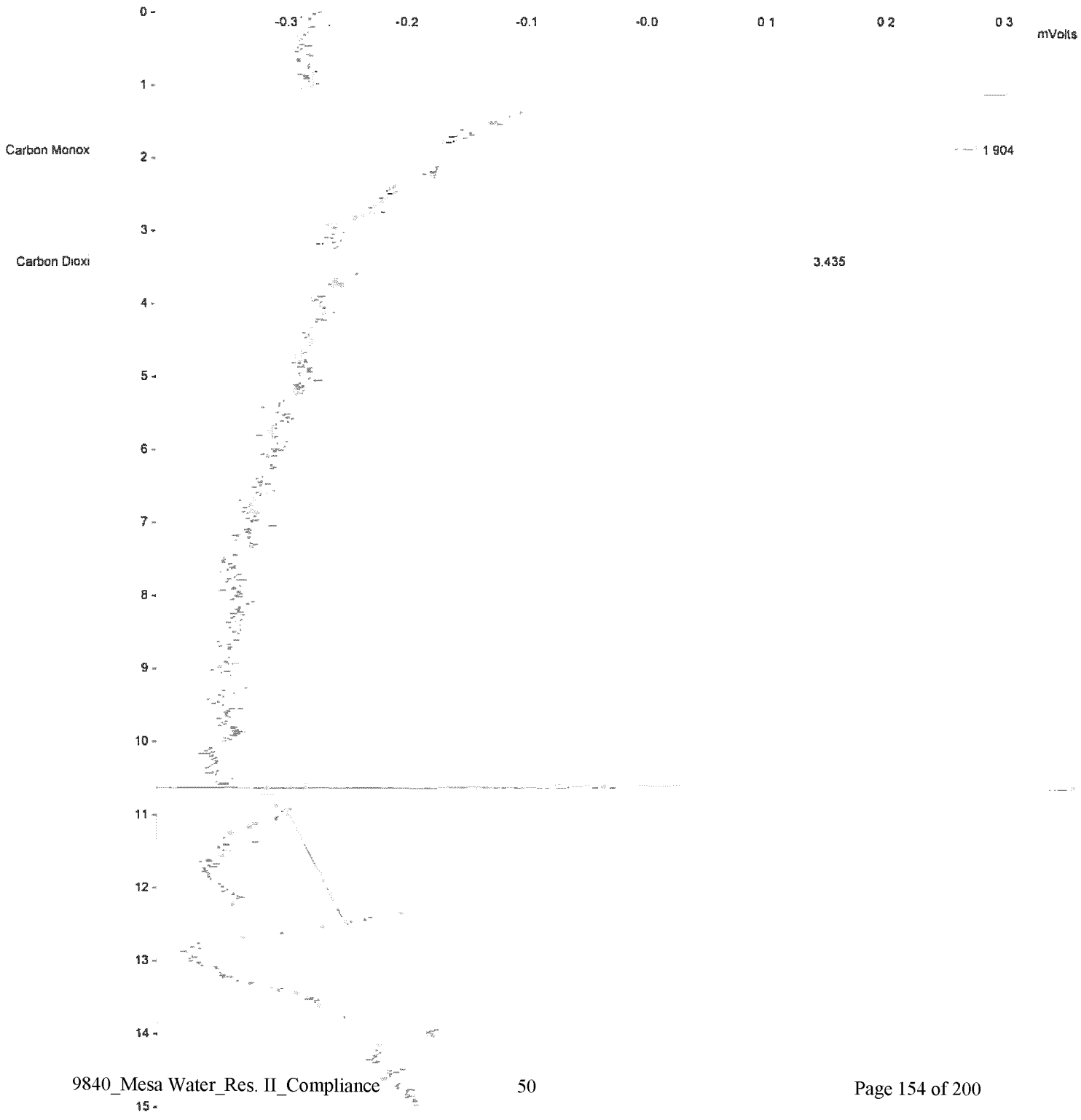
Almega ENVIRONMENTAL

Injection Date: 6/11/2015 10:59 AM Calculation Date: 6/11/2015 3:11 PM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** C0299-3588-D6B-21E1 **

Chart Speed = 1.32 cm/min Attenuation = 1 Zero Offset = 16%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



Print Date: Fri Jun 12 10:58:49 2015 Page 1 of 1

Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\june_15\6-11-2015, 11;48;06, 100ppm mix.run
Method File : c:\docume~1\douglass\locals~1\temp\~6-12-2015, 11;30;17, n2 blank all1-2.tmp
Sample ID : 100ppm mix

Injection Date: 6/11/2015 11:48 AM Calculation Date: 6/12/2015 10:56 AM

Operator : Douglass
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

**Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Calibration
Peak Measurement: Peak Area
Calculation Type: External Standard
Level : 3

Peak No.	Peak Name	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	1.923	-0.007	370255	BV	3.4	
2	Methane	2.296	-0.004	404558	VP	3.8	
3	Carbon Dioxi	3.436	-0.033	398920	PB	8.0	
4	Ethane	7.400	-0.089	401612	BB	21.8	
5	NMOC	12.335	0.011	344008	BB	17.0	
	Totals:		-0.122	1919353			

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: N/A Divisor: N/A Unidentified Peak Factor: 0

Baseline Offset: -153 microVolts LSB: 1 microVolts

Noise (used): 22 microVolts - monitored before this run

Stream: 1 Injection Number: 2 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

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tle : SCAQMD Methods 25.x
n File : \\almega01\fileserver\laboratory\gc chromatograms\2015\june_15\6-11-2015, 11;48;06, 100ppm mix.run
thod File : c:\docume~1\douglass\locals~1\temp\~6-12-2015, 11;30;17, n2 blank all1-2.tmp
mple ID : 100ppm mix

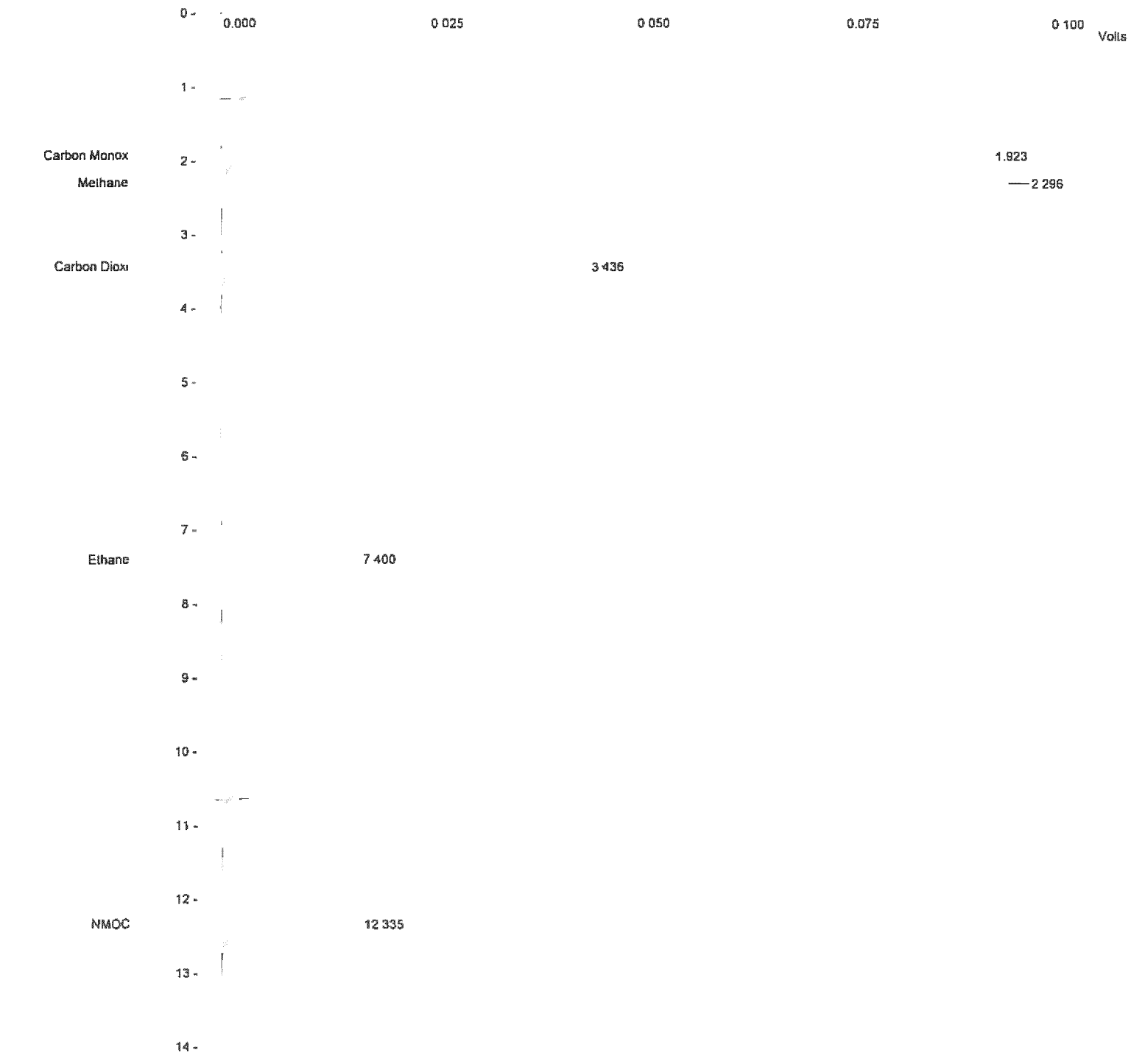
Almega ENVIRONMENTAL

jection Date: 6/11/2015 11:48 AM Calculation Date: 6/12/2015 10:56 AM

erator : Douglass Detector Type: 0800 (10 Volts)
rkstation: Bus Address : 88
strument : Varian Star #1 Sample Rate : 1.25 Hz
annel : 2 = Foreflush 10 Run Time : 15.013 min

Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

art Speed = 1.32 cm/min Attenuation = 46 Zero Offset = 2%
art Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



Print Date: Fri Jun 12 10:58:58 2015 Page 1 of 1

Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\june_15\6-11-2015, 12;14;47, 100ppm mix.run
Method File : c:\docume~1\douglass\locals~1\temp\~6-12-2015, 11;30;17, n2 blank a111-2.tmp
Sample ID : 100ppm mix

Injection Date: 6/11/2015 12:14 PM Calculation Date: 6/12/2015 10:56 AM

Operator : Douglass
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Calibration
Peak Measurement: Peak Area
Calculation Type: External Standard
Level : 3

Peak No.	Peak Name	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	1.913	-0.009	370534	BV	3.3	
2	Methane	2.288	-0.008	404178	VB	3.8	
3	Carbon Dioxi	3.431	-0.005	398859	BB	8.0	
4	Ethane	7.404	0.004	402485	BB	21.8	
5	NMOC	12.333	-0.001	342942	BB	17.4	
	Totals:		-0.019	1918998			

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: N/A Divisor: N/A Unidentified Peak Factor: 0

Baseline Offset: -296 microVolts LSB: 1 microVolts

Noise (used): 36 microVolts - monitored before this run

Stream: 1 Injection Number: 3 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\june_15\6-11-2015, 12;14;47, 100ppm mix.run
Method File : c:\docume~1\douglass\locals~1\temp\~6-12-2015, 11;30;17, n2 blank a111-2.tmp
Sample ID : 100ppm mix

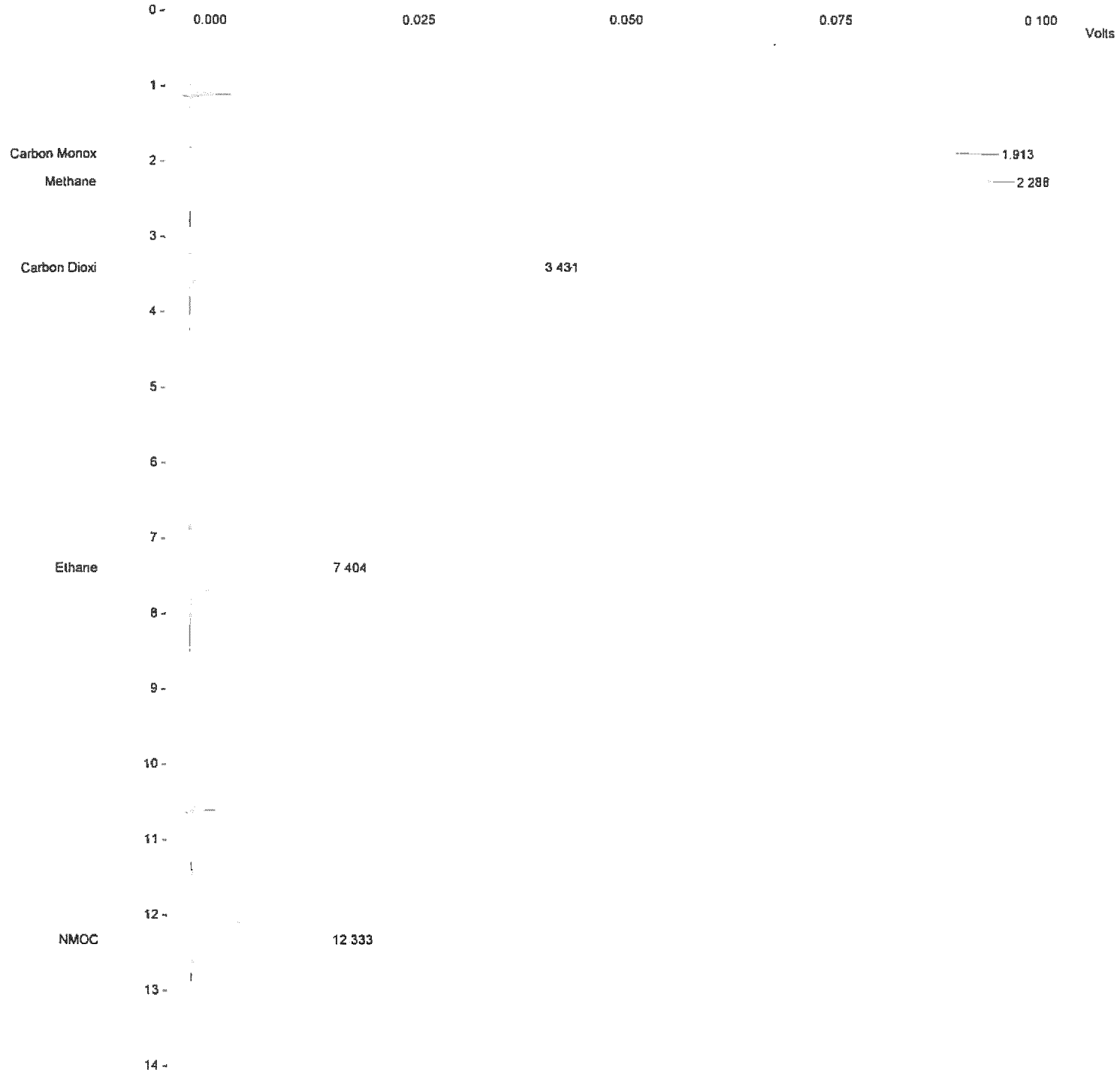
Almega ENVIRONMENTAL

Injection Date: 6/11/2015 12:14 PM Calculation Date: 6/12/2015 10:56 AM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Chart Speed = 1.32 cm/min Attenuation = 47 Zero Offset = 2%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



Print Date: Fri Jun 12 10:59:37 2015 Page 1 of 1

Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\june_15\6-11-2015, 13;10;59, 1000ppm mix.run
Method File : c:\docume~1\douglass\locals~1\temp\~6-12-2015, 11;30;17, n2 blank a111-2.tmp
Sample ID : 1000ppm mix

Injection Date: 6/11/2015 1:10 PM Calculation Date: 6/12/2015 10:56 AM

Operator : Douglass
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Calibration
Peak Measurement: Peak Area
Calculation Type: External Standard
Level : 2

Peak No.	Peak Name	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	1.933	0.020	3675579	BV	3.0	
2	Methane	2.309	0.021	3996870	VV	3.8	
3	Carbon Dioxi	3.448	0.018	3952298	VB	7.9	
4		5.632	0.000	21690	BB	15.2	
5	Ethane	7.413	0.009	3918356	BB	21.9	
6	NMOC	12.349	0.016	3288823	BB	17.1	
	Totals:		0.084	18853616			

Total Unidentified Counts : 21690 counts

Detected Peaks: 6 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: N/A Divisor: N/A Unidentified Peak Factor: 0

Baseline Offset: -231 microVolts LSB: 1 microVolts

Noise (used): 41 microVolts - monitored before this run

Stream: 1 Injection Number: 2 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

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Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\june_15\6-11-2015, 13;10;59, 1000ppm mix.run
Method File : c:\docume~1\douglass\locals~1\temp\~6-12-2015, 11;30;17, n2 blank a111-2.tmp
Sample ID : 1000ppm mix

Almega ENVIRONMENTAL

Injection Date: 6/11/2015 1:10 PM Calculation Date: 6/12/2015 10:56 AM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

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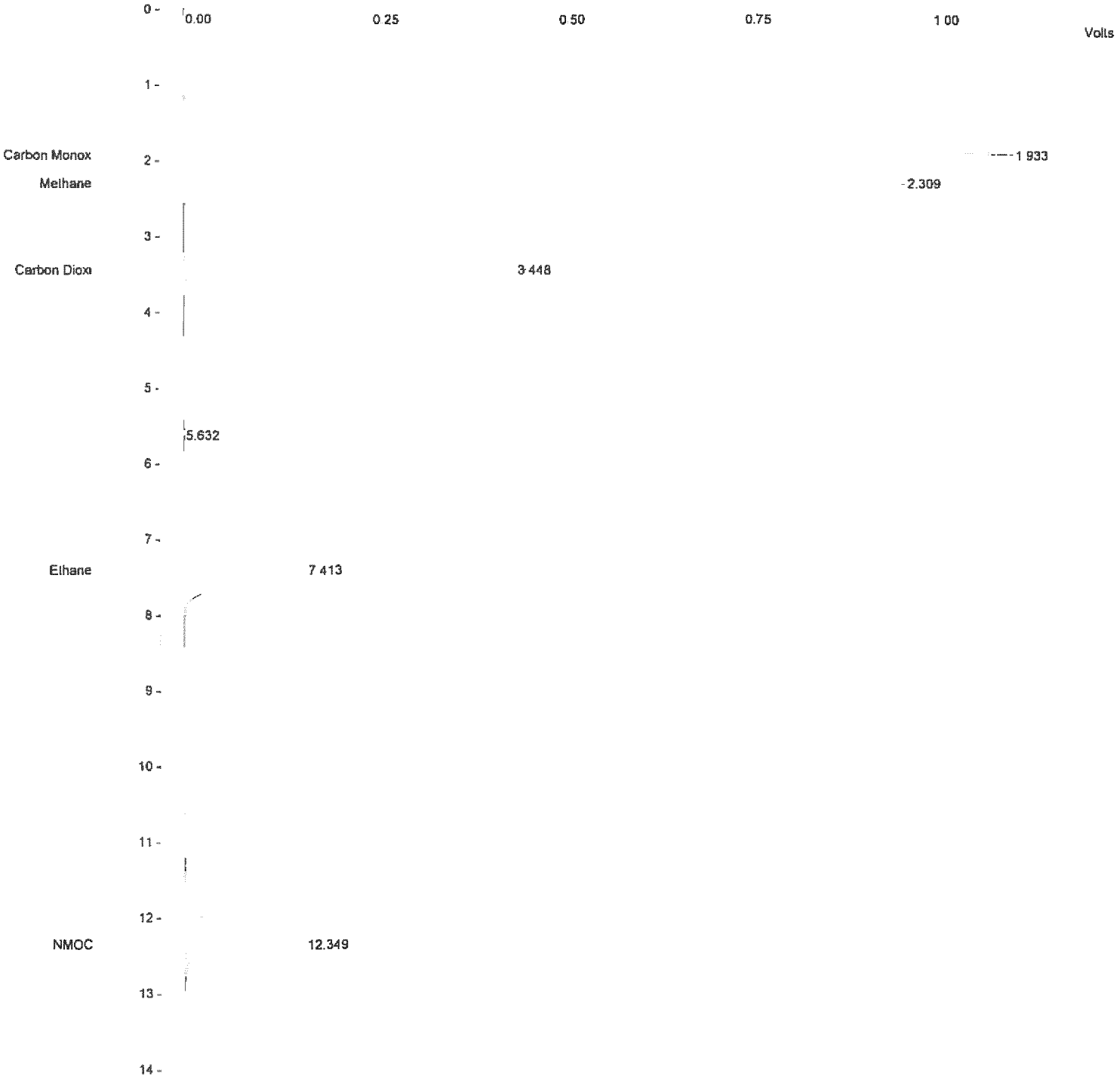

Print Date: Fri Jun 12 10:59:48 2015 Page 1 of 1

Title : SCAQMD Methods 25.x
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Sample ID : 1000ppm mix

Injection Date: 6/11/2015 1:39 PM Calculation Date: 6/12/2015 10:56 AM

Operator : Douglass
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

**Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Calibration
Peak Measurement: Peak Area
Calculation Type: External Standard
Level : 2

Peak No.	Peak Name	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	1.905	-0.028	3677664	BV	2.9	
2	Methane	2.281	-0.028	3999636	VV	3.8	
3	Carbon Dioxi	3.420	-0.028	3958485	VB	7.9	
4		5.603	0.000	22169	BB	15.4	
5	Ethane	7.384	-0.029	3915213	BB	21.8	
6	NMOC	12.323	-0.026	3284294	BB	17.2	
	Totals:		-0.139	18857461			

Total Unidentified Counts : 22169 counts

Detected Peaks: 6 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: N/A Divisor: N/A Unidentified Peak Factor: 0

Baseline Offset: -351 microVolts LSB: 1 microVolts

Noise (used): 24 microVolts - monitored before this run

Stream: 1 Injection Number: 3 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

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Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\june_15\6-11-2015, 13;39;09, 1000ppm mix.run
Method File : c:\docume~1\douglass\locals~1\temp\~6-12-2015, 11;30;17, n2 blank a111-2.tmp
Sample ID : 1000ppm mix

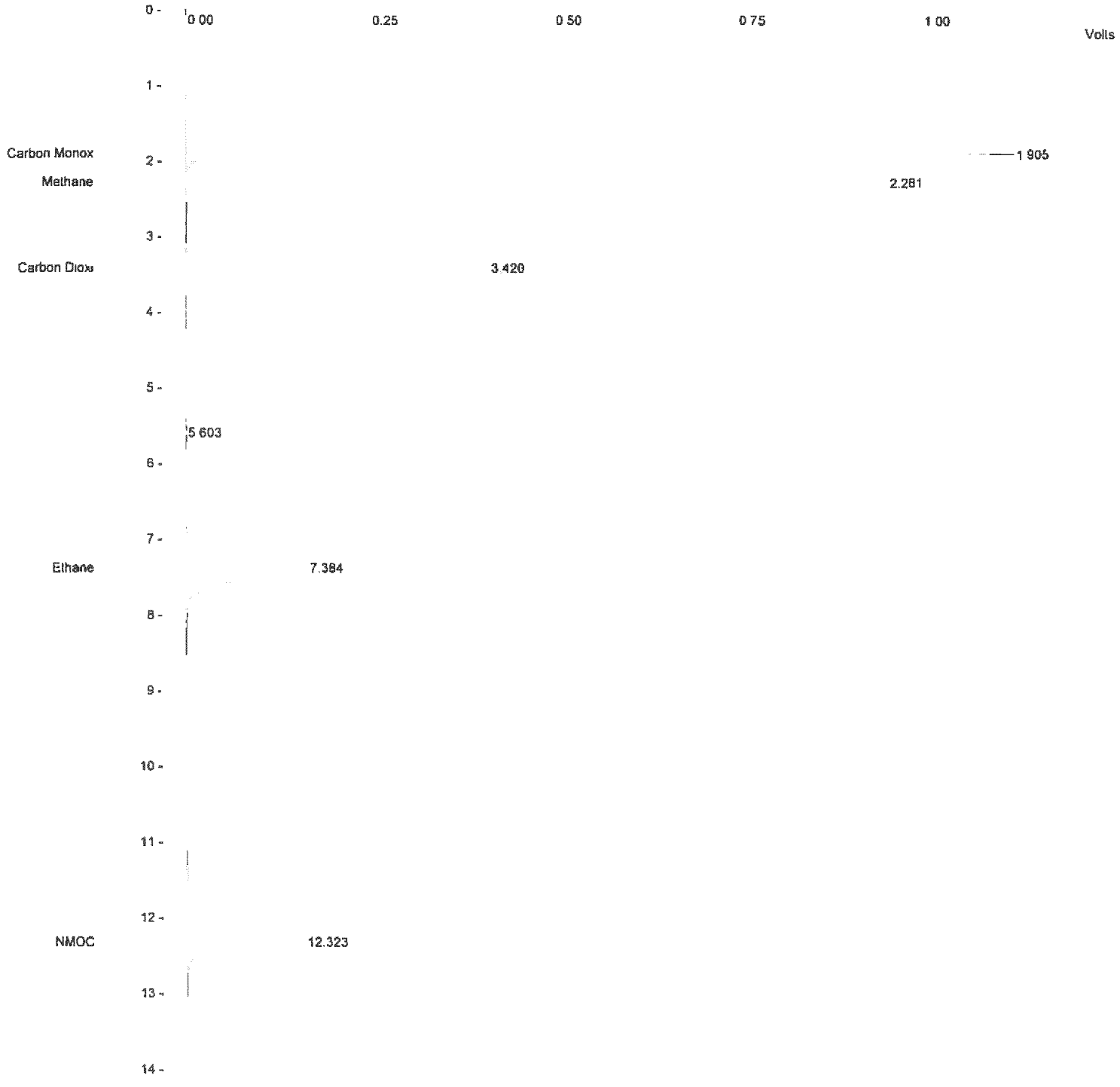
Almega ENVIRONMENTAL

Injection Date: 6/11/2015 1:39 PM Calculation Date: 6/12/2015 10:56 AM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Chart Speed = 1.32 cm/min Attenuation = 533 Zero Offset = 2%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



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Method File : c:\docume~1\douglass\locals~1\temp\~6-12-2015, 11;30;17, n2 blank a111-2.tmp
Sample ID : 2000ppm mix

Injection Date: 6/11/2015 2:30 PM Calculation Date: 6/12/2015 10:56 AM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 66
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

**Star Chromatography Workstation Version 6.00 ** 00299-3586-D6B-21E1 **

Run Mode : Calibration
Peak Measurement: Peak Area
Calculation Type: External Standard
Level : 1

Peak No.	Peak Name	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	1.905	0.000	7837647	BV	2.9	
2	Methane	2.283	0.002	7841024	VV	3.8	
3	Carbon Dioxi	3.420	0.000	7759139	VB	7.9	
4	Ethane	7.383	-0.001	7841898	BB	21.8	
5	NMOC	12.325	0.003	6488336	BB	17.1	
	Totals:		0.004	37768044			

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: N/A Divisor: N/A Unidentified Peak Factor: 0

Baseline Offset: -274 microVolts LSB: 1 microVolts

Noise (used): 43 microVolts - monitored before this run

Stream: 1 Injection Number: 2 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

9840 Variance_Water_Boiler_Compliance 5C

Almega ENVIRONMENTAL

Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\june_15\6-11-2015, 14;30;32, 2000ppm mix.run
Method File : c:\docume~1\douglass\locals~1\temp\~6-12-2015, 11;30;17, n2 blank all-2.tmp
Sample ID : 2000ppm mix

Almega ENVIRONMENTAL

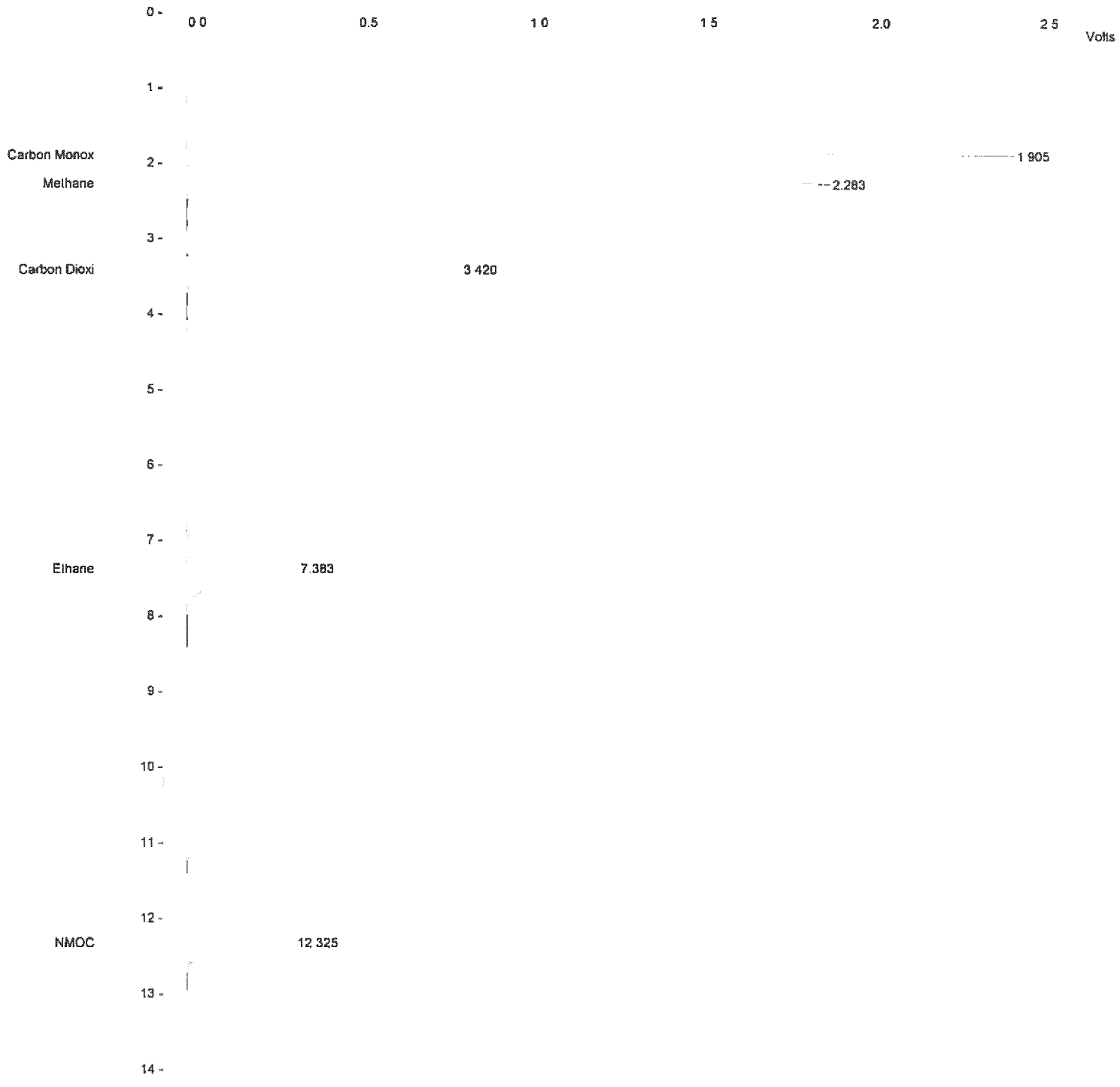
Injection Date: 6/11/2015 2:30 PM Calculation Date: 6/12/2015 10:56 AM

Operator : Douglass
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Chart Speed = 1.32 cm/min Attenuation = 1150 Zero Offset = 2%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



Print Date: Fri Jun 12 11:00:43 2015 Page 1 of 1

Title : SCAQMD Methods 25.x
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Method File : c:\docume~1\douglass\locals~1\temp\~6-12-2015, 11;30;17, n2 blank a111-2.tmp
Sample ID : 2000ppm mix

Injection Date: 6/11/2015 2:58 PM Calculation Date: 6/12/2015 10:56 AM

Operator : Douglass
Workstation:
Instrument : Varian Star #1
Channel : 2 = Foreflush 10

Detector Type: 0800 (10 Volts)
Bus Address : 88
Sample Rate : 1.25 Hz
Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Calibration
Peak Measurement: Peak Area
Calculation Type: External Standard
Level : 1

Peak No.	Peak Name	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	1.928	0.023	7847982	BV	2.9	
2	Methane	2.305	0.023	7848899	VV	3.8	
3	Carbon Dioxi	3.443	0.023	7771729	VB	7.9	
4	Ethane	7.403	0.021	7841835	BB	21.9	
5	NMOC	12.351	0.026	6473601	BB	17.2	
	Totals:		0.116	37784046			

Total Unidentified Counts : 0 counts

Detected Peaks: 5 Rejected Peaks: 0 Identified Peaks: 5

Multiplier: N/A Divisor: N/A Unidentified Peak Factor: 0

Baseline Offset: -293 microVolts LSB: 1 microVolts

Noise (used): 29 microVolts - monitored before this run

Stream: 1 Injection Number: 3 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

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Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\june_15\6-11-2015, 14;58;40, 2000ppm mix.run
Method File : c:\docume~1\douglass\locals~1\temp\~6-12-2015, 11;30;17, n2 blank all-2.tmp
Sample ID : 2000ppm mix

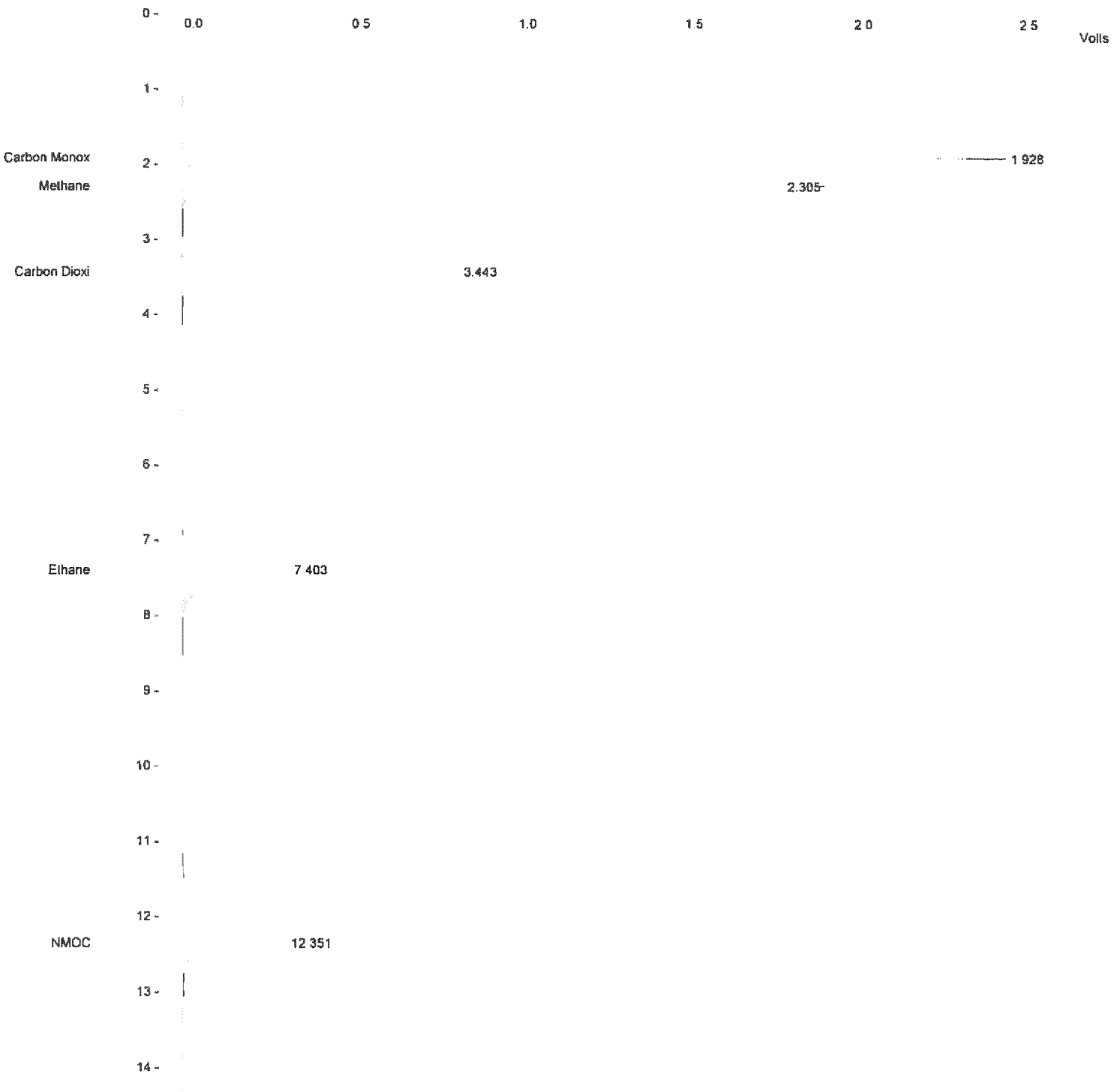
Almega ENVIRONMENTAL

Injection Date: 6/11/2015 2:58 PM Calculation Date: 6/12/2015 10:56 AM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Chart Speed = 1.32 cm/min Attenuation = 1170 Zero Offset = 2%
Start Time = 0.000 min End Time = 15.013 min Min / Tick = 1.00



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Method File : c:\docume~1\douglass\locals~1\temp\~6-8-2015, 09;42;15, lab air-2.tmp
Sample ID : n2 blank s011

Injection Date: 6/11/2015 3:28 PM Calculation Date: 6/11/2015 3:11 PM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Run Mode : Analysis
Peak Measurement: Peak Area
Calculation Type: External Standard

Peak No.	Peak Name	Result (ppmC)	Ret. Time (min)	Time Offset (min)	Area (counts)	Sep. Code	Width 1/2 (sec)	Status Codes
1	Carbon Monox	0.9257	1.904	-0.026	3656	BV	3.1	
2	Methane	0.6937	2.279	0.008	2711	VB	3.4	
3	Carbon Dioxi	0.6908	3.417	-0.052	2700	BB	8.1	
4	Ethane		7.489					M
5	NMOC		12.324					M
	Totals:	2.3102		-0.070	9067			

Status Codes:
M - Missing peak

Total Unidentified Counts : 0 counts

Detected Peaks: 4 Rejected Peaks: 1 Identified Peaks: 5

Multiplier: 1 Divisor: 1 Unidentified Peak Factor: 0

Baseline Offset: -161 microVolts LSB: 1 microVolts

Noise (used): 26 microVolts - monitored before this run

Stream: 1 Injection Number: 1 Sampling Time: 0.00 min

Original Notes:

Appended Notes:

****

9840 Varian Star Workstation_Rev II_Compliance 63

Almega ENVIRONMENTAL

Title : SCAQMD Methods 25.x
Run File : \\almega01\fileserver\laboratory\gc chromatograms\2015\june_15\6-11-2015, 15;28;48, n2 blank s011.run
Method File : c:\docume~1\douglass\locals~1\temp\~6-8-2015, 09;42;15, lab air-2.tmp
Sample ID : n2 blank s011

Almega ENVIRONMENTAL

Injection Date: 6/11/2015 3:28 PM Calculation Date: 6/11/2015 3:11 PM

Operator : Douglass Detector Type: 0800 (10 Volts)
Workstation: Bus Address : 88
Instrument : Varian Star #1 Sample Rate : 1.25 Hz
Channel : 2 = Foreflush 10 Run Time : 15.013 min

** Star Chromatography Workstation Version 6.00 ** 00299-3588-D6B-21E1 **

Chart Speed = 1.32 cm/min Attenuation = 1 Zero Offset = 13%
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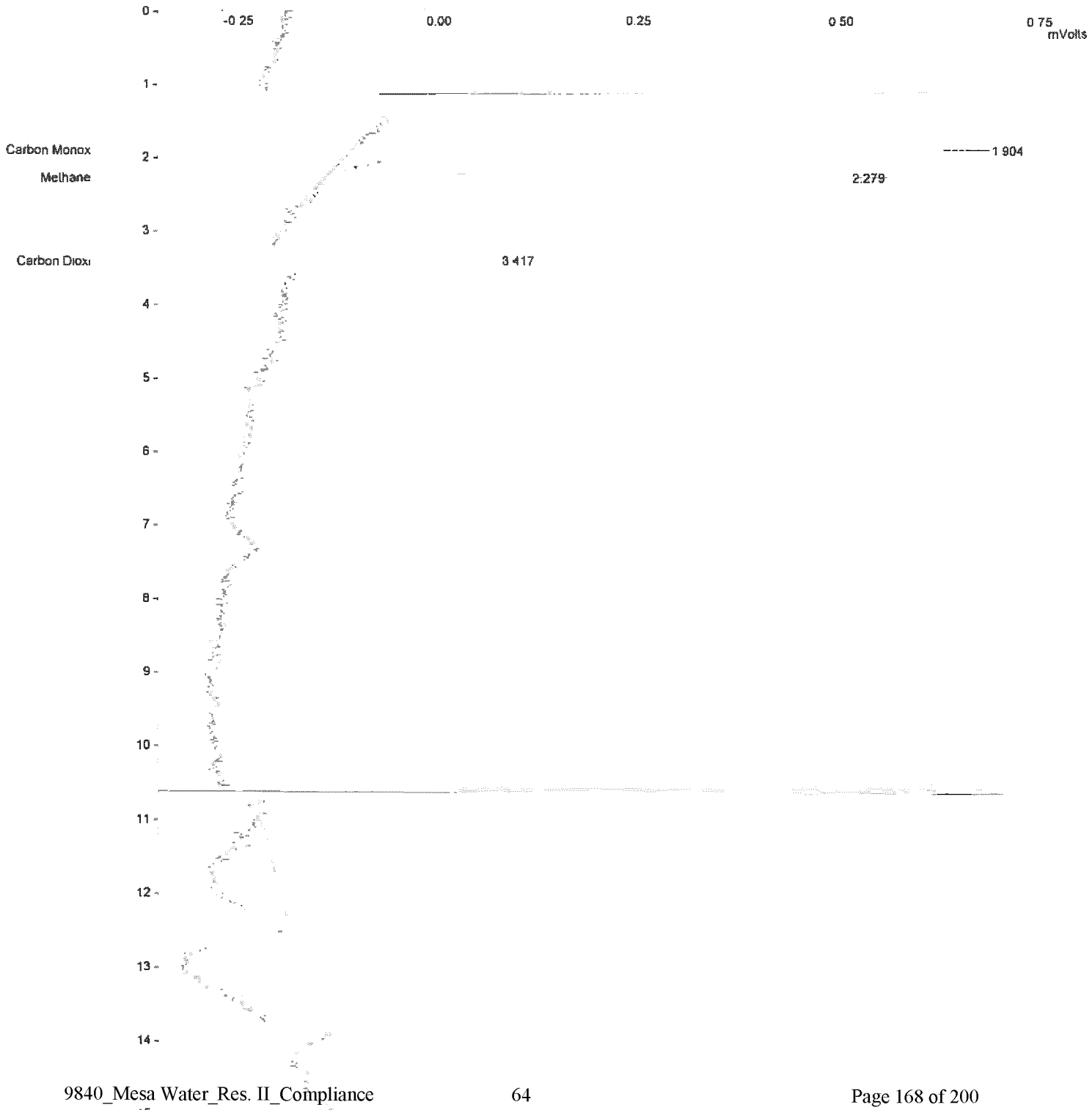

Attachment 2
Source Test Protocol

Mesa Water District
1965 Placentia Avenue
Costa Mesa, CA 92627-3420

Mesa Water District, Well No. 5
SCAQMD Facility ID: 94967

Mesa Water District, Reservoir I
SCAQMD Facility ID: 95067

Mesa Water District, Reservoir II
SCAQMD Facility ID: 98380

December 2014

Prepared by:

Yorke ENGINEERING, LLC
www.YorkeEngr.com

Office Locations:
Los Angeles, Orange County, Riverside,
Ventura, Fresno, Oakland, Bakersfield

Tel: (949) 248-8490
Fax: (949) 248-8499

Almega ENVIRONMENTAL

Rule 1110.2 Source Test Protocol for Internal Combustion Engines

Rule 1110.2 Source Test Protocol for Internal Combustion Engines

Prepared for:

Mesa Water District
1965 Placentia Avenue
Costa Mesa, CA 92627-3420

Mesa Water District, Well No. 5
SCAQMD Facility ID: 94967

Mesa Water District, Reservoir I
SCAQMD Facility ID: 95067

Mesa Water District, Reservoir II
SCAQMD Facility ID: 98380

December 2014

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Permits to Operate – Facility ID: 94967, 95067, and 98380

APPENDIX B – EXHAUST SAMPLE PORT LOCATIONS

APPENDIX C – CONTINUOUS GAS MONITORING REQUIREMENTS

Attachment A – General Continuous Gas Monitoring Requirements
Attachment B – Sample Conditioning Requirements
Attachment C – NO_2 to NO Conversion Test Procedure

APPENDIX D – ALT-104 APPROVAL OF ALTERNATIVE TO METHOD 10 FOR ENGINES

List of Acronyms and Abbreviations

AFRC	Air-to-Fuel Ratio Controller
BAF	Bias Adjustment Factor
BHP	Brake Horsepower
Btu	British Thermal Unit
°C	Degrees Celsius
CARB	California Air Resources Board
CE	Conversion Efficiency
CEM	Continuous Emissions Monitoring
CEMS	Continuous Emissions Monitoring System
CFR	Code of Federal Regulations
CH_4	Methane
CO	Carbon Monoxide
CO_2	Carbon Dioxide
CPP	Certified Permitting Professional
dscfm	Dry Standard Cubic Feet per Minute
EPA	Environmental Protection Agency
°F	Degrees Fahrenheit
F_d	F-Factor Dry
FID	Flame Ionization Detector
GC	Gas Chromatography
GCV	Gross Caloric Value
Hg	Mercury
HHV	Higher Heating Value
ICE	Internal Combustion Engine
I&M	Inspection and Monitoring
LAP	Laboratory Approval Program
lb/hr	Pounds per Hour
MMBtu	1 Million British Thermal Units
mV	Millivolt
N_2	Nitrogen
NDIR	Non-Dispersive Infrared
NESHAP	National Emission Standards for Hazardous Air Pollutants
NH_3	Ammonia
NIST	National Institute of Standards and Technology
NO	Nitrogen Oxide
NO_2	Nitrogen Dioxide
NO_x	Oxides of Nitrogen
O_2	Oxygen
O_3	Ozone

ppm	Parts per Million
ppmv	Parts per Million by Volume
QAQC	Quality Control/Quality Assurance
RICE	Reciprocating Internal Combustion Engine
RPM	Revolutions per Minute
SCAQMD	South Coast Air Quality Management District
scf	Standard Cubic Feet
scfm	Standard Cubic Feet per Minute
SO_2	Sulfur Dioxide
ST/ID	Source Test/Identification
TCA	Total Carbon Analyzer
TCD	Thermal Conductivity Detector
TNMOC	Total Non-Methane Organic Carbon
UHP	Ultra-High Purity
VOC	Volatile Organic Compound

Rule 1110.2 Source Test Protocol for Natural Gas-Fired Internal Combustion Engines

1.0 INTRODUCTION

South Coast Air Quality Management District (SCAQMD) Rule 1110.2 (Rule) requires a source test of non-emergency internal combustion engines (ICEs) every 2 years or 8,760 hours, whichever comes first. The source test frequency may be reduced to once every 3 years if the engine has operated less than 2,000 hours since the last source test. In addition, the Rule requires that a source test protocol be submitted for approval 60 days [Rule 1110.2(f)(1)(C)(iv)] prior to conducting an ICE source test.

Mesa Water District (Mesa Water) agrees to fulfill the source test protocol requirements by following the SCAQMD standard protocol, "Source Test Protocol for the Measurement of Nitrogen Oxides, Volatile Organic Compounds, Carbon Monoxide, and Oxygen from Stationary Engines Subject to South Coast Air Quality Management District Rule 1110.2," dated November 21, 2008.

Mesa Water operates three facilities that have ICEs that must be source tested: Well No. 5 at 3596 Cadillac Avenue, Costa Mesa, CA 92627; Reservoir I at 1971 Placentia Avenue, Costa Mesa, CA 92627; and Reservoir II at 2340 Orange Avenue, Costa Mesa, CA 92627.

Mesa Water is revising its facility-specific existing protocol approved by Marcel Saulis in August 2009 to accommodate the requirements stated in the memo issued by Mohsen Nazemi[1]. Mesa Water will use this protocol for the future source test at all three operating facilities.

1.1 Purpose

The purpose of the source test program is to measure the following parameters at the ICE exhaust stack as stated in permit conditions and Rule 1110.2:

- Total non-methane organic carbon (TNMOC);
- Oxides of nitrogen (NO_x);
- Carbon monoxide (CO);
- Carbon dioxide (CO_2);
- Oxygen (O_2);
- Nitrogen (N_2); and
- Power output, brake horsepower (BHP), and other Inspection and Monitoring (I&M) Plan parameters.

Results of the measurements are used to determine the compliance status of the equipment with permit and Rule standards as shown in Table 1-1.

[1] South Coast Air Quality Management District, Office of Engineering & Compliance, Memorandum Dated November 3, 2009 – Interim Guidance for Rule 1110.2 Implementation.

Results for carbon monoxide emissions from the biannual source test performed on the Well No. 5 engine will be used to demonstrate compliance for Code of Federal Regulations (CFR) Title 40 Part 63, Subpart ZZZZ for Reciprocating Internal Combustion Engine (RICE) National Emission Standards for Hazardous Air Pollutants (NESHAP). Mesa Water will demonstrate compliance per the provisions provided in 40 CFR Part 63.6645. Mesa Water contacted the Environmental Protection Agency (EPA) and obtained authorization to use carbon monoxide data from the recent source test to demonstrate compliance. A copy of the EPA approval is included in Appendix D[2].

Table 1-1: Emission Limits

Location	Equipment ID	Emission Limit (Corrected to 15% O_2)			Reference
		NO_x	CO	VOCs	
Well No. 5	Pump No. 1	11	250	30	Permit Condition No. 9
Reservoir I	Pump No. 1	11	250	30	Permit Condition No. 7
Reservoir I	Pump No. 2	11	250	30	Permit Condition No. 7
Reservoir I	Pump No. 3	11	250	30	Permit Condition No. 7
Reservoir II	Pump No. 1	11	76	30	Permit Condition No. 7
Reservoir II	Pump No. 2	11	76	30	Permit Condition No. 7
Reservoir II	Pump No. 3	11	76	30	Permit Condition No. 7
Reservoir II	Pump No. 4	11	76	30	Permit Condition No. 7

1.2 Source Test Protocol Preparer

This protocol was prepared by Bipul K. Saraf and reviewed by Greg Wolffe of Yorke Engineering, LLC. Technical questions regarding this protocol can be directed to either of these individuals. Table 1-2 provides the contact information for Mr. Saraf and Mr. Wolffe.

Table 1-2: Protocol Preparers

Name:	Bipul K. Saraf	Greg Wolffe, CPP
Title:	Senior Engineer	Principal Scientist
Phone:	(949) 248-8490	(949) 248-8490
Fax:	(949) 248-8499	(949) 248-8499
Cell:	(949) 444-8063 Preferred	(714) 315-9049 Preferred
E-Mail Address:	BSaraf@YorkeEngr.com	GWolffe@YorkeEngr.com

1.3 Source Testing Organization

Source testing of the ICEs per this source test protocol will be performed by a source test organization that has been certified by the SCAQMD under their Laboratory Approval Program (LAP) or the California Air Resources Board (CARB) under their Independent Contractor Program. In addition, the designated testing organization will be screened to ensure it is an "*independent testing laboratory*" under the SCAQMD's Rule 304(k)(4) (no conflict of interest). Mesa Water may choose to use any other source test company approved by the SCAQMD and/or CARB. The complete list of LAP approved sources testers can be accessed from the following website: http://www.aqmd.gov/docs/default-source/laboratory-procedures/lap-contact-info.pdf?sfvrsn=4. The list of CARB Independent Contractors is found at: http://www.arb.ca.gov/ba/icp/currenteo.pdf.

[2] ALT-104 Approval of Alternative to Method 10 for Engines.

2.0 FACILITY AND SOURCE INFORMATION

Mesa Water©, a special district, was formed on January 1, 1960, as a result of the merger of four water agencies. Mesa Water's primary purpose is to manage and deliver water and water-related services to customers within its service area. Mesa Water© distributes a combination of imported water and local groundwater to approximately 23,500 retail accounts (population of over 108,000) in an 18-square-mile area, which includes the city of Costa Mesa, parts of Newport Beach, and unincorporated areas of Orange County, including the John Wayne Airport.

The three facilities that are addressed by this protocol are listed in Table 2-1.

Table 2-1: Facility Information

Name of Facility:	Mesa Water District Well No. 5	Mesa Water District Reservoir I	Mesa Water District Reservoir II
Address:	3596 Cadillac Avenue Costa Mesa, CA 92627	1971 Placentia Avenue Costa Mesa, CA 92627	2340 Orange Avenue Costa Mesa, CA 92627
SCAQMD Facility ID:	94967	95067	98380
Type of Equipment	Water Pumping Engine	Pump No. 1 Pump No. 2 Pump No. 3	Pump No. 1 Pump No. 2 Pump No. 3 Pump No. 4

2.1 Facility Contacts

Facility contact information is provided in Table 2-2.

Table 2-2: Contact Information

Name:	Tracy Manning	Roger Demers
Responsibility:	Assistant Operations Manager	Senior System Operator
Address:	1965 Placentia Avenue Costa Mesa CA 92627	1965 Placentia Avenue Costa Mesa CA 92627
Phone:	(949) 207-5468	(949) 207-5470
Fax:	(949) 574-1033	(949) 574-1033
Cell:	(714) 272-3376	(714) 356-9688
E-Mail Address:	TracyM@MesaWater.org	RogerM@MesaWater.org

2.2 Source Description

Tables 2-3 through 2-5 list equipment descriptions. The engine operating at Well No. 5 pumps drinking water. All three engines at the Reservoir I facility and four engines at the Reservoir II facility pump drinking water to the service area residents.

Table 2-3: Equipment Description – Well No. 5

Equipment ID	Make	Model	Rating (BHP)	Fuel
Pump No. 1	Waukesha	L5790GU	625	Natural Gas

Table 2-4: Equipment Description – Reservoir I

Equipment ID	Make	Model	Rating (BHP)	Fuel
Pump No. 1	Waukesha	F1197G	137	Natural Gas
Pump No. 2	Waukesha	F1197G	137	Natural Gas
Pump No. 3	Waukesha	F1197G	137	Natural Gas

Table 2-5: Equipment Description – Reservoir II

Equipment ID	Make	Model	Rating (BHP)	Fuel
Pump No. 1	Waukesha	2895G	369	Natural Gas
Pump No. 2	Waukesha	2895G	369	Natural Gas
Pump No. 3	Waukesha	2895G	369	Natural Gas
Pump No. 4	Waukesha	2895G	369	Natural Gas

2.3 Source Test Date

This source test protocol is being submitted at least 60 days before any scheduled Rule 1110.2 source test date[3]. Once approved, this source test protocol and subsequent protocol approval (ST/ID) will be referenced in all future SCAQMD notifications of scheduled source tests, which will be provided to the SCAQMD in writing at least 30 days prior to the test to allow the opportunity for an observer to be present at the test[4].

2.4 Source Test Operating Conditions

The Well No. 5 water pump engine will be source tested at maximum load condition in accordance with Permit Condition No. 7, which limits the operation of the engine to a single load[5]. Single 60-minute tests for NO_x, CO, and volatile organic compounds (VOCs) will be carried at 900 revolutions per minute (RPM) (greater than 80% of the rated load).

Reservoir I and Reservoir II water pump engines will be tested at the normal, maximum, and minimum load conditions that can be practically achieved at the time of the test[6].

Operating parameters such as RPM, temperature, and fuel consumption will be monitored and recorded for inclusion in the final report. All the parameters identified in the facility I&M Plan, such as BHP, % load, RPM, O_2 mV, catalyst temperatures (inlet/outlet), engine run hours, air-to-fuel ratio controller (AFRC) alarms, and AFRC set point and actual values will be recorded during the source test.

2.5 Sample Locations

Stack configuration data for each sampling location are provided in Tables 2-6 through 2-8 below.

Table 2-6: Stack Configuration – Well No. 5

Equipment ID	Upstream	Downstream	Stack Diameter	No. of Sampling Ports
Pump No. 1	8"	24"	8.00"	2

[3] Rule 1110.2(f)(1)(C)(iv).
[4] Rule 1110.2(f)(1)(C)(v).
[5] Application No. 499283 (Permit No. G3918).
[6] Rule 1110.2(f)(1)(c)(ii).

Table 2-7: Stack Configuration – Reservoir I

Equipment ID	Upstream	Downstream	Stack Diameter	No. of Sampling Ports
Pump No. 1	3"	13"	5.25"	2
Pump No. 2	3"	13"	5.25"	2
Pump No. 3	3"	13"	5.25"	2

Table 2-8: Stack Configuration – Reservoir II

Equipment ID	Upstream	Downstream	Stack Diameter	No. of Sampling Ports
Pump No. 1	6"	22"	8"	2
Pump No. 2	6"	22"	8"	2
Pump No. 2	6"	22"	8"	2
Pump No. 4	6"	22"	8"	2

3.0 TEST PROGRAM

3.1 Test Objectives

The purpose of this source test program is to satisfy the source test requirement per SCAQMD Rule 1110.2(f)(1)(C). The specific objectives include:

1. Submit a test protocol to the SCAQMD for review and approval;
2. Conduct engine testing at maximum achievable, normal, and minimum load conditions for Reservoir I and II water pumps and fixed maximum load for the Well No. 5 water pump[7];
3. Record pump engine operating conditions during testing; and
4. Prepare and submit a final source test report.

Specific emission limits listed in the Permits to Operate are summarized in Table 1-1 of Section 1.0.

Table 3-1 presents the test matrix for the exhaust. Each matrix shows the test location, pollutants to be measured, number and length of the test runs, and the proposed test methods. The published EPA and SCAQMD reference methods provide more detailed description than the information noted in Table 3-1. The purpose of this protocol is to provide an overview of the test methods and testing conditions. At any time, if there is a discrepancy between the published reference methods and the methods noted in Table 3-1, the reference methods shall take precedence.

Table 3-1: ICE Source Test Matrix – Exhaust

Sampling Location	Number of Runs/Unit	Sample/Type Pollutant	Sampling Method	Load and Run Time (min)[8]	Analytical Method
Reservoir I and Reservoir II	1	NO_x, CO, O_2, CO_2, N_2	SCAQMD Method 100.1	Maximum and Minimum – 15, Normal – 30	CEMS
	1	CH_4, TNMOC	SCAQMD Method 25.3	Normal – 30	TCA/FID
	1	Flow Rate	EPA Method 19	60	Calculation
Well No. 5	1	NO_x, CO, O_2, CO_2, N_2	SCAQMD Method 100.1	60	CEMS
	1	CH_4, TNMOC	SCAQMD Method 25.3	Normal – 30-45	TCA/FID
	1	Flow Rate	EPA Method 19	60	Calculation

[7] Rule 1110.2(f)(1)(c)(ii).

[8] Per Rule 1110.2 [(f)(1)(C)(i)], the test will be carried out at the multiple load condition practically achievable at the time of the test.

4.0 SAMPLING ANALYTICAL METHODS

Mesa Water will conduct source testing for TNMOC, O_2, CO_2, NO_x, and CO for at least 30 minutes during normal operation of an actual duty cycle. In addition, source testing for NO_x and CO emissions will be measured for at least 15 minutes at the engine's actual peak load, or the maximum load that can be practically achieved during the test, and at actual minimum load, excluding idle, or the minimum load that can be practically achieved during the test.

For Well No. 5, a single 60-minute test will be conducted at the exhaust of the engine at 900 RPM for TNMOC, O_2, CO_2, NO_x, and CO.

The sampling and analytical methods that will be used during the source test are listed in Table 3-1. These TNMOC samples will also be analyzed for CO, CO_2, and O_2 following SCAQMD Method 10.1. A comparison between CO, CO_2, and O_2 sampled by SCAQMD Methods 100.1 and 10.1 will be made and included in the test critique.

4.1 Engine Servicing

Mesa Water will conduct the source test at least 40 operating hours, or at least 1 week, after any engine servicing or tuning. In addition, if an emission exceedance is found during any of the three phases (i.e., load levels) of the source test, the failing test shall be completed and properly documented in the source test report. Mesa Water, or their operations contractor, will correct the exceedance and allow the source test to resume[9].

4.1.1 SCAQMD Method 100.1

Sampling for gaseous pollutants will follow SCAQMD Method 100.1. A leak check of the entire sampling system will be performed prior to the test. The leak test will be accomplished by plugging the tip of the Continuous Emissions Monitoring (CEM) sampling probe and observing the gauge on the vacuum side. The CEMS will be connected and the sampling pump will be started. The probe tip will be blocked and the flow on the rotameter mounted on the manifold will be checked. When the flow indicating bulb located on the rotameter drops to the bottom, the sample pump will be turned off. At this time, the vacuum gauge will be observed for 5 minutes. No resultant vacuum loss with the pump turned off ensures that the sampling system is free of all leaks. The tester will mark the pre- and post-test leak checks on the strip chart.

All quality assurance/quality control (QAQC) procedures described in Method 100.1 will be followed. All analyzers, including NO_x, CO_2, and O_2, will be calibrated using EPA Protocol 1 gas traceable to 1% National Institute of Standards and Technology (NIST) standards. Each of the analyzers will be calibrated directly and indirectly. The direct calibration will include the introduction of calibration gases directly to the analyzers at three levels: zero [Ultra-High Purity (UHP)-grade N_2], mid-grade calibration blend balanced N_2 at 40-60% of the range, and high-grade calibration blend balanced N_2 at 80-100% of the range. The acceptable analyzer response is within 2% of the range. Direct calibration needs to be performed before and after the test. Pre- and post-test analyzer linearity shall be below 1%.

[9] Rule 1110.2(f)(1)(C)(ii).

Indirect calibration (system bias) is accomplished by introducing the calibration gas at the probe tip and recording the response. The acceptable response is below 5% of the range. System bias needs to be performed before and after each test. System bias calibration drift between pre- and post-test shall be below 3%.

During the test, if the measured concentration drops below 20% of the selected analyzer range, the tester will inject a low-level calibration gas close to the actual concentration observed during the test to verify the analyzer accuracy at the lower level.

4.1.1.1 Calculations

Emission Drift Corrections

The following equations will be used for O_2, CO_2, CO, and NO_x emission drift corrections:

$$C_{gas} = (C - C_o) \times \left(\frac{C_{ma}}{C_m - C_o} \right)$$

Where:

C_{gas} = Effluent gas concentration, ppmv dry

C = Emissions concentration recorded during the test, dry, ppmv or %

C_{ma} = Concentration of the span gas used in the drift correction, ppmv or %

C_m = Average response of initial and final system bias response upscale

C_o = Average response of initial and final system bias response zero

Correction to 15% O_2

The actual CO and NO_x concentration will be converted to 15% O_2, as shown below:

$$C_{corr}, ppm@15\% = \left(\frac{(20.9 - 15)}{(20.9 - O_2 Meas} \right) \times C_{Meas}$$

Where:

C_{corr} = Concentration corrected to 15% O_2

O_2Meas = % O_2 measured during the test (drift corrected)

C_{Meas} = ppmv measured during the test (drift corrected)

Mass Emission Rate

The NO_x/CO mass emission rate can be calculated using the equation shown below. See the section on EPA Method 19 for the calculation of flow rate.

$$E = P \times flow \times K \times Mol.Wt$$

Where:

E = CO or NO_x emissions rate (lb/hr)

$flow$ = Average stack flow rate, dscfm

K = Constant = 1.583 x 10^{-7} for 60°F

Mol.Wt. = Molecular weight for CO = 28 and NO_x = 46.01

P = Average CO or NO_x concentration in stack, dry ppmv

4.1.2 SCAQMD Method 25.3

SCAQMD Method 25.3 will be used to collect low-concentration TNMOC in a 6-liter evacuated summa canister and ice water trap. The ice water trap will collect TNMOC condensable to 32°F.

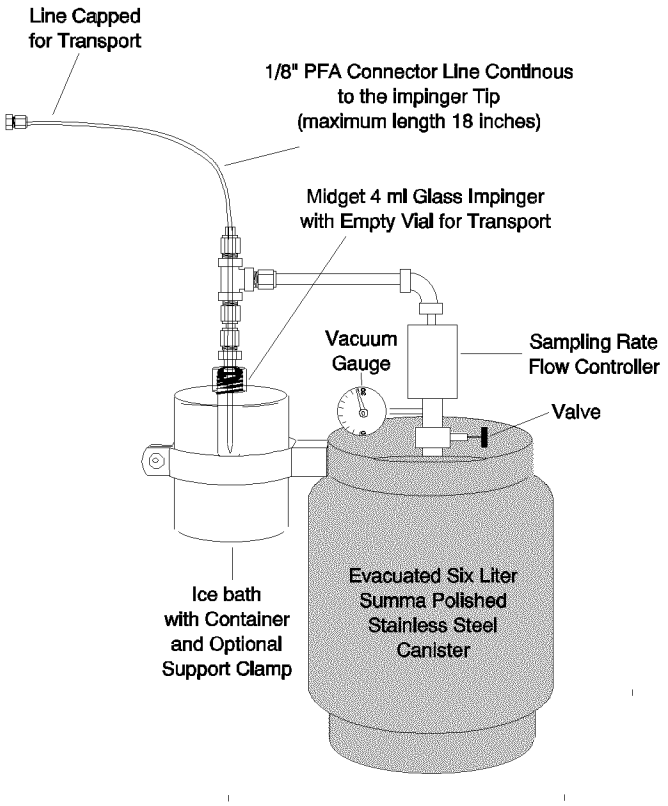
The sampling will be performed in duplicate using two evacuated canisters and two ice water traps simultaneously (Samples A and B). A ¼-inch stainless steel probe will be connected to Teflon tubing and to the ice water chilled trap. The sampling system will be regulated by a stainless steel critical flow controller with vacuum/pressure gauge, and the sample will be drawn by an evacuated canister. The sampling will begin with the canister at 30 inches Hg vacuum and complete when the vacuum will drop to 6 inches Hg in approximately 30 minutes.

A leak test on the sampling system will be performed before and after the test. After the sampling system is assembled, the tank regulator will be opened and the tip of the probe will be sealed. The vacuum gauge attached on the canister will be observed for the drop in the vacuum. If no vacuum loss occurs, the sampling system is considered free of leaks. A similar leak check procedure will be applied after collecting the sample.

The probe will be introduced to the center of the stack and the port will be sealed. Proof of leak checks, reference point monitoring, vacuum drop, flow rate, and temperature will be recorded on the data sheet. After 30 minutes (or when the vacuum drops below 8 inches of Hg), the flow regulator will be turned off and the probe will be allowed to cool to atmospheric conditions. Once the probe cools down, a post-test leak check will be performed as discussed above. The condensate vial will be recovered, sealed, and stored in an ice chest. The summa canister will be disconnected from the probe and secured by plugging the flow controller. A chain of custody will be prepared and the sample will be shipped to the laboratory for analysis.

The sample will be analyzed in two parts: condensable (ice water trap) and non-condensable (canister). Both fractions will be analyzed separately and reported as VOCs in ppmv as methane (CH_4). Overall, the TNMOC concentration will be multiplied by 1.086 [bias adjustment factor (BAF)] to present the total TNMOC results.

Figure 4-1: SCAQMD Method 25.3 Sampling Apparatus



4.1.2.1 Calculations

Laboratory analysis will provide the concentration in ppm for both condensable and non-condensable TNMOC. For each tank and trap, the average of the concentrations of both fractions (condensable and non-condensable) is averaged for the determination of TNMOC.

The following equations will be used to show the TNMOC results.

$$C_{corr}, ppm@15\% = \left(\frac{(20.9 - 15)}{(20.9 - O_2 Meas} \right) \times C_{Meas}$$

Where:

C_{corr}[10] = Concentration corrected to 15% O_2

O_2Meas = % O_2 measured during the test (drift corrected)

C_{Meas} = ppmv measured during the test (drift corrected)

TNMOC = ppmv TNMOC measured during the test (EPA BAF corrected); TNMOC results will be provided by the laboratory

[10] The TNMOC concentration will be provided by AtmAA Laboratory in ppmv, dry.

Mass Emission Rate

The TNMOC mass emission rate will be calculated using the equation shown below (Ref: SCAQMD Method 25.3).

$$E = P \times flow \times K \times Mol.Wt$$

Where:

E = TNMOC emissions rate (lb/hr)

flow = Average stack flow rate, dscfm

K = Constant = 1.583 x 10^{-7} for 60°F

Mol.Wt. = Molecular weight for TNMOC = 16.04

P = Average TNMOC concentration in stack (EPA BAF corrected), dry ppmv

4.1.3 SCAQMD Method 10.1 – Carbon Monoxide and Carbon Dioxide by Gas Chromatography/Non-Dispersive Infrared Detector (GC/NDIR), Oxygen by Gas Chromatography/Thermal Conductivity Detector (GC/TCD)

The SCAQMD Rule 1110.2 Standard Protocol requires that the Method 25.3 canister samples be analyzed for O_2, CO_2, and CO by District Method 10.1. The test report shall include a comparison of these results with those obtained using Method 100.1.

The non-condensable gaseous fraction collected in a summa canister by Method 25.3 can be further analyzed for CO, CO_2, and O_2. CO and CO_2 are fractioned on a chromatic column where CO elution is followed by CO_2. Low-level CO is converted into CO_2 and measured by non-dispersive infrared (NDIR) technology. Low-level CO (0-50 ppm) is converted into CO_2 and then CO_2 is reduced to methane and measured by flame ionization detector (FID). Oxygen is measured by a gas chromatograph using a thermal conductivity detector (GC/TCD).

4.2 Method 19 Flow Calculations

Mesa Water may elect to calculate the volumetric flow rate, dry standard volume flow rate (DSCFM) by F-Factor calculation using the fuel flow rate (scfm) and natural gas gross calorific value. Oxygen based F-Factor (F_d) is used in the calculation using the equation shown below.

$$\text{Flow (dscfm)} = SCFM \times F-Factor \times \frac{GCV}{10^6} \times \frac{(20.9)}{(20.9 - Stack O_2)}$$

Where:

DSCFM = Dry standard cubic feet per minute

SCFM = Fuel flow, standard cubic feet per minute

F-Factor = 8710 DSCF/MMBtu (oxygen based)

GCV = Gross calorific value = 1050 Btu/scf based upon higher heating value (HHV)

Stack O_2 = Stack oxygen

5.0 QUALITY ASSURANCE AND QUALITY CONTROL PROCEDURES

5.1 Sampling Protocol

Sampling will be organized in a manner that facilitates sample management, analytical performance management, and data management. Personnel will be assigned specific tasks to ensure implementation of the QAQC program.

The sample analyst will perform the analyses and initial data review. Each analyst must check and initial their work, making certain that it is complete, determining that instrumentation has been properly calibrated, and ensuring that the analysis has been performed within the QAQC limits.

The data submitted by the analyst will be evaluated by first assessing the validity of the analytical method chosen for the analysis. After data verification, the report will be prepared following the guidelines specified in each method, the calculations checked, the data assembled and signed, and the report completed.

5.2 Equipment Maintenance

All major pieces of equipment have maintenance logs to document maintenance activities. Table 5-1 lists routine maintenance activities that are performed on source testing equipment.

Table 5-1: Test Equipment Maintenance Schedule

Equipment	Acceptance Limits	Frequency of Service	Methods of Service
Pump	1. Absence of leaks 2. Ability to draw within reported specifications	Every 500 hours of operation or 6 months, whichever is less	1. Visual inspection
Flow Meter	1. Free mechanical movement 2. Absence of malfunction	Every 500 hours of operation or 5 months, whichever is less	1. Visual inspection 2. Clean 3. Calibrate
Sampling Instrument	1. Absence of malfunction 2. Proper response to zero, span gas	As recommended by manufacturer	As recommended by manufacturer
Mobile Van Sampling System	1. Absence of leaks	Depends on nature of use	1. Change filters 2. Change gas dryer 3. Leak check 4. Check for system contamination
Sampling Line	Sampling degradation after each test less than 1% of test series		Flush with solvent. Blow air through line until dry.

5.3 Equipment Calibration

The S-type pitot tubes are calibrated initially upon purchase and then semiannually. Visual inspections/measurements are taken prior to each use to ensure accidental damage has not occurred. This check is documented on the calibration forms. Measurement is performed using a micrometer and compass.

Each temperature sensor is marked and identified. This is done by marking each thermocouple end-connector with a number. This sensor is calibrated as a unit with the control box potentiometer

and associated lead wire as an identified unit. Calibrations are performed initially and annually at multiple three points over the range of expected temperatures for that particular thermocouple. A non-multiple three-point check is performed bimonthly thereafter. As an alternative to the three baths, an oyster calibrator thermometer is used as a temperature reference source.

The field barometer is adjusted initially and semiannually to within 0.1 inches of Hg of the atmospheric pressure as reported by John Wayne Airport. There is no correction between John Wayne Airport and the test location. The field dry gas test meter is calibrated against a reference dry gas test meter before its initial use and semiannually thereafter.

The dry gas meter orifice is calibrated before its initial use and then annually. This calibration is performed during the calibration of the dry gas test meter. The unit is checked in the field after every series of tests using a field gas meter check procedure.

Analytical balances are internally calibrated prior to use following the manufacturer's instructions. The balances are further checked using Class S-1 analytical weights prior to daily usage. Field top loading balances are also internally calibrated prior to use and checked with a field analytical weight prior to usage.

5.4 Data Validation

The data presented in final reports are reviewed three times. First, the analyst reviews and certifies that the raw data comply with technical controls, documentation requirements, and standard group procedures. Second, the Principal Chemist reviews and certifies that data packages comply with specifications for sample holding conditions, chain of custody, data documentation, and the final report is free of transcription errors. Third, a quality assurance review is performed by other senior personnel. This review thoroughly examines the entire completed data report. The report is signed off and sent out. All raw laboratory data and final reports are stored for 5 years.

6.0 REPORTING AND DATA REDUCTION

6.1 Test Report Format

The source testing report format consists of the following:

- Cover Page;
- Table of Contents;
- Executive Summary;
- Introduction;
- Equipment and Process Description;
- Sampling and Analytical Procedures;
- Test Results and Critique;
- QAQC Plan; and
- Appendix Data (CEM Results, Source Test Results, Preliminary Data and Calculation Sheets, Laboratory Data, and QAQC Data).

The Test Results and Critique section will include applicable rules, permit conditions, and the comparison source test data computed to satisfy permit requirements. This section will also include a summary of the test events and a detailed account of any problems encountered during the testing. A brief equipment and process description will be included in the final report, indicating equipment operating parameters during the testing. A simple schematic of the process will show all sampling locations, including upstream and downstream disturbances.

All sampling and analytical procedures will be described, specifically detailing all aspects of sampling and analysis. Diagrams of test equipment will be shown.

The appendix to the final report will include complete raw field data, including production data indicative of the testing interval, lab analysis, and test results. All calculations will be shown. The appendix will also contain current calibration data for all applicable equipment and calibration gases used for the testing.

6.2 Data Reduction

Audited spreadsheets will be used to calculate all source test results. The final report will include exhaust concentration and emission rates of TNMOC, NO_x, CO, and all other required test parameters. Emission rates of these compounds will be reported in units of concentration, ppm @ 15% O_2, grams per BHP-hour, and in pounds per hour as applicable. The engine load, RPM, and fuel consumption will also be included in the final report.

7.0 SOURCE TESTING TEAM AND SCHEDULE

7.1 Source Testing Organization

A qualified Project Coordinator and a Field Technician will be selected to carry out the source testing according to the approved source testing protocol.

7.2 Test Preparations

7.2.1 Services Provided by Facility

The facility will provide a source of 120-volt, 15-amp power to the sampling equipment and to the mobile laboratory. The equipment used will require four separate circuits. A designated parking area shall be provided for the parking of the source testing company's mobile laboratory and continuous emissions monitoring vehicle. This designated area will ideally be located within 100 feet of the exhaust sampling location.

7.2.2 Access to Sampling Sites

The facility will provide safe access to the sampling locations. This may require the use of a man-lift or scaffolding to be provided by Mesa Water.

7.2.3 Sample Recovery Area

VOC samples are expected to be recovered in the mobile emissions monitoring van.

7.3 Test Personnel Responsibilities and Detailed Schedule

Source testing personnel are required to arrive at the facility on the test day to obtain any necessary safety training, view the sampling locations, set up the sampling equipment, conduct preliminary measurements, and warm up the CEMS instrumentation. Testing will commence and is expected to be completed on the same day. An additional day will be reserved in case of operational delays, mechanical issues, or issues with the tester's equipment reliability arise.

8.0 REFERENCES

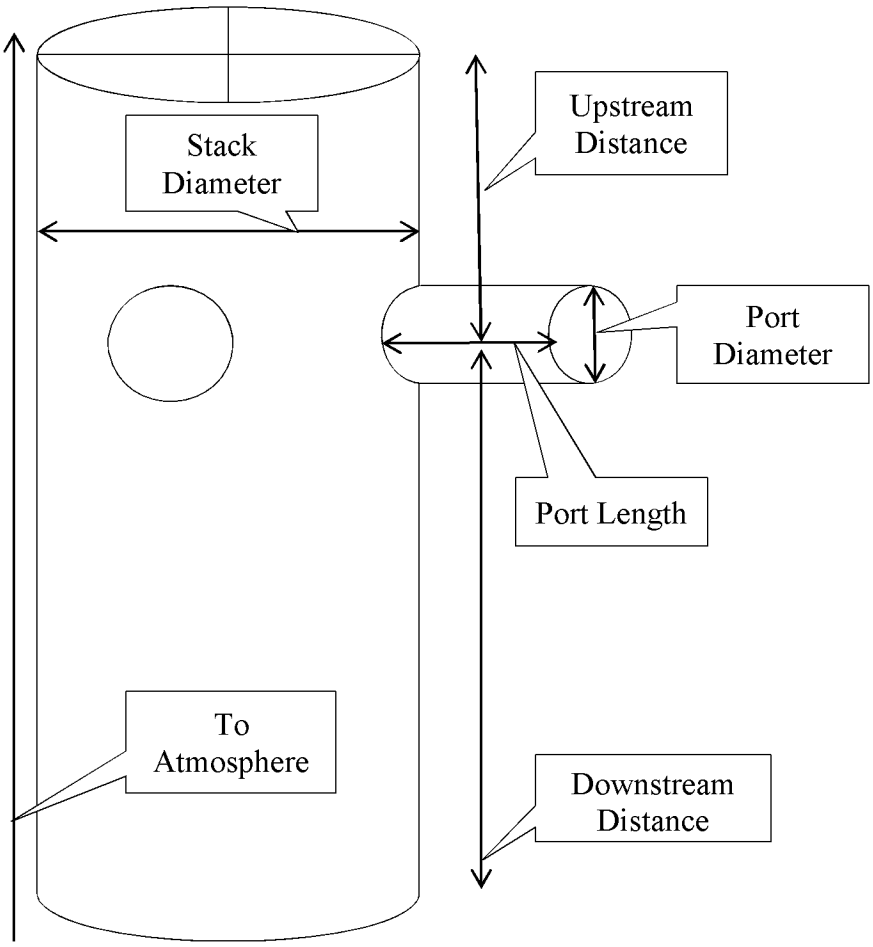
1. SCAQMD Rule 1110.2, amended September 7, 2012.
2. Source Test Protocol for the Measurement of Nitrogen Oxides, Volatile Organic Compounds, Carbon Monoxide, and Oxygen from Stationary Engines Subject to South Coast Air Quality Management District Rule 1110.2, dated November 21, 2008.
3. SCAQMD Method 100.1, dated March 1989.
4. SCAQMD Method 25.3, dated March 2000.
5. EPA Method 19, dated February 2000.
6. ALT-104 Approval of Alternative to Method 10 for Engines, dated October 2013.

APPENDIX A – SCAQMD PERMITS TO OPERATE

Permits to Operate – Facility ID: 94967, 95067, and 98380

Location	Facility ID	Equipment ID	App. No.	Permit No.
Well No. 5	94967	Pump No. 1	499283	G-3918
Reservoir I	95067	Pump No. 1 Pump No. 2 Pump No. 3	499284 499285 499286	R-G3979 R-G3980 R-G3981
Reservoir II	98380	Pump No. 1 Pump No. 2 Pump No. 3 Pump No. 4	499279 499280 499281 499282	G-4002 G-4003 G-4004 G-4005

APPENDIX B – EXHAUST SAMPLE PORT LOCATIONS[11]



[11] See Section 2.5, Tables 2-5, 2-6, and 2-7 for sample port configuration.

APPENDIX C – CONTINUOUS GAS MONITORING REQUIREMENTS

Attachment A – General Continuous Gas Monitoring Requirements

Attachment B – Sample Conditioning Requirements

Attachment C – NO_2 to NO Conversion Test Procedure

ATTACHMENT A – GENERAL CONTINUOUS GAS MONITORING REQUIREMENTS

CARB requires continuous gas monitoring equipment employing sample extraction and conditioning and electronic detection to be conducted strictly according to the EPA gaseous monitoring method, with the emphasis upon representativeness, documentation, and quality assurance. This includes, in part:

1. Gas analyzers must meet minimum acceptable standards for method of detection, sensitivity, noise, precision, linearity, and interference. Also, the gas sample extraction and conditioning equipment (probe, filter, pump, conditioner, connective plumbing, etc.) and data acquisition and logging equipment shall meet minimum acceptable specifications, as described in the QAQC portion of the gaseous sampling method.
2. It is recommended that the entire sampling system for continuous gas monitoring instruments should be leak checked before and after each test run by evacuating the system to a minimum of 20 inches of Hg vacuum and plugging for a period of 5 minutes. The resultant loss of vacuum cannot exceed 1 inch of Hg during this period.
3. Calibration of all analyzers must be accomplished at zero, mid-span (40-60% of full-scale range), and high-span (80-95% of full-scale range). The lowest practicable range should be selected for monitoring, so that the measured emission values are within 20-95% of the range. If a significant amount of the data are outside of this range, the data may be rejected, depending upon the application.
4. The calibration gases must be certified according to EPA Protocol Number 1 or certified to an analytical accuracy of ±1% and be NIST traceable (except cal gases used for system bias check), following EPA-600/R93/224, "EPA Traceability Protocol for Assay and Certification of Gaseous Calibration Standards," TABLE 2-2. Superblend or multi-component blend gas recertifications are based upon the individual component(s) with the shortest recertification date.
5. Field calibrations employing gas dilution systems (mass flow or critical orifice) must be performed in accordance with EPA Method 205, "Gas Dilution Verification Protocol." A five-point check is required.
6. A calibration error check and zero/span drift check must be performed before and after each test run. Calibration error must be less than ±2% of the range of measurement for zero, mid, and high-range calibration gases. Zero/span drift must be less than ±3% of the range of measurement.
7. A system bias check must be performed before and after each test run by alternately introducing cal gases to the entire sampling system, then to the gas analyzer(s), for comparison. The difference cannot exceed ±5% of the analyzer range.
8. Semi-annual analyzer certifications consisting of linearity plot, calibration curve, response time, and interference response must be furnished with the other calibrations to satisfy quality assurance documentation requirements.
9. NO_x measurement must be performed in the NO_x mode of the analyzer. An NO_2 to NO converter is required if NO_2 constitutes 5% or more of the total NO_x in the sample stream

or the rule or permit condition requires "NO_x" monitoring. The NO_2 to NO converter must be at least 90% efficient (use the NO_2 to NO converter efficiency procedure). The converter should be high-temperature (650°C) stainless steel, if no NH_3 is present. If NH_3 is present in the sample stream, then a low-temperature (350°C) molybdenum catalyst must be used in the converter. This check must be done at the beginning of the test.

10. The connective tubing from the probe to the sample conditioner must be heated above the dew point and the dew point reported. The sample conditioner must be able to maintain a dew point temperature of 37°F or less.

11. Data recorder resolution must be at least 0.5% of the range of measurement. A data point for each contaminant/diluent monitored must be recorded at least once/minute. Analog chart recorders must have a minimum 10-inch chart width, with 100 minor divisions.

12. All facets of testing must be continuously recorded. This includes the three-point calibration, system bias, calibration error, and zero/span drift checks, which must precede and conclude each test run.

13. All chart traces, or digital printouts, must be included in the final report and must be clearly identified as to:

- location/source
- operator initials
- date/running times
- actual test interval
- contaminant/diluent
- range changes
- range of measurement
- calibrations
- cal gas concentration/cyl. no.
- range of calibration

14. When more than one gas trace is shown on a chart, the individual traces must be distinguishable by color coding or some other means (original charts may be submitted and returned following evaluation). If a gas measurement range has been "offset" from zero or zero has been "transposed" to the right side of the recorder chart, it must be clearly identified. This offset should not be more than five small divisions of the chart. This data must be corrected using the ratio of the offset.

15. Gaseous measurements must be conducted a minimum of 60 continuous minutes at each load or specified condition, after the readings have stabilized.

16. Sampling locations not meeting the minimum site selection standards for EPA Method 1 must be tested for absence of stratification. (A gaseous constituent concentration profile differing more than 10% between any two monitoring points within the same cross-sectional plane of a stack or duct indicates stratification.) If stratification is present and alternate approved site selection or modification is not possible, then special monitoring will be required.

ATTACHMENT B – SAMPLE CONDITIONING REQUIREMENTS

For gaseous sampling method tests, proper sample conditioning is essential for representative sampling. Sample conditioning includes removal of particulate matter and moisture present in the sample gas stream. The design of the sample conditioning system must be such that during the process of particulate and moisture removal, the pollutants of interest are not also removed from the gas stream. Method 100 requires that the tester select a system that will have a minimum "scrubbing" effect. In particular, NO_2 and SO_2 are more susceptible to scrubbing than, for example, NO or CO, because of their high solubility in water. Since 3A, 7E, and 10B are reference methods, it is required that a sample conditioning system cause only minimum loss of these pollutants.

The EPA recommends a gas sampling system that can be used universally[12] (i.e., under all testing conditions). The setup includes a heated ¼-inch stainless steel probe with a 50-80 micron size, sintered 316 stainless steel or ceramic filter at the tip, and a short (not more than 6 feet) heated Teflon line to the sample conditioning system. The temperature of the probe and the Teflon line should be maintained at about 250°F. The conditioning system consists of a pair of standard Greenburg-Smith impingers with the stems cut to about 1-inch length from the top, immersed in a bath containing water and dry ice pellets, and immediately followed by a thermo-electric cooler or permeation drier. The gas temperature at the outlet of the impinger shall be less than 60°F and the gas at the drier outlet shall be maintained at a dew point less than 37°F. If the drier cannot be directly connected to the impinger outlet, then a Teflon line heated to 10°F above the impinger outlet gas temperature can be used for connection. Another particulate filter (~5 microns) should be in the line right after the cooler/drier. All the temperatures should be measured and recorded, preferably on a strip chart recorder. If the moisture content of the exhaust gas is below 5% and the sample gas flow rate is less than 10 liters/minute, the impinger setup need not be used, as long as no moisture condensation occurs in the system and the conditioned sample is maintained at the required dew point.

PRECAUTIONS: Never allow the water in the impingers to accumulate more than ¼ of the impinger height. Don't allow the water bath to become frozen around the impingers, or cracking of the glassware may result. Assure that the thermo-electric cooler/permeation drier has adequate design capacity. Follow a good maintenance schedule for the cooler/drier gas conditioning system.

Other systems may be used, upon Agency approval, emphasizing the requirements that water is removed immediately after separation from the gas stream and minimal water contact with the gas stream is assured.

[12] An example of a non-universally applicable water removal system is based on the refrigerated cooling coil principle. A refrigerated cooling coil system can scrub out a high percentage of water-soluble pollutants due to a comparatively long residence time and intimate contact between the sample gases and the water droplets collected on the inside of the coil. Consequently, it will show a high bias for the CEMS being tested if the sample gas contains a significant amount of NO_2 compared to NO_x or SO_2, and therefore it may not be suitable in all cases.

ATTACHMENT C – NO_2 TO NO CONVERSION TEST PROCEDURE

NO_2 TO NO CONVERSION TEST PROCEDURE

(Alternative to O_3 Titration Method – 40 CFR 50.1, Appendix F)

1. NO_x Analyzer Requirements

a. Full span range 0-20 ppm or 0-25 ppm

b. Equipped with NO and NO_x modes

2. Auditing Gas Requirements

a. NO_2 in air (or N_2): Use NO_2 in air for a stainless steel converter.

b. Concentration of NO_2: 15 to 18 ppm ± 0.5 ppm *(C_o, ppm)*

c. Recertification: An audit gas should be recertified after 6 months.

3. Calibration Gas Requirements

a. Concentration: NO (17 to 19 ppm) with less than 0.1 ppm NO_2 – high-span
NO (10 to 13 ppm) with less than 0.1 ppm NO_2 – mid-span

b. Zero Gas: High purity N_2

4. Calibration of Analyzer

a. Calibrate NO mode with the NO calibration gases.

b. Calibrate NO_x mode with the same gases without any gain adjustment.

b1. If the analyzer is equipped with two independent gain adjusting circuits, skip 4.b., then repeat 4.a. for the NO_x mode.

5. Conversion Efficiency (CE) Test

a. Analyze the audit gas with NO mode. Read and standardize concentration. *(C_1, ppm)*

b. Analyze the audit gas with NO_x mode. Read and standardize concentration. *(C_2, ppm)*

6. Calculation for Conversion Efficiency

$$\%CE = \frac{|C_2 - C_1|}{C_0} x100$$

7. Criteria for Acceptability of CE

a. % CE must be larger than 90%.

b. C_1 must be less than 5% of total NO_x ($NO + NO_2$) in the NO_2 audit gas (Section 2b).

NOTE: NO_2 audit gas concentration of higher value than what is specified in *Section 2* may be required where NO_2 present in the exhaust gas being measured is greater than 30 ppm. Select the NO_2 gas within 10% of the expected NO_2 concentration in the exhaust.

APPENDIX D – ALT-104 APPROVAL OF ALTERNATIVE TO METHOD 10 FOR ENGINES

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
RESEARCH TRIANGLE PARK, NC 27711

Almega ENVIRONMENTAL

SEP 23 2013

OFFICE OF
AIR QUALITY PLANNING
AND STANDARDS

Ms. Natasha Meskal
Ecotek
17610 Beach Blvd.
Suite 47
Huntington Beach, CA 92647

Dear Ms. Meskal:

This letter is in response to your August 3, 2013, request to use South Coast Air Quality Management District (SCAQMD) Method 100.1 as an alternative to EPA Method 10 in determining carbon monoxide (CO) emissions from an internal combustion engine at Well #5 in the Mesa Consolidated Water District. The engine is subject to Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines, which requires that CO emissions be measured by Method 10. This engine is also subject to SCAQMD Rule 1110.2, which requires CO measurement using Method 100.1. You ask that we allow the use of Method 100.1 to measure CO under Subpart ZZZZ in place of Method 10 in order to preclude duplicate testing with very similar methods to satisfy both regulations. You also ask that Method 100.1 be approved on a broadly applicable basis for federally-regulated engines, since all engines under SCAQMD jurisdiction are already subject to or will become subject to Subpart ZZZZ in the near future.

Method 100.1 is very similar to Method 10 in format, equipment, and performance requirements. The minor differences in the two methods make Method 100.1 the more stringent of the two. For these reasons, we believe Method 100.1 is an acceptable alternative to Method 10. Therefore, we approve the use of SCAQMD Method 100.1 in place of Method 10 when measuring CO from federally-regulated engines. Since this alternative is applicable to other federally-regulated engines, we will be posting this letter on our website at *http://www.epa.gov/ttn/emc/approalt.html* for use by other interested parties.

If you have questions or would like to discuss the matter further, please call Foston Curtis at (919) 541-1063, or email him at curtis.foston@epa.gov.

Sincerely,

Robin R. Segall for CBO

Conniesue B. Oldham, Ph.D., Group Leader
Measurement Technology Group

cc: Foston Curtis (curtis.foston@epa.gov)
Steve Bancroft, Mesa Consolidated Water District (steveb@mesawater.org)
Roger Demers, Mesa Consolidated Water District (rdemers@mesawater.org)
Melanie King (king.melanie@epa.gov)

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CLASS Notif #:	354805	Rec'd:	2/21/2014
STID:	2014-032	A/N:	499284, 499285, 499286
Facility:	95067		
Inspector ID:	KD02	Team:	
REPORT			

AIR GAS TESTING & CONSULTING SERVICES

AIR POLLUTION ENGINEERING, TESTING, PERMITTING, RISK ASSESSMENT, EMISSIONS REPORT

CLASS Notif #:	354806	Rec'd:	2/21/2014
STID:	2014-033	A/N:	499279, 499280, 499281, 499282
Facility:	98380		
Inspector ID:	KD02	Team:	
REPORT			

SOURCE TEST REPORT

MESA CONSOLIDATED WATER DISTRICT
RULE 1110.2 TESTING FOR NOx, CO & VOC

RESERVOIR 1 – ENGINES #1, #2 AND #3
RESERVOIR 2 – ENGINES #1, #2, #3 AND #4

PREPARED FOR:

MESA CONSOLIDATED WATER DISTRICT
1965 PLACENTIA AVENUE
COSTA MESA, CALIFORNIA 92627

PREPARED BY:

AIR GAS TESTING & CONSULTING SERVICES
7111 GARDEN GROVE BLVD., SUITE 118
GARDEN GROVE, CALIFORNIA 92841

Tim T. Dinh

TIMOTHY T. DINH
ENGINEERNING MANAGER

REPORT NO. 91913RP
TEST DATE: AUGUST 21, 26 & 29 AND SEPTEMBER 5, 2013
REPORT DATE: SEPTEMBER 19, 2013

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A. Field Data

B. Calculation Data

C. Calibration Gas Certificates and LAP Approval Letter

D. Laboratory VOC Data

SECTION 1.0

INTRODUCTION AND SUMMARY

1.1 Introduction

Air Gas Testing & Consulting Services was contracted by Mesa Consolidated Water District to conduct a source testing program to determine the emissions of NOx, CO and VOC from seven internal combustion engines operated by Mesa Consolidated Water District (MCWD) in Costa Mesa, California. Three engines are located at Reservoir 1 (RES 1), and four engines are located at Reservoir 2 (RES 2). The engines are regulated under SCAQMD Rule 1110.2. The following table summarizes information relating to this project.

Company:	Mesa Consolidated Water District 1965 Placentia Ave. Costa Mesa, CA 92627
Equipment Location:	Reservoir 1 (RES-1) Facility ID: 95067 Engines Numbers: 1, 2 & 3 Location: 1965 Placentia Avenue, Costa Mesa, CA 92627 Reservoir 2 (RES-2) Facility ID: 98380 Engines Numbers: 1, 2, 3 & 4 Location: 2340 Orange Street, Costa Mesa, CA 92628
Tested Equipment:	RES 1: Engines #1, #2 & #3: Three Identical Natural Gas IC Engines, Waukesha Model F1197G, 137 bhp, Rich Burned Engines with a Catalytic Converters and Air/Fuel Ratio Controllers, Driving a Water Pumps RES-2: Engines #1, #2, #3 and #4: Four Identical Natural Gas IC Engines, Waukesha Model 2895G, 369 bhp, Rich Burned Engines with a Catalytic Converters and Air/Fuel Ratio Controllers, Driving a Water Pumps
Test Objective:	Source Testing for NOx, CO and VOC Emissions in Compliance with Rule 1110.2 Requirements
Test Date:	August 21, 26 & 29 and September 5, 2013
Testing Firm:	Air Gas Testing & Consulting Services 7111 Garden Grove Blvd., Suite 118 Garden Grove, California 92841, Phone: 714-840-9827
Plant's Contact:	Mr. Roger Demers, Phone: (949) 574-1000

1.2 Test Summary

Gaseous concentrations of oxides of nitrogen (NOx), carbon monoxide (CO), oxygen (O_2) and carbon dioxide (CO_2) were measured at the stack of each IC engine using SCAQMD Method 100.1 and analytical instruments in Air Gas' Mobile Laboratory. Volatile organic compounds (VOCs) were measured using SCAQMD Method 25.3. Testing was conducted according to the original approved source test protocol No. 62609P.

Table 1.1 summarizes the test parameters, number of tests, test duration and procedures used. Tables 1.2 to 1.8 summarize the test results with respect to compliance limits.

1.3 Document Outline

Section 2.0 describes the equipment tested and the sampling locations. Section 3.0 presents and discusses about the test results. Section 4.0 describes the test procedures used as well as the instruments used. Section 5.0 summarizes the quality assurance and quality control for each method. Section 6.0 addresses the conflict of interest issues. The appendices contain raw field data, calculation data, calibration and certification documents, and laboratory data.

TABLE 1.1

SUMMARY OF TEST PARAMETERS AND METHODS

PARAMETERS	METHODS	COMMENTS
Stack Gas NOx (ppm @ 15%O2)	SCAQMD 100.1	Conducted a 30-minute test at stack at normal load (actual duty cycle); and two additional 15-minute tests at minimum and maximum achievable loads as specified in Rule 1110.2 Section (f)(1)(C)(ii).
Stack Gas CO (ppm @ 15%O2)	SCAQMD 100.1	Conducted a 30-minute test at stack at normal load (actual duty cycle); and two additional 15-minute tests at minimum and maximum achievable loads as specified in Rule 1110.2 Section (f)(1)(C)(ii).
Stack Gas O_2 (%)	SCAQMD 100.1	Conducted a 30-minute test at stack at normal load (actual duty cycle); and two additional 15-minute tests at minimum and maximum achievable loads as specified in Rule 1110.2 Section (f)(1)(C)(ii).
Stack Gas VOCs (ppm)	SCAQMD 25.3	Conducted duplicate 50-60 minutes samples at stack at normal load (actual duty cycle).
Fuel Flow / Operating Data	Plant's Meters	Recorded from plant's instruments for natural gas fuel flow rate, engine load, catalyst's temperatures, etc.

Note: Testing was conducted according to the original approved source test protocol No. 62609P

TABLE 1.2

SUMMARY OF SOURCE TEST RESULTS – RES 1 ENGINES #1

Test Date: August 26, 2013
Client: Mesa Consolidated Water District

POLLUTANTS	NORMAL LOAD	MAXIMUM LOAD	MINIMUM LOAD
Oxides of Nitrogen (NOx)			
PPM at 15% O_2:	2.54	2.06	5.55
Compliance Limit (ppm @15% O_2):	11	11	11
Pass/Fail Status:	Passed	Passed	Passed
Carbon Monoxide (CO)			
PPM at 15% O_2:	49.4	120.4	59.1
Compliance Limit (ppm @15% O_2):	250	250	250
Pass/Fail Status:	Passed	Passed	Passed
Volatile Organic Compounds (VOC)			
PPM at 15% O_2:	8.19	Not Required for Measurement	Not Required for Measurement
Compliance Limit (ppm @15% O_2):	30		
Pass/Fail Status:	Passed		

Note: For Detailed Test Results Refer To Section 3.0

TABLE 1.3

SUMMARY OF SOURCE TEST RESULTS – RES 1 ENGINE #2

Test Date: August 21, 2013
Client: Mesa Consolidated Water District

POLLUTANTS	NORMAL LOAD	MAXIMUM LOAD	MINIMUM LOAD
Oxides of Nitrogen (NOx)			
PPM at 15% O_2:	2.22	2.47	3.38
Compliance Limit (ppm @15% O_2):	11	11	11
Pass/Fail Status:	Passed	Passed	Passed
Carbon Monoxide (CO)			
PPM at 15% O_2:	82.8	64.4	125.4
Compliance Limit (ppm @15% O_2):	250	250	250
Pass/Fail Status:	Passed	Passed	Passed
Volatile Organic Compounds (VOC)			
PPM at 15% O_2:	2.4	Not Required for Measurement	Not Required for Measurement
Compliance Limit (ppm @15% O_2):	30		
Pass/Fail Status:	Passed		

Note: For Detailed Test Results Refer To Section 3.0

TABLE 1.4

SUMMARY OF SOURCE TEST RESULTS – RES 1 ENGINE #3

Test Date: August 21, 2013
Client: Mesa Consolidated Water District

POLLUTANTS	NORMAL LOAD	MAXIMUM LOAD	MINIMUM LOAD
Oxides of Nitrogen (NOx)			
PPM at 15% O_2:	4.25	1.86	7.52
Compliance Limit (ppm @15% O_2):	11	11	11
Pass/Fail Status:	Passed	Passed	Passed
Carbon Monoxide (CO)			
PPM at 15% O_2:	77.7	90.5	91.7
Compliance Limit (ppm @15% O_2):	250	250	250
Pass/Fail Status:	Passed	Passed	Passed
Volatile Organic Compounds (VOC)			
PPM at 15% O_2:	4.44	Not Required for Measurement	Not Required for Measurement
Compliance Limit (ppm @15% O_2):	30		
Pass/Fail Status:	Passed		

Note: For Detailed Test Results Refer To Section 3.0

TABLE 1.5

SUMMARY OF SOURCE TEST RESULTS – RES 2 ENGINE #1

Test Date: September 5, 2013
Client: Mesa Consolidated Water District

POLLUTANTS	NORMAL LOAD	MAXIMUM LOAD	MINIMUM LOAD
Oxides of Nitrogen (NOx)			
PPM at 15% O_2:	7.48	1.48	8.21
Compliance Limit (ppm @15% O_2):	11	11	11
Pass/Fail Status:	Passed	Passed	Passed
Carbon Monoxide (CO)			
PPM at 15% O_2:	38.9	35.7	38.6
Compliance Limit (ppm @15% O_2):	76	76	76
Pass/Fail Status:	Passed	Passed	Passed
Volatile Organic Compounds (VOC)			
PPM at 15% O_2:	4.55	Not Required for Measurement	Not Required for Measurement
Compliance Limit (ppm @15% O_2):	30		
Pass/Fail Status:	Passed		

Note: For Detailed Test Results Refer To Section 3.0

TABLE 1.6

SUMMARY OF SOURCE TEST RESULTS – RES 2 ENGINE #2

Test Date: September 5, 2013
Client: Mesa Consolidated Water District

POLLUTANTS	NORMAL LOAD	MAXIMUM LOAD	MINIMUM LOAD
Oxides of Nitrogen (NOx)			
PPM at 15% O_2:	0.09	0.37	0.15
Compliance Limit (ppm @15% O_2):	11	11	11
Pass/Fail Status:	Passed	Passed	Passed
Carbon Monoxide (CO)			
PPM at 15% O_2:	39.3	45.9	32.6
Compliance Limit (ppm @15% O_2):	76	76	76
Pass/Fail Status:	Passed	Passed	Passed
Volatile Organic Compounds (VOC)			
PPM at 15% O_2:	2.54	Not Required for Measurement	Not Required for Measurement
Compliance Limit (ppm @15% O_2):	30		
Pass/Fail Status:	Passed		

Note: For Detailed Test Results Refer To Section 3.0

TABLE 1.7

SUMMARY OF SOURCE TEST RESULTS – RES 2 ENGINE #3

Test Date: August 29, 2013
Client: Mesa Consolidated Water District

POLLUTANTS	NORMAL LOAD	MAXIMUM LOAD	MINIMUM LOAD
Oxides of Nitrogen (NOx)			
PPM at 15% O_2:	0.67	0.31	1.85
Compliance Limit (ppm @15% O_2):	11	11	11
Pass/Fail Status:	Passed	Passed	Passed
Carbon Monoxide (CO)			
PPM at 15% O_2:	33.6	46.4	41.1
Compliance Limit (ppm @15% O_2):	76	76	76
Pass/Fail Status:	Passed	Passed	Passed
Volatile Organic Compounds (VOC)			
PPM at 15% O_2:	2.24	Not Required for Measurement	Not Required for Measurement
Compliance Limit (ppm @15% O_2):	30		
Pass/Fail Status:	Passed		

Note: For Detailed Test Results Refer To Section 3.0

TABLE 1.8

SUMMARY OF SOURCE TEST RESULTS – RES 2 ENGINE #4

Test Date: August 19, 2013
Client: Mesa Consolidated Water District

POLLUTANTS	NORMAL LOAD	MAXIMUM LOAD	MINIMUM LOAD
Oxides of Nitrogen (NOx)			
PPM at 15% O_2:	0.32	0.31	0.26
Compliance Limit (ppm @15% O_2):	11	11	11
Pass/Fail Status:	Passed	Passed	Passed
Carbon Monoxide (CO)			
PPM at 15% O_2:	28.5	43.2	37.3
Compliance Limit (ppm @15% O_2):	76	76	76
Pass/Fail Status:	Passed	Passed	Passed
Volatile Organic Compounds (VOC)			
PPM at 15% O_2:	2.77	Not Required for Measurement	Not Required for Measurement
Compliance Limit (ppm @15% O_2):	30		
Pass/Fail Status:	Passed		

Note: For Detailed Test Results Refer To Section 3.0

SECTION 2.0

DESCRIPTION OF EQUIPMENT AND SAMPLE LOCATIONS

2.1 Equipment Description:

The eight engines are located at three different sites. Reservoir 1 has the three identical IC engines Model F1197G. Reservoir 2 has four identical engines Model 2895G. The following tables summarize the engines' information.

RESERVOIR RES-1 SITE (Three Identical Engines):

PARAMETERS	ENGINE #1	ENGINE #2	ENGINE #3
Engine Make:	Waukesha	Waukesha	Waukesha
Model:	F1197G	F1197G	F1197G
Serial Number:	398444	398442	398443
Type:	Sparked Ignition, Rich Burned, 4-stroke	Sparked Ignition, Rich Burned, 4-stroke	Sparked Ignition, Rich Burned, 4-stroke
Horse Power:	137 bhp	137 bhp	137 bhp
Cylinders:	6	6	6
Air Pollution Controller:	Catalytic Converter Air/Fuel Ratio Controller with Oxygen Sensor	Catalytic Converter Air/Fuel Ratio Controller with Oxygen Sensor	Catalytic Converter Air/Fuel Ratio Controller with Oxygen Sensor
SCAQMD ID: SCAQMD A/N: Permit No.:	95067 280185 D90766	95067 280190 D90767	95067 280191 D90772

RESERVOIR RES-2 SITE (Four Identical Engines):

PARAMETERS	ENGINE #1	ENGINE #2	ENGINE #3	ENGINE #4
Engine Make:	Waukesha	Waukesha	Waukesha	Waukesha
Model:	2895G	2895G	2895G	2895G
Serial Number:	C-10769-1	C-10769-2	C-10769-3	C-10769-4
Type:	Sparked Ignition, Rich Burned, 4-stroke	Sparked Ignition, Rich Burned, 4-stroke	Sparked Ignition, Rich Burned, 4-stroke	Sparked Ignition, Rich Burned, 4-stroke
Horse Power:	369 bhp	369 bhp	369 bhp	369 bhp
Cylinders:	6	6	6	6
Air Pollution Controller:	Catalytic Converter Air/Fuel Ratio Controller with Oxygen Sensor	Catalytic Converter Air/Fuel Ratio Controller with Oxygen Sensor	Catalytic Converter Air/Fuel Ratio Controller with Oxygen Sensor	Catalytic Converter Air/Fuel Ratio Controller with Oxygen Sensor
SCAQMD ID: SCAQMD A/N: Permit No.:	98380 466597 F90137	98380 485752 G1148	98380 485754 G1149	98380 485755 G1150

2.2 Sample Location:

Sample ports locations meet the 2 and ½ diameters upstream and downstream criteria. The stacks are small 5.25-in diameter pipes with the sample ports located at a distance greater than 15 diameters downstream from the catalyst. Figure 2.1 shows a schematic of the three identical IC engines at Reservoir 1 and their sample ports locations. Similarly, Figure 2.2 shows a schematic of the four identical IC engines at Reservoir 2 and their sample ports locations.

FIGURE 2.1

SCHEMATIC OF THREE IDENTICAL ENGINES #1, #2 & #3 AT RESERVOIR 1

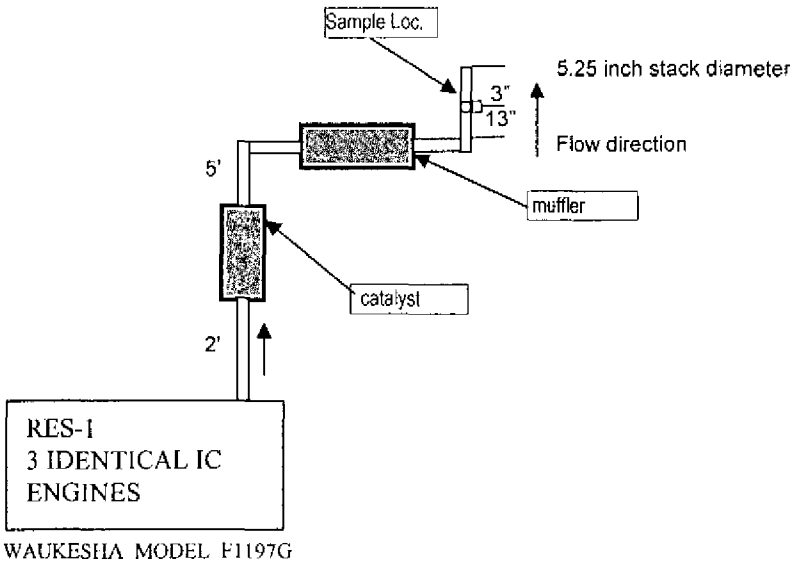
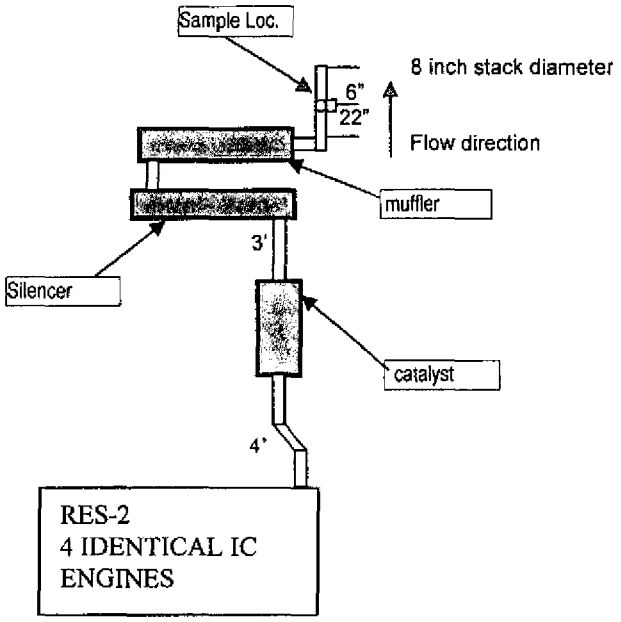


FIGURE 2.2

SCHEMATIC OF FOUR IDENTICAL ENGINES #1, #2, #3 & #4 AT RESERVOIR 2



WAUKESHA MODEL 2895G

SECTION 3.0

TEST RESULTS AND DISCUSSION

Tables 3.1 to 3.7 present the test results in detail including operating data. The concentrations of NOx, CO and VOC corrected to 15% O_2 are below the allowable concentration limits specified in the permits to operate and in SCAQMD Rule 1110.2. Detail calculations for each of the pollutants are found in Appendix B of this report. All CEM data were corrected for calibration bias and drifts as specified in Method 100.1. Calculated values for drift, calibration error, linearity and bias are presented in the calculation spreadsheet for Method 100.1 found in Appendix B of this report. All instruments performed properly during testing and their performance specifications were within the allowable limits specified in Method 100.1. VOC laboratory results are found in Appendix D. The engine operated at normal and stable conditions. There was no operating problem encountered during the entire test regarding the engine or the measurement instruments. The test results are accurate and representative.

TABLE 3.1

DETAIL TEST RESULTS – RESERVOIR 1 IC ENGINE #1

Facility: MCWD (Reservoir 1)
Test Date: 8/26/2013
Unit: Res 1 Engine 1
Engine Rated bhp: 137
Engine Serial No.: 398444

COMPLIANCE RESULTS:

PARAMETERS	Normal		Maximum		Minimum
	As Measured	Report Limit*	As Measured	Report Limit*	
NOx Concentration, ppm dry	8.91	10.0	7.26	10.0	19.34
NOx Concentration, ppm @ 15% O_2	**2.54**	**2.84**	**2.06**	**2.83**	**5.55**
NOx Permit Limit, ppm @ 15% O_2	**11.00**	**11.00**	**11.00**	**11.00**	**11.00**
NOx Pass/Fail Status:	***Passed***	***Passed***	***Passed***	***Passed***	***Passed***
CO Concentration, ppm dry	173.6		425.0		205.7
CO Concentration, ppm @ 15% O_2	**49.40**		**120.39**		**59.06**
CO Permit Limit, ppm @ 15% O_2	**250.00**		**250.00**		**250.00**
CO Pass/Fail Status:	***Passed***		***Passed***		***Passed***
VOC Concentration, ppm**	28.78				
VOC Concentration, ppm @ 15% O_2	**8.19**				
VOC Permit Limit, ppm @ 15% O_2	**30.00**				
VOC Pass/Fail Status:	***Passed***				

*Reported limit at 20% Range

** included bias factor of 1.086 for Method 25.3

SUPPORTING DATA:

PARAMETERS	Normal	Maximum	Minimum
O_2 Concentration, %	0.16	0.07	0.35
CO_2 Concentration, %	11.90	11.91	11.76
Methane Concentration, ppm	39		
Catalyst's Temperature, F (in/out)	880 / 866	975 / 934	855 / 844
Engine Operating RPM	750	870	700
NOx Emission Factor (lb/mmBtu)	0.009	0.008	0.020
CO Emission Factor (lb/mmBtu)	0.111	0.270	0.132
VOC Emission Factor (lb/mmBtu)	0.0105		
Natural Gas Fuel Usage (scfh)	906	1,017	644
Oxygen Sensor Reading (mv)	836	840	837
AFRC Setting (phi)	1.005	1.005	1.005
AFRC Reading (phi)	1.054	1.057	1.059
Engine's Elapse Time Meter, hrs	295	296	296

TABLE 3.2

DETAIL TEST RESULTS – RESERVOIR 1 IC ENGINE #2

Facility:	MCWD (Reservoir 1)
Test Date:	8/21/2013
Unit:	Res 1 Engine 2
Engine Rated bhp:	137
Engine Serial No.:	398442

COMPLIANCE RESULTS:

PARAMETERS	Normal		Maximum		Minimum
	As Measured	Report Limit*	As Measured	Report Limit*	
NOx Concentration, ppm dry	7.67	10.0	8.59	10.0	11.48
NOx Concentration, ppm @ 15% O_2	**2.22**	**2.89**	**2.47**	**2.88**	**3.38**
NOx Permit Limit, ppm @ 15% O_2	**11.00**	**11.00**	**11.00**	**11.00**	**11.00**
NOx Pass/Fail Status:	***Passed***	***Passed***	***Passed***	***Passed***	***Passed***
CO Concentration, ppm dry	286.2		223.9		426.4
CO Concentration, ppm @ 15% O_2	**82.79**		**64.42**		**125.40**
CO Permit Limit, ppm @ 15% O_2	**250.00**		**250.00**		**250.00**
CO Pass/Fail Status:	***Passed***		***Passed***		***Passed***
VOC Concentration, ppm**	8.30				
VOC Concentration, ppm @ 15% O_2	**2.40**				
VOC Permit Limit, ppm @ 15% O_2	**30.00**				
VOC Pass/Fail Status:	***Passed***				

*Reported limit at 20% Range

** included bias factor of 1.086 for Method 25.3

SUPPORTING DATA:

PARAMETERS	Normal	Maximum	Minimum
O_2 Concentration, %	0.51	0.39	0.84
CO_2 Concentration, %	11.76	11.81	11.61
Methane Concentration, ppm	144		
Catalyst's Temperature, F (in/out)	970 / 979	1040 / 1061	882 / 826
Engine Operating RPM	811	902	708
NOx Emission Factor (lb/mmBtu)	0.008	0.009	0.012
CO Emission Factor (lb/mmBtu)	0.186	0.144	0.281
VOC Emission Factor (lb/mmBtu)	0.0031		
Natural Gas Fuel Usage (scfh)	799	1,043	673
Oxygen Sensor Reading (mv)	815	801	780
AFRC Setting (phi)	1.048	1.043	1.060
AFRC Reading (phi)	1.055	1.040	1.050
Engine's Elapse Time Meter, hrs	1,347	1,348	1,349

TABLE 3.3

DETAIL TEST RESULTS – RESERVOIR 1 IC ENGINE #3

Facility: MCWD (Reservoir 1)
Test Date: 8/21/2013
Unit: Res 1 Engine 3
Engine Rated bhp: 137
Engine Serial No.: 398443

COMPLIANCE RESULTS:

PARAMETERS	Normal	Maximum		Minimum
		As Measured	Report Limit*	
NOx Concentration, ppm dry	14.76	6.52	10.0	26.13
NOx Concentration, ppm @ 15% O_2	**4.25**	**1.86**	**2.85**	**7.52**
NOx Permit Limit, ppm @ 15% O_2	**11.00**	**11.00**	**11.00**	**11.00**
NOx Pass/Fail Status:	***Passed***	***Passed***	***Passed***	***Passed***
CO Concentration, ppm dry	269.9	317.3		318.8
CO Concentration, ppm @ 15% O_2	**77.69**	**90.46**		**91.69**
CO Permit Limit, ppm @ 15% O_2	**250.00**	**250.00**		**250.00**
CO Pass/Fail Status:	***Passed***	***Passed***		***Passed***
VOC Concentration, ppm**	15.42			
VOC Concentration, ppm @ 15% O_2	**4.44**			
VOC Permit Limit, ppm @ 15% O_2	**30.00**			
VOC Pass/Fail Status:	***Passed***			

*Reported limit at 20% Range

** included bias factor of 1.086 for Method 25.3

SUPPORTING DATA:

PARAMETERS	Normal	Maximum	Minimum
O_2 Concentration, %	0.41	0.21	0.39
CO_2 Concentration, %	11.77	11.78	11.67
Methane Concentration, ppm	220		
Catalyst's Temperature, F (in/out)	979 / 991	1049 / 1059	899 / 867
Engine Operating RPM	800	900	705
NOx Emission Factor (lb/mmBtu)	0.016	0.007	0.028
CO Emission Factor (lb/mmBtu)	0.174	0.203	0.206
VOC Emission Factor (lb/mmBtu)	0.0057		
Natural Gas Fuel Usage (scfh)	781	980	642
Oxygen Sensor Reading (mv)	668	710	701
AFRC Setting (phi)	1.011	1.014	1.001
AFRC Reading (phi)	1.012	1.014	1.011
Engine's Elapse Time Meter, hrs	2,983	2,983	2,984

TABLE 3.4

DETAIL TEST RESULTS – RESERVOIR 2 IC ENGINE #1

Facility: MCWD (Reservoir 2)
Test Date: 9/5/2013
Unit: Res 2 Engine 1
Engine Rated bhp: 369
Engine Serial No.: 10769-1

COMPLIANCE RESULTS:

PARAMETERS*	Normal	Maximum		Minimum
		As Measured	Report Limit*	
NOx Concentration, ppm dry	26.41	5.25	10.0	28.95
NOx Concentration, ppm @ 15% O_2	**7.48**	**1.48**	**2.83**	**8.21**
NOx Permit Limit, ppm @ 15% O_2	**11.00**	**11.00**	**11.00**	**11.00**
NOx Pass/Fail Status:	***Passed***	***Passed***	***Passed***	***Passed***
CO Concentration, ppm dry	137.2	126.3		136.2
CO Concentration, ppm @ 15% O_2	**38.85**	**35.69**		**38.59**
CO Permit Limit, ppm @ 15% O_2	**76.00**	**76.00**		**76.00**
CO Pass/Fail Status:	***Passed***	***Passed***		***Passed***
VOC Concentration, ppm**	16.07			
VOC Concentration, ppm @ 15% O_2	**4.55**			
VOC Permit Limit, ppm @ 15% O_2	**30.00**			
VOC Pass/Fail Status:	***Passed***			

*Reported limit at 20% Range

** included bias factor of 1.086 for Method 25.3

SUPPORTING DATA:

PARAMETERS	Normal	Maximum	Minimum
O_2 Concentration, %	0.07	0.03	0.09
CO_2 Concentration, %	12.04	12.05	12.06
Methane Concentration, ppm	661		
Catalyst's Temperature, F (in/out)	919 / 941	1016 / 1029	909 / 939
Engine Operating RPM	835	962	805
NOx Emission Factor (lb/mmBtu)	0.028	0.005	0.030
CO Emission Factor (lb/mmBtu)	0.087	0.080	0.087
VOC Emission Factor (lb/mmBtu)	0.0058		
Natural Gas Fuel Usage (scfh)	2,240	2,661	2,040
Oxygen Sensor Reading (mv)	790	776	791
AFRC Setting (phi)	1.036	1.028	1.034
AFRC Reading (phi)	1.040	1.031	1.037
Engine's Elapse Time Meter, hrs	16,427	16,428	16,429

TABLE 3.5

DETAIL TEST RESULTS – RESERVOIR 2 IC ENGINE #2

Facility:	**MCWD (Reservoir 2)**
Test Date:	**9/5/2013**
Unit:	**Res 2 Engine 2**
Engine Rated bhp:	**369**
Engine Serial No.:	**10769-2**

COMPLIANCE RESULTS:

PARAMETERS	Normal		Maximum		Minimum	
	As Measured	Report Limit*	As Measured	Report Limit*	As Measured	Report Limit*
NOx Concentration, ppm dry	0.31	10.0	1.30	10.0	0.54	10.0
NOx Concentration, ppm @ 15% O_2	**0.09**	**2.82**	**0.37**	**2.83**	**0.15**	**2.82**
NOx Permit Limit, ppm @ 15% O_2	**11.00**	**11.00**	**11.00**	**11.00**	**11.00**	**11.00**
NOx Pass/Fail Status:	***Passed***	***Passed***	***Passed***	***Passed***	***Passed***	***Passed***
CO Concentration, ppm dry	139.2		162.4		115.6	
CO Concentration, ppm @ 15% O_2	**39.31**		**45.91**		**32.64**	
CO Permit Limit, ppm @ 15% O_2	**76.00**		**76.00**		**76.00**	
CO Pass/Fail Status:	***Passed***		***Passed***		***Passed***	
VOC Concentration, ppm**	9.00					
VOC Concentration, ppm @ 15% O_2	**2.54**					
VOC Permit Limit, ppm @ 15% O_2	**30.00**					
VOC Pass/Fail Status:	***Passed***					

*Reported limit at 20% Range

** included bias factor of 1.086 for Method 25.3

SUPPORTING DATA:

PARAMETERS	Normal	Maximum	Minimum
O_2 Concentration, %	0.01	0.03	0.01
CO_2 Concentration, %	12.22	12.28	12.18
Methane Concentration, ppm	428		
Catalyst's Temperature, F (in/out)	878 / 913	951 / 975	846 / 892
Engine Operating RPM	850	950	800
NOx Emission Factor (lb/mmBtu)	0.000	0.001	0.001
CO Emission Factor (lb/mmBtu)	0.088	0.103	0.073
VOC Emission Factor (lb/mmBtu)	0.0033		
Natural Gas Fuel Usage (scfh)	2,189	2,607	1,864
Oxygen Sensor Reading (mv)	785	789	774
AFRC Setting (phi)	1.025	1.033	1.031
AFRC Reading (phi)	1.026	1.032	1.028
Engine's Elapse Time Meter, hrs	16,455	16,456	16,457

TABLE 3.6

DETAIL TEST RESULTS – RESERVOIR 2 IC ENGINE #3

Facility: MCWD (Reservoir 2)
Test Date: 8/29/2013
Unit: Res 2 Engine 3
Engine Rated bhp: 369
Engine Serial No.: 10769-3

COMPLIANCE RESULTS:

PARAMETERS	Normal		Maximum		Minimum	
	As Measured	Report Limit*	As Measured	Report Limit*	As Measured	Report Limit*
NOx Concentration, ppm dry	2.39	10.0	1.10	10.0	6.56	10.0
NOx Concentration, ppm @ 15% O_2	**0.67**	**2.82**	**0.31**	**2.82**	**1.85**	**2.82**
NOx Permit Limit, ppm @ 15% O_2	**11.00**	**11.00**	**11.00**	**11.00**	**11.00**	**11.00**
NOx Pass/Fail Status:	***Passed***	***Passed***	***Passed***	***Passed***	***Passed***	***Passed***
CO Concentration, ppm dry	119.0		164.2		145.5	
CO Concentration, ppm @ 15% O_2	**33.58**		**46.36**		**41.09**	
CO Permit Limit, ppm @ 15% O_2	**76.00**		**76.00**		**76.00**	
CO Pass/Fail Status:	***Passed***		***Passed***		***Passed***	
VOC Concentration, ppm**	7.93					
VOC Concentration, ppm @ 15% O_2	**2.24**					
VOC Permit Limit, ppm @ 15% O_2	**30.00**					
VOC Pass/Fail Status:	***Passed***					

*Reported limit at 20% Range

** included bias factor of 1.086 for Method 25.3

SUPPORTING DATA:

PARAMETERS	Normal	Maximum	Minimum
O_2 Concentration, %	0.0	0.01	0.01
CO_2 Concentration, %	12.15	12.14	12.18
Methane Concentration, ppm	450		
Catalyst's Temperature, F (in/out)	936 / 951	1016 / 1026	860 / 871
Engine Operating RPM	850	970	791
NOx Emission Factor (lb/mmBtu)	0.002	0.001	0.007
CO Emission Factor (lb/mmBtu)	0.075	0.104	0.092
VOC Emission Factor (lb/mmBtu)	0.0029		
Natural Gas Fuel Usage (scfh)	2,299	2,644	1,900
Oxygen Sensor Reading (mv)	840	817	805
AFRC Setting (phi)	1.050	1.047	1.040
AFRC Reading (phi)	1.047	1.045	1.032
Engine's Elapse Time Meter, hrs	17,855	17,856	17,856

TABLE 3.7

DETAIL TEST RESULTS – RESERVOIR 2 IC ENGINE #4

Facility:	**MCWD (Reservoir 2)**
Test Date:	**8/29/2013**
Unit:	**Res 2 Engine 4**
Engine Rated bhp:	**369**
Engine Serial No.:	**10769-4**

COMPLIANCE RESULTS:

PARAMETERS	Normal		Maximum		Minimum	
	As Measured	Report Limit*	As Measured	Report Limit*	As Measured	Report Limit*
NOx Concentration, ppm dry	1.14	10.0	1.08	10.0	0.94	10.0
NOx Concentration, ppm @ 15% O_2	**0.32**	**2.82**	**0.31**	**2.86**	**0.26**	**2.82**
NOx Permit Limit, ppm @ 15% O_2	**11.00**	**11.00**	**11.00**	**11.00**	**11.00**	**11.00**
NOx Pass/Fail Status:	***Passed***	***Passed***	***Passed***	***Passed***	***Passed***	***Passed***
CO Concentration, ppm dry	101.1		151.0		132.5	
CO Concentration, ppm @ 15% O_2	**28.54**		**43.17**		**37.31**	
CO Permit Limit, ppm @ 15% O_2	**76.00**		**76.00**		**76.00**	
CO Pass/Fail Status:	***Passed***		***Passed***		***Passed***	
VOC Concentration, ppm**	9.83					
VOC Concentration, ppm @ 15% O_2	**2.77**					
VOC Permit Limit, ppm @ 15% O_2	**30.00**					
VOC Pass/Fail Status:	***Passed***					

*Reported limit at 20% Range

** included bias factor of 1.086 for Method 25.3

SUPPORTING DATA:

PARAMETERS	Normal	Maximum	Minimum
O_2 Concentration, %	0.0	0.26	0.0
CO_2 Concentration, %	12.10	12.07	12.09
Methane Concentration, ppm	727		
Catalyst's Temperature, F (in/out)	904 / 942	986 / 1018	868 / 940
Engine Operating RPM	847	971	790
NOx Emission Factor (lb/mmBtu)	0.001	0.001	0.001
CO Emission Factor (lb/mmBtu)	0.064	0.097	0.084
VOC Emission Factor (lb/mmBtu)	0.0036		
Natural Gas Fuel Usage (scfh)	2,203	2,699	1,966
Oxygen Sensor Reading (mv)	819	830	775
AFRC Setting (phi)	1.042	1.051	1.041
AFRC Reading (phi)	1.044	1.049	1.027
Engine's Elapse Time Meter, hrs	16,056	16,057	16,058

SECTION 4.0

TEST PROCEDURES AND INSTRUMENTS

4.1 SCAQMD Method 100.1 - Continuous Gaseous Emissions Sampling

Gaseous components of oxides of nitrogen (NO_x), oxygen (O_2) and carbon monoxide (CO) were measured continuously using SCAQMD Method 100.1 and analytical instruments in Air Gas' mobile laboratory. Figure 4.1 shows a schematic of the sampling apparatus, and Table 4.1 shows specifications for each instrument used.

The gaseous sample was extracted, filtered, dried and transported to each analyzer using a 1/4 stainless steel heated probe, a short heated teflon sample line, a teflon-coated diaphragm pump and a transporting sample line. The sample gas was passed through a sample conditioning system, which consisted of water knockout stainless steel impingers and a thermoelectric condenser before transporting to the analyzers. A series of valves, pressure gauges, and rotameters maintained steady flow and constant pressure throughout the system. Leak checks were conducted both before and after sampling to ensure that no leakage occurs in the entire sampling apparatus. A leak check was performed on the vacuum side by sealing the probe tip and increasing the vacuum to above 20 inches of mercury. After the vacuum stabilizes, it held constantly at 20 in Hg. On the pressure side, the pressure gauge indicator dropped to zero and the flow to each individual rotameter also dropped to zero to indicate a successful leak check.

The calibration for each individual analyzer was performed by introducing zero, hi-span and mid-span gases to each analyzer and by making corresponding adjustments. A system bias zero and bias calibration were also performed before and after each run by injecting calibration gases at the sampling-probe/calibration valve assembly. The response time for each analyzer was determined at the moment when the calibration gas for the bias check reaches 95% of its concentration value.

EPA Protocol-1 gases used were not older than 24 months for NOx gases, and 36 months for oxygen and carbon monoxide gases. The Certificates of Analysis for these gases are found in the Appendix C of this report. A STEC gas divider with an accuracy of ±0.5% was also used to provide additional gases for the calibration of analyzers. EPA Method 205 "Verification of the Gas Dilution System for Field Instruments Calibration" was conducted to verify the accuracy of the device.

All data were recorded on the CEMS' Data Acquisition System (DAS) and on the strip chart, and were corrected for bias /drifts according to Method 100.1. Other pertinent data such as calibration gas concentrations, locations, date and time were also recorded on the strip chart and on the field data form.

A full calibration of each monitor was performed, adhering to Method 100.1. This included a three- point calibration of the analyzers internally using EPA Protocol 1 calibration gases at 80-100%, 40-60%, and 0-20% of full scale. System bias zero and bias calibration checks were performed before and after each run by passing zero and calibration gases through the entire sampling system using a three-way valve located at the probe and sample line interface. A system bias result was determined by comparing the analyzer's direct response value and the system bias response value. The sampling only commenced if the bias check results were below the 5 percent allowable limit. The actual stack gas concentration is calculated using the following formula:

$$\text{Corrected ppm} = \frac{(\text{ppm}_{\text{measured}} - \text{avg zero}_{\text{bias cal}}) \times (\text{ppm certified})}{(\text{ppm avg cal}_{\text{bias}} - \text{avg zero}_{\text{bias cal}})}$$

The concentration corrected to 15% oxygen basis is calculated as below:

$$\text{PPM @ 15\% } O_2 = (\text{ppm as found})\ (20.9 - 15) / (20.9 - \%O_2)$$

TABLE 4.1

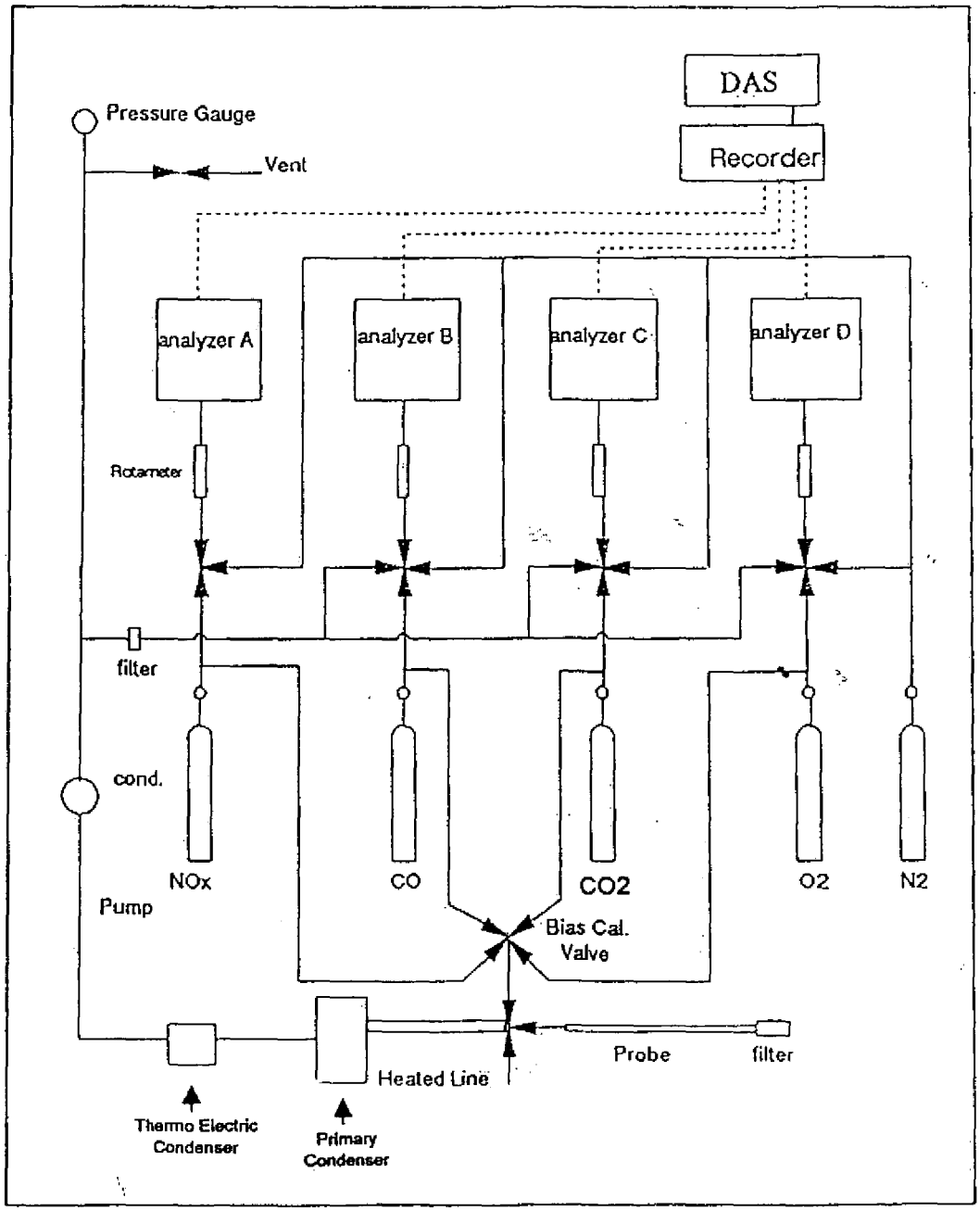
AIR GAS' CEMS MOBILE - EQUIPMENT SPECIFICATIONS

O2 ANALYZER SERVOMEX MODEL 571	
Analytical Principle	Paramagnetic
Ranges	0-5%, 10%, 25%
Accuracy	+/- 1% of Full Scale
Repeatability	0.5% of Full Scale
Sensitivity	0.5% of Full Scale
Zero/Span Drift	+/- 1% of Full Scale in 24 Hrs
Response Time	90% Full Scale in 7 Seconds
Linearity	< 1% of Full Scale
Output	1 Volt DC
Serial Number	SPR-372
NOx/NO ANALYZER - THERMO ENVIRONMENTAL MODEL 42C	
Analytical Principle	Chemiluminescence
Ranges	0.5 ppm, 1, 2, 5, 10, 20, 50,100, 200 ppm
Accuracy	+/- 1% of Full Scale
Repeatability	0.5% of Full Scale
Sensitivity	0.5% of Full Scale
Zero/Span Drift	+/- 1% of Full Scale in 24 Hrs
Response Time	90% Full Scale in 15 Seconds
Linearity	< 1% of Full Scale
Output	1 Volt DC, 10 Volt DC
Serial Number	42C-61357-330
CO ANALYZER – THERMO ENVIRONMENTAL MODEL 48C	
Analytical Principle	Infrared Gas Filter Correlation
Ranges	1, 5, 10, 20, 50,100, 200, 500, 1000, 2000ppm
Accuracy	+/- 1% of Full Scale
Repeatability	0.5% of Full Scale
Sensitivity	0.5% of Full Scale
Zero/span Drift	+/- 1% of Full Scale in 24 Hrs
Response Time	95% Full Scale in 20 Seconds
Linearity	< 1% of Full Scale
Output	10 Volt DC
Serial Number	48C-71534-369

CO_2 ANALYZER – CALIFORNIA ANALYTICAL MODEL 10	
Analytical Principle	Non Dispersive Infrared Analyzer
Ranges	5%, 10%, 20%
Accuracy	+/- 1% of Full Scale
Repeatability	0.5% of Full Scale
Sensitivity	0.5% of Full Scale
Zero/span Drift	+/- 1% of Full Scale in 24 Hrs
Response Time	90% Full Scale in 5 Seconds
Linearity	< 1% of Full Scale
Output	10 Volt DC
Serial Number	R01039
YOKOGAWA HYBRID RECODER DR241 WITH DATA ACQUISITION SYSTEM	
Hybrid Recorder Model:	DR241 with Data Acquisition System (DAS)
Number of Channels:	Recording 60 (30 inputs, 30 computations)
Method:	Raster Scan Method with 10-color trends
Chart Width:	250 mm
Integration Time:	20ms to 100ms
Average Time Intervals:	5 seconds to 24 hours user defined
Input Voltages:	Multiples from 20mv to 50v
Accuracy:	0.05% of readings
Chart Speed:	Multiples from 1-1500 mm/hr
Chart Scale:	100 Divisions
Software:	Yokogawa DP400-3 for Window XP
Data Storage:	Internal 512K SRAM and Memory Disk
Data Communication Port	Ethernet
Serial Number	47JD0076-712
THERMOELECTRIC COOLER - BALDWIN ENV. MODEL 2285 DUAL STAGES	
Double Refrigeration	Both Sizes
Max. Inlet Temperature	*500 F*
Max. Inlet Pressure	40 psi
Max. Flow Rate	8.0 Lpm
Max. Water Concentration	50%
Outlet Dew-Point Temperature	<37 F
Dew-Point Stability	+/- 0.5 F
Voltage	115 V
Thermocouple	Type K

FIGURE 4.1

SAMPLING APPARATUS FOR METHOD 100.1



4.2 SCAQMD Modified Method 25.3 - Collection and Measurement of Low Level Volatile Organic Compounds (VOC) Using Mini Water Impinger and Canister

Volatile organic components were collected in two fractions using a SUMMA canister preceded by a mini water impinger. An integrated sample was collected over a time period of 50-60 minutes using an orifice flow control module made of stainless steel. The flow module also contained a combination vacuum/pressure gauge which was connected directly to a single valve SUMMA canister. The canister was initially cleaned and evacuated in preparation for sample collection.

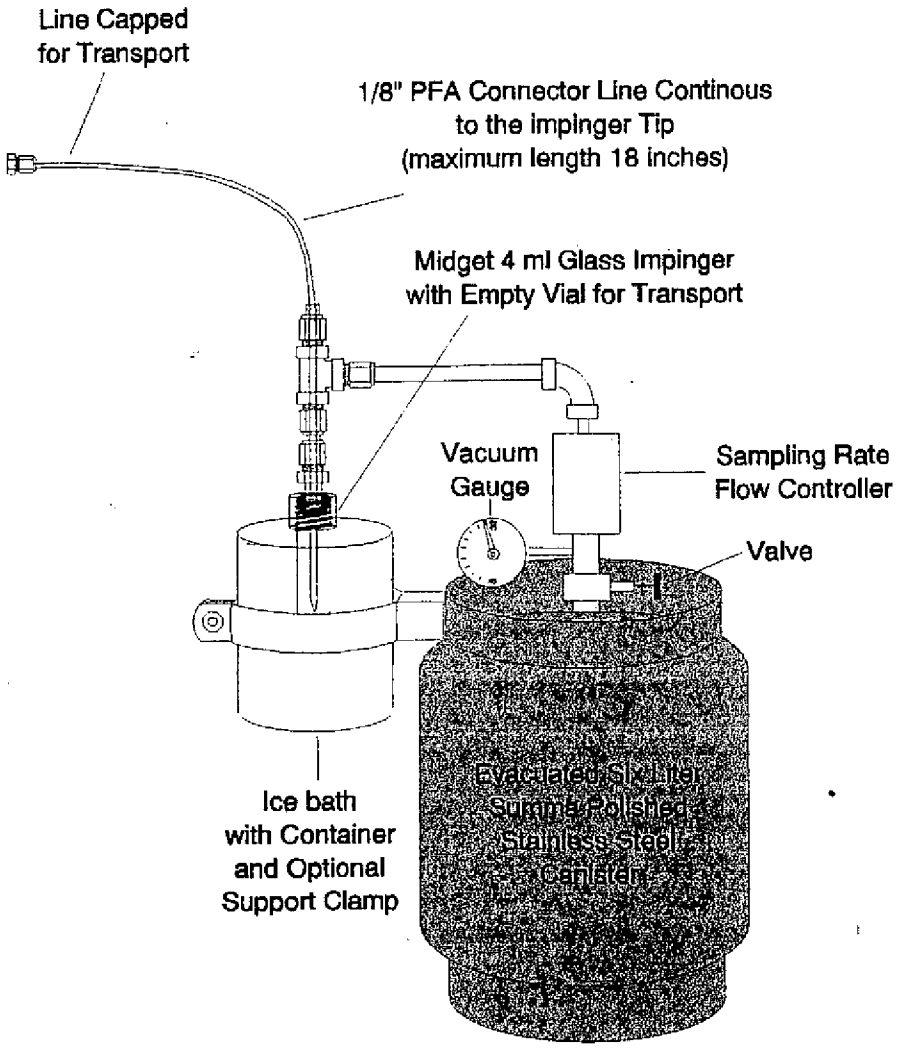
The collected sample was fractionated in two parts. Organics retained in the water impinger were measured using a total carbon analyzer. This instrument was capable of measuring and differentiating both inorganic and organic carbon species. Organics in the water impinger were reported as ppmv methane. A blank sample for each sample set was also analyzed.

Volatile organics that passed through the water impinger were collected in the SUMMA canister. Methane and total gaseous non-methane organics (TGNMO or ROG) were measured using the Method 25 analysis which utilized the flame ionization detection total combustion analysis (FID/TCA). Four volatile carbon containing component categories (methane, CO, CO_2, and TGNMO) were chromatographically separated and then converted to CO_2 by oxidation catalyst followed by conversion to methane by reduction catalyst and then detected by flame ionization. Methane and TGNMO were reported as ppmv methane.

The impinger/canister collection system consisted of a 6-liter SUMMA canister with a single valve, a mini Teflon impinger vial filled with 4 ml of hydrocarbons-free water, Teflon sample inlet line, an impinger holder with clamp, flow control module and a vacuum/pressure gauge. Impinger collection vials pre-filled by the laboratory with hydrocarbons free water, were maintained at water/ice temperature (2-4 C) prior to sampling. Section 5.2 will describe the procedure and QA/QC in greater detail.

FIGURE 4.2

SAMPLING APPARATUS FOR METHOD 25.3



SECTION 5.0

QUALITY ASSURANCE/QUALITY CONTROL

Air Gas applies stringent quality assurance and quality control procedures (QA/QC) to ensure the validity of all measurements for all test methods. Generally, Air Gas' QA/QC procedures follow guidelines from the "Quality Assurance Handbook for Air Pollution Measurement Systems," Volume I through III. In addition, procedures for pretest preparation and calibration of sampling equipment were followed. Standardized written procedures, calculator programs, and computer spreadsheets were used for test planning, pre-survey, equipment checklist, preliminary calculations, testing, data analysis, and reporting. Pretest equipment preparation and maintenance include organization of the following equipment prior to testing:

Mobile CEM test van: Checked fluids, fuel, mechanical conditions, verified operation of CEM instruments, sample line and sample conditioner prior to the source test.

Sampling equipment: Checked meter boxes, pitot tubes, manometers and thermocouples to ensure good working conditions and proper calibrations.

Calibrations were conducted according to Chapter III of the SCAQMD Source Test Manual (March 1989). Table 5.1 shows the test equipment calibration schedules. Table 5.2 shows the test equipment maintenance schedules. In addition, the following quality assurance requirements were performed:

5.1 Quality Assurance Procedures for Method 100.1

Instrument Performance Specifications. All instruments were calibrated with three gases (hi, mid and zero). Analyzer calibration errors and linearity errors were calculated at the beginning and at the end of the testing to confirm the errors were within the allowable limits of 2% and 1% respectively.

Analytical Range. The analytical range was selected so that all data situated within 20-95 percent of the selected range. If some data situated below the quantifiable limit of 20% of the selected range, and the quantifiable limit was below the compliance limit; obviously, there is no need to recalibrate the analyzer on a lower range.

Protocol-1 Gases. EPA Traceability Protocol 1 (±1 percent accuracy) gases were used for analyzer calibrations. Certificates of analysis of these gases are found in Appendices D of this report. A STEC gas divider with an accuracy of ±0.5% was also used to provide additional gases for the calibration of analyzers. EPA Method 205 "Verification of the Gas Dilution System for Field Instruments Calibration" was conducted to verify the accuracy of the device.

System Bias Checks. A bias calibration was performed by injecting a calibration gas at the 3-way valve assemblies. The analyzer's response to this bias check was

compared with the analyzer's response when the same calibration gas was injected directly to the analyzer. The percent difference must be within 5% of the selected range before testing could commence. Before and after each run zero and calibration gases were injected to each analyzer using a three-way valve assembled at the probe/sample line interface. This three-way valve allowed the calibration gas to flow through the entire sampling apparatus before passing to each analyzer. The average response values before and after each run were used to correct all actual readings per SCAQMD Method 100.1. This correction took into account for data bias, and zero/calibration drifts during each run.

Sample Conditioner. The sample conditioner system comprised of a short heated sample line, water knockout impingers and a thermoelectric condenser. The outlet sample temperature was kept below 37 degrees Fahrenheit to ensure that the moisture in the stack gas was completely removed. During testing, this temperature was observed and recorded.

System Leak Checks. Prior to the testing, a system leak check was performed. The leak check was accomplished by plugging the probe tip and drawing approximately 20-25" Hg vacuum on the entire sampling system as described in Section 4.1 Procedure.

NOx Conversion Efficiency. Air Gas performed an NO_2 to NO converter efficiency check on its NO/NOx analyzer to ensure the conversion efficiency was above the 90% limit. This was done by calibrating the NOx analyzer in NOx mode with a zero gas and a span EPA-Protocol 1 gas. Without adjustment NO_2 EPA-Protocol 1 gas was injected to the analyzer at the same flow rate and pressure. The analyzer's response to the NO_2 gas was recorded. Then the percent conversion efficiency of the converter was calculated by comparing the certified NO_2 concentration and the analyzer's response to this NO_2 gas. A copy of the conversion efficiency test is enclosed in Appendix C.

Concentration Stratification. The probe was traversed across the stack to ensure stratification effect is covered and averaged over the test.

Response Time. The response time of each analyzer was determined at the moment when the calibration gas for the bias check reaches 95% of its certified value.

5.2 Quality Assurance for SCAQMD Modified Method 25.3

Air Gas used a SCAQMD approved laboratory to provide the sampling and the analysis for this particular method. The laboratory has experienced chemists and excellent QA/QC programs for this particular method including sampling, recovery and transporting the samples to the Laboratory.

The sampling procedure and QA/QC for this method were strictly followed to maintain the integrity and the validity of the samples. Duplicate samples were collected for each source. Hydrocarbon-free water was used. The following check lists were used to make sure the sampling procedure and its QA/QC were strictly followed:

Pre-Test Determination and Equipment Check List :

1. Using previous test data, or emission factors corresponding to the pollution equipment being tested, determine if SCAQMD Draft Method 25.3 is applicable for the testing (VOC <50 ppmv).

2. Order sampling apparatus including teflon sample lines, flow controllers, vacuum gauges, pressure gauges, canisters and mini water pre-filled impingers.

3. Check sample labels to make sure there is no missing information or duplication of sample number.

4. Make sure all fittings in contact with the sample are clean from grease, oil, solvents or dust etc.

5. Have surplus ice for sampling, storing and transporting traps to the Laboratory for analysis.

Field Preparation Check List:

1. Prepare an ice bath in a large container for chilling and storing impinger vials. It is critical to chill the impinger at 2-4 degrees C for 30 minutes prior to sampling.

2. Completely fill out sample labels to be affixed to the tank and impinger vial with all necessary information.

3. Assemble the sampling apparatus and make sure the impinger vial is adequately immersed in ice water. Note: careful handling of the small water impinger vial to prevent ice/water from entering it.

4. Leak checks the sampling system by opening the main valve and plugging the probe inlet while observing the vacuum reading on the canister. The vacuum should remain constant to indicate no leakage in the system. If leakage occurs, use another set to replace this sampling system.

5. Clean the sample ports thoroughly, and place the sampling apparatus as close to the sampling port as possible.

6. All other data such as sample number, engine number, date, time, location, process data, etc. should be recorded on the run sheet, and make sure to fill out every detail tabulated in the run sheet.

Sampling Procedure Check List:

1. Begin sample collection by opening the single valve on the canister and record the tank vacuum and starting time on the run sheet. Observe the bubbles in the impinger's water appear at a regular rate to indicate steady flow.

2. Flow rate has been pre-set to complete the sample collection in about 50-60 minutes. In any case, observe that the vacuum reading, and discontinue sampling if the vacuum reach about 10 in Hg and record the final time and vacuum.

3. If sampling is interrupted by engine operating problems, close the main valve, remove the probe from the stack and cap the nozzle until source operation resumes.

4. After finishing the test, remove the probe from the port, let cool and perform the final leak check on the sampling system in the same manner as the initial leak check.

5. Remove the water/ice bath from the impinger and impinger holder. Wipe off water on the impinger vial and cap it securely.

6. Make sure both the impinger vial and the canister have assigned sample number, and to fill out the sample labels completely.

Packing/Storing/Shipping Samples to the Lab:

1. Place impinger vials in the cooler, pack with ice and ship to the lab for analysis.

2. Fill out the chain of custody completely, and enclose a copy of it with the sample container.

3. If the samples need to be stored overnight, store the samples in a clean refrigerator designed for sample storage, or pack with adequate ice in the sample cooler.

4. Make sure all parties handling the samples to sign and date the Chain of Custody every time the samples have changed hands.

TABLE 5.1

TEST EQUIPMENT CALIBRATION SCHEDULES

TYPE OF EQUIPMENT	CALIBRATION PERIOD	STANDARD/METHOD
Thermocouple	6 Months	Mercury thermometer, three- point calibration (ice, boiling water, hot oil)
Dry Gas Meter	6 Months	Calibrated test meter
Turbine Meter	6 Month	Send to outside company for calibration prior to testing using an NIST Prover Meter
S-Type Pitot	6 Months and check prior to usage	EPA Method 2, measure physical configuration Reshape pitot tips or calibrate if configurations do not meet the limits
Pressure Gauge	1 Months 6 Months	Three-point check Five-point calibration against a manometer
Temperature Meter	6 Months	Mercury thermometer, three- point calibration (ice, boiling water, hot oil)
CEM System	Bimonthly Or when poor performance occurred	Specified by manufacturer Performance limits specified in Method 100.1

TABLE 5.2

TEST EQUIPMENT MAINTENANCE

EQUIPMENT	CHECK FOR	CORRECTION	FREQUENCY
CEM System	Malfunction, noise, drift, conversion, efficiency for NOx analyzer.	As required by manufacturer	Bimonthly or depend on performance
Pump	Absence of flow and proper vacuum, Presence of leakage	Inspect, clean, replace parts	300 hours of usage
Turbine Meter	Rotor, bearing counter index	Inspect, clean lubricate, replace part	300 hr of usage
Flow Device	Leveling, zeroing, obstruction, deformation	Clean, replace, or re-calibrate	300 hours of usage
Calibration Gases	Expiration date, tank pressure	Re-certify, order new gases	2 months and prior to field testing
Regulator	Malfunction, gauge precision	Repair or replace	Monthly and prior to field testing
Gas Divider	Malfunction, precision	Repair or replace	Monthly and prior to field testing
Condenser	Leakage, temperature	Repair or replace	Monthly and prior to field testing
Heated Line	Leakage, temperature, cleanliness	Repair, clean, or replace	Monthly and prior to field testing

SECTION 6.0

CONFLICT OF INTEREST ISSUES

6.1 Conflict of interest issues:

Air Gas acknowledges the following statements with respect to SCAQMD Rule 304:

1. Air Gas has no financial interest or partnership with the Mesa Consolidated Water District, or any subsidiary thereof.

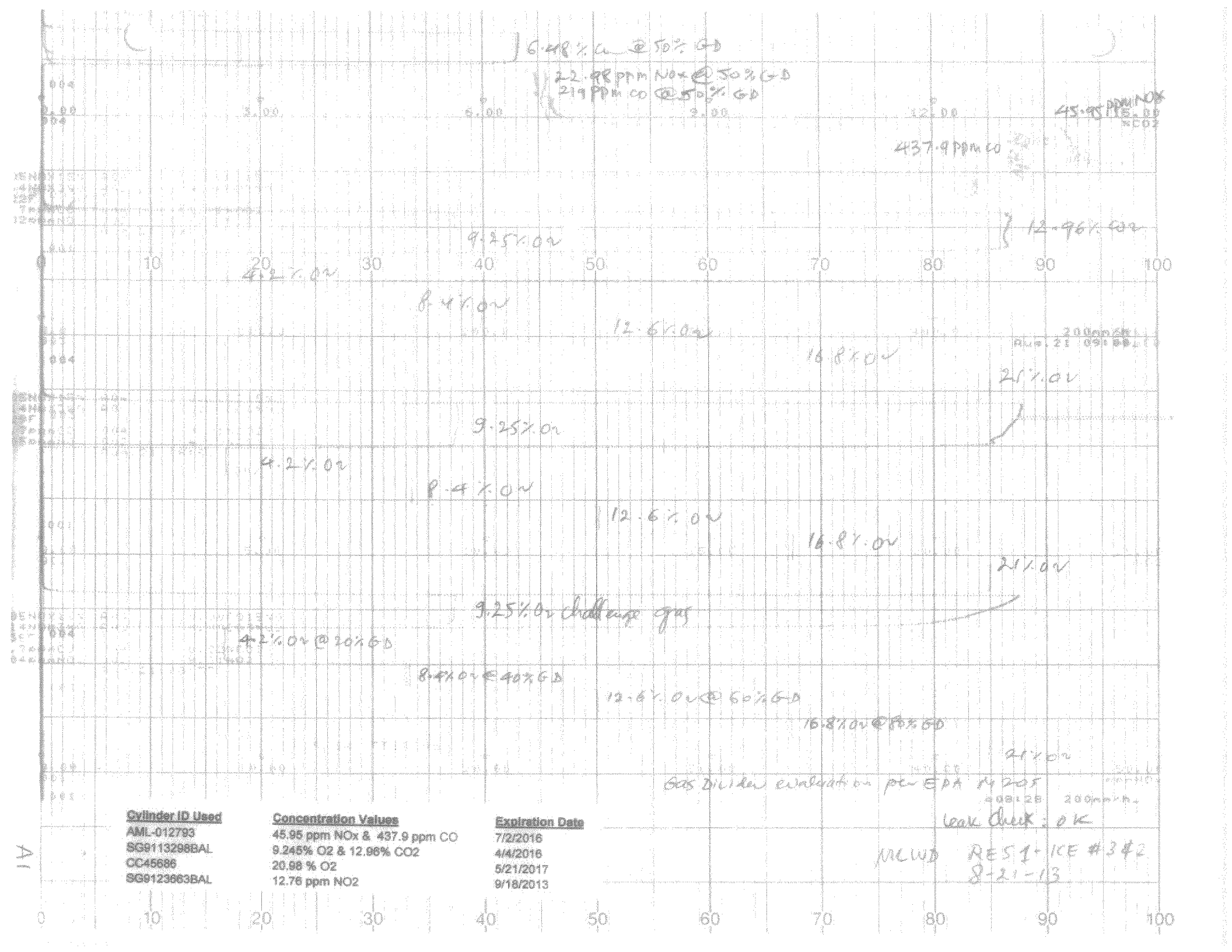
2. Mesa Consolidated Water District, or parent company, or any subsidiary thereof has no financial interest or partnership with Air Gas.

3. Air Gas is not in partnership with, owned by, in part or in full, the contractor or consulting company who has provided, or installed equipment, or monitoring systems, or is providing maintenance for installed equipment systems for Mesa Consolidated Water District.

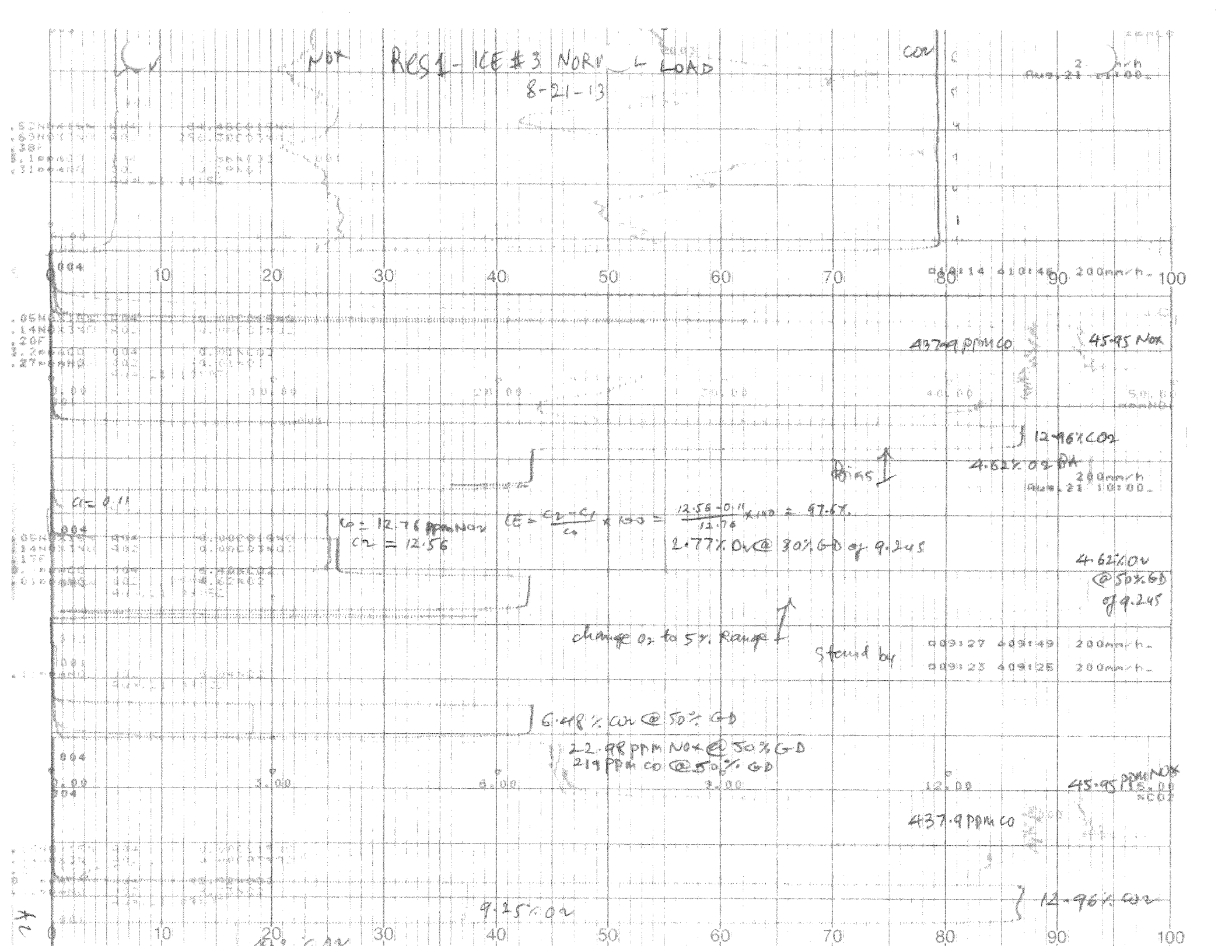
Acknowledged By:

Timothy T. Dinh
Manager of Engineering Services

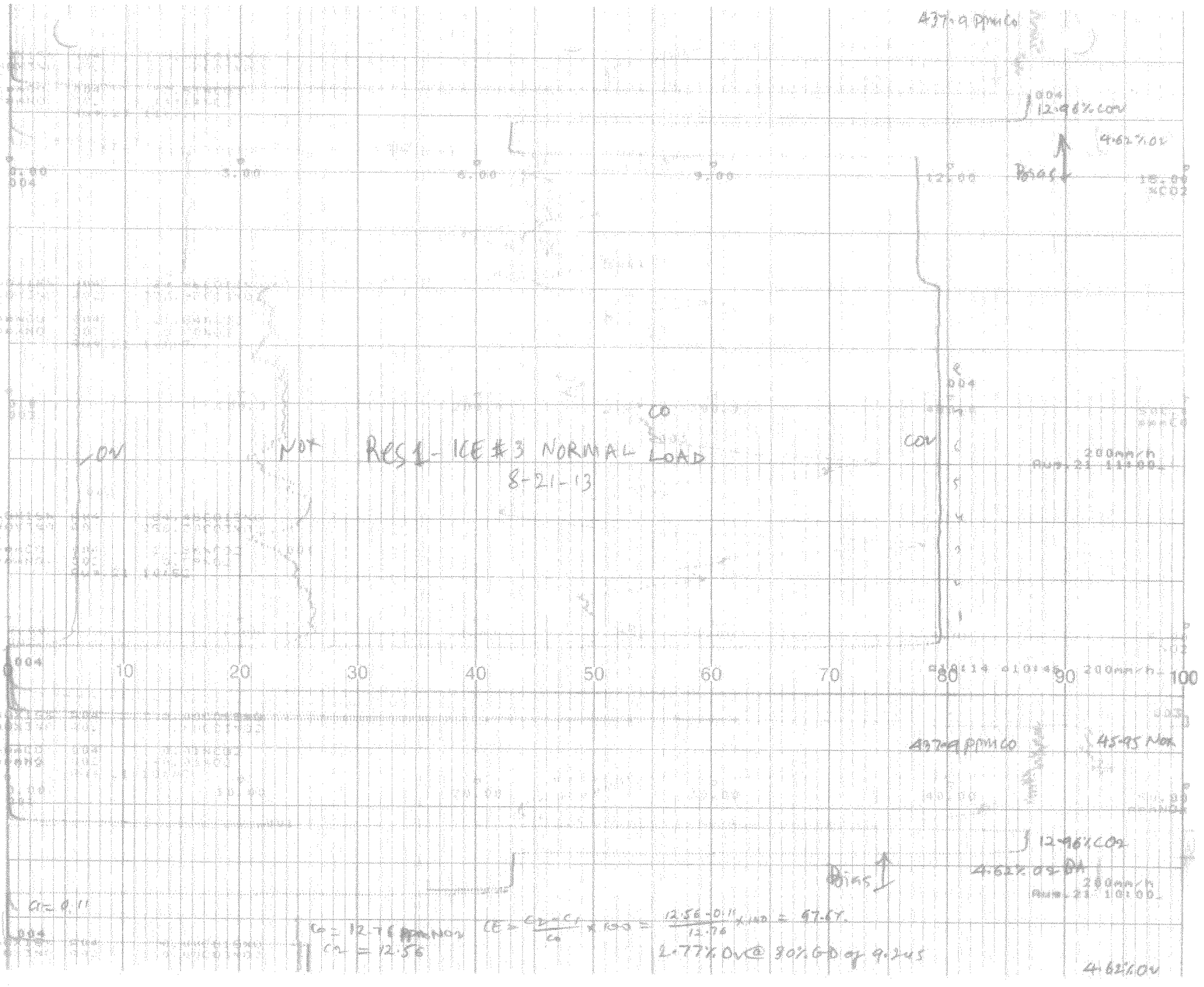
September 19, 2013



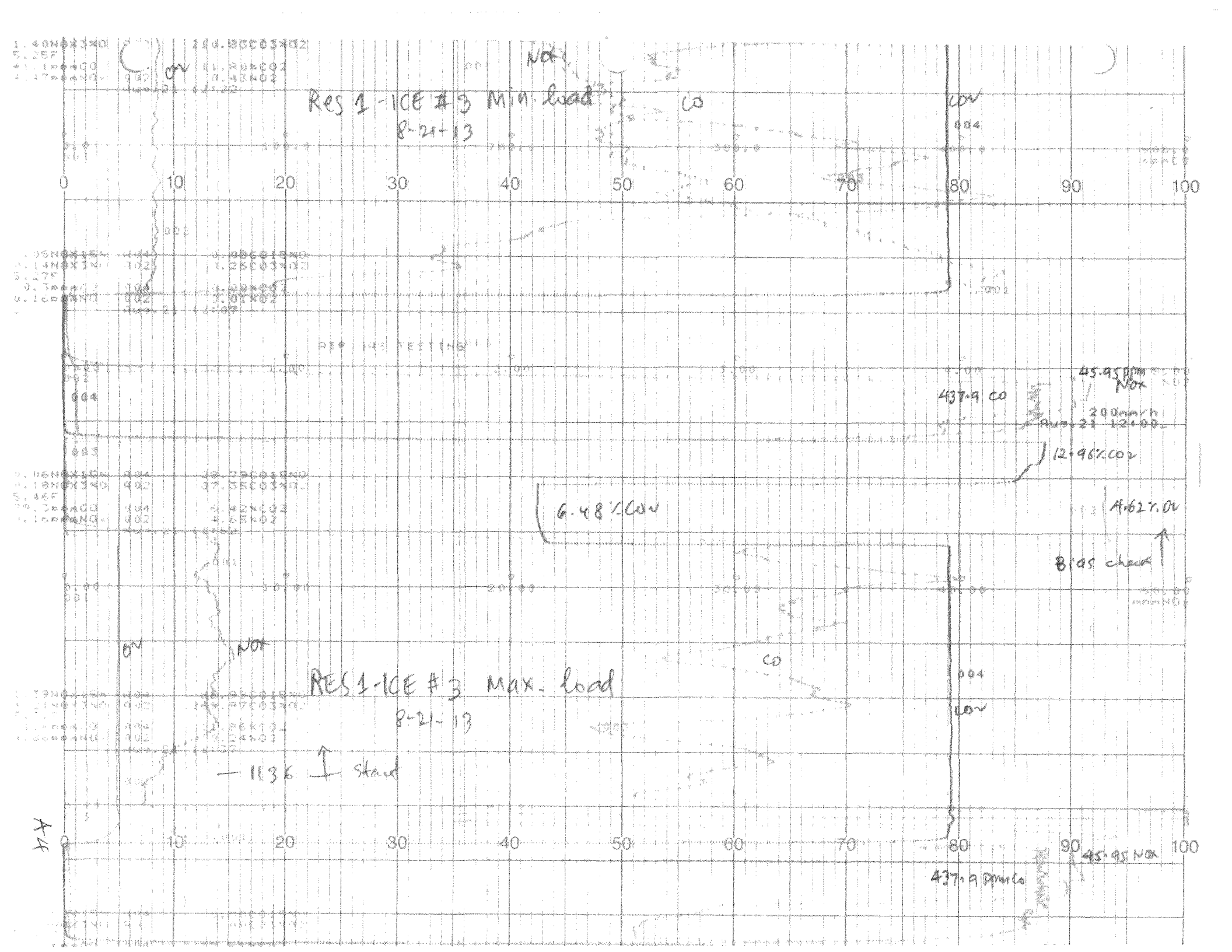
Cylinder ID Used	Concentration Values	Expiration Date
AML-012793	45.95 ppm NOx & 437.9 ppm CO	7/2/2016
SG9113298BAL	9.245% O2 & 12.96% CO2	4/4/2016
CC45686	20.98 % O2	5/21/2017
SG9123863BAL	12.76 ppm NO2	9/18/2013

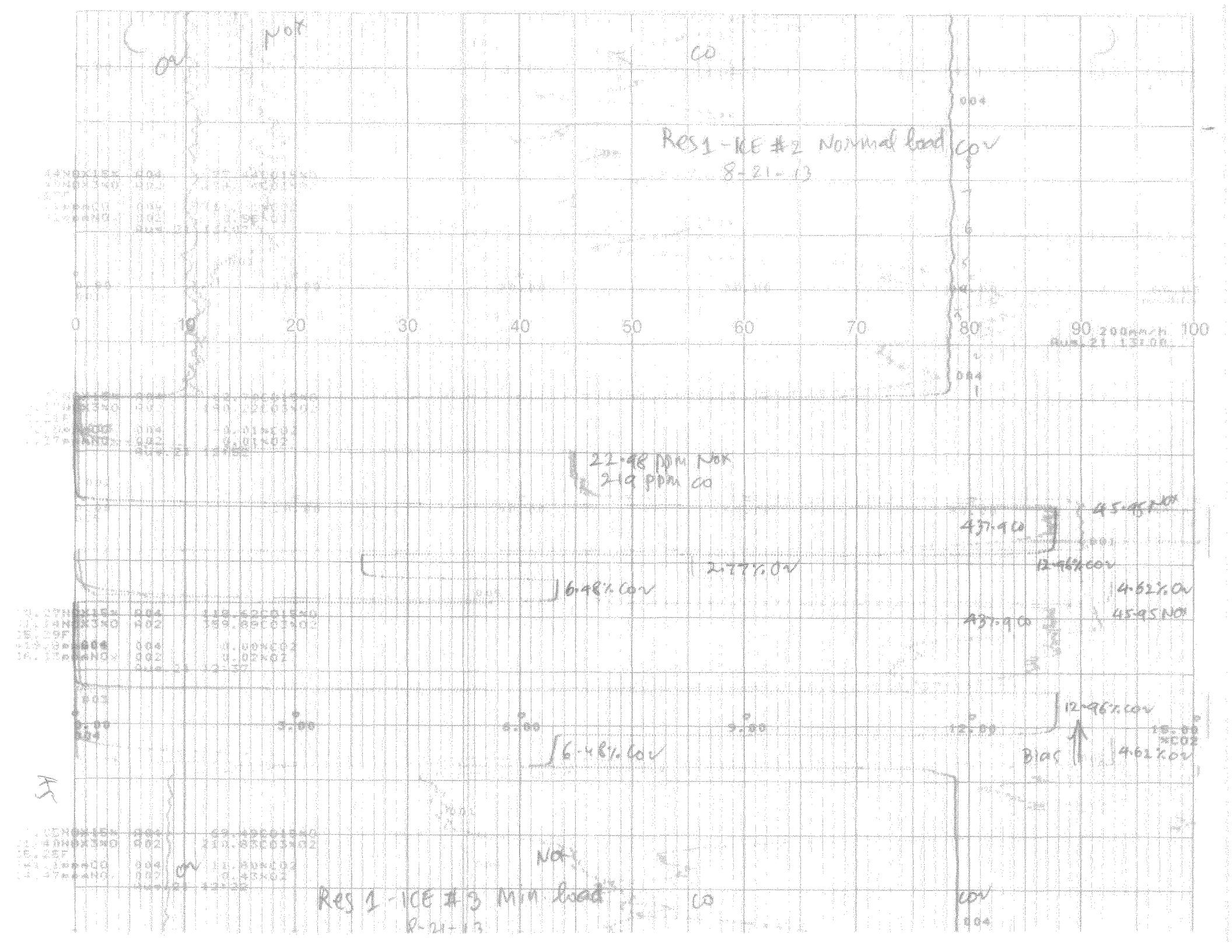


NOx
RES 1 - ICE #3 NORM LOAD
8-21-13
CO2
Aug. 21 21:00
410:14 410:46 200mm/h
437.9 ppm CO
45.95 NOx
12.96% CO2
4.62% O2 DA
200mm/h
Aug. 21 10:00
Bias
Ca = 0.11
Co = 12.76 ppm NOx
C2 = 12.56
CE = (C2 - C1)/Co x 100 = (12.56 - 0.11)/12.76 x 100 = 97.6%
2.77% O2 @ 30% GD of 9.245
4.62% O2 @ 50% GD of 9.245
change O2 to 5% Range
Stand by
009:27 409:49 200mm/h
009:23 409:25 200mm/h
6.48% CO2 @ 50% GD
22.98 ppm NOx @ 50% GD
219 ppm CO @ 50% GD
45.95 ppm NOx
437.9 ppm CO
12.96% CO2
9.25% O2

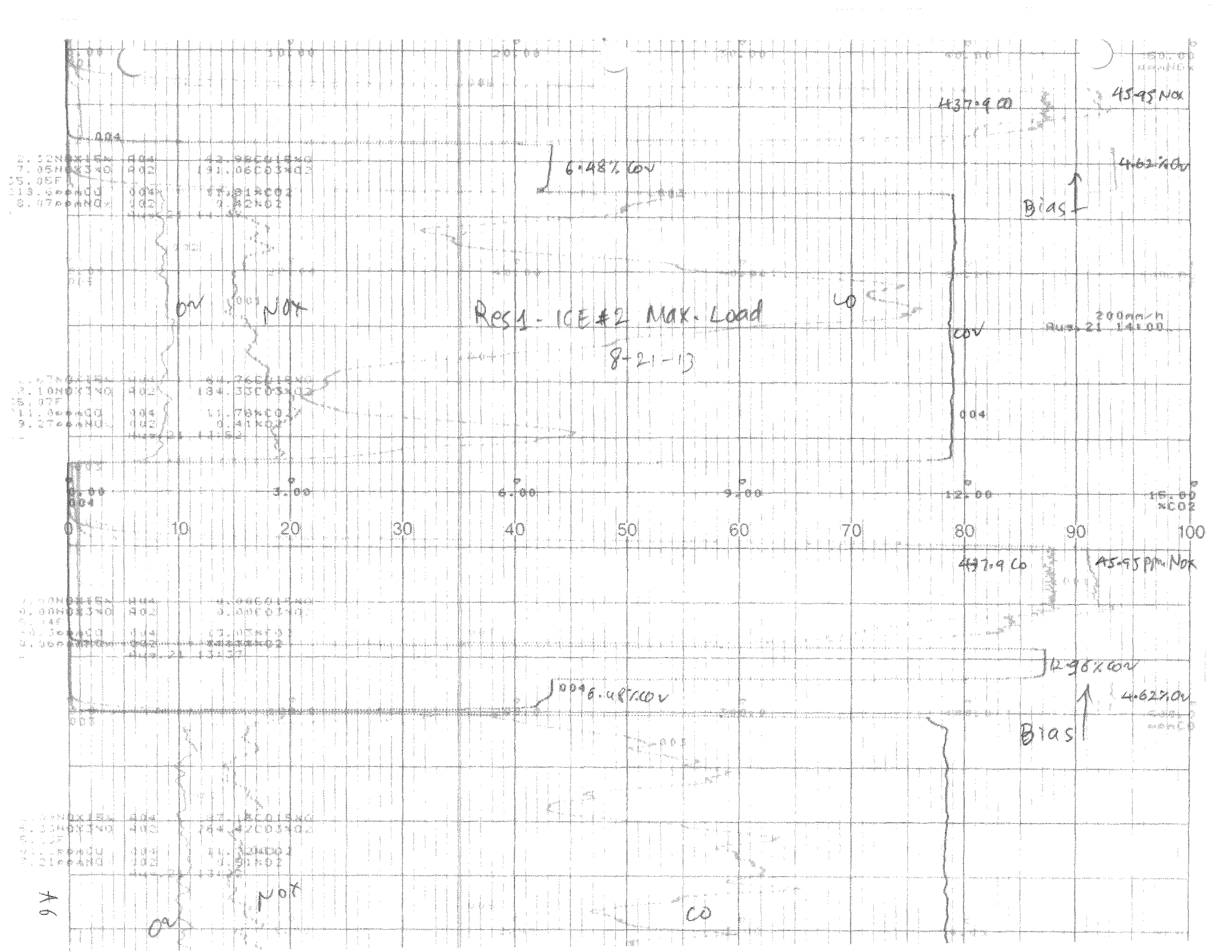

437.9 ppm CO
12.96% CO2
4.62% O2
Bias
CO
CO2
NOx
RES 1 - ICE #3 NORMAL LOAD
8-21-13
200mm/h
Aug 21 11:00
10
20
30
40
50
60
70
80
90
100
437.9 ppm CO
45.95 NOx
12.96% CO2
4.62% O2
Bias
200mm/h
Aug 21 10:00
CI = 0.11
CO = 12.76 ppm NOx
CI = 12.56
CE = (CI - CI)/CO × 100 = (12.56 - 0.11)/12.76 × 100 = 57.6%
2.77% Ov @ 80% GD of 9.245
4.62% O2

K3


Res 1 - ICE # 3 Min. load
8-21-13
NOx
CO
CO
NOx
0
10
20
30
40
50
60
70
80
90
100
437.9 CO
45.95 ppm NOx
12.96% CO2
6.48% CO2
4.62% O2
Bias check
RES 1-ICE # 3 Max. load
8-21-13
CO
NOx
CO
NOx
1136
Stand
437.9 ppm CO
45.95 NOx

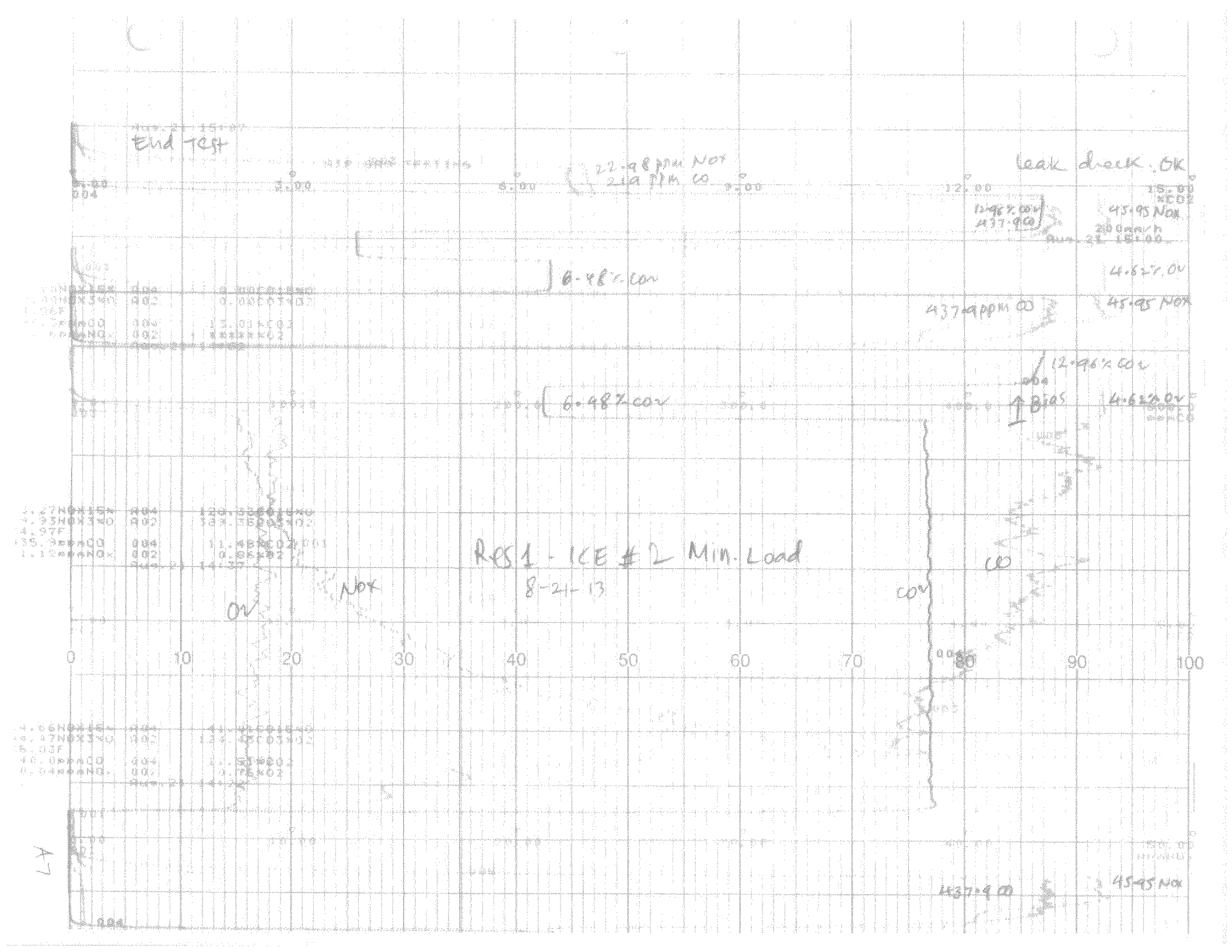


Res 1 - ICE #2 Normal load
8-21-13
Res 1 - ICE #3 Min load
8-21-13
0
10
20
30
40
50
60
70
80
90
100
22.98 ppm NOx
219 ppm CO
437.9 CO
45.95 NOx
12.96% CO2
2.77% O2
6.48% CO2
4.62% O2
45.95 NOx
437.9 CO
12.96% CO2
6.48% CO2
Bias
4.62% O2
NOx
CO
CO2

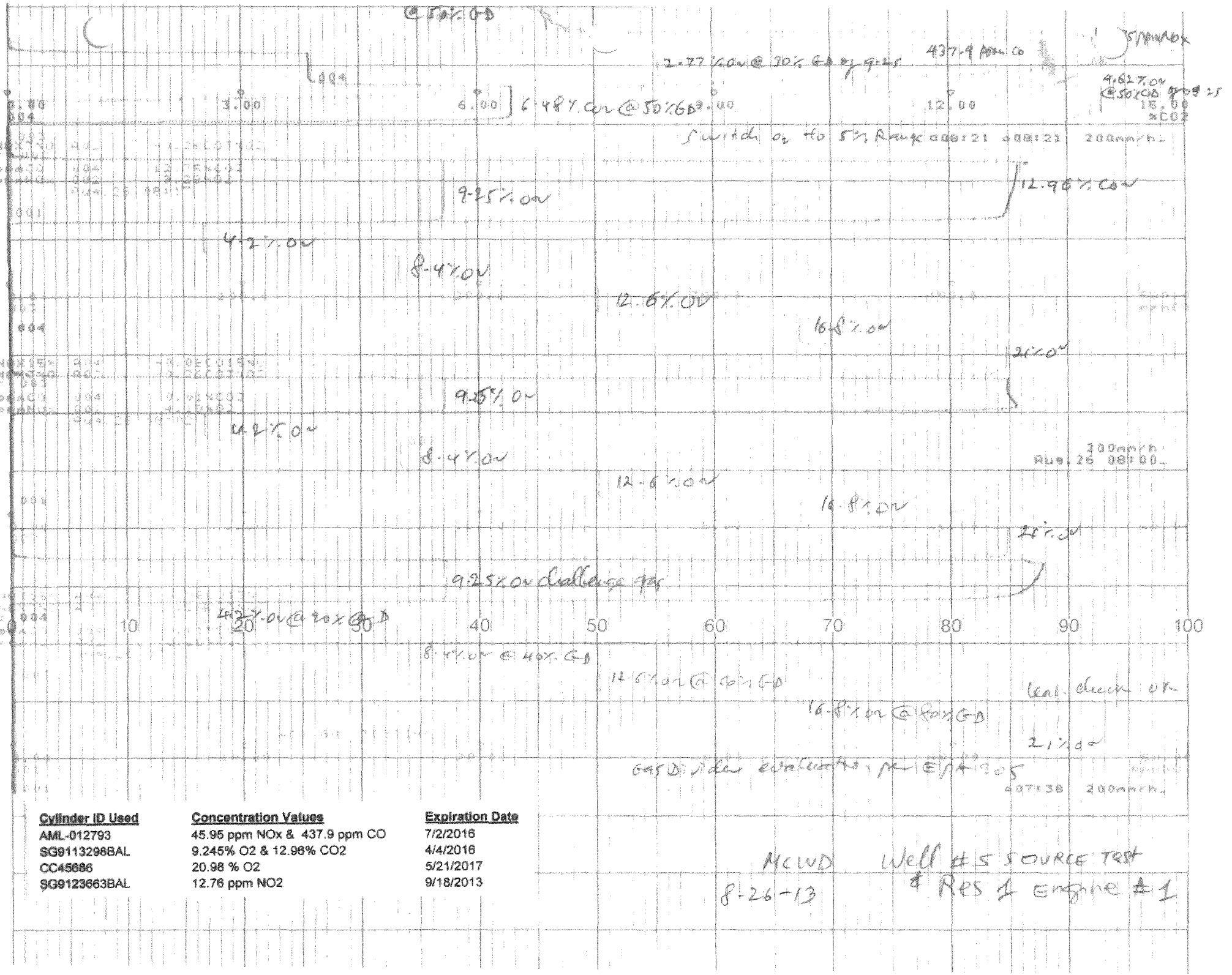


Res 1 - ICE #2 Max. Load
8-21-13
437.9 CO
45.95 NOx
6.48% COV
4.62% OV
Bias
OV
NOx
CO
COV
200mm/h
Aug. 21 14:00
0
10
20
30
40
50
60
70
80
90
100
3.00
6.00
9.00
12.00
15.00
%CO2
437.9 CO
45.95 ppm NOx
12.96% COV
6.48% COV
4.62% OV
Bias
NOx
OV
CO

A6


End Test
22.98 ppm NOx
219 ppm CO
leak check OK
12.96% CO2
437.9 CO
45.95 NOx
6.48% CO2
4.62% O2
437.9 ppm CO
45.95 NOx
12.96% CO2
6.48% CO2
Bias
4.62% O2
Res 1 - ICE #2 Min. Load
8-21-13
NOx
O2
CO2
CO
0
10
20
30
40
50
60
70
80
90
100
437.9 CO
45.95 NOx

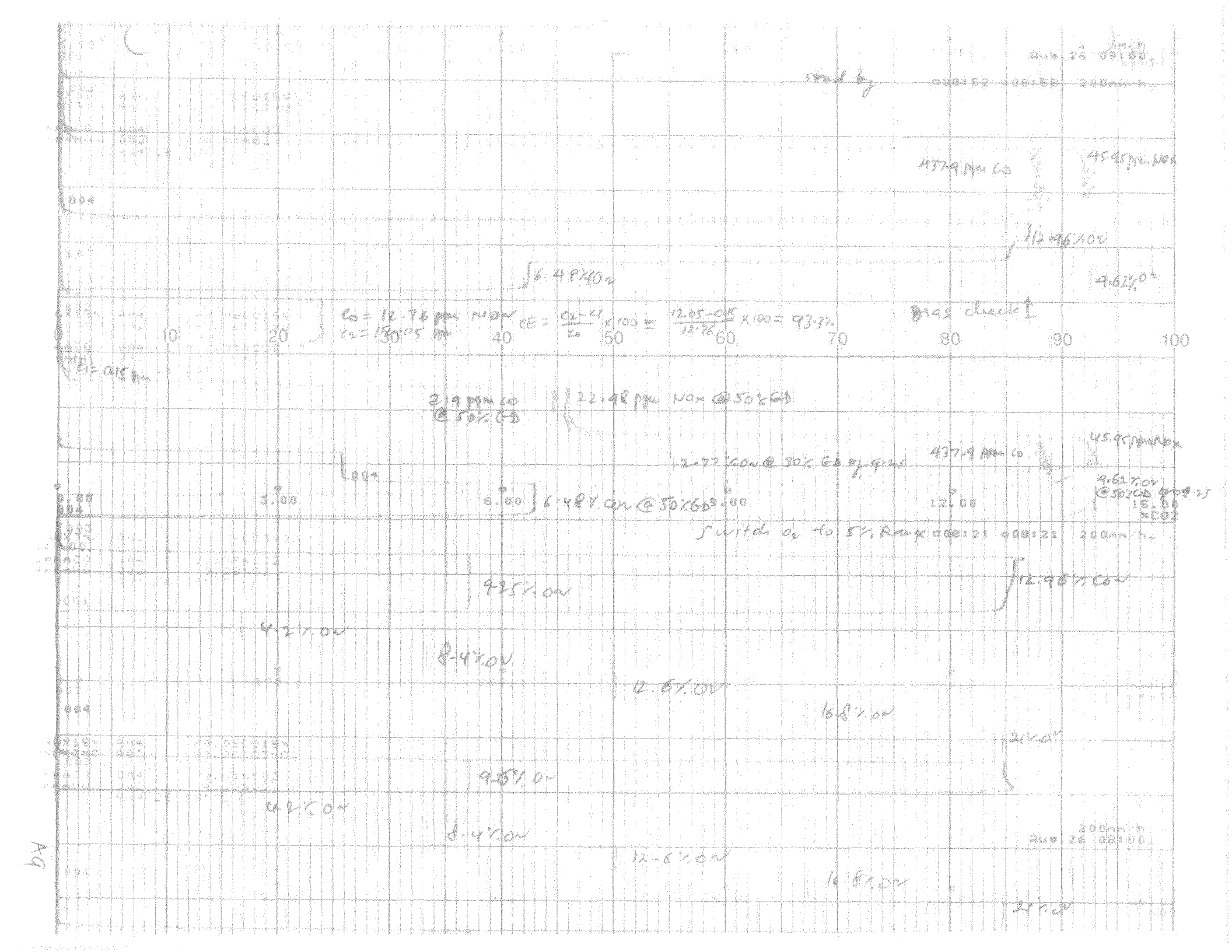
A-7



Cylinder ID Used	Concentration Values	Expiration Date
AML-012793	45.95 ppm NOx & 437.9 ppm CO	7/2/2016
SG9113298BAL	9.245% O2 & 12.96% CO2	4/4/2016
CC45686	20.98 % O2	5/21/2017
SG9123663BAL	12.76 ppm NO2	9/18/2013

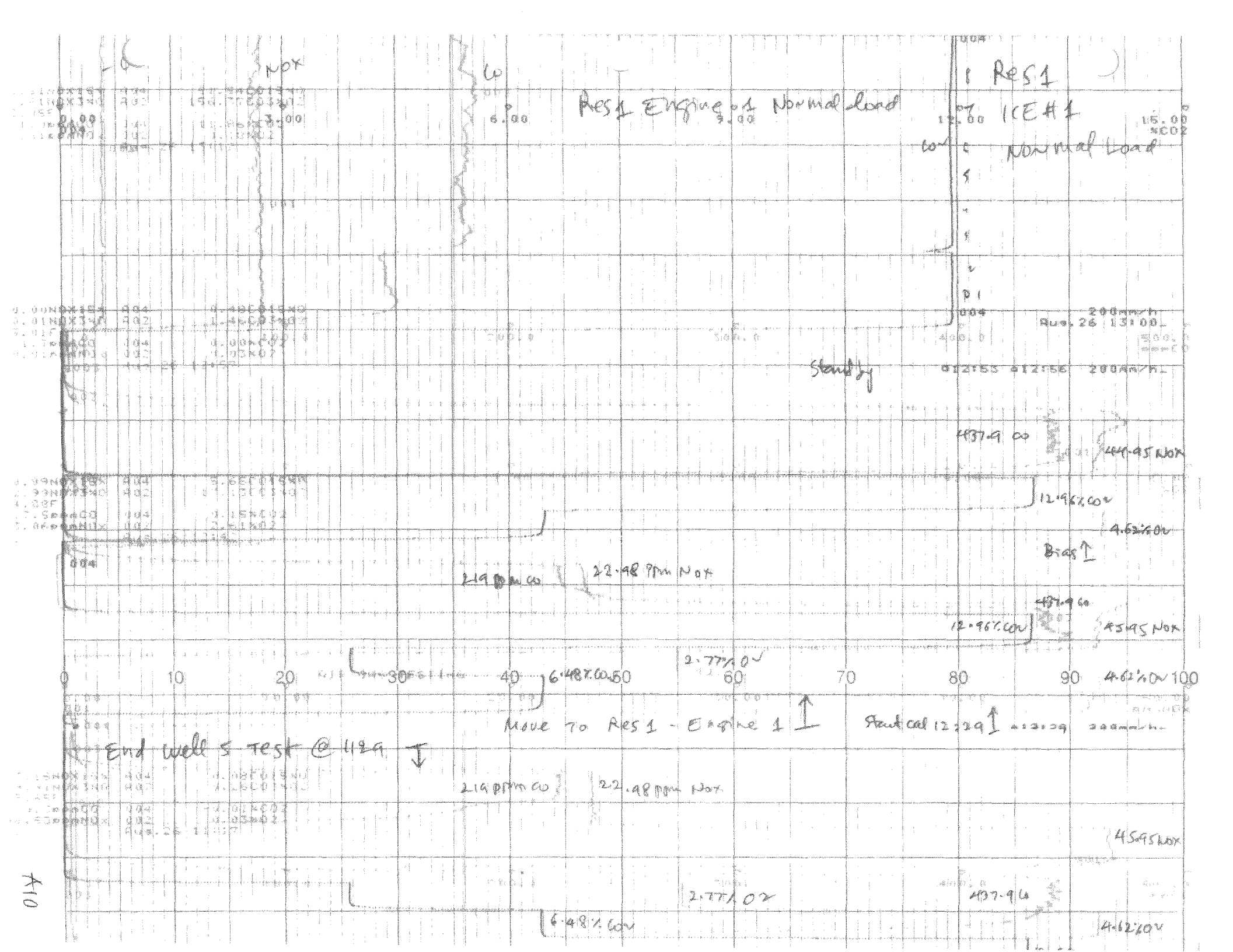
MCLUD Well #5 SOURCE TEST
8-26-13 & Res 1 Engine #1

A8



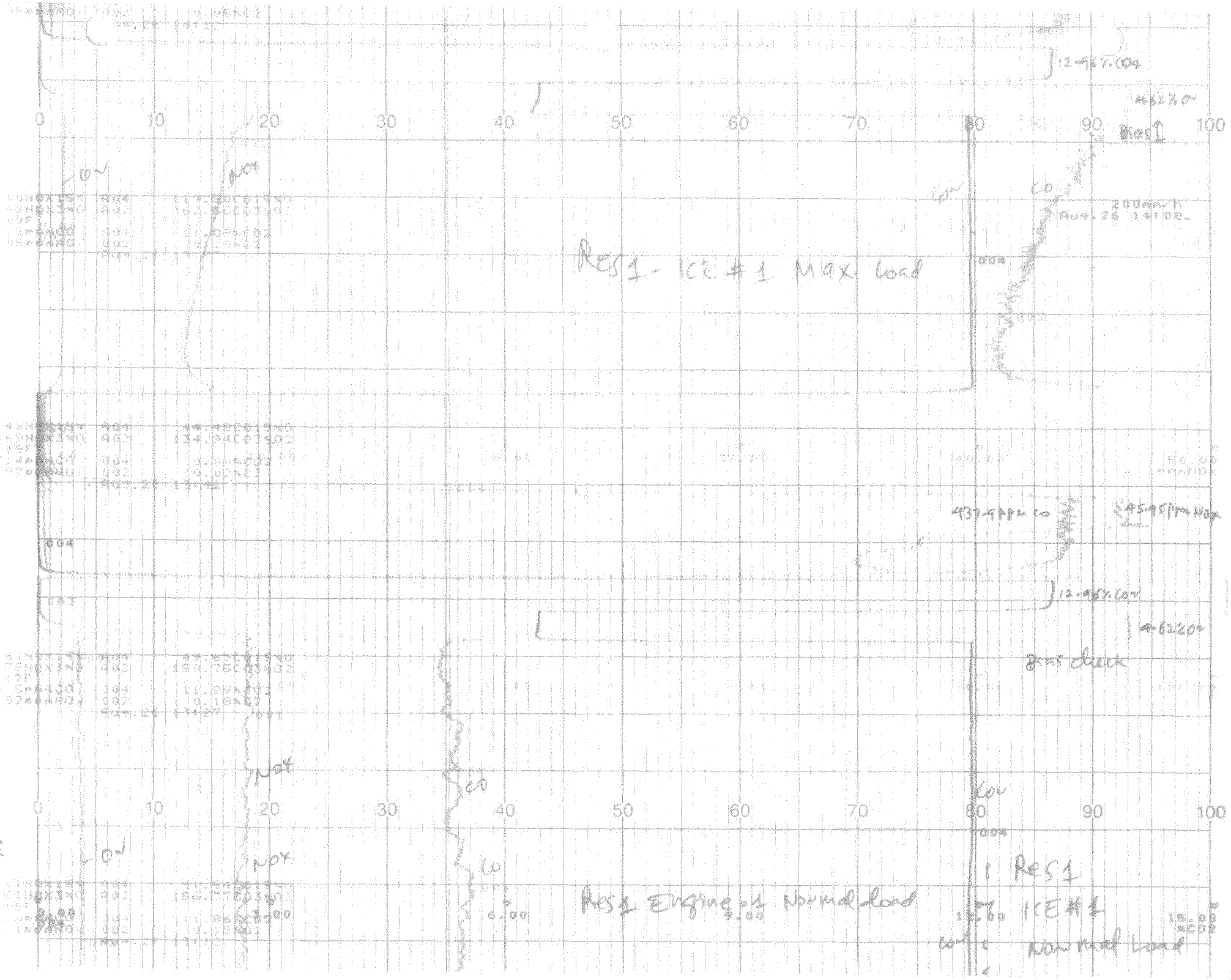
Aug. 26 09:00
stand by
008:52 408:58 200mm/h
437.9 ppm Co
45.95 ppm NOx
12.96% O2
6.48% O2
4.62% O2
Co = 12.76 ppm NOx
C2 = 18.05 ppm
CE = (C2 - C1)/Co x 100 = (12.05 - 0.15)/12.76 x 100 = 93.3%
Bias check
10
20
30
40
50
60
70
80
90
100
C1 = 0.15 ppm
2.9 ppm Co @ 50% GD
22.98 ppm NOx @ 50% GD
2.77% O2 @ 50% GD by 9.25
437.9 ppm Co
45.95 ppm NOx
4.62% O2 @ 50% GD by 9.25
3.00
6.00
6.48% O2 @ 50% GD
3.00
12.00
15.00
Switch O2 to 5% Range
008:21 408:21 200mm/h
12.96% CO2
9.25% O2
4.2% O2
8.4% O2
12.6% O2
16.8% O2
21% O2
9.25% O2
4.2% O2
8.4% O2
12.6% O2
16.8% O2
21% O2
300mm/h
Aug. 26 08:00

A9

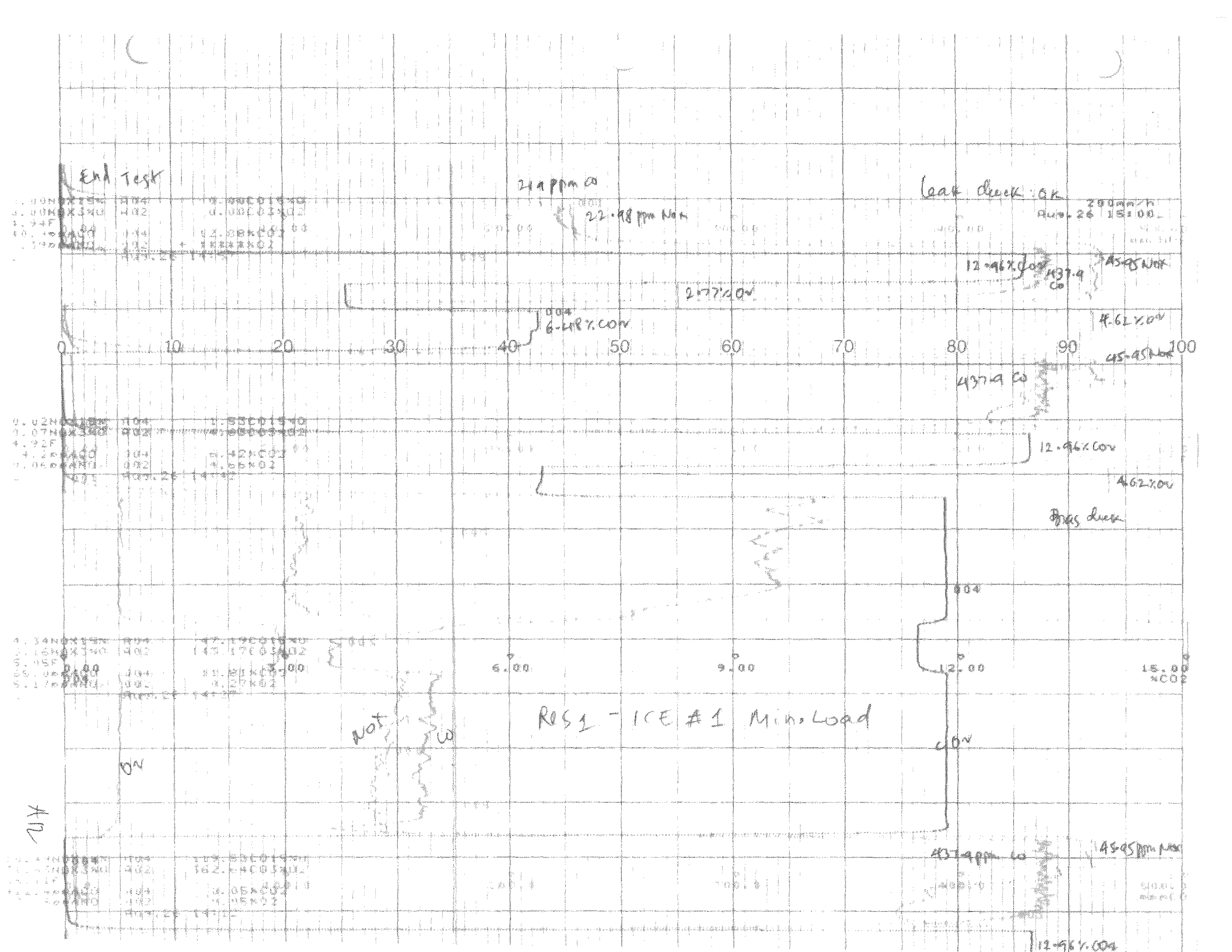


Res 1 Engine 1 Normal load
Res 1
ICE #1
Normal Load
Standby
437.9 CO
44.95 NOX
12.96% CO2
4.62% O2
Bias
219 ppm CO
22.98 ppm NOX
437.9 CO
12.96% CO2
45.95 NOX
2.77% O2
6.48% CO2
4.62% O2
Move To Res 1 - Engine 1
Start cal 12:29
End well 5 Test @ 1129
219 ppm CO
22.98 ppm NOX
45.95 NOX
2.77% O2
437.9 CO
6.48% CO2
4.62% O2
0
10
20
30
40
50
60
70
80
90
100

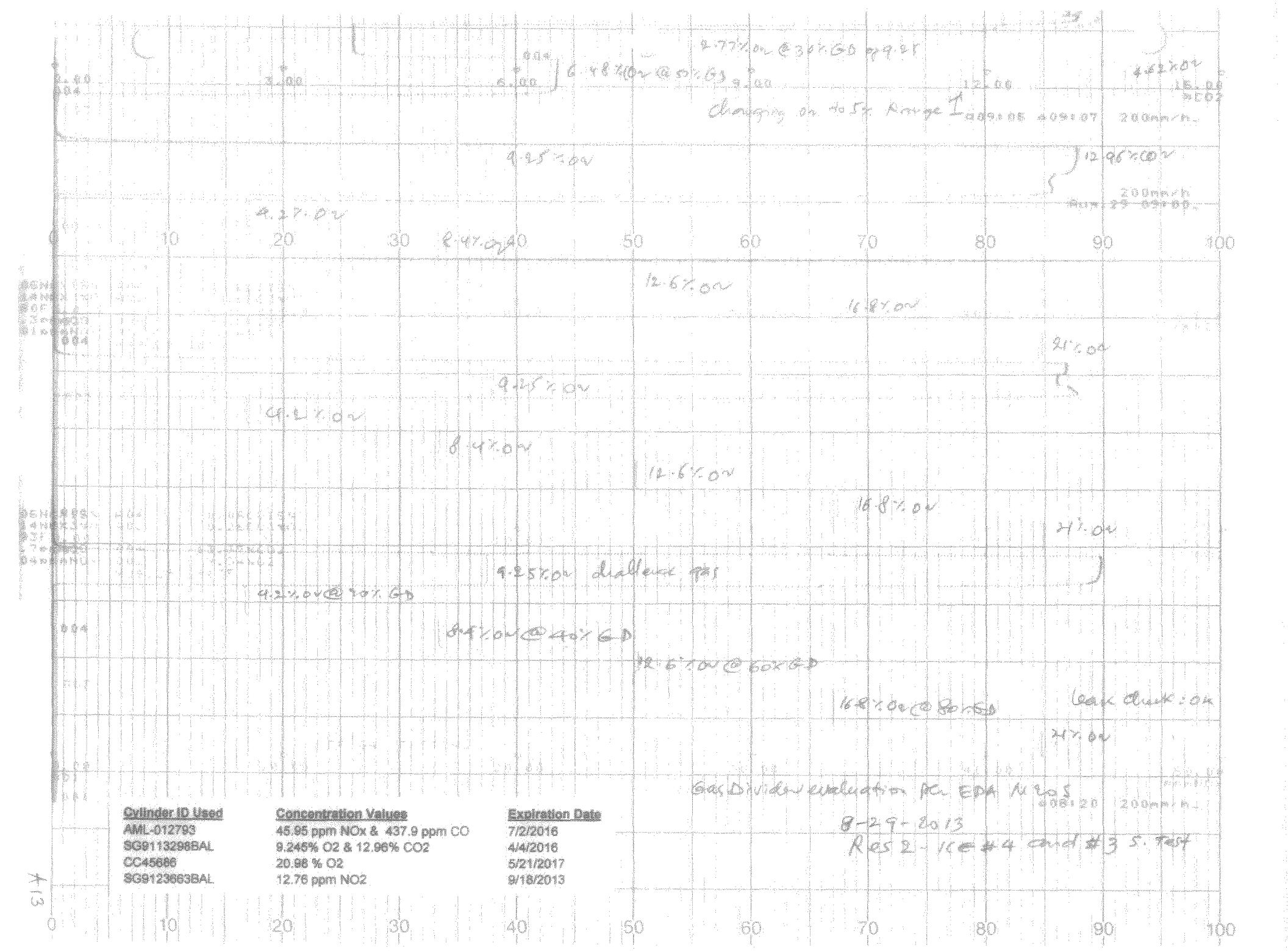
A10



Res 1 - ICE #1 Max. Load
Bias 1
Bias check
Res 1 Engine #1 Normal load
Res 1
ICE #1
Normal Load


End Test
219 ppm CO
22.98 ppm NOx
leak check: OK
200mm/h
Aug. 26 15:00
12.96% CO2
437.9 CO
45.95 NOx
2.77% O2
6.48% CO2
4.62% O2
0
10
20
30
40
50
60
70
80
90
100
437.9 CO
45.95 NOx
12.96% CO2
4.62% O2
Bras duck
0.00
3.00
6.00
9.00
12.00
15.00
%CO2
Res 1 - ICE #1 Min. Load
NOx
CO
O2
CO2
437.9 ppm CO
45.95 ppm NOx
12.96% CO2

A12



Cylinder ID Used	Concentration Values	Expiration Date
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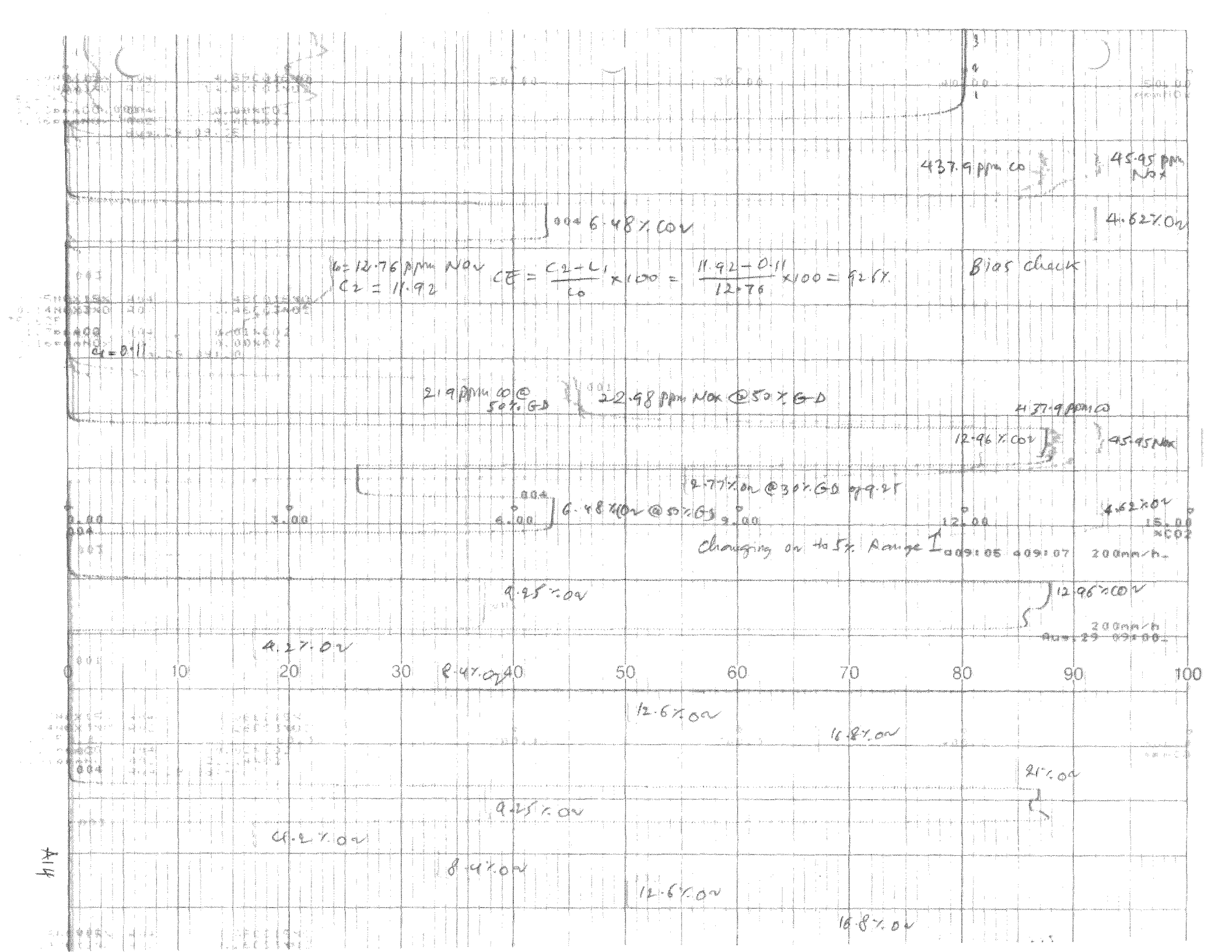
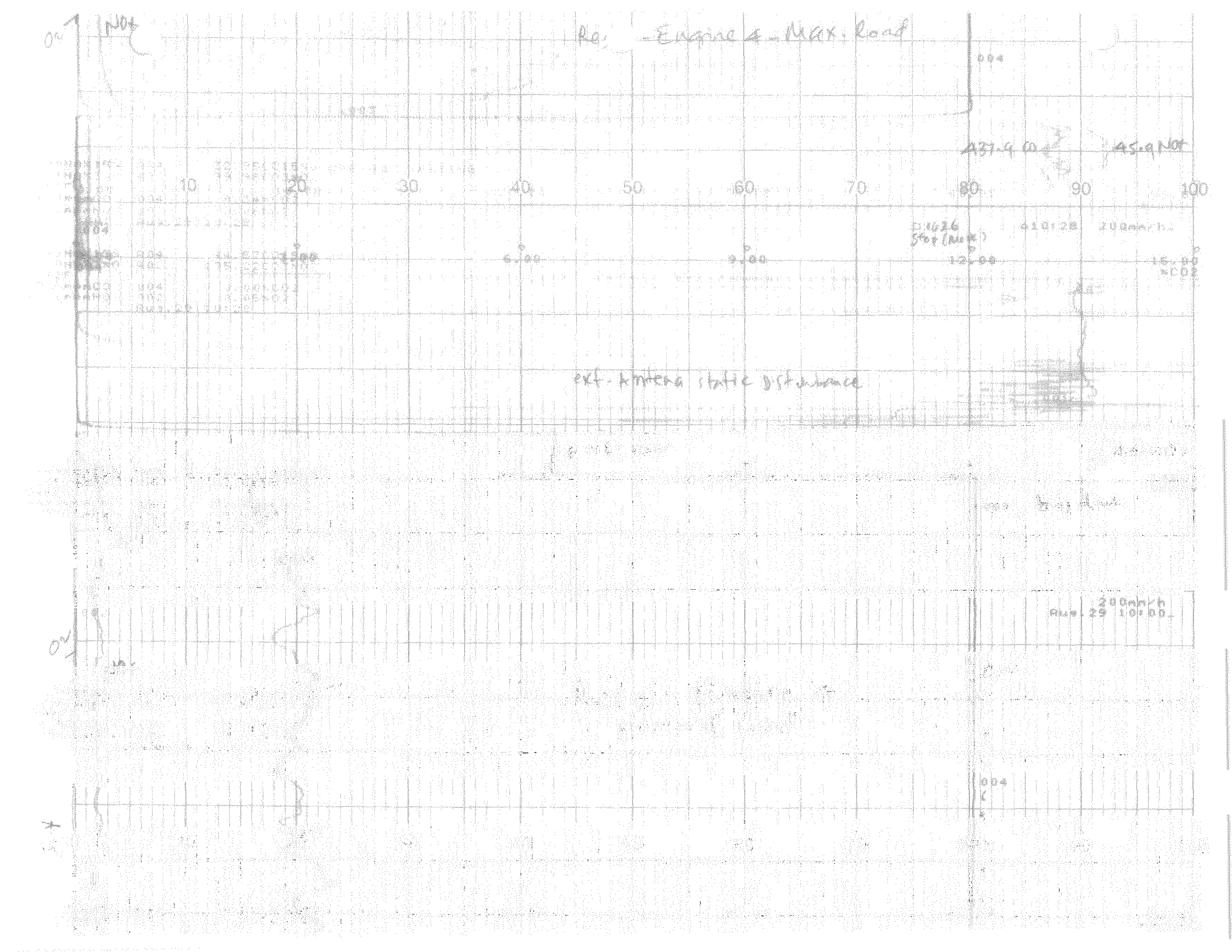
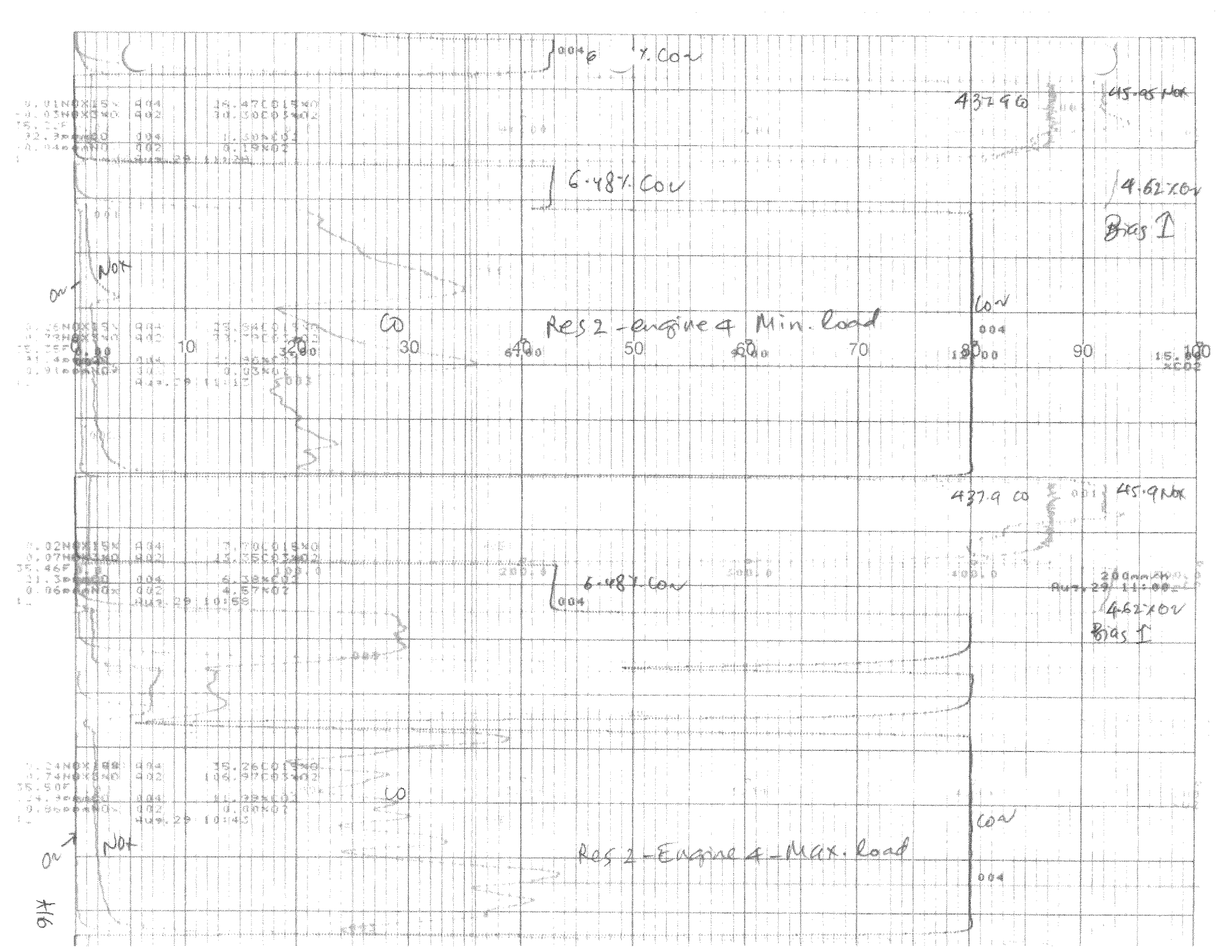
SG9113298BAL	9.245% O2 & 12.96% CO2	4/4/2016
CC45686	20.98 % O2	5/21/2017
SG9123663BAL	12.76 ppm NO2	9/18/2013

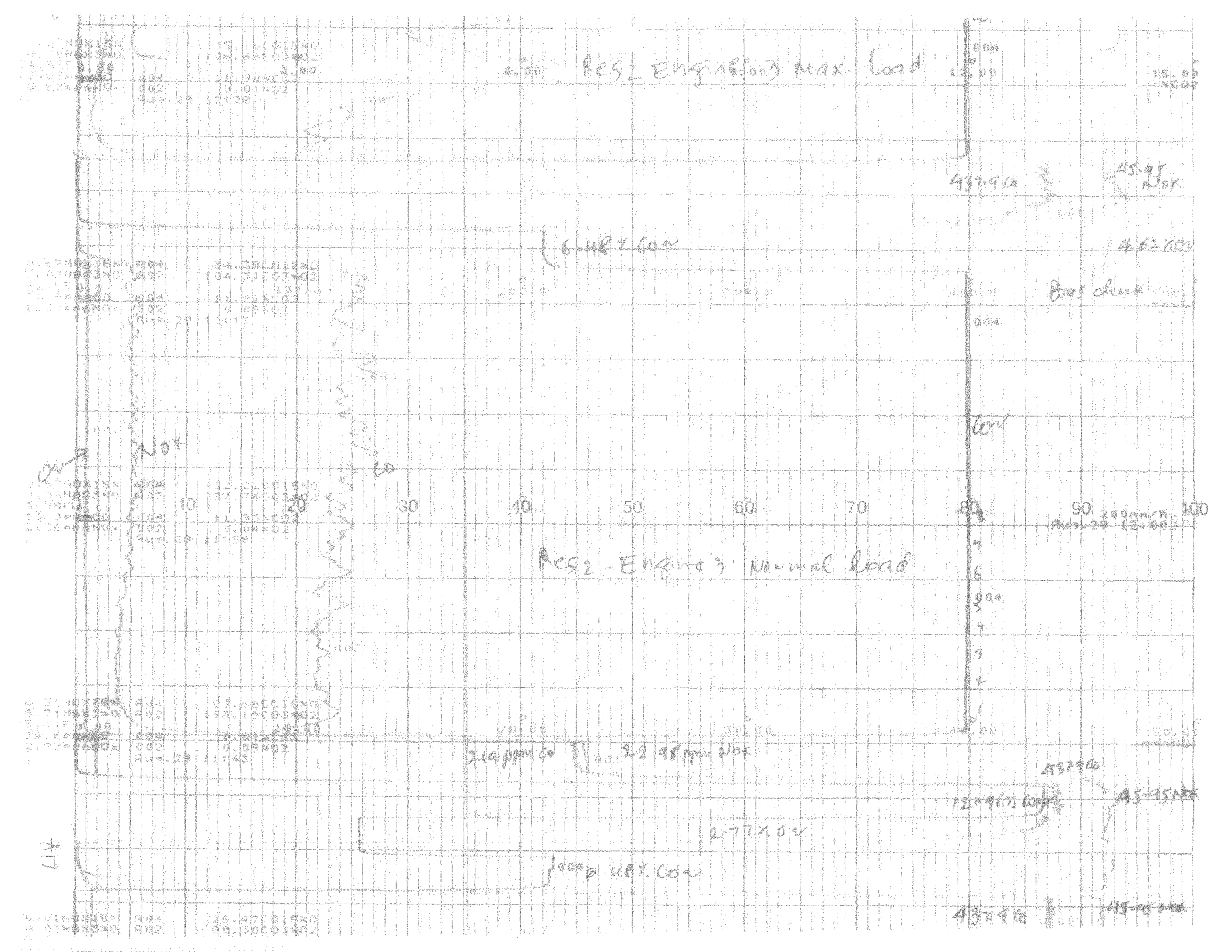

437.9 ppm CO
45.95 ppm NOx
4.62% O2
6.48% CO2
C0 = 12.76 ppm NOx
C2 = 11.92
CF = (C2 + L1)/C0 x 100 = (11.92 - 0.11)/12.76 x 100 = 92%
Bias check
L1 = 0.11
219 ppm CO @ 50% GD
22.98 ppm NOx @ 50% GD
437.9 ppm CO
12.96% CO2
45.95 NOx
12.77% O2 @ 30% GD
99.25
6.48% CO2 @ 50% GD
4.62% O2
15.00 %CO2
Changing on to 5% Range
09:05
09:07
200mm/h
12.96% CO2
200mm/h
9.25% O2
4.2% O2
8.4% O2
12.6% O2
16.8% O2
21% O2
0
10
20
30
40
50
60
70
80
90
100

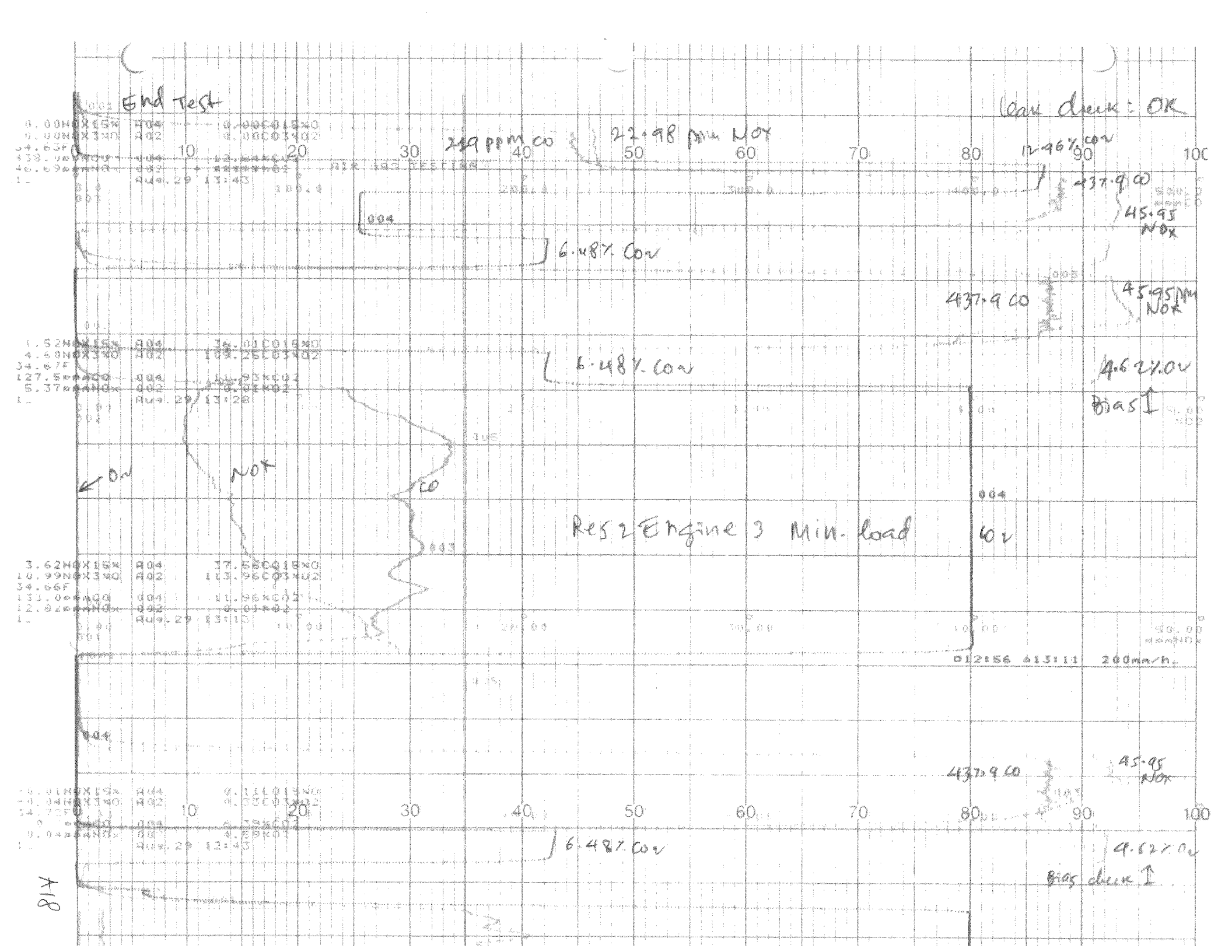


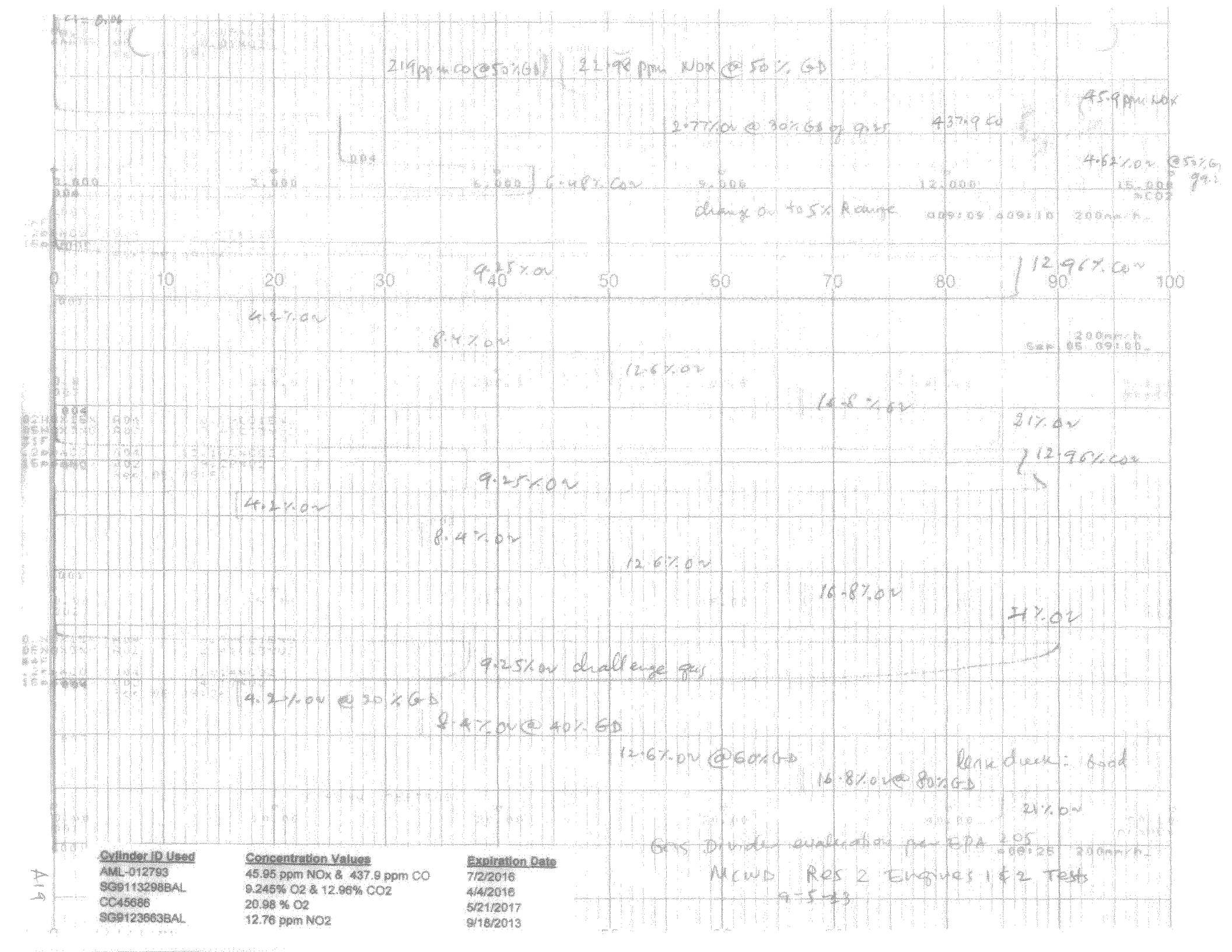
Re: Engine 4 - Max. Road
10
20
30
40
50
60
70
80
90
100
6.00
9.00
12.00
15.00
ext. Antena static Disturbance
200mm/h
Aug. 29 10:00



6 % Co2
437.9 Co
45.95 Nox
6.48% Co2
4.62% Co2
Bias I
Nox
Co
Co2
Res 2 - engine 4 Min. load
10
20
30
40
50
60
70
80
90
100
437.9 Co
45.9 Nox
6.48% Co2
4.62% Co2
Bias I
Co
Co2
Nox
Res 2 - Engine 4 - Max. load


Res2 Engine 3 Max. Load
437.9 CO
45.95 NOx
6.48% CO2
4.62% O2
Bias check
CO2
NOx
CO
0
10
20
30
40
50
60
70
80
90
100
Res2 - Engine 3 Normal Load
219 ppm CO
22.98 ppm NOx
437.9 CO
12.96% CO2
45.95 NOx
2.77% O2
6.48% CO2
437.9 CO
45.95 NOx


End Test
leak check: OK
219 ppm CO
22.98 ppm NOx
12.96% CO2
437.9 CO
45.95 NOx
6.48% CO2
437.9 CO
45.95 ppm NOx
6.48% CO2
4.62% O2
Bias
O2
NOx
CO
Res 2 Engine 3 Min. load
CO2
012:56 013:11 200mm/h
437.9 CO
45.95 NOx
6.48% CO2
4.62% O2
Bias check
A18



Cylinder ID Used	Concentration Values	Expiration Date
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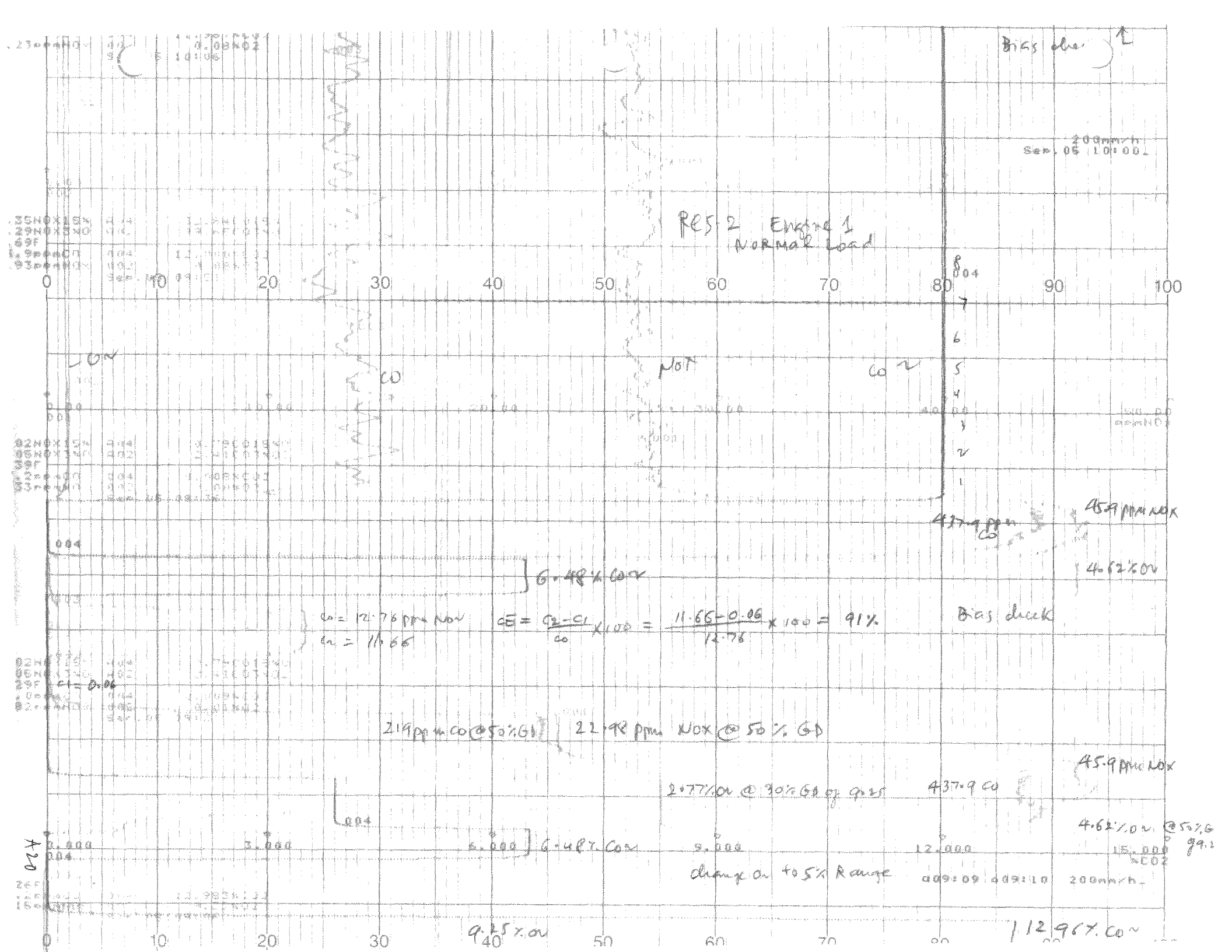
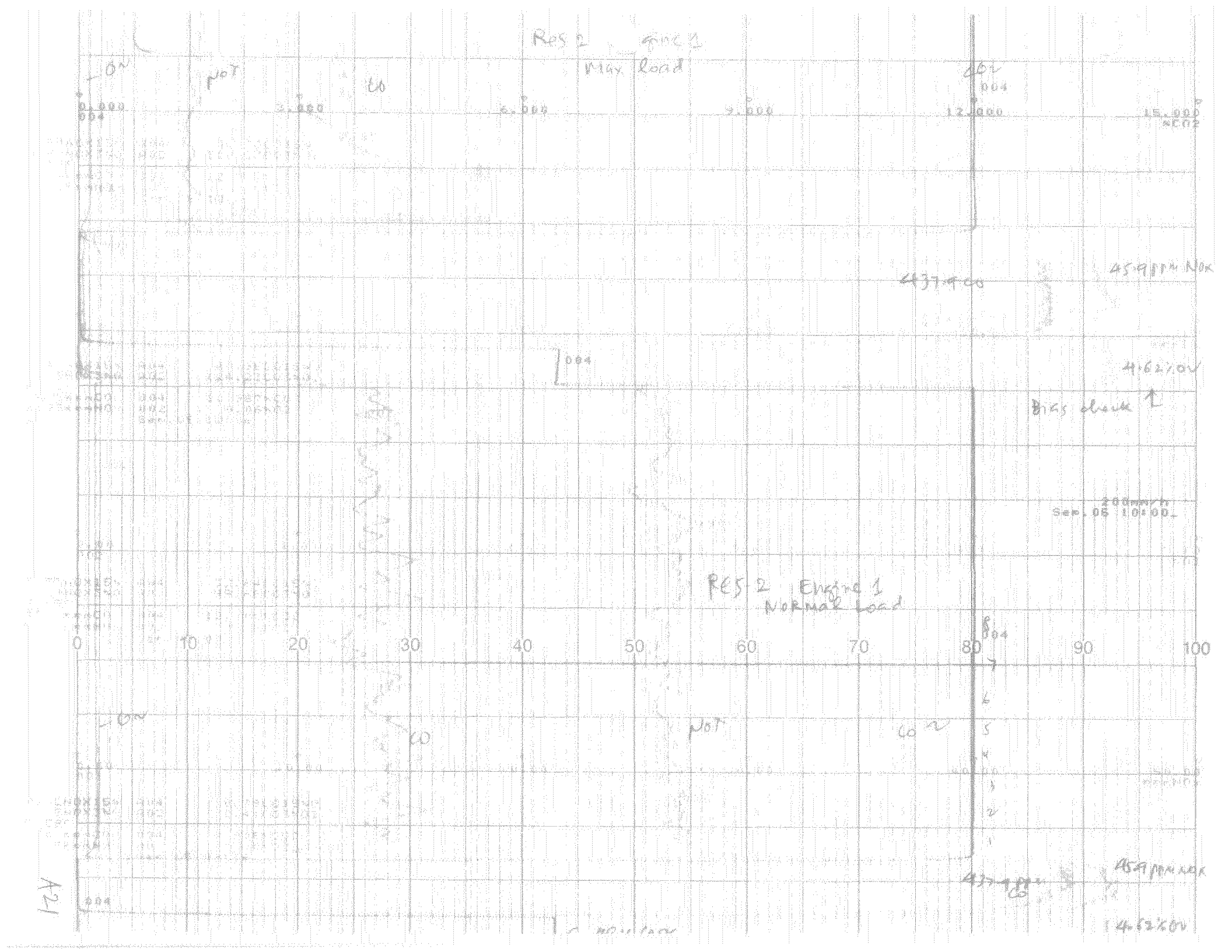
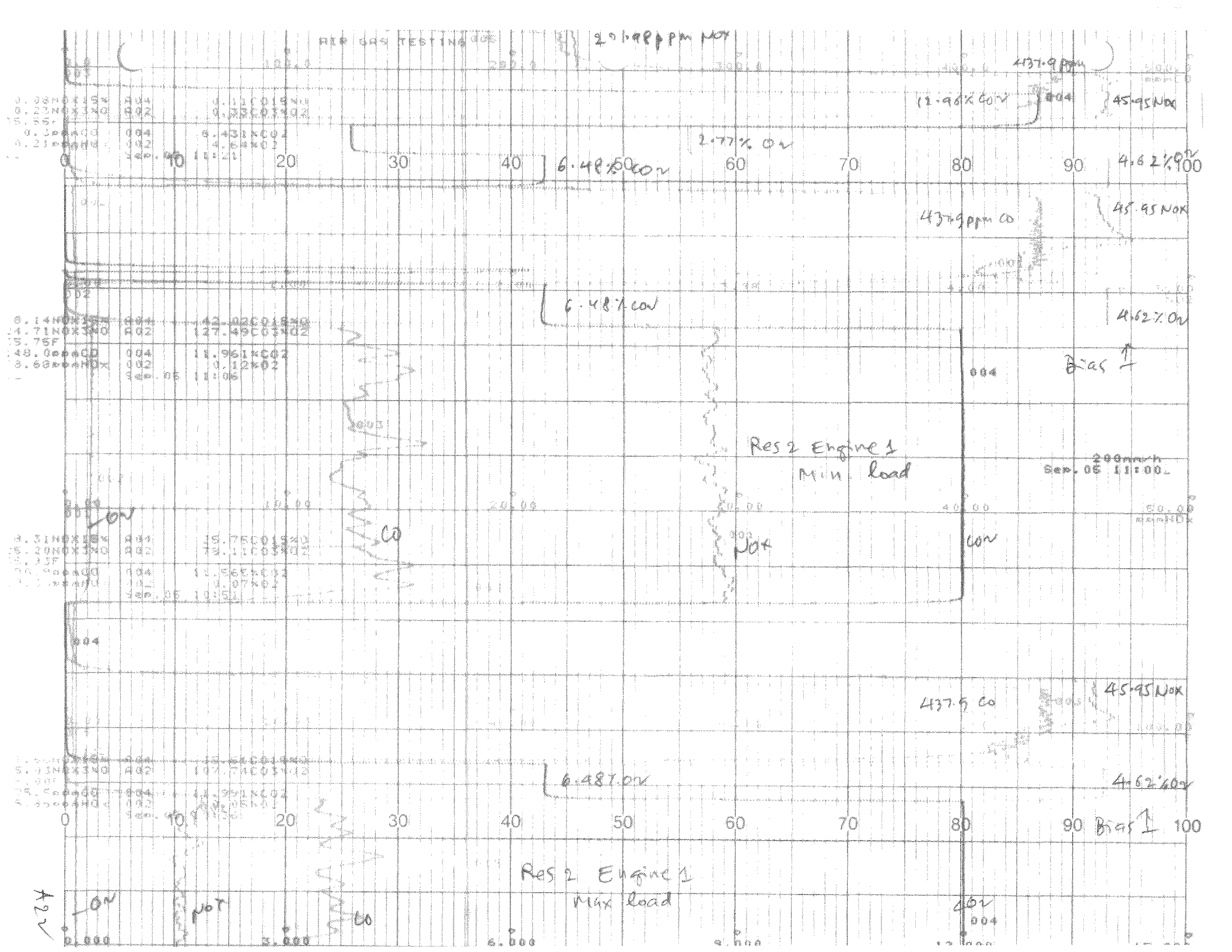
SG9113298BAL	9.245% O2 & 12.96% CO2	4/4/2016
CC45686	20.98 % O2	5/21/2017
SG9123663BAL	12.76 ppm NO2	9/18/2013

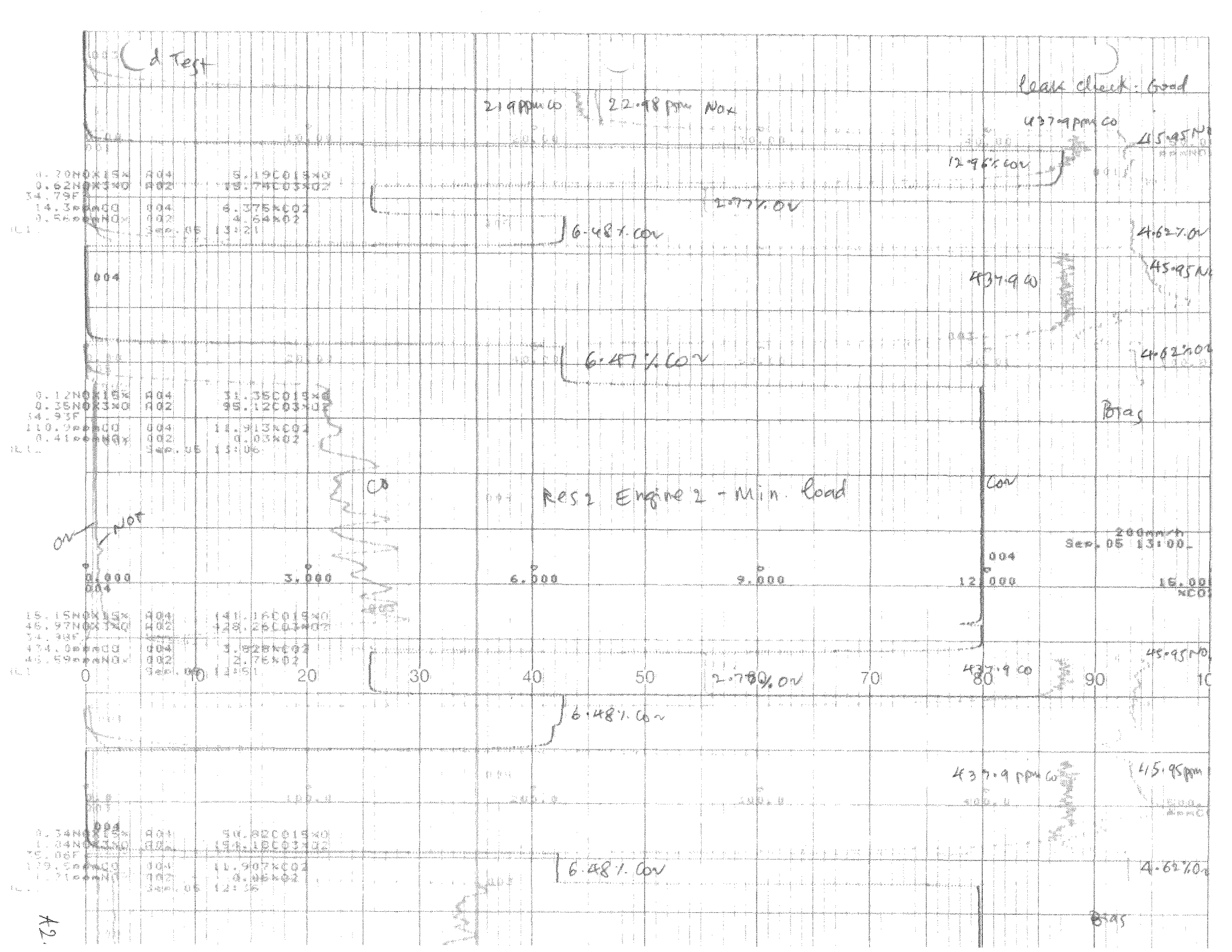


Bias check
200mm/h
Sep. 05 10:00
Res 2 Engine 1
Normal Load
CO
NOX
CO
437.9 ppm CO
45.9 ppm NOX
4.62% O2
6.48% CO2
Co = 12.76 ppm NOX
Cr = 11.66
CE = (C2 - C1)/Co x 100 = (11.66 - 0.06)/12.76 x 100 = 91%
Bias check
C1 = 0.06
219 ppm CO @ 50% GD
22.98 ppm NOX @ 50% GD
45.9 ppm NOX
2.77% O2 @ 30% GD of 9.25
437.9 CO
4.62% O2 @ 50% G
6.48% CO2
change O2 to 5% Range
009:09 009:10 200mm/h
9.25% O2
12.96% CO2


RES 2 Engine 1
Normal Load
0
10
20
30
40
50
60
70
80
90
100


AIR GAS TESTING
201.98 ppm NOx
437.9 ppm
12.96% CO2
45.95 NOx
2.77% O2
6.48% CO2
4.62% O2
437.9 ppm CO
45.95 NOx
6.48% CO2
4.62% O2
Bias
Res 2 Engine 1
Min. load
200mm/h
Sep. 05 11:00
CO2
CO
NOx
CO2
437.9 CO
45.95 NOx
6.48% O2
4.62% O2
Bias
Res 2 Engine 1
Max load
CO2
NOx
CO
CO2
A2

A23



d Test
Leak check: Good
219 ppm CO
22.98 ppm NOx
437.9 ppm CO
45.95 NO
12.96% CO2
2.77% O2
6.48% CO2
4.62% O2
45.95 NO
437.9 CO
6.47% CO2
4.62% O2
Bias
CO
Res 2 Engine 2 - Min. Load
CO2
NOT
200mm/h
Sep. 05 13:00
0.000
3.000
6.000
9.000
12.000
15.00
NCO
0
10
20
30
40
50
70
80
90
2.78% O2
437.9 CO
45.95 NO
6.48% CO2
437.9 ppm CO
45.95 ppm
6.48% CO2
4.62% O2
Bias

A2.

Air Gas Testing & Consulting Services
DAS Field Data
Date: August 21, 2013
Tested Sources: Res-1 Engines #3 and #2

Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
08/21	08:28:36	0.06	-0.06	1.1	0.02	35.46
08/21	08:29:36	0.01	-0.02	1.2	0.02	35.45
08/21	08:30:36	0.01	-0.02	1.2	0.02	35.44
08/21	08:31:36	-0.04	21.14	1.2	0.01	35.42
08/21	08:32:36	-0.04	21.17	1.2	0.01	35.41
08/21	08:33:36	-0.04	16.77	0.7	0.02	35.40
08/21	08:34:36	-0.05	16.07	0.6	0.01	35.38
08/21	08:35:36	-0.04	12.47	0.7	0.02	35.36
08/21	08:36:36	-0.04	8.30	0.7	0.02	35.35
08/21	08:37:36	-0.04	8.30	0.7	0.02	35.35
08/21	08:38:36	-0.04	4.17	0.7	0.02	35.34
08/21	08:39:36	-0.05	4.16	0.7	0.02	35.33
08/21	08:40:36	-0.04	4.18	0.7	0.02	35.33
08/21	08:41:36	-0.04	9.28	1.2	12.49	35.32
08/21	08:42:36	-0.05	9.31	1.1	13.03	35.31
08/21	08:43:36	-0.04	21.18	1.2	0.03	35.29
08/21	08:44:36	-0.04	21.19	1.2	0.02	35.29
08/21	08:45:36	-0.05	16.81	0.7	0.02	35.28
08/21	08:46:36	-0.05	16.81	1.1	0.02	35.27
08/21	08:47:36	-0.05	12.51	1.2	0.02	35.26
08/21	08:48:36	-0.05	12.51	0.7	0.02	35.26
08/21	08:49:36	-0.05	8.36	0.7	0.01	35.27
08/21	08:50:36	-0.05	8.35	0.7	0.01	35.28
08/21	08:51:36	-0.05	4.20	1.2	0.01	35.28
08/21	08:52:36	-0.05	4.19	0.7	0.01	35.29
08/21	08:53:36	-0.05	9.30	0.7	12.74	35.30
08/21	08:54:36	-0.05	9.37	1.2	12.99	35.31
08/21	08:55:36	-0.05	9.38	1.2	13.12	35.31
08/21	08:56:36	-0.05	21.17	0.7	0.05	35.31
08/21	08:57:36	-0.05	21.18	0.7	0.02	35.29
08/21	08:58:36	-0.05	16.81	0.7	0.02	35.29
08/21	08:59:36	-0.05	16.82	0.7	0.02	35.28
08/21	09:00:36	-0.05	12.55	0.7	0.01	35.28
08/21	09:01:36	0.01	12.56	0.7	0.01	35.27
08/21	09:02:36	0.06	8.33	0.7	0.01	35.25
08/21	09:03:36	0.06	8.33	0.7	0.01	35.25
08/21	09:04:36	0.01	4.21	0.7	0.02	35.24
08/21	09:05:36	0.06	4.18	0.7	0.01	35.23
08/21	09:06:36	0.01	9.28	0.7	12.93	35.23
08/21	09:07:36	0.01	9.33	0.7	12.93	35.22
08/21	09:08:36	0.01	9.33	0.7	13.00	35.21
08/21	09:09:36	1.36	0.04	322.5	0.05	35.20
08/21	09:10:36	6.96	0.04	422.7	0.03	35.19
08/21	09:11:36	24.92	0.04	437.2	0.02	35.18
08/21	09:12:36	46.03	0.04	436.7	0.02	35.18
08/21	09:13:36	46.03	0.04	439.6	0.02	35.18
08/21	09:14:36	45.83	0.04	436.2	0.02	35.18
08/21	09:15:36	22.87	0.04	237.5	0.02	35.18
08/21	09:16:36	22.57	0.05	231.0	0.01	35.20
08/21	09:17:36	22.72	0.05	224.0	0.02	35.22
08/21	09:18:36	22.77	0.05	223.0	0.01	35.24
08/21	09:19:36	0.26	4.56	8.7	6.44	35.26
08/21	09:20:36	0.16	4.55	0.7	6.46	35.28
08/21	09:21:36	0.11	0.05	0.7	0.13	35.29
08/21	09:22:36	0.11	0.04	0.7	0.01	35.29
08/21	09:23:36	0.06	0.03	0.7	0.01	35.30
08/21	09:25:15	0.06	0.02	0.7	0.01	35.30
08/21	09:26:15	0.06	0.02	0.7	0.01	35.30
08/21	09:27:15	0.06	0.01	0.7	0.01	35.30
08/21	09:49:15	0.06	0.00	0.7	0.00	35.15

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Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
08/21	09:50:15	0.01	0.00	0.7	0.00	35.15
08/21	09:51:15	0.01	0.40	0.7	2.05	35.16
08/21	09:52:15	0.01	4.62	0.7	6.39	35.17
08/21	09:53:15	5.46	4.62	0.7	6.41	35.17
08/21	09:54:15	12.42	2.75	0.7	3.87	35.17
08/21	09:55:15	12.56	2.74	0.7	3.86	35.18
08/21	09:56:15	12.57	2.74	0.7	3.87	35.19
08/21	09:57:15	12.47	-0.02	0.7	0.01	35.19
08/21	09:58:15	12.47	-0.02	0.7	0.01	35.19
08/21	09:59:15	0.11	0.00	0.7	0.01	35.19
08/21	10:00:15	0.06	4.45	0.7	5.77	35.19
08/21	10:01:15	0.06	4.63	0.2	6.45	35.19
08/21	10:02:15	0.01	4.63	0.2	6.46	35.19
08/21	10:03:15	0.01	5.00	0.2	12.96	35.20
08/21	10:04:15	10.77	5.00	15.2	12.97	35.20
08/21	10:05:15	21.77	0.00	402.7	0.03	35.19
08/21	10:06:15	23.57	0.00	434.2	0.02	35.20
08/21	10:07:15	26.12	0.00	436.7	0.01	35.20
08/21	10:08:15	48.23	0.00	432.7	0.01	35.20
08/21	10:09:15	45.87	0.00	436.2	0.00	35.21
08/21	10:10:15	45.78	0.00	435.2	0.01	35.21
08/21	10:11:15	43.73	2.65	500.8	0.55	35.21
08/21	10:12:15	0.31	0.02	131.4	0.01	35.21
08/21	10:13:15	0.21	0.02	3.7	0.00	35.21
08/21	10:14:15	0.16	0.01	0.7	0.00	35.22
08/21	10:46:15	0.06	0.01	1.7	0.00	35.33
08/21	10:47:15	0.01	0.01	0.2	0.00	35.34
08/21	10:48:15	12.36	0.25	252.0	11.79	35.35
Start Res-1 ICE #3 Normal Load:						
08/21	10:49:15	12.92	0.28	266.5	11.87	35.36
08/21	10:50:15	13.17	0.29	246.1	11.86	35.37
08/21	10:51:15	12.92	0.30	243.0	11.87	35.37
08/21	10:52:15	12.47	0.30	288.1	11.86	35.38
08/21	10:53:15	12.37	0.30	292.1	11.86	35.38
08/21	10:54:15	11.42	0.29	340.7	11.85	35.38
08/21	10:55:15	10.87	0.30	342.6	11.85	35.38
08/21	10:56:15	12.52	0.30	230.0	11.87	35.38
08/21	10:57:15	12.91	0.30	214.5	11.87	35.38
08/21	10:58:15	11.97	0.30	274.6	11.86	35.38
08/21	10:59:15	11.22	0.30	340.1	11.86	35.39
08/21	11:00:15	10.31	0.30	367.1	11.85	35.40
08/21	11:01:15	11.32	0.30	294.1	11.86	35.40
08/21	11:02:15	11.76	0.30	273.0	11.86	35.40
08/21	11:03:15	11.82	0.30	261.0	11.86	35.41
08/21	11:04:15	11.77	0.30	254.6	11.86	35.42
08/21	11:05:15	11.87	0.30	244.0	11.86	35.42
08/21	11:06:15	11.57	0.30	275.1	11.85	35.42
08/21	11:07:15	10.66	0.30	324.1	11.84	35.42
08/21	11:08:15	11.17	0.30	272.6	11.84	35.42
08/21	11:09:15	11.26	0.30	253.5	11.85	35.42
08/21	11:10:15	11.01	0.30	293.5	11.85	35.41
08/21	11:11:15	11.21	0.30	235.5	11.85	35.42
08/21	11:12:15	23.42	0.75	207.0	11.60	35.43
08/21	11:13:15	25.28	0.76	276.6	11.58	35.44
08/21	11:14:15	23.17	0.77	211.0	11.58	35.45
08/21	11:15:15	22.42	0.77	205.5	11.58	35.45
08/21	11:16:15	23.07	0.78	251.0	11.58	35.44
08/21	11:17:15	23.17	0.77	272.1	11.58	35.44
08/21	11:18:15	21.67	0.77	232.1	11.58	35.45
08/21	11:19:15	22.22	0.77	246.1	11.58	35.45
End Res-1 ICE #3 Normal Load, Ave.:		**14.67**	**0.42**	**268.64**	**11.79**	**35.41**
08/21	11:20:15	21.77	4.39	185.9	6.54	35.46

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Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
08/21	11:21:15	0.06	4.62	4.7	6.43	35.45
08/21	11:22:15	0.06	5.00	0.3	6.51	35.46
08/21	11:23:15	0.06	5.00	0.3	12.97	35.46
08/21	11:24:15	0.06	5.00	48.2	13.00	35.47
08/21	11:25:15	25.57	0.03	417.7	0.02	35.47
08/21	11:26:15	26.58	0.02	425.8	0.02	35.48
08/21	11:27:15	31.78	0.03	437.8	0.00	35.48
08/21	11:28:15	44.68	0.03	434.8	0.00	35.49
08/21	11:29:15	45.43	0.02	435.3	0.00	35.49
08/21	11:30:15	45.03	0.02	433.8	0.00	35.50
08/21	11:31:15	41.72	0.05	401.2	0.02	35.50
08/21	11:32:15	5.07	0.23	431.8	11.83	35.50
08/21	11:33:15	24.87	0.25	500.8	11.88	35.51
08/21	11:34:15	3.71	0.24	267.6	11.87	35.51
08/21	11:35:15	3.61	0.24	279.6	11.86	35.52
Start Res-1 ICE #3 Maximum Load:						
08/21	11:36:15	4.36	0.24	288.6	11.86	35.52
08/21	11:37:15	4.66	0.24	312.1	11.85	35.51
08/21	11:38:15	5.81	0.24	274.6	11.87	35.51
08/21	11:39:15	7.02	0.24	235.5	11.87	35.51
08/21	11:40:15	6.61	0.24	330.7	11.86	35.51
08/21	11:41:15	6.72	0.24	338.7	11.85	35.51
08/21	11:42:15	6.77	0.24	330.7	11.85	35.50
08/21	11:43:15	7.16	0.24	298.1	11.84	35.49
08/21	11:44:15	7.66	0.25	273.6	11.85	35.49
08/21	11:45:15	7.16	0.25	313.2	11.84	35.48
08/21	11:46:15	6.72	0.25	342.7	11.84	35.47
08/21	11:47:15	6.96	0.25	321.1	11.84	35.46
08/21	11:48:15	6.81	0.25	336.2	11.83	35.46
08/21	11:49:15	6.41	0.25	384.7	11.83	35.45
08/21	11:50:15	6.41	0.25	350.2	11.82	35.46
08/21	11:51:15	6.97	0.25	299.7	11.84	35.46
End Res-1 ICE #3 Maximum Load, Ave.:		**6.51**	**0.25**	**314.40**	**11.85**	**35.49**
08/21	11:52:15	1.56	4.66	182.5	6.45	35.46
08/21	11:53:15	0.06	4.63	4.7	6.37	35.46
08/21	11:54:15	0.06	4.63	0.3	6.35	35.43
08/21	11:55:15	0.06	4.63	0.3	6.35	35.42
08/21	11:56:15	0.06	5.00	0.2	12.74	35.40
08/21	11:57:15	0.06	5.00	0.3	12.90	35.38
08/21	11:58:15	0.06	5.00	-0.3	13.08	35.36
08/21	11:59:15	37.58	0.07	368.2	0.14	35.35
08/21	12:00:15	39.13	0.06	429.8	0.00	35.34
08/21	12:01:15	44.88	0.06	432.3	0.00	35.32
08/21	12:02:15	45.58	0.06	431.8	0.00	35.31
08/21	12:03:15	44.99	0.00	203.0	0.00	35.29
08/21	12:04:15	0.36	0.00	6.8	0.00	35.28
08/21	12:05:15	0.21	0.00	0.3	0.00	35.26
08/21	12:06:15	0.16	0.00	0.3	0.00	35.26
08/21	12:07:15	0.16	0.01	0.3	0.00	35.27
08/21	12:08:15	0.16	0.01	0.2	0.00	35.27
08/21	12:09:15	41.23	0.38	93.9	11.81	35.28
08/21	12:10:15	41.53	0.41	154.5	11.82	35.28
08/21	12:11:15	39.08	0.42	165.0	11.81	35.27
Start Res-1 ICE #3 Minimum Load:						
08/21	12:12:15	37.43	0.42	184.5	11.81	35.28
08/21	12:13:15	35.32	0.42	212.5	11.80	35.28
08/21	12:14:15	32.73	0.41	314.2	11.81	35.27
08/21	12:15:15	28.63	0.41	395.7	11.80	35.26
08/21	12:16:15	27.83	0.44	368.7	11.78	35.25
08/21	12:17:15	26.82	0.41	353.2	11.80	35.24
08/21	12:18:15	24.37	0.42	383.2	11.79	35.23

Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
08/21	12:19:15	24.02	0.41	351.7	11.80	35.23
08/21	12:20:15	24.17	0.41	302.7	11.80	35.23
08/21	12:21:15	24.52	0.42	267.7	11.80	35.24
08/21	12:22:15	24.93	0.43	234.1	11.81	35.25
08/21	12:23:15	23.72	0.42	253.0	11.80	35.25
08/21	12:24:15	22.27	0.42	269.6	11.81	35.25
08/21	12:25:15	22.42	0.43	267.6	11.80	35.26
08/21	12:26:15	19.22	0.42	405.8	11.79	35.27
08/21	12:27:15	16.92	0.42	495.4	11.78	35.28
End Res-1 ICE #3 Minimum Load, Ave.:		**25.96**	**0.42**	**316.23**	**11.80**	**35.25**
08/21	12:28:15	16.82	0.43	432.3	11.78	35.29
08/21	12:29:15	16.62	0.44	416.3	11.77	35.29
08/21	12:30:15	15.52	0.44	434.4	11.77	35.29
08/21	12:31:15	17.27	4.56	500.9	6.33	35.30
08/21	12:32:15	0.11	4.62	20.7	6.44	35.30
08/21	12:33:15	0.06	5.00	0.8	9.04	35.30
08/21	12:34:15	0.06	5.00	0.2	13.12	35.30
08/21	12:35:15	0.06	5.00	0.2	13.12	35.30
08/21	12:36:15	0.01	3.38	24.3	11.14	35.30
08/21	12:37:15	36.88	0.02	411.3	0.00	35.29
08/21	12:38:15	36.68	0.02	426.8	-0.01	35.28
08/21	12:39:15	37.23	0.02	436.3	-0.01	35.28
08/21	12:40:15	43.68	0.01	436.3	-0.01	35.27
08/21	12:41:15	45.63	0.01	434.3	-0.01	35.26
08/21	12:42:15	44.28	3.77	284.2	2.50	35.27
08/21	12:43:15	0.46	4.62	9.2	6.48	35.25
08/21	12:44:15	0.26	2.76	0.2	3.95	35.25
08/21	12:45:15	0.16	2.75	-0.3	3.88	35.25
08/21	12:46:15	44.88	5.00	350.2	13.07	35.24
08/21	12:47:15	44.88	5.00	431.8	13.10	35.23
08/21	12:48:15	44.84	5.00	434.9	13.11	35.22
08/21	12:49:15	44.93	0.13	398.8	1.43	35.21
08/21	12:50:15	22.62	0.01	228.0	0.00	35.21
08/21	12:51:15	22.47	0.01	222.5	0.00	35.21
08/21	12:52:15	22.32	0.01	222.0	-0.01	35.21
08/21	12:53:15	0.61	0.01	33.8	-0.01	35.20
08/21	12:54:15	0.26	0.01	1.2	-0.01	35.20
08/21	12:55:15	0.21	0.01	0.2	-0.01	35.20
08/21	12:56:15	0.16	0.01	0.2	-0.01	35.21
08/21	12:57:15	5.21	0.50	363.7	11.69	35.22
08/21	12:58:15	5.31	0.53	380.8	11.68	35.21
Start Res-1 ICE #2 Normal Load:						
08/21	12:59:15	5.46	0.53	361.2	11.69	35.20
08/21	13:00:15	5.81	0.56	372.7	11.68	35.20
08/21	13:01:15	5.06	0.51	403.3	11.71	35.20
08/21	13:02:15	5.81	0.55	401.8	11.69	35.20
08/21	13:03:15	5.67	0.50	411.3	11.72	35.19
08/21	13:04:15	6.47	0.50	366.3	11.73	35.18
08/21	13:05:15	6.41	0.53	369.2	11.71	35.15
08/21	13:06:15	8.01	0.53	243.6	11.74	35.13
08/21	13:07:15	8.76	0.55	257.1	11.72	35.13
08/21	13:08:15	8.02	0.54	292.7	11.71	35.11
08/21	13:09:15	8.67	0.50	223.7	11.75	35.10
08/21	13:10:15	8.81	0.52	228.0	11.74	35.09
08/21	13:11:15	8.96	0.55	252.1	11.71	35.08
08/21	13:12:15	8.47	0.54	235.1	11.72	35.06
08/21	13:13:15	8.24	0.52	236.1	11.73	35.07
08/21	13:14:15	8.92	0.54	218.1	11.72	35.07
08/21	13:15:15	8.77	0.56	247.1	11.70	35.07
08/21	13:16:15	7.86	0.51	268.1	11.72	35.07
08/21	13:17:15	8.61	0.54	231.0	11.72	35.05
08/21	13:18:15	8.01	0.52	266.6	11.72	35.05

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Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
08/21	13:19:15	8.47	0.54	248.6	11.71	35.05
08/21	13:20:15	8.21	0.51	238.6	11.73	35.04
08/21	13:21:15	7.46	0.51	280.1	11.73	35.04
08/21	13:22:15	7.21	0.49	293.1	11.73	35.04
08/21	13:23:15	7.82	0.55	305.2	11.69	35.04
08/21	13:24:15	7.77	0.54	296.2	11.69	35.03
08/21	13:25:15	7.26	0.51	312.2	11.71	35.03
08/21	13:26:15	7.96	0.51	253.1	11.72	35.03
08/21	13:27:15	8.62	0.52	215.1	11.72	35.03
08/21	13:28:15	8.17	0.52	231.6	11.72	35.02
End Res-1 ICE #2 Normal Load, Ave.:		**7.66**	**0.53**	**285.30**	**11.72**	**35.09**
08/21	13:29:15	7.16	0.50	283.7	11.73	35.02
08/21	13:30:15	7.32	0.50	275.1	11.73	35.01
08/21	13:31:15	8.52	0.57	251.1	11.68	35.01
08/21	13:32:15	8.07	0.53	241.6	11.70	35.01
08/21	13:33:15	15.87	0.97	193.0	11.48	35.02
08/21	13:34:15	0.11	4.63	11.3	6.28	35.02
08/21	13:35:15	0.06	4.64	0.2	6.47	35.03
08/21	13:36:15	0.06	5.00	-0.3	12.52	35.03
08/21	13:37:15	0.06	5.00	-0.3	13.04	35.03
08/21	13:38:15	0.06	5.00	5.8	12.91	35.04
08/21	13:39:15	35.03	0.05	405.3	0.01	35.04
08/21	13:40:15	39.18	0.05	418.8	0.00	35.05
08/21	13:41:15	46.43	0.04	437.8	-0.01	35.05
08/21	13:42:15	45.68	0.04	437.3	-0.01	35.06
08/21	13:43:15	45.58	0.04	434.9	-0.01	35.05
08/21	13:44:15	45.38	0.04	436.9	-0.01	35.05
08/21	13:45:15	44.73	0.04	436.4	-0.01	35.05
08/21	13:46:15	0.51	0.04	14.8	-0.01	35.05
08/21	13:47:15	0.31	0.04	0.8	-0.01	35.05
08/21	13:48:15	0.22	0.04	0.3	-0.01	35.06
08/21	13:49:15	0.21	0.04	-0.3	-0.01	35.06
08/21	13:50:15	0.16	0.04	-0.3	-0.01	35.06
08/21	13:51:15	9.57	0.38	127.4	11.73	35.07
Start Res-1 ICE #2 Maximum Load:						
08/21	13:52:15	9.37	0.41	206.0	11.77	35.06
08/21	13:53:15	9.32	0.43	208.1	11.78	35.06
08/21	13:54:15	10.37	0.44	122.9	11.79	35.07
08/21	13:55:15	10.12	0.46	104.9	11.77	35.08
08/21	13:56:15	8.87	0.42	115.9	11.80	35.08
08/21	13:57:15	8.87	0.44	132.4	11.79	35.07
08/21	13:58:15	8.07	0.43	198.5	11.79	35.07
08/21	13:59:15	8.46	0.48	247.6	11.76	35.06
08/21	14:00:15	8.07	0.48	316.7	11.75	35.07
08/21	14:01:15	7.36	0.44	376.3	11.76	35.06
08/21	14:02:15	7.57	0.45	356.3	11.76	35.06
08/21	14:03:15	7.46	0.44	352.8	11.77	35.06
08/21	14:04:15	7.87	0.43	270.6	11.79	35.07
08/21	14:05:15	9.06	0.44	197.5	11.80	35.07
08/21	14:06:15	8.41	0.41	171.0	11.82	35.06
08/21	14:07:15	8.31	0.43	198.5	11.81	35.05
End Res-1 ICE #2 Maximum Load, Ave.:		**8.60**	**0.44**	**223.50**	**11.78**	**35.07**
08/21	14:08:15	7.52	0.42	247.1	11.80	35.04
08/21	14:09:15	6.91	2.73	190.5	8.06	35.04
08/21	14:10:15	0.06	4.65	5.8	6.43	35.04
08/21	14:11:15	0.06	4.65	0.3	6.45	35.03
08/21	14:12:15	0.06	4.65	-0.3	6.47	35.03
08/21	14:13:15	40.28	0.07	400.3	0.01	35.02
08/21	14:14:15	42.84	0.06	434.4	0.00	35.02
08/21	14:15:15	45.88	0.06	437.9	-0.01	35.02
08/21	14:16:15	45.73	0.05	434.9	-0.01	35.01

Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
08/21	14:17:15	0.41	0.00	19.8	-0.01	35.03
08/21	14:18:15	0.21	0.00	0.8	-0.01	35.03
08/21	14:19:15	0.16	0.00	-0.3	-0.01	35.02
08/21	14:20:15	0.11	0.00	-0.3	-0.02	35.03
08/21	14:21:15	50.04	0.75	116.4	11.54	35.04
08/21	14:22:15	50.04	0.79	140.5	11.50	35.03
08/21	14:23:15	50.04	0.79	178.5	11.49	35.03
08/21	14:24:15	50.04	0.79	239.6	11.51	35.02
08/21	14:25:15	33.63	0.80	368.8	11.49	35.01
08/21	14:26:15	27.78	0.77	381.3	11.50	35.01
08/21	14:27:15	26.28	0.85	374.3	11.48	35.01
08/21	14:28:15	23.22	0.84	378.3	11.49	35.00
08/21	14:29:15	19.52	0.83	380.3	11.50	35.00
Start Res-1 ICE #2 Minimum Load:						
08/21	14:30:15	17.92	0.83	396.8	11.49	35.00
08/21	14:31:15	17.02	0.87	400.3	11.49	35.00
08/21	14:32:15	14.87	0.83	408.8	11.50	34.99
08/21	14:33:15	14.37	0.87	414.9	11.48	34.98
08/21	14:34:15	13.07	0.86	424.4	11.48	34.98
08/21	14:35:15	12.12	0.83	420.4	11.50	34.98
08/21	14:36:15	11.42	0.84	430.9	11.50	34.97
08/21	14:37:15	11.52	0.90	426.9	11.46	34.97
08/21	14:38:15	10.02	0.86	453.9	11.48	34.98
08/21	14:39:15	10.22	0.88	415.8	11.47	34.98
08/21	14:40:15	9.37	0.85	424.9	11.48	34.97
08/21	14:41:15	8.97	0.84	421.9	11.49	34.97
08/21	14:42:15	9.12	0.91	423.9	11.45	34.98
08/21	14:43:15	8.52	0.92	443.9	11.44	34.99
08/21	14:44:15	8.07	0.88	443.9	11.46	34.99
08/21	14:45:15	7.76	0.88	455.4	11.45	34.99
End Res-1 ICE #2 Minimum Load, Ave.:		**11.52**	**0.87**	**425.44**	**11.48**	**34.98**
08/21	14:46:15	8.12	0.96	432.9	11.41	34.99
08/21	14:47:15	7.62	0.93	453.4	11.43	34.99
08/21	14:48:15	0.41	4.61	93.4	6.36	34.98
08/21	14:49:15	0.06	4.60	3.3	6.35	34.99
08/21	14:50:15	0.06	5.00	0.3	12.42	34.98
08/21	14:51:15	0.06	5.00	-0.3	12.91	34.97
08/21	14:52:15	0.06	5.00	-0.3	13.01	34.97
08/21	14:53:15	37.83	0.02	399.3	0.02	34.96
08/21	14:54:15	40.93	0.02	432.4	-0.01	34.95
08/21	14:55:15	45.94	0.02	435.9	-0.01	34.95
08/21	14:56:15	44.93	3.94	319.2	3.12	34.94
08/21	14:57:15	0.41	4.61	9.3	6.45	34.94
08/21	14:58:15	0.21	4.61	0.3	6.45	34.93
08/21	14:59:15	0.16	2.75	1.3	3.86	34.92
08/21	15:00:15	45.74	2.75	420.4	3.86	34.92
08/21	15:01:15	46.04	5.00	441.9	12.95	34.91
08/21	15:02:15	45.84	5.00	437.4	12.98	34.92
08/21	15:03:15	23.42	5.00	226.6	11.28	34.91
08/21	15:04:15	23.12	0.01	222.1	0.01	34.91
08/21	15:05:15	22.97	0.01	154.0	-0.01	34.91
08/21	15:06:15	0.36	0.01	5.3	-0.01	34.91
08/21	15:07:15	0.22	0.01	-0.3	-0.01	34.92

Air Gas Testing & Consulting Services
DAS Field Data
Date: August 26, 2013
Tested Sources: Res-1 Engine #1

Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
08/26	07:38:34	0.11	0.06	1.2	0.01	35.59
08/26	07:39:34	0.06	0.02	1.2	0.01	35.56
08/26	07:40:34	0.06	0.03	1.2	0.01	35.52
08/26	07:41:34	0.11	21.17	1.2	0.01	35.48
08/26	07:42:34	0.06	21.19	1.2	0.01	35.45
08/26	07:43:34	0.06	16.81	1.2	0.01	35.42
08/26	07:44:34	0.06	16.83	1.2	0.01	35.39
08/26	07:45:34	0.06	12.54	1.2	0.01	35.35
08/26	07:46:34	0.06	12.54	1.2	0.01	35.34
08/26	07:47:34	0.06	8.28	1.2	0.01	35.32
08/26	07:48:34	0.06	8.31	1.2	0.01	35.29
08/26	07:49:34	0.06	4.18	1.2	0.01	35.28
08/26	07:50:34	0.06	4.18	1.2	0.01	35.26
08/26	07:51:34	0.06	9.28	1.2	12.80	35.25
08/26	07:52:34	0.06	9.30	1.2	13.07	35.22
08/26	07:53:34	0.06	9.31	1.2	12.97	35.20
08/26	07:54:34	0.06	21.15	1.2	0.02	35.18
08/26	07:55:34	0.06	21.17	1.2	0.01	35.16
08/26	07:56:34	0.06	16.79	1.2	0.01	35.15
08/26	07:57:34	0.06	16.80	1.2	0.01	35.14
08/26	07:58:34	0.06	12.53	1.2	0.01	35.12
08/26	07:59:34	0.06	9.48	1.2	0.01	35.12
08/26	08:00:34	0.06	8.33	1.2	0.01	35.10
08/26	08:01:34	0.06	4.24	1.2	0.01	35.08
08/26	08:02:34	0.06	4.19	1.2	0.01	35.08
08/26	08:03:34	0.06	9.27	1.2	12.79	35.07
08/26	08:04:34	0.06	9.27	0.7	12.70	35.08
08/26	08:05:34	0.06	19.84	1.2	2.16	35.09
08/26	08:06:34	0.06	21.13	1.2	0.02	35.10
08/26	08:07:34	0.06	21.12	1.2	0.01	35.12
08/26	08:08:34	0.06	16.78	1.2	0.01	35.14
08/26	08:09:34	0.06	16.78	1.2	0.01	35.15
08/26	08:10:34	0.06	12.52	1.2	0.01	35.16
08/26	08:11:34	0.01	10.99	1.2	0.01	35.16
08/26	08:12:34	0.01	8.31	1.2	0.01	35.15
08/26	08:13:34	-0.04	5.84	-0.3	0.01	35.15
08/26	08:14:34	-0.04	4.18	-0.3	0.01	35.14
08/26	08:15:34	-0.04	4.18	0.2	0.01	35.13
08/26	08:16:34	-0.05	9.26	0.7	12.69	35.12
08/26	08:17:34	-0.04	9.28	0.7	12.76	35.10
08/26	08:18:34	-0.04	9.28	1.2	12.81	35.09
08/26	08:19:34	-0.04	9.27	1.2	12.95	35.08
08/26	08:20:34	-0.04	-0.01	1.2	0.03	35.06
08/26	08:21:34	-0.04	-0.01	1.2	0.03	35.04
08/26	08:22:34	-0.04	-0.01	1.2	0.03	35.06
08/26	08:23:34	-0.04	4.50	1.2	6.44	35.04
08/26	08:24:34	18.00	4.65	250.0	6.45	35.06
08/26	08:25:34	33.00	2.75	435.0	3.87	35.02
08/26	08:26:34	46.45	2.77	442.5	3.86	35.06
08/26	08:27:34	46.40	0.05	441.0	0.05	35.03
08/26	08:28:34	46.05	0.00	440.0	0.00	35.06
08/26	08:29:34	23.40	0.00	230.0	0.00	35.05
08/26	08:30:34	22.85	0.00	225.0	0.00	35.06
08/26	08:31:34	22.85	0.00	224.0	0.00	35.01
08/26	08:32:34	0.40	0.00	5.0	0.00	35.06
08/26	08:33:34	0.15	0.00	3.5	0.00	35.02
08/26	08:34:34	11.00	0.00	3.0	0.00	35.06

Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
08/26	08:35:34	12.00	0.00	3.0	0.00	35.06
08/26	08:36:34	12.05	0.00	3.0	0.00	35.05
08/26	08:37:34	12.05	0.00	3.0	0.00	35.06
08/26	08:38:34	1.00	4.60	3.0	6.35	35.05
08/26	08:39:34	0.10	4.64	2.5	6.38	35.06
08/26	08:40:34	0.10	5.00	2.5	12.83	35.03
08/26	08:41:34	0.10	5.00	2.5	12.84	35.06
08/26	08:42:34	0.10	5.00	2.0	13.07	35.01
08/26	08:43:34	40.00	0.03	300.0	0.45	35.06
08/26	08:44:34	44.40	0.02	438.5	0.00	35.02
08/26	08:45:34	46.20	0.02	439.0	0.00	35.06
08/26	08:46:34	46.25	0.02	438.5	0.00	35.03
08/26	08:47:34	46.05	0.03	438.0	0.00	35.06
08/26	08:48:34	1.00	0.03	50.0	0.00	35.04
08/26	08:49:34	0.25	0.03	2.5	0.00	35.06
08/26	08:50:34	0.25	0.03	1.0	0.00	35.04
08/26	08:51:34	0.10	0.03	0.7	0.00	35.06
08/26	08:52:34	0.07	0.03	0.7	0.00	35.00
08/26	12:29:01	0.56	0.33	0.3	0.14	34.90
08/26	12:30:01	0.31	0.00	-0.3	-0.01	34.90
08/26	12:31:01	-0.04	4.56	0.2	6.41	34.90
08/26	12:32:01	0.02	4.61	0.3	6.43	34.91
08/26	12:33:01	0.02	2.74	0.3	3.89	34.91
08/26	12:34:01	0.01	2.73	0.2	3.86	34.90
08/26	12:35:01	46.08	5.00	439.3	12.89	34.90
08/26	12:36:01	45.93	5.00	437.8	12.93	34.90
08/26	12:37:01	46.18	4.21	437.8	11.77	34.90
08/26	12:38:01	23.67	-0.03	247.1	0.01	34.90
08/26	12:39:01	23.27	-0.03	223.5	0.00	34.89
08/26	12:40:01	23.17	-0.03	221.5	0.00	34.89
08/26	12:41:01	0.36	-0.03	20.7	-0.01	34.88
08/26	12:42:01	3.06	0.01	21.8	-0.01	34.88
08/26	12:43:01	0.06	4.62	0.3	6.44	34.87
08/26	12:44:01	0.01	4.89	-0.3	6.46	34.88
08/26	12:45:01	0.01	5.00	-0.3	12.95	34.88
08/26	12:46:01	0.01	5.00	0.3	12.95	34.89
08/26	12:47:01	45.83	0.01	422.3	0.01	34.90
08/26	12:48:01	46.13	0.01	440.3	0.00	34.91
08/26	12:49:01	46.08	0.00	440.9	0.00	34.91
08/26	12:50:01	47.23	0.00	440.3	-0.01	34.92
08/26	12:51:01	37.58	0.01	406.8	-0.01	34.93
08/26	12:52:01	0.26	0.00	15.2	-0.01	34.94
08/26	12:53:01	0.11	0.00	1.2	-0.01	34.94
08/26	12:57:01	0.01	0.03	1.7	0.00	35.01
08/26	12:58:01	0.01	0.03	0.7	0.00	35.02
08/26	12:59:01	0.01	0.02	0.8	-0.01	35.02
08/26	13:00:01	8.82	0.15	64.3	11.77	35.04
08/26	13:01:01	8.97	0.18	146.9	11.87	35.04
Start Res-1 ICE #1 Normal Load:						
08/26	13:02:01	9.06	0.18	148.0	11.88	35.04
08/26	13:03:01	9.06	0.18	144.9	11.88	35.05
08/26	13:04:01	8.92	0.18	145.4	11.88	35.05
08/26	13:05:01	9.02	0.18	148.0	11.88	35.06
08/26	13:06:01	8.97	0.18	180.0	11.88	35.06
08/26	13:07:01	9.02	0.18	180.0	11.88	35.06
08/26	13:08:01	9.06	0.18	178.0	11.88	35.05
08/26	13:09:01	8.96	0.18	180.0	11.87	35.05
08/26	13:10:01	8.81	0.18	177.0	11.87	35.05
08/26	13:11:01	8.81	0.18	180.5	11.87	35.05
08/26	13:12:01	8.81	0.19	181.5	11.86	35.05

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Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
08/26	13:13:01	8.76	0.19	181.0	11.86	35.05
08/26	13:14:01	8.67	0.18	183.5	11.86	35.05
08/26	13:15:01	8.81	0.19	182.5	11.86	35.05
08/26	13:16:01	8.81	0.18	183.5	11.87	35.05
08/26	13:17:01	8.67	0.19	184.5	11.88	35.05
08/26	13:18:01	8.77	0.19	180.0	11.89	35.06
08/26	13:19:01	8.86	0.19	181.5	11.90	35.07
08/26	13:20:01	8.87	0.19	174.5	11.90	35.07
08/26	13:21:01	9.06	0.19	176.0	11.90	35.08
08/26	13:22:01	8.81	0.18	180.5	11.90	35.08
08/26	13:23:01	9.06	0.18	175.5	11.90	35.11
08/26	13:24:01	8.82	0.18	177.5	11.90	35.13
08/26	13:25:01	8.92	0.17	179.0	11.90	35.14
08/26	13:26:01	9.01	0.18	178.9	11.89	35.15
08/26	13:27:01	9.02	0.18	175.5	11.90	35.17
08/26	13:28:01	8.92	0.19	176.5	11.89	35.17
08/26	13:29:01	9.02	0.19	175.0	11.89	35.18
08/26	13:30:01	9.17	0.18	172.0	11.89	35.18
08/26	13:31:01	9.07	0.17	172.5	11.89	35.19
08/26	13:32:01	8.77	0.18	174.5	11.90	35.18
End Res-1 ICE #1 Normal Load, Ave.:		**8.92**	**0.18**	**174.44**	**11.88**	**35.09**
08/26	13:33:01	0.01	4.64	15.3	6.40	35.18
08/26	13:34:01	-0.04	4.63	1.3	6.42	35.18
08/26	13:35:01	-0.05	5.00	0.7	12.92	35.18
08/26	13:36:01	-0.04	5.00	0.8	12.94	35.18
08/26	13:37:01	35.58	0.04	412.9	0.03	35.19
08/26	13:38:01	35.23	0.03	434.9	0.01	35.19
08/26	13:39:01	37.58	0.03	435.8	0.00	35.19
08/26	13:40:01	46.03	0.02	437.9	0.00	35.18
08/26	13:41:01	45.93	0.02	438.9	0.00	35.18
08/26	13:42:01	22.97	0.02	189.5	0.00	35.19
08/26	13:43:01	0.31	0.02	6.8	-0.01	35.19
08/26	13:44:01	0.16	0.02	0.8	-0.01	35.18
08/26	13:45:01	0.11	0.02	0.7	-0.01	35.18
08/26	13:46:01	0.11	0.02	0.8	0.00	35.17
08/26	13:47:01	0.11	0.02	0.7	-0.01	35.16
08/26	13:48:01	0.06	0.03	0.8	-0.01	35.15
Start Res-1 ICE #1 Maximum Load:						
08/26	13:49:01	7.07	0.08	439.4	11.91	35.15
08/26	13:50:01	6.47	0.10	408.4	11.91	35.15
08/26	13:51:01	6.32	0.10	410.9	11.90	35.15
08/26	13:52:01	6.41	0.10	405.8	11.90	35.15
08/26	13:53:01	6.52	0.10	412.9	11.90	35.14
08/26	13:54:01	6.67	0.10	411.9	11.90	35.13
08/26	13:55:01	6.81	0.10	411.4	11.89	35.12
08/26	13:56:01	6.92	0.10	418.9	11.89	35.10
08/26	13:57:01	7.07	0.10	419.4	11.90	35.09
08/26	13:58:01	7.26	0.10	421.9	11.89	35.07
08/26	13:59:01	7.41	0.10	424.8	11.89	35.06
08/26	14:00:01	7.62	0.10	428.9	11.90	35.06
08/26	14:01:01	7.81	0.11	432.9	11.89	35.06
08/26	14:02:01	7.92	0.11	438.5	11.89	35.07
08/26	14:03:01	8.07	0.11	440.4	11.89	35.07
08/26	14:04:01	8.12	0.11	448.4	11.88	35.08
08/26	14:05:01	8.37	0.11	451.4	11.88	35.08
End Res-1 ICE #1 Maximum Load, Ave.:		**7.23**	**0.10**	**425.07**	**11.89**	**35.10**
08/26	14:06:01	9.06	0.11	422.9	11.88	35.09
08/26	14:07:01	0.16	4.65	103.9	6.36	35.10

Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
08/26	14:08:01	0.02	4.65	4.3	6.44	35.09
08/26	14:09:01	-0.04	5.00	0.7	12.80	35.10
08/26	14:10:01	-0.04	5.00	0.7	12.95	35.10
08/26	14:11:01	-0.04	5.00	44.8	12.95	35.11
08/26	14:12:01	37.23	0.06	422.9	0.05	35.11
08/26	14:13:01	37.73	0.05	435.9	0.02	35.11
08/26	14:14:01	38.63	0.04	438.9	0.01	35.11
08/26	14:15:01	44.48	0.04	436.4	0.00	35.11
08/26	14:16:01	45.78	0.04	440.4	0.00	35.11
08/26	14:17:01	45.99	0.04	436.9	0.00	35.11
08/26	14:18:01	14.22	0.20	121.9	11.76	35.12
Start Res-1 ICE #1 Minimum Load:						
08/26	14:19:01	13.92	0.24	160.5	11.79	35.12
08/26	14:20:01	13.92	0.24	159.0	11.80	35.11
08/26	14:21:01	13.87	0.24	162.0	11.80	35.10
08/26	14:22:01	14.22	0.24	159.5	11.81	35.11
08/26	14:23:01	14.02	0.25	164.0	11.80	35.10
08/26	14:24:01	14.77	0.25	162.0	11.81	35.09
08/26	14:25:01	14.17	0.25	167.0	11.81	35.08
08/26	14:26:01	14.87	0.26	166.5	11.81	35.07
08/26	14:27:01	15.07	0.26	164.0	11.81	35.05
08/26	14:28:01	15.22	0.26	165.0	11.81	35.04
08/26	14:29:01	38.28	0.82	135.5	11.56	35.02
08/26	14:30:01	50.03	0.97	120.4	11.42	35.01
08/26	14:31:01	50.03	0.97	119.9	11.42	35.00
08/26	14:32:01	50.03	0.96	173.0	11.43	34.99
08/26	14:33:01	11.47	0.26	254.9	11.80	34.97
08/26	14:34:01	10.16	0.25	292.7	11.81	34.96
08/26	14:35:01	9.87	0.25	319.2	11.81	34.95
08/26	14:36:01	10.37	0.26	315.7	11.80	34.94
08/26	14:37:01	10.37	0.26	313.7	11.79	34.94
08/26	14:38:01	11.01	0.27	310.2	11.79	34.94
08/26	14:39:01	10.82	0.26	331.3	11.79	34.93
End Res-1 ICE #1 Minimum Load, Ave.:		**19.36**	**0.38**	**205.52**	**11.74**	**35.02**
08/26	14:40:01	11.26	0.26	314.2	11.79	34.93
08/26	14:41:01	11.17	4.54	191.6	6.48	34.92
08/26	14:42:01	0.06	4.66	4.8	6.42	34.91
08/26	14:43:01	0.01	5.00	0.8	10.25	34.91
08/26	14:44:01	0.01	5.00	0.8	12.92	34.91
08/26	14:45:01	0.01	5.00	0.8	12.92	34.92
08/26	14:46:01	41.79	0.06	413.9	0.06	34.91
08/26	14:47:01	41.63	0.05	434.4	0.02	34.91
08/26	14:48:01	42.68	0.05	438.4	0.01	34.91
08/26	14:49:01	46.04	0.05	435.4	0.00	34.92
08/26	14:50:01	46.03	0.04	436.4	0.00	34.92
08/26	14:51:01	0.77	4.46	41.9	5.95	34.92
08/26	14:52:01	0.31	4.54	2.2	6.30	34.93
08/26	14:53:01	0.16	4.59	0.3	6.39	34.93
08/26	14:54:01	0.16	2.75	122.5	3.83	34.92
08/26	14:55:01	46.03	2.75	423.9	3.82	34.93
08/26	14:56:01	46.08	5.00	433.9	12.82	34.94
08/26	14:57:01	46.19	5.00	439.9	12.87	34.94
08/26	14:58:01	45.98	0.01	333.3	0.08	34.93
08/26	14:59:01	22.87	0.01	230.1	0.00	34.93
08/26	15:00:01	22.77	0.01	221.6	0.00	34.93
08/26	15:01:01	1.66	0.00	89.4	0.00	34.95
08/26	15:02:01	0.31	0.00	3.8	-0.01	34.95
08/26	15:03:01	0.16	0.00	0.3	-0.01	34.97

Air Gas Testing & Consulting Services
DAS Field Data
Date: August 29, 2013
Tested Sources: Res 2 Engines #4 and #3

Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
08/29	08:20:41	0.06	0.07	1.7	0.01	36.01
08/29	08:21:41	0.01	0.01	1.7	0.01	36.02
08/29	08:22:41	0.06	0.00	1.6	0.01	36.02
08/29	08:23:41	0.01	20.92	1.7	0.00	36.05
08/29	08:24:41	0.02	21.14	1.7	0.00	36.06
08/29	08:25:41	0.01	20.83	1.7	0.00	36.07
08/29	08:26:41	0.01	16.70	1.7	0.00	36.05
08/29	08:27:41	-0.04	16.69	1.7	0.00	36.04
08/29	08:28:41	-0.04	12.47	1.7	0.00	36.03
08/29	08:29:41	-0.04	12.58	1.7	0.01	36.01
08/29	08:30:41	-0.04	12.56	1.7	0.00	35.99
08/29	08:31:41	-0.04	8.31	1.7	0.00	35.97
08/29	08:32:41	-0.04	8.30	1.7	0.00	35.96
08/29	08:33:41	-0.04	4.17	1.7	0.01	35.95
08/29	08:34:41	-0.04	4.17	1.7	0.00	35.94
08/29	08:35:41	-0.04	9.34	1.7	13.39	35.93
08/29	08:36:41	-0.04	9.35	1.7	13.44	35.92
08/29	08:37:41	0.01	21.16	1.7	0.04	35.91
08/29	08:38:41	-0.04	21.17	1.7	0.01	35.89
08/29	08:39:41	0.02	16.79	1.7	0.01	35.88
08/29	08:40:41	-0.04	16.79	1.7	0.00	35.87
08/29	08:41:41	0.01	12.52	1.7	0.00	35.86
08/29	08:42:41	-0.04	12.51	1.2	0.00	35.85
08/29	08:43:41	0.01	8.30	1.7	0.00	35.85
08/29	08:44:41	0.01	8.32	1.2	0.00	35.84
08/29	08:45:41	0.01	4.22	1.7	0.00	35.84
08/29	08:46:41	0.01	4.19	1.7	0.00	35.83
08/29	08:47:41	0.01	9.46	1.7	13.08	35.82
08/29	08:48:41	0.01	9.35	1.7	12.88	35.81
08/29	08:49:41	0.01	9.36	1.7	12.99	35.81
08/29	08:50:41	0.01	21.14	1.7	0.02	35.80
08/29	08:51:41	0.02	21.14	1.7	0.01	35.79
08/29	08:52:41	0.01	16.77	1.7	0.01	35.79
08/29	08:53:41	0.01	16.78	1.7	0.01	35.78
08/29	08:54:41	0.01	12.52	1.3	0.00	35.78
08/29	08:55:41	0.01	12.53	1.7	0.00	35.77
08/29	08:56:41	0.01	8.31	1.2	0.00	35.76
08/29	08:57:41	0.01	8.31	1.7	0.00	35.75
08/29	08:58:41	0.01	4.21	1.7	0.00	35.75
08/29	08:59:41	0.01	4.19	1.7	0.00	35.73
08/29	09:00:41	0.02	8.82	1.7	10.39	35.73
08/29	09:01:41	0.00	9.27	1.7	12.80	35.71
08/29	09:02:41	0.00	9.29	1.7	13.10	35.70
08/29	09:03:41	0.00	0.01	1.7	0.16	35.68
08/29	09:04:41	0.00	0.00	1.5	0.00	35.67
08/29	09:05:41	0.00	0.00	1.2	0.00	35.64
08/29	09:07:05	0.01	0.01	1.2	0.00	35.69
08/29	09:08:05	0.01	0.02	1.2	0.01	35.68
08/29	09:09:05	0.01	4.60	1.2	6.50	35.69
08/29	09:10:05	0.01	4.64	1.2	6.52	35.68
08/29	09:11:05	0.01	2.82	0.8	4.35	35.67
08/29	09:12:05	8.42	2.76	1.3	3.92	35.67
08/29	09:13:05	40.33	2.76	429.8	3.91	35.67
08/29	09:14:05	40.64	5.00	440.4	13.04	35.66
08/29	09:15:05	46.19	5.00	439.8	13.09	35.66
08/29	09:16:05	45.93	0.20	371.3	1.94	35.65
08/29	09:17:05	22.87	0.03	229.5	0.01	35.64
08/29	09:18:05	22.87	0.03	224.5	0.01	35.63
08/29	09:19:05	22.77	0.03	218.0	0.01	35.63
08/29	09:20:05	0.26	0.02	9.2	0.01	35.62
08/29	09:21:05	0.11	0.00	1.2	0.01	35.61
08/29	09:22:05	4.91	0.00	0.7	0.00	35.62
08/29	09:23:05	8.01	0.00	0.8	0.00	35.61
08/29	09:24:05	10.66	0.00	0.7	0.00	35.60
08/29	09:25:05	11.67	0.00	0.7	0.00	35.60

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Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
08/29	09:26:05	11.92	0.00	0.8	0.00	35.59
08/29	09:27:05	11.87	0.01	0.8	0.00	35.58
08/29	09:28:05	0.21	0.01	1.2	0.00	35.58
08/29	09:29:05	0.06	4.58	0.8	6.45	35.58
08/29	09:30:05	0.06	4.58	0.8	6.43	35.58
08/29	09:31:05	0.06	1.46	62.8	5.50	35.58
08/29	09:32:05	43.79	0.02	425.3	0.02	35.58
08/29	09:33:05	45.44	0.02	433.8	0.01	35.57
08/29	09:34:05	45.83	0.02	434.4	0.00	35.57
08/29	09:35:05	1.41	0.02	118.9	0.00	35.57
08/29	09:36:05	0.26	0.01	4.7	0.00	35.56
Start Res 2 ICE #4 Normal Load:						
08/29	09:37:05	2.01	1.17	66.3	10.98	35.56
08/29	09:38:05	1.26	0.00	108.4	11.96	35.56
08/29	09:39:05	1.36	0.00	105.9	12.00	35.55
08/29	09:40:05	1.42	0.00	98.9	12.01	35.54
08/29	09:41:05	0.91	-0.01	113.9	12.01	35.52
08/29	09:42:05	0.86	-0.01	111.9	12.02	35.52
08/29	09:43:05	1.21	-0.01	102.9	12.02	35.51
08/29	09:44:05	1.26	-0.01	99.4	12.02	35.50
08/29	09:45:05	1.16	-0.01	97.4	12.03	35.49
08/29	09:46:05	1.16	-0.01	99.9	12.03	35.49
08/29	09:47:05	0.91	-0.01	101.9	12.02	35.48
08/29	09:48:05	1.10	-0.01	100.0	12.06	35.48
08/29	09:49:05	1.15	-0.01	91.5	12.06	35.49
08/29	09:50:05	0.99	-0.01	100.0	12.06	35.55
08/29	09:51:05	1.05	-0.01	96.5	12.04	35.58
08/29	09:52:05	0.95	-0.01	104.5	12.06	35.52
08/29	09:53:05	0.85	-0.01	105.0	12.07	35.57
08/29	09:54:05	0.80	-0.01	107.5	12.06	35.57
08/29	09:55:05	0.75	-0.01	108.0	12.06	35.51
08/29	09:56:05	0.80	-0.01	108.5	12.08	35.56
08/29	09:57:05	1.00	-0.01	100.0	12.08	35.53
08/29	09:58:05	1.20	-0.01	96.0	12.08	35.55
08/29	09:59:05	1.15	-0.01	90.0	12.08	35.54
08/29	10:00:05	1.00	-0.01	102.5	12.08	35.50
08/29	10:01:05	0.90	-0.01	107.0	12.08	35.58
08/29	10:02:05	1.25	-0.01	95.0	12.08	35.60
08/29	10:03:05	1.20	-0.01	93.0	12.09	35.62
08/29	10:04:05	2.10	-0.01	150.5	12.09	35.71
08/29	10:05:05	1.75	-0.01	110.0	12.09	35.80
08/29	10:06:05	1.25	-0.01	85.5	12.09	35.78
08/29	10:07:05	1.15	-0.01	77.5	12.09	35.79
End Res 2 ICE #4 Normal Load, Ave.:		**1.16**	**0.03**	**100.98**	**12.02**	**35.57**
08/29	10:08:05	1.10	-0.01	84.0	12.09	35.79
08/29	10:09:05	0.95	-0.01	25.0	12.09	35.78
08/29	10:10:05	0.00	4.57	1.0	12.11	35.74
08/29	10:11:05	0.00	4.59	0.0	6.41	35.77
08/29	10:12:05	0.00	4.61	0.0	6.44	35.76
08/29	10:13:05	35.00	0.05	300.0	6.45	35.75
08/29	10:14:05	37.25	0.05	430.0	0.00	35.75
08/29	10:15:05	45.60	0.05	435.0	0.00	35.73
08/29	10:16:05	45.00	0.05	445.0	0.00	35.72
08/29	10:17:05	45.00	0.05	437.5	0.00	35.67
08/29	10:18:05	45.05	0.05	20.0	0.00	35.65
08/29	10:19:05	45.50	0.05	1.5	0.00	35.57
08/29	10:20:05	44.60	0.05	260.0	0.00	35.56
08/29	10:21:05	44.65	0.05	467.5	0.00	35.56
08/29	10:22:05	43.90	0.05	455.0	0.00	35.64
08/29	10:23:05	0.75	0.05	35.0	0.00	35.55
08/29	10:24:05	0.25	0.05	5.0	0.00	35.54
08/29	10:25:05	0.25	0.05	1.5	0.00	35.52
08/29	10:28:05	0.15	0.05	0.5	0.00	35.70
08/29	10:29:05	43.50	0.05	435.0	0.00	35.73
08/29	10:30:05	43.25	0.05	444.0	0.00	35.71
08/29	10:31:05	46.20	0.05	435.0	0.00	35.67
08/29	10:32:05	46.20	0.05	439.5	0.00	35.57

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Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
Start Res 2 ICE #4 Maximum Load:						
08/29	10:33:05	2.00	0.05	150.0	11.80	35.57
08/29	10:34:05	1.50	0.03	135.0	12.03	35.59
08/29	10:35:05	1.50	0.02	175.0	12.00	35.56
08/29	10:36:05	1.25	0.01	200.0	12.02	35.54
08/29	10:37:05	1.05	0.01	205.0	12.02	35.55
08/29	10:38:05	1.03	0.01	180.0	12.03	35.54
08/29	10:39:05	1.00	0.01	125.0	12.02	35.58
08/29	10:40:05	0.98	0.00	165.0	12.01	35.68
08/29	10:41:05	0.95	0.00	140.0	12.02	35.63
08/29	10:42:05	0.88	0.00	135.0	12.02	35.72
08/29	10:43:05	0.85	0.00	130.0	12.01	35.80
08/29	10:44:05	0.85	0.00	115.0	12.02	35.84
08/29	10:45:05	0.93	0.00	100.0	12.03	35.87
08/29	10:46:05	0.85	0.00	145.0	12.01	35.86
08/29	10:47:05	0.83	0.00	193.5	12.02	35.85
08/29	10:48:05	0.63	5.00	120.0	12.02	35.82
End Res 2 ICE #4 Maximum Load, Ave.:		**1.07**	**0.32**	**150.84**	**12.00**	**35.69**
08/29	10:49:05	0.50	0.04	35.0	1.05	35.84
08/29	10:50:05	3.85	0.03	66.0	11.87	35.84
08/29	10:51:05	3.45	0.02	62.5	12.02	35.83
08/29	10:52:05	0.80	0.02	63.5	7.54	35.86
08/29	10:53:05	0.80	0.15	147.5	12.00	35.81
08/29	10:54:05	0.83	0.02	148.5	12.00	35.81
08/29	10:55:05	0.80	0.02	146.0	12.00	35.80
08/29	10:56:05	0.50	0.02	145.0	12.00	35.79
08/29	10:57:05	0.05	4.58	20.0	6.41	35.79
08/29	10:58:05	0.00	4.62	1.5	6.44	42.90
08/29	10:59:05	0.00	4.63	0.5	6.45	35.78
08/29	11:00:05	0.00	4.65	0.0	0.00	35.77
08/29	11:01:05	20.00	0.00	0.0	0.00	35.76
08/29	11:02:05	40.00	0.06	436.0	0.00	35.81
08/29	11:03:05	41.50	0.06	436.5	0.00	35.89
08/29	11:04:05	45.90	0.06	436.0	0.00	35.88
08/29	11:05:05	45.95	0.07	436.5	0.00	35.86
08/29	11:06:05	45.90	0.07	436.5	0.00	35.86
08/29	11:07:05	2.50	0.04	110.0	12.02	35.85
Start Res 2 ICE #4 Minimum Load:						
08/29	11:08:05	1.75	0.04	107.5	12.00	35.80
08/29	11:09:05	1.25	0.04	117.0	12.00	35.84
08/29	11:10:05	1.00	0.04	100.0	12.00	35.84
08/29	11:11:05	0.95	0.04	101.0	12.00	35.83
08/29	11:12:05	0.90	0.04	93.0	12.00	35.80
08/29	11:13:05	0.85	0.04	90.0	12.00	35.81
08/29	11:14:05	0.85	0.04	175.0	12.00	35.81
08/29	11:15:05	1.10	0.04	160.0	12.00	35.80
08/29	11:16:05	0.84	0.04	175.0	12.00	35.79
08/29	11:17:05	0.80	0.03	150.0	12.00	35.79
08/29	11:18:05	0.75	0.03	140.0	12.00	35.78
08/29	11:19:05	1.75	0.03	150.0	12.00	35.75
08/29	11:20:05	0.95	0.03	165.0	12.02	35.77
08/29	11:21:05	0.75	0.03	145.0	12.02	35.76
08/29	11:22:05	0.70	0.03	130.0	12.02	35.61
08/29	11:23:05	0.60	0.03	120.0	12.02	35.64
08/29	11:24:05	0.55	0.03	110.0	12.03	35.67
08/29	11:25:05	0.55	0.03	155.0	12.03	35.49
End Res 2 ICE #4 Minimum Load, Ave.:		**0.94**	**0.03**	**132.42**	**12.01**	**35.75**
08/29	11:26:05	0.50	4.45	35.0	6.39	35.38
08/29	11:27:05	0.00	4.63	1.5	6.41	35.34
08/29	11:28:05	0.00	4.65	1.0	6.42	35.30
08/29	11:29:05	41.50	0.08	430.0	0.00	35.29
08/29	11:30:05	47.75	0.08	435.5	0.00	35.19
08/29	11:31:05	46.75	0.08	436.5	0.00	35.18
08/29	11:32:05	45.90	0.08	435.5	0.00	35.18
08/29	11:33:46	45.90	0.07	436.5	0.00	35.17

Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
08/29	11:34:46	17.72	2.77	190.1	1.83	35.19
08/29	11:35:46	0.31	4.59	9.3	6.36	35.18
08/29	11:36:46	0.16	4.62	0.8	6.41	35.19
08/29	11:37:46	0.11	2.79	0.3	3.85	35.17
08/29	11:38:46	45.79	2.79	381.8	3.84	35.16
08/29	11:39:46	45.99	2.79	431.5	3.84	35.16
08/29	11:40:46	46.09	5.00	436.4	12.92	35.14
08/29	11:41:46	46.89	5.00	439.5	12.95	35.13
08/29	11:42:46	45.14	0.10	287.2	0.40	35.11
08/29	11:43:46	22.92	0.09	224.6	0.01	35.11
08/29	11:44:46	22.73	0.09	223.6	0.00	35.10
08/29	11:45:46	15.77	0.07	95.4	10.49	35.25
Start Res 2 ICE #3 Normal Load:						
08/29	11:46:46	2.36	0.05	115.4	11.90	35.09
08/29	11:47:46	1.96	0.05	113.9	11.90	35.08
08/29	11:48:46	1.86	0.05	109.5	11.90	35.08
08/29	11:49:46	1.81	0.05	107.5	11.90	35.07
08/29	11:50:46	1.81	0.05	109.0	11.91	35.06
08/29	11:51:46	1.92	0.05	108.9	11.91	35.05
08/29	11:52:46	1.81	0.05	106.9	11.92	35.05
08/29	11:53:46	2.06	0.05	114.4	11.92	35.03
08/29	11:54:46	1.91	0.04	120.5	11.92	35.02
08/29	11:55:46	2.27	0.04	111.4	11.93	35.01
08/29	11:56:46	2.27	0.04	124.0	11.93	35.00
08/29	11:57:46	2.26	0.05	113.9	11.93	35.00
08/29	11:58:46	2.36	0.04	113.9	11.93	34.98
08/29	11:59:46	2.46	0.04	123.5	11.93	34.97
08/29	12:00:46	2.42	0.03	115.0	11.93	34.97
08/29	12:01:46	2.56	0.04	115.5	11.93	34.96
08/29	12:02:46	2.61	0.05	124.0	11.92	34.95
08/29	12:03:46	2.56	0.04	126.5	11.92	34.95
08/29	12:04:46	2.56	0.04	130.5	11.92	34.95
08/29	12:05:46	2.56	0.05	125.0	11.92	34.95
08/29	12:06:46	2.36	0.05	131.0	11.92	34.95
08/29	12:07:46	2.67	0.04	120.5	11.92	34.95
08/29	12:08:46	2.72	0.06	121.0	11.91	34.95
08/29	12:09:46	3.27	0.04	119.5	11.92	34.95
08/29	12:10:46	2.46	0.05	128.5	11.91	34.96
08/29	12:11:46	2.46	0.04	128.5	11.91	34.95
08/29	12:12:46	2.67	0.03	117.5	11.91	34.95
08/29	12:13:46	2.37	0.05	121.5	11.91	34.95
08/29	12:14:46	2.61	0.05	117.5	11.91	34.96
08/29	12:15:46	2.26	0.04	124.5	11.91	34.94
08/29	12:16:46	3.02	0.04	129.5	11.91	34.94
End Res 2 ICE #3 Normal Load, Ave.:		**2.36**	**0.04**	**118.99**	**11.92**	**34.99**
08/29	12:17:46	0.16	4.57	42.4	6.48	34.93
08/29	12:18:46	-0.04	4.60	1.8	6.28	34.93
08/29	12:19:46	-0.04	4.61	0.3	6.29	34.92
08/29	12:20:46	40.89	0.10	369.9	0.04	34.90
08/29	12:21:46	45.34	0.00	418.0	0.01	34.89
08/29	12:22:46	46.74	0.01	436.9	0.00	34.90
08/29	12:23:46	45.74	0.01	434.5	0.00	34.89
08/29	12:24:46	45.04	0.01	402.4	0.00	34.89
Start Res 2 ICE #3 Maximum Load:						
08/29	12:25:46	1.16	0.00	102.9	11.92	34.88
08/29	12:26:46	0.76	0.01	104.5	11.90	34.88
08/29	12:27:46	0.61	0.01	123.5	11.90	34.87
08/29	12:28:46	0.82	0.01	124.5	11.90	34.87
08/29	12:29:46	0.77	0.00	176.1	11.90	34.86
08/29	12:30:46	1.07	0.01	197.1	11.90	34.87
08/29	12:31:46	1.12	0.01	207.6	11.90	34.87
08/29	12:32:46	1.26	0.01	160.0	11.91	34.86
08/29	12:33:46	1.11	0.01	152.0	11.91	34.84
08/29	12:34:46	1.26	0.00	181.6	11.90	34.82
08/29	12:35:46	1.51	0.01	164.6	11.92	34.82
08/29	12:36:46	1.11	0.01	189.6	11.93	34.80

Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
08/29	12:37:46	1.12	0.00	202.6	11.94	34.79
08/29	12:38:46	1.11	0.01	188.1	11.93	34.77
08/29	12:39:46	1.10	0.01	178.2	11.92	34.77
End Res 2 ICE #3 Maximum Load, Ave.:		**1.06**	**0.01**	**163.53**	**11.91**	**34.84**
08/29	12:40:46	0.03	5.00	12.3	0.90	34.75
08/29	12:41:46	0.02	0.03	0.8	0.00	34.74
08/29	12:42:46	-0.04	0.37	0.3	-0.01	34.73
08/29	12:43:46	-0.04	4.59	0.3	6.39	34.72
08/29	12:44:46	-0.04	4.59	0.3	6.42	34.71
08/29	12:45:46	43.14	0.00	393.9	0.01	34.71
08/29	12:46:46	43.74	0.00	431.5	0.00	34.70
08/29	12:47:46	44.09	0.00	431.0	-0.01	34.71
08/29	12:48:46	46.39	0.00	434.5	-0.01	34.70
08/29	12:49:46	46.04	0.00	432.5	-0.01	34.70
08/29	12:50:46	0.82	0.01	61.9	-0.01	34.69
08/29	12:51:46	0.31	0.01	2.8	-0.01	34.70
08/29	12:52:46	0.16	0.01	0.3	-0.01	34.70
08/29	12:53:46	0.11	0.01	0.3	-0.01	34.71
08/29	12:54:46	0.06	0.01	0.3	-0.01	34.70
08/29	12:55:46	0.06	0.01	0.3	-0.01	34.70
08/29	12:56:46	0.06	0.01	0.3	-0.01	34.97
08/29	13:11:07	13.50	0.01	100.0	12.02	35.89
08/29	13:12:07	13.10	0.01	132.5	12.02	34.96
08/29	13:13:07	12.25	0.01	135.0	12.02	34.95
08/29	13:14:07	11.00	0.01	145.0	12.02	34.93
Start Res 2 ICE #3 Minimum Load:						
08/29	13:15:07	9.00	0.01	105.0	12.02	34.95
08/29	13:16:07	9.10	0.01	142.5	12.02	34.85
08/29	13:17:07	8.50	0.01	145.0	12.00	34.95
08/29	13:18:07	7.75	0.01	155.0	12.01	34.94
08/29	13:19:07	7.50	0.01	151.0	12.02	34.95
08/29	13:20:07	7.05	0.01	150.0	12.00	34.73
08/29	13:21:07	7.05	0.01	151.0	12.00	34.72
08/29	13:22:07	7.00	0.01	142.5	12.01	34.71
08/29	13:23:07	6.25	0.01	152.5	12.00	34.69
08/29	13:24:07	5.50	0.01	165.0	12.03	34.70
08/29	13:25:07	5.00	0.01	168.0	12.00	34.71
08/29	13:26:07	4.85	0.01	165.0	12.00	34.60
08/29	13:27:07	4.90	0.01	147.5	12.04	34.70
08/29	13:28:07	5.20	0.01	130.0	12.01	34.69
08/29	13:29:07	5.55	0.01	122.5	12.00	34.79
08/29	13:30:07	5.50	0.01	120.0	12.01	34.93
End Res 2 ICE #3 Minimum Load, Ave.:		**6.61**	**0.01**	**144.53**	**12.01**	**34.79**
08/29	13:31:07	0.00	4.57	0.5	6.32	34.93
08/29	13:32:07	0.00	4.60	0.0	6.35	34.92
08/29	13:33:07	38.00	0.03	415.0	0.00	34.89
08/29	13:34:07	47.00	0.00	434.0	0.00	34.89
08/29	13:35:07	46.75	0.00	435.0	0.00	34.90
08/29	13:36:07	46.25	0.00	435.0	0.00	34.88
08/29	13:37:07	22.50	0.10	250.0	4.50	34.89
08/29	13:38:07	0.50	4.55	15.0	6.35	34.88
08/29	13:39:07	0.25	4.62	1.0	6.35	34.85
08/29	13:40:07	0.20	2.77	0.0	3.85	34.86
08/29	13:41:07	46.30	2.75	430.0	3.84	34.80
08/29	13:42:07	46.60	2.77	439.0	3.84	34.86
08/29	13:43:07	46.80	5.00	440.0	12.90	34.96
08/29	13:44:07	46.85	5.00	300.0	12.98	34.95
08/29	13:45:07	23.30	0.02	230.0	-0.02	34.90
08/29	13:46:07	23.25	0.02	222.5	-0.02	34.95
08/29	13:47:07	23.25	0.02	222.5	-0.02	34.93
08/29	13:48:07	0.30	0.02	125.0	-0.02	34.95
08/29	13:49:07	0.25	0.02	5.0	-0.02	34.90
08/29	13:50:07	0.20	0.02	1.0	-0.02	34.94

Air Gas Testing & Consulting Services

DAS Field Data

Date: September 5, 2013

Tested Sources: Res-2 Engines #1 and #2

Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
09/05	08:25:20	-0.04	0.10	0.7	0.01	35.54
09/05	08:26:20	-0.04	0.02	0.7	0.01	35.53
09/05	08:27:20	-0.09	17.86	0.7	0.01	35.52
09/05	08:28:20	-0.14	21.17	0.8	0.01	35.51
09/05	08:29:20	-0.14	17.45	0.7	0.01	35.50
09/05	08:30:20	-0.14	16.76	0.2	0.01	35.49
09/05	08:31:20	-0.15	14.02	0.2	0.01	35.47
09/05	08:32:20	-0.14	12.48	0.2	0.01	35.47
09/05	08:33:20	-0.15	8.87	0.2	0.01	35.46
09/05	08:34:20	-0.15	8.30	0.2	0.01	35.45
09/05	08:35:20	-0.14	4.85	0.2	0.01	35.45
09/05	08:36:20	-0.15	4.17	0.2	0.01	35.44
09/05	08:37:20	-0.15	5.85	0.2	0.13	35.43
09/05	08:38:20	-0.15	9.30	0.7	12.31	35.42
09/05	08:39:20	-0.15	9.34	0.7	13.35	35.41
09/05	08:40:20	-0.15	21.24	0.7	0.12	35.39
09/05	08:41:20	-0.15	21.19	0.7	0.02	35.38
09/05	08:42:20	-0.15	17.09	0.7	0.02	35.37
09/05	08:43:20	-0.14	16.79	0.8	0.01	35.36
09/05	08:44:20	-0.15	12.52	0.7	0.01	35.35
09/05	08:45:20	-0.15	12.53	0.7	0.01	35.35
09/05	08:46:20	-0.15	8.38	0.7	0.01	35.34
09/05	08:47:20	-0.15	8.28	0.7	0.01	35.34
09/05	08:48:20	-0.15	4.19	0.7	0.01	35.33
09/05	08:49:20	-0.15	4.14	0.2	0.01	35.32
09/05	08:50:20	-0.15	9.11	0.7	12.08	35.31
09/05	08:51:20	-0.15	9.30	0.2	13.15	35.31
09/05	08:52:20	-0.15	9.30	0.2	12.99	35.31
09/05	08:53:20	-0.15	20.29	0.2	0.96	35.30
09/05	08:54:20	-0.15	21.13	0.7	0.02	35.29
09/05	08:55:20	-0.15	16.89	0.7	0.02	35.29
09/05	08:56:20	-0.15	16.75	0.2	0.01	35.29
09/05	08:57:20	-0.15	16.75	0.2	0.01	35.28
09/05	08:58:20	-0.15	12.52	0.2	0.01	35.27
09/05	08:59:20	-0.14	12.38	0.2	0.01	35.27
09/05	09:00:20	-0.15	8.31	0.2	0.01	35.26
09/05	09:01:20	-0.15	8.31	0.2	0.01	35.26
09/05	09:02:20	-0.15	4.18	0.3	0.01	35.26
09/05	09:03:20	-0.15	7.61	0.2	2.85	35.26
09/05	09:04:20	-0.15	9.31	0.3	12.91	35.26
09/05	09:05:20	-0.15	9.32	0.2	12.94	35.26
09/05	09:06:20	-0.15	8.07	0.2	12.97	35.26
09/05	09:07:20	-0.14	0.03	0.2	0.02	35.26
09/05	09:08:20	-0.14	0.03	0.2	0.02	35.26
09/05	09:10:14	-0.15	0.02	0.2	0.01	35.26
09/05	09:11:14	-0.04	0.01	0.2	0.01	35.26
09/05	09:12:14	0.01	4.61	0.3	6.49	35.26
09/05	09:13:14	0.02	4.61	0.3	6.49	35.26
09/05	09:14:14	4.02	2.75	424.8	3.92	35.26
09/05	09:15:14	29.18	2.75	444.8	3.90	35.26
09/05	09:16:14	46.29	2.75	436.3	3.90	35.26
09/05	09:17:14	46.08	1.17	436.2	3.53	35.27
09/05	09:18:14	45.98	0.01	330.1	0.01	35.28
09/05	09:19:14	23.02	0.01	231.1	0.01	35.28
09/05	09:20:14	22.87	0.01	222.0	0.01	35.28
09/05	09:21:14	22.82	0.01	222.5	0.01	35.29
09/05	09:22:14	0.41	0.01	17.8	0.01	35.29
09/05	09:23:14	0.21	0.01	0.7	0.01	35.30
09/05	09:24:14	0.08	0.01	0.2	0.01	35.30
09/05	09:25:14	0.06	0.01	0.3	0.01	35.31
09/05	09:26:14	11.56	0.01	0.2	0.01	35.31
09/05	09:27:14	11.66	0.01	-0.3	0.01	35.32
09/05	09:28:14	11.62	0.01	0.2	0.01	35.33
09/05	09:29:14	0.26	0.01	0.2	0.01	35.33
09/05	09:30:14	0.11	4.60	-0.1	6.45	35.33

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Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
09/05	09:31:14	0.11	4.59	0.3	6.42	35.34
09/05	09:32:14	0.41	0.33	140.4	1.78	35.35
09/05	09:33:14	44.98	0.01	423.3	0.01	35.35
09/05	09:34:14	45.88	0.01	440.8	0.01	35.36
09/05	09:35:14	45.73	0.01	439.8	0.01	35.38
09/05	09:36:14	43.59	0.06	223.6	8.48	35.39
09/05	09:37:14	27.33	0.09	134.4	11.99	35.40
Start Res 2 ICE #1 Normal Load:						
09/05	09:38:14	27.33	0.09	140.9	11.98	35.42
09/05	09:39:14	27.03	0.10	145.9	11.99	35.44
09/05	09:40:14	26.92	0.09	137.9	11.99	35.45
09/05	09:41:14	27.37	0.09	131.4	11.99	35.46
09/05	09:42:14	26.47	0.09	140.4	11.99	35.48
09/05	09:43:14	26.57	0.09	154.9	12.00	35.50
09/05	09:44:14	26.83	0.09	137.9	11.99	35.52
09/05	09:45:14	26.52	0.09	147.9	12.00	35.55
09/05	09:46:14	26.07	0.09	136.9	11.99	35.58
09/05	09:47:14	25.82	0.08	133.4	11.99	35.59
09/05	09:48:14	26.12	0.09	136.4	11.99	35.62
09/05	09:49:14	26.93	0.09	136.4	12.00	35.65
09/05	09:50:14	25.87	0.08	128.9	12.00	35.67
09/05	09:51:14	25.93	0.08	116.4	12.00	35.70
09/05	09:52:14	26.53	0.08	137.4	12.01	35.72
09/05	09:53:14	25.77	0.08	135.4	12.00	35.74
09/05	09:54:14	27.03	0.08	148.9	12.00	35.77
09/05	09:55:14	27.33	0.08	138.9	12.00	35.79
09/05	09:56:14	26.62	0.08	146.4	12.01	35.82
09/05	09:57:14	26.63	0.08	135.9	12.00	35.84
09/05	09:58:14	26.78	0.08	137.1	12.00	35.86
09/05	09:59:14	27.88	0.08	138.9	11.99	35.88
09/05	10:00:14	26.28	0.08	124.4	12.00	35.91
09/05	10:01:14	24.88	0.08	134.9	12.00	35.94
09/05	10:02:14	27.08	0.08	127.4	11.99	35.97
09/05	10:03:14	25.73	0.08	128.5	11.99	36.02
09/05	10:04:14	26.43	0.08	126.4	11.99	36.05
09/05	10:05:14	26.33	0.08	140.0	11.99	36.08
09/05	10:06:14	26.22	0.08	142.4	11.99	36.11
09/05	10:07:14	26.02	0.08	138.9	11.99	36.14
09/05	10:08:14	25.33	0.07	136.0	11.98	36.16
End Res 2 ICE #1 Normal Load, Ave.:		**26.47**	**0.08**	**136.88**	**11.99**	**35.76**
09/05	10:09:14	0.26	4.62	18.8	6.44	36.18
09/05	10:10:14	0.06	4.60	0.3	6.46	36.20
09/05	10:11:14	0.02	4.61	-0.3	6.47	36.20
09/05	10:12:14	35.53	0.03	409.4	0.04	36.21
09/05	10:13:14	38.13	0.03	435.4	0.02	36.22
09/05	10:14:14	46.14	0.02	433.9	0.01	36.22
09/05	10:15:14	45.88	0.02	432.8	0.01	36.21
09/05	10:16:14	45.54	0.02	431.4	0.01	36.21
09/05	10:17:14	42.84	0.02	324.2	0.01	36.19
09/05	10:18:14	0.71	0.03	7.2	0.01	36.18
09/05	10:19:14	6.86	0.01	151.4	11.22	36.18
09/05	10:20:14	6.96	0.04	56.3	12.01	36.18
Start Res 2 ICE #1 Maximum Load:						
09/05	10:21:14	6.17	0.05	142.9	12.00	36.16
09/05	10:22:14	5.07	0.05	155.5	12.01	36.16
09/05	10:23:14	4.92	0.05	116.9	12.00	36.15
09/05	10:24:14	5.21	0.05	135.4	11.99	36.14
09/05	10:25:14	4.77	0.05	122.5	12.00	36.12
09/05	10:26:14	4.82	0.05	118.5	12.01	36.11
09/05	10:27:14	5.11	0.05	103.9	12.00	36.10
09/05	10:28:14	5.46	0.05	121.9	12.00	36.10
09/05	10:29:14	5.21	0.05	132.4	12.00	36.09
09/05	10:30:14	4.96	0.05	124.9	12.00	36.08
09/05	10:31:14	5.17	0.05	116.9	12.00	36.07
09/05	10:32:14	5.47	0.05	113.4	11.99	36.05
09/05	10:33:14	4.76	0.05	136.5	11.99	36.03

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Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
09/05	10:34:14	6.06	0.05	115.4	11.99	36.02
09/05	10:35:14	5.21	0.05	127.5	11.99	36.01
09/05	10:36:14	5.81	0.05	123.4	11.99	36.00
End Res 2 ICE #1 Maximum Load, Ave.:		**5.26**	**0.05**	**125.49**	**12.00**	**36.09**
09/05	10:37:14	6.17	0.04	115.4	11.99	36.00
09/05	10:38:14	0.06	4.61	7.3	6.43	36.00
09/05	10:39:14	0.01	4.62	0.3	6.45	36.00
09/05	10:40:14	42.69	0.04	297.1	0.13	35.98
09/05	10:41:14	41.03	0.04	420.9	0.02	35.97
09/05	10:42:14	42.39	0.04	437.9	0.02	35.97
09/05	10:43:14	46.64	0.03	434.9	0.01	35.97
09/05	10:44:14	45.69	0.03	436.4	0.01	35.96
09/05	10:45:14	45.64	0.03	422.4	0.01	35.96
09/05	10:46:14	0.86	0.03	13.3	0.01	35.95
09/05	10:47:14	0.36	0.04	0.2	0.01	35.95
09/05	10:48:14	0.26	0.04	-0.3	0.01	35.95
09/05	10:49:14	0.16	0.04	-0.3	0.01	35.94
09/05	10:50:14	0.16	0.04	-0.3	0.01	35.94
09/05	10:51:14	29.48	0.08	102.9	11.88	35.93
09/05	10:52:14	29.68	0.11	149.4	11.97	35.92
Start Res 2 ICE #1 Minimum Load:						
09/05	10:53:14	29.28	0.11	153.5	11.97	35.92
09/05	10:54:14	29.23	0.11	136.0	11.97	35.92
09/05	10:55:14	29.08	0.11	134.4	11.97	35.91
09/05	10:56:14	28.73	0.11	137.5	11.97	35.90
09/05	10:57:14	29.28	0.11	134.5	11.97	35.90
09/05	10:58:14	29.13	0.12	132.4	11.97	35.88
09/05	10:59:14	28.53	0.11	118.9	11.97	35.88
09/05	11:00:14	28.93	0.12	123.5	11.97	35.87
09/05	11:01:14	28.98	0.12	132.4	11.97	35.84
09/05	11:02:14	28.83	0.12	143.0	11.97	35.82
09/05	11:03:14	28.53	0.12	128.4	11.97	35.80
09/05	11:04:14	28.88	0.12	126.4	11.97	35.79
09/05	11:05:14	28.48	0.12	135.0	11.96	35.77
09/05	11:06:14	28.68	0.12	149.5	11.96	35.75
09/05	11:07:14	28.58	0.12	137.0	11.95	35.73
09/05	11:08:14	28.48	0.12	137.5	11.95	35.71
End Res 2 ICE #1 Minimum Load, Ave.:		**28.85**	**0.12**	**134.99**	**11.97**	**35.84**
09/05	11:09:14	29.03	0.12	130.9	11.94	35.69
09/05	11:10:14	0.16	4.63	14.8	6.39	35.68
09/05	11:11:14	0.06	4.63	0.3	6.40	35.67
09/05	11:12:14	0.01	4.63	-0.3	6.42	35.66
09/05	11:13:14	42.44	0.05	381.8	0.02	35.65
09/05	11:14:14	41.08	0.04	430.9	0.02	35.64
09/05	11:15:14	43.28	0.04	429.9	0.01	35.63
09/05	11:16:14	46.94	0.04	428.0	0.00	35.61
09/05	11:17:14	46.14	0.04	428.4	0.00	35.60
09/05	11:18:14	45.89	0.04	431.9	0.00	35.59
09/05	11:19:14	22.67	3.45	168.5	1.40	35.57
09/05	11:20:14	0.31	4.64	7.3	6.43	35.56
09/05	11:21:14	0.22	4.64	0.3	6.43	35.56
09/05	11:22:14	0.16	2.78	-0.3	3.86	35.55
09/05	11:23:14	0.11	2.78	-0.3	3.86	35.54
09/05	11:24:14	45.79	5.00	343.3	12.95	35.54
09/05	11:25:14	46.19	5.00	428.4	12.98	35.54
09/05	11:26:14	46.09	0.00	434.9	0.08	35.53
09/05	11:27:14	39.69	0.00	324.3	0.02	35.54
09/05	11:28:14	22.82	0.00	224.6	0.01	35.54
09/05	11:29:14	22.78	0.00	220.6	0.01	35.54
09/05	11:30:14	0.81	0.00	52.9	0.01	35.54
09/05	11:31:14	0.26	0.00	2.2	0.01	35.54
09/05	11:32:14	0.16	0.00	-0.3	0.00	35.55
09/05	11:33:14	0.16	0.00	-0.3	0.00	35.56
09/05	11:34:14	1.51	0.01	92.9	11.83	35.56
09/05	11:35:14	0.77	0.05	169.6	11.94	35.57

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Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
Start Res 2 ICE #2 Normal Load:						
09/05	11:36:14	0.56	0.05	175.1	11.94	35.58
09/05	11:37:14	0.46	0.05	167.0	11.95	35.58
09/05	11:38:14	0.41	0.04	158.6	11.95	35.59
09/05	11:39:14	0.36	0.04	169.0	11.96	35.59
09/05	11:40:14	0.36	0.04	144.5	11.97	35.55
09/05	11:41:14	0.31	0.04	155.5	11.97	35.54
09/05	11:42:14	0.31	0.04	141.0	11.97	35.51
09/05	11:43:14	0.31	0.04	142.5	11.97	35.48
09/05	11:44:14	0.26	0.04	160.5	11.97	35.46
09/05	11:45:14	0.26	0.04	149.0	11.97	35.44
09/05	11:46:14	0.26	0.04	130.5	11.96	35.42
09/05	11:47:14	0.26	0.04	132.0	11.96	35.40
09/05	11:48:14	0.26	0.04	156.0	11.96	35.38
09/05	11:49:14	0.26	0.04	134.5	11.96	35.37
09/05	11:50:14	0.26	0.04	153.1	11.96	35.35
09/05	11:51:14	0.26	0.04	134.0	11.96	35.34
09/05	11:52:14	0.27	0.04	126.5	11.95	35.33
09/05	11:53:14	0.27	0.04	123.0	11.95	35.32
09/05	11:54:14	0.26	0.04	117.0	11.95	35.29
09/05	11:55:14	0.31	0.04	132.0	11.95	35.28
09/05	11:56:14	0.32	0.04	124.0	11.95	35.27
09/05	11:57:14	0.32	0.04	125.0	11.95	35.26
09/05	11:58:14	0.31	0.04	127.4	11.94	35.25
09/05	11:59:14	0.32	0.04	122.0	11.95	35.25
09/05	12:00:14	0.36	0.04	120.5	11.95	35.24
09/05	12:01:14	0.36	0.04	118.5	11.95	35.24
09/05	12:02:14	0.36	0.04	114.4	11.95	35.24
09/05	12:03:14	0.36	0.04	128.0	11.96	35.24
09/05	12:04:14	0.36	0.04	125.5	11.95	35.25
09/05	12:05:14	0.36	0.04	138.9	11.95	35.24
09/05	12:06:14	0.36	0.04	123.5	11.95	35.24
End Res 2 ICE #2 Normal Load, Ave.:		**0.32**	**0.04**	**137.71**	**11.96**	**35.37**
09/05	12:07:14	0.36	0.04	121.5	11.95	35.25
09/05	12:08:14	0.41	4.44	62.4	6.59	35.25
09/05	12:09:14	0.02	4.60	1.3	6.27	35.25
09/05	12:10:14	0.01	4.59	-0.3	6.25	35.25
09/05	12:11:14	0.02	0.55	63.4	2.98	35.24
09/05	12:12:14	41.69	0.03	421.5	0.03	35.23
09/05	12:13:14	47.14	0.03	434.0	0.01	35.22
09/05	12:14:14	47.59	0.03	435.9	0.01	35.22
09/05	12:15:14	46.09	0.02	435.0	0.01	35.21
09/05	12:16:14	45.98	0.02	435.9	0.01	35.20
09/05	12:17:14	45.59	0.02	237.6	0.01	35.20
09/05	12:18:14	0.46	0.02	9.8	0.00	35.19
09/05	12:19:14	0.27	0.02	-0.3	0.00	35.18
Start Res 2 ICE #2 Maximum Load:						
09/05	12:20:14	1.41	0.04	153.5	11.93	35.18
09/05	12:21:14	1.26	0.05	158.0	11.92	35.17
09/05	12:22:14	1.26	0.05	156.5	11.92	35.16
09/05	12:23:14	1.36	0.05	156.6	11.93	35.15
09/05	12:24:14	1.37	0.05	161.6	11.93	35.15
09/05	12:25:14	1.46	0.05	165.1	11.93	35.13
09/05	12:26:14	1.36	0.05	162.5	11.93	35.12
09/05	12:27:14	1.32	0.05	167.1	11.93	35.11
09/05	12:28:14	1.31	0.05	162.0	11.92	35.11
09/05	12:29:14	1.32	0.05	169.1	11.92	35.09
09/05	12:30:14	1.26	0.05	159.0	11.92	35.08
09/05	12:31:14	1.26	0.06	159.5	11.91	35.07
09/05	12:32:14	1.31	0.06	161.0	11.91	35.05
09/05	12:33:14	1.26	0.06	174.0	11.91	35.05
09/05	12:34:14	1.31	0.06	166.0	11.91	35.05
09/05	12:35:14	1.26	0.06	167.5	11.91	35.05
End Res 2 ICE #2 Maximum Load, Ave.:		**1.32**	**0.05**	**162.44**	**11.92**	**35.11**
09/05	12:36:14	1.26	0.06	179.5	11.91	35.06

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Date	Time	ppm NOx	%O2	ppm CO	%CO2	TEC (F)
09/05	12:37:14	0.07	4.63	26.3	6.32	35.04
09/05	12:38:14	0.01	4.63	0.3	6.32	35.03
09/05	12:39:14	44.63	0.04	367.3	0.12	35.03
09/05	12:40:14	44.34	0.04	434.5	0.02	35.02
09/05	12:41:14	45.14	0.04	438.0	0.02	35.03
09/05	12:42:14	47.79	0.04	430.9	0.01	35.01
09/05	12:43:14	46.79	0.03	435.5	0.01	35.02
09/05	12:44:14	46.44	0.03	440.0	0.01	35.01
09/05	12:45:14	46.44	0.03	433.0	0.01	35.00
09/05	12:46:14	0.86	4.31	70.9	5.45	34.99
09/05	12:47:14	0.31	4.59	2.8	6.25	34.99
09/05	12:48:14	0.21	4.66	-0.8	6.36	34.99
09/05	12:49:14	46.43	4.65	303.8	6.39	35.00
09/05	12:50:14	46.49	2.75	429.5	3.84	34.98
09/05	12:51:14	46.54	2.76	431.9	3.83	34.98
09/05	12:52:14	46.89	2.75	430.5	3.83	34.98
09/05	12:53:14	4.61	-0.02	35.2	11.91	34.98
Start Res 2 ICE #2 Minimum Load:						
09/05	12:54:14	1.31	0.02	95.9	11.93	34.98
09/05	12:55:14	0.81	0.03	127.9	11.92	34.97
09/05	12:56:14	0.71	0.03	124.4	11.92	34.97
09/05	12:57:14	0.56	0.03	129.4	11.92	34.96
09/05	12:58:14	0.56	0.03	125.5	11.92	34.96
09/05	12:59:14	0.66	0.03	113.4	11.92	34.96
09/05	13:00:14	0.46	0.03	118.4	11.92	34.96
09/05	13:01:14	0.51	0.03	120.5	11.93	34.95
09/05	13:02:14	0.46	0.03	115.5	11.92	34.94
09/05	13:03:14	0.46	0.03	110.9	11.92	34.94
09/05	13:04:14	0.46	0.04	112.0	11.92	34.92
09/05	13:05:14	0.41	0.03	130.9	11.92	34.92
09/05	13:06:14	0.41	0.03	107.4	11.91	34.92
09/05	13:07:14	0.41	0.04	110.0	11.92	34.92
09/05	13:08:14	0.41	0.03	108.4	11.91	34.92
09/05	13:09:14	0.41	0.04	107.4	11.90	34.91
End Res 2 ICE #21 Minimum Load, Ave.:		**0.56**	**0.03**	**116.12**	**11.92**	**34.94**
09/05	13:10:14	0.41	0.04	107.4	11.91	34.91
09/05	13:11:14	0.06	4.69	25.3	6.39	34.91
09/05	13:12:14	0.01	4.65	0.3	6.35	34.91
09/05	13:13:14	0.01	4.65	-0.8	6.37	34.89
09/05	13:14:14	43.99	0.02	394.9	0.05	34.88
09/05	13:15:14	45.64	0.02	432.5	0.02	34.87
09/05	13:16:14	47.04	0.01	441.5	0.01	34.85
09/05	13:17:14	47.99	0.01	430.9	0.01	34.83
09/05	13:18:14	47.09	0.01	433.4	0.01	34.82
09/05	13:19:14	46.93	0.01	431.9	0.00	34.81
09/05	13:20:14	46.34	2.49	260.7	1.56	34.80
09/05	13:21:14	0.51	4.64	9.3	6.38	34.79
09/05	13:22:14	0.21	4.64	-0.3	6.40	34.78
09/05	13:23:14	0.16	2.75	-0.8	3.83	34.76
09/05	13:24:14	0.11	2.74	-0.8	3.84	34.75
09/05	13:25:14	45.94	5.00	413.4	12.95	34.75
09/05	13:26:14	46.34	5.00	435.5	12.99	34.73
09/05	13:27:14	46.14	0.08	443.0	1.49	34.72
09/05	13:28:14	45.74	0.00	299.7	0.01	34.71
09/05	13:29:14	22.87	0.00	220.1	0.00	34.71
09/05	13:30:14	22.73	0.00	219.1	-0.01	34.70
09/05	13:31:14	0.86	0.00	57.4	-0.01	34.69
09/05	13:32:14	0.26	0.00	1.8	-0.01	34.66
09/05	13:33:14	0.16	-0.01	-0.8	-0.01	34.66
09/05	13:34:14	0.16	0.00	-0.8	-0.01	34.67
09/05	13:35:14	0.11	0.00	-0.8	-0.01	34.69

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AIR GAS TESTING & CONSULTING SERVICES
OPERATING DATA

Company: MCWD
Location: Res 1
Test Date: 8-21-13
Fuel: Nat. Gas

PARAMETERS RECORDED	ENGINE UNIT #: 3 ENGINE SERIAL #: 398443	ENGINE UNIT #: 2 ENGINE SERIAL #: 398442
NORMAL LOAD: RPM	800	811
Fuel Flow Start Time & Read	1035 / 89 87900	12:52 / 10526400
Fuel Flow Stop Time & Read	1112 / 89 88350	13:28 / 10526850
Fuel Press. (psig) / Temp. (F)	1.5 / 84	1.5 / 86
O2 Sensor Voltage (V)	0.668	0.815
AFRC Reading (Phi) / Set (Phi)	1.012 / 1.011	1.055 / 1.048
Engine Elapsed Time Meter	2983	1347
Catalyst Inlet Temp (F)	979	970
Catalyst Outlet Temp (F)	991	979
MAXIMUM LOAD: RPM	900	902
Fuel Flow Start Time & Read	1131 / 8988660	1349 / 10527150
Fuel Flow Stop Time & Read	1150 / 89 88950	1408 / 10527460
Fuel Press. (psig) / Temp. (F)	1.5 / 84	1.5 / 86
O2 Sensor Voltage (V)	0.710	0.801
AFRC Reading (Phi) / Set (Phi)	1.014 / 1.014	1.040 / 1.043
Engine Elapsed Time Meter	2983	1398
Catalyst Inlet Temp (F)	1049	1040
Catalyst Outlet Temp (F)	1059	1061
MINIMUM LOAD: RPM	705	708
Fuel Flow Start Time & Read	1204 / 89 89000	1416 / 10527500
Fuel Flow Stop Time & Read	1224 / 89 89200	1435 / 10527700
Fuel Press. (psig) / Temp. (F)	1.5 / 84	1.5 / 86
O2 Sensor Voltage (V)	0.701	0.780
AFRC Reading (Phi) / Set (Phi)	1.011 / 1.012	1.050 / 1.060
Engine Elapsed Time Meter	2984	1349
Catalyst Inlet Temp (F)	899	892
Catalyst Outlet Temp (F)	867	826

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AIR GAS TESTING & CONSULTING SERVICES
OPERATING DATA

Company: MCWD
Location: REJ 1-
Test Date: 8-26-13
Fuel: Nat. Gas

PARAMETERS RECORDED	ENGINE UNIT #: 1 ENGINE SERIAL #: 398444	ENGINE UNIT #: _____ ENGINE SERIAL #: _____
NORMAL LOAD: RPM	750	
Fuel Flow Start Time & Read	1254 / 9337100	/
Fuel Flow Stop Time & Read	1326 / 9337550	/
Fuel Press. (psig) / Temp. (F)	1.51 / 82	/
O2 Sensor Voltage (V)	0.836	
AFRC Reading (Phi) / Set (Phi)	1.054 / 1.005	/
Engine Elapsed Time Meter	295	
Catalyst Inlet Temp (F)	880	
Catalyst Outlet Temp (F)	866	
MAXIMUM LOAD: RPM	870	
Fuel Flow Start Time & Read	1350 / 9337706	/
Fuel Flow Stop Time & Read	1404 / 9338000	/
Fuel Press. (psig) / Temp. (F)	1.51 / 82	/
O2 Sensor Voltage (V)	0.840	
AFRC Reading (Phi) / Set (Phi)	1.057 / 1.005	/
Engine Elapsed Time Meter	296	
Catalyst Inlet Temp (F)	975	
Catalyst Outlet Temp (F)	934	
MINIMUM LOAD: RPM	700	
Fuel Flow Start Time & Read	1415 / 9338206	/
Fuel Flow Stop Time & Read	1435 / 9338400	/
Fuel Press. (psig) / Temp. (F)	1.51 / 82	/
O2 Sensor Voltage (V)	0.837	
AFRC Reading (Phi) / Set (Phi)	1.059 / 1.005	/
Engine Elapsed Time Meter	297	
Catalyst Inlet Temp (F)	855	
Catalyst Outlet Temp (F)	844	

AIR GAS TESTING & CONSULTING SERVICES
OPERATING DATA

Company: MCWD
Location: RES2
Test Date: 8-29-13
Fuel: Nat. Gas

PARAMETERS RECORDED	ENGINE UNIT #: 4 ENGINE SERIAL #: 10769-4	ENGINE UNIT #: 3 ENGINE SERIAL #: 16769-3
NORMAL LOAD: RPM	847	850
Fuel Flow Start Time & Read	935 / 188165 00	1146 / 20907 00
Fuel Flow Stop Time & Read	1006 / 188176 00	1227 / 20908 50
Fuel Press. (psig) / Temp. (F)	1.0 / 85	1.0 / 86
O2 Sensor Voltage (V)	819	840
AFRC Reading (Phi) / Set (Phi)	1.044 / 1.042	1.047 / 1.050
Engine Elapsed Time Meter	16056	17855
Catalyst Inlet Temp (F)	909	936
Catalyst Outlet Temp (F)	942	951
MAXIMUM LOAD: RPM	971	970
Fuel Flow Start Time & Read	1036 / 188 18300	1228 / 20909 50
Fuel Flow Stop Time & Read	1059 / 188 19300	1243 / 20909 990
Fuel Press. (psig) / Temp. (F)	1 / 85	1.0 / 86
O2 Sensor Voltage (V)	0.830	0.817
AFRC Reading (Phi) / Set (Phi)	1.049 / 1.051	1.045 / 1.047
Engine Elapsed Time Meter	16057	17856
Catalyst Inlet Temp (F)	986	1016
Catalyst Outlet Temp (F)	1018	1026
MINIMUM LOAD: RPM	790	791
Fuel Flow Start Time & Read	1102 / 18819840	1312 / 20911140
Fuel Flow Stop Time & Read	1126 / 18820600	1327 / 20911600
Fuel Press. (psig) / Temp. (F)	1 / 85	1.0 / 86
O2 Sensor Voltage (V)	0.775	0.805
AFRC Reading (Phi) / Set (Phi)	1.027 / 1.041	1.032 / 1.040
Engine Elapsed Time Meter	16058	17856
Catalyst Inlet Temp (F)	868	860
Catalyst Outlet Temp (F)	940	871

A47

AIR GAS TESTING & CONSULTING SERVICES
OPERATING DATA

Company: MCWD
Location: Res 2
Test Date: 9-5-13
Fuel: Nat-gas

PARAMETERS RECORDED	ENGINE UNIT #: 1 ENGINE SERIAL #: C10769/1	ENGINE UNIT #: 2 ENGINE SERIAL #: C10769/2
NORMAL LOAD: RPM	895	850
Fuel Flow Start Time & Read	998 / 18711490	1132 / 19308700
Fuel Flow Stop Time & Read	1008 / 18712500	1205 / 19309790
Fuel Press. (psig) / Temp. (F)	2 / 81	2 ~~0.785~~ 83
O2 Sensor Voltage (V)	0.790	0.785
AFRC Reading (Phi) / Set (Phi)	1.040 / 1.036	1.026 / 1.025
Engine Elapsed Time Meter	16427	16455
Catalyst Inlet Temp (F)	919	878
Catalyst Outlet Temp (F)	941	913
MAXIMUM LOAD: RPM	962	950
Fuel Flow Start Time & Read	1020 / 18712760	1219 / 19310280
Fuel Flow Stop Time & Read	1095 / 18713360	1234 / 19310870
Fuel Press. (psig) / Temp. (F)	2 / 81	2 / 83
O2 Sensor Voltage (V)	0.776	0.789
AFRC Reading (Phi) / Set (Phi)	1.031 / 1.028	1.032 / 1.037
Engine Elapsed Time Meter	16428	16456
Catalyst Inlet Temp (F)	1016	951
Catalyst Outlet Temp (F)	1029	975
MINIMUM LOAD: RPM	805	800
Fuel Flow Start Time & Read	1053 / 18713940	1255 / 19311600
Fuel Flow Stop Time & Read	1110 / 18714100	1311 / 19312050
Fuel Press. (psig) / Temp. (F)	2 / 81	2 / 83
O2 Sensor Voltage (V)	0.791	0.774
AFRC Reading (Phi) / Set (Phi)	1.037 / 1.034	1.028 / 1.031
Engine Elapsed Time Meter	16429	16457
Catalyst Inlet Temp (F)	909	846
Catalyst Outlet Temp (F)	939	892

VOC FIELD DATA SHEET - SCAQMD METHOD 25.3

Date: 8-21-13
Plant: MCWD
Unit: RES 1 - ICE #3
Operator Name: TD & KA
Fuel: NATURAL GAS
Probe Location Within Stack (in.): 4

Test No.: VOC - ICE #3 (RES 1)
Barometric Pressure (in. Hg): 30
Pretest Leak check:
A: 0 / 30 B: 0 / 30
Post-test Leak check:
A: 0 / 5 B: 0 / 5

START
10:20

Time
0
15
30
45
60

SAMPLE A

Tank #: 92 **Trap#** 1
Control ID: A

Vacumm ("HG)	Comments
30	
23	
17	
11	
5	

SAMPLE B

Tank #: 93 **Trap#** 2
Control ID: B

Vacumm ("HG)	Comments
30	
23	
17	
11	
5	

Take Data every 15 minutes during test

VOC FIELD DATA SHEET - SCAQMD METHOD 25.3

Date: 8-21-13
Plant: MCWD
Unit: RES 1 - ICE #2
Operator Name: TD & KA
Fuel: NATURAL GAS
Probe Location Within Stack (in.): 4

Test No.: VOC - ICE #2 (RES 1)
Barometric Pressure (in. Hg): 30
Pretest Leak check:
A: 0 | 30 B: 0 | 30
Post-test Leak check:
A: 0 | 5 B: 0 | 5

12:45
START

Time
0
15
30
45
60

SAMPLE A

Tank #: 94 **Trap#** 3
Control ID: A

Vacumm ("HG)	Comments
30	
23	
17	
11	
5	

SAMPLE B

Tank #: 95 **Trap#** 4
Control ID: B

Vacumm ("HG)	Comments
30	
23	
17	
11	
5	

Take Data every 15 minutes during test

A50

VOC FIELD DATA SHEET - SCAQMD METHOD 25.3

Date: 8-26-13
Plant: MCWD
Unit: RES 1 - ICE #1
Operator Name: TD & KA
Fuel: NATURAL GAS
Probe Location Within Stack (in.): 4

Test No.: VOC - ICE #1 (RES 1)
Barometric Pressure (in. Hg): 30
Pretest Leak check:
A: 0 | 30 B: 0 | 30
Post-test Leak check:
A: 0 | 5 B: 0 | 5

START 12:35

Time
0
15
30
60

SAMPLE A

Tank #: 82 **Trap#** 7
Control ID: A

Vacumm ("HG)	Comments
30	
23	
17	
5	

SAMPLE B

Tank #: 83 **Trap#** 8
Control ID: B

Vacumm ("HG)	Comments
30	
23	
17	
5	

Take Data every 15 minutes during test

VOC FIELD DATA SHEET - SCAQMD METHOD 25.3

Date: 8-29-13
Plant: MCWD
Unit: RES 2 - ICE # 4
Operator Name: TD & KA
Fuel: NATURAL GAS
Probe Location Within Stack (in.): 4

Test No.: VOC - ICE#4 (RES2)
Barometric Pressure (in. Hg): 30
Pretest Leak check:
A: 0 / 30 B: 0/30
Post-test Leak check:
A: 0 / 5 B: 0/5

START
9:10

Time
0
15
30
45
60

SAMPLE A

Tank #: 85 **Trap#** 9
Control ID: A

Vacumm ("HG)	Comments
30	
23	
17	
11	
5	

SAMPLE B

Tank #: 86 **Trap#** 10
Control ID: B

Vacumm ("HG)	Comments
30	
23	
17	
11	
5	

Take Data every 15 minutes during test

A52

VOC FIELD DATA SHEET - SCAQMD METHOD 25.3

Date: 8-29-13
Plant: MCWD
Unit: RES 2 - ICE #3
Operator Name: TD & KA
Fuel: NATURAL GAS
Probe Location Within Stack (in.): 4

Test No.: VOC - ICE#3 (RES 2)
Barometric Pressure (in. Hg): 30
Pretest Leak check:
A: 0 | 30 B: 0 | 30
Post-test Leak check:
A: 0 | 5 B: 0 | 5

START 11:15

Time
0
15
30
45
60

SAMPLE A

Tank #: 87 Trap# 12
Control ID: A

Vacumm ("HG)	Comments
30	
23	
17	
11	
5	

SAMPLE B

Tank #: 88 Trap# 13
Control ID: B

Vacumm ("HG)	Comments
30	
23	
17	
11	
5	

Take Data every 15 minutes during test

A53

VOC FIELD DATA SHEET - SCAQMD METHOD 25.3

Date: 9-5-13
Plant: MCWD
Unit: RES 2 - ENGINE 1
Operator Name: TD & KA
Fuel: NATURAL GAS
Probe Location Within Stack (in.): 4

Test No.: VOC - ICE #1 (RES 2)
Barometric Pressure (in. Hg): 30
Pretest Leak check:
A: 0 | 30 B: 0 | 30
Post-test Leak check:
A: 0 | 5 B: 0 | 5

START
9:00

Time
0
15
30
45
60

SAMPLE A

Tank #: 78 **Trap#** 14
Control ID: A

Vacumm ("HG)	Comments
30	
23	
17	
10.5	
5	

SAMPLE B

Tank #: 79 **Trap#** 15
Control ID: B

Vacumm ("HG)	Comments
30	
23	
17	
11	
5	

Take Data every 15 minutes during test

VOC FIELD DATA SHEET - SCAQMD METHOD 25.3

Date: 9-5-13
Plant: WMWD
Unit: RES 2 - ICE # 2
Operator Name: TD & KA
Fuel: NAT GAS
Probe Location Within Stack (in.): 4

Test No.: VOC - ICE #2 (RES 2)
Barometric Pressure (in. Hg): 30
Pretest Leak check:
A: 0 | 30 B: 0 | 30
Post-test Leak check:
A: 0 | 5 B: 0 | 5

START
11:06

Time
0
15
30
60

SAMPLE A

Tank #: 90 **Trap#** 16
Control ID: A

Vacumm ("HG)	Comments
30	
23	
17	
5	

SAMPLE B

Tank #: 91 **Trap#** 17
Control ID: B

Vacumm ("HG)	Comments
30	
23	
17	
5	

Take Data every 15 minutes during test

A55

Facility:	MCWD (Reservoir 1)
Test Date:	8/21/2013
Unit:	Res 1 Engine 3
Engine Rated bhp:	137
Engine Serial No.:	398443

COMPLIANCE RESULTS:

PARAMETERS	Normal	Maximum		Minimum
		As Measured	Report Limit*	
NOx Concentration, ppm dry	14.76	6.52	10.0	26.13
NOx Concentration, ppm @ 15% O_2	**4.25**	**1.86**	**2.85**	**7.52**
NOx Permit Limit, ppm @ 15% O_2	**11.00**	**11.00**	**11.00**	**11.00**
NOx Pass/Fail Status:	***Passed***	***Passed***	***Passed***	***Passed***
CO Concentration, ppm dry	269.9	317.3		318.8
CO Concentration, ppm @ 15% O_2	**77.69**	**90.46**		**91.69**
CO Permit Limit, ppm @ 15% O_2	**250.00**	**250.00**		**250.00**
CO Pass/Fail Status:	***Passed***	***Passed***		***Passed***
VOC Concentration, ppm**	15.42			
VOC Concentration, ppm @ 15% O_2	**4.44**			
VOC Permit Limit, ppm @ 15% O_2	**30.00**			
VOC Pass/Fail Status:	***Passed***			

*Reported limit at 20% Range

** included bias factor of 1.086 for Method 25.3

SUPPORTING DATA:

PARAMETERS	Normal	Maximum	Minimum
O_2 Concentration, %	0.41	0.21	0.39
CO_2 Concentration, %	11.77	11.78	11.67
Methane Concentration, ppm	220		
Catalyst's Temperature, F (in/out)	979 / 991	1049 / 1059	899 / 867
Engine Operating RPM	800	900	705
NOx Emission Factor (lb/mmBtu)	0.016	0.007	0.028
CO Emission Factor (lb/mmBtu)	0.174	0.203	0.206
VOC Emission Factor (lb/mmBtu)	0.0057		
Natural Gas Fuel Usage (scfh)	781	980	642
Oxygen Sensor Reading (mv)	668	710	701
AFRC Setting (phi)	1.011	1.014	1.001
AFRC Reading (phi)	1.012	1.014	1.011
Engine's Elapse Time Meter, hrs	2,983	2,983	2,984

B1

CONTINUOUS EMISSIONS MONITORING SYSTEM

FACILITY:	MCWD (Reservoir 1)
CITY:	Costa Mesa
UNIT TESTED:	Res 1 Engine 3
DATE:	8/21/2013
FIRING CONDITIONS:	Normal, Maximum, Minimum
ENGINE SERIAL NO.:	398443
ENGINE RATED BHP:	137

	CAL GAS (Ca)		RANGE
O2:	4.62	2.77	5.00
CO2:	12.96	6.48	15.00
NOx:	45.95	22.98	50.00
CO:	437.90	218.95	500.00

LOAD TEST	TIME (hhmm)	PARAMETER	INITIAL S.B. CAL ZERO (iZ)	INITIAL S.B. CAL SPAN (iSP)	FINAL S.B. CAL ZERO (fZ)	FINAL S.B. CAL SPAN (fSP)	DRIFT ZERO (Zdr)	DRIFT CAL (Cdr.)	CONCENTRATION MEAS. (Cm)	CONCENTRATION DRIFT CORR. (Ccorr.)	CONCENTRATION @ 15% O2 (C@)	EMISSION RATE (lb/mmBtu)
Normal	1049-1119	CO_2	0.03	12.96	-0.01	13.00	-0.27	0.27	*11.79*	11.77	-	
		O_2	0.00	4.63	0.03	4.62	0.60	-0.20	*0.42*	**0.41**	-	
		NOx	0.01	45.78	0.06	45.43	0.10	-0.70	*14.67*	**14.76**	4.25	**0.016**
		CO	0.20	436.20	0.30	435.30	0.02	-0.18	*268.64*	**269.87**	77.69	**0.174**
Maximum	1136-1151	CO_2	-0.01	13.00	0.00	13.08	0.07	0.53	*11.85*	11.78	-	
		O_2	0.03	4.62	0.06	4.63	0.60	0.20	*0.25*	**0.21**	-	
		NOx	0.06	45.43	0.06	45.58	0.00	0.30	*6.51*	**6.52**	1.86	**0.007**
		CO	0.30	435.30	0.30	432.30	0.00	-0.60	*314.40*	**317.29**	90.46	**0.203**
Minimum	1212-1227	CO_2	0.00	13.08	-0.01	13.12	-0.07	0.27	*11.80*	11.67	-	
		O_2	0.06	4.63	0.01	4.62	-1.00	-0.20	*0.42*	**0.39**	-	
		NOx	0.06	45.58	0.06	45.63	0.00	0.10	*25.96*	**26.13**	7.52	**0.028**
		CO	0.30	432.30	0.20	436.30	-0.02	0.80	*316.23*	**318.78**	91.69	**0.206**

Zdr = (fZ-iZ)/F.S.x 100 ; Cdr = (fSP-iSP)/F.S.x 100 ; Ccorr = (Cm-(iZ+fZ)/2) x [Ca/(((fSP+iSP)/2)-((FZ+iZ)/2)]

Fd @60F= 8578 scf/mmBtu for Nat. gas Fuel

MW= 46 for NOx, 28 for CO

SV@60F= 379.5 scf/lb-mole

Emission Factor E= Lb NOx/mmBtu= ppm NOx*E-6*46/379.5*Fd*20.9/(20.9-%O2)

(For CO using MW of 28)

B2

CALIBRATION DATA

FACILITY: MCWD (Reservoir 1)
CITY: Costa Mesa
UNIT TESTED: Res 1 Engine 3
DATE: 8/21/2013

FIRING CONDITION: Normal, Maximum, Minimum

	Normal				Maximum				Minimum			
	O2	CO2	NOx	CO	O2	CO2	NOx	CO	O2	CO2	NOx	CO
A High Span Gas Concentration	4.62	12.96	45.95	437.90	4.62	12.96	45.95	437.90	4.62	12.96	45.95	437.90
B Mid Span Gas Concentration	2.77	6.48	22.98	218.95	2.77	6.48	22.98	218.95	2.77	6.48	22.98	218.95
C Initial Zero Response	0.00	0.01	0.01	0.70	0.00	0.01	0.01	0.70	0.00	0.01	0.01	0.70
D Initial High Span Response	4.62	12.93	46.03	439.60	4.62	12.93	46.03	439.60	4.62	12.93	46.03	439.60
E Initial Mid Span Response	2.74	6.46	22.77	223.00	2.74	6.46	22.77	223.00	2.74	6.46	22.77	223.00
F *Initial System Bias Zero*	0.00	0.03	0.01	0.20	0.03	-0.01	0.06	0.30	0.06	0.00	0.06	0.30
G *Initial System Bias Upper Response*	4.63	12.96	45.78	436.20	4.62	13.00	45.43	435.30	4.63	13.08	45.58	432.30
H *Final System Bias Zero*	0.03	-0.01	0.06	0.30	0.06	0.00	0.06	0.30	0.01	-0.01	0.06	0.20
I *Final System Bias Upper Response*	4.62	13.00	45.43	435.30	4.63	13.08	45.58	432.30	4.62	13.12	45.63	436.30
J Final Zero Response	0.01	0.00	0.16	-0.30	0.01	0.00	0.16	-0.30	0.01	0.00	0.16	-0.30
K Final High Span Response	4.62	13.11	44.93	434.90	4.62	13.11	44.93	434.90	4.62	13.11	44.93	434.90
L Final Mid Span Response	2.75	6.48	22.32	222.00	2.75	6.48	22.32	222.00	2.75	6.48	22.32	222.00
M Analyzer Range	5	15	50	500	5	15	50	500	5	15	50	500
N Initial Linearity = {(E-C)-((D-C)xB)/A) x 100/M	*-0.6*	*-0.1*	*-0.5*	*0.6*	*-0.6*	*-0.1*	*-0.5*	*0.6*	*-0.6*	*-0.1*	*-0.5*	*0.6*
O Final Linearity = {(L-J)-((K-J)xB)/A) x 100/M	*-0.5*	*-0.5*	*-0.5*	*0.9*	*-0.5*	*-0.5*	*-0.5*	*0.9*	*-0.5*	*-0.5*	*-0.5*	*0.9*
P Initial Cal Error, Zero (%F.S.) = [C/M] x 100	*0.0*	*0.1*	*0.0*	*0.1*	*0.0*	*0.1*	*0.0*	*0.1*	*0.0*	*0.1*	*0.0*	*0.1*
Q Final Cal Error, Zero (%F.S.) = [J/M] x 100	*0.2*	*0.0*	*0.3*	*-0.1*	*0.2*	*0.0*	*0.3*	*-0.1*	*0.2*	*0.0*	*0.3*	*-0.1*
R Initial Cal Error, Mid (%F.S.) = [(E-B)/M] x 100	*-0.7*	*-0.1*	*-0.4*	*0.8*	*-0.7*	*-0.1*	*-0.4*	*0.8*	*-0.7*	*-0.1*	*-0.4*	*0.8*
S Final Cal Error, Mid (%F.S.) = [(L-B)/M] x 100	*-0.5*	*0.0*	*-1.3*	*0.6*	*-0.5*	*0.0*	*-1.3*	*0.6*	*-0.5*	*0.0*	*-1.3*	*0.6*
T Initial Cal Error, High (%F.S.) = [(D-A)/M] x 100	*0.0*	*-0.2*	*0.2*	*0.3*	*0.0*	*-0.2*	*0.2*	*0.3*	*0.0*	*-0.2*	*0.2*	*0.3*
U Final Cal Error, High (%F.S.) = [(K-A)/M] x 100	*0.0*	*1.0*	*-2.0*	*-0.6*	*0.0*	*1.0*	*-2.0*	*-0.6*	*0.0*	*1.0*	*-2.0*	*-0.6*
V Initial System Bias, Zero (%F.S.) = [(F-C)]/M] x 100	*0.0*	*0.1*	*0.0*	*-0.1*	*0.6*	*-0.1*	*0.1*	*-0.1*	*1.2*	*-0.1*	*0.1*	*-0.1*
W Final System Bias, Zero (%F.S.) = [(H-J)]/M] x 100	*0.4*	*-0.1*	*-0.2*	*0.1*	*1.0*	*0.0*	*-0.2*	*0.1*	*0.0*	*-0.1*	*-0.2*	*0.1*
X Initial System Bias, Upper (%F.S.) = [(G-D)]/M] x 100*	*0.2*	*0.2*	*-0.5*	*-0.7*	*0.0*	*0.5*	*-1.2*	*-0.9*	*0.2*	*1.0*	*-0.9*	*-1.5*
*Y Final System Bias, Upper (%F.S.) = [(I-K**)]/M] x 100*	*0.0*	*-0.7*	*1.0*	*0.1*	*0.2*	*-0.2*	*1.3*	*-0.5*	*0.0*	*0.1*	*1.4*	*0.3*
Z Response Time (sec.)	*18.0*	*20.0*	*22.0*	*21.0*	*18.0*	*20.0*	*22.0*	*21.0*	*18.0*	*20.0*	*22.0*	*21.0*

* D or E, whichever gas was used for bias check

** K or L, whichever gas was used for bias check

Facility:	MCWD (Reservoir 1)
Test Date:	8/21/2013
Unit:	Res 1 Engine 2
Engine Rated bhp:	137
Engine Serial No.:	398442

COMPLIANCE RESULTS:

PARAMETERS	Normal		Maximum		Minimum
	As Measured	Report Limit*	As Measured	Report Limit*	
NOx Concentration, ppm dry	7.67	10.0	8.59	10.0	11.48
NOx Concentration, ppm @ 15% O_2	**2.22**	**2.89**	**2.47**	**2.88**	**3.38**
NOx Permit Limit, ppm @ 15% O_2	**11.00**	**11.00**	**11.00**	**11.00**	**11.00**
NOx Pass/Fail Status:	***Passed***	***Passed***	***Passed***	***Passed***	***Passed***
CO Concentration, ppm dry	286.2		223.9		426.4
CO Concentration, ppm @ 15% O_2	**82.79**		**64.42**		**125.40**
CO Permit Limit, ppm @ 15% O_2	**250.00**		**250.00**		**250.00**
CO Pass/Fail Status:	***Passed***		***Passed***		***Passed***
VOC Concentration, ppm**	8.30				
VOC Concentration, ppm @ 15% O_2	**2.40**				
VOC Permit Limit, ppm @ 15% O_2	**30.00**				
VOC Pass/Fail Status:	***Passed***				

*Reported limit at 20% Range

** included bias factor of 1.086 for Method 25.3

SUPPORTING DATA:

PARAMETERS	Normal	Maximum	Minimum
O_2 Concentration, %	0.51	0.39	0.84
CO_2 Concentration, %	11.76	11.81	11.61
Methane Concentration, ppm	144		
Catalyst's Temperature, F (in/out)	970 / 979	1040 / 1061	882 / 826
Engine Operating RPM	811	902	708
NOx Emission Factor (lb/mmBtu)	0.008	0.009	0.012
CO Emission Factor (lb/mmBtu)	0.186	0.144	0.281
VOC Emission Factor (lb/mmBtu)	0.0031		
Natural Gas Fuel Usage (scfh)	799	1,043	673
Oxygen Sensor Reading (mv)	815	801	780
AFRC Setting (phi)	1.048	1.043	1.060
AFRC Reading (phi)	1.055	1.040	1.050
Engine's Elapse Time Meter, hrs	1,347	1,348	1,349

B4

CONTINUOUS EMISSIONS MONITORING SYSTEM

FACILITY:	MCWD (Reservoir 1)
CITY:	Costa Mesa
UNIT TESTED:	Res 1 Engine 2
DATE:	8/21/2013
FIRING CONDITIONS:	Normal, Maximum, Minimum
ENGINE SERIAL NO.:	398442
ENGINE RATED BHP:	137

	CAL GAS (Ca)		RANGE
O2:	4.62	2.77	5.00
CO2:	12.96	6.48	15.00
NOx:	45.95	22.98	50.00
CO:	437.90	218.95	500.00

LOAD TEST	TIME (hhmm)	PARAMETER	INITIAL S.B. CAL ZERO (iZ)	INITIAL S.B. CAL SPAN (iSP)	FINAL S.B. CAL ZERO (fZ)	FINAL S.B. CAL SPAN (fSP)	DRIFT ZERO (Zdr)	DRIFT CAL (Cdr.)	CONCENTRATION MEAS. (Cm)	CONCENTRATION DRIFT CORR. (Ccorr.)	CONCENTRATION @ 15% O2 (C@)	EMISSION RATE (lb/mmBtu)
Normal	1259-1328	CO_2	-0.01	6.44	-0.01	6.47	0.00	0.20	*11.72*	11.76	-	
		O_2	0.01	4.62	0.04	4.64	0.60	0.40	*0.53*	**0.51**	-	
		NOx	0.06	45.63	0.06	45.58	0.00	-0.10	*7.66*	**7.67**	2.22	**0.008**
		CO	0.20	436.30	-0.30	436.90	-0.10	0.12	*285.30*	**286.17**	82.79	**0.186**
Maximum	1352-1407	CO_2	-0.01	6.47	0.00	6.45	0.07	-0.13	*11.78*	11.81	-	
		O_2	0.04	4.64	0.06	4.65	0.40	0.20	*0.44*	**0.39**	-	
		NOx	0.06	45.58	0.06	45.88	0.00	0.60	*8.60*	**8.59**	2.47	**0.009**
		CO	-0.30	436.90	-0.30	437.90	0.00	0.20	*223.50*	**223.90**	64.42	**0.144**
Minimum	1430-1445	CO_2	0.00	6.45	-0.01	6.36	-0.07	-0.60	*11.48*	11.61	-	
		O_2	0.06	4.65	0.02	4.60	-0.80	-1.00	*0.87*	**0.84**	-	
		NOx	0.06	45.88	0.06	45.94	0.00	0.12	*11.52*	**11.48**	3.38	**0.012**
		CO	-0.30	437.90	0.30	435.90	0.12	-0.40	*425.44*	**426.41**	125.40	**0.281**

Zdr = (fZ-iZ)/F.S.x 100 ; Cdr = (fSP-iSP)/F.S.x 100 ; Ccorr = (Cm-(iZ+fZ)/2) x [Ca/(((fSP+iSP)/2)-((FZ+iZ)/2)]

Fd @60F= 8578 scf/mmBtu for Nat. gas Fuel

MW= 46 for NOx, 28 for CO

SV@60F= 379.5 scf/lb-mole

Emission Factor E= Lb NOx/mmBtu= ppm NOx*E-6*46/379.5*Fd*20.9/(20.9-%O2)

(For CO using MW of 28)

CALIBRATION DATA

FACILITY: MCWD (Reservoir 1)
CITY: Costa Mesa
UNIT TESTED: Res 1 Engine 2
DATE: 8/21/2013

FIRING CONDITION: Normal, Maximum, Minimum

		Normal				Maximum				Minimum			
		O2	CO2	NOx	CO	O2	CO2	NOx	CO	O2	CO2	NOx	CO
A	High Span Gas Concentration	4.62	12.96	45.95	437.90	4.62	12.96	45.95	437.90	4.62	12.96	45.95	437.90
B	Mid Span Gas Concentration	2.77	6.48	22.98	218.95	2.77	6.48	22.98	218.95	2.77	6.48	22.98	218.95
C	Initial Zero Response	0.01	0.00	0.16	-0.30	0.00	0.01	0.01	0.70	0.00	0.01	0.01	0.70
D	Initial High Span Response	4.62	13.11	44.93	434.90	4.62	12.93	46.03	439.60	4.62	12.93	46.03	439.60
E	Initial Mid Span Response	2.75	6.48	22.32	222.00	2.74	6.46	22.77	223.00	2.74	6.46	22.77	223.00
F	*Initial System Bias Zero*	0.01	-0.01	0.06	0.20	0.04	-0.01	0.06	-0.30	0.06	0.00	0.06	-0.30
G	*Initial System Bias Upper Response*	4.62	6.44	45.63	436.30	4.64	6.47	45.58	436.90	4.65	6.45	45.88	437.90
H	*Final System Bias Zero*	0.04	-0.01	0.06	-0.30	0.06	0.00	0.06	-0.30	0.02	-0.01	0.06	0.30
I	*Final System Bias Upper Response*	4.64	6.47	45.58	436.90	4.65	6.45	45.88	437.90	4.60	6.36	45.94	435.90
J	Final Zero Response	0.01	0.01	0.16	0.30	0.01	0.01	0.16	0.30	0.01	0.01	0.16	0.30
K	Final High Span Response	4.61	12.98	45.84	437.40	4.61	12.98	45.84	437.40	4.61	12.98	45.84	437.40
L	Final Mid Span Response	2.75	6.45	22.97	222.10	2.75	6.45	22.97	222.10	2.75	6.45	22.97	222.10
M	Analyzer Range	5	15	50	500	5	15	50	500	5	15	50	500
N	*Initial Linearity = {(E-C)-((D-C)xB)/A} x 100/M*	*-0.5*	*-0.5*	*-0.5*	*0.9*	*-0.6*	*-0.1*	*-0.5*	*0.6*	*-0.6*	*-0.1*	*-0.5*	*0.6*
O	*Final Linearity = {(L-J)-((K-J)xB)/A} x 100/M*	*-0.4*	*-0.3*	*-0.1*	*0.7*	*-0.4*	*-0.3*	*-0.1*	*0.7*	*-0.4*	*-0.3*	*-0.1*	*0.7*
P	*Initial Cal Error, Zero (%F.S.) = [C/M] x 100*	*0.2*	*0.0*	*0.3*	*-0.1*	*0.0*	*0.1*	*0.0*	*0.1*	*0.0*	*0.1*	*0.0*	*0.1*
Q	*Final Cal Error, Zero (%F.S.) = [J/M] x 100*	*0.2*	*0.1*	*0.3*	*0.1*	*0.2*	*0.1*	*0.3*	*0.1*	*0.2*	*0.1*	*0.3*	*0.1*
R	*Initial Cal Error, Mid (%F.S.) = [(E-B)/M] x 100*	*-0.5*	*0.0*	*-1.3*	*0.6*	*-0.7*	*-0.1*	*-0.4*	*0.8*	*-0.7*	*-0.1*	*-0.4*	*0.8*
S	*Final Cal Error, Mid (%F.S.) = [(L-B)/M] x 100*	*-0.5*	*-0.2*	*0.0*	*0.6*	*-0.5*	*-0.2*	*0.0*	*0.6*	*-0.5*	*-0.2*	*0.0*	*0.6*
T	*Initial Cal Error, High (%F.S.) = [(D-A)/M] x 100*	*0.0*	*1.0*	*-2.0*	*-0.6*	*0.0*	*-0.2*	*0.2*	*0.3*	*0.0*	*-0.2*	*0.2*	*0.3*
U	*Final Cal Error, High (%F.S.) = [(K-A)/M] x 100*	*-0.2*	*0.1*	*-0.2*	*-0.1*	*-0.2*	*0.1*	*-0.2*	*-0.1*	*-0.2*	*0.1*	*-0.2*	*-0.1*
V	*Initial System Bias, Zero (%F.S.) = [(F-C)]/M] x 100*	*0.0*	*-0.1*	*-0.2*	*0.1*	*0.8*	*-0.1*	*0.1*	*-0.2*	*1.2*	*-0.1*	*0.1*	*-0.2*
W	*Final System Bias, Zero (%F.S.) = [(H-J)]/M] x 100*	*0.6*	*-0.1*	*-0.2*	*-0.1*	*1.0*	*-0.1*	*-0.2*	*-0.1*	*0.2*	*-0.1*	*-0.2*	*0.0*
X	*Initial System Bias, Upper (%F.S.) = [(G-D*)]/M] x 100*	*0.0*	*-0.3*	*1.4*	*0.3*	*0.4*	*0.1*	*-0.9*	*-0.5*	*0.6*	*-0.1*	*-0.3*	*-0.3*
Y	*Final System Bias, Upper (%F.S.) = [(I-K**)]/M] x 100*	*0.6*	*0.1*	*-0.5*	*-0.1*	*0.8*	*0.0*	*0.1*	*0.1*	*-0.2*	*-0.6*	*0.2*	*-0.3*
Z	*Response Time (sec.)*	*18.0*	*20.0*	*22.0*	*21.0*	*18.0*	*20.0*	*22.0*	*21.0*	*18.0*	*20.0*	*22.0*	*21.0*

* D or E, whichever gas was used for bias check

** K or L, whichever gas was used for bias check

GAS DIVIDER VERIFICATION CHECK

FACILITY:	MCWD (Reservoir 1)	DILUTION GAS:	20.98%
TEST DATE:	8/21/2013	CHALLENGE GAS:	9.25%
ANALYZER:	O2	GAS DIVIDER MODEL #:	SGD-710C
RANGE:	25%	GAS DIVIDER SERIAL #:	2455501-07
UNIT TESTED:	Res 1 Engine 3	& Res 1 Engine 2	

RUN 1

% DILUTION	PREDICTED CONC. (%)	ACTUAL CONC. (%)	PERCENT ERROR (%)
100	20.98	21.17	0.91
80	16.78	16.77	-0.08
60	12.59	12.47	-0.94
40	8.39	8.30	-1.10
20	4.20	4.18	-0.38
CHALLENGE GAS	9.25	9.28	0.32

RUN 2

% DILUTION	PREDICTED CONC. (%)	ACTUAL CONC. (%)	PERCENT ERROR (%)
100	20.98	21.19	1.00
80	16.78	16.81	0.15
60	12.59	12.51	-0.62
40	8.39	8.36	-0.38
20	4.20	4.19	-0.14
CHALLENGE GAS	9.25	9.37	1.30

RUN 3

% DILUTION	PREDICTED CONC. (%)	ACTUAL CONC. (%)	PERCENT ERROR (%)
100	20.98	21.18	0.95
80	16.78	16.82	0.21
60	12.59	12.56	-0.22
40	8.39	8.33	-0.74
20	4.20	4.18	-0.38
CHALLENGE GAS	9.25	9.33	0.86

Allowable Error </= 2.00%

PLANT: MCWD (Reservoir 1)
UNIT: Res 1 Engine 3 & Engine 2
DATE: 8/21/2013

NOx TO NO CONVERTER EFFICIENCY CALCULATION

NO2 CONCENTRATION (Co):	12.76
AUDIT GAS WITH NO MODE (C1):	0.11
AUDIT GAS WITH NOx MODE (C2):	12.47
|C2-C1|=	12.36

% CONVERTER EFFICIENCY: **%CE=(C2-C1)*100/C0=** **96.87**

Criteria for Passing CE check: CE >90%
C1 < 5% of Audit gas NOx certified value

Facility:	**MCWD (Reservoir 1)**
Test Date:	**8/26/2013**
Unit:	**Res 1 Engine 1**
Engine Rated bhp:	**137**
Engine Serial No.:	**398444**

COMPLIANCE RESULTS:

PARAMETERS	Normal		Maximum		Minimum
	As Measured	Report Limit*	As Measured	Report Limit*	
NOx Concentration, ppm dry	8.91	10.0	7.26	10.0	19.34
NOx Concentration, ppm @ 15% O_2	**2.54**	**2.84**	**2.06**	**2.83**	**5.55**
NOx Permit Limit, ppm @ 15% O_2	**11.00**	**11.00**	**11.00**	**11.00**	**11.00**
NOx Pass/Fail Status:	***Passed***	***Passed***	***Passed***	***Passed***	***Passed***
CO Concentration, ppm dry	173.6		425.0		205.7
CO Concentration, ppm @ 15% O_2	**49.40**		**120.39**		**59.06**
CO Permit Limit, ppm @ 15% O_2	**250.00**		**250.00**		**250.00**
CO Pass/Fail Status:	***Passed***		***Passed***		***Passed***
VOC Concentration, ppm**	28.78				
VOC Concentration, ppm @ 15% O_2	**8.19**				
VOC Permit Limit, ppm @ 15% O_2	**30.00**				
VOC Pass/Fail Status:	***Passed***				

*Reported limit at 20% Range

** included bias factor of 1.086 for Method 25.3

SUPPORTING DATA:

PARAMETERS	Normal	Maximum	Minimum
O_2 Concentration, %	0.16	0.07	0.35
CO_2 Concentration, %	11.90	11.91	11.76
Methane Concentration, ppm	39		
Catalyst's Temperature, F (in/out)	880 / 866	975 / 934	855 / 844
Engine Operating RPM	750	870	700
NOx Emission Factor (lb/mmBtu)	0.009	0.008	0.020
CO Emission Factor (lb/mmBtu)	0.111	0.270	0.132
VOC Emission Factor (lb/mmBtu)	0.0105		
Natural Gas Fuel Usage (scfh)	906	1,017	644
Oxygen Sensor Reading (mv)	836	840	837
AFRC Setting (phi)	1.005	1.005	1.005
AFRC Reading (phi)	1.054	1.057	1.059
Engine's Elapse Time Meter, hrs	295	296	296

CONTINUOUS EMISSIONS MONITORING SYSTEM

FACILITY:	MCWD (Reservoir 1)
CITY:	Costa Mesa
UNIT TESTED:	Res 1 Engine 1
DATE:	8/26/2013
FIRING CONDITIONS:	Normal, Maximum, Minimum
ENGINE SERIAL NO.:	398444
ENGINE RATED BHP:	137

	CAL GAS (Ca)		RANGE
O2:	4.62	2.77	5.00
CO2:	12.96	6.48	15.00
NOx:	45.95	22.98	50.00
CO:	437.90	218.95	500.00

LOAD TEST	TIME (hhmm)	PARAMETER	INITIAL S.B. CAL ZERO (iZ)	INITIAL S.B. CAL SPAN (iSP)	FINAL S.B. CAL ZERO (fZ)	FINAL S.B. CAL SPAN (fSP)	DRIFT ZERO (Zdr)	DRIFT CAL (Cdr.)	CONCENTRATION MEAS. (Cm)	CONCENTRATION DRIFT CORR. (Ccorr.)	CONCENTRATION @ 15% O2 (C@)	EMISSION RATE (lb/mmBtu)
Normal	1302-1332	CO_2	0.00	12.95	-0.01	12.92	-0.07	-0.20	*11.88*	11.90	-	
		O_2	0.01	4.62	0.03	4.63	0.40	0.20	*0.18*	**0.16**	-	
		NOx	0.01	46.13	-0.05	46.03	-0.12	-0.20	*8.92*	**8.91**	2.54	**0.009**
		CO	-0.30	440.30	0.70	438.90	0.20	-0.28	*174.44*	**173.65**	49.40	**0.111**
Maximum	1349-1405	CO_2	-0.01	12.92	-0.01	12.95	0.00	0.20	*11.89*	11.91	-	
		O_2	0.03	4.63	0.03	4.65	0.00	0.40	*0.10*	**0.07**	-	
		NOx	-0.05	46.03	-0.04	45.99	0.02	-0.08	*7.23*	**7.26**	2.06	**0.008**
		CO	0.70	438.90	0.70	436.90	0.00	-0.40	*425.07*	**425.05**	120.39	**0.270**
Minimum	1419-1439	CO_2	-0.01	12.95	-0.01	12.92	0.00	-0.20	*11.74*	11.76	-	
		O_2	0.03	4.65	0.03	4.66	0.00	0.20	*0.38*	**0.35**	-	
		NOx	-0.04	45.99	0.01	46.03	0.10	0.08	*19.36*	**19.34**	5.55	**0.020**
		CO	0.70	436.90	0.80	436.40	0.02	-0.10	*205.52*	**205.71**	59.06	**0.132**

Zdr = (fZ-iZ)/F.S.x 100 ; Cdr = (fSP-iSP)/F.S.x 100 ; Ccorr = (Cm-(iZ+fZ)/2) x [Ca/((((fSP+iSP)/2)-((FZ+iZ)/2)]

Fd @60F= 8578 scf/mmBtu for Nat. gas Fuel

MW= 46 for NOx, 28 for CO

SV@60F= 379.5 scf/lb-mole

Emission Factor E= Lb NOx/mmBtu= ppm NOx*E-6*46/379.5*Fd*20.9/(20.9-%O2)

(For CO using MW of 28)

Bio

CALIBRATION DATA

FACILITY: MCWD (Reservoir 1)
CITY: Costa Mesa
UNIT TESTED: Res 1 Engine 1
DATE: 8/26/2013

FIRING CONDITION: Normal, Maximum, Minimum

		Normal				Maximum				Minimum			
		O2	CO2	NOx	CO	O2	CO2	NOx	CO	O2	CO2	NOx	CO
A	High Span Gas Concentration	4.62	12.96	45.95	437.90	4.62	12.96	45.95	437.90	4.62	12.96	45.95	437.90
B	Mid Span Gas Concentration	2.77	6.48	22.98	218.95	2.77	6.48	22.98	218.95	2.77	6.48	22.98	218.95
C	Initial Zero Response	0.00	-0.01	0.01	0.20	0.00	-0.01	0.01	0.20	0.00	-0.01	0.01	0.20
D	Initial High Span Response	4.61	12.93	46.18	437.80	4.61	12.93	46.18	437.80	4.61	12.93	46.18	437.80
E	Initial Mid Span Response	2.74	6.43	23.17	221.50	2.74	6.43	23.17	221.50	2.74	6.43	23.17	221.50
F	*Initial System Bias Zero*	0.01	0.00	0.01	-0.30	0.03	-0.01	-0.05	0.70	0.03	-0.01	-0.04	0.70
G	*Initial System Bias Upper Response*	4.62	12.95	46.13	440.30	4.63	12.92	46.03	438.90	4.65	12.95	45.99	436.90
H	*Final System Bias Zero*	0.03	-0.01	-0.05	0.70	0.03	-0.01	-0.04	0.70	0.03	-0.01	0.01	0.80
I	*Final System Bias Upper Response*	4.63	12.92	46.03	438.90	4.65	12.95	45.99	436.90	4.66	12.92	46.03	436.40
J	Final Zero Response	0.01	0.00	0.16	0.30	0.01	0.00	0.16	0.30	0.01	0.00	0.16	0.30
K	Final High Span Response	4.59	12.87	46.19	439.90	4.59	12.87	46.19	439.90	4.59	12.87	46.19	439.90
L	Final Mid Span Response	2.75	6.39	22.87	221.60	2.75	6.39	22.87	221.60	2.75	6.39	22.87	221.60
M	Analyzer Range	5	15	50	500	5	15	50	500	5	15	50	500
N	*Initial Linearity = {(E-C)-((D-C)xB)/A} x 100/M*	*-0.5*	*-0.2*	*0.1*	*0.5*	*-0.5*	*-0.2*	*0.1*	*0.5*	*-0.5*	*-0.2*	*0.1*	*0.5*
O	*Final Linearity = {(L-J)-((K-J)xB)/A} x 100/M*	*-0.2*	*-0.3*	*-0.6*	*0.3*	*-0.2*	*-0.3*	*-0.6*	*0.3*	*-0.2*	*-0.3*	*-0.6*	*0.3*
P	*Initial Cal Error, Zero (%F.S.) = [C/M] x 100*	*0.0*	*-0.1*	*0.0*	*0.0*	*0.0*	*-0.1*	*0.0*	*0.0*	*0.0*	*-0.1*	*0.0*	*0.0*
Q	*Final Cal Error, Zero (%F.S.) = [J/M] x 100*	*0.2*	*0.0*	*0.3*	*0.1*	*0.2*	*0.0*	*0.3*	*0.1*	*0.2*	*0.0*	*0.3*	*0.1*
R	*Initial Cal Error, Mid (%F.S.) = [(E-B)/M] x 100*	*-0.7*	*-0.3*	*0.4*	*0.5*	*-0.7*	*-0.3*	*0.4*	*0.5*	*-0.7*	*-0.3*	*0.4*	*0.5*
S	*Final Cal Error, Mid (%F.S.) = [(L-B)/M] x 100*	*-0.5*	*-0.6*	*-0.2*	*0.5*	*-0.5*	*-0.6*	*-0.2*	*0.5*	*-0.5*	*-0.6*	*-0.2*	*0.5*
T	*Initial Cal Error, High (%F.S.) = [(D-A)/M] x 100*	*-0.2*	*-0.2*	*0.5*	*0.0*	*-0.2*	*-0.2*	*0.5*	*0.0*	*-0.2*	*-0.2*	*0.5*	*0.0*
U	*Final Cal Error, High (%F.S.) = [(K-A)/M] x 100*	*-0.6*	*-0.6*	*0.5*	*0.4*	*-0.6*	*-0.6*	*0.5*	*0.4*	*-0.6*	*-0.6*	*0.5*	*0.4*
V	*Initial System Bias, Zero (%F.S.) = [(F-C)]/M] x 100*	*0.2*	*0.1*	*0.0*	*-0.1*	*0.6*	*0.0*	*-0.1*	*0.1*	*0.6*	*0.0*	*-0.1*	*0.1*
W	*Final System Bias, Zero (%F.S.) = [(H-J)]/M] x 100*	*0.4*	*-0.1*	*-0.4*	*0.1*	*0.4*	*-0.1*	*-0.4*	*0.1*	*0.4*	*-0.1*	*-0.3*	*0.1*
X	*Initial System Bias, Upper (%F.S.) = [(G-D*)]/M] x 100*	*0.2*	*0.1*	*-0.1*	*0.5*	*0.4*	*-0.1*	*-0.3*	*0.2*	*0.8*	*0.1*	*-0.4*	*-0.2*
Y	*Final System Bias, Upper (%F.S.) = [(I-K**)]/M] x 100*	*0.8*	*0.3*	*-0.3*	*-0.2*	*1.2*	*0.5*	*-0.4*	*-0.6*	*1.4*	*0.3*	*-0.3*	*-0.7*
Z	*Response Time (sec.)*	*17.0*	*19.0*	*22.0*	*23.0*	*17.0*	*19.0*	*22.0*	*23.0*	*17.0*	*19.0*	*22.0*	*23.0*

* D or E, whichever gas was used for bias check

** K or L, whichever gas was used for bias check

PLANT: MCWD (Reservoir 1)
UNIT: Res 1 Engine 1
DATE: 8/26/2013

NOx TO NO CONVERTER EFFICIENCY CALCULATION

NO2 CONCENTRATION (Co):	12.76
AUDIT GAS WITH NO MODE (C1):	0.15
AUDIT GAS WITH NOx MODE (C2):	12.05
|C2-C1|=	11.90

% CONVERTER EFFICIENCY: **%CE=(C2-C1)*100/C0=** **93.26**

Criteria for Passing CE check: CE >90%
C1 < 5% of Audit gas NOx certified value

B12

GAS DIVIDER VERIFICATION CHECK

FACILITY:	MCWD (Reservoir 1)	DILUTION GAS:	20.98%
TEST DATE:	8/26/2013	CHALLENGE GAS:	9.25%
ANALYZER:	O2	GAS DIVIDER MODEL #:	SGD-710C
RANGE:	25%	GAS DIVIDER SERIAL #:	2455501-07
UNIT TESTED:	Res 1 Engine 1		

RUN 1

% DILUTION	PREDICTED CONC. (%)	ACTUAL CONC. (%)	PERCENT ERROR (%)
100	20.98	21.19	1.00
80	16.78	16.81	0.15
60	12.59	12.54	-0.38
40	8.39	8.31	-0.98
20	4.20	4.18	-0.38
CHALLENGE GAS	9.25	9.30	0.54

RUN 2

% DILUTION	PREDICTED CONC. (%)	ACTUAL CONC. (%)	PERCENT ERROR (%)
100	20.98	21.17	0.91
80	16.78	16.80	0.10
60	12.59	12.53	-0.46
40	8.39	8.33	-0.74
20	4.20	4.19	-0.14
CHALLENGE GAS	9.25	9.27	0.22

RUN 3

% DILUTION	PREDICTED CONC. (%)	ACTUAL CONC. (%)	PERCENT ERROR (%)
100	20.98	21.13	0.71
80	16.78	16.78	-0.02
60	12.59	12.52	-0.54
40	8.39	8.31	-0.98
20	4.20	4.18	-0.38
CHALLENGE GAS	9.25	9.28	0.32

Allowable Error </= 2.00%

Facility:	**MCWD (Reservoir 2)**
Test Date:	**8/29/2013**
Unit:	**Res 2 Engine 4**
Engine Rated bhp:	**369**
Engine Serial No.:	**10769-4**

COMPLIANCE RESULTS:

PARAMETERS	Normal		Maximum		Minimum	
	As Measured	Report Limit*	As Measured	Report Limit*	As Measured	Report Limit*
NOx Concentration, ppm dry	1.14	10.0	1.08	10.0	0.94	10.0
NOx Concentration, ppm @ 15% O_2	**0.32**	**2.82**	**0.31**	**2.86**	**0.26**	**2.82**
NOx Permit Limit, ppm @ 15% O_2	**11.00**	**11.00**	**11.00**	**11.00**	**11.00**	**11.00**
NOx Pass/Fail Status:	***Passed***	***Passed***	***Passed***	***Passed***	***Passed***	***Passed***
CO Concentration, ppm dry	101.1		151.0		132.5	
CO Concentration, ppm @ 15% O_2	**28.54**		**43.17**		**37.31**	
CO Permit Limit, ppm @ 15% O_2	**76.00**		**76.00**		**76.00**	
CO Pass/Fail Status:	***Passed***		***Passed***		***Passed***	
VOC Concentration, ppm**	9.83					
VOC Concentration, ppm @ 15% O_2	**2.77**					
VOC Permit Limit, ppm @ 15% O_2	**30.00**					
VOC Pass/Fail Status:	***Passed***					

*Reported limit at 20% Range

** included bias factor of 1.086 for Method 25.3

SUPPORTING DATA:

PARAMETERS	Normal	Maximum	Minimum
O_2 Concentration, %	0.0	0.26	0.0
CO_2 Concentration, %	12.10	12.07	12.09
Methane Concentration, ppm	727		
Catalyst's Temperature, F (in/out)	904 / 942	986 / 1018	868 / 940
Engine Operating RPM	847	971	790
NOx Emission Factor (lb/mmBtu)	0.001	0.001	0.001
CO Emission Factor (lb/mmBtu)	0.064	0.097	0.084
VOC Emission Factor (lb/mmBtu)	0.0036		
Natural Gas Fuel Usage (scfh)	2,203	2,699	1,966
Oxygen Sensor Reading (mv)	819	830	775
AFRC Setting (phi)	1.042	1.051	1.041
AFRC Reading (phi)	1.044	1.049	1.027
Engine's Elapse Time Meter, hrs	16,056	16,057	16,058

CONTINUOUS EMISSIONS MONITORING SYSTEM

FACILITY:	MCWD (Reservoir 2)
CITY:	Costa Mesa
UNIT TESTED:	Res 2 Engine 4
DATE:	8/29/2013
FIRING CONDITIONS:	Normal, Maximum, Minimum
ENGINE SERIAL NO.:	10769-4
ENGINE RATED BHP:	369

	CAL GAS (Ca)		RANGE
O2:	4.62	2.77	5.00
CO2:	12.96	6.48	15.00
NOx:	45.95	22.98	50.00
CO:	437.90	218.95	500.00

LOAD TEST	TIME (hhmm)	PARAMETER	INITIAL S.B. CAL ZERO (iZ)	INITIAL S.B. CAL SPAN (iSP)	FINAL S.B. CAL ZERO (fZ)	FINAL S.B. CAL SPAN (fSP)	DRIFT ZERO (Zdr)	DRIFT CAL (Cdr.)	CONCENTRATION MEAS. (Cm)	CONCENTRATION DRIFT CORR. (Ccorr.)	CONCENTRATION @ 15% O2 (C@)	EMISSION RATE (lb/mmBtu)
Normal	937-1007	**CO_2**	0.00	6.43	0.00	6.44	0.00	0.07	*12.02*	12.10	-	
		O_2	0.02	4.58	0.05	4.61	0.60	0.60	*0.03*	**-0.01**	-	
		NOx	0.06	45.83	0.00	45.50	-0.12	-0.66	*1.16*	**1.14**	0.32	**0.001**
		CO	0.80	434.40	0.00	437.50	-0.16	0.62	*100.98*	**101.12**	28.54	**0.064**
Maximum	1033-1048	**CO_2**	0.00	6.44	0.00	6.45	0.00	0.07	*12.00*	12.07	-	
		O_2	0.05	4.61	0.07	4.65	0.40	0.80	*0.32*	**0.26**	-	
		NOx	0.00	45.50	0.00	45.95	0.00	0.90	*1.07*	**1.08**	0.31	**0.001**
		CO	0.00	437.50	0.50	436.50	0.10	-0.20	*150.84*	**150.99**	43.17	**0.097**
Minimum	1108-1125	**CO_2**	0.00	6.45	0.00	6.42	0.00	-0.20	*12.01*	12.09	-	
		O_2	0.07	4.65	0.08	4.63	0.20	-0.40	*0.03*	**-0.05**	-	
		NOx	0.00	45.95	0.00	45.90	0.00	-0.10	*0.94*	**0.94**	0.26	**0.001**
		CO	0.50	436.50	1.00	435.50	0.10	-0.20	*132.42*	**132.47**	37.31	**0.084**

Zdr = (fZ-iZ)/F.S.x 100 ; Cdr = (fSP-iSP)/F.S.x 100 ; Ccorr = (Cm-(iZ+fZ)/2) x [Ca/(((fSP+iSP)/2)-((FZ+iZ)/2)]

Fd @60F= 8578 scf/mmBtu for Nat. gas Fuel

MW= 46 for NOx, 28 for CO

SV@60F= 379.5 scf/lb-mole

Emission Factor E= Lb NOx/mmBtu= ppm NOx*E-6*46/379.5*Fd*20.9/(20.9-%O2)

(For CO using MW of 28)

B15

CALIBRATION DATA

FACILITY: MCWD (Reservoir 2)
CITY: Costa Mesa
UNIT TESTED: Res 2 Engine 4
DATE: 8/29/2013

FIRING CONDITION: Normal, Maximum, Minimum

		Normal				Maximum				Minimum			
		O2	CO2	NOx	CO	O2	CO2	NOx	CO	O2	CO2	NOx	CO
A	High Span Gas Concentration	4.62	12.96	45.95	437.90	4.62	12.96	45.95	437.90	4.62	12.96	45.95	437.90
B	Mid Span Gas Concentration	2.77	6.48	22.98	218.95	2.77	6.48	22.98	218.95	2.77	6.48	22.98	218.95
C	Initial Zero Response	0.00	0.00	0.01	0.80	0.00	0.00	0.01	0.80	0.00	0.00	0.01	0.80
D	Initial High Span Response	4.64	13.10	46.19	439.80	4.64	13.10	46.19	439.80	4.64	13.10	46.19	439.80
E	Initial Mid Span Response	2.76	6.50	22.77	218.00	2.76	6.50	22.77	218.00	2.76	6.50	22.77	218.00
F	*Initial System Bias Zero*	0.02	0.00	0.06	0.60	0.05	0.00	0.00	0.00	0.07	0.00	0.00	0.50
G	*Initial System Bias Upper Response*	4.58	6.43	45.83	434.40	4.61	6.44	45.50	437.50	4.65	6.45	45.95	436.50
H	*Final System Bias Zero*	0.05	0.00	0.00	0.00	0.07	0.00	0.00	0.50	0.08	0.00	0.00	1.00
I	*Final System Bias Upper Response*	4.61	6.44	45.50	437.50	4.65	6.45	45.95	436.50	4.63	6.42	45.90	435.50
J	Final Zero Response	0.07	0.01	0.11	0.30	0.07	0.01	0.11	0.30	0.07	0.01	0.11	0.30
K	Final High Span Response	4.62	12.95	46.09	439.50	4.62	12.95	46.09	439.50	4.62	12.95	46.09	439.50
L	Final Mid Span Response	2.79	6.41	22.92	223.60	2.79	6.41	22.92	223.60	2.79	6.41	22.92	223.60
M	Analyzer Range	5	15	50	500	5	15	50	500	5	15	50	500
N	*Initial Linearity = {(E-C)-((D-C)xB)/A} x 100/M*	*-0.5*	*-0.3*	*-0.7*	*-0.5*	*-0.5*	*-0.3*	*-0.7*	*-0.5*	*-0.5*	*-0.3*	*-0.7*	*-0.5*
O	*Final Linearity = {(L-J)-((K-J)xB)/A} x 100/M*	*-0.2*	*-0.5*	*-0.4*	*0.7*	*-0.2*	*-0.5*	*-0.4*	*0.7*	*-0.2*	*-0.5*	*-0.4*	*0.7*
P	*Initial Cal Error, Zero (%F.S.) = [C/M] x 100*	*0.0*	*0.0*	*0.0*	*0.2*	*0.0*	*0.0*	*0.0*	*0.2*	*0.0*	*0.0*	*0.0*	*0.2*
Q	*Final Cal Error, Zero (%F.S.) = [J/M] x 100*	*1.4*	*0.1*	*0.2*	*0.1*	*1.4*	*0.1*	*0.2*	*0.1*	*1.4*	*0.1*	*0.2*	*0.1*
R	*Initial Cal Error, Mid (%F.S.) = [(E-B)/M] x 100*	*-0.3*	*0.1*	*-0.4*	*-0.2*	*-0.3*	*0.1*	*-0.4*	*-0.2*	*-0.3*	*0.1*	*-0.4*	*-0.2*
S	*Final Cal Error, Mid (%F.S.) = [(L-B)/M] x 100*	*0.3*	*-0.5*	*-0.1*	*0.9*	*0.3*	*-0.5*	*-0.1*	*0.9*	*0.3*	*-0.5*	*-0.1*	*0.9*
T	*Initial Cal Error, High (%F.S.) = [(D-A)/M] x 100*	*0.4*	*0.9*	*0.5*	*0.4*	*0.4*	*0.9*	*0.5*	*0.4*	*0.4*	*0.9*	*0.5*	*0.4*
U	*Final Cal Error, High (%F.S.) = [(K-A)/M] x 100*	*0.0*	*-0.1*	*0.3*	*0.3*	*0.0*	*-0.1*	*0.3*	*0.3*	*0.0*	*-0.1*	*0.3*	*0.3*
V	*Initial System Bias, Zero (%F.S.) = [(F-C)]/M] x 100*	*0.4*	*0.0*	*0.1*	*0.0*	*1.0*	*0.0*	*0.0*	*-0.2*	*1.4*	*0.0*	*0.0*	*-0.1*
W	*Final System Bias, Zero (%F.S.) = [(H-J)]/M] x 100*	*-0.4*	*-0.1*	*-0.2*	*-0.1*	*0.0*	*-0.1*	*-0.2*	*0.0*	*0.2*	*-0.1*	*-0.2*	*0.1*
X	*Initial System Bias, Upper (%F.S.) = [(G-D*)]/M] x 100*	*-1.2*	*-0.5*	*-0.7*	*-1.1*	*-0.6*	*-0.4*	*-1.4*	*-0.5*	*0.2*	*-0.3*	*-0.5*	*-0.7*
Y	*Final System Bias, Upper (%F.S.) = [(I-K**)]/M] x 100*	*-0.2*	*0.2*	*-1.2*	*-0.4*	*0.6*	*0.3*	*-0.3*	*-0.6*	*0.2*	*0.1*	*-0.4*	*-0.8*
Z	*Response Time (sec.)*	*20.0*	*22.0*	*23.0*	*21.0*	*20.0*	*22.0*	*23.0*	*21.0*	*20.0*	*22.0*	*23.0*	*21.0*

* D or E, whichever gas was used for bias check

** K or L, whichever gas was used for bias check

Facility:	**MCWD (Reservoir 2)**
Test Date:	**8/29/2013**
Unit:	**Res 2 Engine 3**
Engine Rated bhp:	**369**
Engine Serial No.:	**10769-3**

COMPLIANCE RESULTS:

PARAMETERS	Normal		Maximum		Minimum	
	As Measured	Report Limit*	As Measured	Report Limit*	As Measured	Report Limit*
NOx Concentration, ppm dry	2.39	10.0	1.10	10.0	6.56	10.0
NOx Concentration, ppm @ 15% O_2	**0.67**	**2.82**	**0.31**	**2.82**	**1.85**	**2.82**
NOx Permit Limit, ppm @ 15% O_2	**11.00**	**11.00**	**11.00**	**11.00**	**11.00**	**11.00**
NOx Pass/Fail Status:	***Passed***	***Passed***	***Passed***	***Passed***	***Passed***	***Passed***
CO Concentration, ppm dry	119.0		164.2		145.5	
CO Concentration, ppm @ 15% O_2	**33.58**		**46.36**		**41.09**	
CO Permit Limit, ppm @ 15% O_2	**76.00**		**76.00**		**76.00**	
CO Pass/Fail Status:	***Passed***		***Passed***		***Passed***	
VOC Concentration, ppm**	7.93					
VOC Concentration, ppm @ 15% O_2	**2.24**					
VOC Permit Limit, ppm @ 15% O_2	**30.00**					
VOC Pass/Fail Status:	***Passed***					

*Reported limit at 20% Range

** included bias factor of 1.086 for Method 25.3

SUPPORTING DATA:

PARAMETERS	Normal	Maximum	Minimum
O_2 Concentration, %	0.0	0.01	0.01
CO_2 Concentration, %	12.15	12.14	12.18
Methane Concentration, ppm	450		
Catalyst's Temperature, F (in/out)	936 / 951	1016 / 1026	860 / 871
Engine Operating RPM	850	970	791
NOx Emission Factor (lb/mmBtu)	0.002	0.001	0.007
CO Emission Factor (lb/mmBtu)	0.075	0.104	0.092
VOC Emission Factor (lb/mmBtu)	0.0029		
Natural Gas Fuel Usage (scfh)	2,299	2,644	1,900
Oxygen Sensor Reading (mv)	840	817	805
AFRC Setting (phi)	1.050	1.047	1.040
AFRC Reading (phi)	1.047	1.045	1.032
Engine's Elapse Time Meter, hrs	17,855	17,856	17,856

CONTINUOUS EMISSIONS MONITORING SYSTEM

FACILITY:	MCWD (Reservoir 2)
CITY:	Costa Mesa
UNIT TESTED:	Res 2 Engine 3
DATE:	8/29/2013
FIRING CONDITIONS:	Normal, Maximum, Minimum
ENGINE SERIAL NO.:	10769-3
ENGINE RATED BHP:	369

	CAL GAS (Ca)		RANGE
O2:	4.62	2.77	5.00
CO2:	12.96	6.48	15.00
NOx:	45.95	22.98	50.00
CO:	437.90	218.95	500.00

LOAD TEST	TIME (hhmm)	PARAMETER	INITIAL S.B. CAL		FINAL S.B. CAL		DRIFT		CONCENTRATION			EMISSION RATE
			ZERO (iZ)	SPAN (iSP)	ZERO (fZ)	SPAN (fSP)	ZERO (Zdr)	CAL (Cdr.)	MEAS. (Cm)	DRIFT CORR. (Ccorr.)	@ 15% O2 (C@)	(lb/mmBtu)
Normal	1146-1216	CO_2	0.00	6.42	0.00	6.29	0.00	-0.87	*11.92*	12.15	-	
		O_2	0.08	4.63	0.01	4.61	-1.40	-0.40	*0.04*	**-0.01**	-	
		NOx	0.00	45.90	-0.04	45.74	-0.08	-0.32	*2.36*	**2.39**	0.67	**0.002**
		CO	1.00	435.50	0.30	436.90	-0.14	0.28	*118.99*	**118.98**	33.58	**0.075**
Maximum	1225-1239	CO_2	0.00	6.29	-0.01	6.42	-0.07	0.87	*11.91*	12.14	-	
		O_2	0.01	4.61	0.00	4.59	-0.20	-0.40	*0.01*	**0.01**	-	
		NOx	-0.04	45.74	-0.04	46.04	0.00	0.60	*1.06*	**1.10**	0.31	**0.001**
		CO	0.30	436.90	0.30	434.50	0.00	-0.48	*163.53*	**164.17**	46.36	**0.104**
Minimum	1315-1330	CO_2	-0.01	6.42	0.00	6.35	0.07	-0.47	*12.01*	12.18	-	
		O_2	0.00	4.59	0.00	4.60	0.00	0.20	*0.01*	**0.01**	-	
		NOx	-0.04	46.04	0.00	46.75	0.08	1.42	*6.61*	**6.56**	1.85	**0.007**
		CO	0.30	434.50	0.00	435.00	-0.06	0.10	*144.53*	**145.48**	41.09	**0.092**

Zdr = (fZ-iZ)/F.S.x 100 ; Cdr = (fSP-iSP)/F.S.x 100 ; Ccorr = (Cm-(iZ+fZ)/2) x [Ca/(((fSP+iSP)/2)-((FZ+iZ)/2)]

Fd @60F= 8578 scf/mmBtu for Nat. gas Fuel

MW= 46 for NOx, 28 for CO

SV@60F= 379.5 scf/lb-mole

Emission Factor E= Lb NOx/mmBtu= ppm NOx*E-6*46/379.5*Fd*20.9/(20.9-%O2)

(For CO using MW of 28)

CALIBRATION DATA

FACILITY: MCWD (Reservoir 2)
CITY: Costa Mesa
UNIT TESTED: Res 2 Engine 3
DATE: 8/29/2013

FIRING CONDITION: Normal, Maximum, Minimum

		Normal				Maximum				Minimum			
		O2	CO2	NOx	CO	O2	CO2	NOx	CO	O2	CO2	NOx	CO
A	High Span Gas Concentration	4.62	12.96	45.95	437.90	4.62	12.96	45.95	437.90	4.62	12.96	45.95	437.90
B	Mid Span Gas Concentration	2.77	6.48	22.98	218.95	2.77	6.48	22.98	218.95	2.77	6.48	22.98	218.95
C	Initial Zero Response	0.07	0.01	0.11	0.30	0.07	0.01	0.11	0.30	0.07	0.01	0.11	0.30
D	Initial High Span Response	4.62	12.95	46.09	439.50	4.62	12.95	46.09	439.50	4.62	12.95	46.09	439.50
E	Initial Mid Span Response	2.79	6.41	22.92	223.60	2.79	6.41	22.92	223.60	2.79	6.41	22.92	223.60
F	*Initial System Bias Zero*	0.08	0.00	0.00	1.00	0.01	0.00	-0.04	0.30	0.00	-0.01	-0.04	0.30
G	*Initial System Bias Upper Response*	4.63	6.42	45.90	435.50	4.61	6.29	45.74	436.90	4.59	6.42	46.04	434.50
H	*Final System Bias Zero*	0.01	0.00	-0.04	0.30	0.00	-0.01	-0.04	0.30	0.00	0.00	0.00	0.00
I	*Final System Bias Upper Response*	4.61	6.29	45.74	436.90	4.59	6.42	46.04	434.50	4.60	6.35	46.75	435.00
J	Final Zero Response	0.02	-0.02	0.20	0.00	0.02	-0.02	0.20	0.00	0.02	-0.02	0.20	0.00
K	Final High Span Response	4.62	12.90	46.80	440.00	4.62	12.90	46.80	440.00	4.62	12.90	46.80	440.00
L	Final Mid Span Response	2.77	6.35	23.25	222.50	2.77	6.35	23.25	222.50	2.77	6.35	23.25	222.50
M	Analyzer Range	5	15	50	500	5	15	50	500	5	15	50	500
N	*Initial Linearity = {(E-C)-((D-C)xB)/A} x 100/M*	*-0.2*	*-0.5*	*-0.4*	*0.7*	*-0.2*	*-0.5*	*-0.4*	*0.7*	*-0.2*	*-0.5*	*-0.4*	*0.7*
O	*Final Linearity = {(L-J)-((K-J)xB)/A} x 100/M*	*-0.2*	*-0.6*	*-0.5*	*0.5*	*-0.2*	*-0.6*	*-0.5*	*0.5*	*-0.2*	*-0.6*	*-0.5*	*0.5*
P	*Initial Cal Error, Zero (%F.S.) = [C/M] x 100*	*1.4*	*0.1*	*0.2*	*0.1*	*1.4*	*0.1*	*0.2*	*0.1*	*1.4*	*0.1*	*0.2*	*0.1*
Q	*Final Cal Error, Zero (%F.S.) = [J/M] x 100*	*0.4*	*-0.1*	*0.4*	*0.0*	*0.4*	*-0.1*	*0.4*	*0.0*	*0.4*	*-0.1*	*0.4*	*0.0*
R	*Initial Cal Error, Mid (%F.S.) = [(E-B)/M] x 100*	*0.3*	*-0.5*	*-0.1*	*0.9*	*0.3*	*-0.5*	*-0.1*	*0.9*	*0.3*	*-0.5*	*-0.1*	*0.9*
S	*Final Cal Error, Mid (%F.S.) = [(L-B)/M] x 100*	*-0.1*	*-0.9*	*0.5*	*0.7*	*-0.1*	*-0.9*	*0.5*	*0.7*	*-0.1*	*-0.9*	*0.5*	*0.7*
T	*Initial Cal Error, High (%F.S.) = [(D-A)/M] x 100*	*0.0*	*-0.1*	*0.3*	*0.3*	*0.0*	*-0.1*	*0.3*	*0.3*	*0.0*	*-0.1*	*0.3*	*0.3*
U	*Final Cal Error, High (%F.S.) = [(K-A)/M] x 100*	*0.0*	*-0.4*	*1.7*	*0.4*	*0.0*	*-0.4*	*1.7*	*0.4*	*0.0*	*-0.4*	*1.7*	*0.4*
V	*Initial System Bias, Zero (%F.S.) = [(F-C)]/M] x 100*	*0.2*	*-0.1*	*-0.2*	*0.1*	*-1.2*	*-0.1*	*-0.3*	*0.0*	*-1.4*	*-0.1*	*-0.3*	*0.0*
W	*Final System Bias, Zero (%F.S.) = [(H-J)}/M] x 100*	*-0.2*	*0.1*	*-0.5*	*0.1*	*-0.4*	*0.1*	*-0.5*	*0.1*	*-0.4*	*0.1*	*-0.4*	*0.0*
X	*Initial System Bias, Upper (%F.S.) = [(G-D*)}/M] x 100*	*0.2*	*0.1*	*-0.4*	*-0.8*	*-0.2*	*-0.8*	*-0.7*	*-0.5*	*-0.6*	*0.1*	*-0.1*	*42.2*
Y	*Final System Bias, Upper (%F.S.) = [(I-K**)}/M] x 100*	*-0.2*	*-0.4*	*-2.1*	*-0.6*	*-0.6*	*0.5*	*-1.5*	*-1.1*	*-0.4*	*0.0*	*-0.1*	*42.5*
Z	*Response Time (sec.)*	*21.0*	*20.0*	*22.0*	*23.0*	*21.0*	*20.0*	*22.0*	*23.0*	*21.0*	*20.0*	*22.0*	*23.0*

* D or E, whichever gas was used for bias check

** K or L, whichever gas was used for bias check

PLANT: MCWD (Reservoir 2)
UNIT: Res 2 Engine 4 & Engine 3
DATE: 8/29/2013

NOx TO NO CONVERTER EFFICIENCY CALCULATION

NO2 CONCENTRATION (Co):	12.76
AUDIT GAS WITH NO MODE (C1):	0.11
AUDIT GAS WITH NOx MODE (C2):	11.92
|C2-C1|=	11.81

% CONVERTER EFFICIENCY: **%CE=(C2-C1)*100/C0=** **92.55**

Criteria for Passing CE check: CE >90%
C1 < 5% of Audit gas NOx certified value

GAS DIVIDER VERIFICATION CHECK

FACILITY:	MCWD (Reservoir 2)	DILUTION GAS:	20.98%
TEST DATE:	8/29/2013	CHALLENGE GAS:	9.25%
ANALYZER:	O2	GAS DIVIDER MODEL #:	SGD-710C
RANGE:	25%	GAS DIVIDER SERIAL #:	2455501-07
UNIT TESTED:	Res 2 Engine 4	& Res 2 Engine 3	

RUN 1

% DILUTION	PREDICTED CONC. (%)	ACTUAL CONC. (%)	PERCENT ERROR (%)
100	20.98	21.14	0.76
80	16.78	16.70	-0.50
60	12.59	12.56	-0.22
40	8.39	8.31	-0.98
20	4.20	4.17	-0.62
CHALLENGE GAS	9.25	9.34	0.97

RUN 2

% DILUTION	PREDICTED CONC. (%)	ACTUAL CONC. (%)	PERCENT ERROR (%)
100	20.98	21.17	0.91
80	16.78	16.79	0.04
60	12.59	12.52	-0.54
40	8.39	8.32	-0.86
20	4.20	4.19	-0.14
CHALLENGE GAS	9.25	9.35	1.08

RUN 3

% DILUTION	PREDICTED CONC. (%)	ACTUAL CONC. (%)	PERCENT ERROR (%)
100	20.98	21.14	0.76
80	16.78	16.78	-0.02
60	12.59	12.53	-0.46
40	8.39	8.31	-0.98
20	4.20	4.19	-0.14
CHALLENGE GAS	9.25	9.29	0.43

Allowable Error </= 2.00%

Facility:	**MCWD (Reservoir 2)**
Test Date:	**9/5/2013**
Unit:	**Res 2 Engine 1**
Engine Rated bhp:	**369**
Engine Serial No.:	**10769-1**

COMPLIANCE RESULTS:

PARAMETERS	Normal	Maximum		Minimum
		As Measured	Report Limit*	
NOx Concentration, ppm dry	26.41	5.25	10.0	28.95
NOx Concentration, ppm @ 15% O_2	**7.48**	**1.48**	**2.83**	**8.21**
NOx Permit Limit, ppm @ 15% O_2	**11.00**	**11.00**	**11.00**	**11.00**
NOx Pass/Fail Status:	***Passed***	***Passed***	***Passed***	***Passed***
CO Concentration, ppm dry	137.2	126.3		136.2
CO Concentration, ppm @ 15% O_2	**38.85**	**35.69**		**38.59**
CO Permit Limit, ppm @ 15% O_2	**76.00**	**76.00**		**76.00**
CO Pass/Fail Status:	***Passed***	***Passed***		***Passed***
VOC Concentration, ppm**	16.07			
VOC Concentration, ppm @ 15% O_2	**4.55**			
VOC Permit Limit, ppm @ 15% O_2	**30.00**			
VOC Pass/Fail Status:	***Passed***			

*Reported limit at 20% Range

** included bias factor of 1.086 for Method 25.3

SUPPORTING DATA:

PARAMETERS	Normal	Maximum	Minimum
O_2 Concentration, %	0.07	0.03	0.09
CO_2 Concentration, %	12.04	12.05	12.06
Methane Concentration, ppm	661		
Catalyst's Temperature, F (in/out)	919 / 941	1016 / 1029	909 / 939
Engine Operating RPM	835	962	805
NOx Emission Factor (lb/mmBtu)	0.028	0.005	0.030
CO Emission Factor (lb/mmBtu)	0.087	0.080	0.087
VOC Emission Factor (lb/mmBtu)	0.0058		
Natural Gas Fuel Usage (scfh)	2,240	2,661	2,040
Oxygen Sensor Reading (mv)	790	776	791
AFRC Setting (phi)	1.036	1.028	1.034
AFRC Reading (phi)	1.040	1.031	1.037
Engine's Elapse Time Meter, hrs	16,427	16,428	16,429

B22

CONTINUOUS EMISSIONS MONITORING SYSTEM

FACILITY:	MCWD (Reservoir 2)
CITY:	Costa Mesa
UNIT TESTED:	Res 2 Engine 1
DATE:	9/5/2013
FIRING CONDITIONS:	Normal, Maximum, Minimum
ENGINE SERIAL NO.:	10769-1
ENGINE RATED BHP:	369

	CAL GAS (Ca)		RANGE
O2:	4.62	2.77	5.00
CO2:	12.96	6.48	15.00
NOx:	45.95	22.98	50.00
CO:	437.90	218.95	500.00

LOAD TEST	TIME (hhmm)	PARAMETER	INITIAL S.B. CAL ZERO (iZ)	INITIAL S.B. CAL SPAN (iSP)	FINAL S.B. CAL ZERO (fZ)	FINAL S.B. CAL SPAN (fSP)	DRIFT ZERO (Zdr)	DRIFT CAL (Cdr.)	CONCENTRATION MEAS. (Cm)	CONCENTRATION DRIFT CORR. (Ccorr.)	CONCENTRATION @ 15% O2 (C@)	EMISSION RATE (lb/mmBtu)
Normal	938-1008	CO_2	0.01	6.45	0.01	6.47	0.00	0.13	*11.99*	12.04	-	
		O_2	0.01	4.60	0.02	4.61	0.20	0.20	*0.08*	**0.07**	-	
		NOx	0.11	45.88	0.02	46.14	-0.18	0.52	*26.47*	**26.41**	7.48	**0.028**
		CO	-0.10	440.80	-0.30	433.90	-0.04	-1.38	*136.88*	**137.19**	38.85	**0.087**
Maximum	1021-1036	CO_2	0.01	6.47	0.01	6.45	0.00	-0.13	*12.00*	12.05	-	
		O_2	0.02	4.61	0.03	4.62	0.20	0.20	*0.05*	**0.03**	-	
		NOx	0.02	46.14	0.01	45.69	-0.02	-0.90	*5.26*	**5.25**	1.48	**0.005**
		CO	-0.30	433.90	0.30	436.40	0.12	0.50	*125.49*	**126.28**	35.69	**0.080**
Minimum	1053-1108	CO_2	0.01	6.45	0.00	6.42	-0.07	-0.20	*11.97*	12.06	-	
		O_2	0.03	4.62	0.04	4.63	0.20	0.20	*0.12*	**0.09**	-	
		NOx	0.01	45.69	0.01	45.89	0.00	0.40	*28.85*	**28.95**	8.21	**0.030**
		CO	0.30	436.40	-0.30	431.90	-0.12	-0.90	*134.99*	**136.16**	38.59	**0.087**

Zdr = (fZ-iZ)/F.S.x 100 ; Cdr = (fSP-iSP)/F.S.x 100 ; Ccorr = (Cm-(iZ+fZ)/2) x [Ca/((((fSP+iSP)/2)-((FZ+iZ)/2)]

Fd @60F= 8578 scf/mmBtu for Nat. gas Fuel

MW= 46 for NOx, 28 for CO

SV@60F= 379.5 scf/lb-mole

Emission Factor E= Lb NOx/mmBtu= ppm NOx*E-6*46/379.5*Fd*20.9/(20.9-%O2)

(For CO using MW of 28)

B23

CALIBRATION DATA

FACILITY: MCWD (Reservoir 2)
CITY: Costa Mesa
UNIT TESTED: Res 2 Engine 1
DATE: 9/5/2013

FIRING CONDITION: Normal, Maximum, Minimum

		Normal				Maximum				Minimum			
		O2	CO2	NOx	CO	O2	CO2	NOx	CO	O2	CO2	NOx	CO
A	High Span Gas Concentration	4.62	12.96	45.95	437.90	4.62	12.96	45.95	437.90	4.62	12.96	45.95	437.90
B	Mid Span Gas Concentration	2.77	6.48	22.98	218.95	2.77	6.48	22.98	218.95	2.77	6.48	22.98	218.95
C	Initial Zero Response	0.01	0.01	0.02	0.30	0.01	0.01	0.02	0.30	0.01	0.01	0.02	0.30
D	Initial High Span Response	4.61	12.97	45.98	436.30	4.61	12.97	45.98	436.30	4.61	12.97	45.98	436.30
E	Initial Mid Span Response	2.75	6.49	22.87	222.50	2.75	6.49	22.87	222.50	2.75	6.49	22.87	222.50
F	*Initial System Bias Zero*	0.01	0.01	0.11	-0.10	0.02	0.01	0.02	-0.30	0.03	0.01	0.01	0.30
G	*Initial System Bias Upper Response*	4.60	6.45	45.88	440.80	4.61	6.47	46.14	433.90	4.62	6.45	45.69	436.40
H	*Final System Bias Zero*	0.02	0.01	0.02	-0.30	0.03	0.01	0.01	0.30	0.04	0.00	0.01	-0.30
I	*Final System Bias Upper Response*	4.61	6.47	46.14	433.90	4.62	6.45	45.69	436.40	4.63	6.42	45.89	431.90
J	Final Zero Response	0.00	0.00	0.11	0.30	0.00	0.00	0.11	0.30	0.00	0.00	0.11	0.30
K	Final High Span Response	4.64	12.98	46.09	434.90	4.64	12.98	46.09	434.90	4.64	12.98	46.09	434.90
L	Final Mid Span Response	2.78	6.43	22.82	220.60	2.78	6.43	22.82	220.60	2.78	6.43	22.82	220.60
M	Analyzer Range	5	15	50	500	5	15	50	500	5	15	50	500
N	*Initial Linearity = {(E-C)-((D-C)xB)/A} x 100/M*	*-0.4*	*0.0*	*-0.3*	*0.8*	*-0.4*	*0.0*	*-0.3*	*0.8*	*-0.4*	*0.0*	*-0.3*	*0.8*
O	*Final Linearity = {(L-J)-((K-J)xB)/A} x 100/M*	*-0.1*	*-0.4*	*-0.6*	*0.6*	*-0.1*	*-0.4*	*-0.6*	*0.6*	*-0.1*	*-0.4*	*-0.6*	*0.6*
P	*Initial Cal Error, Zero (%F.S.) = [C/M] x 100*	*0.2*	*0.1*	*0.0*	*0.1*	*0.2*	*0.1*	*0.0*	*0.1*	*0.2*	*0.1*	*0.0*	*0.1*
Q	*Final Cal Error, Zero (%F.S.) = [J/M] x 100*	*0.0*	*0.0*	*0.2*	*0.1*	*0.0*	*0.0*	*0.2*	*0.1*	*0.0*	*0.0*	*0.2*	*0.1*
R	*Initial Cal Error, Mid (%F.S.) = [(E-B)/M] x 100*	*-0.5*	*0.1*	*-0.2*	*0.7*	*-0.5*	*0.1*	*-0.2*	*0.7*	*-0.5*	*0.1*	*-0.2*	*0.7*
S	*Final Cal Error, Mid (%F.S.) = [(L-B)/M] x 100*	*0.1*	*-0.3*	*-0.3*	*0.3*	*0.1*	*-0.3*	*-0.3*	*0.3*	*0.1*	*-0.3*	*-0.3*	*0.3*
T	*Initial Cal Error, High (%F.S.) = [(D-A)/M] x 100*	*-0.2*	*0.1*	*0.1*	*-0.3*	*-0.2*	*0.1*	*0.1*	*-0.3*	*-0.2*	*0.1*	*0.1*	*-0.3*
U	*Final Cal Error, High (%F.S.) = [(K-A)/M] x 100*	*0.4*	*0.1*	*0.3*	*-0.6*	*0.4*	*0.1*	*0.3*	*-0.6*	*0.4*	*0.1*	*0.3*	*-0.6*
V	*Initial System Bias, Zero (%F.S.) = [(F-C)]/M] x 100*	*0.0*	*0.0*	*0.2*	*-0.1*	*0.2*	*0.0*	*0.0*	*-0.1*	*0.4*	*0.0*	*0.0*	*0.0*
W	*Final System Bias, Zero (%F.S.) = [(H-J)]/M] x 100*	*0.4*	*0.1*	*-0.2*	*-0.1*	*0.6*	*0.1*	*-0.2*	*0.0*	*0.8*	*0.0*	*-0.2*	*-0.1*
X	*Initial System Bias, Upper (%F.S.) = [(G-D*)]/M] x 100*	*-0.2*	*-0.3*	*-0.2*	*0.9*	*0.0*	*-0.1*	*0.3*	*-0.5*	*0.2*	*-0.3*	*-0.6*	*0.0*
Y	*Final System Bias, Upper (%F.S.) = [(I-K**)]/M] x 100*	*-0.6*	*0.3*	*0.1*	*-0.2*	*-0.4*	*0.1*	*-0.8*	*0.3*	*-0.2*	*-0.1*	*-0.4*	*-0.6*
Z	*Response Time (sec.)*	*22.0*	*20.0*	*21.0*	*24.0*	*22.0*	*20.0*	*21.0*	*24.0*	*22.0*	*20.0*	*21.0*	*24.0*

* D or E, whichever gas was used for bias check

** K or L, whichever gas was used for bias check

Facility:	**MCWD (Reservoir 2)**
Test Date:	**9/5/2013**
Unit:	**Res 2 Engine 2**
Engine Rated bhp:	**369**
Engine Serial No.:	**10769-2**

COMPLIANCE RESULTS:

PARAMETERS	Normal		Maximum		Minimum	
	As Measured	Report Limit*	As Measured	Report Limit*	As Measured	Report Limit*
NOx Concentration, ppm dry	0.31	10.0	1.30	10.0	0.54	10.0
NOx Concentration, ppm @ 15% O_2	**0.09**	**2.82**	**0.37**	**2.83**	**0.15**	**2.82**
NOx Permit Limit, ppm @ 15% O_2	**11.00**	**11.00**	**11.00**	**11.00**	**11.00**	**11.00**
NOx Pass/Fail Status:	***Passed***	***Passed***	***Passed***	***Passed***	***Passed***	***Passed***
CO Concentration, ppm dry	139.2		162.4		115.6	
CO Concentration, ppm @ 15% O_2	**39.31**		**45.91**		**32.64**	
CO Permit Limit, ppm @ 15% O_2	**76.00**		**76.00**		**76.00**	
CO Pass/Fail Status:	***Passed***		***Passed***		***Passed***	
VOC Concentration, ppm**	9.00					
VOC Concentration, ppm @ 15% O_2	**2.54**					
VOC Permit Limit, ppm @ 15% O_2	**30.00**					
VOC Pass/Fail Status:	***Passed***					

*Reported limit at 20% Range

** included bias factor of 1.086 for Method 25.3

SUPPORTING DATA:

PARAMETERS	Normal	Maximum	Minimum
O_2 Concentration, %	0.01	0.03	0.01
CO_2 Concentration, %	12.22	12.28	12.18
Methane Concentration, ppm	428		
Catalyst's Temperature, F (in/out)	878 / 913	951 / 975	846 / 892
Engine Operating RPM	850	950	800
NOx Emission Factor (lb/mmBtu)	0.000	0.001	0.001
CO Emission Factor (lb/mmBtu)	0.088	0.103	0.073
VOC Emission Factor (lb/mmBtu)	0.0033		
Natural Gas Fuel Usage (scfh)	2,189	2,607	1,864
Oxygen Sensor Reading (mv)	785	789	774
AFRC Setting (phi)	1.025	1.033	1.031
AFRC Reading (phi)	1.026	1.032	1.028
Engine's Elapse Time Meter, hrs	16,455	16,456	16,457

CONTINUOUS EMISSIONS MONITORING SYSTEM

FACILITY:	MCWD (Reservoir 2)
CITY:	Costa Mesa
UNIT TESTED:	Res 2 Engine 2
DATE:	9/5/2013
FIRING CONDITIONS:	Normal, Maximum, Minimum
ENGINE SERIAL NO.:	10769-2
ENGINE RATED BHP:	369

	CAL GAS (Ca)		RANGE
O2:	4.62	2.77	5.00
CO2:	12.96	6.48	15.00
NOx:	45.95	22.98	50.00
CO:	437.90	218.95	500.00

LOAD TEST	TIME (hhmm)	PARAMETER	INITIAL S.B. CAL		FINAL S.B. CAL		DRIFT		CONCENTRATION			EMISSION RATE
			ZERO (iZ)	SPAN (iSP)	ZERO (fZ)	SPAN (fSP)	ZERO (Zdr)	CAL (Cdr.)	MEAS. (Cm)	DRIFT CORR. (Ccorr.)	@ 15% O2 (C@)	(lb/mmBtu)
Normal	1136-1206	CO_2	0.00	6.42	0.01	6.27	0.07	-1.00	*11.96*	12.22	-	
		O_2	0.04	4.63	0.02	4.60	-0.40	-0.60	*0.04*	**0.01**	-	
		NOx	0.01	45.89	0.01	46.09	0.00	0.40	*0.32*	**0.31**	0.09	**0.000**
		CO	-0.30	431.90	-0.30	435.90	0.00	0.80	*137.71*	**139.19**	39.31	**0.088**
Maximum	1220-1235	CO_2	0.01	6.27	0.01	6.32	0.00	0.33	*11.92*	12.28	-	
		O_2	0.02	4.60	0.03	4.63	0.20	0.60	*0.05*	**0.03**	-	
		NOx	0.01	46.09	0.01	46.44	0.00	0.70	*1.32*	**1.30**	0.37	**0.001**
		CO	-0.30	435.90	0.30	440.00	0.12	0.82	*162.44*	**162.42**	45.91	**0.103**
Minimum	1254-1309	CO_2	0.01	6.32	0.01	6.37	0.00	0.33	*11.92*	12.18	-	
		O_2	0.03	4.63	0.01	4.65	-0.40	0.40	*0.03*	**0.01**	-	
		NOx	0.01	46.44	0.01	46.93	0.00	0.98	*0.56*	**0.54**	0.15	**0.001**
		CO	0.30	440.00	-0.80	441.50	-0.22	0.30	*116.12*	**115.55**	32.64	**0.073**

Zdr = (fZ-iZ)/F.S.x 100 ; Cdr = (fSP-iSP)/F.S.x 100 ; Ccorr = (Cm-(iZ+fZ)/2) x [Ca/(((fSP+iSP)/2)-((FZ+iZ)/2)]

Fd @60F= 8578 scf/mmBtu for Nat. gas Fuel

MW= 46 for NOx, 28 for CO

SV@60F= 379.5 scf/lb-mole

Emission Factor E= Lb NOx/mmBtu= ppm NOx*E-6*46/379.5*Fd*20.9/(20.9-%O2)

(For CO using MW of 28)

B26

CALIBRATION DATA

FACILITY: MCWD (Reservoir 2)
CITY: Costa Mesa
UNIT TESTED: Res 2 Engine 2
DATE: 9/5/2013

FIRING CONDITION: Normal, Maximum, Minimum

		Normal				Maximum				Minimum			
		O2	CO2	NOx	CO	O2	CO2	NOx	CO	O2	CO2	NOx	CO
A	High Span Gas Concentration	4.62	12.96	45.95	437.90	4.62	12.96	45.95	437.90	4.62	12.96	45.95	437.90
B	Mid Span Gas Concentration	2.77	6.48	22.98	218.95	2.77	6.48	22.98	218.95	2.77	6.48	22.98	218.95
C	Initial Zero Response	0.00	0.00	0.11	0.30	0.00	0.00	0.11	0.30	0.00	0.00	0.11	0.30
D	Initial High Span Response	4.64	12.98	46.09	434.90	4.64	12.98	46.09	434.90	4.64	12.98	46.09	434.90
E	Initial Mid Span Response	2.78	6.43	22.82	220.60	2.78	6.43	22.82	220.60	2.78	6.43	22.82	220.60
F	*Initial System Bias Zero*	0.04	0.00	0.01	-0.30	0.02	0.01	0.01	-0.30	0.03	0.01	0.01	0.30
G	*Initial System Bias Upper Response*	4.63	6.42	45.89	431.90	4.60	6.27	46.09	435.90	4.63	6.32	46.44	440.00
H	*Final System Bias Zero*	0.02	0.01	0.01	-0.30	0.03	0.01	0.01	0.30	0.01	0.01	0.01	-0.80
I	*Final System Bias Upper Response*	4.60	6.27	46.09	435.90	4.63	6.32	46.44	440.00	4.65	6.37	46.93	441.50
J	Final Zero Response	0.00	0.01	0.11	-0.30	0.00	0.01	0.11	-0.30	0.00	0.01	0.11	-0.30
K	Final High Span Response	4.64	12.99	46.14	435.50	4.64	12.99	46.14	435.50	4.64	12.99	46.14	435.50
L	Final Mid Span Response	2.74	6.40	22.73	219.10	2.74	6.40	22.73	219.10	2.74	6.40	22.73	219.10
M	Analyzer Range	5	15	50	500	5	15	50	500	5	15	50	500
N	*Initial Linearity = {(E-C)-((D-C)xB)/A} x 100/M*	*-0.1*	*-0.4*	*-0.6*	*0.6*	*-0.1*	*-0.4*	*-0.6*	*0.6*	*-0.1*	*-0.4*	*-0.6*	*0.6*
O	*Final Linearity = {(L-J)-((K-J)xB)/A} x 100/M*	*-0.9*	*-0.7*	*-0.8*	*0.3*	*-0.9*	*-0.7*	*-0.8*	*0.3*	*-0.9*	*-0.7*	*-0.8*	*0.3*
P	*Initial Cal Error, Zero (%F.S.) = [C/M] x 100*	*0.0*	*0.0*	*0.2*	*0.1*	*0.0*	*0.0*	*0.2*	*0.1*	*0.0*	*0.0*	*0.2*	*0.1*
Q	*Final Cal Error, Zero (%F.S.) = [J/M] x 100*	*0.0*	*0.1*	*0.2*	*-0.1*	*0.0*	*0.1*	*0.2*	*-0.1*	*0.0*	*0.1*	*0.2*	*-0.1*
R	*Initial Cal Error, Mid (%F.S.) = [(E-B)/M] x 100*	*0.1*	*-0.3*	*-0.3*	*0.3*	*0.1*	*-0.3*	*-0.3*	*0.3*	*0.1*	*-0.3*	*-0.3*	*0.3*
S	*Final Cal Error, Mid (%F.S.) = [(L-B)/M] x 100*	*-0.7*	*-0.5*	*-0.5*	*0.0*	*-0.7*	*-0.5*	*-0.5*	*0.0*	*-0.7*	*-0.5*	*-0.5*	*0.0*
T	*Initial Cal Error, High (%F.S.) = [(D-A)/M] x 100*	*0.4*	*0.1*	*0.3*	*-0.6*	*0.4*	*0.1*	*0.3*	*-0.6*	*0.4*	*0.1*	*0.3*	*-0.6*
U	*Final Cal Error, High (%F.S.) = [(K-A)/M] x 100*	*0.4*	*0.2*	*0.4*	*-0.5*	*0.4*	*0.2*	*0.4*	*-0.5*	*0.4*	*0.2*	*0.4*	*-0.5*
V	*Initial System Bias, Zero (%F.S.) = [(F-C)]/M] x 100*	*0.8*	*0.0*	*-0.2*	*-0.1*	*0.4*	*0.1*	*-0.2*	*-0.1*	*0.6*	*0.1*	*-0.2*	*0.0*
W	*Final System Bias, Zero (%F.S.) = [(H-J)]/M] x 100*	*0.4*	*0.0*	*-0.2*	*0.0*	*0.6*	*0.0*	*-0.2*	*0.1*	*0.2*	*0.0*	*-0.2*	*-0.1*
X	*Initial System Bias, Upper (%F.S.) = [(G-D*)]/M] x 100*	*-0.2*	*-0.1*	*-0.4*	*-0.6*	*-0.8*	*-1.1*	*0.0*	*0.2*	*-0.2*	*-0.7*	*0.7*	*1.0*
Y	*Final System Bias, Upper (%F.S.) = [(I-K**)]/M] x 100*	*-0.8*	*-0.9*	*-0.1*	*0.1*	*-0.2*	*-0.5*	*0.6*	*0.9*	*0.2*	*-0.2*	*1.6*	*1.2*
Z	*Response Time (sec.)*	*20.0*	*23.0*	*22.0*	*21.0*	*20.0*	*23.0*	*22.0*	*21.0*	*20.0*	*23.0*	*22.0*	*21.0*

* D or E, whichever gas was used for bias check

** K or L, whichever gas was used for bias check

GAS DIVIDER VERIFICATION CHECK

FACILITY:	MCWD (Reservoir 2)	DILUTION GAS:	20.98%
TEST DATE:	9/5/2013	CHALLENGE GAS:	9.25%
ANALYZER:	O2	GAS DIVIDER MODEL #:	SGD-710C
RANGE:	25%	GAS DIVIDER SERIAL #:	2455501-07
UNIT TESTED:	Res 2 Engine 1	& Engine 2	

RUN 1

% DILUTION	PREDICTED CONC. (%)	ACTUAL CONC. (%)	PERCENT ERROR (%)
100	20.98	21.17	0.91
80	16.78	16.76	-0.14
60	12.59	12.48	-0.86
40	8.39	8.30	-1.10
20	4.20	4.17	-0.62
CHALLENGE GAS	9.25	9.34	0.97

RUN 2

% DILUTION	PREDICTED CONC. (%)	ACTUAL CONC. (%)	PERCENT ERROR (%)
100	20.98	21.19	1.00
80	16.78	16.79	0.04
60	12.59	12.53	-0.46
40	8.39	8.38	-0.14
20	4.20	4.19	-0.14
CHALLENGE GAS	9.25	9.30	0.54

RUN 3

% DILUTION	PREDICTED CONC. (%)	ACTUAL CONC. (%)	PERCENT ERROR (%)
100	20.98	21.13	0.71
80	16.78	16.75	-0.20
60	12.59	12.52	-0.54
40	8.39	8.31	-0.98
20	4.20	4.18	-0.38
CHALLENGE GAS	9.25	9.32	0.76

Allowable Error </= 2.00%

B28

PLANT: MCWD (Reservoir 2)
UNIT: Res 2 Engine 1 & Engine 2
DATE: 9/5/2013

NOx TO NO CONVERTER EFFICIENCY CALCULATION

NO2 CONCENTRATION (Co):	12.76
AUDIT GAS WITH NO MODE (C1):	0.06
AUDIT GAS WITH NOx MODE (C2):	11.66
|C2-C1|=	11.60

% CONVERTER EFFICIENCY: **%CE=(C2-C1)*100/C0=** **91**

Criteria for Passing CE check: CE >90%
C1 < 5% of Audit gas NOx certified value

B29

FUEL FLOW CALCULATION

FACILITY: MCWD (Reservoir 1)

TEST DATE: 8/21/2013

UNIT: Res 1 Engine 3

	NORMAL LOAD	MAXIMUM LOAD	MINIMUM LOAD
Actual Fuel Flow Rate per Hour, ACFH	730	916	600
Actual Fuel Flow Rate per Minute, ACFM	12.162	15.263	10.000
Fuel Pressure, psig	1.5	1.5	1.5
Fuel Temp., F	84.0	84.0	84.0
Corrected Fuel Flow Rate at standard conditions, scfm	13	16	11
Corrected Fuel Flow Rate at standard conditions, scfh	781	980	642

FUEL FLOW CALCULATION

FACILITY:	MCWD (Reservoir 1)
TEST DATE:	8/21/2013
UNIT:	Res 1 Engine 2

	NORMAL LOAD	MAXIMUM LOAD	MINIMUM LOAD
Actual Fuel Flow Rate per Hour, ACFH	750	979	632
Actual Fuel Flow Rate per Minute, ACFM	12.500	16.316	10.526
Fuel Pressure, psig	1.5	1.5	1.5
Fuel Temp., F	86.0	86.0	86.0
Corrected Fuel Flow Rate at standard conditions, scfm	13	17	11
Corrected Fuel Flow Rate at standard conditions, scfh	799	1043	673

FUEL FLOW CALCULATION

FACILITY:	MCWD (Reservoir 1)
TEST DATE:	8/26/2013
UNIT:	Res 1 Engine 1

	NORMAL LOAD	MAXIMUM LOAD	MINIMUM LOAD
Actual Fuel Flow Rate per Hour, ACFH	844	947	600
Actual Fuel Flow Rate per Minute, ACFM	14.063	15.789	10.000
Fuel Pressure, psig	1.5	1.5	1.5
Fuel Temp., F	82.0	82.0	82.0
Corrected Fuel Flow Rate at standard conditions, scfm	15	17	11
Corrected Fuel Flow Rate at standard conditions, scfh	906	1017	644

B32

FUEL FLOW CALCULATION

FACILITY:	MCWD (Reservoir 2)
TEST DATE:	8/29/2013
UNIT:	Res 2 Engine 4

	NORMAL LOAD	MAXIMUM LOAD	MINIMUM LOAD	
Actual Fuel Flow Rate per Hour, ACFH	2,129	2,609	1,900	18819300.00
Actual Fuel Flow Rate per Minute, ACFM	35.484	43.478	31.667	18819840.00
Fuel Pressure, psig	1.0	1.0	1.0	18820608.00
Fuel Temp., F	85.0	85.0	85.0	
Corrected Fuel Flow Rate at standard conditions, scfm	37	45	33	
Corrected Fuel Flow Rate at standard conditions, scfh	2203	2699	1966	

B33

FUEL FLOW CALCULATION

FACILITY:	MCWD (Reservoir 2)
TEST DATE:	8/29/2013
UNIT:	Res 2 Engine 3

	NORMAL LOAD	MAXIMUM LOAD	MINIMUM LOAD
Actual Fuel Flow Rate per Hour, ACFH	2,226	2,560	1,840
Actual Fuel Flow Rate per Minute, ACFM	37.097	42.667	30.667
Fuel Pressure, psig	1.0	1.0	1.0
Fuel Temp., F	86.0	86.0	86.0
Corrected Fuel Flow Rate at standard conditions, scfm	38	44	32
Corrected Fuel Flow Rate at standard conditions, scfh	2299	2644	1900

B34

FUEL FLOW CALCULATION

FACILITY:	MCWD (Reservoir 2)
TEST DATE:	9/5/2013
UNIT:	Res 2 Engine 1

	NORMAL LOAD	MAXIMUM LOAD	MINIMUM LOAD
Actual Fuel Flow Rate per Hour, ACFH	2,020	2,400	1,840
Actual Fuel Flow Rate per Minute, ACFM	33.667	40.000	30.667
Fuel Pressure, psig	2.0	2.0	2.0
Fuel Temp., F	81.0	81.0	81.0
Corrected Fuel Flow Rate at standard conditions, scfm	37	44	34
Corrected Fuel Flow Rate at standard conditions, scfh	2240	2661	2040

B35

FUEL FLOW CALCULATION

FACILITY:	MCWD (Reservoir 2)
TEST DATE:	9/5/2013
UNIT:	Res 2 Engine 2

	NORMAL LOAD	MAXIMUM LOAD	MINIMUM LOAD
Actual Fuel Flow Rate per Hour, ACFH	1,982	2,360	1,688
Actual Fuel Flow Rate per Minute, ACFM	33.030	39.333	28.125
Fuel Pressure, psig	2.0	2.0	2.0
Fuel Temp., F	83.0	83.0	83.0
Corrected Fuel Flow Rate at standard conditions, scfm	36	43	31
Corrected Fuel Flow Rate at standard conditions, scfh	2189	2607	1864

GENERAL CALCULATIONS

Standard conditions:
29.92 In of Hg, 60F or 60F

Gas Moisture at standard conditions (scf):
Vwtr = .04707*Vcond

Sample volume at standard conditions (scf):
Vmstd = 17.64*Vmacf*Ym*(Pbar+@h/13.6)/(Tm+460)

Percent of water:
$\%H_2O = 100*Vmstd/(Vmstd+Vwtr)$

Dry molecular weight:
$Md = (44(\%CO_2)+32(\%O_2)+28(\%N_2+\%CO))/100$

Wet molecular weight:
$Mw = Md(1-\%H_2O/100)+18(\%H_2O/100)$

Stack gas pressure (In. Hg):
Pstk = Pbar+Psta/13.6

Average velocity head:
Ave. Delta P = $\{SQRT\ (DeltaP)\}^2$

Stack gas velocity (fps):
V = 85.49*Cp*SQRT(Delta P)*SQRT((Ts+460)/(Pstk*Mw))

Percent of excess air:
$\%EXCA = 100*(\%O_2-0.5\%CO)/(0.264(\%N_2-(\%O_2-0.5\%CO)))$

Stack gas flow (scfm):
$Qstk = 60(1-\%H_2O/100)*V*A*(528/(Ts+460))*Pstk/29.92$

Concentration at 15% O_2:
PPM @ 15% O_2 = PPM measured*5.9/(20.9-%O_2)

Emissions LB/MMBTU:
LB/MMBTU=PPM*10E-6*(MW Lb/Lb Mole)/SV Mole*Fd*20.9/(20.9-%O_2)

Emissions LB/HR:
LB/HR=PPM*10E-6*((MW Lb/Lb.Mole)/SV)*Fd*FF*(1050BTU/Dscf)*20.9/(20.9-%O_2)

CALCULATION FOR METHOD 100.1:

Corrected ppm = (ppm measured-Co)*Cma/(Cm-Co)
Where: Co= Average of initial and final bias zeros
Cm= Average of initial and final bias calibrations
Cma= Certified gas value used for the bias calibration.

Calibration Error= 100*(Certified value-Anlzr response)/Anlzr range
Percent Bias= 100*(Direct anlz. response-Bias response)/Anlz. range
System Zero/Span Drifts= 100*(Final-Initial)/Analz. range
Linearity= 100*(Anlz. mid. gas response-Predictive value)/range

Where:

Predictive Value for the mid gas is found by a straight line drawn between hi gas and zero gas calibration points which can be calculated from the straight line equation, Y=mx+b where m is the slope of the line and b is the Y-intercept. The calculation is done by Air Gas's spreadsheet for Method 100.1.

Notations:

A:	Stack cross area, Square feet
Cp:	Pitot coefficient
@h:	Orifice Pressure, In. H2O
MW:	Molecular weight
Md:	Dry molecular weight of flue gas
Mw:	Wet molecular weight of flue gas
Pbar:	Barometric pressure, In. Hg
Psta:	Static Pressure, In. H2O
Pstk:	Stack pressure, In, Hg
Delta P:	differential pressure, In. H2O
Qstk:	Stack gas flow, scfm
Tm:	Meter temperature, F
Ts:	Stack gas temperature, F
Vcond:	Volume of water condensation, ml
Vm:	Meter volume, acf
Vmstd:	Sample gas at standard conditions, scf
Vwtr:	Water vapor volume, scf
Ym:	Meter correction factor
SV:	Specific molar volume, 379.5 dscf/Lb.mole at 60F, or 385.3 dscf/Lb.mole at 68F
FF:	Fuel Flow Rate (SCF/HR)
Fd:	Dry Fuel Factor, for nat. gas Fd=8710 Dscf/mmBtu at 68F, (8578 Dscf/MMBTU at 60F)

SPECIALTY AIR TECHNOLOGIES, INC.

Long Beach, CA 90805 - Telephone: 562-984-7230

EPA PGVP ID # J12013

CERTIFICATE OF ANALYSIS / EPA PROTOCOL

CUSTOMER:	Air Gas Testing	***CERTIFICATION DATE:***	20-May-13
PO NUMBER:	50213	***EXPIRATION DATE:***	21-May-17
CYLINDER NUMBER:	CC45686	***LOT NUMBER:***	15053-07
CYLINDER PRESSURE:	2000	***ORDER NUMBER:***	27528
CYLINDER SIZE:	150AL		

Component	*Certified Concentration*	*Accuracy*	*Procedure*
Oxygen	***20.98 %***	***+/-0.08%***	***G1***
Nitrogen	***Balance***		

This cylinder has been certified per the 2012 EPA Traceability Protocol EPA-600/R-12/531, using the procedure listed above.
The cylinder should not be used when the pressure is below 0.7 megapascals (100 psig)

REFERENCE STANDARD

Component	*Cylinder Number*	*Reference Number*	*Reference Concentration*
Oxygen	**CC105657**	**GMIS**	**20.96 %**

The GMIS used was named against SRM 2659a, 20.72% Oxygen in Nitrogen Serial Number CAL015489

METHOD OF ANALYSIS

Analyzer	*Serial Number*	*Analytical Principle*	*Calibration Date*
Sevromex 1100	**1101-2228-C**	**Paramagnetic**	**4-May-13**

ANALYZER READINGS

COMPONENT			***Oxygen***				
FIRST ANALYSIS DATE:			**20-May-13**				
ref	84.9	sample	85	zero	0.5	conc	20.98
sample	85	zero	0.5	ref	84.9	conc	20.98
zero	0.5	ref	84.9	sample	85	conc	20.98
						Average Conc	20.98

Authorized Signature: _____

Claude Vahle / Lab Manager

C1

SPECIALTY AIR TECHNOLOGIES, INC.

Long Beach, CA 90805 - Telephone: 562-984-7230

EPA PGVP ID # J12013

CERTIFICATE OF ANALYSIS / EPA PROTOCOL

CUSTOMER:	Air Gas Testing	***CERTIFICATION DATE:***	4-Apr-13
PO NUMBER:	32113	***EXPIRATION DATE:***	4-Apr-16
CYLINDER NUMBER:	SG9113298BAL	***LOT NUMBER:***	29033-02
CYLINDER PRESSURE:	2000 psig	***ORDER NUMBER:***	27212
CYLINDER SIZE:	150AL		

Component	*Certified Concentration*	*Accuracy*	*Procedure*
Oxygen	***9.245 %***	***+/-1%***	***G1***
Carbon Dioxide	***12.96 %***	***+/-1%***	***G1***
Nitrogen	***Balance***		

This cylinder has been certified per the 1997 EPA Traceability Protocol EPA-600/97/121, using the procedure listed above.

The cylinder should not be used when the pressure is below 1.0 megapascals (150 psig)

REFERENCE STANDARD

Component	*Cylinder Number*	*Reference Number*	*Reference Concentration*
Oxygen	**CC105657**	**GMIS**	**20.92 %**
Carbon Dioxide	**CC107251**	**GMIS**	**16.053 %**

METHOD OF ANALYSIS

Analyzer	*Serial Number*	*Analytical Principle*	*Calibration Date*
Servomex 1100	**1101-2228-C**	**Paramagnetic**	**4-Apr-12**
Siemens Ultramat 23	**N1TN0382**	**NDIR**	**4-Apr-13**

ANALYZER READINGS

COMPONENT : ***Oxygen***

FIRST ANALYSIS DATE: **4-Apr-13**

ref	86	sample	38.9	zero	1.6	conc	9.25
sample	38.9	zero	1.6	ref	86	conc	9.25
zero	1.6	ref	86	sample	38.9	conc	9.25
					Average Conc		9.245

COMPONENT: ***Carbon Dioxide***

FIRST ANALYSIS DATE: **4-Apr-13**

ref	64.7	sample	52.3	zero	0.4	conc	12.96
sample	52.3	zero	0.4	ref	64.7	conc	12.96
zero	0.4	ref	64.8	sample	52.4	conc	12.96
					Average Conc		12.959

Authorized Signature: _____

Claude Vahle / Lab Manager

CV

SPECIALTY AIR TECHNOLOGIES, INC.

Long Beach, CA 90805 - Telephone: 562-984-7230

EPA PGVP ID # J12013

CERTIFICATE OF ANALYSIS / EPA PROTOCOL

CUSTOMER:	Air Gas Testing	***CERTIFICATION DATE:***	1-Jul-13
PO NUMBER:	5312013	***EXPIRATION DATE:***	2-Jul-16
CYLINDER NUMBER:	ALM-012793	***LOT NUMBER:***	18063-01
CYLINDER PRESSURE:	2000 psig	***ORDER NUMBER:***	27616
CYLINDER SIZE:	150AL		

Component	*Certified Concentration*	*Accuracy*	*Procedure*
Nitric Oxide	***45.15 ppm***	***+/- 0.30 ppm***	***G1***
Carbon Monoxide	***437.9 ppm***	***+/- 2 ppm***	***G1***
Nitrogen	***Balance***		
Total NOx	***45.95 ppm***		

This cylinder has been certified per the 2012 EPA Traceability Protocol EPA-600/R-12/531, using the procedure listed above.

The cylinder should not be used when the pressure is below 0.7 megapascals (100 psig)

REFERENCE STANDARD

Component	*Cylinder Number*	*Reference Number*	*Reference Concentration*
Nitric Oxide	**CC252472**	**GMIS**	**91.89 ppm**
Nitric Oixde standard traceable to SRM 1684b S/N CAL015678 97.45 ppm NO in Nitrogen			
Carbon Monoxide	**CC217716**	**GMIS**	**1013 ppm**
Carbon Monoxide standard traceable to SRM 1679c S/N CAL018084 98.85 ppm CO in Nitrrogen			

METHOD OF ANALYSIS

Analyzer	*Serial Number*	*Analytical Principle*	*Calibration Date*
Nicolet 470	**AEO31180**	**FTIR**	**6-Jun-13**
Thermo 48	**48-30203-237**	**NDIR**	**6-Jun-13**

ANALYZER READINGS

COMPONENT : ***Nitric Oxide***

FIRST ANALYSIS DATE: **24-Jun-13** ***SECOND ANALYSIS DATE:*** **1-Jul-13**

Conc: 45.32 ppm Uncertainty +/- 0.3 ppm Conc: 44.95 ppm Uncertainty +/- 0.20 ppm

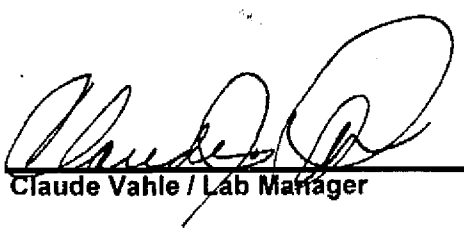
THIRD ANALYSIS DATE: **0-Jan-00**

Conc: 0 ppm Uncertainty +/- 0.00 ppm

COMPONENT: ***Carbon Monoxide***

FIRST ANALYSIS DATE: **24-Jun-13**

Conc: 437.90 ppm Uncertainty +/- 0.32 ppm

Authorized Signature: 

Claude Vahle / Lab Manager

C3

SPECIALTY AIR TECHNOLOGIES, INC.

Long Beach, CA 90805 - Telephone: 562-984-7230

EPA PGVP ID # J12013

CERTIFICATE OF ANALYSIS / EPA PROTOCOL

CUSTOMER:	Air Gas Testing	***CERTIFICATION DATE:***	18-Mar-13
PO NUMBER:	2062013	***EXPIRATION DATE:***	18-Sep-13
CYLINDER NUMBER:	SG9123663BAL	***LOT NUMBER:***	05033-02
CYLINDER PRESSURE:	2000	***ORDER NUMBER:***	26920
CYLINDER SIZE:	150AL		

Component	*Certified Concentration*		*Accuracy*	*Procedure*
Nitrogen Dioxide	***12.76***	***ppm***	***+/-1 %***	***G1***
Air	***Balance***			

This cylinder has been certified per the 1997 EPA Traceability Protocol EPA-600/97/121, using the procedure listed above.

The cylinder should not be used when the pressure is below 1.0 megapascals (150 psig)

REFERENCE STANDARD

Component	*Cylinder Number*	*Reference Number*	*Reference Concentration*
Nitrogen Dioxide	**CC62258**	**GMIS**	**96.5 ppm**

METHOD OF ANALYSIS

Analyzer	*Serial Number*	*Analytical Principle*	*Calibration Date*
Thermo 42i-HL	**921237088**	**Chemiluminescence**	**4-Mar-13**

ANALYZER READINGS

COMPONENT ***Nitrogen Dioxide***

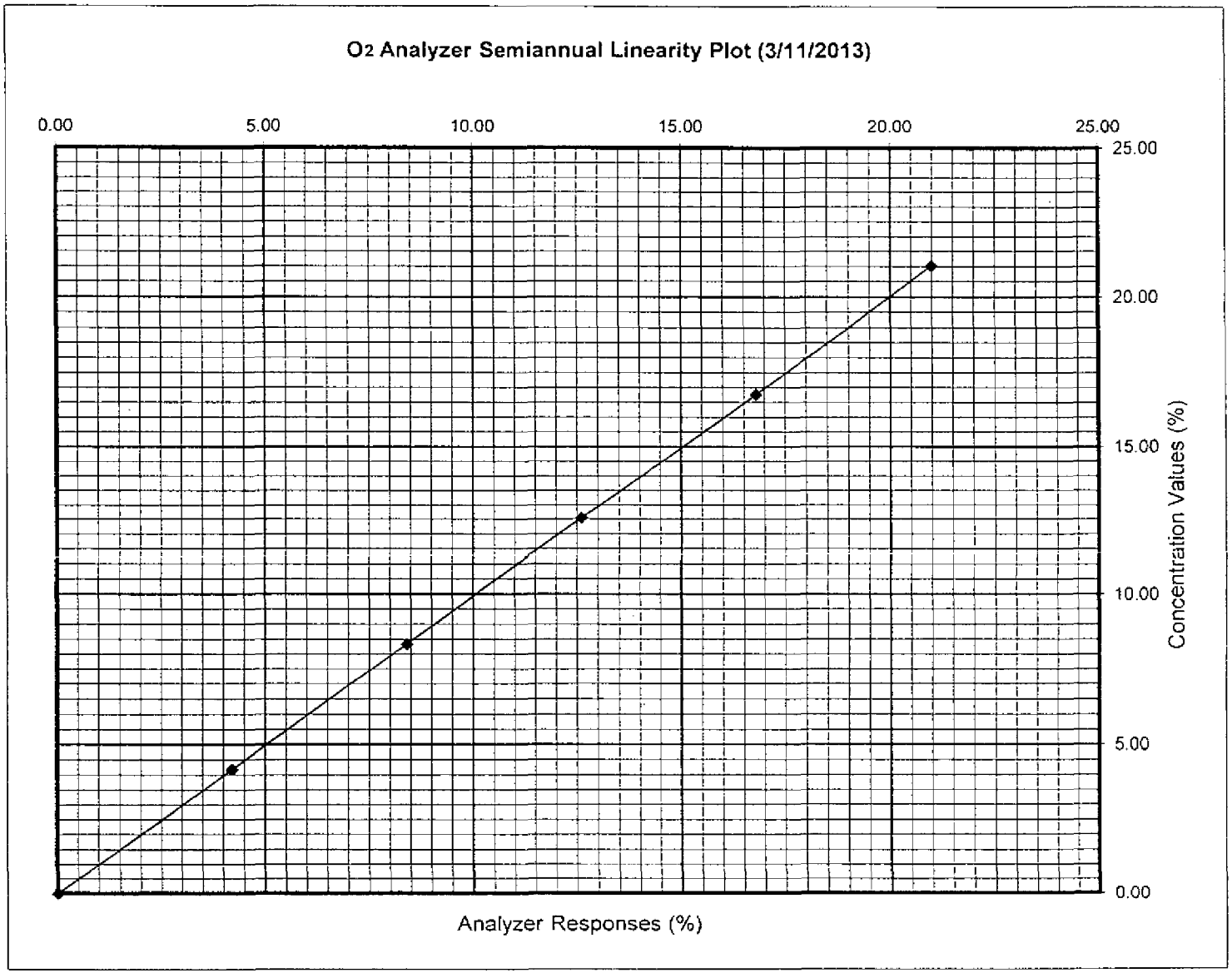
FIRST ANALYSIS DATE:				**11-Mar-13**				***SECOND ANALYSIS DATE:***				**18-Mar-13**			
ref	89.5	sample	11.8	zero	0	conc	12.72	ref	89.8	sample	11.9	zero	0.00	conc	12.79
sample	11.8	zero	0	ref	89.5	conc	12.72	sample	11.9	zero	0.0	ref	89.8	conc	12.79
zero	0	ref	89.5	sample	11.8	conc	12.72	zero	0	ref	89.8	sample	11.90	conc	12.79
					Average Conc		12.72						Average Conc		12.79

Authorized Signature: _____

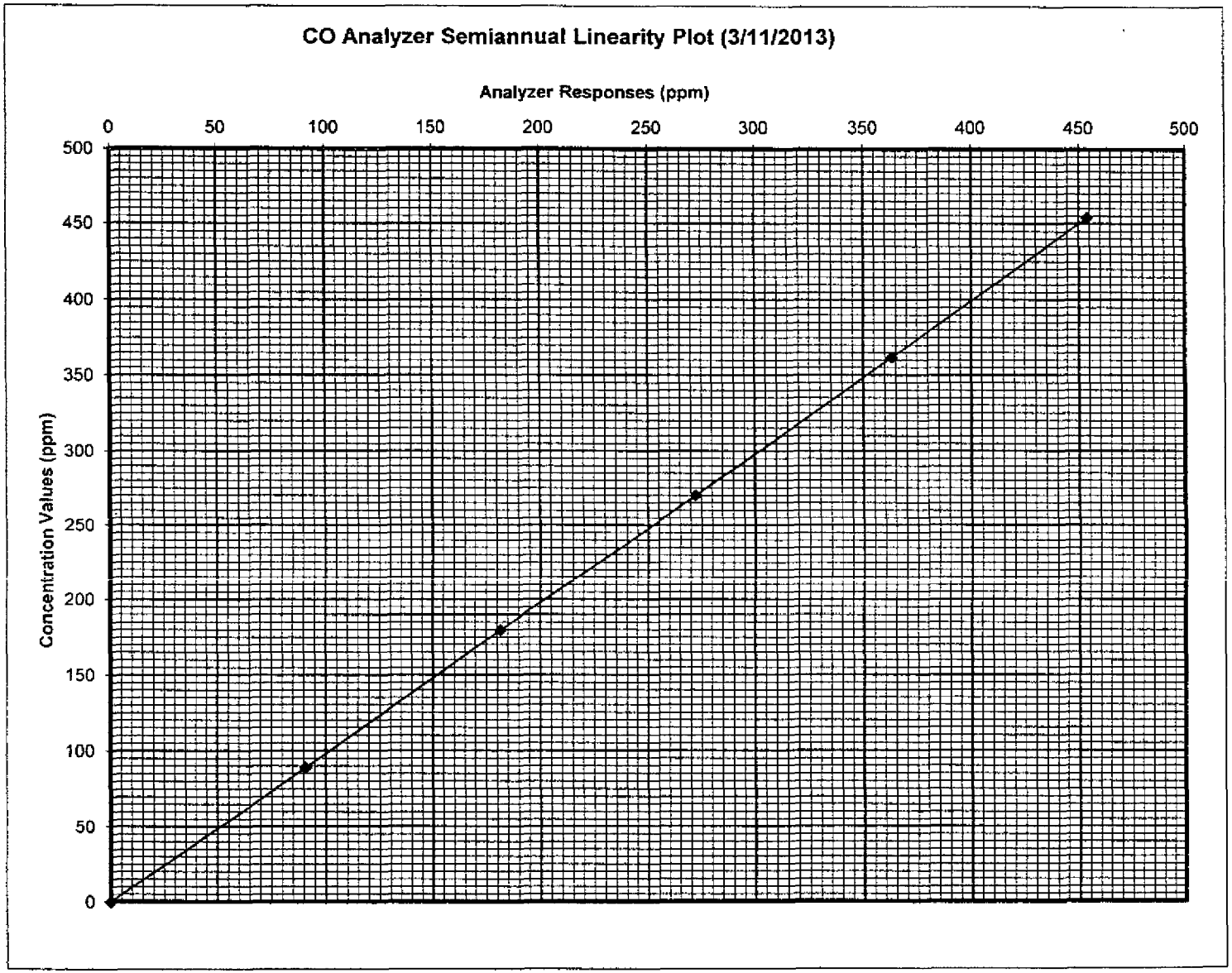
Claude Vahle / Lab Manager

C4

Gas Conc. Value (% O2)	Analyzer's Response (%O2)
0.00	0.00
4.20	4.18
8.40	8.34
12.59	12.55
16.79	16.76
20.99	21.02

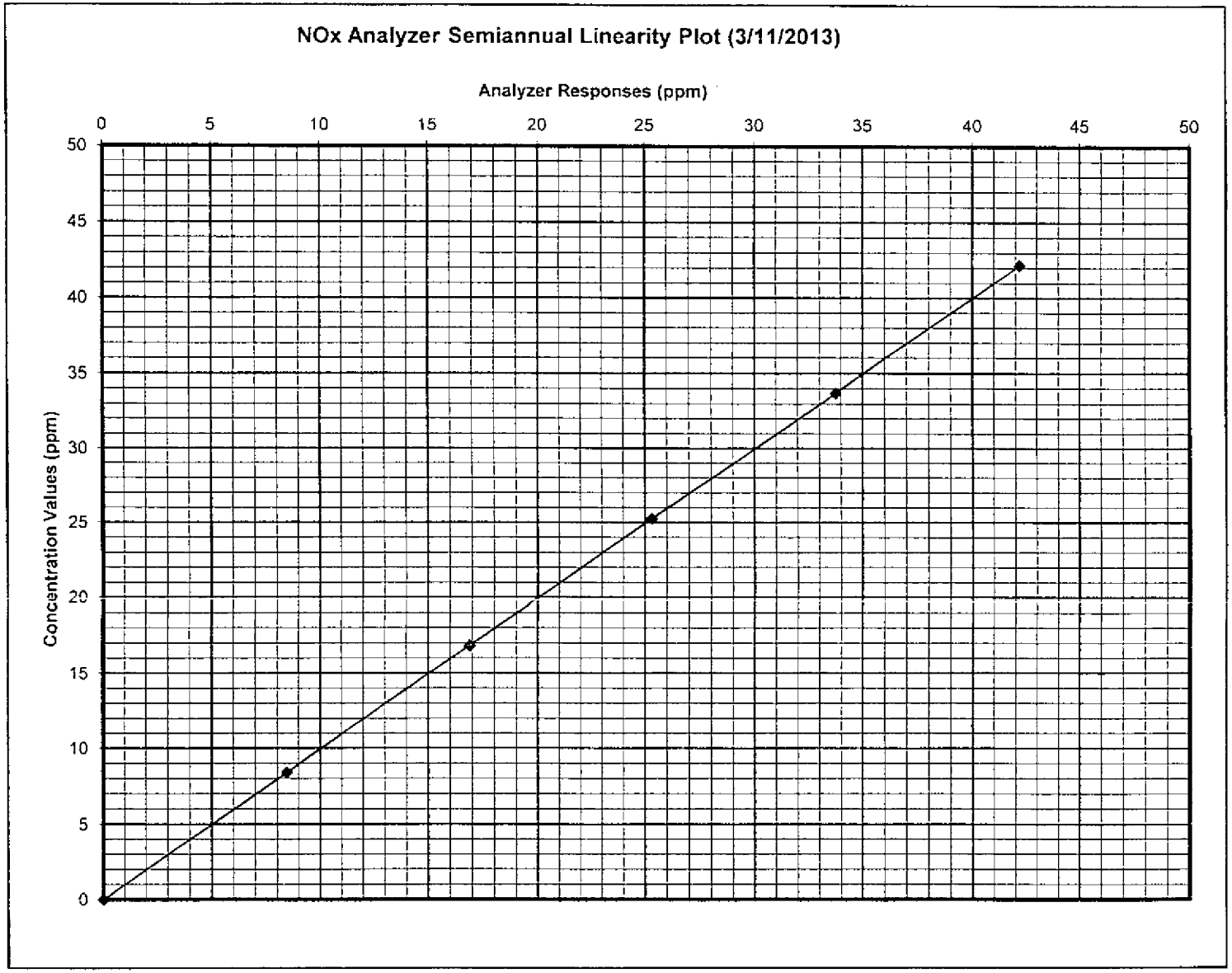


Gas Conc. Value (CO)	Analyzer's Response (CO)
0.0	0.0
90.8	89.0
181.6	179.7
272.3	270.1
363.1	361.8
453.9	454.0



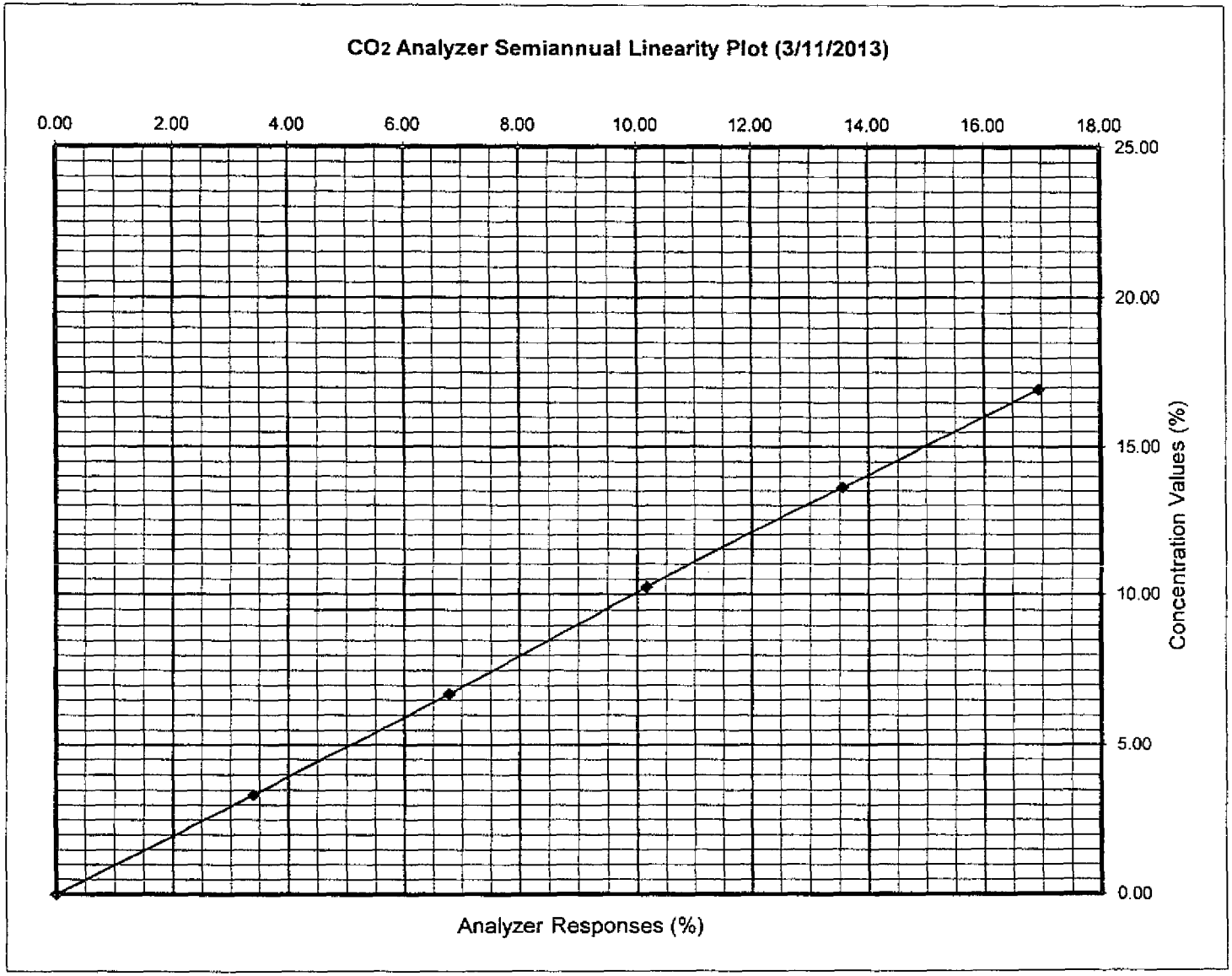
C6

Gas Conc. Value (NOx)	Analyzer's Response (NOx)
0.00	0.00
8.44	8.40
16.88	16.84
25.31	25.27
33.75	33.71
42.19	42.20



C7

Gas Conc. Value (% CO2)	Analyzer's Response (%CO2)
0.00	0.00
3.39	3.34
6.78	6.71
10.16	10.25
13.55	13.63
16.94	16.94



South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 • www.aqmd.gov

June 18, 2013

Mr. Tim Dinh
Air-Gas Testing & Consulting Services
7111 Garden Grove Blvd., Suite 118
Garden Grove, CA 92841

Subject: LAP Approval Notice
Reference # 02LA0501

Dear Mr. Dinh:

We completed our review of the renewal application you submitted for approval under the South Coast Air Quality Management District's Laboratory Approval Program (AQMD LAP). We are pleased to inform you that your firm is approved for the period beginning July 31, 2013, and ending July 31, 2014 for the following methods subject to the requirements in the LAP Conditions For Approval Agreement and conditions listed in the attachment to this letter:

SCAQMD Methods 1-4
SCAQMD Method 100.1
SCAQMD Method 25.3

Thank you for participating in the SCAQMD LAP. Your cooperation helps us to achieve the goal of the LAP: to maintain high standards of quality in the sampling and analysis of source emissions. You may direct any questions or information to LAP Coordinator, Glenn Kasai. He may be reached by telephone at (909) 396-2271, by facsimilie at (909) 396-2099, or via e-mail at gkasai@aqmd.gov.

Sincerely,

Rudy Eden, Senior Manager
Laboratory Services &
Source Test Engineering

RE:GK/gk

cc: Mike Garibay

130618 LapRenewal.doc

C9

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CLIENT : **Air Gas Testing & Consulting Services**
CLIENT JOB NO/NAME : **WMWD-RES 1**
QUANTUM PROJECT NUMBER : **13-589**
REPORT DATE : **August 30, 2013**

Quantum Analytical Services, Inc. received on August 21 2013 4 six-liter canisters and 4 vials for the analysis of Total non-Methane non-Ethane Organic Carbon (TNMNEOC) according to SCAQMD Method 25.3 and fixed gases according to the EPA Method 3C. Upon receipt, the canisters were checked for pressure and the vials were checked for temperature and leakage. The samples were assigned a specific laboratory project number and the canisters were given a specific sample ID number as follows:

Client ID	Lab No.	Tank Pressure Received (mmHg)
ICE #3-Tank 1of 2, #92	23313-2	579.6
ICE #3-Tank 2of 2, #93	23313-3	547.4
ICE #2-Tank 1of 2, #94	23313-4	593.7
ICE #2-Tank 2of 2, #95	23313-5	586.9

The samples were in good condition and no problems were encountered during sample preparation, and analysis. The test results included in this reports meet all the requirement of the SCAQMD Method 25.3, and EPA Method 3C.

SCAQMD Method 25.3: An aliquot of the gaseous sample (tank) is injected into the TCA (GC-FID) instrument, and an aliquot of the liquid (water trap) is analyzed into TOC analyzer (Shimadzu 5000A) following the SCAQMD Method 25.3 as outlined in the SOP.

EPA 3C: An aliquot of the gaseous sample (tank) is injected into the TCA (GC-TCD) for the analysis following EPA Method 3C.

I certify that the results in this report are technically accurate and in compliance with the terms and condition of the contract. Release of the data package has been approved by the laboratory president as verified in the following signature.

Thank you for giving us the opportunity to serve you. We appreciate your business and the confidence you have placed in us. Please contact me for further assistance or with any question.

Andrew Kitto, Ph.D.
President

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CLIENT: **Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.: **WMWD - RES 1**
ANALYSIS: **Method 25.3- TNMNEOC**
LABORATORY NO: **13-589**
SAMPLING DATE: August 21, 2013
RECEIVING DATE: August 21, 2013
ANALYSIS DATE: August 22, 2013
REPORT DATE: August 30, 2013

Pressure- Dilution Sheet

ANALYSIS METHOD		*SCAQMD 25.3*					
LIMIT OF DETECTION		*1.0 ppmC*					
Air Gas Sample ID #	*LAB ID No.*	Tank Vol. (L) (V_{tank})	Initial Pressure mmHg (P_i)	Return Pressure mmHg (P_r)	Final Pressure mmHg (P_f)	Sample Vol. (L) (V_{sample})	Tank Dil Factor (DF_{tank})
ICE #3-1 of 2 - Tank 92	23313-2	6.0	3.1	579.6	817.8	4.58	1.41
ICE #3-2 of 2 - Tank 93	23313-3	6.0	3.1	547.4	816.4	4.32	1.49
ICE #2-1 of 2 - Tank 94	23313-4	6.0	3.1	593.7	817.3	4.69	1.38
ICE #2-2 of 2 - Tank 95	23313-5	6.0	3.1	586.9	818.4	4.63	1.39

Dr. Andrew Kitto
President

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**WMWD - RES 1**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-589**
SAMPLING DATE:	August 21, 2013
RECEIVING DATE:	August 21, 2013
ANALYSIS DATE:	August 22, 2013
REPORT DATE:	August 30, 2013

Laboratory Analysis Report

All Samples were analyzed in duplicates/Average values are reported

Analysis Method	**SCAQMD 25.3**					
Detection Limits	**1.0 ppmv**					
Air Gas **Sample ID #**	**Lab Sample ID**	**CH4 PPMV**	**Ethane PPMV**	**TOC PPMC**	**Canister TNMNEOC PPMC**	**Total TNMNEOC† PPMC**
ICE #3-1 of 2 - Tank 92	23313-2	219	1.6	9.7	3.89	**14.7**
ICE #3-2 of 2 - Tank 93	23313-3	221	1.4	9.4	3.24	**13.7**
ICE #2-1 of 2 - Tank 94	23313-4	144	<1.0	2.8	3.68	**7.08**
ICE #2-2 of 2 - Tank 95	23313-5	144	<1.0	4.0	3.51	**8.21**

TNMNEOC: Total Non methane non Ethane Organic Carbon

† Includes Bias Correction = 1.086, per method

Dr. Andrew Kitto
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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**WMWD - RES 1**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-589**
SAMPLING DATE:	August 21, 2013
RECEIVING DATE:	August 21, 2013
ANALYSIS DATE:	August 22, 2013
REPORT DATE:	August 30, 2013

Laboratory Analysis Report

I- NMNEOC Tanks **All Samples were analyzed in duplicates**

ANALYSIS METHOD	*SCAQMD 25.3*						
LIMIT OF DETECTION	*1.0 ppmC*						
Air Gas **Sample ID #**	*LAB ID No.*	**Tank Dil Factor (DFtank)**	**GC Methane* PPMV**	**GC Carbon Monoxide PPMV**	**GC Ethylene PPMV**	**GC NMNEOC as C3 PPMV**	**NMNEOC Tank as Carbon PPMV**
ICE #3-1 of 2 - Tank 92	23313-2	1.41	154	192	<1.0	0.93	**3.94**
ICE #3-1 of 2 - Tank 92 Dup	23313-2D	1.41	156	191	<1.0	0.91	**3.85**
ICE #3-2 of 2 - Tank 93	23313-3	1.49	149	169	<1.0	0.72	**3.22**
ICE #3-2 of 2 - Tank 93 Dup	23313-3D	1.49	148	167	<1.0	0.73	**3.27**
ICE #2-1 of 2 - Tank 94	23313-4	1.38	104	235	<1.0	0.88	**3.63**
ICE #2-1 of 2 - Tank 94 Dup	23313-4D	1.38	105	239	<1.0	0.90	**3.72**
ICE #2-2 of 2 - Tank 95	23313-5	1.39	104	239	<1.0	0.83	**3.47**
ICE #2-2 of 2 - Tank 95 Dup	23313-5D	1.39	103	239	<1.0	0.85	**3.56**

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CLIENT: **Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.: **WMWD - RES 1**
PROJECT NO: **Method 25.3- TNMNEOC**
LABORATORY NO: **13-589**
SAMPLING DATE: August 21, 2013
RECEIVING DATE: August 21, 2013
ANALYSIS DATE: August 22, 2013
REPORT DATE: August 30, 2013

DUPLICATE ANALYSES

Analysis Method / **Detection Limit**	**SCAQMD 25.3** / **1.0 ppmC**				
Air Gas **Sample ID**	**Analyte**	**Analysis #1 PPMV**	**Analysis #2 PPMV**	**Mean PPMV**	**% Difference from the Mean**
ICE #3-1 of 2 - Tank 92	Methane	217	220	219	0.7%
	CO	271	270	270	0.2%
	Ethane	1.6	1.7	1.6	2.6%
	Ethylene	<1.0	<1.0	<1.0	N/A
	NMNEOC	**3.94**	**3.85**	**3.89**	**1.1%**
ICE #3-2 of 2 - Tank 93	Methane	222	221	221	0.1%
	CO	252	249	251	0.6%
	Ethane	1.4	1.4	1.4	0.5%
	Ethylene	<1.0	<1.0	<1.0	N/A
	NMNEOC	**3.22**	**3.27**	**3.24**	**0.7%**
ICE #2-1 of 2 - Tank 94	Methane	143	145	144	0.7%
	CO	324	329	326	0.7%
	Ethane	<1.0	<1.0	<1.0	N/A
	Ethylene	<1.0	<1.0	<1.0	N/A
	NMNEOC	**3.63**	**3.72**	**3.68**	**1.1%**
ICE #2-2 of 2 - Tank 95	Methane	145	144	144	0.3%
	CO	333	334	333	0.2%
	Ethane	<1.0	<1.0	<1.0	N/A
	Ethylene	<1.0	<1.0	<1.0	N/A
	NMNEOC	**3.47**	**3.56**	**3.51**	**1.2%**

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CLIENT: **Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.: **WMWD - RES 1**
ANALYSIS: **Method 25.3- TNMNEOC**
LABORATORY NO: **13-589**
SAMPLING DATE: August 21, 2013
RECEIVING DATE: August 21, 2013
ANALYSIS DATE: August 22, 2013
REPORT DATE: August 30, 2013

Quality Control/Quality Assurance Report (1 of 2)

I- Blank

Lab ID	Analyte	Result
N2 Blank - Open	NMNEOC	<1.0
N2 Blank - Close	NMNEOC	<1.0

II- Initial Calibration Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery*
ICV	CO	19.68	19.57	99%
ICV	CH4	19.36	19.38	100%
ICV	CO2	58.80	59.92	102%
ICV	Ethylene	19.40	19.26	99%
ICV	Ethane	19.74	19.97	101%
ICV	NMNEOC	19.96	19.97	100%

* Must be ±10%

III- Closing Calibration Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery**
CCV	CH4	10.00	9.58	96%
CCV	NMNEOC	10.00	9.53	95%

**Must be ±10%

IV- 1 ppm Backflush Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery**
Backflush	NMNEOC	1.00	1.03	103%

**Must be ±20%

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**WMWD - RES 1**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-589**
SAMPLING DATE:	August 21, 2013
RECEIVING DATE:	August 21, 2013
ANALYSIS DATE:	August 22, 2013
REPORT DATE:	August 30, 2013

Laboratory Control Sample
Quality Control/Quality Assurance Report

I- Blank

Lab ID	Analyte	Result
N2 Blank - Open	NMNEOC	<1.0
N2 Blank - Close	NMNEOC	<1.0

II- Laboratory Control Sample (LCS)

Lab ID	Date	Analyte	Theoretical Value PPMV	Tested Value PPMV	RPD %
LCS	**8/22/13**	NMNEOC	16.00	15.40	3.8%

* Must be ±10%

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**WMWD - RES 1**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-589**
SAMPLING DATE:	August 21, 2013
RECEIVING DATE:	August 21, 2013
ANALYSIS DATE:	August 22, 2013
REPORT DATE:	August 30, 2013

Laboratory Analysis Report

II- Traps (TOC Analysis)

All The samples were analyzed in triplicate

ANALYSIS METHOD		*SCAQMD 25.3*								
LIMIT OF DETECTION		*1.0 ug/mL*								
Air Gas Sample ID #	*Trap No.*	Tank Vol. (L) (V_{tank})	Initial Pressure mmHg (P_i)	Return Pressure mmHg (P_r)	Final Pressure mmHg (P_f)	Gaseous Sample Vol. (L)	Water Sample Volume ml	Dilution Factor	TOC ug/mL	TOC PPMC
ICE #3-1 of 2 - Tank 92	1	6.0	3.1	579.6	817.8	4.58	5.0	1.0	4.3	9.7
ICE #3-2 of 2 - Tank 93	2	6.0	3.1	547.4	816.4	4.32	5.0	1.0	4.0	9.4
ICE #2-1 of 2 - Tank 94	3	6.0	3.1	593.7	817.3	4.69	5.0	1.0	1.3	2.8
ICE #2-2 of 2 - Tank 95	4	6.0	3.1	586.9	818.4	4.63	5.0	1.0	1.8	4.0

Note: All Traps (vials) were purged with Ultra Pure grade Helium

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From Shimadzu 5000A

Trap Vol (ml)	TOC Analysis Sample ID	Trap ID	ug/ml	DF	Gas Sample Vol (L)	ug/sample	mg/sample	PPMV
5	**ICE #3-1 of 2 - Tank 92**	**1**	4.34	1.00	4.58	21.70	0.02	9.66
5	**ICE #3-2 of 2 - Tank 93**	**2**	3.97	1.00	4.32	19.85	0.02	9.36
5	**ICE #2-1 of 2 - Tank 94**	**3**	1.31	1.00	4.69	6.55	0.01	2.85
5	**ICE #2-2 of 2 - Tank 95**	**4**	1.84	1.00	4.63	9.20	0.01	4.04

Initial AK

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CLIENT: **Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.: **WMWD - RES 1**
ANALYSIS: **Method 25.3- TNMNEOC**
LABORATORY NO: **13-589**
SAMPLING DATE: August 21, 2013
RECEIVING DATE: August 21, 2013
ANALYSIS DATE: August 22, 2013
REPORT DATE: August 30, 2013

TC Analysis
Triplicate analysis

Sample #	Mean Area	SD	CV*	Average Conc. ug/ml
Trap 1	18430	340	1.84%	51.64
Trap 2	14174	242	1.71%	39.71
Trap 3	27542	271	0.98%	77.17
Trap 4	30510	525	1.72%	85.49

*: CV must be within 10%

IC Analysis
Triplicate Analysis

Sample #	Mean Area	SD	CV*	Average Conc. ug/ml
Trap 1	16854	197	1.16%	47.30
Trap 2	12734	582	4.57%	35.74
Trap 3	27026	187	0.69%	75.86
Trap 4	29801	352	1.18%	83.65

*: CV must be within 10%

TOC (Average of Triplicate Analysis)

Sample #	Average TC mg/L	Average IC mg/L	Average TOC mg/L
Trap 1	**51.64**	**47.30**	**4.34**
Trap 2	**39.71**	**35.74**	**3.97**
Trap 3	**77.17**	**75.86**	**1.31**
Trap 4	**85.49**	**83.65**	**1.84**

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**WMWD - RES 1**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-589**
SAMPLING DATE:	August 21, 2013
RECEIVING DATE:	August 21, 2013
ANALYSIS DATE:	August 22, 2013
REPORT DATE:	August 30, 2013

Quality Control/Quality Assurance Report

I- Blank

Lab ID	Analyte	Result ug/mL
Water Blank - Open	TOC	<1.0
Water Blank - Close	TOC	<1.0

II- Initial Calibration Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery*
ICV	TOC	10.0	9.99	100%

* Must be ±5%

III- Continuing/Closing Calibration Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery*
CCV	TOC	40.0	39.03	98%

*Must be ±10%

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**WMWD - RES 1**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-589**
SAMPLING DATE:	August 21, 2013
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ANALYSIS DATE:	August 22, 2013
REPORT DATE:	August 30, 2013

Laboratory Analysis Report

Analysis Method	**EPA Method 3C**		
Detection Limits	**0.10%**		
Air Gas **Sample ID #**	**Lab Sample ID #**	**O2 Mole %**	**CO2 Mole %**
ICE #3-1 of 2 - Tank 92	23313-2	0.33	11.3
ICE #3-2 of 2 - Tank 93	23313-3	0.28	11.0
ICE #2-1 of 2 - Tank 94	23313-4	0.70	11.1
ICE #2-2 of 2 - Tank 95	23313-5	0.61	10.8

*** Oxygen + Argon are not separated by GC**
Argon constitutes 0.93% of the atmosphere (Handbook of Chemistry and Physics)
0.9% was substracted from O2 concentrations

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**WMWD - RES 1**
ANALYSIS:	**Method 25.3- TNMNEOC**
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REPORT DATE:	August 30, 2013

Quality Control/Quality Assurance

EPA 3C - Fixed Gases

Lab ID	Analyte	Theoretical Value Mole %	Tested Value Mole %	% Recovery*
SCOTT STD	CO2	15.0	15.2	101%
SCOTT STD	O2	7.0	7.1	102%
SCOTT STD	N2	66.7	66.5	100%
SCOTT STD	CH4	4.5	4.5	100%
SCOTT STD	CO	7.0	7.0	99%

* Must be ±10%

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EXAMPLE OF CALCULATION SHEET

Laboratory Analysis Report

I- Tanks

ANALYSIS METHOD		*SCAQND 25.3*							
LIMIT OF DETECTION		*0.5 PPMV*							
Air Gas Sample ID #	*LAB ID No.*	Tank Dil Factor (DFtank)	Methane Tank PPMC	Tank Ethylene From GC	Tank Ethylene PPMV+++	Ethylene as C PPMV	Tank NMNEOC as C3 from GC	Tank NMNEOC as C PPMV+++	Tank NMNEOC* as Carbon PPMV
ICE #3-1 of 2 - Tank 92	23313-2	1.41	153.8	0.00	<1.0	*0.00*	0.93	*3.94*	3.94
ICE #3-1 of 2 - Tank 92 Dup	23313-2D	1.41	156.0	0.00	<1.0	*0.00*	0.91	*3.85*	3.85

+++: Includes Dilution factor

Tank Dil Factor = Pressure Final/ Pressure Received (Please see Pressure Sheet)
1.41

Tank Ethylene (ppmv) = From GC Chromatogram
0.00

Ethylene As C = Ethylene from GC Chromatogram x 2 x Dilution Factor
0.00

Tank NMNEOC as C3 = From the GC chromatogram
0.93

Tank NMNEOC as C = GC NMNEOC x 3 x Dil Factor
3.94

Tank Total NMNEOC = (NMNEOC as C + Ethylene as C)
3.94

Avg TNMNEOC (Reported Value) = 3.89

Initial: AK

Method 25.3 Calculation Summary Sheet

TOC Calculations (Trap):

$$C_{Trap} = \frac{(C_{Toc} \times V_{Trap})}{(V_{Sample})} \times \frac{V_{id}}{MW_c}$$

Where:
C_{Trap} = Gaseous concentration of TOC in condensate trap water, ppmv (as Carbon)
C_{Toc} = TOC concentration in ug/ml of condensate trap water (*from Raw Data printout*)
V_{Trap} = Volume of condensate trap water in ml (*from Sample Receiving Data Sheet*)
V_{id} = Volume of ideal gas per mole at 25°C (24.4652 liters/mole)
MW_c = Atomic weight of carbon (12.01 g/mol)
V_{Sample} = Volume sampled in collection tank in Liters ($V_{Tank} \times (P_f - P_i)/ P_a$)

Where:
V_{Tank} = Volume of the sampling tank in liters (*from Sample Receiving Data Sheet*)
P_f = Return canister pressure of the sampling tank (*from Sample Receiving Data Sheet*)
P_i = Initial canister pressure of the sampling tank (*from Sample Receiving Data Sheet*)
P_a = atmospheric pressure (760 mmHg)

TCA Calculations (Tank):

$$C_{Tank} = C_{TCA} \times DF_{Tank} \times 3.0$$

Where:
C_{Tank} = Gaseous concentration of tank, ppmv (as Carbon)
C_{TCA} = Average of analysis results from chromatograms, ppmv (as Propane)
DF_{Tank} = Dilution factor resulting from tank pressurization upon receipt (P_f/P_r)
3.0 = Conversion of result (as Propane) to (as Carbon)

Where:
P_f = Final canister pressure after pressurization for analysis (*from Sample Receiving Data Sheet*)
P_r = Return canister pressure upon sample receipt (*from Sample Receiving Data Sheet*)

Final Calculation (Tank and Trap):

$$\text{Total VOC (ppmC)} = (C_{Trap} + C_{Tank}) \times 1.086$$

Per method section 4.11, the final concentration includes a 1.086 bias correction factor.

Summa Cansiter Pressure Log

Client: Air Gas

Laboratory Project No: 13-589

Sampling Date: August 21, 2013

Receiving Date: August 21, 2013

Item#	Sample ID	Tank #	Lab ID	P_r (mmHg)	Purge	P_f (mmHg)
1	ICE #3 Tank 1 of 2	92	23313-2	579.6	601.8	817.8
2	ICE #3 Tank 2 of 2	93	23313-3	547.4	569.6	816.4
3	ICE #2 Tank 1 of 2	94	23313-4	593.7	616.2	817.3
4	ICE #2 Tank 2 of 2	95	23313-5	586.9	609.5	818.4
5						
6						
7						
8						
9						
10						

13-589

Air Gas Testing & Consulting Services
7111 Garden Grove Blvd., Garden Grove, CA 92841
Phone: 714-840-9827

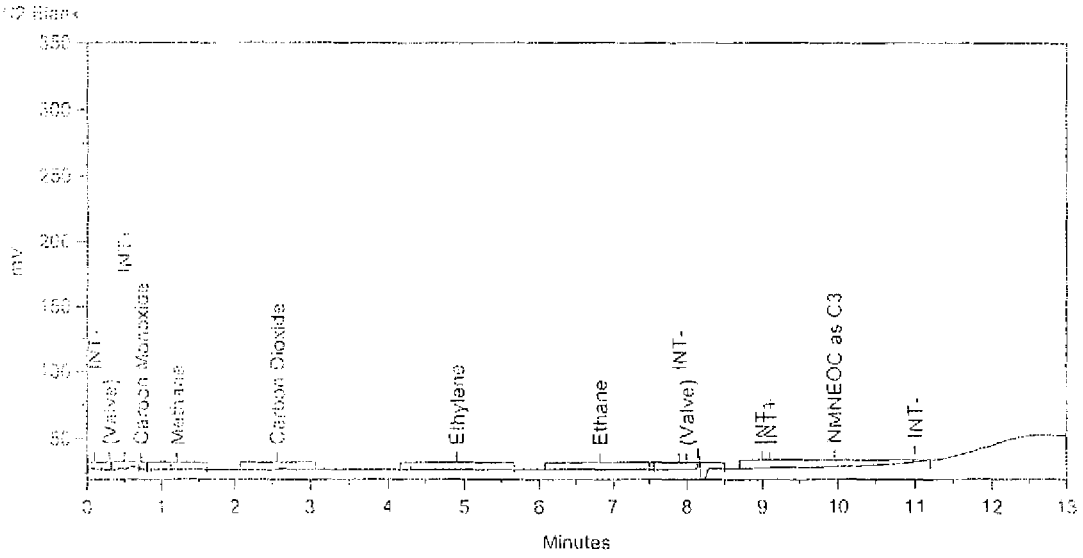
CHAIN OF CUSTODY

Plant: WMWD
Unit Tested: RES 1 Engines #3 & #2
Sample Loc: Stack

Test Date: 8-21-13
Operator: KA & TD
Test Method: 25.3

	SAMPLE NO.	SAMPLE DESCRIPTION	TEST#	DATE	TIME	ANALYSIS FOR	COMMENT
ICE #3	92	Tank 1 of 2	VOC-ICE #3	8-21-13	4:30pm	VOC +CH4	M 25.3 23313-2
	93	Tank 2 of 2	↓	↓	↓	↓	↓ 23313-3
	1	Trap 1 of 2					
	2	Trap 2 of 2					
ICE #2	94	Tank 1 of 2	VOC-ICE #2	8-21-13			23313-4
	95	Tank 2 of 2	↓	↓	↓	↓	23313-5
	3	Trap 1 of 2					↓
	4	Trap 2 of 2					

Relinquished by: Tim Dinh	Signature: Tim Dinh	For Delivery to Lab	Date: 8-21-13	Time: 4:30 Pm
Relinquished by:	Signature:	For	Date:	Time:
Relinquished by:	Signature:	For	Date:	Time:
Relinquished by	Signature:	For	Date:	Time:
Relinquished by:	Signature:	For	Date:	Time:
Relinquished by:	Signature:	For	Date:	Time



Sample Name: N2 Blank
Acquired from Chrom6--Det6A via port 6 on 8/22/13 08:27:09am by Dr. Kitto

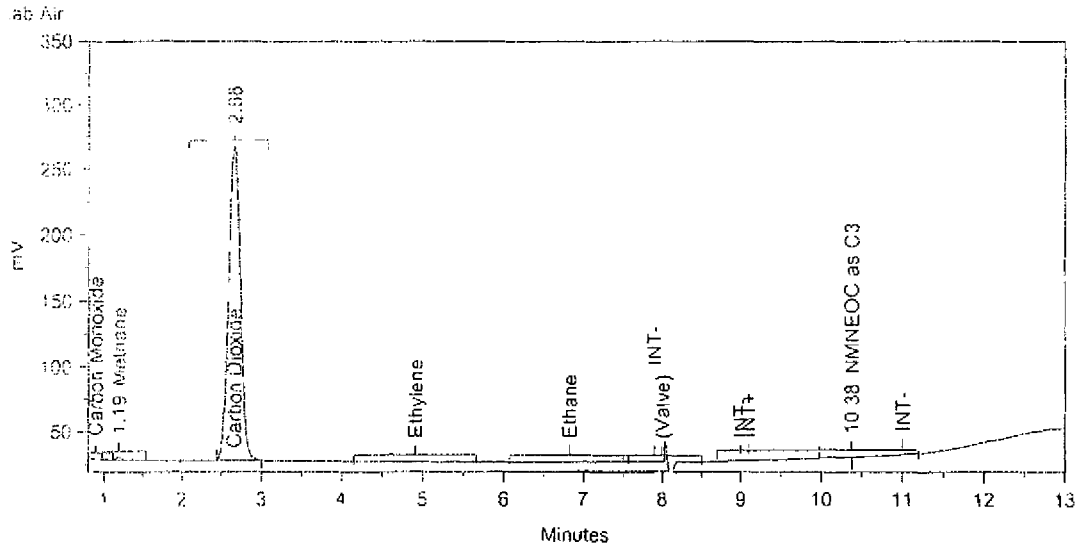
Data File: D:\CPWIN\DATA6\AUG2213B.01R
Date Stamp: 8/22/13 08:27:08am
Sequence File: AUG2213A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

BCP	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%

Total Area = 0.0, Total Amount = 0.0, Total Height = 0.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.



Sample Name: Lab Air
Acquired from Chrom6--Det6A via port 6 on 8/22/13 08:49:35am by Dr. Kitto

Data File: D:\CPWIN\DATA6\AUG2213B.02R
Date Stamp: 8/22/13 08:49:34am
Sequence File: AUG2213A.SEQ #2
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

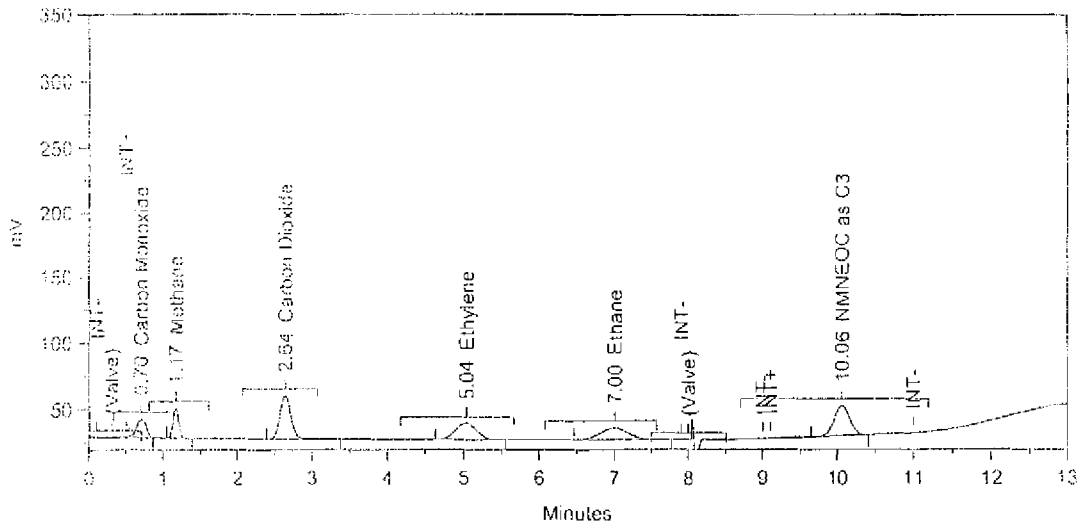
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	1.192	Methane	1.5351	0.362	9419.9	0.386	BB	0.081	1937.04	0.804
2	2.659	Carbon Dioxide	422.7873	99.591	2427585.0	99.478	BB	0.169	238942.60	99.181
3	10.377	NMNEOC as C3	0.1996	0.047	3308.5	0.136	BB	1.561	35.32	0.015

Total Area = 2440313.0, Total Amount = 424.522, Total Height = 240914.9, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

ICV - 20 PPMV STD



Sample Name: ICV - 20 PPMV STD
Acquired from Chrom6--Det6A via port 6 on 8/22/13 09:08:47am by Dr. Kitto

Data File: D:\CPWIN\DATA6\AUG2213S.03R
Date Stamp: 8/22/13 09:08:46am
Sequence File: AUG2213A.SEQ #3
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

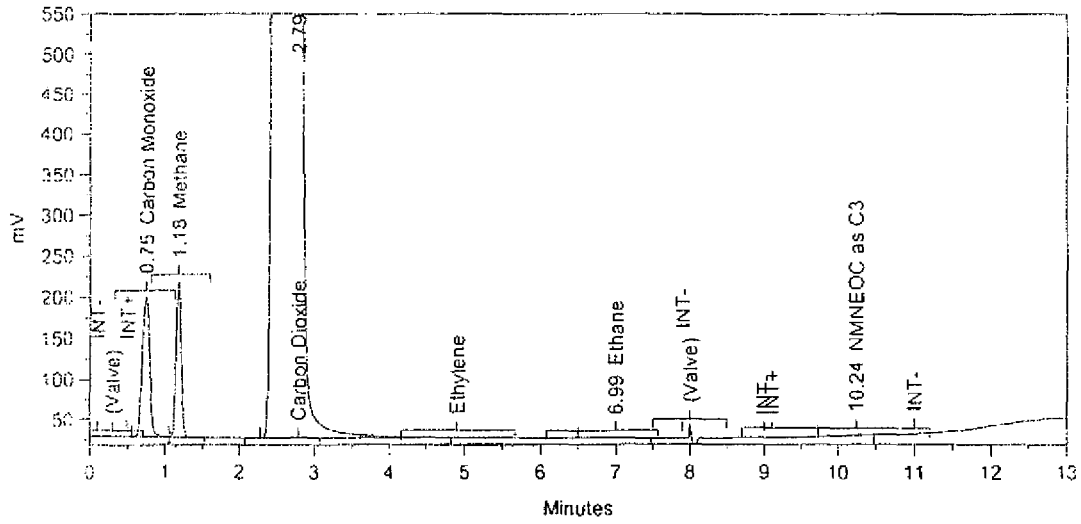
Run Time = 13.5 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.698	Carbon Monoxide	19.5650	12.378	119995.0	8.753	BB	0.148	13478.45	11.989
2	1.168	Methane	19.3830	12.263	118941.2	8.676	BB	0.087	22692.10	20.185
3	2.639	Carbon Dioxide	59.9187	37.908	344044.9	25.096	BB	0.175	32775.01	29.154
4	5.038	Ethylene	19.2625	12.187	225989.3	16.485	BB	0.311	12119.83	10.781
5	6.999	Ethane	19.9666	12.632	230936.4	16.846	BB	0.458	8790.03	7.819
6	10.065	NMNEOC as C3	19.9681	12.633	330995.0	24.144	BB	0.244	22564.89	20.072

Total Area = 1370902.0, Total Amount = 158.064, Total Height = 112420.3, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 3 (1of2), TK # 92



Sample Name: **AIR GAS, ICE 3 (1of2), TK # 92**
Acquired from Chrom6--Det6A via port 6 on 8/22/13 09:45:04am by Dr. Kitto

Data File: **D:\CPWIN\DATA6\23213-2.05R**
Date Stamp: 8/22/13 09:45:04am
Sequence File: AUG2213A.SEQ #5
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

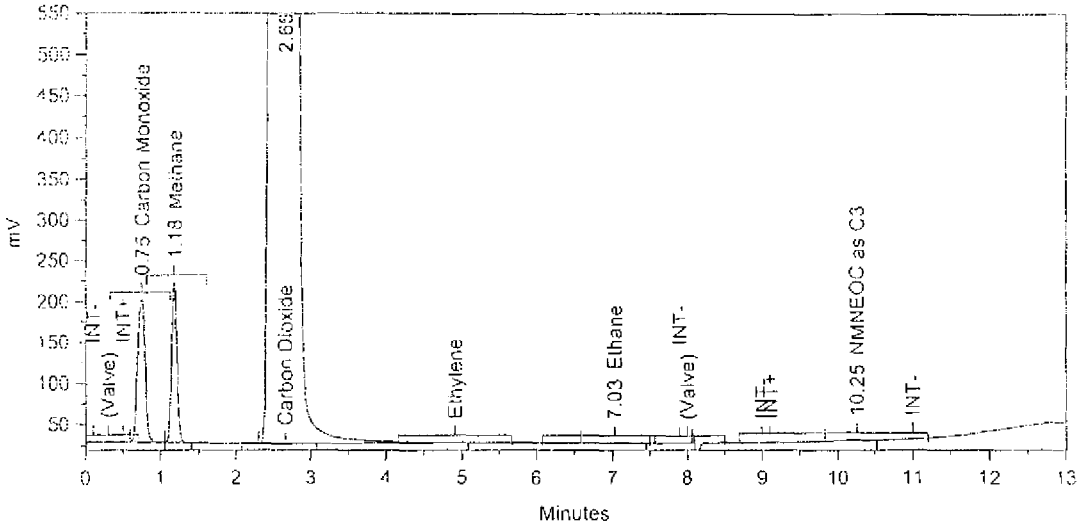
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.747	Carbon Monoxide	191.8597	3.941	1176706.0	4.187	BV	0.115	171012.70	13.023
2	1.184	Methane	153.7880	3.159	943699.9	3.358	VB	0.082	190879.50	14.536
3	2.788	Carbon Dioxide	4520.7760	92.858	25957660.0	92.355	BB	0.455	950036.70	72.350
4	6.990	Ethane	1.1143	0.023	12887.8	0.046	BB	0.413	520.16	0.040
5	10.240	NMNEOC as C3	0.9332	0.019	15469.5	0.055	BB	0.388	663.93	0.051

Total Area = 28106420.0, Total Amount = 4868.471, Total Height = 1313113.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 3 (1of2), TK # 92 Dup



Sample Name: **AIR GAS, ICE 3 (1of2), TK # 92 Dup**
Acquired from Chrom6--Det6A via port 6 on 8/22/13 10:02:02am by Dr. Kitto

Data File: **D:\CPWIN\DATA6\23213-2.06R**
Date Stamp: 8/22/13 10:02:02am
Sequence File: AUG2213A.SEQ #6
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

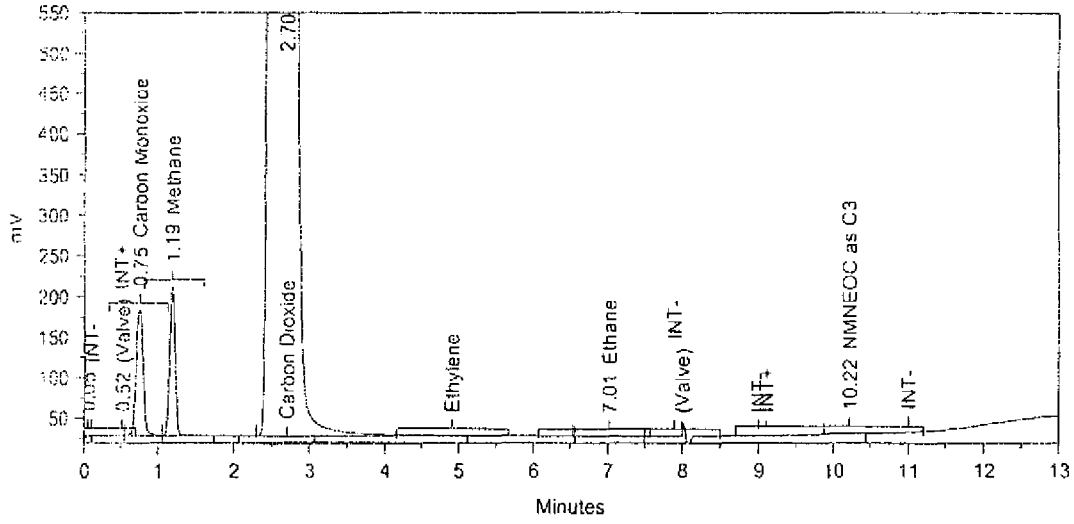
Run Time = 13.68 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.747	Carbon Monoxide	191.1216	3.905	1172179.0	4.149	BV	0.112	173789.10	13.165
2	1.185	Methane	156.0357	3.188	957492.9	3.389	VB	0.082	195020.30	14.773
3	2.657	Carbon Dioxide	4544.5640	92.864	26094240.0	92.361	BB	0.458	950042.10	71.969
4	7.026	Ethane	1.1705	0.024	13538.0	0.048	BB	0.411	549.14	0.042
5	10.251	NMNEOC as C3	0.9063	0.019	15023.4	0.053	BB	0.372	673.41	0.051

Total Area = 28252470.0, Total Amount = 4893.797, Total Height = 1320074.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 3 (2of2), TK # 93



Sample Name: **AIR GAS, ICE 3 (2of2), TK # 93**
Acquired from Chrom6--Det6A via port 6 on 8/22/13 10:18:50am by Dr. Kitto

Data File: **D:\CPWIN\DATA6\23213-3.07R**
Date Stamp: 8/22/13 10:18:50am
Sequence File: AUG2213A.SEQ #7
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

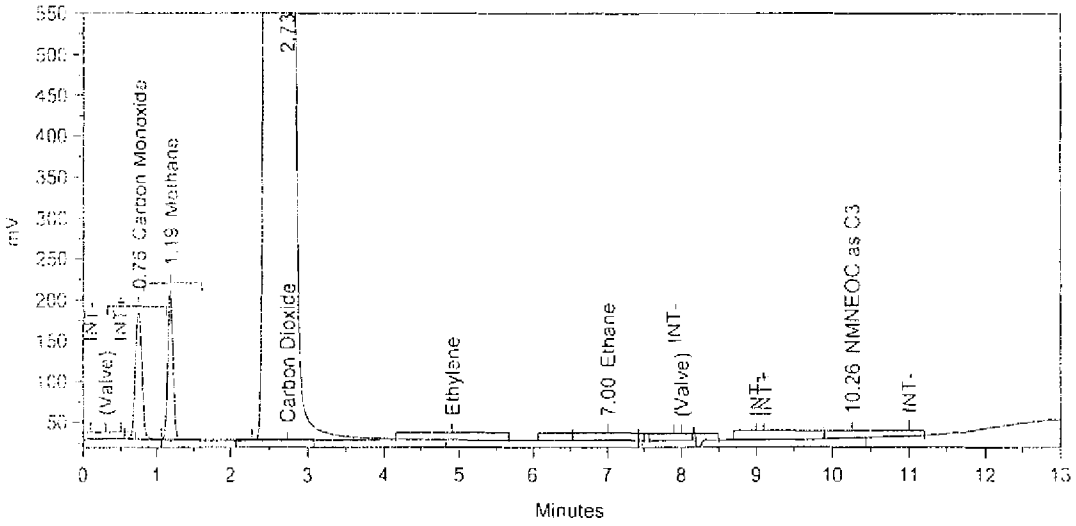
Run Time = 13.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.051		0.0000	0.000	11552.3	0.042	BB	0.072	2673.62	0.207
2	0.517 (Valve)		0.0000	0.000	467.7	0.002	BB	0.038	205.48	0.016
3	0.753 Carbon Monoxide		169.0641	3.523	1036897.0	3.743	BV	0.111	155552.90	12.027
4	1.188 Methane		148.6118	3.097	911937.1	3.292	VB	0.082	184233.70	14.245
5	2.696 Carbon Dioxide		4478.9310	93.345	25717380.0	92.840	BB	0.451	949604.60	73.422
7	7.015 Ethane		0.9197	0.019	10636.8	0.038	BB	0.387	457.72	0.035
8	10.222 NMNEOC as C3		0.7180	0.015	11902.2	0.043	BB	0.317	626.51	0.048

Total Area = 27700780.0, Total Amount = 4798.244, Total Height = 1293355.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 3 (2of2), TK # 93 Dup



Sample Name: **AIR GAS, ICE 3 (2of2), TK # 93 Dup**
Acquired from Chrom6--Det6A via port 6 on 8/22/13 10:36:15am by Dr. Kitto

Data File: **D:\CPWIN\DATA6\23213-3.08R**
Date Stamp: 8/22/13 10:36:14am
Sequence File: AUG2213A.SEQ #8
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

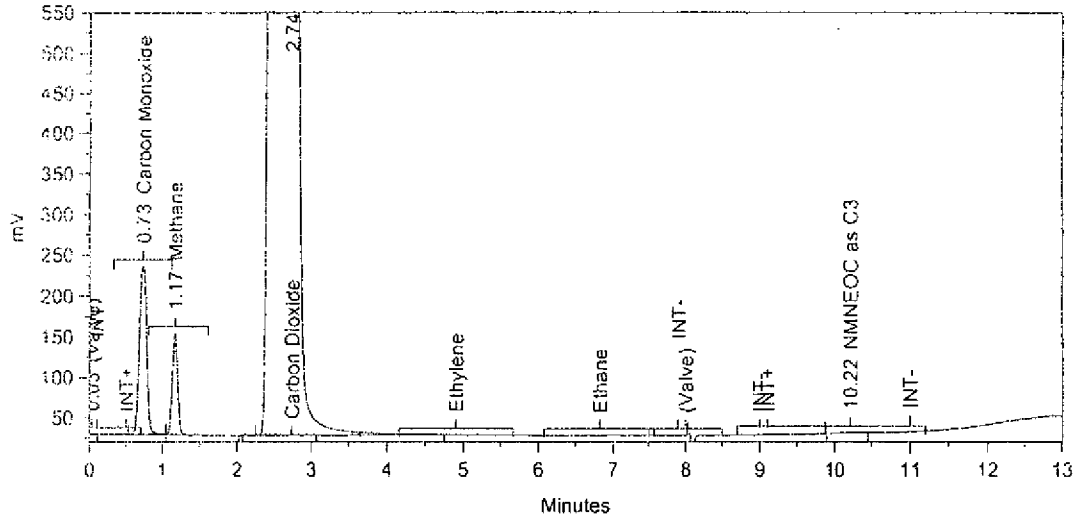
Run Time = 13.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.749	Carbon Monoxide	167.0025	3.484	1024253.0	3.703	BV	0.110	154885.10	12.011
2	1.185	Methane	148.2301	3.095	910208.3	3.291	VB	0.083	183780.40	14.252
3	2.734	Carbon Dioxide	4476.1180	93.386	25701230.0	92.923	BB	0.451	949776.30	73.653
4	7.004	Ethane	0.9337	0.019	10799.4	0.039	BB	0.399	450.65	0.035
6	10.256	NMNEOC as C3	0.7308	0.015	12114.0	0.044	BB	0.322	627.28	0.049

Total Area = 27658610.0, Total Amount = 4793.115, Total Height = 1289520.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 2(1of2) , TK # 94



Sample Name: **AIR GAS, ICE 2(1of2) , TK # 94**
Acquired from Chrom6--Det6A via port 6 on 8/22/13 10:54:01am by Dr. Kitto

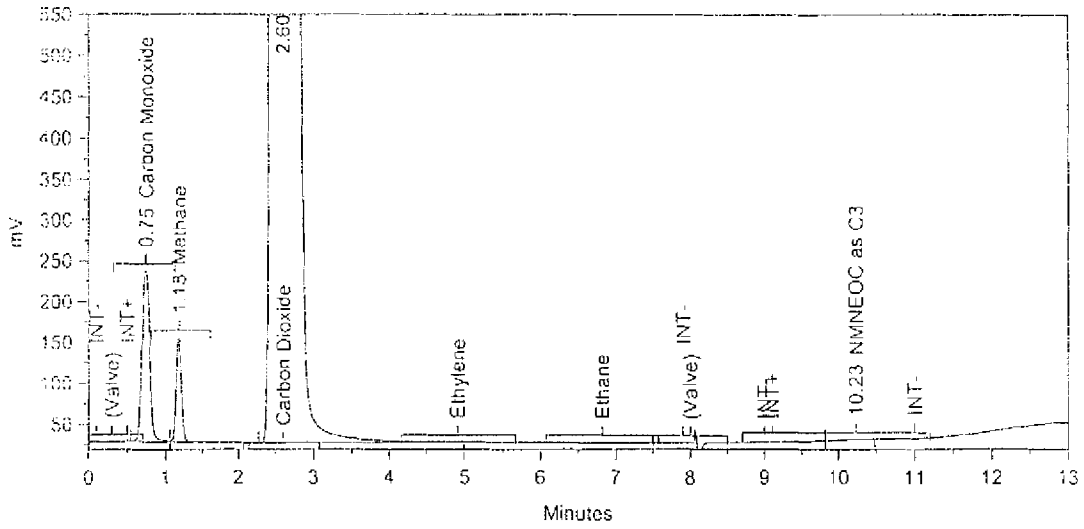
Data File: **D:\CPWIN\DATA6\23213-4.09R**
Date Stamp: 8/22/13 10:54:00am
Sequence File: AUG2213A.SEQ #9
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.032	(Valve)	0.0005	0.000	4514.9	0.016	BB	0.059	1269.53	0.099
2	0.733	Carbon Monoxide	235.4850	4.795	1444267.0	5.096	BV	0.116	207865.30	16.161
3	1.171	Methane	103.7724	2.113	636786.1	2.247	VB	0.084	126403.30	9.827
4	2.739	Carbon Dioxide	4570.6150	93.074	26243820.0	92.591	BB	0.460	949943.30	73.855
6	10.219	NMNEOC as C3	0.8762	0.018	14524.0	0.051	BB	0.325	743.86	0.058

Total Area = 28343920.0, Total Amount = 4910.749, Total Height = 1286225.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.



Sample Name: **AIR GAS, ICE 2(1of2) , TK # 94 Dup**
Acquired from Chrom6--Det6A via port 6 on 8/22/13 11:12:22am by Dr. Kitto

Data File: **D:\CPWIN\DATA6\23213-4.10R**
Date Stamp: 8/22/13 11:12:22am
Sequence File: AUG2213A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

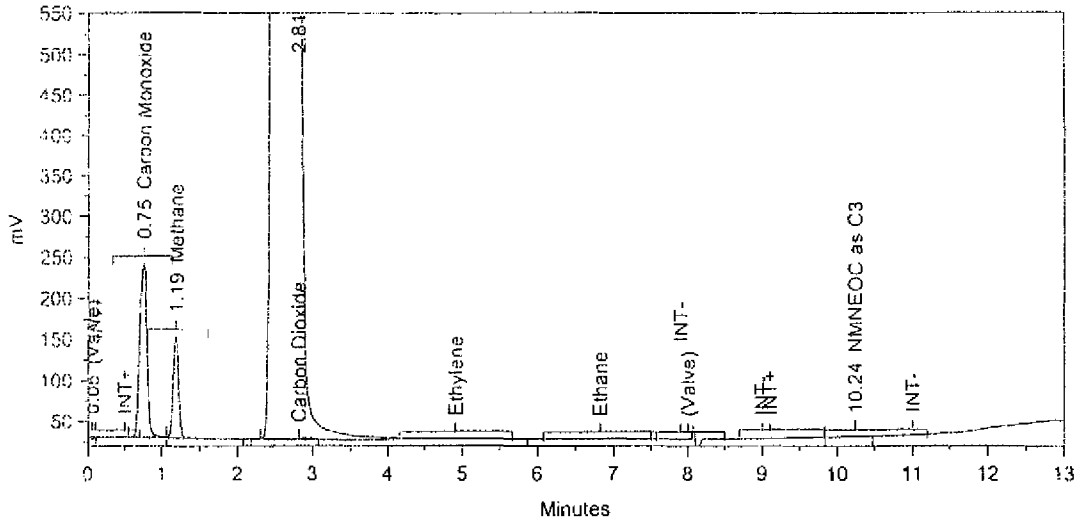
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.745	Carbon Monoxide	238.7802	4.850	1464476.0	5.155	BV	0.117	209074.00	16.241
2	1.183	Methane	105.1858	2.137	645459.2	2.272	VB	0.084	127618.20	9.913
3	2.600	Carbon Dioxide	4578.0360	92.995	26286430.0	92.521	BB	0.461	949867.10	73.786
5	10.233	NMNEOC as C3	0.8952	0.018	14838.3	0.052	BB	0.325	760.31	0.059

Total Area = 28411210.0, Total Amount = 4922.897, Total Height = 1287320.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 2 (2of2), TK # 95



Sample Name: **AIR GAS, ICE 2 (2of2), TK # 95**
Acquired from Chrom6--Det6A via port 6 on 8/22/13 12:54:24pm by Dr. Kitto

Data File: **D:\CPWIN\DATA6\23213-5.16R**
Date Stamp: 8/22/13 12:54:24pm
Sequence File: AUG2213A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

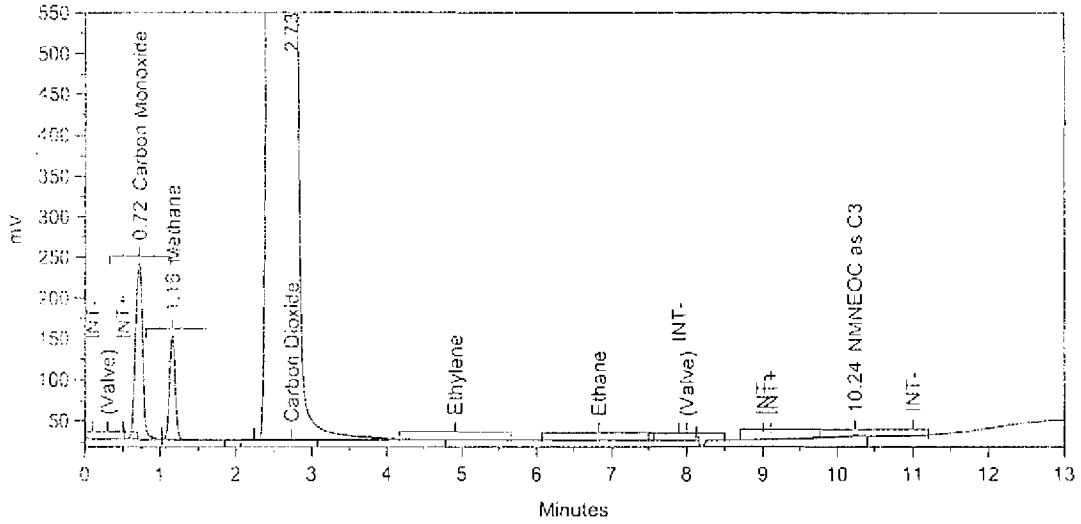
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.051	(Valve)	0.0011	0.000	11036.3	0.039	BB	0.071	2593.52	0.201
2	0.751	Carbon Monoxide	238.5023	4.879	1462772.0	5.183	BV	0.114	214141.60	16.561
3	1.187	Methane	103.6497	2.120	636033.2	2.254	VB	0.084	125454.10	9.702
4	2.813	Carbon Dioxide	4545.5450	92.984	26099880.0	92.476	BB	0.458	950088.30	73.479
5	10.238	NMNEOC as C3	0.8264	0.017	13699.3	0.049	BB	0.312	732.22	0.057

Total Area = 28223420.0, Total Amount = 4888.525, Total Height = 1293010.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 2 (2of2), TK # 95 Dup



Sample Name: **AIR GAS, ICE 2 (2of2), TK # 95 Dup**
Acquired from Chrom6--Det6A via port 6 on 8/22/13 01:11:19pm by Dr. Kitto

Data File: D:\CPWIN\DATA6\23213-5.17R
Date Stamp: 8/22/13 01:11:18pm
Sequence File: AUG2213A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

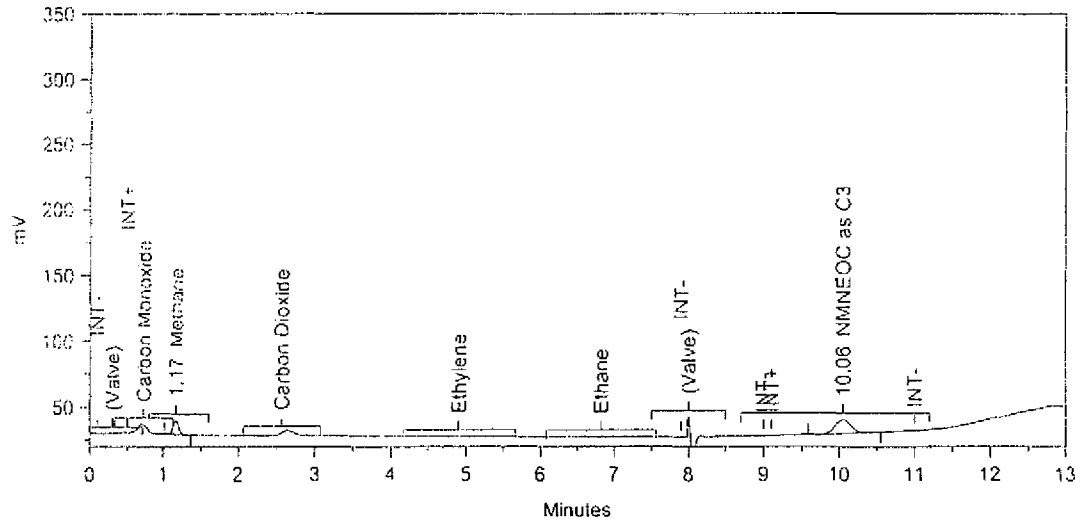
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.719	Carbon Monoxide	239.2672	4.907	1467464.0	5.215	BV	0.114	214484.10	16.615
2	1.157	Methane	103.0557	2.113	632387.8	2.247	VB	0.084	125859.20	9.750
3	2.730	Carbon Dioxide	4532.9990	92.962	26027840.0	92.488	BB	0.457	949838.40	73.579
4	10.236	NMNEOC as C3	0.8480	0.017	14055.9	0.050	BB	0.322	727.60	0.056

Total Area = 28141750.0, Total Amount = 4876.17, Total Height = 1290909.0, Sample Units = ppmv @C3

CCV 10 PPMV STD



Sample Name: **CCV 10 PPMV STD**
Acquired from Chrom6--Det6A via port 6 on 8/22/13 01:29:01pm by Dr. Kitto

Data File: **D:\CPWIN\DATA6\AUG2213S.18R**
Date Stamp: 8/22/13 01:29:00pm
Sequence File: AUG2213A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

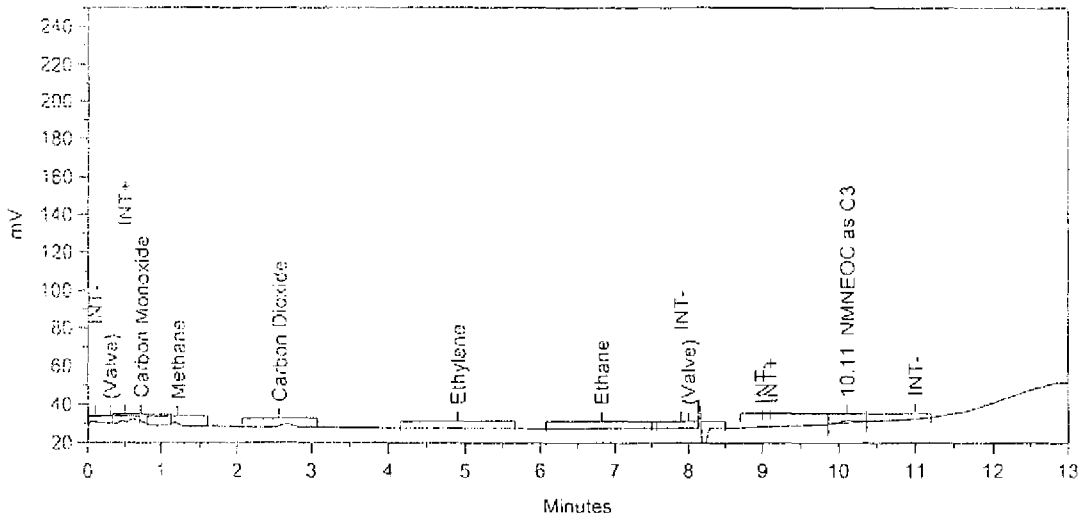
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	1.170	Methane	9.5778	50.117	58772.9	27.110	BB	0.090	10850.21	50.966
2	10.055	NMNEOC as C3	9.5332	49.883	158024.6	72.890	BB	0.252	10439.08	49.034

Total Area = 216797.4, Total Amount = 19.111, Total Height = 21289.29, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

1.0 PPMV STD Backflush



Sample Name: **1.0 PPMV STD Backflush**
Acquired from Chrom6--Det6A via port 6 on 8/22/13 01:48:27pm by Dr. Kitto

Data File: D:\CPWIN\DATA6\AUG2213S.19R
Date Stamp: 8/22/13 01:48:26pm
Sequence File: AUG2213A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

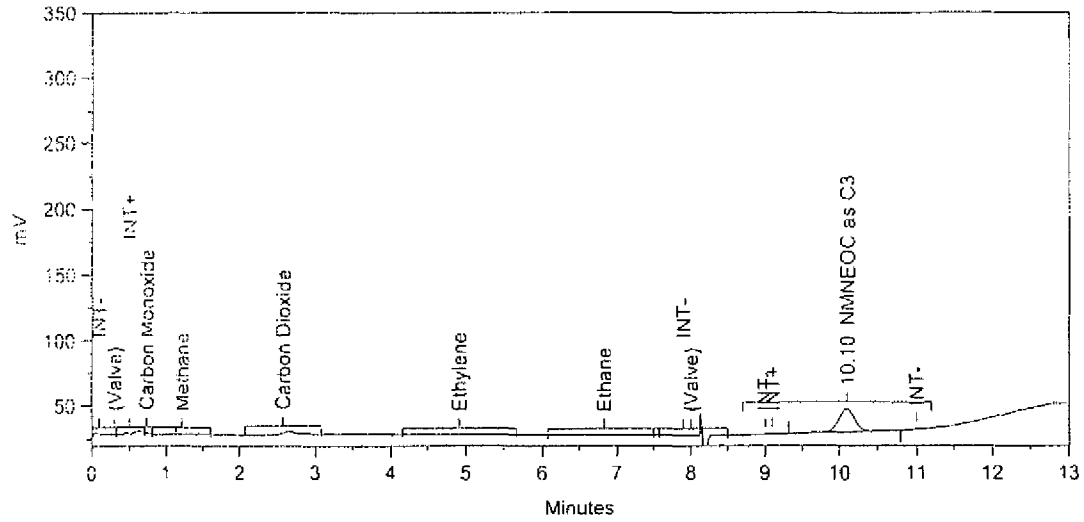
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
3	10.113	NMNEOC as C3	1.0282	100.000	17043.8	100.000	BB	0.242	1176.09	100.000

Total Area = 17043.8, Total Amount = 1.028, Total Height = 1176.09, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

LCS STD



Sample Name: LCS STD
Acquired from Chrom6--Det6A via port 6 on 8/22/13 02:13:51pm by Dr. Kitto

Data File: D:\CPWIN\DATA6\AUG2213S.20R
Date Stamp: 8/22/13 02:13:50pm
Sequence File: AUG2213A.SEQ #2
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

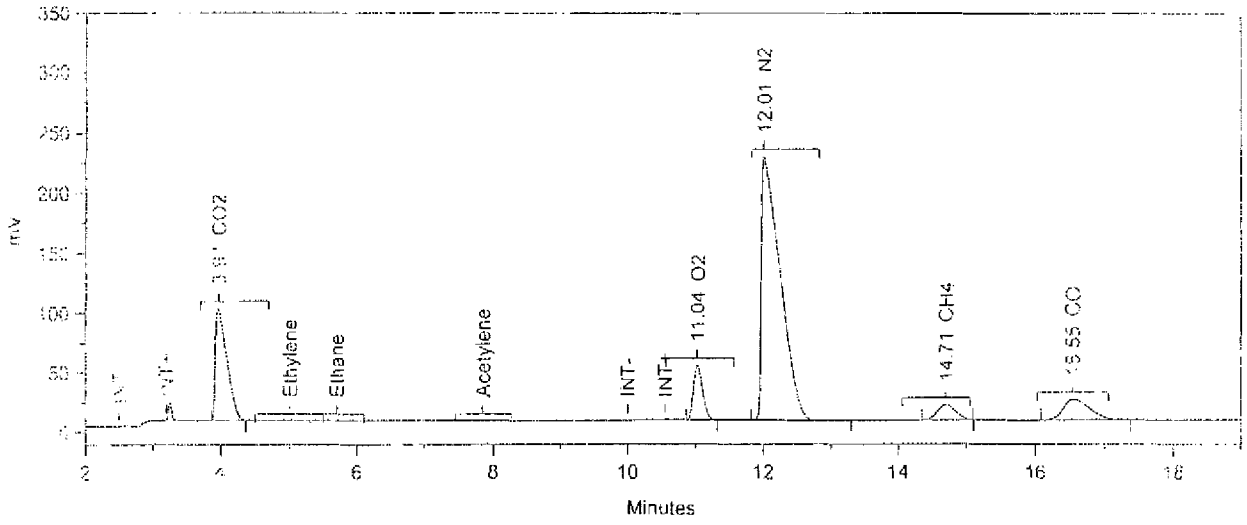
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	10.103	NMNEOC as C3	15.4012	100.000	255293.6	100.000	BB	0.244	17411.37	100.000

Total Area = 255293.6, Total Amount = 15.401, Total Height = 17411.37, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

TCD STD



Sample Name: TCD STD
Acquired from HHV/BTU--TCD via port 8 on 8/22/13 09:10:51am by Dr. Kitto

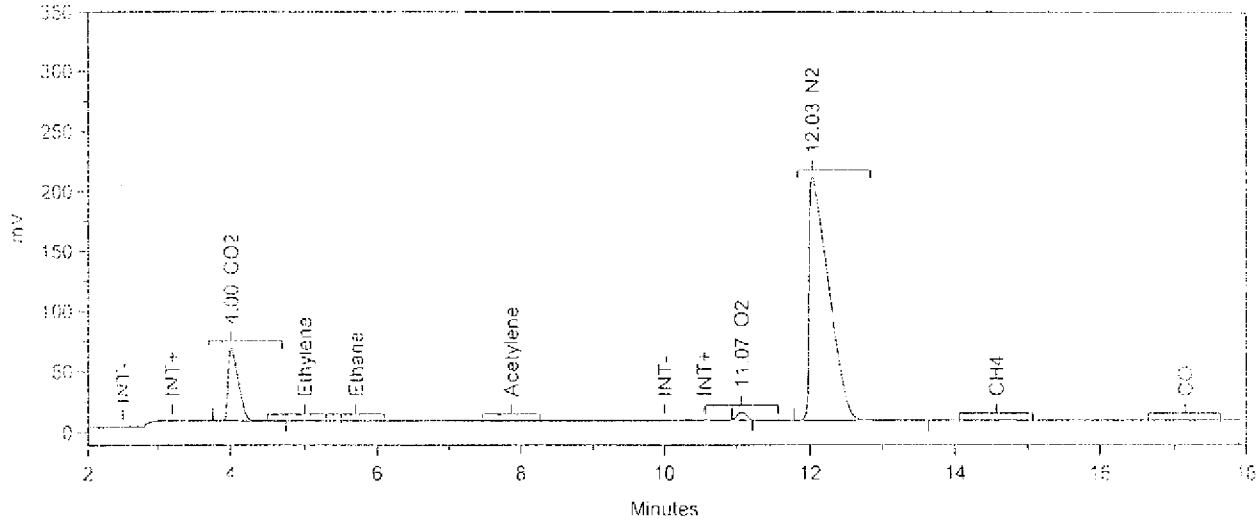
Data File: D:\CPWIN\DATA8\AUG2213S.01R
Date Stamp: 8/22/13 09:10:50am
Sequence File: AUG2213.SEQ #1
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

Run Time = 19.53 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.963	CO2	15.2190	15.168	1076725.0	16.577	BB	0.190	94616.05	24.164
2	11.037	O2	7.1375	7.114	441469.8	6.797	BB	0.158	46479.17	11.870
3	12.013	N2	66.5098	66.289	4274094.0	65.802	BB	0.324	220041.40	56.196
4	14.707	CH4	4.5012	4.486	236243.0	3.637	BB	0.310	12715.66	3.247
6	16.547	CO	6.9658	6.943	466808.4	7.187	BB	0.439	17706.50	4.522

Total Area = 6495341.0, Total Amount = 100.333, Total Height = 391558.7, Sample Units = Mole %
* Some peaks have been manually integrated.



Sample Name: AIR GAS, ICE #3 (1of2), TK # 92
Acquired from HHV/BTU--TCD via port 8 on 8/22/13 09:30:18am by Dr. Kitto

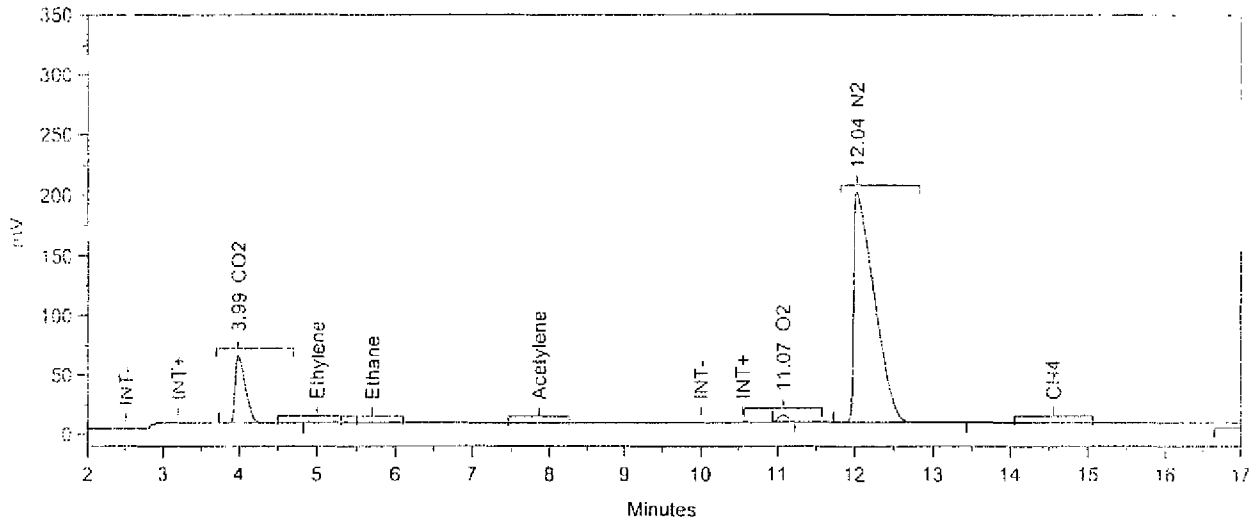
Data File: D:\CPWIN\DATA8\23213-2.02R
Date Stamp: 8/22/13 09:30:18am
Sequence File: AUG2213.SEQ #2
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

Run Time = 18.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	4.004	CO2	8.0097	11.886	566676.0	12.936	BB	0.157	59981.51	22.295
2	11.071	O2	0.8713	1.293	53893.9	1.230	BB	0.140	6437.41	2.393
3	12.034	N2	58.5080	86.821	3759880.0	85.833	BB	0.309	202620.70	75.313

Total Area = 4380450.0, Total Amount = 67.389, Total Height = 269039.6, Sample Units = Mole %
* Some peaks have been manually integrated.



Sample Name: **AIR GAS, ICE #3 (2of2), TK # 93**
Acquired from HHV/BTU--TCD via port 8 on 8/22/13 09:57:46am by Dr. Kitto

Data File: D:\CPWIN\DATA8\23213-3.03R
Date Stamp: 8/22/13 09:57:46am
Sequence File: AUG2213.SEQ #3
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

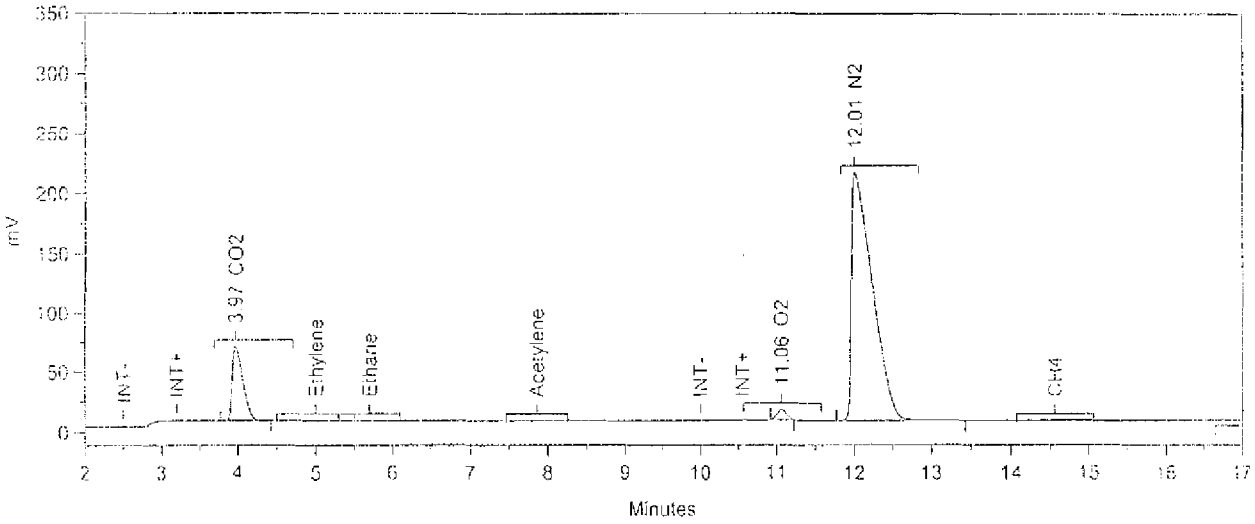
Run Time = 17.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.987	CO2	7.3491	11.755	519937.5	12.796	BB	0.152	57028.61	22.289
2	11.073	O2	0.7926	1.268	49023.5	1.207	BB	0.139	5872.72	2.295
3	12.039	N2	54.3753	86.977	3494302.0	85.997	BB	0.302	192961.20	75.416

Total Area = 4063263.0, Total Amount = 62.517, Total Height = 255862.5, Sample Units = Mole %
* Some peaks have been manually integrated.

AIR GAS, ICE #2 (1of2), TK # 94



Sample Name: **AIR GAS, ICE #2 (1of2), TK # 94**
Acquired from HHV/BTU--TCD via port 8 on 8/22/13 10:17:38am by Dr. Kitto

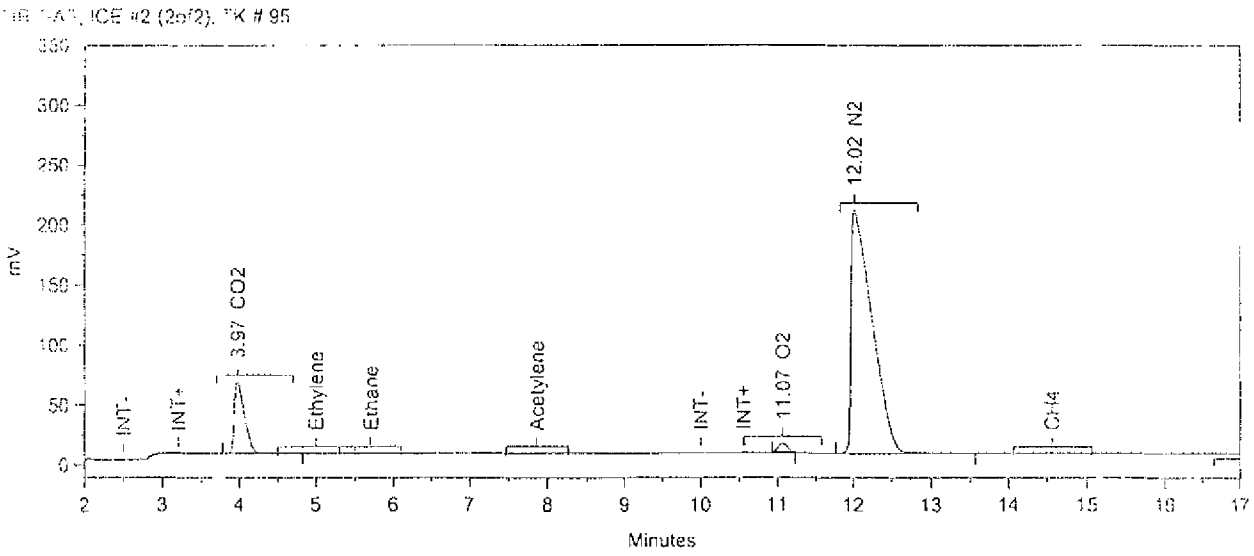
Data File: D:\CPWIN\DATA8\23213-4.04R
Date Stamp: 8/22/13 10:17:38am
Sequence File: AUG2213.SEQ #4
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

Run Time = 17.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.970	CO2	8.0646	11.579	570562.4	12.608	BB	0.154	61772.66	22.229
2	11.063	O2	1.1601	1.666	71752.5	1.586	BB	0.144	8286.18	2.982
3	12.009	N2	60.4220	86.755	3882912.0	85.806	BB	0.311	207829.70	74.789

Total Area = 4525227.0, Total Amount = 69.647, Total Height = 277888.6, Sample Units = Mole %
* Some peaks have been manually integrated.



Sample Name: **AIR GAS, ICE #2 (2of2), TK # 95**
Acquired from HHV/BTU--TCD via port 8 on 8/22/13 10:37:28am by Dr. Kitto

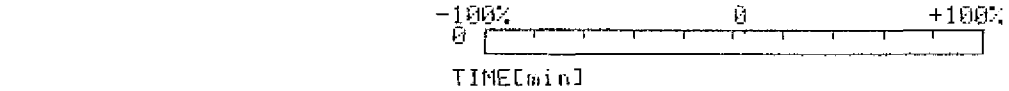
Data File: D:\CPWIN\DATA8\23213-5.05R
Date Stamp: 8/22/13 10:37:28am
Sequence File: AUG2213.SEQ #5
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

Run Time = 17.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.970	CO2	7.7098	11.512	545459.2	12.536	BB	0.152	59683.24	22.102
2	11.067	O2	1.0763	1.607	66573.1	1.530	BB	0.142	7803.87	2.890
3	12.017	N2	58.1873	86.881	3739266.0	85.934	BB	0.308	202546.30	75.008

Total Area = 4351298.0, Total Amount = 66.973, Total Height = 270033.4, Sample Units = Mole %
* Some peaks have been manually integrated.




```
  RANGE                : x5
[READY]
  TC FURNACE TEMP      :  OK      692°C
  DEHUMIDIFIER TEMP    :  OK      1.1°C
  BASELINE POSITION    :  OK
  BASELINE FLUCTUATION:  OK
  BASELINE NOISE       :  OK

        DATE  08(AUG)-23-2013  08:01
```

ICB- BLANK

```
SAMPLE# 100   TC
 [x 5,  100µl, C#  1, #WASH 3, SP  0min]
    #  AREA PPM      C#  µl RG
    1     0  0.000
    2-  203  0.284
    3     0  0.000
    4     0  0.000
   - - - - - - - - - - - - - -
   MN     0  0.000
   SD     0  0.000
   CV  0.00 %
   COR CONC DIL  0.000 [x 1.0]
   COR CONC INJ  0.000 [x 1.0]

        DATE  08(AUG)-23-2013  08:36


SAMPLE# 100   IC
 [x 5,  100µl, C#  3, #WASH 3, SP  0min]
    #  AREA PPM      C#  µl RG
    1     0  0.000
    2     0  0.000
    3     0  0.000
   - - - - - - - - - - - - - -
   MN     0  0.000
   SD     0  0.000
   CV  0.00 %
   COR CONC DIL  0.000 [x 1.0]
   COR CONC INJ  0.000 [x 1.0]

SAMPLE# 100   TOC(TC-IC)    0.000 PPM

        DATE  08(AUG)-23-2013  08:45
```

ICV - 10 ppm STD

```
SAMPLE#  10   TC
 [x 5,  100µl, C#  1, #WASH 3, SP  0min]
    #  AREA PPM      C#  µl RG
    1  7107  9.957
    2  7145  10.01
    3  7156  10.02
   - - - - - - - - - - - - - -
   MN  7136  9.998
   SD    25  0.036
   CV  0.36 %
   COR CONC DIL  9.998 [x 1.0]
   COR CONC INJ  9.998 [x 1.0]

        DATE  08(AUG)-23-2013  08:54


SAMPLE#  10   IC
 [x 5,  100µl, C#  3, #WASH 3, SP  0min]
    #  AREA PPM      C#  µl RG
    1     0  0.000
    2-  163  0.228
    3     0  0.000
    4     0  0.000
   - - - - - - - - - - - - - -
   MN     0  0.000
   SD     0  0.000
   CV  0.00 %
   COR CONC DIL  0.000 [x 1.0]
   COR CONC INJ  0.000 [x 1.0]

SAMPLE#  10   TOC(TC-IC)    9.998 PPM ✓

        DATE  08(AUG)-23-2013  09:04
```

AIRGAS B3-589

#1 SAMPLE# 1 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	18148	25.42			
2	18809	26.35			
3	18334	25.68			
MN	18430	25.82			
SD	340	0.477			
CV	1.84 %				
COR CONC DIL		51.64 [x 2.0]			
COR CONC INJ		51.64 [x 1.0]			

DATE 08(AUG)-23-2013 09:54

SAMPLE# 1 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	16660	23.38			
2	17054	23.93			
3	16849	23.64			
MN	16854	23.65			
SD	197	0.276			
CV	1.16 %				
COR CONC DIL		47.30 [x 2.0]			
COR CONC INJ		47.30 [x 1.0]			

SAMPLE# 1 TOC(TC-IC) 4.340 PPM ✓

DATE 08(AUG)-23-2013 10:02

SAMPLE# 2 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	14349	20.10			
2	14277	20.00			
3	13897	19.47			
MN	14174	19.85			
SD	242	0.340			
CV	1.71 %				
COR CONC DIL		39.71 [x 2.0]			
COR CONC INJ		39.71 [x 1.0]			

DATE 08(AUG)-23-2013 10:11

SAMPLE# 2 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	13315	18.68			
2	12739	17.87			
3	12150	17.05			
MN	12734	17.87			
SD	582	0.817			
CV	4.57 %				
COR CONC DIL		35.74 [x 2.0]			
COR CONC INJ		35.74 [x 1.0]			

SAMPLE# 2 TOC(TC-IC) 3.970 PPM

DATE 08(AUG)-23-2013 10:19

SAMPLE# 3 TC
[× 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	27835	38.99			
2	27495	38.52			
3	27298	38.24			
MN	27542	38.58			
SD	271	0.380			
CV	0.98 %				

COR CONC DIL 77.17 [× 2.0]
COR CONC INJ 77.17 [× 1.0]

DATE 08(AUG)-23-2013 11:23

SAMPLE# 3 IC
[× 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	27217	38.19			
2	27020	37.92			
3	26843	37.67			
MN	27026	37.93			
SD	187	0.262			
CV	0.69 %				

COR CONC DIL 75.86 [× 2.0]
COR CONC INJ 75.86 [× 1.0]

SAMPLE# 3 TOC(TC-IC) 1.310 ppm

DATE 08(AUG)-23-2013 11:33

SAMPLE# 4 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	31110	43.58			
2	30294	42.44			
3	30128	42.21			
MN	30510	42.74			
SD	525	0.736			
CV	1.72 %				
COR CONC DIL	85.49 [x 2.0]				
COR CONC INJ	85.49 [x 1.0]				

DATE 08(AUG)-23-2013 11:06

SAMPLE# 4 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	30208	42.39			
2	29611	41.55			
3	29584	41.52			
MN	29801	41.82			
SD	352	0.495			
CV	1.18 %				
COR CONC DIL	83.65 [x 2.0]				
COR CONC INJ	83.65 [x 1.0]				

SAMPLE# 4 TOC(TC-IC) 1.840 ppm

DATE 08(AUG)-23-2013 11:14

CCV 40 ppm STD

SAMPLE# 40 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	28349	39.71			
2	28082	39.34			
3	28077	39.33			
MN	28169	39.46			
SD	155	0.218			
CV	0.55 %				

COR CONC DIL 39.46 [x 1.0]
COR CONC INJ 39.46 [x 1.0]

DATE 08(AUG)-23-2013 15:45

SAMPLE# 40 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1-	254	0.356			
2-	360	0.505			
3	321	0.450			
4	296	0.415			
5	284	0.398			
MN	300	0.421			
SD	18	0.026			
CV	6.28 %				

COR CONC DIL 0.421 [x 1.0]
COR CONC INJ 0.421 [x 1.0]

SAMPLE# 40 TOC(TC-IC) 39.03 ppm ✓

DATE 08(AUG)-23-2013 15:55

Quantum Analytical Services Inc.
www.quantumairlab.com
1210 E. 223rd Street, Suite #314 • Carson, California 90745 • 310/830-2226 • Fax 310/830-2227

CLIENT : **Air Gas Testing & Consulting Services**
CLIENT JOB NO/NAME : **MCWD**
QUANTUM PROJECT NUMBER : **13-600**
REPORT DATE : **September 4, 2013**

Quantum Analytical Services, Inc. received on August 26. 2013 4 six-liter canisters and 4 vials for the analysis of Total non-Methane non-Ethane Organic Carbon (TNMNEOC) according to SCAQMD Method 25.3 and fixed gases according to the EPA Method 3C. Upon receipt, the canisters were checked for pressure and the vials were checked for temperature and leakage. The samples were assigned a specific laboratory project number and the canisters were given a specific sample ID number as follows:

Client ID	Lab No.	Tank Pressure Received (mmHg)
Well #5-Tank 1of 2, #80	23813-20	511.3
Well #5-Tank 2of 2, #81	23813-21	639.7
RES 1-ICE 1-Tank 1of 2, #82	23813-22	529.5
RES 1-ICE 1-Tank 2of 2, #83	23813-23	663.9

The samples were in good condition and no problems were encountered during sample preparation, and analysis. The test results included in this reports meet all the requirement of the SCAQMD Method 25.3, and EPA Method 3C.

SCAQMD Method 25.3: An aliquot of the gaseous sample (tank) is injected into the TCA (GC-FID) instrument, and an aliquot of the liquid (water trap) is analyzed into TOC analyzer (Shimadzu 5000A) following the SCAQMD Method 25.3 as outlined in the SOP.

EPA 3C: An aliquot of the gaseous sample (tank) is injected into the TCA (GC-TCD) for the analysis following EPA Method 3C.

I certify that the results in this report are technically accurate and in compliance with the terms and condition of the contract. Release of the data package has been approved by the laboratory president as verified in the following signature.

Thank you for giving us the opportunity to serve you. We appreciate your business and the confidence you have placed in us. Please contact me for further assistance or with any question.

Andrew Kitto, Ph.D.
President

Quantum Analytical Services Inc.
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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**MCWD**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-600**
SAMPLING DATE:	August 26, 2013
RECEIVING DATE:	August 26, 2013
ANALYSIS DATE:	August 28, 2013
REPORT DATE:	September 4, 2013

Pressure- Dilution Sheet

ANALYSIS METHOD		*SCAQMD 25.3*					
LIMIT OF DETECTION		*1.0 ppmC*					
Air Gas **Sample ID #**	*LAB ID No.*	**Tank Vol. (L) (Vtank)**	**Initial Pressure mmHg (Pi)**	**Return Pressure mmHg (Pr)**	**Final Pressure mmHg (Pf)**	**Sample Vol. (L) (Vsample)**	**Tank Dil Factor (DFtank)**
Well #5 - 1 of 2 - Tk 80	23813-20	6.0	3.1	511.3	819.2	4.04	1.60
WEll #5 - 2 of 2 - Tk 81	23813-21	6.0	3.1	639.7	817.4	5.05	1.28
RES 1-ICE 1 - 1 of 2 - Tk 82	23813-22	6.0	3.1	529.5	818.9	4.18	1.55
RES 1-ICE 1 - 2 of 2 - Tk 83	23813-23	6.0	3.1	663.9	818.1	5.24	1.23

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ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-600**
SAMPLING DATE:	August 26, 2013
RECEIVING DATE:	August 26, 2013
ANALYSIS DATE:	August 28, 2013
REPORT DATE:	September 4, 2013

Laboratory Analysis Report

All Samples were analyzed in duplicates/Average values are reported

Analysis Method	SCAQMD 25.3					
Detection Limits	1.0 ppmv					
Air Gas Sample ID #	Lab Sample ID	CH4 PPMV	Ethane PPMV	TOC PPMC	Canister TNMNEOC PPMC	Total TNMNEOC† PPMC
Well #5 - 1 of 2 - Tk 80	23813-20	2163	19.8	3.9	5.46	**10.2**
WEll #5 - 2 of 2 - Tk 81	23813-21	1952	20.0	5.0	4.06	**9.8**
RES 1-ICE 1 - 1 of 2 - Tk 82	23813-22	43	<1.0	15.8	4.41	**22.0**
RES 1-ICE 1 - 2 of 2 - Tk 83	23813-23	35	<1.0	24.9	3.70	**31.0**

TNMNEOC: Total Non methane non Ethane Organic Carbon

† Includes Bias Correction = 1.086, per method

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CLIENT PROJ. NO.:	**MCWD**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-600**
SAMPLING DATE:	August 26, 2013
RECEIVING DATE:	August 26, 2013
ANALYSIS DATE:	August 28, 2013
REPORT DATE:	September 4, 2013

Laboratory Analysis Report

I- NMNEOC Tanks **All Samples were analyzed in duplicates**

ANALYSIS METHOD	*SCAQMD 25.3*						
LIMIT OF DETECTION	*1.0 ppmC*						
Air Gas Sample ID #	*LAB ID No.*	Tank Dil Factor (DFtank)	GC Methane* PPMV	GC Carbon Monoxide PPMV	GC Ethylene PPMV	GC NMNEOC as C3 PPMV	NMNEOC Tank as Carbon PPMV
Well #5 - 1 of 2 - Tk 80	23813-20	1.60	1350	168	<1.0	1.16	**5.58**
Well #5 - 1 of 2 - Tk 80 Dup	23813-20D	1.60	-	165	<1.0	1.11	**5.34**
WEll #5 - 2 of 2 - Tk 81	23813-21	1.28	1528	264	<1.0	1.06	**4.06**
WEll #5 - 2 of 2 - Tk 81 Dup	23813-21D	1.28	-	264	<1.0	1.06	**4.06**
RES 1-ICE 1 - 1 of 2 - Tk 82	23813-22	1.55	27	148	<1.0	0.99	**4.59**
RES 1-ICE 1 - 1 of 2 - Tk 82 Dup	23813-22D	1.55	29	149	<1.0	0.91	**4.22**
RES 1-ICE 1 - 2 of 2 - Tk 83	23813-23	1.23	28	166	<1.0	0.98	**3.62**
RES 1-ICE 1 - 2 of 2 - Tk 83 Dup	23813-23D	1.23	28	167	<1.0	1.02	**3.77**

Note: Methane values for Well #5 reported from TCD (EPA 3C)

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**MCWD**
PROJECT NO:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-600**
SAMPLING DATE:	August 26, 2013
RECEIVING DATE:	August 26, 2013
ANALYSIS DATE:	August 28, 2013
REPORT DATE:	September 4, 2013

DUPLICATE ANALYSES

Analysis Method	**SCAQMD 25.3**				
Detection Limit	**1.0 ppmC**				
Air Gas **Sample ID**	**Analyte**	**Analysis #1 PPMV**	**Analysis #2 PPMV**	**Mean PPMV**	**% Difference from the Mean**
Well #5 - 1 of 2 - Tk 80	Methane	2163	-	2163	N/A
	CO	270	264	267	1.2%
	Ethane	20	19	20	1.5%
	Ethylene	<1.0	<1.0	<1.0	N/A
	NMNEOC	**5.58**	**5.34**	**5.46**	**2.2%**
WEll #5 - 2 of 2 - Tk 81	Methane	1952	-	1952	N/A
	CO	337	337	337	0.1%
	Ethane	20	20	20	0.6%
	Ethylene	<1.0	<1.0	<1.0	N/A
	NMNEOC	**4.06**	**4.06**	**4.06**	**0.0%**
RES 1-ICE 1 - 1 of 2 - Tk 82	Methane	42	44	43	2.7%
	CO	229	231	230	0.4%
	Ethane	<1.0	<1.0	<1.0	N/A
	Ethylene	<1.0	<1.0	<1.0	N/A
	NMNEOC	**4.59**	**4.22**	**4.41**	**4.2%**
RES 1-ICE 1 - 2 of 2 - Tk 83	Methane	35	35	35	0.3%
	CO	205	206	206	0.3%
	Ethane	<1.0	<1.0	<1.0	N/A
	Ethylene	<1.0	<1.0	<1.0	N/A
	NMNEOC	**3.62**	**3.77**	**3.70**	**2.0%**

Note: Methane values for Well #5 reported from TCD (EPA 3C)

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CLIENT: **Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.: **MCWD**
ANALYSIS: **Method 25.3- TNMNEOC**
LABORATORY NO: **13-600**
SAMPLING DATE: August 26, 2013
RECEIVING DATE: August 26, 2013
ANALYSIS DATE: August 28, 2013
REPORT DATE: September 4, 2013

Quality Control/Quality Assurance Report

I- Blank

Lab ID	Analyte	Result
N2 Blank - Open	NMNEOC	<1.0
N2 Blank - Close	NMNEOC	<1.0

II- Initial Calibration Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery*
ICV	CO	19.68	20.35	103%
ICV	CH4	19.36	19.64	101%
ICV	CO2	58.80	59.02	100%
ICV	Ethylene	19.40	19.66	101%
ICV	Ethane	19.74	19.78	100%
ICV	NMNEOC	19.96	20.01	100%

* Must be ±10%

III- Closing Calibration Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery**
CCV	CH4	10.00	9.77	98%
CCV	NMNEOC	10.00	9.80	98%

**Must be ±10%

IV- 1 ppm Backflush Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery**
Backflush	NMNEOC	1.00	0.99	99%

**Must be ±20%

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CLIENT: **Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.: **MCWD**
ANALYSIS: **Method 25.3- TNMNEOC**
LABORATORY NO: **13-600**
SAMPLING DATE: August 26, 2013
RECEIVING DATE: August 26, 2013
ANALYSIS DATE: August 28, 2013
REPORT DATE: September 4, 2013

Laboratory Control Sample
Quality Control/Quality Assurance Report

I- Blank

Lab ID	Analyte	Result
N2 Blank - Open	NMNEOC	<1.0
N2 Blank - Close	NMNEOC	<1.0

II- Laboratory Control Sample (LCS)

Lab ID	Date	Analyte	Theoretical Value PPMV	Tested Value PPMV	RPD %
LCS	8/28/13	NMNEOC	16.00	15.48	3.3%

* Must be ±10%

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**MCWD**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-600**
SAMPLING DATE:	August 26, 2013
RECEIVING DATE:	August 26, 2013
ANALYSIS DATE:	August 28, 2013
REPORT DATE:	September 4, 2013

Laboratory Analysis Report

II- Traps (TOC Analysis)

All The samples were analyzed in triplicate

ANALYSIS METHOD	*SCAQMD 25.3*								
LIMIT OF DETECTION	*1.0 ug/mL*								
Air Gas Sample ID #	*Trap No.*	Tank Vol. (L) (Vtank)	Initial Pressure mmHg (Pi)	Return Pressure mmHg (Pr)	Final Pressure mmHg (Pf)	Gaseous Sample Vol. (L)	Water Sample Volume ml	Dilution Factor	TOC ug/mL	TOC PPMC
Well #5 - 1 of 2 - Tk 80	5	6.0	3.1	511.3	819.2	4.04	5.0	1.0	1.6	3.9
WEll #5 - 2 of 2 - Tk 81	6	6.0	3.1	639.7	817.4	5.05	5.0	1.0	2.5	5.0
RES 1-ICE 1 - 1 of 2 - Tk 82	7	6.0	3.1	529.5	818.9	4.18	5.0	1.0	6.5	16
RES 1-ICE 1 - 2 of 2 - Tk 83	8	6.0	3.1	663.9	818.1	5.24	5.0	1.0	13	25

Note: All Traps (vials) were purged with Ultra Pure grade Helium

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From Shimadzu 5000A

Trap Vol (ml)	TOC Analysis Sample ID	Trap ID	ug/ml	DF	Gas Sample Vol (L)	ug/sample	mg/sample	PPMV
5	**Well #5 - 1 of 2 - Tk 80**	**5**	1.55	1.00	4.04	7.75	0.01	3.91
5	**WEll #5 - 2 of 2 - Tk 81**	**6**	2.47	1.00	5.05	12.35	0.01	4.98
5	**RES 1-ICE 1 - 1 of 2 - Tk 82**	**7**	6.50	1.00	4.18	32.50	0.03	15.84
5	**RES 1-ICE 1 - 2 of 2 - Tk 83**	**8**	12.80	1.00	5.24	64.00	0.06	24.87

Initial:

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CLIENT: **Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.: **MCWD**
ANALYSIS: **Method 25.3- TNMNEOC**
LABORATORY NO: **13-600**
SAMPLING DATE: August 26, 2013
RECEIVING DATE: August 26, 2013
ANALYSIS DATE: August 28, 2013
REPORT DATE: September 4, 2013

TC Analysis
Triplicate analysis

Sample #	Mean Area	SD	CV*	Average Conc. ug/ml
Trap 5	11323	13	0.11%	31.73
Trap 6	17066	461	2.70%	47.82
Trap 7	15115	185	1.22%	42.35
Trap 8	36250	1670	4.60%	253.90

*: CV must be within 10%

IC Analysis
Triplicate Analysis

Sample #	Mean Area	SD	CV*	Average Conc. ug/ml
Trap 5	10755	328	3.05%	30.18
Trap 6	16159	719	4.45%	45.35
Trap 7	12775	217	1.70%	35.85
Trap 8	34371	316	0.91%	241.10

*: CV must be within 10%

TOC (Average of Triplicate Analysis)

Sample #	Average TC mg/L	Average IC mg/L	Average TOC mg/L
Trap 5	**31.73**	**30.18**	**1.55**
Trap 6	**47.82**	**45.35**	**2.47**
Trap 7	**42.35**	**35.85**	**6.50**
Trap 8	**253.9**	**241.1**	**12.80**

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**MCWD**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-600**
SAMPLING DATE:	August 26, 2013
RECEIVING DATE:	August 26, 2013
ANALYSIS DATE:	August 28, 2013
REPORT DATE:	September 4, 2013

Quality Control/Quality Assurance Report

I- Blank

Lab ID	Analyte	Result ug/mL
Water Blank - Open	TOC	<1.0
Water Blank - Close	TOC	<1.0

II- Initial Calibration Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery*
ICV	TOC	10.0	9.99	100%

* Must be ±5%

III- Continuing/Closing Calibration Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery*
CCV	TOC	40.0	39.0	98%

*Must be ±10%

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CLIENT:	**Air Gas Testing & Consulting Services**
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ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-600**
SAMPLING DATE:	August 26, 2013
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ANALYSIS DATE:	August 28, 2013
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Laboratory Analysis Report

Analysis Method	**EPA Method 3C**			
Detection Limits	**0.10%**			
Air Gas **Sample ID #**	**Lab Sample ID #**	**CH4 Mole %**	**O2 Mole %**	**CO2 Mole %**
Well #5 - 1 of 2 - Tk 80	23813-20	0.2	0.5	11
WEll #5 - 2 of 2 - Tk 81	23813-21	0.2	0.3	12
RES 1-ICE 1 - 1 of 2 - Tk 82	23813-22	<0.1	0.5	11
RES 1-ICE 1 - 2 of 2 - Tk 83	23813-23	<0.1	0.5	12

*** Oxygen + Argon are not separated by GC**
Argon constitutes 0.93% of the atmosphere (Handbook of Chemistry and Physics)
0.9% was substracted from O2 concentrations

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ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-600**
SAMPLING DATE:	August 26, 2013
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ANALYSIS DATE:	August 28, 2013
REPORT DATE:	September 4, 2013

Quality Control/Quality Assurance

EPA 3C - Fixed Gases

Lab ID	Analyte	Theoretical Value Mole %	Tested Value Mole %	% Recovery*
SCOTT STD	CO2	15.0	15.2	101%
SCOTT STD	O2	7.0	7.1	102%
SCOTT STD	N2	66.7	67.3	101%
SCOTT STD	CH4	4.5	4.6	102%
SCOTT STD	CO	7.0	7.1	101%

* Must be ±10%

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EXAMPLE OF CALCULATION SHEET

Laboratory Analysis Report

I- Tanks

ANALYSIS METHOD		*SCAQND 25.3*							
LIMIT OF DETECTION		*0.5 PPMV*							
Air Gas Sample ID #	*LAB ID No.*	Tank Dil Factor (DFtank)	Methane Tank PPMC	Tank Ethylene From GC	Tank Ethylene PPMV+++	Ethylene as C PPMV	Tank NMNEOC as C3 from GC	Tank NMNEOC as C PPMV+++	Tank NMNEOC* as Carbon PPMV
Well #5 - 1 of 2 - Tk 80	23813-20	1.60	1350.0	0.00	<1.0	*0.00*	1.16	*5.58*	5.58
Well #5 - 1 of 2 - Tk 80 Dup	23813-20D	1.60	-	0.00	<1.0	*0.00*	1.11	*5.34*	5.34

+++: Includes Dilution factor

Tank Dil Factor = Pressure Final/ Pressure Received (Please see Pressure Sheet)
1.60

Tank Ethylene (ppmv) = From GC Chromatogram
0.00

Ethylene As C = Ethylene from GC Chromatogram x 2 x Dilution Factor
0.00

Tank NMNEOC as C3 = From the GC chromatogram
1.16

Tank NMNEOC as C = GC NMNEOC x 3 x Dil Factor
5.58

Tank Total NMNEOC = (NMNEOC as C + Ethylene as C)
5.58

Avg TNMNEOC (Reported Value) = **5.46**

Initial: AK

Method 25.3 Calculation Summary Sheet

TOC Calculations (Trap):

$$C_{Trap} = \frac{(C_{Toc} \times V_{Trap})}{(V_{Sample})} \times \frac{V_{id}}{MW_c}$$

Where:
C_{Trap} = Gaseous concentration of TOC in condensate trap water, ppmv (as Carbon)
C_{Toc} = TOC concentration in ug/ml of condensate trap water (*from Raw Data printout*)
V_{Trap} = Volume of condensate trap water in ml (*from Sample Receiving Data Sheet*)
V_{id} = Volume of ideal gas per mole at 25°C (24.4652 liters/mole)
MW_c = Atomic weight of carbon (12.01 g/mol)
V_{Sample} = Volume sampled in collection tank in Liters ($V_{Tank} \times (P_r - P_i) / P_a$)

Where:
V_{Tank} = Volume of the sampling tank in liters (*from Sample Receiving Data Sheet*)
P_r = Return canister pressure of the sampling tank (*from Sample Receiving Data Sheet*)
P_i = Initial canister pressure of the sampling tank (*from Sample Receiving Data Sheet*)
P_a = atmospheric pressure (760 mmHg)

TCA Calculations (Tank):

$$C_{Tank} = C_{TCA} \times DF_{Tank} \times 3.0$$

Where:
C_{Tank} = Gaseous concentration of tank, ppmv (as Carbon)
C_{TCA} = Average of analysis results from chromatograms, ppmv (as Propane)
DF_{Tank} = Dilution factor resulting from tank pressurization upon receipt (P_f/P_r)
3.0 = Conversion of result (as Propane) to (as Carbon)

Where:
P_f = Final canister pressure after pressurization for analysis (*from Sample Receiving Data Sheet*)
P_r = Return canister pressure upon sample receipt (*from Sample Receiving Data Sheet*)

Final Calculation (Tank and Trap):

$$\text{Total VOC (ppmC)} = (C_{Trap} + C_{Tank}) \times 1.086$$

Per method section 4.11, the final concentration includes a 1.086 bias correction factor.

Summa Cansiter Pressure Log

Client: Air Gas

Laboratory Project No: 13-600

Sampling Date: August 26, 2013

Receiving Date: August 26, 2013

Item#	Sample ID	Tank #	Lab ID	P_r (mmHg)	Purge	P_f (mmHg)
1	Well #5 Tank 1 of 2	80	23813-20	511.3	533.6	819.2
2	Well #5 Tank 2 of 2	81	23813-21	639.7	662.1	817.4
3	RES 1-ICE 1 Tank 1 of 2	82	23813-22	529.5	551.8	818.9
4	RES 1-ICE 1 Tank 2 of 2	83	23813-23	663.9	687.2	818.1
5						
6						
7						
8						
9						
10						

13-600

Air Gas Testing & Consulting Services
7111 Garden Grove Blvd., Garden Grove, CA 92841
Phone: 714-840-9827

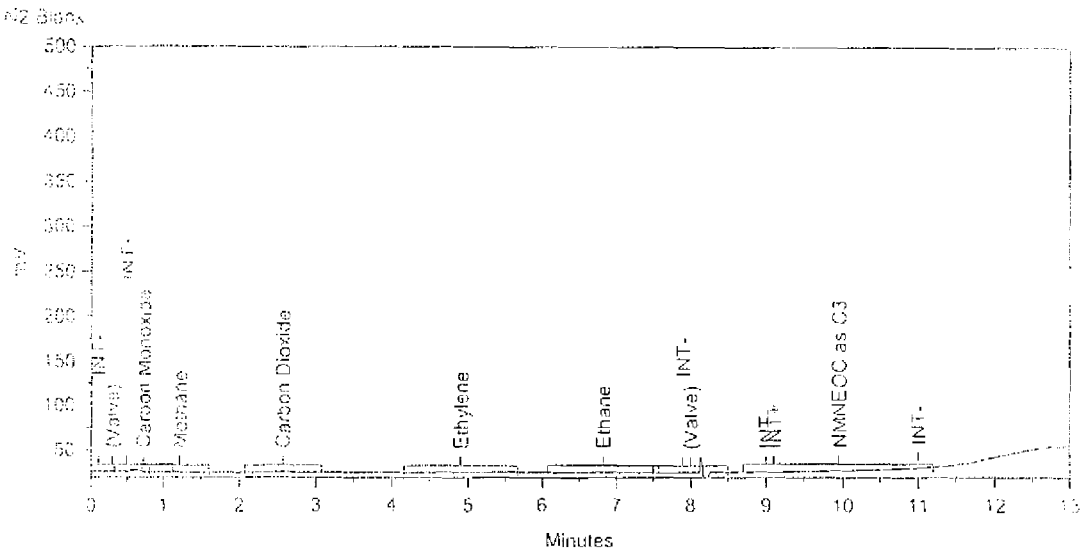
CHAIN OF CUSTODY

Plant: MCWD
Unit Tested: Well #5 & RES 1-ICE #1
Sample Loc: Stacks

Test Date: 8-26-13
Operator: TD/KA
Test Method: 25.3

	SAMPLE NO.	SAMPLE DESCRIPTION	TEST#	DATE	TIME	ANALYSIS FOR	COMMENT
Well #5	80	Tank 1 of 2	VOC-WELLS	8-26-13	440 PM	VOC + CH4	Method 25.3
	81	Tank 2 of 2	↓	↓	↓	↓	↓
	5	Trap 1 of 2					
	6	Trap 2 of 2					
Res 1-ICE #1	82	Tank 1 of 2	VOC-ICE #1				
	83	Tank 2 of 2	VOC-ICE #1				
	7	Vial 1 of 2	VOC-ICE #1				
	8	Vial 2 of 2	VOC ICE #1				

Relinquished by: Tim Dinh Signature: Tim Dinh For Delivery to Lab Date: 8-26-13 Time: 4:40
Relinquished by: Signature: For Date: Time:
Relinquished by: Signature: For Date: Time:
Relinquished by: Signature: For Date: Time:
Relinquished by: Signature: For Date: Time:
Relinquished by: Signature: For Date: Time:



Sample Name: N2 Blank
Acquired from: Chrom6--Det6A via port 6 on 8/28/13 08:45:49am by Dr. Kitto

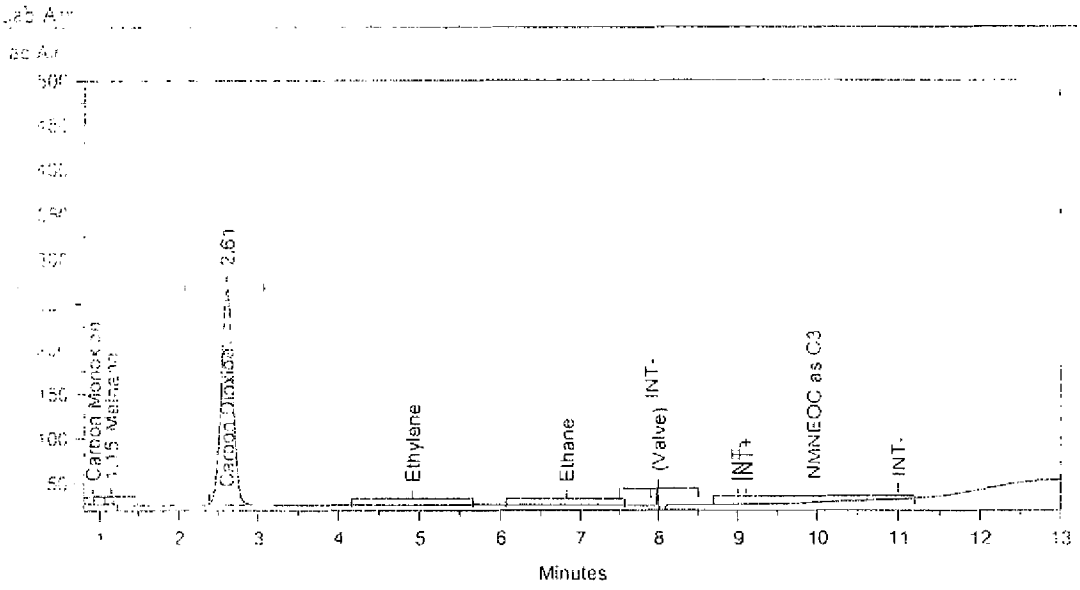
Data File: D:\CPWIN\DATA6\AUG2813B.01R
Date Stamp: 8/28/13 08:45:48am
Sequence File: AUG2813A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%

Total Area = 0.0, Total Amount = 0.0, Total Height = 0.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.



Sample Name: Lab Air
Acquired from Chrom6--Det6A via port 6 on 8/28/13 09:05:43am by Dr. Kitto

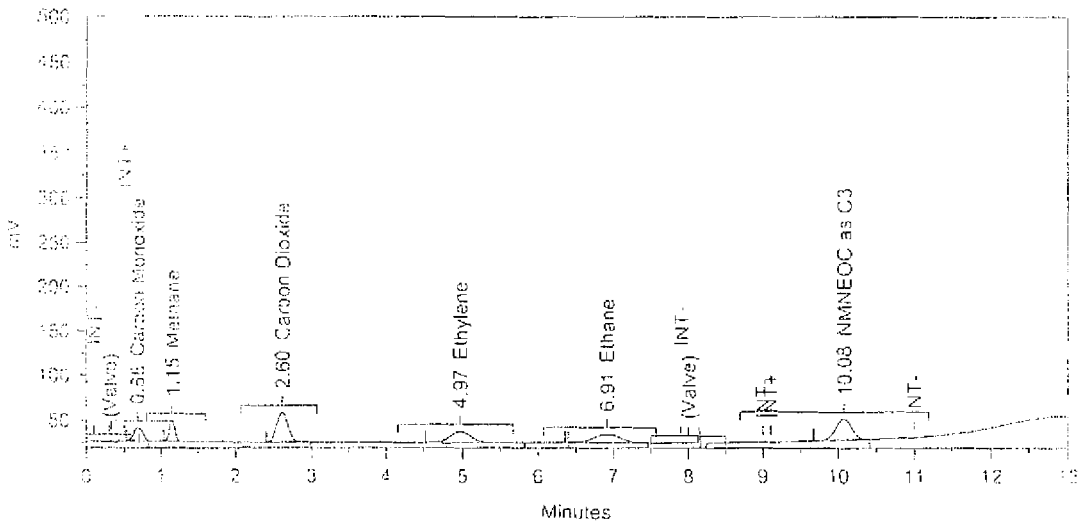
Data File: D:\CPWIN\DATA6\AUG2813B.02R
Date Stamp: 8/28/13 09:05:42am
Sequence File: AUG2813A.SEQ #2
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3, Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3, Date Stamp: 7/13/12 04:27:18pm

Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	1.149	Methane	1.5752	0.371	9666.2	0.397	BB	0.079	2029.51	0.837
2	2.606	Carbon Dioxide	422.8921	99.629	2428186.0	99.603	BB	0.168	240575.10	99.163

Total Area = 2437853.0, Total Amount = 424.467, Total Height = 242604.6, Sample Units = ppmv @C3
* Some peaks have been manually integrated.



Sample Name: ICV - 20 PPMV STD
Acquired from Chrom6--Det6A via port 6 on 8/28/13 09:29:45am by Dr. Kitto

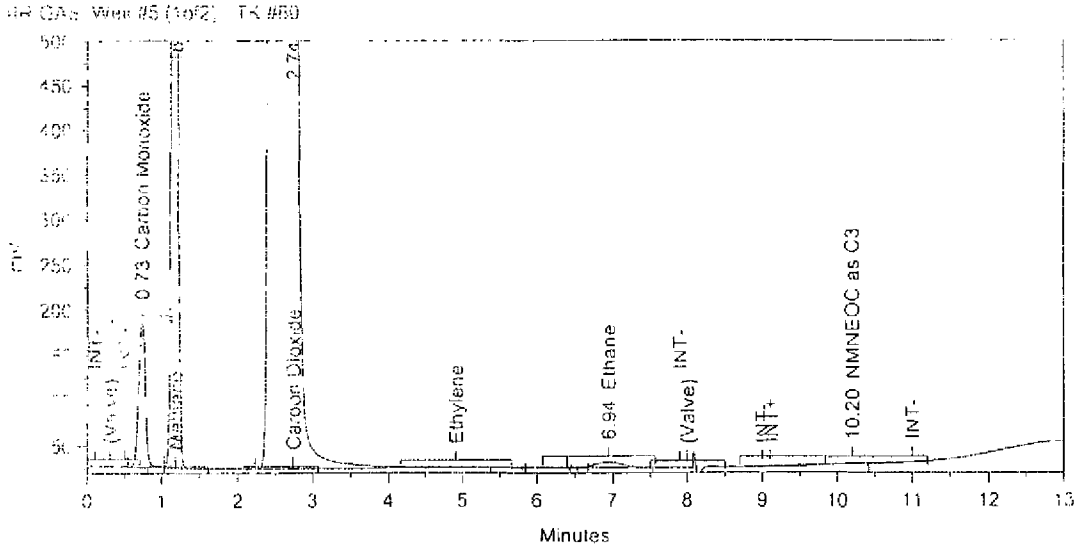
Data File: D:\CPWIN\DATA6\AUG2813S.03R
Date Stamp: 8/28/13 09:29:44am
Sequence File: AUG2813A.SEQ #3
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 13.64 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.681	Carbon Monoxide	20.3483	12.841	124799.2	9.074	BB	0.147	14179.76	12.264
2	1.152	Methane	19.6434	12.396	120539.3	8.764	BB	0.085	23561.40	20.378
3	2.605	Carbon Dioxide	59.0167	37.244	338865.7	24.638	BB	0.170	33224.20	28.736
4	4.969	Ethylene	19.6571	12.405	230618.8	16.768	BB	0.312	12331.95	10.666
6	6.907	Ethane	19.7820	12.484	228800.5	16.636	BB	0.427	8930.95	7.724
7	10.082	NMNEOC as C3	20.0123	12.629	331728.3	24.120	BB	0.236	23391.01	20.231

Total Area = 1375352.0, Total Amount = 158.46, Total Height = 115619.3, Sample Units = ppmv @C3
* Some peaks have been manually integrated.



Sample Name: AIR GAS, Well #5 (1of2) - TK #80
Acquired from Chrom6--Det6A via port 6 on 8/28/13 09:47:49am by Dr. Kitto

Data File: D:\CPWIN\DATA6\23813-20.04R
Date Stamp: 8/28/13 09:47:48am
Sequence File: AUG2813A.SEQ #4
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

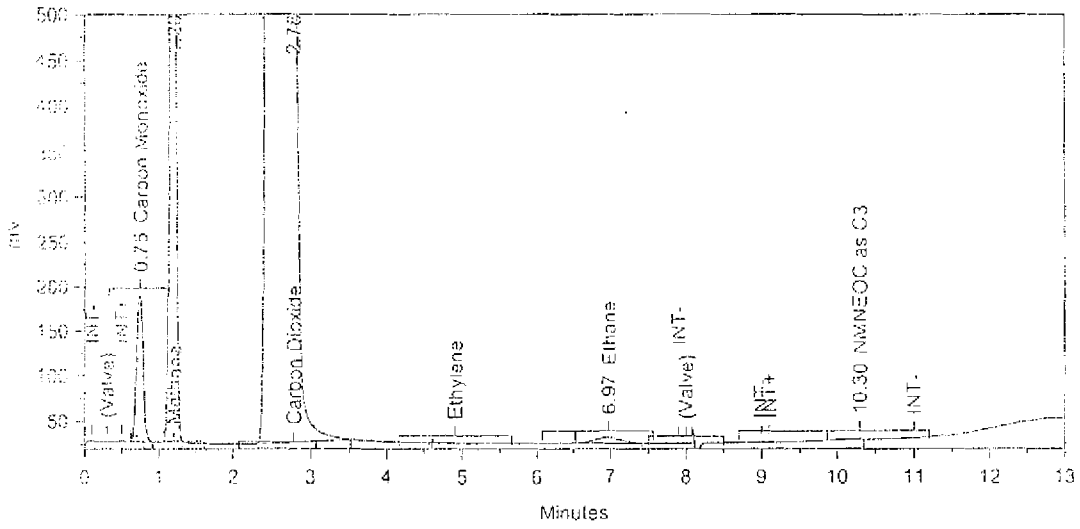
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Act Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.734	Carbon Monoxide	168.4475	3.113	1033115.0	3.274	BV	0.108	159411.20	7.701
2	1.178	Methane	845.4126	15.622	5187765.0	16.439	VB	0.091	951626.10	45.971
3	2.736	Carbon Dioxide	4384.2100	81.013	25173520.0	79.768	BB	0.441	952405.80	46.009
4	6.937	Ethane	12.5233	0.231	144845.4	0.459	BB	0.428	5644.18	0.273
5	10.197	NMNEOC as C3	1.1650	0.021	19278.5	0.061	BB	0.333	966.19	0.047

Total Area = 31558520.0 Total Amount = 5411.757, Total Height = 2070053.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, Well #5 (1of2) - TK #80 Dup



Sample Name: **AIR GAS, Well #5 (1of2) - TK #80 Dup**
Acquired from Chrom6--Det6A via port 6 on 8/28/13 10:05:20am by Dr. Kitto

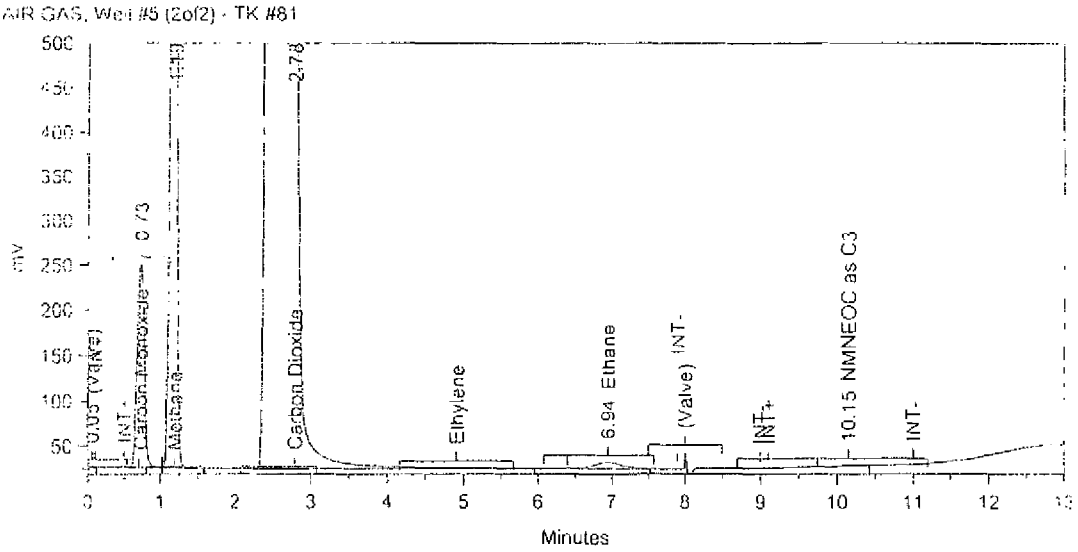
Data File: D:\CPWIN\DATA6\23813-20.05R
Date Stamp: 8/28/13 10:05:20am
Sequence File: AUG2813A.SEQ #5
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	RetTime	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.751	Carbon Monoxide	164.5895	3.059	1009454.0	3.217	BB	0.103	162969.30	7.871
2	1.198	Methane	850.8823	15.813	5221329.0	16.639	BB	0.092	949434.20	45.856
3	2.783	Carbon Dioxide	4352.3060	80.882	24990320.0	79.637	BB	0.438	950631.50	45.913
4	6.966	Ethane	12.1544	0.226	140579.3	0.448	BB	0.407	5755.17	0.278
5	10.297	NMNEOC as C3	1.1134	0.021	18439.1	0.059	BB	0.181	1700.35	0.082

Total Area = 31380130.0, Total Amount = 5381.044, Total Height = 2070491.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.



Sample Name: **AIR GAS, Well #5 (2of2) - TK #81**
Acquired from Chrom6--Det6A via port 6 on 8/28/13 10:23:02am by Dr. Kitto

Data File: D:\CPWIN\DATA6\23813-21.06R
Date Stamp: 8/28/13 10:23:02am
Sequence File: AUG2813A.SEQ #6
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

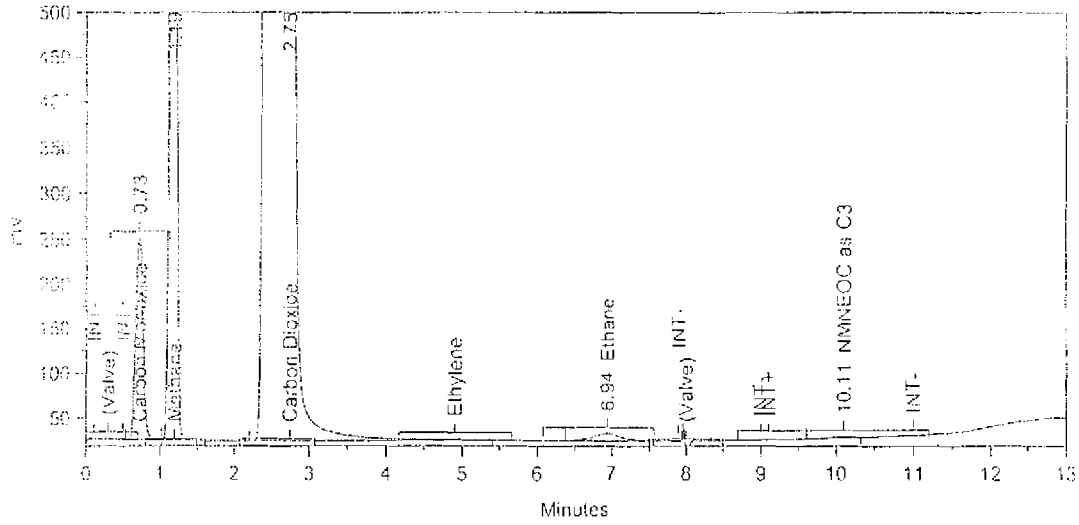
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.050	(Valve)	0.0009	0.000	8802.8	0.025	BB	0.072	2043.92	0.096
2	0.728	Carbon Monoxide	263.6583	4.434	1617058.0	4.655	BV	0.120	224834.40	10.514
3	1.194	Methane	981.8174	16.513	6024795.0	17.342	VB	0.106	951404.40	44.492
4	2.782	Carbon Dioxide	4683.6130	78.773	26892640.0	77.410	BB	0.471	952284.50	44.533
5	6.940	Ethane	15.5289	0.261	179608.5	0.517	BB	0.429	6974.82	0.326
6	10.146	NMNEOC as C3	1.0646	0.018	17647.5	0.051	BB	0.351	838.54	0.039

Total Area = 34746550.0, Total Amount = 5945.683, Total Height = 2138381.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, Well #5 (2of2) - TK #81 Dup



Sample Name: AIR GAS, Well #5 (2of2) - TK #81 Dup
Acquired from Chrom6--Det6A via port 6 on 8/28/13 10:40:08am by Dr. Kitto

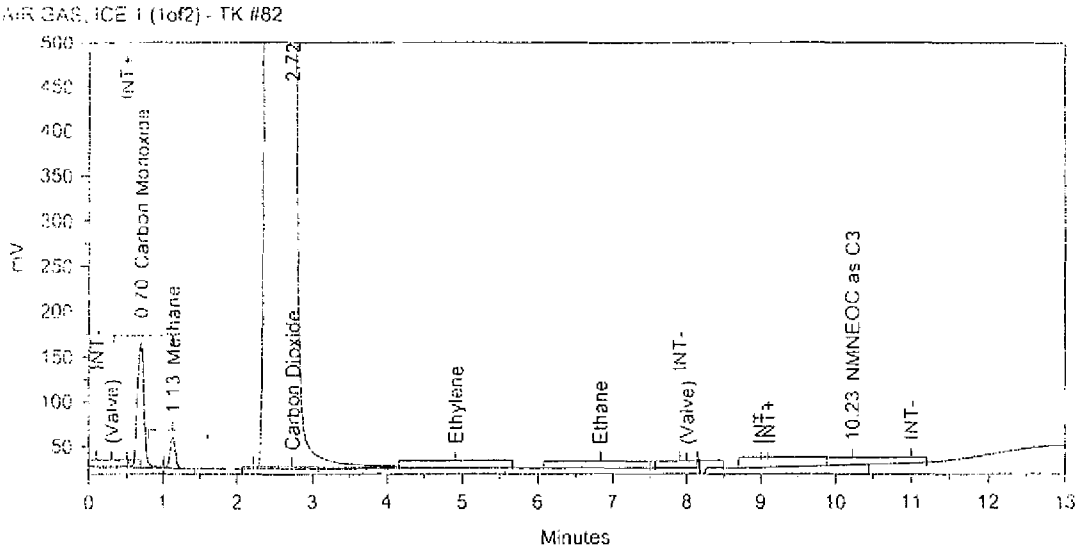
Data File: D:\CPWIN\DATA6\23813-21.07R
Date Stamp: 8/28/13 10:40:08am
Sequence File: AUG2813A.SEQ #7
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.728	Carbon Monoxide	264.0333	4.445	1619358.0	4.667	BV	0.120	224725.60	10.520
2	1.187	Methane	981.4680	16.525	6022651.0	17.358	VB	0.106	951359.90	44.537
3	2.748	Carbon Dioxide	4677.1690	78.747	26855640.0	77.400	BB	0.470	952072.20	44.570
4	6.938	Ethane	15.7249	0.265	181876.5	0.524	BB	0.431	7028.72	0.329
5	10.106	NMNEOC as C3	1.0556	0.018	17498.4	0.050	BB	0.316	923.73	0.043

Total Area = 34697030.0, Total Amount = 5939.452, Total Height = 2136110.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.



Sample Name: **AIR GAS, ICE 1 (1of2) - TK #82**
Acquired from Chrom6--Det6A via port 6 on 8/28/13 10:58:00am by Dr. Kitto

Data File: D:\CPWIN\DATA6\23813-22.08R
Date Stamp: 8/28/13 10:58:00am
Sequence File: AUG2813A.SEQ #8
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

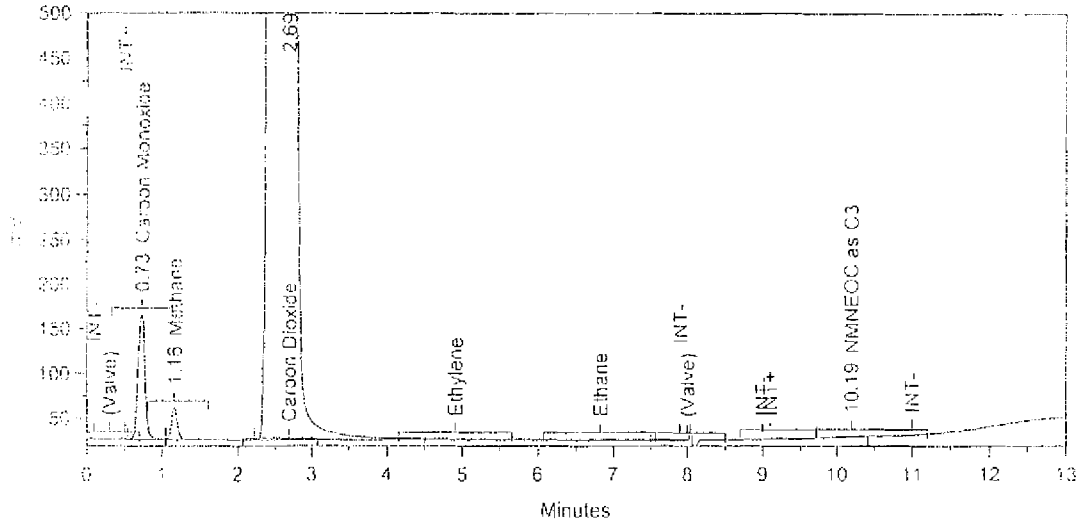
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.699	Carbon Monoxide	148.2766	3.201	909403.6	3.409	BV	0.109	139256.20	12.365
2	1.131	Methane	27.1088	0.585	166349.7	0.624	VB	0.081	34337.38	3.049
3	2.723	Carbon Dioxide	4455.5480	96.192	25583120.0	95.906	BB	0.448	951833.40	84.515
4	10.228	NMNEOC as C3	0.9861	0.021	16345.4	0.061	BB	0.336	809.78	0.072

Total Area = 26675220.0, Total Amount = 4631.919, Total Height = 1126237.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 1 (1of2) - TK #82 Dup



Sample Name: **AIR GAS, ICE 1 (1of2) - TK #82 Dup**
Acquired from Chrom6--Det6A via port 6 on 8/28/13 11:24:55am by Dr. Kitto

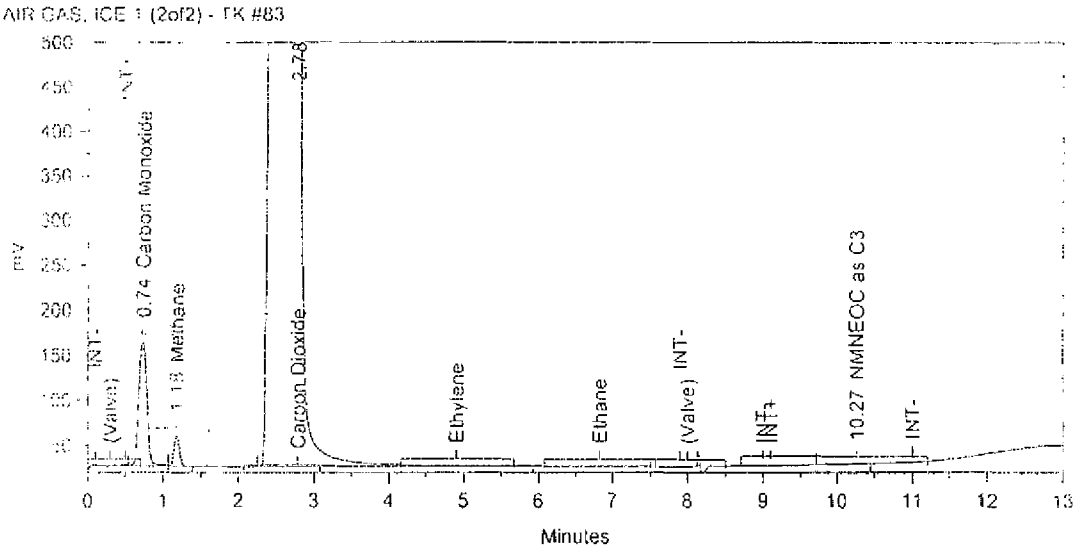
Data File: D:\CPWIN\DATA6\23813-22.09R
Date Stamp: 8/28/13 11:24:54am
Sequence File: AUG2813A.SEQ #9
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.729	Carbon Monoxide	149.4608	3.239	916666.8	3.449	BV	0.110	139179.90	12.360
2	1.160	Methane	28.6336	0.621	175706.1	0.661	VB	0.084	34769.92	3.088
3	2.693	Carbon Dioxide	4435.4880	96.121	25467940.0	95.833	BB	0.446	951314.60	84.480
4	10.192	NMNEOC as C3	0.9135	0.020	15141.9	0.057	BB	0.309	815.97	0.072

Total Area = 26575460.0, Total Amount = 4614.496, Total Height = 1126080.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.



Sample Name: **AIR GAS, ICE 1 (2of2) - TK #83**
Acquired from Chrom6--Det6A via port 6 on 8/28/13 11:53:03am by Dr. Kitto

Data File: **D:\CPWIN\DATA6\23813-23.10R**
Date Stamp: 8/28/13 11:53:02am
Sequence File: AUG2813A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

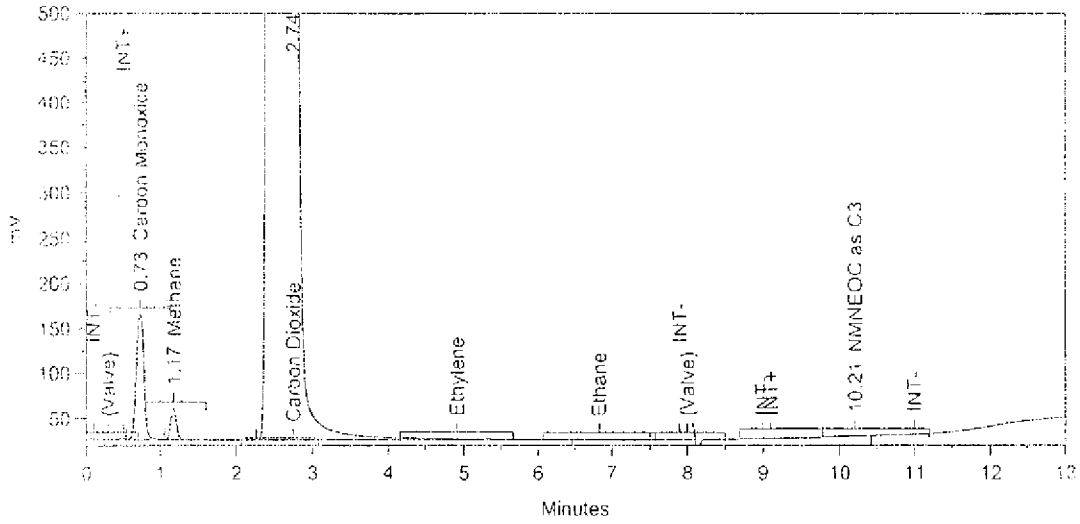
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.737	Carbon Monoxide	166.3911	3.409	1020503.0	3.631	BV	0.122	138988.60	12.340
2	1.176	Methane	28.2790	0.579	173530.6	0.617	VB	0.082	35121.57	3.118
3	2.782	Carbon Dioxide	4684.6780	95.991	26898760.0	95.694	BB	0.471	951559.30	84.482
4	10.266	NMNEOC as C3	0.9774	0.020	16202.1	0.058	BB	0.399	676.05	0.060

Total Area = 28108990.0, Total Amount = 4880.325, Total Height = 1126346.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 1 (2of2) - TK #83 Dup



Sample Name: AIR GAS, ICE 1 (2of2) - TK #83 Dup
Acquired from Cbrom6--Det6A via port 6 on 8/28/13 12:09:30pm by Dr. Kitto

Data File: D:\CPWIN\DATA6\23813-23.11R
Date Stamp: 8/28/13 12:09:30pm
Sequence File: AUG2813A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

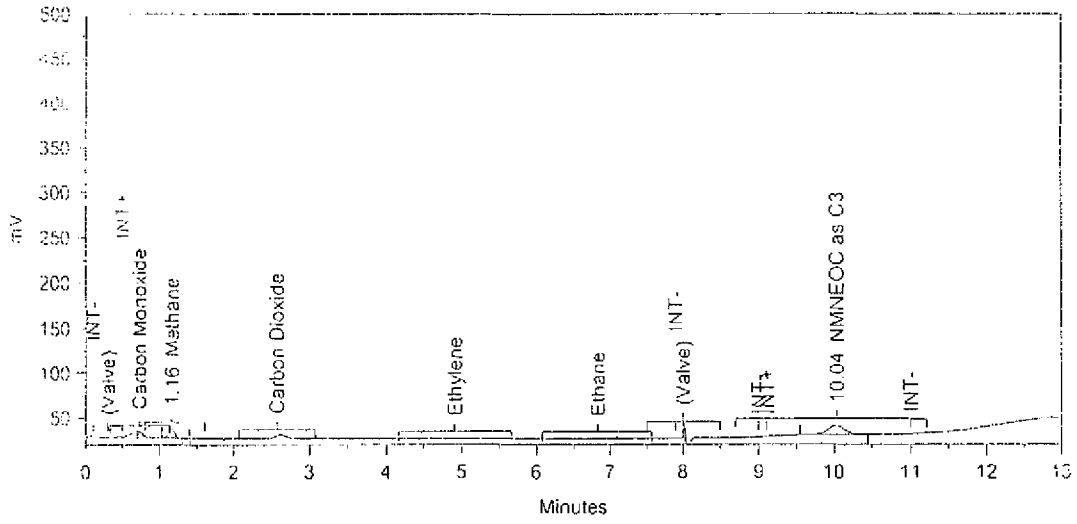
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.734	Carbon Monoxide	167.3789	3.416	1026561.0	3.638	BV	0.123	139621.50	12.383
2	1.175	Methane	28.1136	0.574	172515.6	0.611	VB	0.082	35160.94	3.118
3	2.744	Carbon Dioxide	4703.0320	95.989	27004150.0	95.691	BB	0.473	951949.80	84.426
4	10.211	NMNEOC as C3	1.0194	0.021	16898.3	0.060	BB	0.343	820.54	0.073

Total Area = 28220120.0, Total Amount = 4899.544, Total Height = 1127553.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

CCV 10 PPMV STD



Sample Name: **CCV 10 PPMV STD**
Acquired from Chrom6--Det6A via port 6 on 8/28/13 01:33:50pm by Dr. Kitto

Data File: **D:\CPWIN\DATA6\AUG2813S.14R**
Date Stamp: 8/28/13 01:33:50pm
Sequence File: AUG2813A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

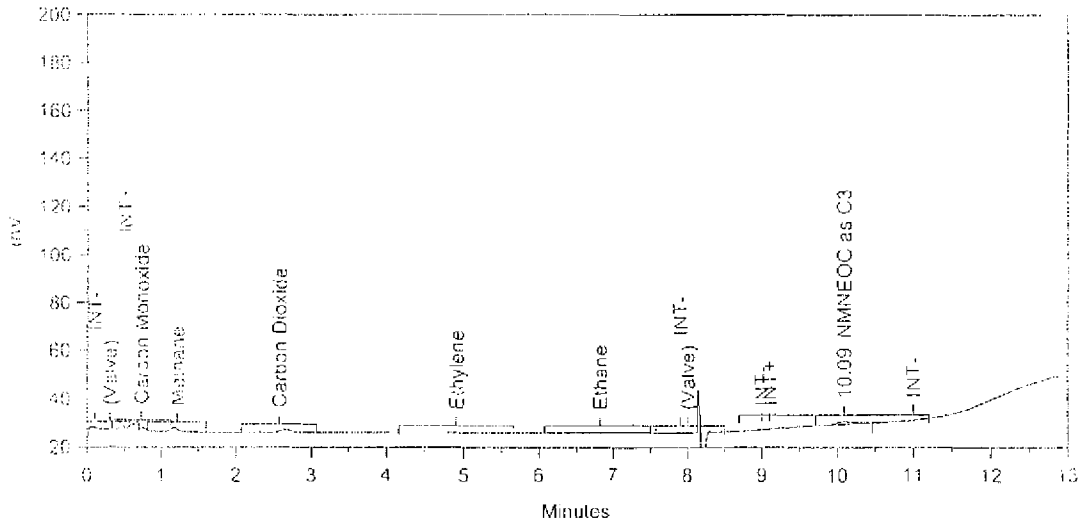
Run Time = 13.66 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	1.160	Methane	9.7665	49.915	59930.8	26.951	BB	0.091	11030.23	50.749
3	10.040	NMNEOC as C3	9.7997	50.085	162441.3	73.049	BB	0.253	10704.44	49.251

Total Area = 222372.1, Total Amount = 19.566, Total Height = 21734.66, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

1.0 PPMV STD Backflush



Sample Name: **1.0 PPMV STD Backflush**
Acquired from Chrom6--Det6A via port 6 on 8/28/13 01:51:50pm by Dr. Kitto

Data File: D:\CPWIN\DATA6\AUG2813S.15R
Date Stamp: 8/28/13 01:51:50pm
Sequence File: AUG2813A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

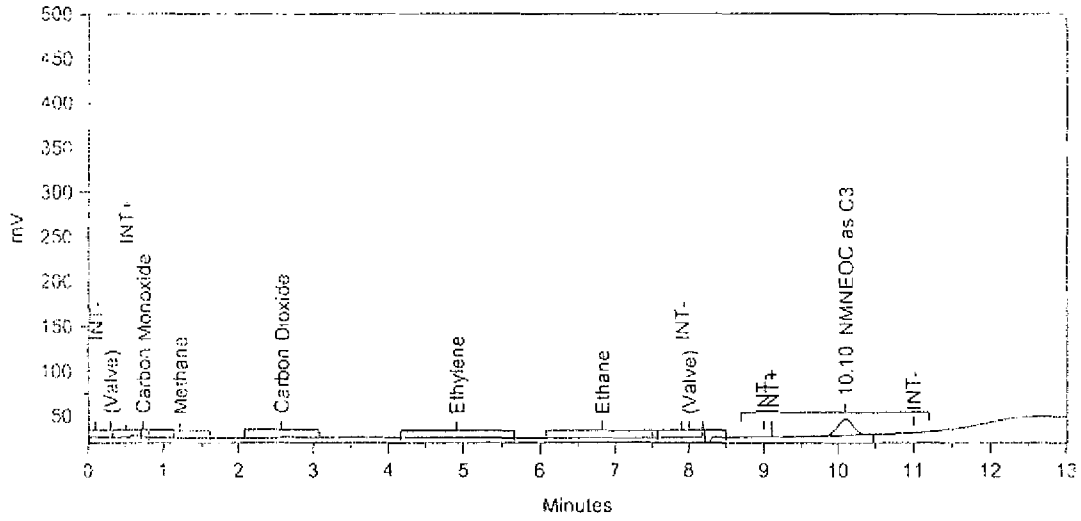
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	10.085	NMNEOC as C3	0.9915	100.000	16435.8	100.000	BB	0.253	1084.39	100.000

Total Area = 16435.8, Total Amount = 0.992, Total Height = 1084.39, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

LCS STD



Sample Name: **LCS STD**
Acquired from Chrom6--Det6A via port 6 on 8/28/13 02:47:54pm by Dr. Kitto

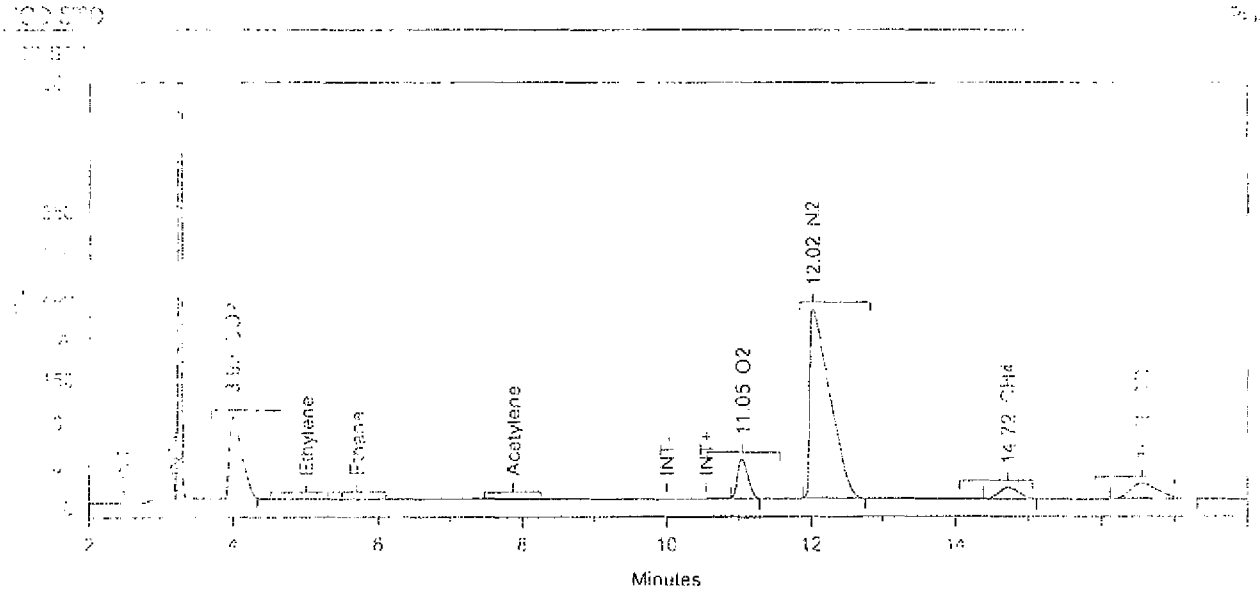
Data File: **D:\CPWIN\DATA6\AUG2813S.16R**
Date Stamp: 8/28/13 02:47:54pm
Sequence File: AUG2813A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	10.102	NMNEOC as C3	15.4840	100.000	256666.3	100.000	BB	0.239	17881.35	100.000

Total Area = 256666.3, Total Amount = 15.484, Total Height = 17881.35, Sample Units = ppmv @C3
* Some peaks have been manually integrated.



Sample Name: TCD STD
Acquired from HP7/BTU--TCD via port 8 on 8/28/13 09:36:33am by Dr. Kitto

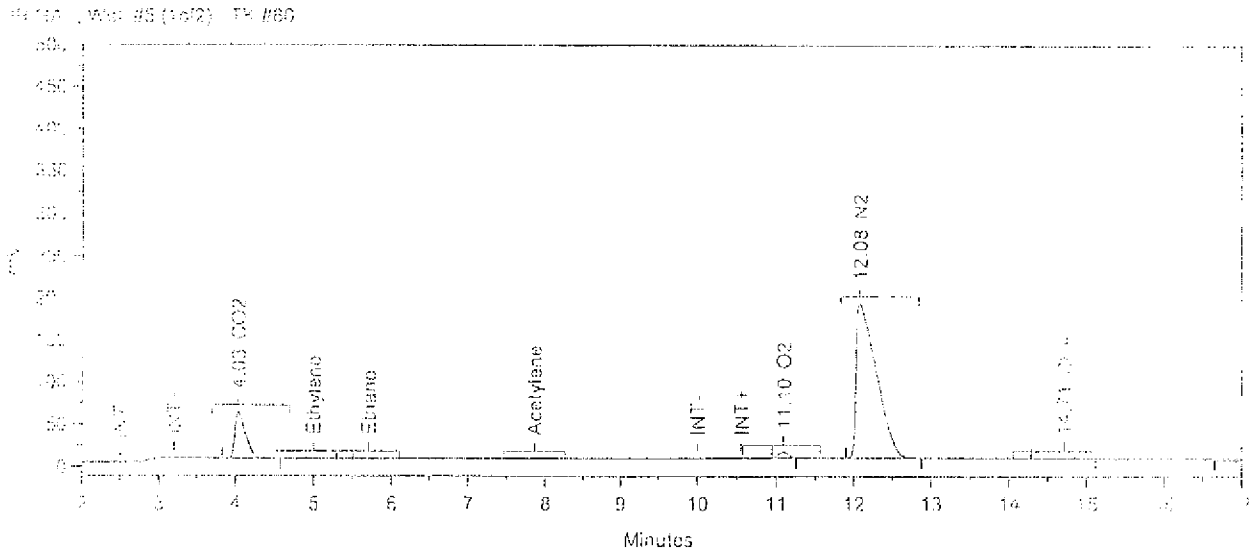
Data File: D:\CPWIN\DATA8\AUG2813S.01R
Date Stamp: 8/28/13 09:36:32am
Sequence File: AUG2813.SEQ #1
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

Run Time = 18.57 min Sample Rate = 15.0 per sec.
Area Reject = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.980	CO2	15.2041	15.004	1075669.0	16.400	BB	0.190	94452.27	23.979
2	11.050	O2	7.1164	7.023	440168.8	6.711	BB	0.158	46405.56	11.781
3	12.020	N2	67.3390	66.452	4327383.0	65.976	BB	0.325	222240.80	56.422
4	14.717	CH4	4.5797	4.519	240362.5	3.665	BB	0.312	12854.60	3.263
5	16.560	C3	7.0950	7.002	475465.3	7.249	BB	0.442	17939.03	4.554

Total Area = 6559049.0, Total Amount = 101.334, Total Height = 393892.2, Sample Units = Mole %
* Some peaks have been manually integrated.



Sample Name: AIR GAS, Well #5 (1of2) - TK #80
Acquired from HHV/BTU--TCD via port 8 on 8/28/13 09:54:55am by Dr. Kitto

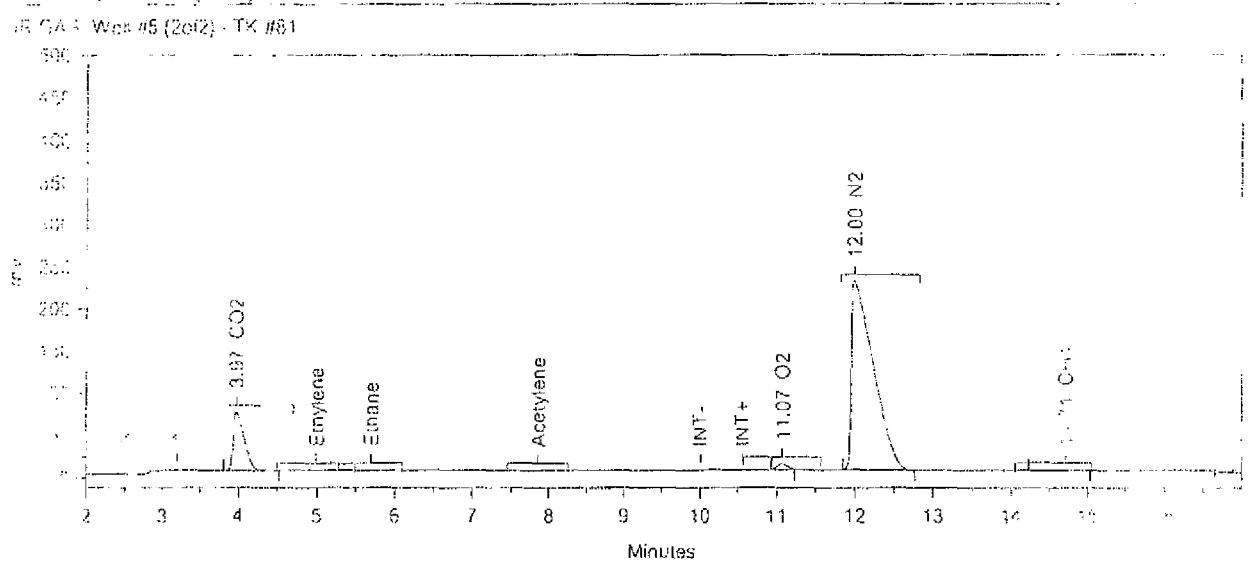
Data File: D:\CPWIN\DATA8\23813-20.02R
Date Stamp: 8/28/13 09:54:54am
Sequence File: AUG2813.SEQ #2
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

Run Time = 17.0 min Sample Rate = 15.0 per sec.
Amount Inj = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

Pk#	ret time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	4.035	CO2	7.0431	11.920	498288.2	12.979	BB	0.153	54133.00	22.108
2	11.098	O2	0.8924	1.510	55196.7	1.438	BB	0.144	6406.84	2.617
3	12.079	N2	51.0181	86.342	3278557.0	85.399	BB	0.297	183962.90	75.130
4	14.713	CH4	0.1350	0.228	7084.0	0.185	BB	0.330	357.45	0.146

Total Area = 3839126.0, Total Amount = 59.089, Total Height = 244860.2, Sample Units = Mole %
* Some peaks have been manually integrated.



Sample Name: AIR GAS, Well #5 (2of2) - TK #81
Acquired from HW/BTU--TCD via port 8 on 8/28/13 10:14:43am by Dr. Kitto

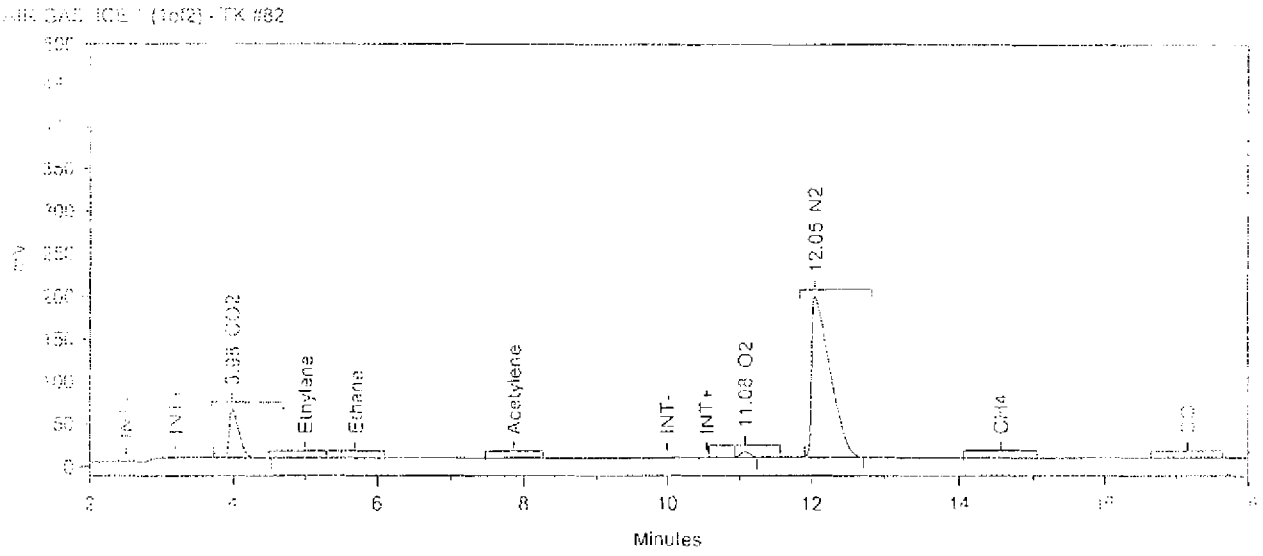
Data File: D:\CPWIN\DATA8\23813-21.03R
Date Stamp: 8/28/13 10:14:42am
Sequence File: AUG2813.SEQ #3
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

Run Time = 17.0 mns Sample Rate = 15.0 per sec.
Amount Inj = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.975 CO2		9.2651	12.046	655493.8	13.114	BB	0.160	68095.20	22.862
2	11.074 O2		0.9708	1.262	60048.4	1.201	BB	0.145	6883.33	2.311
3	11.997 N2		66.5227	86.493	4274922.0	85.524	BB	0.320	222449.70	74.685
4	14.710 CH4		0.1528	0.199	8018.3	0.160	BB	0.316	422.54	0.142

Total Area = 4998483.0, Total Amount = 76.911, Total Height = 297850.7, Sample Units = Mole %
* Some peaks have been manually integrated.



Sample Name: AIR GAS, ICE 1 (1of2) - TK #82
Acquired from BBV/BTU--TCD via port 8 on 8/28/13 10:34:51am by Dr. Kitto

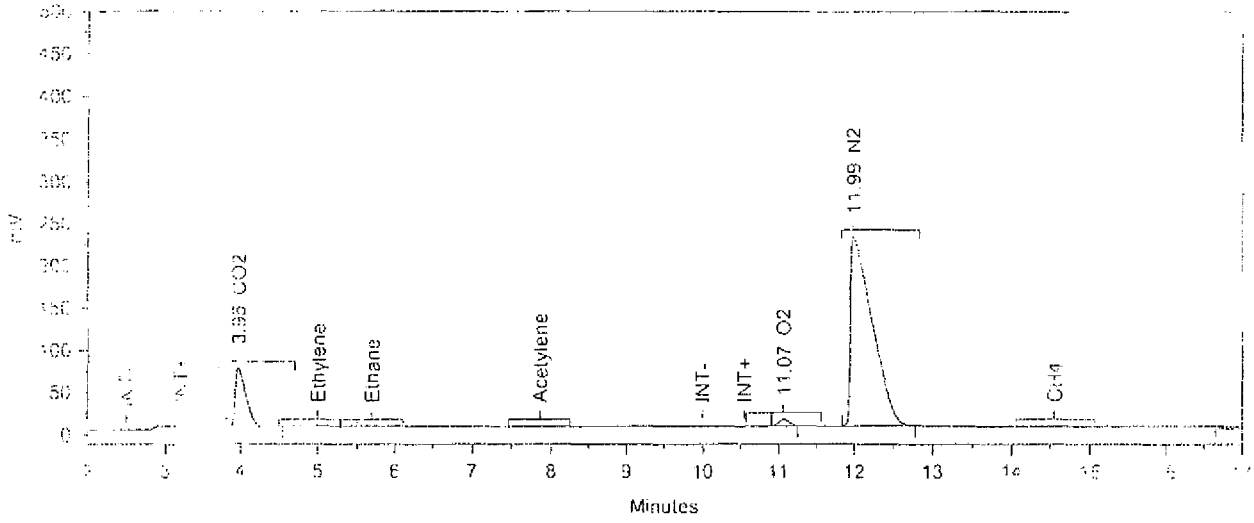
Data File: D:\CPWIN\DATA8\23813-22.04R
Date Stamp: 8/28/13 10:34:50am
Sequence File: AUG2813.SEQ #4
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

Run Time = 18.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.985 CO2		7.2743	11.961	514647.0	13.018	BB	0.151	56745.85	22.503
2	11.083 O2		0.8878	1.460	54914.6	1.389	BB	0.144	6349.53	2.518
3	12.050 N2		52.6570	86.580	3383879.0	85.593	BB	0.298	189072.80	74.979

Total Area = 3953440.0, Total Amount = 60.819, Total Height = 252168.2, Sample Units = Mole %
* Some peaks have been manually integrated.



Sample Name: AIR GAS, ICE 1 (2of2) - TK #83
Acquired from HHV/BTU--TCD via port 8 on 8/28/13 10:54:06am by Dr. Kitto

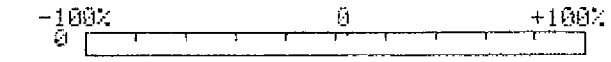
Data File: D:\CPWIN\DATA8\23813-23.05R
Date Stamp: 8/28/13 10:54:06am
Sequence File: AUG2813.SEQ #5
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

Run Time = 17.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.983	CO2	9.3442	11.989	661086.9	13.049	BB	0.160	68708.13	22.849
2	11.067	O2	1.1594	1.488	71709.0	1.415	BB	0.151	7918.87	2.633
3	11.990	N2	67.4354	86.523	4333575.0	85.536	BB	0.322	224081.30	74.518

Total Area = 5066371.0, Total Amount = 77.939, Total Height = 300708.3, Sample Units = Mole %
* Some peaks have been manually integrated.




```
  RANGE                : x5
[READY]
  TC FURNACE TEMP      :  OK      692°C
  DEHUMIDIFIER TEMP    :  OK      1.1°C
  BASELINE POSITION    :  OK
  BASELINE FLUCTUATION:  OK
  BASELINE NOISE       :  OK

        DATE  08(AUG)-23-2013  08:01

SAMPLE# 100   TC        FCB- BLANK
 [x 5,  100µl, C#  1, #WASH 3, SP  0min]
    #  AREA PPM      C#  µl RG
    1     0  0.000
    2-  203  0.284
    3     0  0.000
    4     0  0.000
   - - - - - - - - - - - - - -
   MN     0  0.000
   SD     0  0.000
   CV  0.00 %
   COR CONC DIL  0.000 [x 1.0]
   COR CONC INJ  0.000 [x 1.0]

        DATE  08(AUG)-23-2013  08:36


SAMPLE# 100   IC
 [x 5,  100µl, C#  3, #WASH 3, SP  0min]
    #  AREA PPM      C#  µl RG
    1     0  0.000
    2     0  0.000
    3     0  0.000
   - - - - - - - - - - - - - -
   MN     0  0.000
   SD     0  0.000
   CV  0.00 %
   COR CONC DIL  0.000 [x 1.0]
   COR CONC INJ  0.000 [x 1.0]

SAMPLE# 100   TOC(TC-IC)    0.000 PPM ✓

        DATE  08(AUG)-23-2013  08:45
```

ICV - 10 ppm STD

```
SAMPLE#  10   TC
 [x 5,  100µl, C#  1, #WASH 3, SP  0min]
    #  AREA PPM      C#  µl RG
    1  7107  9.957
    2  7145  10.01
    3  7156  10.02
   - - - - - - - - - - - - - -
   MN  7136  9.998
   SD    25  0.036
   CV  0.36 %
   COR CONC DIL  9.998 [x 1.0]
   COR CONC INJ  9.998 [x 1.0]

        DATE  08(AUG)-23-2013  08:54


SAMPLE#  10   IC
 [x 5,  100µl, C#  3, #WASH 3, SP  0min]
    #  AREA PPM      C#  µl RG
    1     0  0.000
    2-  163  0.228
    3     0  0.000
    4     0  0.000
   - - - - - - - - - - - - - -
   MN     0  0.000
   SD     0  0.000
   CV  0.00 %
   COR CONC DIL  0.000 [x 1.0]
   COR CONC INJ  0.000 [x 1.0]

SAMPLE#  10   TOC(TC-IC)    9.998 PPM

        DATE  08(AUG)-23-2013  09:04
```

#5 AirGas 13-600

SAMPLE# 5 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	12553	17.58			
2	11332	15.87			
3	11308	15.84			
4	11331	15.87			
MN	11323	15.86			
SD	13	0.019			
CV	0.11 %				
COR CONC DIL		31.73 [x 2.0]			
COR CONC INJ		31.73 [x 1.0]			

DATE 08(AUG)-23-2013 13:42

SAMPLE# 5 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	11124	15.61			
2	10645	14.94			
3	10496	14.73			
MN	10755	15.09			
SD	328	0.460			
CV	3.05 %				
COR CONC DIL		30.18 [x 2.0]			
COR CONC INJ		30.18 [x 1.0]			

SAMPLE# 5 TOC(TC-IC) 1.550 PPM ✓

DATE 08(AUG)-23-2013 13:50

#6

SAMPLE# 6 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	18758	26.28			
2	17594	24.65			
3	17867	25.03			
4	16861	23.62			
5	16743	23.45			
MN	17066	23.91			
SD	461	0.646			
CV	2.70 %				

COR CONC DIL 47.82 [x 2.0]
COR CONC INJ 47.82 [x 1.0]

DATE 08(AUG)-23-2013 12:12

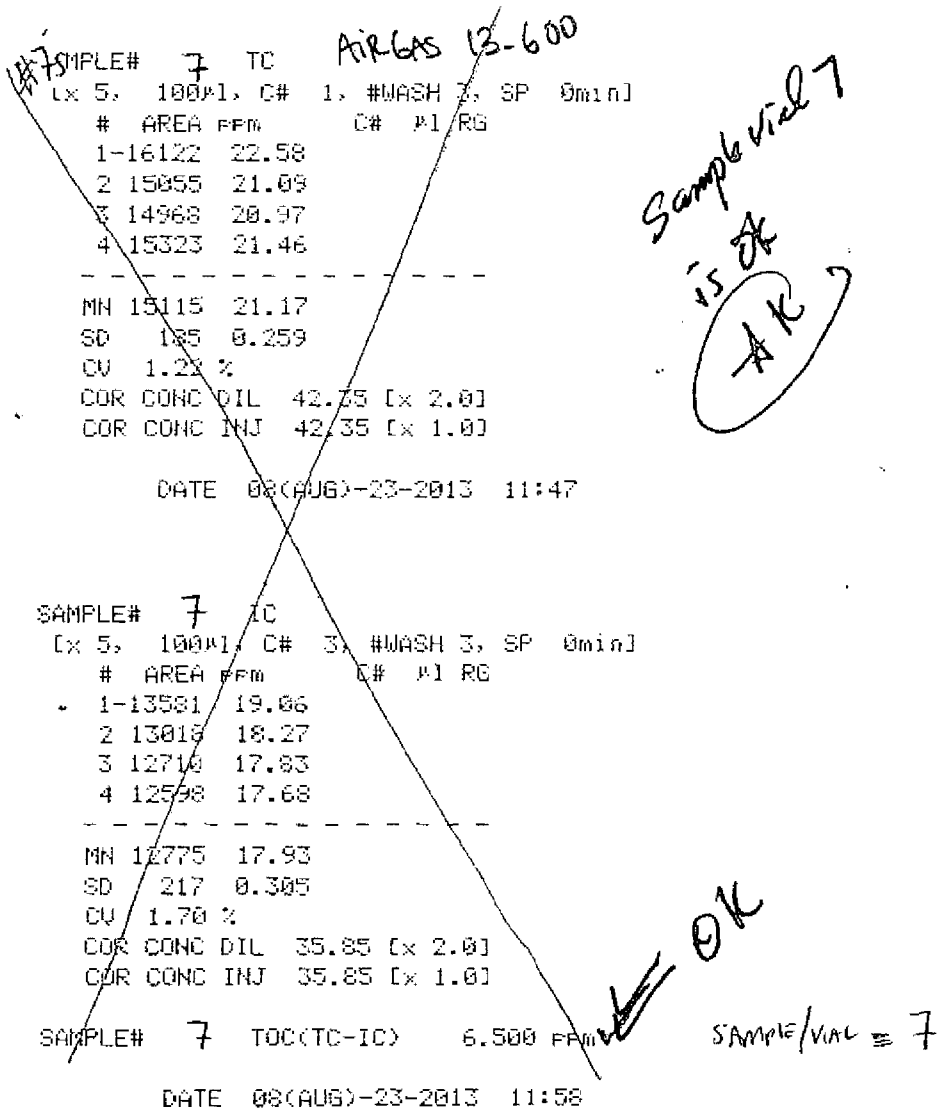
SAMPLE# 6 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	16939	23.77			
2	16017	22.47			
3	15521	21.78			
MN	16159	22.67			
SD	719	1.010			
CV	4.45 %				

COR CONC DIL 45.35 [x 2.0]
COR CONC INJ 45.35 [x 1.0]

SAMPLE# 6 TOC(TC-IC) 2.470 ppm ✓

DATE 08(AUG)-23-2013 12:21



SAMPLE# 7 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	16122	22.58			
2	15055	21.09			
3	14968	20.97			
4	15323	21.46			
MN	15115	21.17			
SD	185	0.259			
CV	1.23 %				

COR CONC DIL 42.35 [x 2.0]
COR CONC INJ 42.35 [x 1.0]

DATE 08(AUG)-23-2013 11:47

SAMPLE# 7 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	13581	19.06			
2	13018	18.27			
3	12710	17.83			
4	12598	17.68			
MN	12775	17.93			
SD	217	0.305			
CV	1.70 %				

COR CONC DIL 35.85 [x 2.0]
COR CONC INJ 35.85 [x 1.0]

SAMPLE# 7 TOC(TC-IC) 6.500 PPM

DATE 08(AUG)-23-2013 11:58

SAMPLE# 8 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	38124	53.41			
2	35708	50.02			
3	34918	48.92			
MN	36250	50.78			
SD	1670	2.340			
CV	4.60 %				
COR CONC DIL		253.9 [x 5.0]			
COR CONC INJ		253.9 [x 1.0]			

DATE 08(AUG)-23-2013 12:34

SAMPLE# 8 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	34732	48.74			
2	34237	48.05			
3	34144	47.92			
MN	34371	48.23			
SD	316	0.443			
CV	0.91 %				
COR CONC DIL		241.1 [x 5.0]			
COR CONC INJ		241.1 [x 1.0]			

SAMPLE# 8 TOC(TC-IC) 12.80 PPM ✓

SAmple/VAL = 8

DATE 08(AUG)-23-2013 12:43

CCV 40ppm STD

```
SAMPLE#  40   TC
 [x 5,  100µl, C#  1, #WASH 3, SP  0min]
    #  AREA PPM      C#  µl RG
    1 28349  39.71
    2 28082  39.34
    3 28077  39.33
   - - - - - - - - - - - - - -
   MN 28169  39.46
   SD   155  0.218
   CV  0.55 %
   COR CONC DIL  39.46 [x 1.0]
   COR CONC INJ  39.46 [x 1.0]

        DATE  08(AUG)-23-2013  15:45


SAMPLE#  40   IC
 [x 5,  100µl, C#  3, #WASH 3, SP  0min]
    #  AREA PPM      C#  µl RG
    1-  254  0.356
    2-  360  0.505
    3   321  0.450
    4   296  0.415
    5   284  0.398
   - - - - - - - - - - - - - -
   MN   300  0.421
   SD    18  0.026
   CV  6.28 %
   COR CONC DIL  0.421 [x 1.0]
   COR CONC INJ  0.421 [x 1.0]

SAMPLE#  40   TOC(TC-IC)    39.03 PPM ✓

        DATE  08(AUG)-23-2013  15:55
```

Quantum Analytical Services Inc.
www.quantumanlab.com
1210 E. 223rd Street, Suite #314 • Carson, California 90745 • 310/830-2226 • Fax 310/830-2227

CLIENT : **Air Gas Testing & Consulting Services**
CLIENT JOB NO/NAME : **CMWD (RES 2)**
QUANTUM PROJECT NUMBER : **13-610**
REPORT DATE : **September 6, 2013**

Quantum Analytical Services, Inc. received on August 29, 2013 4 six-liter canisters and 4 vials for the analysis of Total non-Methane non-Ethane Organic Carbon (TNMNEOC) according to SCAQMD Method 25.3 and fixed gases according to the EPA Method 3C. Upon receipt, the canisters were checked for pressure and the vials were checked for temperature and leakage. The samples were assigned a specific laboratory project number and the canisters were given a specific sample ID number as follows:

Client ID	Lab No.	Tank Pressure Received (mmHg)
ICE #4 – 1 of 2, Tk 85	24113-15	608.3
ICE #4 – 2 of 2, Tk 86	24113-16	641.1
ICE #3 – 1 of 2, Tk 87	24113-17	678.9
ICE #3 – 2 of 2, Tk 88	24113-18	693.7

The samples were in good condition and no problems were encountered during sample preparation, and analysis. The test results included in this reports meet all the requirement of the SCAQMD Method 25.3, and EPA Method 3C.

SCAQMD Method 25.3: An aliquot of the gaseous sample (tank) is injected into the TCA (GC-FID) instrument, and an aliquot of the liquid (water trap) is analyzed into TOC analyzer (Shimadzu 5000A) following the SCAQMD Method 25.3 as outlined in the SOP.

EPA 3C: An aliquot of the gaseous sample (tank) is injected into the TCA (GC-TCD) for the analysis following EPA Method 3C.

I certify that the results in this report are technically accurate and in compliance with the terms and condition of the contract. Release of the data package has been approved by the laboratory president as verified in the following signature.

Thank you for giving us the opportunity to serve you. We appreciate your business and the confidence you have placed in us. Please contact me for further assistance or with any question.

Andrew Kitto, Ph.D.
President

Quantum Analytical Services Inc.
www.quantumairlab.com
1210 E. 223rd Street, Suite #314 • Carson, California 90745 • 310/830-2226 • Fax 310/830-2227

CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**CMWD (RES 2)**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-610**
SAMPLING DATE:	August 29, 2013
RECEIVING DATE:	August 29, 2013
ANALYSIS DATE:	August 30, 2013
REPORT DATE:	September 6, 2013

Pressure- Dilution Sheet

ANALYSIS METHOD		*SCAQMD 25.3*					
LIMIT OF DETECTION		*1.0 ppmC*					
Air Gas **Sample ID #**	*LAB ID No.*	**Tank Vol. (L) (Vtank)**	**Initial Pressure mmHg (Pi)**	**Return Pressure mmHg (Pr)**	**Final Pressure mmHg (Pf)**	**Sample Vol. (L) (Vsample)**	**Tank Dil Factor (DFtank)**
ICE #4- 1 of 2 - Tk 85	24113-15	6.0	3.1	608.3	806.7	4.80	1.33
ICE #4- 2 of 2 - Tk 86	24113-16	6.0	3.1	641.1	809.7	5.06	1.26
ICE #3- 1 of 2 - Tk 87	24113-17	6.0	3.1	678.9	811.3	5.36	1.20
ICE #3- 2 of 2 - Tk 88	24113-18	6.0	3.1	693.7	811.4	5.48	1.17

Dr. Andrew Kitto
President

Quantum Analytical Services Inc.
www.quantumairlab.com
1210 E. 223rd Street, Suite #314 • Carson, California 90745 • 310/830-2226 • Fax 310/830-2227

CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**CMWD (RES 2)**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-610**
SAMPLING DATE:	August 29, 2013
RECEIVING DATE:	August 29, 2013
ANALYSIS DATE:	August 30, 2013
REPORT DATE:	September 6, 2013

Laboratory Analysis Report

All Samples were analyzed in duplicates/Average values are reported

Analysis Method	**SCAQMD 25.3**					
Detection Limits	**1.0 ppmv**					
Air Gas **Sample ID #**	**Lab Sample ID**	**CH4 PPMV**	**Ethane PPMV**	**TOC PPMC**	**Canister TNMNEOC PPMC**	**Total TNMNEOC† PPMC**
ICE #4- 1 of 2 - Tk 85	24113-15	687	5.0	3.7	5.15	**9.6**
ICE #4- 2 of 2 - Tk 86	24113-16	767	5.4	2.1	5.74	**8.5**
ICE #3- 1 of 2 - Tk 87	24113-17	435	1.4	1.3	5.61	**7.5**
ICE #3- 2 of 2 - Tk 88	24113-18	464	1.3	2.0	4.61	**7.1**

TNMNEOC: Total Non methane non Ethane Organic Carbon

† Includes Bias Correction = 1.086, per method

Dr. Andrew Kitto
President

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**CMWD (RES 2)**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-610**
SAMPLING DATE:	August 29, 2013
RECEIVING DATE:	August 29, 2013
ANALYSIS DATE:	August 30, 2013
REPORT DATE:	September 6, 2013

Laboratory Analysis Report

I- NMNEOC Tanks **All Samples were analyzed in duplicates**

ANALYSIS METHOD	*SCAQMD 25.3*						
LIMIT OF DETECTION	*1.0 ppmC*						
Air Gas Sample ID #	*LAB ID No.*	Tank Dil Factor (DFtank)	GC Methane PPMV	GC Carbon Monoxide PPMV	GC Ethylene PPMV	GC NMNEOC as C3 PPMV	NMNEOC Tank as Carbon PPMV
ICE #4- 1 of 2 - Tk 85	24113-15	1.33	516	95	<1.0	1.28	**5.09**
ICE #4- 1 of 2 - Tk 85 Dup	24113-15D	1.33	521	96	<1.0	1.31	**5.21**
ICE #4- 2 of 2 - Tk 86	24113-16	1.26	607	87	<1.0	1.51	**5.72**
ICE #4- 2 of 2 - Tk 86 Dup	24113-16D	1.26	608	87	<1.0	1.52	**5.76**
ICE #3- 1 of 2 - Tk 87	24113-17	1.20	363	146	<1.0	1.59	**5.70**
ICE #3- 1 of 2 - Tk 87 Dup	24113-17D	1.20	365	147	<1.0	1.54	**5.52**
ICE #3- 2 of 2 - Tk 88	24113-18	1.17	397	152	<1.0	1.32	**4.63**
ICE #3- 2 of 2 - Tk 88 Dup	24113-18D	1.17	397	151	<1.0	1.31	**4.60**

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President

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**CMWD (RES 2)**
PROJECT NO:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-610**
SAMPLING DATE:	August 29, 2013
RECEIVING DATE:	August 29, 2013
ANALYSIS DATE:	August 30, 2013
REPORT DATE:	September 6, 2013

DUPLICATE ANALYSES

Analysis Method	**SCAQMD 25.3**				
Detection Limit	**1.0 ppmC**				
Air Gas **Sample ID**	**Analyte**	**Analysis #1 PPMV**	**Analysis #2 PPMV**	**Mean PPMV**	**% Difference from the Mean**
ICE #4- 1 of 2 - Tk 85	Methane	684	691	687	0.5%
	CO	126	127	127	0.3%
	Ethane	5.0	5.0	5.0	0.4%
	Ethylene	<1.0	<1.0	<1.0	N/A
	NMNEOC	**5.09**	**5.21**	**5.15**	**1.2%**
ICE #4- 2 of 2 - Tk 86	Methane	767	768	767	0.1%
	CO	109	110	110	0.2%
	Ethane	5.5	5.4	5.4	0.6%
	Ethylene	<1.0	<1.0	<1.0	N/A
	NMNEOC	**5.72**	**5.76**	**5.74**	**0.3%**
ICE #3- 1 of 2 - Tk 87	Methane	434	436	435	0.2%
	CO	174	176	175	0.5%
	Ethane	1.4	1.4	1.4	1.3%
	Ethylene	<1.0	<1.0	<1.0	N/A
	NMNEOC	**5.70**	**5.52**	**5.61**	**1.6%**
ICE #3- 2 of 2 - Tk 88	Methane	464	464	464	0.0%
	CO	177	177	177	0.2%
	Ethane	1.3	1.3	1.3	1.3%
	Ethylene	<1.0	<1.0	<1.0	N/A
	NMNEOC	**4.63**	**4.60**	**4.61**	**0.4%**

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CLIENT: **Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.: **CMWD (RES 2)**
ANALYSIS: **Method 25.3- TNMNEOC**
LABORATORY NO: **13-610**
SAMPLING DATE: August 29, 2013
RECEIVING DATE: August 29, 2013
ANALYSIS DATE: August 30, 2013
REPORT DATE: September 6, 2013

Quality Control/Quality Assurance Report

I- Blank

Lab ID	Analyte	Result
N2 Blank - Open	NMNEOC	<1.0
N2 Blank - Close	NMNEOC	<1.0

II- Initial Calibration Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery*
ICV	CO	19.68	19.82	101%
ICV	CH4	19.36	19.77	102%
ICV	CO2	58.80	59.11	101%
ICV	Ethylene	19.40	19.51	101%
ICV	Ethane	19.74	20.14	102%
ICV	NMNEOC	19.96	20.21	101%

* Must be ±10%

III- Closing Calibration Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery**
CCV	CH4	10.00	10.04	100%
CCV	NMNEOC	10.00	9.84	98%

**Must be ±10%

IV- 1 ppm Backflush Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery**
Backflush	NMNEOC	1.00	1.03	103%

**Must be ±20%

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**CMWD (RES 2)**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-610**
SAMPLING DATE:	August 29, 2013
RECEIVING DATE:	August 29, 2013
ANALYSIS DATE:	August 30, 2013
REPORT DATE:	September 6, 2013

Laboratory Control Sample
Quality Control/Quality Assurance Report

I- Blank

Lab ID	Analyte	Result
N2 Blank - Open	NMNEOC	<1.0
N2 Blank - Close	NMNEOC	<1.0

II- Laboratory Control Sample (LCS)

Lab ID	Date	Analyte	Theoretical Value PPMV	Tested Value PPMV	RPD %
LCS	8/30/13	NMNEOC	16.00	15.58	2.6%

* Must be ±10%

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**CMWD (RES 2)**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-610**
SAMPLING DATE:	August 29, 2013
RECEIVING DATE:	August 29, 2013
ANALYSIS DATE:	August 30, 2013
REPORT DATE:	September 6, 2013

Laboratory Analysis Report

II- Traps (TOC Analysis)
All The samples were analyzed in triplicate

ANALYSIS METHOD		*SCAQMD 25.3*								
LIMIT OF DETECTION		*1.0 ug/mL*								
Air Gas Sample ID #	*Trap No.*	Tank Vol. (L) (V_{tank})	Initial Pressure mmHg (P_i)	Return Pressure mmHg (P_r)	Final Pressure mmHg (P_f)	Gaseous Sample Vol. (L)	Water Sample Volume ml	Dilution Factor	TOC ug/mL	TOC PPMC
ICE #4- 1 of 2 - Tk 85	9	6.0	3.1	608.3	806.7	4.80	5.0	1.0	1.8	3.7
ICE #4- 2 of 2 - Tk 86	10	6.0	3.1	641.1	809.7	5.06	5.0	1.0	1.0	2.1
ICE #3- 1 of 2 - Tk 87	12	6.0	3.1	678.9	811.3	5.36	5.0	1.0	0.7	1.3
ICE #3- 2 of 2 - Tk 88	13	6.0	3.1	693.7	811.4	5.48	5.0	1.0	1.1	2.0

Note: All Traps (vials) were purged with Ultra Pure grade Helium

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From Shimadzu 5000A

	TOC Analysis				Gas			
Trap Vol (ml)	Sample ID	Trap ID	ug/ml	DF	Sample Vol (L)	ug/sample	mg/sample	PPMV
5	ICE #4- 1 of 2 - Tk 85	9	1.75	1.00	4.80	8.75	0.01	3.71
5	ICE #4- 2 of 2 - Tk 86	10	1.04	1.00	5.06	5.20	0.01	2.09
5	ICE #3- 1 of 2 - Tk 87	12	0.67	1.00	5.36	3.35	0.00	1.27
5	ICE #3- 2 of 2 - Tk 88	13	1.05	1.00	5.48	5.25	0.01	1.95

Initial: AK

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CLIENT: **Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.: **CMWD (RES 2)**
ANALYSIS: **Method 25.3- TNMNEOC**
LABORATORY NO: **13-610**
SAMPLING DATE: August 29, 2013
RECEIVING DATE: August 29, 2013
ANALYSIS DATE: August 30, 2013
REPORT DATE: September 6, 2013

TC Analysis
Triplicate analysis

Sample #	Mean Area	SD	CV*	Average Conc. ug/ml
Trap 9	21843	649	2.97%	30.60
Trap 10	19740	562	2.84%	27.65
Trap 12	31207	727	2.33%	43.72
Trap 13	28009	617	2.20%	39.24

*: CV must be within 10%

IC Analysis
Triplicate Analysis

Sample #	Mean Area	SD	CV*	Average Conc. ug/ml
Trap 9	20557	491	2.39%	28.85
Trap 10	18960	376	1.98%	26.61
Trap 12	30680	558	1.82%	43.05
Trap 13	27214	378	1.39%	38.19

*: CV must be within 10%

TOC (Average of Triplicate Analysis)

Sample #	Average TC mg/L	Average IC mg/L	Average TOC mg/L
Trap 9	**30.60**	**28.85**	**1.75**
Trap 10	**27.65**	**26.61**	**1.04**
Trap 12	**43.72**	**43.05**	**0.67**
Trap 13	**39.2**	**38.2**	**1.05**

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**CMWD (RES 2)**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-610**
SAMPLING DATE:	August 29, 2013
RECEIVING DATE:	August 29, 2013
ANALYSIS DATE:	August 30, 2013
REPORT DATE:	September 6, 2013

Quality Control/Quality Assurance Report

I- Blank

Lab ID	Analyte	Result ug/mL
Water Blank - Open	TOC	<1.0
Water Blank - Close	TOC	<1.0

II- Initial Calibration Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery*
ICV	TOC	10.0	10.1	101%

* Must be ±5%

III- Continuing/Closing Calibration Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery*
CCV	TOC	5.0	4.73	95%
CCV	TOC	40.0	38.7	97%

*Must be ±10%

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**CMWD (RES 2)**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-610**
SAMPLING DATE:	August 29, 2013
RECEIVING DATE:	August 29, 2013
ANALYSIS DATE:	August 30, 2013
REPORT DATE:	September 6, 2013

Laboratory Analysis Report

Analysis Method	**EPA Method 3C**			
Detection Limits	**0.10%**			
Air Gas **Sample ID #**	**Lab Sample ID #**	**CH4 Mole %**	**O2 Mole %**	**CO2 Mole %**
ICE #4- 1 of 2 - Tk 85	24113-15	<0.1	0.3	11
ICE #4- 2 of 2 - Tk 86	24113-16	<0.1	0.3	11
ICE #3- 1 of 2 - Tk 87	24113-17	<0.1	0.8	11
ICE #3- 2 of 2 - Tk 88	24113-18	<0.1	0.2	12

*** Oxygen + Argon are not separated by GC**
Argon constitutes 0.93% of the atmosphere (Handbook of Chemistry and Physics)
0.9% was substracted from O2 concentrations

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**CMWD (RES 2)**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-610**
SAMPLING DATE:	August 29, 2013
RECEIVING DATE:	August 29, 2013
ANALYSIS DATE:	August 30, 2013
REPORT DATE:	September 6, 2013

Quality Control/Quality Assurance
EPA 3C - Fixed Gases

Lab ID	Analyte	Theoretical Value Mole %	Tested Value Mole %	% Recovery*
SCOTT STD	CO2	15.0	15.1	100%
SCOTT STD	O2	7.0	7.2	103%
SCOTT STD	N2	66.7	66.7	100%
SCOTT STD	CH4	4.5	4.5	100%
SCOTT STD	CO	7.0	7.0	100%

* Must be ±10%

Dr. Andrew Kitto
President

Summa Cansiter Pressure Log

Client: Air Gas

Laboratory Project No: 13-610

Sampling Date: August 29, 2013

Receiving Date: August 29, 2013

Item#	Sample ID	Tank #	Lab ID	P_r (mmHg)	Purge	P_f (mmHg)
1	ICE #4 Tank 1 of 2	85	24113-15	608.3	630.5	806.7
2	ICE #4 Tank 2 of 2	86	24113-16	641.1	663.7	809.7
3	ICE #3 Tank 1 of 2	87	24113-17	678.9	701.1	811.3
4	ICE #3 Tank 2 of 2	88	24113-18	693.7	716.6	811.4
5						
6						
7						
8						
9						
10						

13-610

Air Gas Testing & Consulting Services
7111 Garden Grove Blvd., Garden Grove, CA 92841
Phone: 714-840-9827

CHAIN OF CUSTODY

Plant: CMWD (Res 2)
Unit Tested: Res 2 ICE # 4 & #3
Sample Loc: Stack

Test Date: 8-29-13
Operator: KA/TD
Test Method: 25.3

LAB: DD

SAMPLE NO.	SAMPLE DESCRIPTION	TEST#	DATE	TIME	ANALYSIS FOR	COMMENT
Res 2 ICE #4						
85	Tank 1 of 2 24HR-15	VOC-ICE 4	8-29-13	1300	VOC + CH_4	Method 25.3
86	Tank 2 of 2 -14	↓	↓	↓	↓	↓
9	Trap 1 of 2					
10	Trap 2 of 2					
Res 2 ICE #3						
87	Tank 1 of 2 -17	VOC-ICE 3				
12	Trap 1 of 2	↓				
88	Tank 2 of 2 -18					
13	Trap 2 of 2					

Relinquished by: Tim Dinh Signature: Tim T Dh For Delivery to Lab Date: 8-29-13 Time: 1300
Relinquished by: _____ Signature: _____ For _____ Date: _____ Time: _____
Relinquished by: _____ Signature: _____ For _____ Date: _____ Time: _____
Relinquished by: _____ Signature: _____ For _____ Date: _____ Time: _____
Relinquished by: _____ Signature: _____ For _____ Date: _____ Time: _____
Relinquished by: _____ Signature: _____ For _____ Date: _____ Time: _____

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EXAMPLE OF CALCULATION SHEET

Laboratory Analysis Report

I- Tanks

ANALYSIS METHOD		*SCAQND 25.3*							
LIMIT OF DETECTION		*0.5 PPMV*							
Air Gas Sample ID #	*LAB ID No.*	Tank Dil Factor (DFtank)	Methane Tank PPMC	Tank Ethylene From GC	Tank Ethylene PPMV+++	Ethylene as C PPMV	Tank NMNEOC as C3 from GC	Tank NMNEOC as C PPMV+++	Tank NMNEOC* as Carbon PPMV
ICE #4- 1 of 2 - Tk 85	24113-15	1.33	515.6	0.00	<1.0	*0.00*	1.28	*5.09*	5.09
ICE #4- 1 of 2 - Tk 85 Dup	24113-15D	1.33	520.7	0.00	<1.0	*0.00*	1.31	*5.21*	5.21

+++: Includes Dilution factor

Tank Dil Factor = Pressure Final/ Pressure Received (Please see Pressure Sheet)
1.33

Tank Ethylene (ppmv) = From GC Chromatogram
0.00

Ethylene As C = Ethylene from GC Chromatogram x 2 x Dilution Factor
0.00

Tank NMNEOC as C3 = From the GC chromatogram
1.28

Tank NMNEOC as C = GC NMNEOC x 3 x Dil Factor
5.09

Tank Total NMNEOC = (NMNEOC as C + Ethylene as C)
5.09

Avg TNMNEOC (Reported Value) = 5.15

Initial: AK

Method 25.3 Calculation Summary Sheet

TOC Calculations (Trap):

$$C_{Trap} = \frac{(C_{Toc} \times V_{Trap})}{(V_{Sample})} \times \frac{V_{id}}{MW_c}$$

Where:
C_{Trap} = Gaseous concentration of TOC in condensate trap water, ppmv (as Carbon)
C_{Toc} = TOC concentration in ug/ml of condensate trap water (*from Raw Data printout*)
V_{Trap} = Volume of condensate trap water in ml (*from Sample Receiving Data Sheet*)
V_{id} = Volume of ideal gas per mole at 25°C (24.4652 liters/mole)
MW_c = Atomic weight of carbon (12.01 g/mol)
V_{Sample} = Volume sampled in collection tank in Liters ($V_{Tank} \times (P_f - P_i) / P_a$)

Where:
V_{Tank} = Volume of the sampling tank in liters (*from Sample Receiving Data Sheet*)
P_f = Return canister pressure of the sampling tank (*from Sample Receiving Data Sheet*)
P_i = Initial canister pressure of the sampling tank (*from Sample Receiving Data Sheet*)
P_a = atmospheric pressure (760 mmHg)

TCA Calculations (Tank):

$$C_{Tank} = C_{TCA} \times DF_{Tank} \times 3.0$$

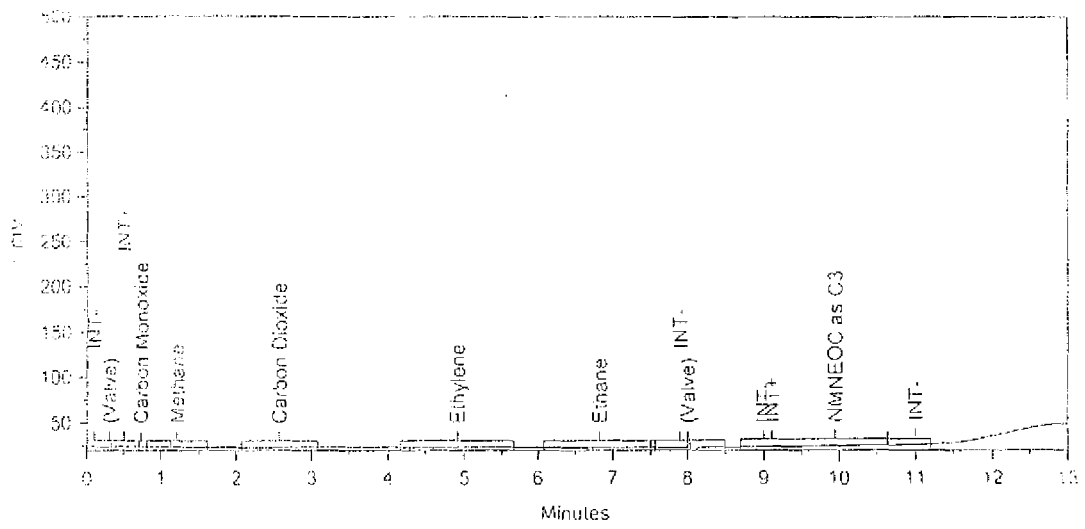
Where:
C_{Tank} = Gaseous concentration of tank, ppmv (as Carbon)
C_{TCA} = Average of analysis results from chromatograms, ppmv (as Propane)
DF_{Tank} = Dilution factor resulting from tank pressurization upon receipt (P_f/P_i)
3.0 = Conversion of result (as Propane) to (as Carbon)

Where:
P_f = Final canister pressure after pressurization for analysis (*from Sample Receiving Data Sheet*)
P_i = Return canister pressure upon sample receipt (*from Sample Receiving Data Sheet*)

Final Calculation (Tank and Trap):

$$\text{Total VOC (ppmC)} = (C_{Trap} + C_{Tank}) \times 1.086$$

Per method section 4.11, the final concentration includes a 1.086 bias correction factor.



Sample Name: N2 Blank
Acquired from Chrom6--Det6A via port 6 on 8/30/13 08:22:43am by Dr. Kitto

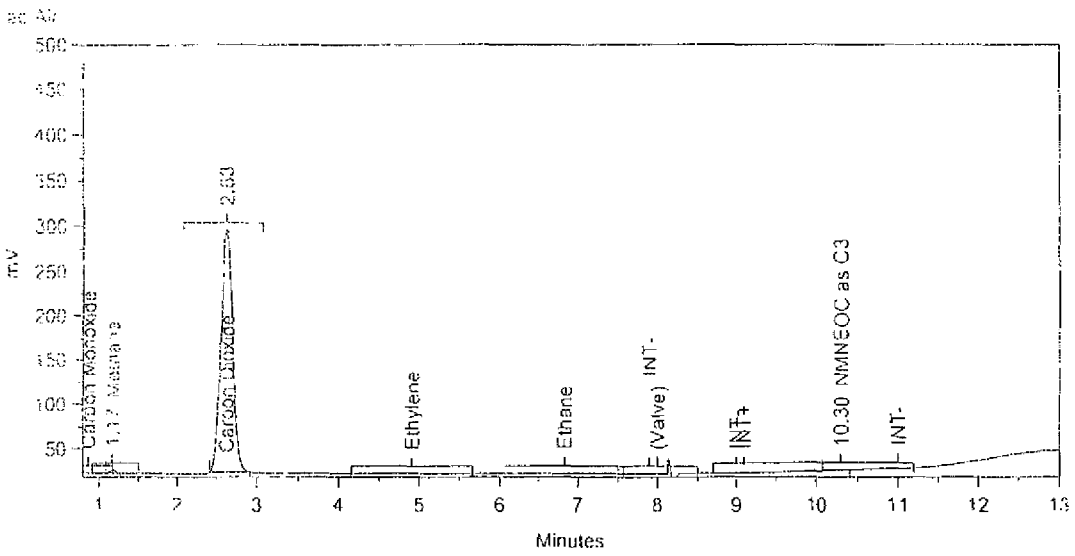
Data File: D:\CPWIN\DATA6\AUG3013B.01R
Date Stamp: 8/30/13 08:22:42am
Sequence File: AUG3013A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%

Total Area = 0.0, Total Amount = 0.0, Total Height = 0.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.



Sample Name: Lab Air
Acquired from Chrom6--Det6A via port 6 on 8/30/13 08:39:35am by Dr. Kitto

Data File: **D:\CPWIN\DATA6\AUG3013B.02R**
Date Stamp: 8/30/13 08:39:34am
Sequence File: AUG3013A.SEQ #2
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

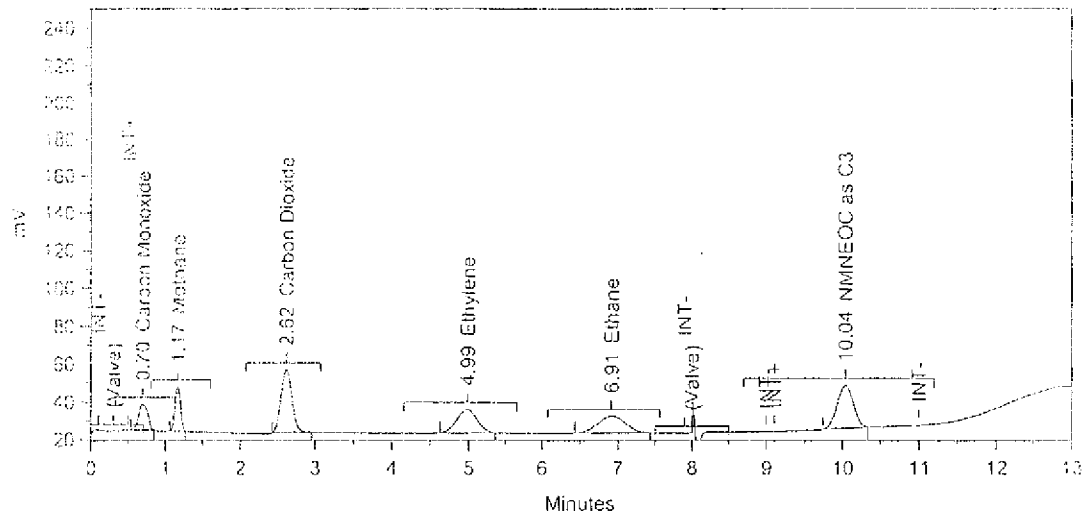
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	1.171	Methane	1.8749	0.392	13505.2	0.418	BB	0.081	2363.76	0.861
2	2.625	Carbon Dioxide	476.3920	99.551	2735375.0	99.416	BB	0.168	271703.70	99.020
3	10.297	NMNEOC as C3	0.2747	0.057	4553.0	0.165	BB	0.233	325.01	0.118

Total Area = 2751434.0, Total Amount = 478.542, Total Height = 274392.5, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

ICV - 20 PPMV STD



Sample Name: **ICV - 20 PPMV STD**
Acquired from Chrom6--Det6A via port 6 on 8/30/13 09:13:00am by Dr. Kitto

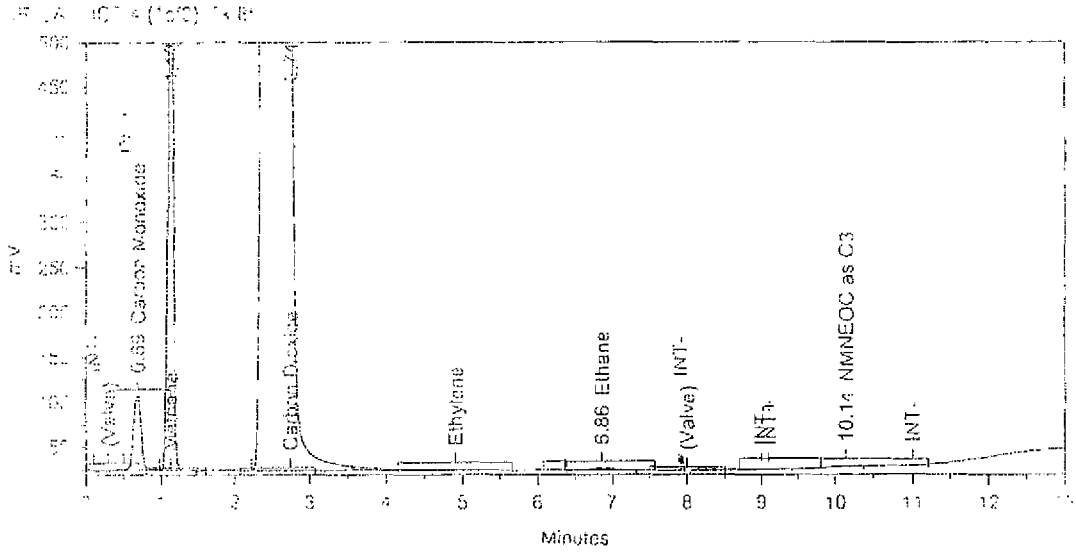
Data File: D:\CPWIN\DATA6\BUG3013S.03R
Date Stamp: 8/30/13 09:13:00am
Sequence File: AUG3013A.SEQ #3
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 13.73 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.698	Carbon Monoxide	19.8180	12.499	121547.0	8.813	BB	0.146	13851.19	11.960
2	1.166	Methane	19.7651	12.466	121285.9	8.795	BB	0.085	23654.70	20.425
3	2.620	Carbon Dioxide	59.1062	37.279	339379.2	24.609	BB	0.168	33606.48	29.018
4	4.989	Ethylene	19.5067	12.303	228853.6	16.594	BB	0.301	12652.86	10.925
5	6.910	Ethane	20.1415	12.703	232959.4	16.892	BB	0.422	9190.75	7.936
6	10.039	NMNEOC as C3	20.2148	12.750	335084.2	24.297	BB	0.244	22856.90	19.736

Total Area = 1379109.0, Total Amount = 158.552, Total Height = 115812.9, Sample Units = ppmv @C3
* Some peaks have been manually integrated.



Sample Name: A'R CAS, ICE 4 (1of2), Tk 85
Acquired From Chrom6->Det6A via port 6 on 8/30/13 11:18:30am by Dr. Kitto

Data File: D:\CPWIN\DATA6\24113-15.10R
Date Stamp: 8/30/13 11:18:30am
Sequence File: AUG30i3A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

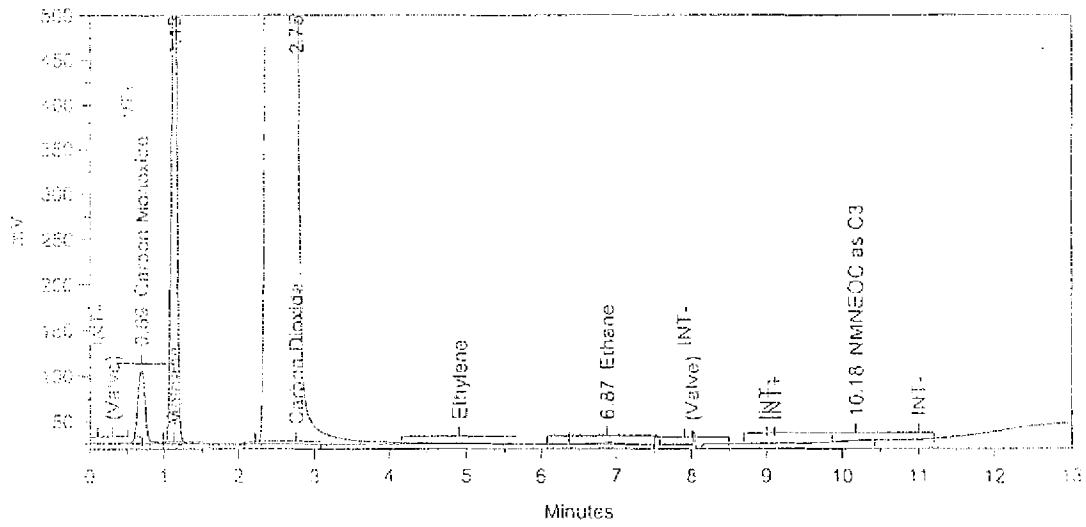
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Area of Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.685	Carbon Monoxide	95.1474	1.818	583554.3	1.924	BV	0.119	81511.70	4.843
3	1.122	Methane	515.5930	9.853	3163858.0	10.431	VB	0.082	645419.80	38.350
4	2.738	Carbon Dioxide	4618.2680	88.234	26517420.0	87.429	BB	0.664	953052.20	56.629
6	5.856	Ethane	3.8947	0.073	44006.0	0.145	BB	0.415	1769.08	0.105
9	10.147	NMNEOC as C3	1.2812	0.024	21254.3	0.070	BB	0.292	1213.89	0.072

Total Area = 30330990.0, Total Amount = 5234.09, Total Height = 1682967.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 4 (1of2), Tk 85 Dup



Sample Name: AIR GAS, ICE 4 (1of2), Tk 85 Dup
Acquired from Chrom6--Det6A via port 6 on 8/30/13 11:36:00am by Dr. Kitto

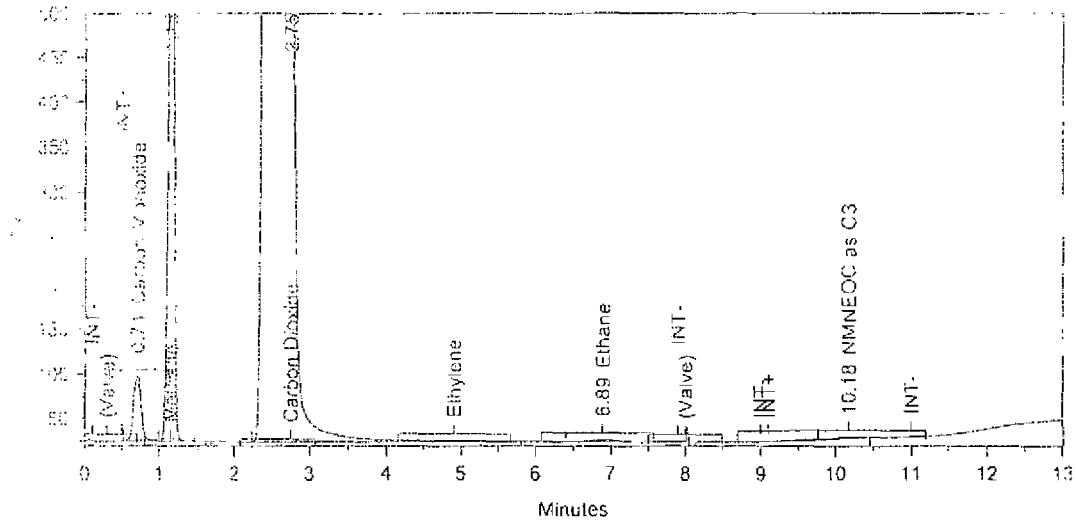
Data File: D:\CPWIN\DATA6\24113-15.11R
Date Stamp: 8/30/13 11:36:00am
Sequence File: AUG3013A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 13.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.694	Carbon Monoxide	95.7037	1.826	586965.6	1.932	BV	0.120	81406.43	4.828
2	1.130	Methane	520.7180	9.934	3195318.0	10.519	VB	0.082	649102.00	38.495
3	2.776	Carbon Dioxide	4620.3160	88.143	26529220.0	87.334	BB	0.464	952715.30	56.501
4	6.869	Ethane	3.7668	0.072	43567.0	0.143	BB	0.414	1755.42	0.104
5	10.180	NMNEOC as C3	1.3082	0.025	21685.0	0.071	BB	0.300	1206.28	0.072

Total Area = 30376760.0, Total Amount = 5241.816, Total Height = 1686185.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.



Sample Name: AIR GAS, ICE 4 (2of2), Tk 86
Acquired from Chrom6--Det6A via port 6 on 8/30/13 11:52:39am by Dr. Kitto

Data File: D:\CPWIN\DATA6\24113-16.12R
Date Stamp: 8/30/13 11:52:38am
Sequence File: AUG3013A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3, Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3, Date Stamp: 7/13/12 04:27:18pm

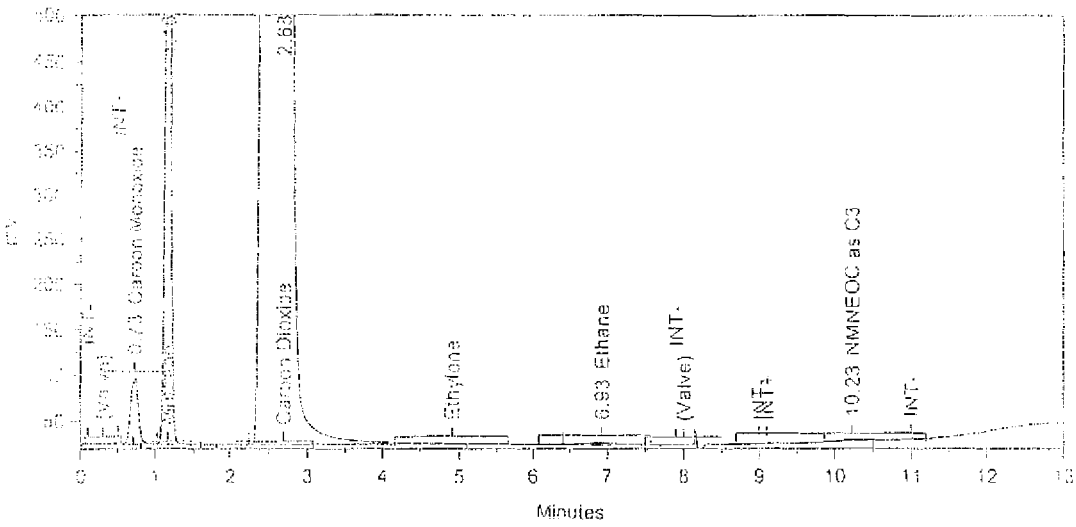
Run Time = 13.3 min Sample Rate = 15.0 per sec.
[illegible] = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

Pk#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.710	Carbon Monoxide	86.6545	1.610	531465.8	1.703	BV	0.122	72333.97	4.047
2	1.149	Methane	607.1035	11.282	3725412.0	11.936	VB	0.082	758501.30	42.439
3	2.751	Carbon Dioxide	4681.3720	86.999	26879770.0	86.121	BB	0.470	953168.70	53.331
4	6.888	Ethane	4.3322	0.081	50106.6	0.161	BB	0.419	1993.49	0.112
5	10.176	NMNEOC as C3	1.5083	0.028	25002.4	0.080	BB	0.326	1278.07	0.072

Total Area = 31211760.0, Total Amount = 5380.97, Total Height = 1787276.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 4 (2of2), Tk 86 Dup



Sample Name: AIR GAS, ICE 4 (2of2), Tk 86 Dup
Acquired from Chrom6--Det6A via port 6 on 8/30/13 12:08:40pm by Dr. Kitto

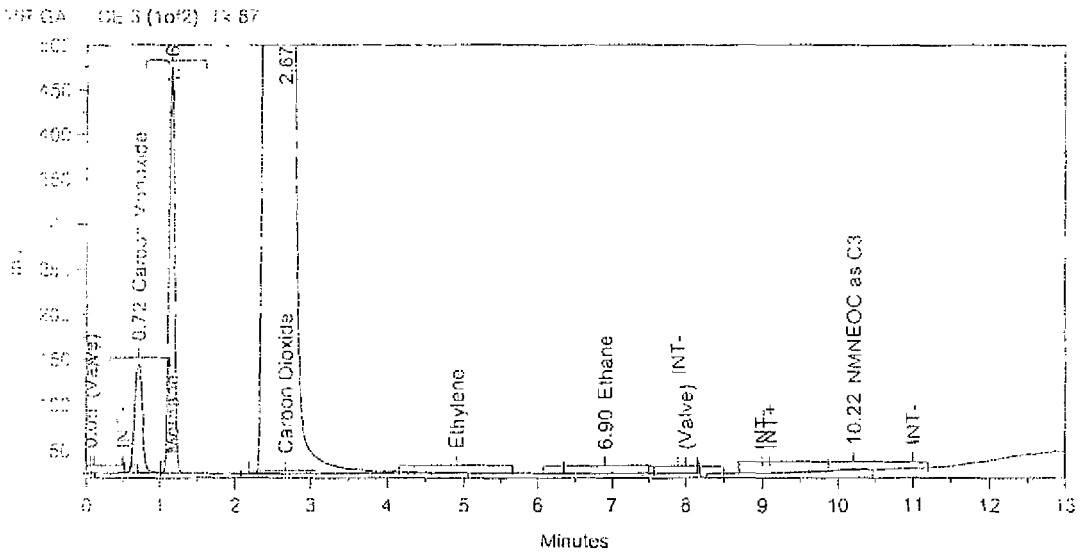
Data File: D:\CPWIN\DATA6\24113-16.13R
Date Stamp: 8/30/13 12:08:40pm
Sequence File: AUG3013A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 13.0 min Sample Rate = 15.0 per sec.
Amount Inj = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.733	Carbon Monoxide	86.9784	1.618	5334525	1.711	BV	0.123	72531.32	4.059
2	1.165	Methane	607.7316	11.308	3729266.0	11.963	VB	0.082	758099.10	42.422
3	2.683	Carbon Dioxide	4673.8820	86.966	26836770.0	86.086	BB	0.469	953254.60	53.343
4	6.925	Ethane	4.2793	0.080	49494.9	0.159	BB	0.421	1959.07	0.110
5	10.231	NMNEOC as C3	1.5230	0.028	25345.0	0.081	BB	0.353	1192.79	0.067

Total Area = 31174230.0, Total Amount = 5374.394, Total Height = 1787037.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.



Sample Name: AIR GAS, ICE 3 (1of2), Tk 87
Acquired from Chrom6--Det6A via port 6 on 8/30/13 01:15:01pm by Dr. Kitto

Data File: D:\CPWIN\DATA6\24113-17.17R
Date Stamp: 8/30/13 01:15:00pm
Sequence File: AUG3013A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

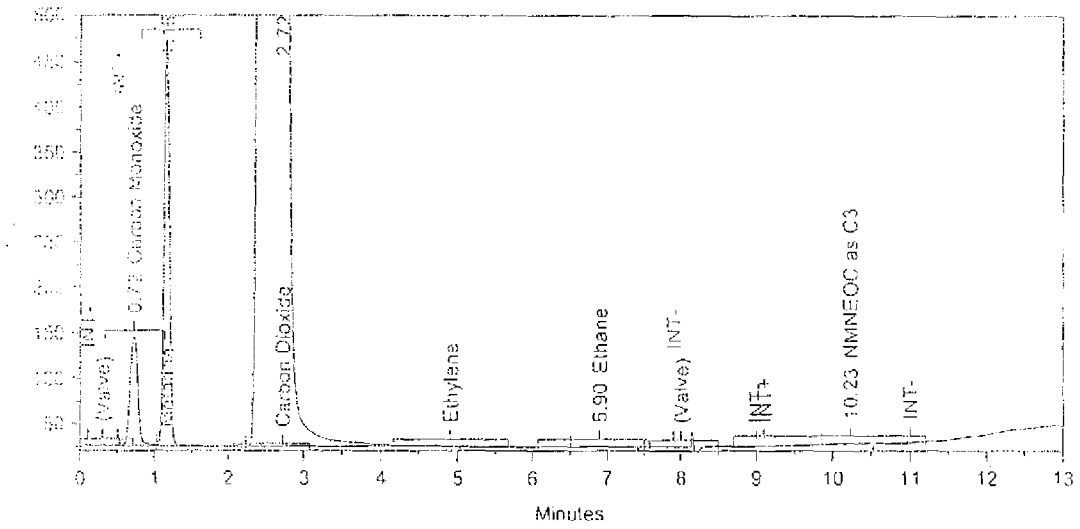
Run Time = 13.2 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.052 (Valve)		0.0006	0.000	6358.2	0.021	BB	0.073	1445.69	0.095
2	0.716 Carbon Monoxide		145.7742	2.795	894056.1	2.963	BV	0.125	119028.60	7.801
3	1.157 Methane		363.2332	6.965	2228934.0	7.387	VB	0.082	450516.90	29.525
4	2.669 Carbon Dioxide		4703.4410	90.187	27006490.0	89.498	BB	0.472	953061.00	62.459
5	6.90# Ethane		1.1574	0.022	13386.6	0.044	BB	0.454	490.99	0.032
6	10.219 NMNEOC as C3		1.5919	0.031	26388.4	0.087	BB	0.327	1345.95	0.088

Total Area = 30175620.0, Total Amount = 5215.198, Total Height = 1525889.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated,

AIR GAS, ICE 3 (1of2), Tk 87 Dup



Sample Name: AIR GAS, ICE 3 (1of2), Tk 87 Dup
Acquired from Chrom6--Det6A via port 6 on 8/30/13 01:33:28pm by Dr. Kitto

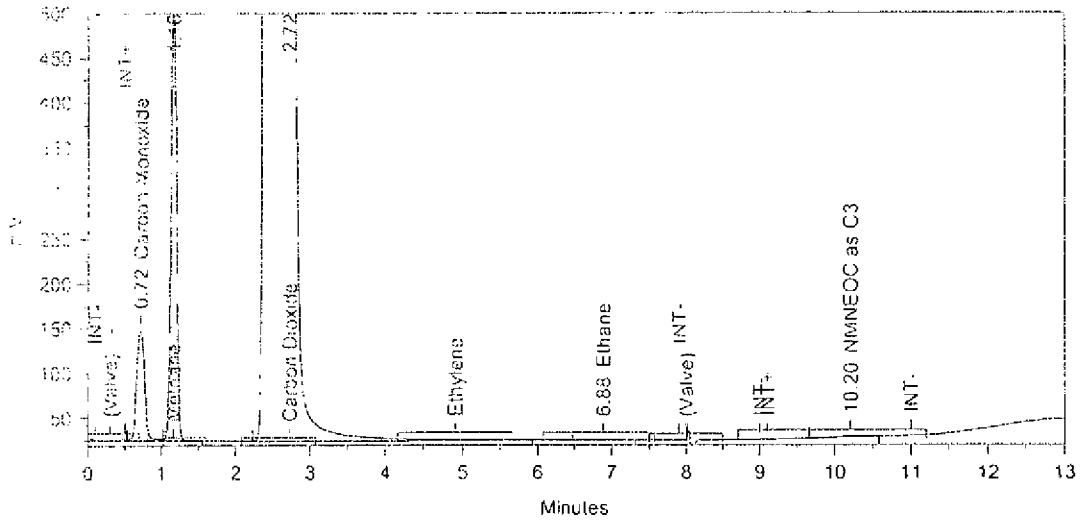
Data File: D:\CPWIN\DATA6\24113-17.18R
Date Stamp: 8/30/13 01:33:28pm
Sequence File: AUG3013A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

Pk#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.717	Carbon Monoxide	147.2791	2.825	903285.9	2.993	BV	0.126	119412.50	7.828
2	1.157	Methane	364.9858	6.997	2239689.0	7.422	VB	0.083	451286.60	29.585
3	2.716	Carbon Dioxide	4701.3300	90.127	26994370.0	89.454	BB	0.472	952907.60	62.469
4	6.806	Ethane	1.1948	0.023	13819.7	0.046	BB	0.413	557.58	0.037
5	10.235	NMNEOC as C3	1.5407	0.030	25539.7	0.085	BB	0.341	1247.55	0.082

Total Area = 30176700.0, Total Amount = 5216.331, Total Height = 1525412.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.



Sample Name: AIR GAS, ICE 3 (2of2), Tk 88
Acquired from Chrom6--Det6A via port 6 on 8/30/13 01:50:37pm by Dr. Kitto

Data File: D:\CPWIN\DATA6\24113-18.19R
Date Stamp: 8/30/13 01:50:36pm
Sequence File: AUG3013A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

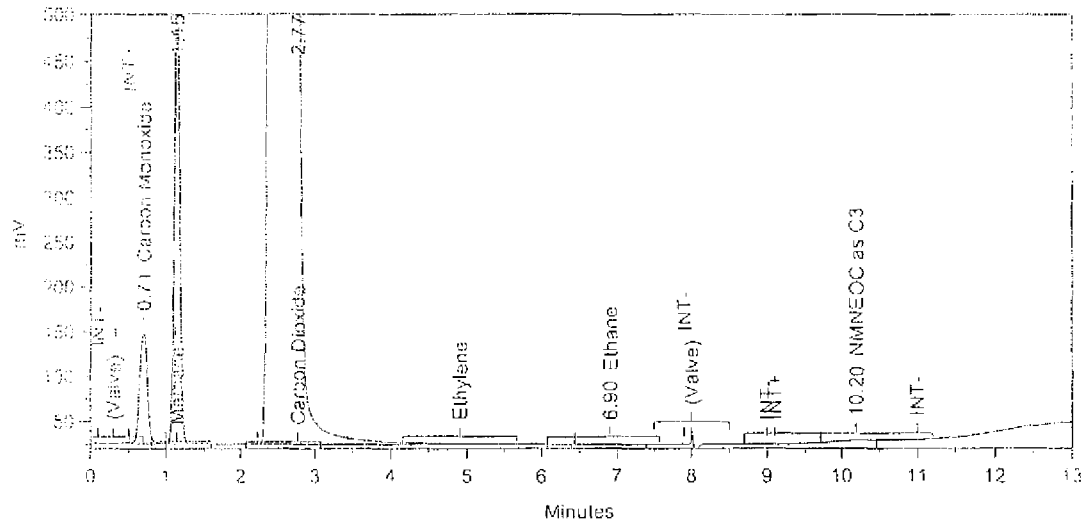
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.721	Carbon Monoxide	151.6601	2.844	930155.0	3.015	BV	0.127	122165.90	7.788
2	1.162	Methane	396.6474	7.439	2433976.0	7.889	VB	0.082	491899.40	31.357
3	2.721	Carbon Dioxide	4781.4140	89.671	27454200.0	88.982	BB	0.480	953109.00	60.758
4	6.884	Ethane	1.1520	0.022	13323.7	0.043	BB	0.401	553.09	0.035
5	10.204	NMNEOC as C3	1.3212	0.025	21900.8	0.071	BB	0.381	958.44	0.061

Total Area = 30853550.0, Total Amount = 5332.194, Total Height = 1568686.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 3 (2of2), Tk 88 Dup



Sample Name: AIR GAS, ICE 3 (2of2), Tk 88 Dup
Acquired from Chrom6--Det6A via port 6 on 8/30/13 02:07:34pm by Dr. Kitto

Data File: D:\CPWIN\DATA6\24113-18.20R
Date Stamp: 8/30/13 02:07:34pm
Sequence File: AUG3013A.SEQ #2
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

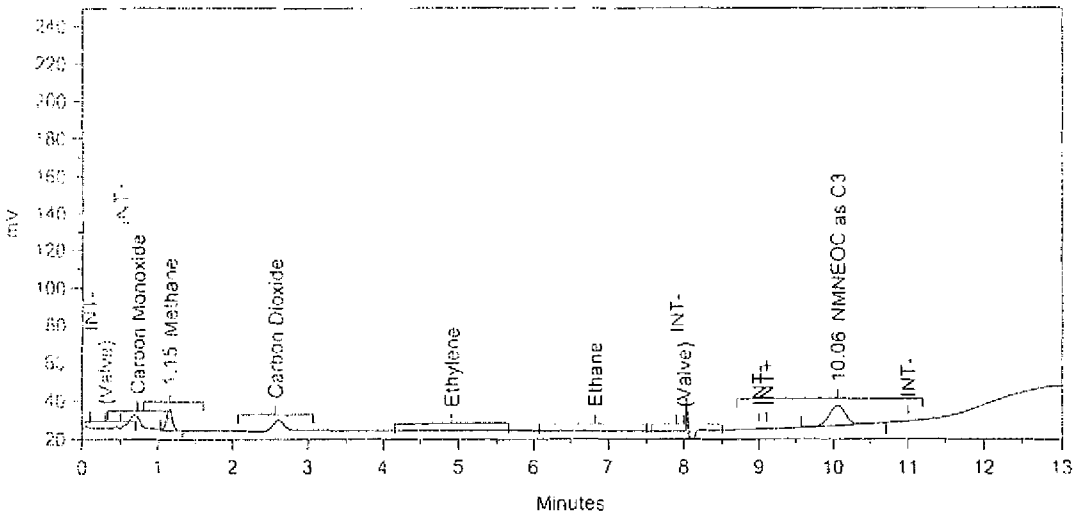
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.707	Carbon Monoxide	150.9902	2.828	926046.4	2.998	BV	0.126	122182.00	7.784
3	1.149	Methane	396.5447	7.427	2433345.0	7.877	VB	0.082	492810.30	31.396
3	2.766	Carbon Dioxide	4789.3140	89.700	27499560.0	89.014	BB	0.481	953057.40	60.718
4	6.903	Ethane	1.1165	0.021	12914.1	0.042	BB	0.396	542.87	0.035
5	10.158	NMNEOC as C3	1.3113	0.025	21736.4	0.070	BB	0.340	1065.22	0.068

Total Area = 30892600.0, Total Amount = 5339.276, Total Height = 1569658.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

CCV 10 PPMV STD



Sample Name: **CCV 10 PPMV STD**
Acquired from Chrom6--Det6A via port 6 on 8/30/13 02:41:17pm by Dr. Kitto

Data File: **D:\CPWIN\DATA6\AUG3013S.22R**
Date Stamp: 8/30/13 02:41:16pm
Sequence File: AUG3013A.SEQ #2
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

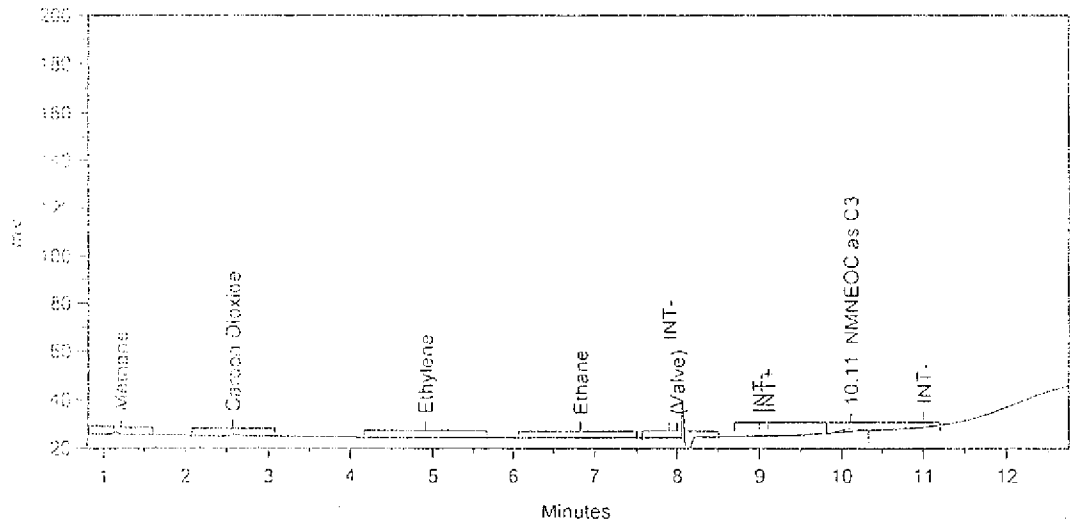
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	1.349	Methane	10.0400	50.498	61609.1	27.412	BB	0.092	11207.41	51.376
2	10.060	NMNEOC as C3	9.8421	49.502	163144.3	72.588	BB	0.256	10607.27	48.624

Total Area = 224753.4, Total Amount = 19.882, Total Height = 21814.68, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

1.0 PPMV STD Backflush



Sample Name: 1.0 PPMV STD Backflush
Acquired from Chrom6--Det6A via port 6 on 8/30/13 03:02:24pm by Dr. Kitto

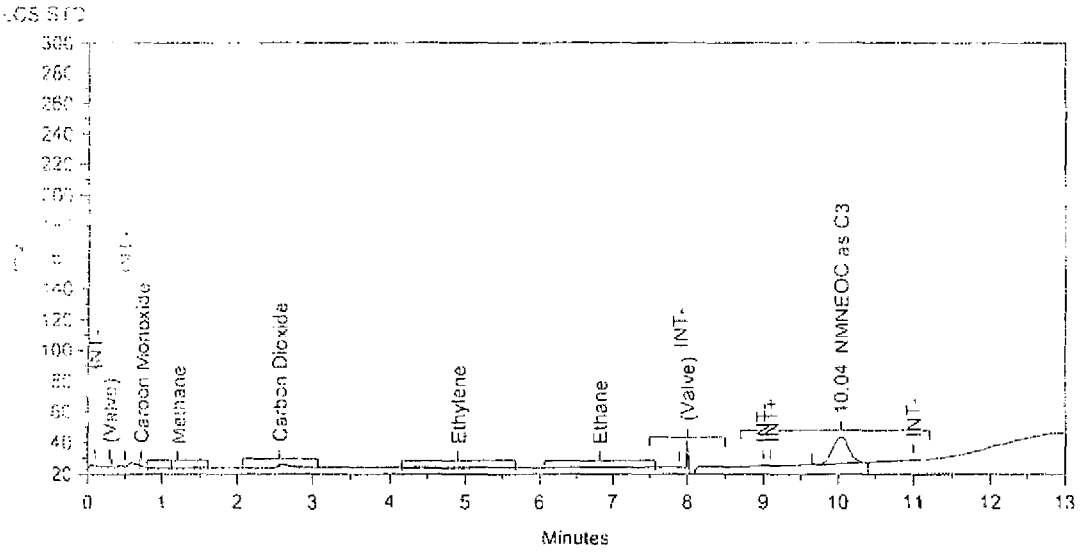
Data File: D:\CPWIN\DATA6\AUG3013S.23R
Date Stamp: 8/30/13 03:02:24pm
Sequence File: AUG3013A.SEQ #2
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 13.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	10.113	NMNEOC as C3	1.0271	100.000	17025.6	100.000	BB	0.266	1066.29	100.000

Total Area = 17025.6, Total Amount = 1.027, Total Height = 1066.29, Sample Units = ppmv @C3
* Some peaks have been manually integrated.



Sample Name: LCS STD
Acquired from Chrom6--Det6A via port 6 on 8/30/13 03:18:47pm by Dr. Kitto

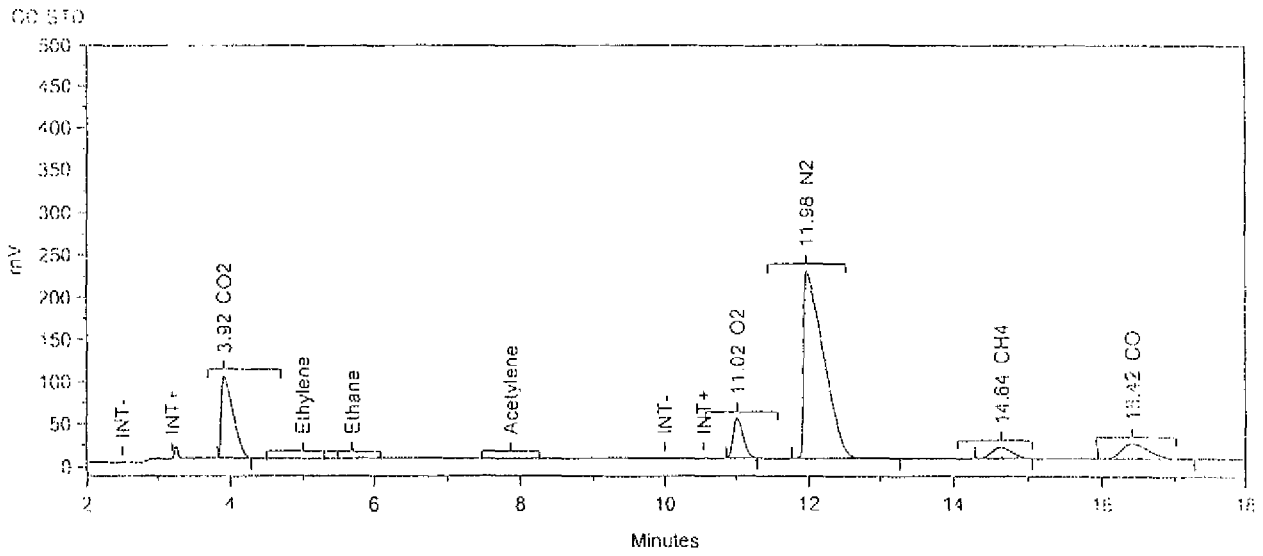
Data File: D:\CPWIN\DATA6\AUG3013S.24R
Date Stamp: 8/30/13 03:18:46pm
Sequence File: AUG3013A.SEQ #2
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	10.040	NMNEOC as C3	15.5818	100.000	258286.5	100.000	BB	0.252	17070.25	100.000

Total Area = 258286.5, Total Amount = 15.582, Total Height = 17070.25, Sample Units = ppmv @C3
* Some peaks have been manually integrated.



Sample Name: **TCD STD**
Acquired from HHV/BTU--TCD via port 8 on 8/29/13 10:17:59am by Dr. Kitto

Data File: D:\CPWIN\DATA8\AUG2913S.01R
Date Stamp: 8/29/13 10:17:58am
Sequence File: AUG2913.SEQ #1
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

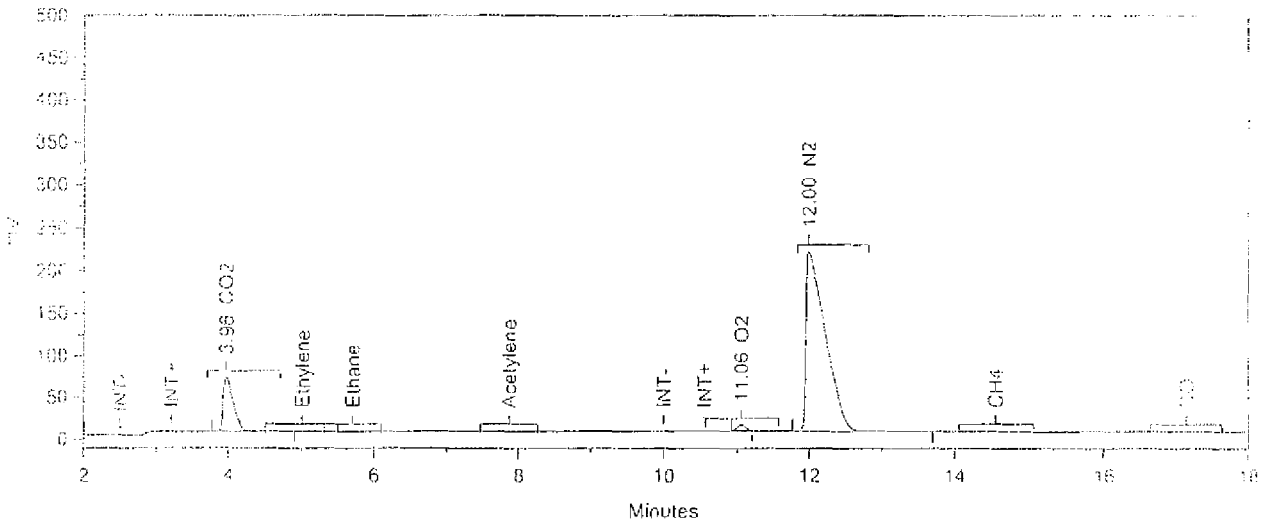
Run Time = 21.77 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.915	CO2	15.0652	14.998	1065845.0	16.394	BB	0.184	96387.92	24.355
2	11.025	O2	7.1804	7.148	444123.5	6.831	BB	0.158	46853.55	11.839
3	11.978	N2	66.6777	66.381	4284885.0	65.906	BB	0.322	221980.70	56.088
4	14.641	CH4	4.5126	4.492	236839.4	3.643	BB	0.310	12716.27	3.213
5	16.421	CO	7.0414	6.980	469861.3	7.227	BB	0.439	17830.83	4.505

Total Area = 6501554.0, Total Amount = 100.447, Total Height = 395769.3, Sample Units = Mole %
* Some peaks have been manually integrated.

AIR GAS, ICE 4 (1of2) Tk 85



Sample Name: AIR GAS, ICE 4 (1of2) Tk 85
Acquired from HHV/BTU--TCD via port 8 on 8/29/13 03:39:14pm by Dr. Kitto

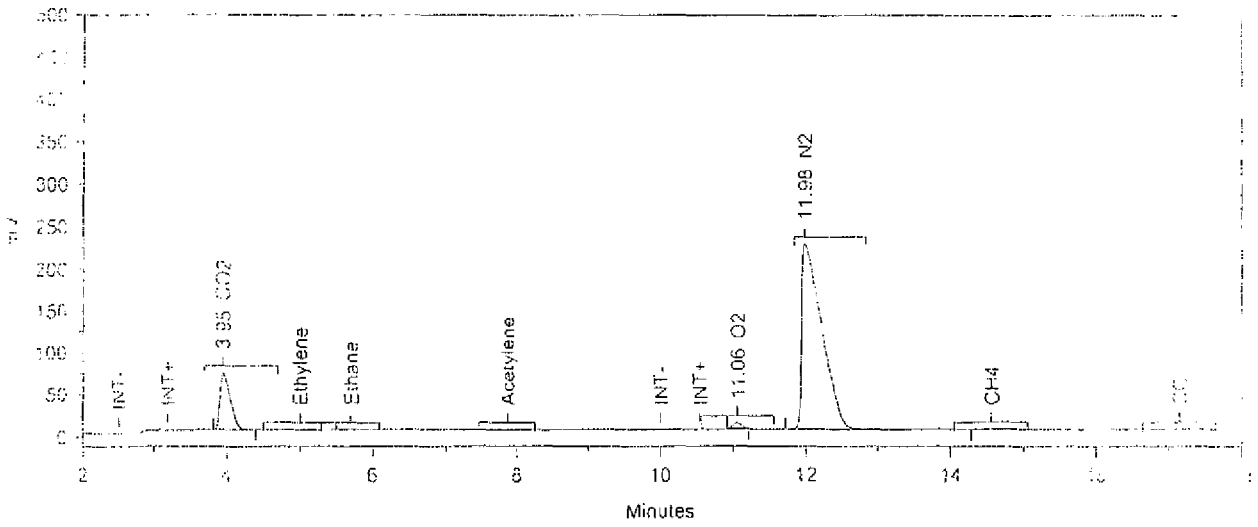
Data File: D:\CPWIN\DATA8\24113-15.08R
Date Stamp: 8/29/13 03:39:14pm
Sequence File: AUG2913.SEQ #8
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

Run Time = 18.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.963 CO2		8.5279	11.900	603339.9	12.952	BB	0.157	64170.39	22.666
2	11.059 O2		0.9208	1.285	56950.8	1.223	BB	0.141	6714.96	2.372
3	11.996 N2		62.2136	86.815	3998007.0	85.826	BB	0.314	212225.10	74.962

Total Area = 4658298.0, Total Amount = 71.662, Total Height = 283110.4, Sample Units = Mole %
* Some peaks have been manually integrated.



Sample Name: AIR GAS, ICE 4 (2of2) Tk 86
Acquired from HHV/BTU--TCD via port 8 on 8/29/13 04:56:50pm by Dr. Kitto

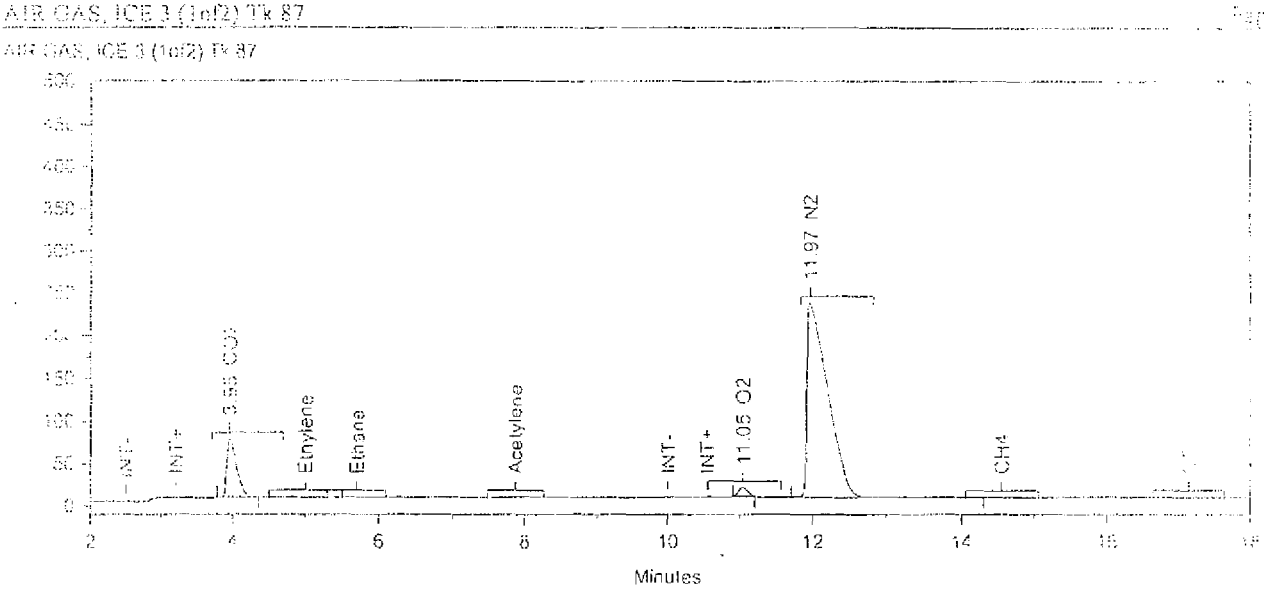
Data File: D:\CPWIN\DATA8\B4113-16.09R
Date Stamp: 8/29/13 04:56:50pm
Sequence File: AUG2913.SEQ #9
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

Run Time = 18.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

Pk#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.950 CO2		8.9402	11.828	632508.1	12.874	BB	0.157	67062.20	22.787
2	11.060 O2		0.9432	1.248	58340.8	1.187	BB	0.141	6886.08	2.340
3	11.985 N2		65.7021	86.924	4222188.0	85.938	BB	0.319	220357.90	74.874

Total Area = 4913037.0, Total Amount = 75.586, Total Height = 294306.2, Sample Units = Mole %
* Some peaks have been manually integrated.



Sample Name: AIR GAS, ICE 3 (1of2) Tk 87
Acquired from HHV/BTU--TCD via port 8 on 8/29/13 04:18:05pm by Dr. Kitto

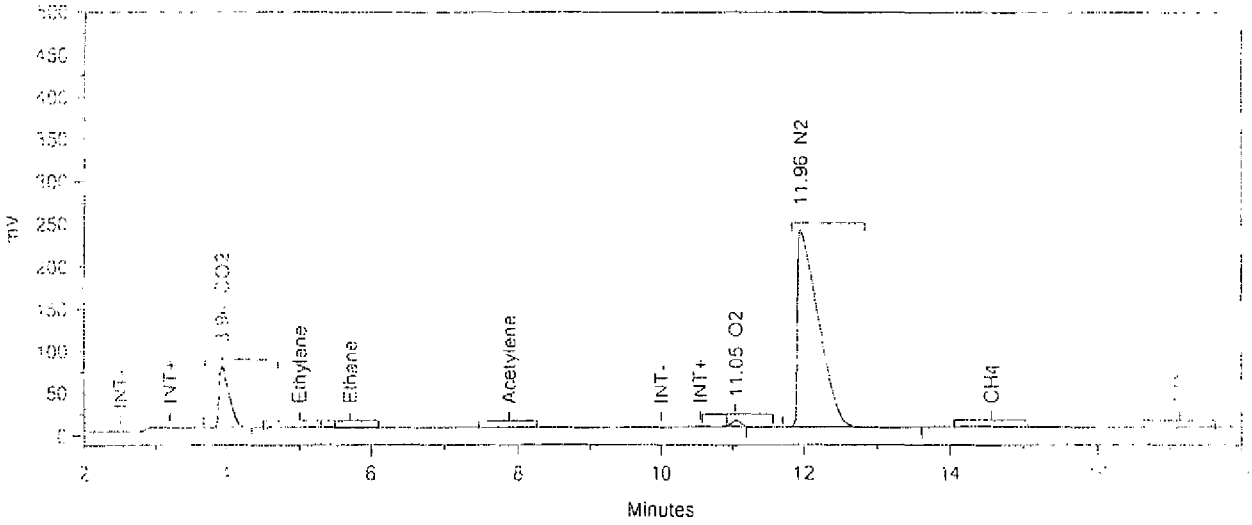
Data File: D:\CPWIN\DATA8\24113-17.10R
Date Stamp: 8/29/13 04:18:04pm
Sequence File: AUG2913.SEQ #10
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

Run Time = 18.34 min Sample Rate = 15.0 per sec.
Amount Inj = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.949	CO2	9.2511	11.536	654505.1	12.562	BB	0.159	68727.16	22.341
2	11.049	O2	1.4280	1.781	88322.4	1.695	BB	0.144	10252.53	3.333
3	11.958	N2	69.5169	86.684	4467338.0	85.743	BB	0.326	228642.80	74.326

Total Area = 5210165.0, Total Amount = 80.196, Total Height = 307622.5, Sample Units = Mole %
* Some peaks have been manually integrated.



Sample Name: AIR GAS, ICE 3 (2of2) Tk 88
Acquired from HHV/BTU--TCD via port 8 on 8/29/13 04:36:53pm by Dr. Kitto

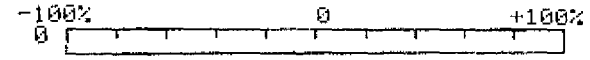
Data File: D:\CPWIN\DATA8\24113-18.11R
Date Stamp: 8/29/13 04:36:52pm
Sequence File: AUG2913.SEQ #11
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

Run Time = 18.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.940	CO2	9.8623	11.944	697744.4	12.998	BB	0.161	72162.84	23.077
2	11.050	O2	0.9554	1.157	59091.4	1.101	BB	0.143	6884.06	2.201
3	11.957	N2	71.7565	86.899	4611261.0	85.901	BB	0.329	233661.30	74.722

Total Area = 5368097.0, Total Amount = 82.574, Total Height = 312708.2, Sample Units = Mole %
* Some peaks have been manually integrated.



RANGE : x5
[READY]
TC FURNACE TEMP : OK 679°C
DEHUMIDIFIER TEMP : OK 1.1°C
BASELINE POSITION : OK
BASELINE FLUCTUATION: OK
BASELINE NOISE : OK

DATE 08(AUG)-30-2013 09:35

SAMPLE# 100 TC ICB BLANK
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	267	0.374			
2-	0	0.000			
3-	242	0.339			
4	265	0.371			
5	273	0.382			
MN	268	0.376			
SD	4	0.005			

CV 1.55 %
COR CONC DIL 0.376 [x 1.0]
COR CONC INJ 0.376 [x 1.0]

DATE 08(AUG)-30-2013 09:46

SAMPLE# 100 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1-	0	0.000			
2-	0	0.000			
3	149	0.209			
4	154	0.216			
5	154	0.216			
MN	152	0.213			
SD	2	0.004			

CV 1.89 %
COR CONC DIL 0.213 [x 1.0]
COR CONC INJ 0.213 [x 1.0]

SAMPLE# 100 TOC(TC-IC) 0.163 PPM ✓

DATE 08(AUG)-30-2013 09:57

ICV - 10 ppm STD

SAMPLE# 10 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	7619	10.67			
2	7453	10.44			
3	7487	10.48			
MN	7519	10.53			
SD	87	0.122			
CV	1.16 %				
COR CONC DIL		10.53 [x 1.0]			
COR CONC INJ		10.53 [x 1.0]			

DATE 08(AUG)-30-2013 10:06

SAMPLE# 10 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	314	0.440			
2	314	0.440			
3	298	0.418			
MN	308	0.433			
SD	9	0.013			
CV	2.99 %				
COR CONC DIL		0.433 [x 1.0]			
COR CONC INJ		0.433 [x 1.0]			

SAMPLE# 10 TOC(TC-IC) 10.09 ppm ✓

DATE 08(AUG)-30-2013 10:13

#9 AIR GAS 13-610

SAMPLE# 9 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	22500	31.52			
2	21829	30.58			
3	21201	29.70			
MN	21843	30.60			
SD	649	0.910			
CV	2.97 %				

COR CONC DIL 30.60 [x 1.0]
COR CONC INJ 30.60 [x 1.0]

DATE 08(AUG)-30-2013 11:03

SAMPLE# 9 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	21116	29.63			
2	20369	28.58			
3	20188	28.33			
MN	20557	28.85			
SD	491	0.690			
CV	2.39 %				

COR CONC DIL 28.85 [x 1.0]
COR CONC INJ 28.85 [x 1.0]

SAMPLE# 9 TOC(TC-IC) 1.750 PPM ✓

DATE 08(AUG)-30-2013 11:12

#10

SAMPLE# 10 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	20369	28.53			
2	19567	27.41			
3	19285	27.01			
MN	19740	27.65			
SD	562	0.788			
CV	2.84 %				
COR CONC DIL		27.65 [x 1.0]			
COR CONC INJ		27.65 [x 1.0]			

DATE 08(AUG)-30-2013 11:20

SAMPLE# 10 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	19387	27.20			
2	18818	26.41			
3	18676	26.21			
MN	18960	26.61			
SD	376	0.528			
CV	1.98 %				
COR CONC DIL		26.61 [x 1.0]			
COR CONC INJ		26.61 [x 1.0]			

SAMPLE# 10 TOC(TC-IC) 1.040 PPM ✓

DATE 08(AUG)-30-2013 11:20

#12

SAMPLE# 12 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	32025	44.86			
2	30967	43.38			
3	30630	42.91			
MN	31207	43.72			
SD	727	1.019			
CV	2.33 %				

COR CONC DIL 43.72 [x 1.0]
COR CONC INJ 43.72 [x 1.0]

DATE 08(AUG)-30-2013 11:37

SAMPLE# 12 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	31308	43.94			
2	30496	42.80			
3	30237	42.43			
MN	30680	43.05			
SD	558	0.784			
CV	1.82 %				

COR CONC DIL 43.05 [x 1.0]
COR CONC INJ 43.05 [x 1.0]

SAMPLE# 12 TOC(TC-IC) 0.670 ppm ✓

DATE 08(AUG)-30-2013 11:45

SAMPLE# 13 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	28703	40.21			
2	27804	38.95			
3	27521	38.55			
MN	28009	39.24			
SD	617	0.864			
CV	2.20 %				

COR CONC DIL 39.24 [x 1.0]
COR CONC INJ 39.24 [x 1.0]

DATE 08(AUG)-30-2013 11:54

SAMPLE# 13 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	27612	38.75			
2	27172	38.13			
3	26858	37.69			
MN	27214	38.19			
SD	378	0.531			
CV	1.39 %				

COR CONC DIL 38.19 [x 1.0]
COR CONC INJ 38.19 [x 1.0]

SAMPLE# 13 TOC(TC-IC) 1.050 ppm ✓

DATE 08(AUG)-30-2013 12:03

CCV1: 5 ppm STD

SAMPLE# 5 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	3739	5.238			
2	3847	5.389			
3	3825	5.359			
MN	3803	5.329			
SD	57	0.080			
CV	1.50 %				
COR CONC DIL	5.329 [x 1.0]				
COR CONC INJ	5.329 [x 1.0]				

DATE 08(AUG)-30-2013 14:23

SAMPLE# 5 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1-	305	0.428			
2	444	0.623			
3	435	0.610			
4	412	0.578			
MN	430	0.604			
SD	16	0.023			
CV	3.83 %				
COR CONC DIL	0.604 [x 1.0]				
COR CONC INJ	0.604 [x 1.0]				

SAMPLE# 5 TOC(TC-IC) 4.725 ppm ✓

DATE 08(AUG)-30-2013 14:31

SAMPLE# 40 TC CCV2: 40 ppm STD
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	27686	38.78			
2	27964	39.17			
3	28110	39.38			
MN	27920	39.11			
SD	215	0.301			
CV	0.77 %				

COR CONC DIL 39.11 [x 1.0]
COR CONC INJ 39.11 [x 1.0]

DATE 08(AUG)-30-2013 14:41

SAMPLE# 40 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1-	221	0.310			
2	308	0.432			
3	316	0.443			
4	306	0.429			
MN	310	0.435			
SD	5	0.007			
CV	1.70 %				

COR CONC DIL 0.435 [x 1.0]
COR CONC INJ 0.435 [x 1.0]

SAMPLE# 40 TOC(TC-IC) 38.67 PPM ✓

DATE 08(AUG)-30-2013 14:53

```
SAMPLE# 100   TC
 [x 5,  100µl, C#  1, #WASH 3, SP  0min]
    #  AREA ppm      C#  µl RG
    1   457  0.640
    2-  499  0.699
    3   445  0.623
    4   466  0.652
   - - - - - - - - - - - - - -
   MN   456  0.638
   SD    10  0.014
   CV  2.31 %
   COR CONC DIL  0.638 [x 1.0]
   COR CONC INJ  0.638 [x 1.0]

        DATE  08(AUG)-30-2013  15:02


SAMPLE# 100   IC
 [x 5,  100µl, C#  3, #WASH 3, SP  0min]
    #  AREA ppm      C#  µl RG
    1-  198  0.277
    2   235  0.329
    3   250  0.350
    4   245  0.343
   - - - - - - - - - - - - - -
   MN   243  0.341
   SD     7  0.010
   CV  3.13 %
   COR CONC DIL  0.341 [x 1.0]
   COR CONC INJ  0.341 [x 1.0]

SAMPLE# 100   TOC(TC-IC)    0.297 ppm

        DATE  08(AUG)-30-2013  15:11
```

Quantum Analytical Services Inc.
www.quantumairlab.com
1210 E. 223rd Street, Suite #314 • Carson, California 90745 • 310/830-2226 • Fax 310/830-2227

CLIENT : **Air Gas Testing & Consulting Services**
CLIENT JOB NO/NAME : **MCWD – RES 2**
QUANTUM PROJECT NUMBER : **13-626**
REPORT DATE : **September 16, 2013**

Quantum Analytical Services, Inc. received on September 5, 2013 4 six-liter canisters and 4 vials for the analysis of Total non-Methane non-Ethane Organic Carbon (TNMNEOC) according to SCAQMD Method 25.3 and fixed gases according to the EPA Method 3C. Upon receipt, the canisters were checked for pressure and the vials were checked for temperature and leakage. The samples were assigned a specific laboratory project number and the canisters were given a specific sample ID number as follows:

Client ID	Lab No.	Tank Pressure Received (mmHg)
ICE #1 – 1 of 2, Tk 78	24813-6	687.8
ICE #1 – 2 of 2, Tk 79	24813-7	704.1
ICE #2 – 1 of 2, Tk 90	24813-8	703.1
ICE #2 – 2 of 2, Tk 91	24813-9	698.3

The samples were in good condition and no problems were encountered during sample preparation, and analysis. The test results included in this reports meet all the requirement of the SCAQMD Method 25.3, and EPA Method 3C.

SCAQMD Method 25.3: An aliquot of the gaseous sample (tank) is injected into the TCA (GC-FID) instrument, and an aliquot of the liquid (water trap) is analyzed into TOC analyzer (Shimadzu 5000A) following the SCAQMD Method 25.3 as outlined in the SOP.

EPA 3C: An aliquot of the gaseous sample (tank) is injected into the TCA (GC-TCD) for the analysis following EPA Method 3C.

I certify that the results in this report are technically accurate and in compliance with the terms and condition of the contract. Release of the data package has been approved by the laboratory president as verified in the following signature.

Thank you for giving us the opportunity to serve you. We appreciate your business and the confidence you have placed in us. Please contact me for further assistance or with any question.

Andrew Kitto, Ph.D.
President

Quantum Analytical Services Inc.
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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**MCWD - RES 2**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-626**
SAMPLING DATE:	September 5, 2013
RECEIVING DATE:	September 5, 2013
ANALYSIS DATE:	September 10, 2013
REPORT DATE:	September 13, 2013

Pressure- Dilution Sheet

ANALYSIS METHOD		*SCAQMD 25.3*					
LIMIT OF DETECTION		*1.0 ppmC*					
Air Gas Sample ID #	*LAB ID No.*	Tank Vol. (L) (Vtank)	Initial Pressure mmHg (Pi)	Return Pressure mmHg (Pr)	Final Pressure mmHg (Pf)	Sample Vol. (L) (Vsample)	Tank Dil Factor (DFtank)
ICE #1- 1 of 2 - Tk 78	24813-6	6.0	3.1	687.8	819.6	5.43	1.19
ICE #1- 2 of 2 - Tk 79	24813-7	6.0	3.1	704.1	819.8	5.56	1.16
ICE #2 - 1 of 2 - Tk 90	24813-8	6.0	3.1	703.1	818.7	5.55	1.16
ICE #2 - 2 of 2 - Tk 91	24813-9	6.0	3.1	698.3	818.8	5.51	1.17

Dr. Andrew Kitto
President

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**MCWD - RES 2**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-626**
SAMPLING DATE:	September 5, 2013
RECEIVING DATE:	September 5, 2013
ANALYSIS DATE:	September 10, 2013
REPORT DATE:	September 13, 2013

Laboratory Analysis Report

All Samples were analyzed in duplicates/Average values are reported

Analysis Method	SCAQMD 25.3					
Detection Limits	1.0 ppmv					
Air Gas Sample ID #	Lab Sample ID	CH4 PPMV	Ethane PPMV	TOC PPMC	Canister TNMNEOC PPMC	Total TNMNEOC† PPMC
ICE #1- 1 of 2 - Tk 78	24813-6	648	4.1	10	2.95	**14.6**
ICE #1- 2 of 2 - Tk 79	24813-7	673	3.8	11	2.65	**15.0**
ICE #2 - 1 of 2 - Tk 90	24813-8	434	1.0	5.9	2.41	**8.99**
ICE #2 - 2 of 2 - Tk 91	24813-9	421	1.0	4.8	2.18	**7.59**

TNMNEOC: Total Non methane non Ethane Organic Carbon

† Includes Bias Correction = 1.086, per method

Dr. Andrew Kitto
President

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**MCWD - RES 2**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-626**
SAMPLING DATE:	September 5, 2013
RECEIVING DATE:	September 5, 2013
ANALYSIS DATE:	September 10, 2013
REPORT DATE:	September 13, 2013

Laboratory Analysis Report

I- NMNEOC Tanks **All Samples were analyzed in duplicates**

ANALYSIS METHOD	*SCAQMD 25.3*						
LIMIT OF DETECTION	*1.0 ppmC*						
Air Gas Sample ID #	*LAB ID No.*	Tank Dil Factor (DFtank)	GC Methane PPMV	GC Carbon Monoxide PPMV	GC Ethylene PPMV	GC NMNEOC as C3 PPMV	NMNEOC Tank as Carbon PPMV
ICE #1- 1 of 2 - Tk 78	24813-6	1.19	543	107	<1.0	0.84	3.00
ICE #1- 1 of 2 - Tk 78 Dup	24813-6D	1.19	543	105	<1.0	0.81	2.90
ICE #1- 2 of 2 - Tk 79	24813-7	1.16	582	108	<1.0	0.76	2.65
ICE #1- 2 of 2 - Tk 79 Dup	24813-7D	1.16	575	107	<1.0	0.76	2.65
ICE #2 - 1 of 2 - Tk 90	24813-8	1.16	373	234	<1.0	0.70	2.45
ICE #2 - 1 of 2 - Tk 90 Dup	24813-8D	1.16	371	233	<1.0	0.68	2.38
ICE #2 - 2 of 2 - Tk 91	24813-9	1.17	360	233	<1.0	0.61	2.15
ICE #2 - 2 of 2 - Tk 91 Dup	24813-9D	1.17	358	231	<1.0	0.63	2.22

Dr. Andrew Kitto
President

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**MCWD - RES 2**
PROJECT NO:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-626**
SAMPLING DATE:	September 5, 2013
RECEIVING DATE:	September 5, 2013
ANALYSIS DATE:	September 10, 2013
REPORT DATE:	September 13, 2013

DUPLICATE ANALYSES

Analysis Method	SCAQMD 25.3				
Detection Limit	1.0 ppmC				
Air Gas Sample ID	Analyte	Analysis #1 PPMV	Analysis #2 PPMV	Mean PPMV	% Difference from the Mean
ICE #1- 1 of 2 - Tk 78	Methane	648	648	648	0.0%
	CO	128	125	127	1.0%
	Ethane	4.0	4.1	4.1	0.7%
	Ethylene	<1.0	<1.0	<1.0	N/A
	NMNEOC	**3.00**	**2.90**	**2.95**	**1.8%**
ICE #1- 2 of 2 - Tk 79	Methane	677	669	673	0.6%
	CO	125	125	125	0.1%
	Ethane	3.9	3.7	3.8	1.5%
	Ethylene	<1.0	<1.0	<1.0	N/A
	NMNEOC	**2.65**	**2.65**	**2.65**	**0.0%**
ICE #2 - 1 of 2 - Tk 90	Methane	435	433	434	0.3%
	CO	272	271	271	0.2%
	Ethane	1.0	1.0	1.0	1.8%
	Ethylene	<1.0	<1.0	<1.0	N/A
	NMNEOC	**2.45**	**2.38**	**2.41**	**1.4%**
ICE #2 - 2 of 2 - Tk 91	Methane	422	420	421	0.3%
	CO	273	271	272	0.4%
	Ethane	1.0	1.0	1.0	0.0%
	Ethylene	<1.0	<1.0	<1.0	N/A
	NMNEOC	**2.15**	**2.22**	**2.18**	**1.6%**

Dr. Andrew Kitto
President

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CLIENT: **Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.: **MCWD - RES 2**
ANALYSIS: **Method 25.3- TNMNEOC**
LABORATORY NO: **13-626**
SAMPLING DATE: September 5, 2013
RECEIVING DATE: September 5, 2013
ANALYSIS DATE: September 10, 2013
REPORT DATE: September 13, 2013

Quality Control/Quality Assurance Report

I- Blank

Lab ID	Analyte	Result
N2 Blank - Open	NMNEOC	<1.0
N2 Blank - Close	NMNEOC	<1.0

II- Initial Calibration Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery*
ICV	CO	19.68	19.88	101%
ICV	CH4	19.36	19.90	103%
ICV	CO2	58.80	58.96	100%
ICV	Ethylene	19.40	19.32	100%
ICV	Ethane	19.74	19.51	99%
ICV	NMNEOC	19.96	20.05	100%

* Must be ±10%

III- Closing Calibration Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery**
CCV	CH4	10.00	10.06	101%
CCV	NMNEOC	10.00	10.08	101%

**Must be ±10%

IV- 1 ppm Backflush Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery**
Backflush	NMNEOC	1.00	1.00	100%

**Must be ±20%

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**MCWD - RES 2**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-626**
SAMPLING DATE:	September 5, 2013
RECEIVING DATE:	September 5, 2013
ANALYSIS DATE:	September 10, 2013
REPORT DATE:	September 13, 2013

Laboratory Control Sample
Quality Control/Quality Assurance Report

I- Blank

Lab ID	Analyte	Result
N2 Blank - Open	NMNEOC	<1.0
N2 Blank - Close	NMNEOC	<1.0

II- Laboratory Control Sample (LCS)

Lab ID	Date	Analyte	Theoretical Value PPMV	Tested Value PPMV	RPD %
LCS	9/10/13	NMNEOC	16.00	15.79	1.3%

* Must be ±10%

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**MCWD - RES 2**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-626**
SAMPLING DATE:	September 5, 2013
RECEIVING DATE:	September 5, 2013
ANALYSIS DATE:	September 10, 2013
REPORT DATE:	September 13, 2013

Laboratory Analysis Report

II- Traps (TOC Analysis)

All The samples were analyzed in triplicate

ANALYSIS METHOD		*SCAQMD 25.3*								
LIMIT OF DETECTION		*1.0 ug/mL*								
Air Gas Sample ID #	*Trap No.*	Tank Vol. (L) (V_{tank})	Initial Pressure mmHg (P_i)	Return Pressure mmHg (P_r)	Final Pressure mmHg (P_f)	Gaseous Sample Vol. (L)	Water Sample Volume ml	Dilution Factor	TOC ug/mL	TOC PPMC
ICE #1- 1 of 2 - Tk 78	14	6.0	3.1	687.8	819.6	5.43	5.0	1.0	5.6	10.5
ICE #1- 2 of 2 - Tk 79	15	6.0	3.1	704.1	819.8	5.56	5.0	1.0	6.1	11.2
ICE #2 - 1 of 2 - Tk 90	16	6.0	3.1	703.1	818.7	5.55	5.0	1.0	3.2	5.87
ICE #2 - 2 of 2 - Tk 91	17	6.0	3.1	698.3	818.8	5.51	5.0	1.0	2.6	4.80

Note: All Traps (vials) were purged with Ultra Pure grade Helium

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**MCWD - RES 2**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-626**
SAMPLING DATE:	September 5, 2013
RECEIVING DATE:	September 5, 2013
ANALYSIS DATE:	September 10, 2013
REPORT DATE:	September 13, 2013

Laboratory Analysis Report

II- Traps (TOC Analysis)

All The samples were analyzed in triplicate

ANALYSIS METHOD		*SCAQMD 25.3*								
LIMIT OF DETECTION		*1.0 ug/mL*								
Air Gas Sample ID #	*Trap No.*	Tank Vol. (L) (Vtank)	Initial Pressure mmHg (Pi)	Return Pressure mmHg (Pr)	Final Pressure mmHg (Pf)	Gaseous Sample Vol. (L)	Water Sample Volume ml	Dilution Factor	TOC ug/mL	TOC PPMC
ICE #1- 1 of 2 - Tk 78	14	6.0	3.1	687.8	819.6	5.43	5.0	1.0	5.6	10.5
ICE #1- 2 of 2 - Tk 79	15	6.0	3.1	704.1	819.8	5.56	5.0	1.0	6.1	11.2
ICE #2 - 1 of 2 - Tk 90	16	6.0	3.1	703.1	818.7	5.55	5.0	1.0	3.2	5.87
ICE #2 - 2 of 2 - Tk 91	17	6.0	3.1	698.3	818.8	5.51	5.0	1.0	2.6	4.80

Note: All Traps (vials) were purged with Ultra Pure grade Helium

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CLIENT: **Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.: **MCWD - RES 2**
ANALYSIS: **Method 25.3- TNMNEOC**
LABORATORY NO: **13-626**
SAMPLING DATE: September 5, 2013
RECEIVING DATE: September 5, 2013
ANALYSIS DATE: September 10, 2013
REPORT DATE: September 13, 2013

TC Analysis
Triplicate analysis

Sample #	Mean Area	SD	CV*	Average Conc. ug/ml
Trap 14	21431	243	1.13%	60.05
Trap 15	30954	897	2.90%	86.73
Trap 16	42810	919	2.14%	119.9
Trap 17	40511	732	1.80%	113.5

*: CV must be within 10%

IC Analysis
Triplicate Analysis

Sample #	Mean Area	SD	CV*	Average Conc. ug/ml
Trap 14	19403	121	0.62%	54.46
Trap 15	28726	508	1.76%	80.63
Trap 16	41604	787	1.89%	116.7
Trap 17	39528	595	1.50%	110.9

*: CV must be within 10%

TOC (Average of Triplicate Analysis)

Sample #	Average TC mg/L	Average IC mg/L	Average TOC mg/L
Trap 14	60.05	54.46	5.59
Trap 15	86.73	80.63	6.10
Trap 16	119.9	116.7	3.20
Trap 17	113.5	110.9	2.60

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**MCWD - RES 2**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-626**
SAMPLING DATE:	September 5, 2013
RECEIVING DATE:	September 5, 2013
ANALYSIS DATE:	September 10, 2013
REPORT DATE:	September 13, 2013

Quality Control/Quality Assurance Report

I- Blank

Lab ID	Analyte	Result ug/mL
Water Blank - Open	TOC	<1.0
Water Blank - Close	TOC	<1.0

II- Initial Calibration Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery*
ICV	TOC	10.0	10.3	103%

* Must be ±5%

III- Continuing/Closing Calibration Verification Standard

Lab ID	Analyte	Theoretical Value PPMV	Tested Value PPMV	% Recovery*
CCV	TOC	5.0	4.81	96%
CCV	TOC	40.0	38.3	96%

*Must be ±10%

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**MCWD - RES 2**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-626**
SAMPLING DATE:	September 5, 2013
RECEIVING DATE:	September 5, 2013
ANALYSIS DATE:	September 10, 2013
REPORT DATE:	September 13, 2013

Laboratory Analysis Report

Analysis Method	**EPA Method 3C**			
Detection Limits	**0.10%**			
Air Gas	**Lab**	**CH4**	**O2**	**CO2**
Sample ID #	**Sample ID #**	**Mole %**	**Mole %**	**Mole %**
ICE #1- 1 of 2 - Tk 78	24813-6	<0.1	0.49	11
ICE #1- 2 of 2 - Tk 79	24813-7	<0.1	0.29	12
ICE #2 - 1 of 2 - Tk 90	24813-8	<0.1	0.29	12
ICE #2 - 2 of 2 - Tk 91	24813-9	<0.1	0.21	11

*** Oxygen + Argon are not separated by GC**
Argon constitutes 0.93% of the atmosphere (Handbook of Chemistry and Physics)
0.9% was substracted from O2 concentrations

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CLIENT:	**Air Gas Testing & Consulting Services**
CLIENT PROJ. NO.:	**MCWD - RES 2**
ANALYSIS:	**Method 25.3- TNMNEOC**
LABORATORY NO:	**13-626**
SAMPLING DATE:	September 5, 2013
RECEIVING DATE:	September 5, 2013
ANALYSIS DATE:	September 10, 2013
REPORT DATE:	September 13, 2013

Quality Control/Quality Assurance

EPA 3C - Fixed Gases

Lab ID	Analyte	Theoretical Value Mole %	Tested Value Mole %	% Recovery*
SCOTT STD	CO2	15.0	15.3	102%
SCOTT STD	O2	7.0	7.1	102%
SCOTT STD	N2	66.7	66.4	100%
SCOTT STD	CH4	4.5	4.6	102%
SCOTT STD	CO	7.0	7.0	100%

* Must be ±10%

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EXAMPLE OF CALCULATION SHEET

Laboratory Analysis Report

I- Tanks

ANALYSIS METHOD		*SCAQND 25.3*							
LIMIT OF DETECTION		*0.5 PPMV*							
Air Gas Sample ID #	*LAB ID No.*	Tank Dil Factor (DFtank)	Methane Tank PPMC	Tank Ethylene From GC	Tank Ethylene PPMV+++	Ethylene as C PPMV	Tank NMNEOC as C3 from GC	Tank NMNEOC as C PPMV+++	Tank NMNEOC* as Carbon PPMV
ICE #1- 1 of 2 - Tk 78	24813-6	1.19	543.4	0.00	<1.0	*0.00*	0.84	*3.00*	3.00
ICE #1- 1 of 2 - Tk 78 Dup	24813-6D	1.19	543.4	0.00	<1.0	*0.00*	0.81	*2.90*	2.90

+++: Includes Dilution factor

Tank Dil Factor = Pressure Final/ Pressure Received (Please see Pressure Sheet)
1.19

Tank Ethylene (ppmv) = From GC Chromatogram
0.00

Ethylene As C = Ethylene from GC Chromatogram x 2 x Dilution Factor
0.00

Tank NMNEOC as C3 = From the GC chromatogram
0.84

Tank NMNEOC as C = GC NMNEOC x 3 x Dil Factor
3.00

Tank Total NMNEOC = (NMNEOC as C + Ethylene as C)
3.00

Avg TNMNEOC (Reported Value) = **2.95**

Initial:

Summa Cansiter Pressure Log

Client: Air Gas

Laboratory Project No: 13-626

Sampling Date: September 5, 2013

Receiving Date: September 5, 2013

Item#	Sample ID	Tank #	Lab ID	P_r (mmHg)	Purge	P_f (mmHg)
1	ICE 1 Tank 1 of 2	78	24813-6	687.8	710.4	819.6
2	ICE 1 Tank 2 of 2	79	24813-7	704.1	726.6	819.8
3	ICE 2 Tank 1 of 2	90	24813-8	703.1	725.5	818.7
4	ICE 2 Tank 2 of 2	91	24813-9	698.3	721.8	818.8
5						
6						
7						
8						
9						
10						

13-626

Air Gas Testing & Consulting Services
7111 Garden Grove Blvd., Garden Grove, CA 92841
Phone: 714-840-9827

CHAIN OF CUSTODY

(RES. 2)
Plant: MCWD Reservoir #2
Unit Tested: RES II - Engines 1 & 2
Sample Loc: Stack

Test Date: 9-5-13
Operator: KA/TD
Test Method: 25.3

SAMPLE NO.	SAMPLE DESCRIPTION	TEST#	DATE	TIME	ANALYSIS FOR	COMMENT	Lab #
78	Tank 1 of 2	VOC-ICE 1	9-5-13	1315	VOC+CH4	SCAQMD 25.3	24913-6
79	Tank 2 of 2	↓	↓	↓	↓	↓	-7
14	Trap 1 of 2						
15	Trap 2 of 2						
90	Tank 1 of 2	VOC-ICE 2	↓	↓	↓	↓	-8
91	Tank 2 of 2	↓					-9
16	Trap 1 of 2						
17	Trap 2 of 2						

Relinquished by: Tim Dinh Signature: Tim T Dh For Delivery To Lab Date: 9-5-13 Time: 1315
Relinquished by: _____ Signature: _____ For ~~Mad Cat~~ & Quantum Analytical 9/5/13 Time: 13:30
Relinquished by: _____ Signature: _____ For Quantum Analytical Date: _____ Time: _____
Relinquished by: _____ Signature: _____ For _____ Date: _____ Time: _____
Relinquished by: _____ Signature: _____ For _____ Date: _____ Time: _____
Relinquished by: _____ Signature: _____ For _____ Date: _____ Time: _____

Method 25.3 Calculation Summary Sheet

TOC Calculations (Trap):

$$C_{Trap} = \frac{(C_{Toc} \times V_{Trap})}{(V_{Sample})} \times \frac{V_{id}}{MW_c}$$

Where:
C_{Trap} = Gaseous concentration of TOC in condensate trap water, ppmv (as Carbon)
C_{Toc} = TOC concentration in ug/ml of condensate trap water (*from Raw Data printout*)
V_{Trap} = Volume of condensate trap water in ml (*from Sample Receiving Data Sheet*)
V_{id} = Volume of ideal gas per mole at 25°C (24.4652 liters/mole)
MW_c = Atomic weight of carbon (12.01 g/mol)
V_{Sample} = Volume sampled in collection tank in Liters ($V_{Tank} \times (P_r - P_i) / P_a$)

Where:
V_{Tank} = Volume of the sampling tank in liters (*from Sample Receiving Data Sheet*)
P_r = Return canister pressure of the sampling tank (*from Sample Receiving Data Sheet*)
P_i = Initial canister pressure of the sampling tank (*from Sample Receiving Data Sheet*)
P_a = atmospheric pressure (760 mmHg)

TCA Calculations (Tank):

$$C_{Tank} = C_{TCA} \times DF_{Tank} \times 3.0$$

Where:
C_{Tank} = Gaseous concentration of tank, ppmv (as Carbon)
C_{TCA} = Average of analysis results from chromatograms, ppmv (as Propane)
DF_{Tank} = Dilution factor resulting from tank pressurization upon receipt (P_f/P_r)
3.0 = Conversion of result (as Propane) to (as Carbon)

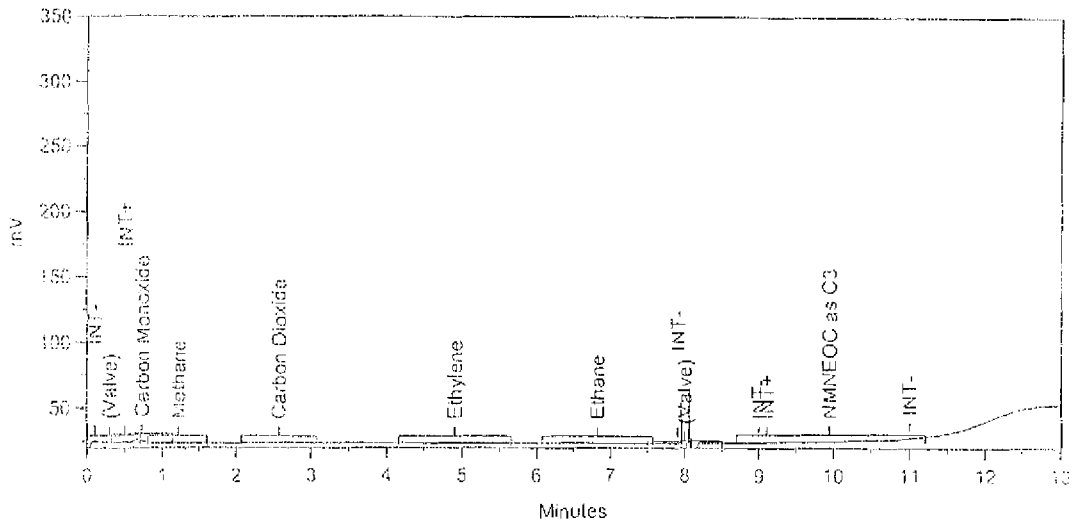
Where:
P_f = Final canister pressure after pressurization for analysis (*from Sample Receiving Data Sheet*)
P_r = Return canister pressure upon sample receipt (*from Sample Receiving Data Sheet*)

Final Calculation (Tank and Trap):

$$\text{Total VOC (ppmC)} = (C_{Trap} + C_{Tank}) \times 1.086$$

Per method section 4.11, the final concentration includes a 1.086 bias correction factor.

N2 Blank



Sample Name: N2 Blank
Acquired from Chrom6--Det6A via port 6 on 9/10/13 08:52:29am by Dr. Kitto

Data File: D:\CPWIN\DATA6\SEP1013B.01R
Date Stamp: 9/10/13 08:52:28am
Sequence File: SEP1013A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

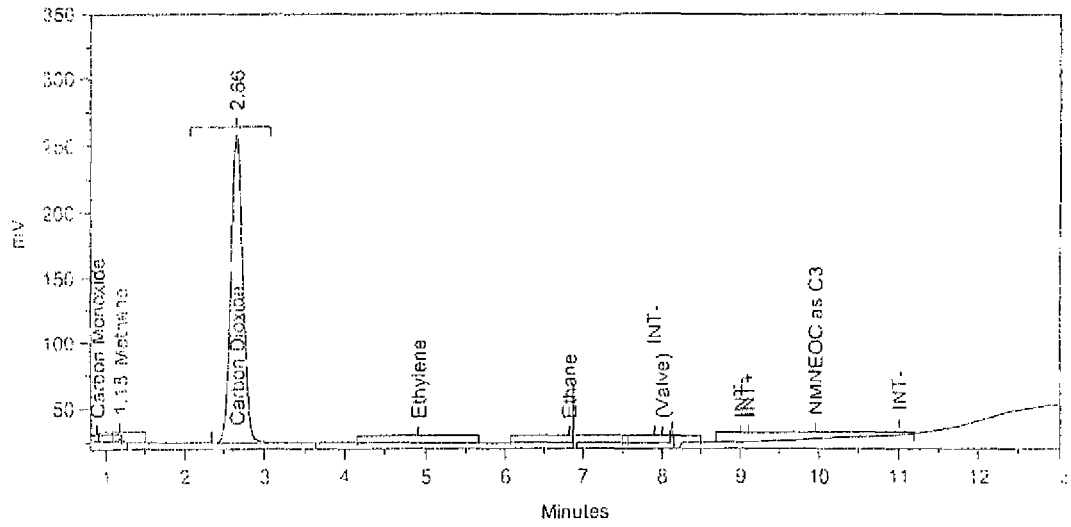
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%

Total Area = 0.0, Total Amount = 0.0, Total Height = 0.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

Lab Air



Sample Name: Lab Air
Acquired from Chrom6--Det6A via port 6 on 9/10/13 09:15:01am by Dr. Kitto

Data File: D:\CPWIN\DATA6\SEP1013B.02R
Date Stamp: 9/10/13 09:15:00am
Sequence File: SEP1013A.SEQ #2
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

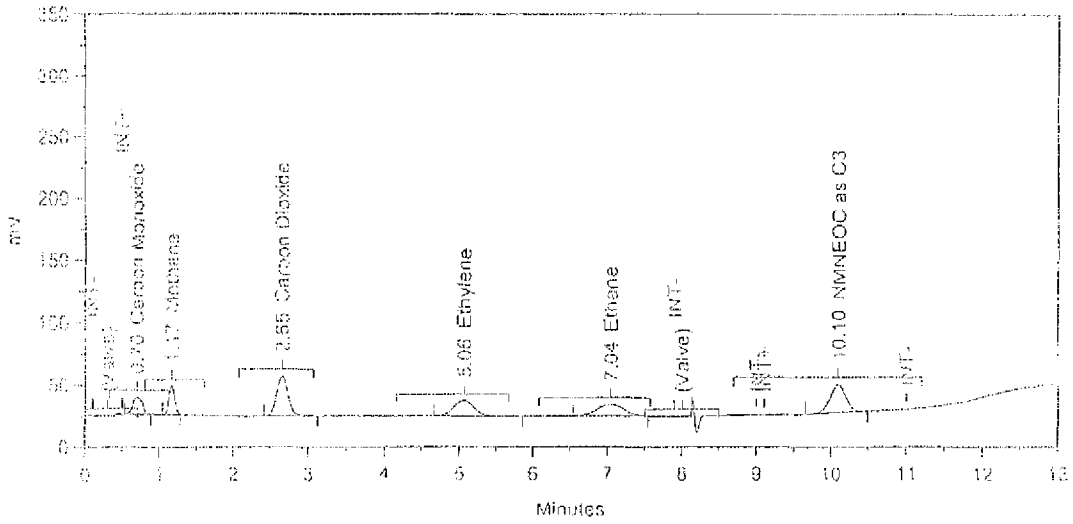
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Type	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	1.180	Methane	1.7546	0.411	10767.0	0.439	BB	0.085	2121.02	0.897
2	2.657	Carbon Dioxide	425.5587	99.589	2443498.0	99.561	BB	0.174	234393.00	99.103

Total Area = 2454265.0, Total Amount = 427.313, Total Height = 236514.1, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

ICV - 20 PPMV STD



Sample Name: ICV - 20 PPMV STD
Acquired from Chrom6--Det6A via port 6 on 9/10/13 09:32:15am by Dr. Kitto

Data File: D:\CPWIN\DATA6\SEP1013S.03R
Date Stamp: 9/10/13 09:32:14am
Sequence File: SEP1013A.SEQ #3
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

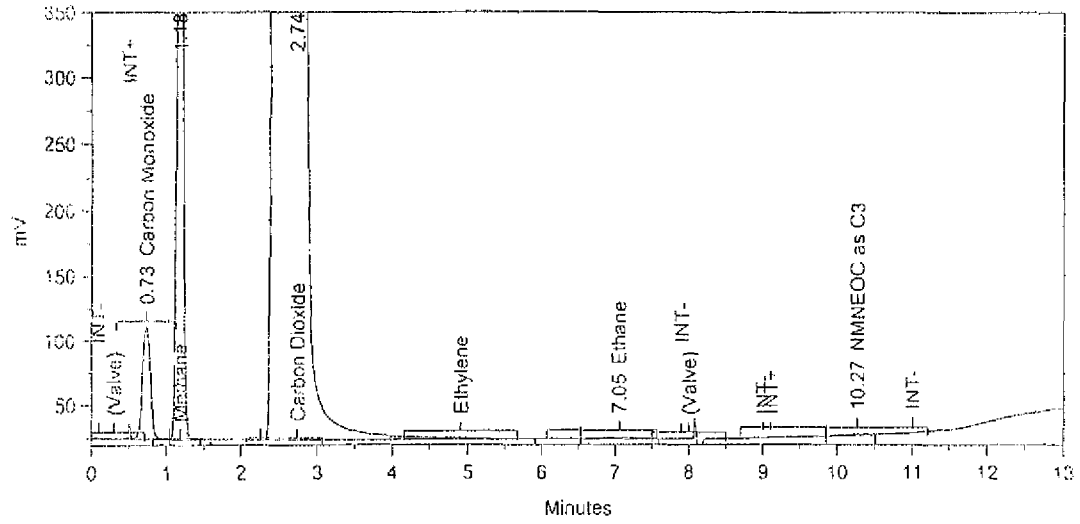
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

Peak	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.698	Carbon Monoxide	19.8776	12.611	121912.7	8.917	BB	0.149	13661.61	12.091
2	1.171	Methane	19.9037	12.628	122136.7	8.933	BB	0.088	23192.19	20.525
3	2.856	Carbon Dioxide	58.9604	37.407	338542.0	24.761	BB	0.175	32330.61	28.613
4	5.064	Ethylene	19.3206	12.258	226670.1	16.579	BB	0.314	12022.12	10.640
5	7.056	Ethane	19.5062	12.375	225611.1	16.501	BB	0.429	8763.79	7.756
6	10.104	NMNEOC as C3	20.0512	12.721	332373.1	24.310	BB	0.241	23023.50	20.376

Total Area = 1567266.0, Total Amount = 157.62, Total Height = 112993.8, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 1 (1 of 2), Tk 78



Sample Name: AIR GAS, ICE 1 (1 of 2), Tk 78
Acquired from Chrom6--Det6A via port 6 on 9/10/13 01:37:10pm by Dr. Kitto

Data File: D:\CPWIN\DATA6\24813-6.16R
Date Stamp: 9/10/13 01:37:10pm
Sequence File: SEP1013A.SEQ #1
Method File. D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

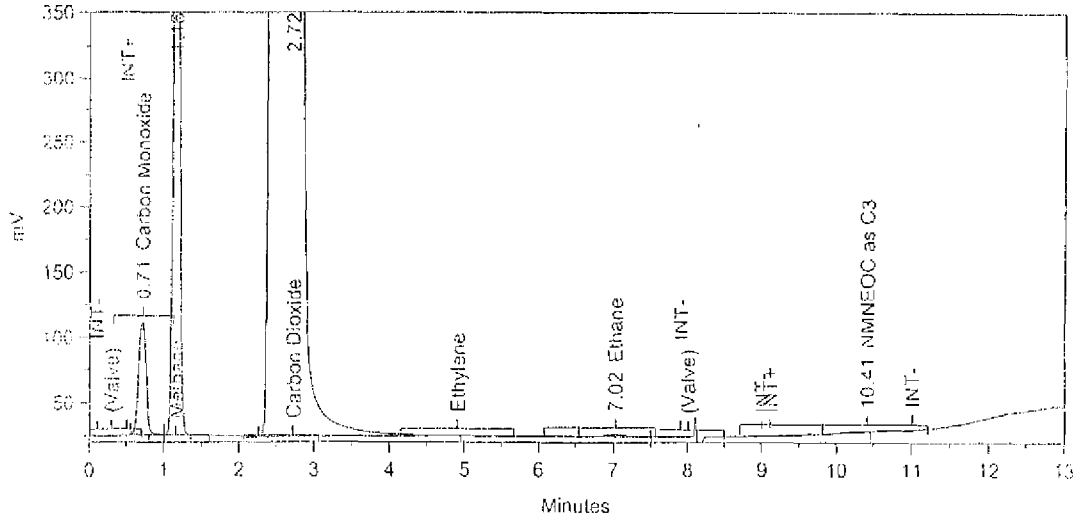
Run Time = 13.64 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.732	Carbon Monoxide	107.3820	1.958	658590.8	2.073	BV	0.128	86009.05	5.052
2	1.179	Methane	543.3873	9.909	3334426.0	10.494	VB	0.084	660558.90	38.798
3	2.758	Carbon Dioxide	4829.0280	88.056	27727590.0	87.266	BB	0.485	953779.10	56.020
5	7.049	Ethane	3.3915	0.062	39226.7	0.123	BB	0.436	1498.42	0.088
7	10.268	NMNEOC as C3	0.8374	0.015	13881.5	0.044	BB	0.315	734.23	0.043

Total Area = 31773720.0, Total Amount = 5484.026, Total Height = 1702580.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 1 (1 of 2), Tk 78 Dup



Sample Name: **AIR GAS, ICE 1 (1 of 2), Tk 78 Dup**
Acquired from Chrom6--Det6A via port 6 on 9/10/13 01:54:55pm by Dr. Kitto

Data File: **D:\CPWIN\DATA6\24813-6.17R**
Date Stamp: 9/10/13 01:54:54pm
Sequence File: SEP1013A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

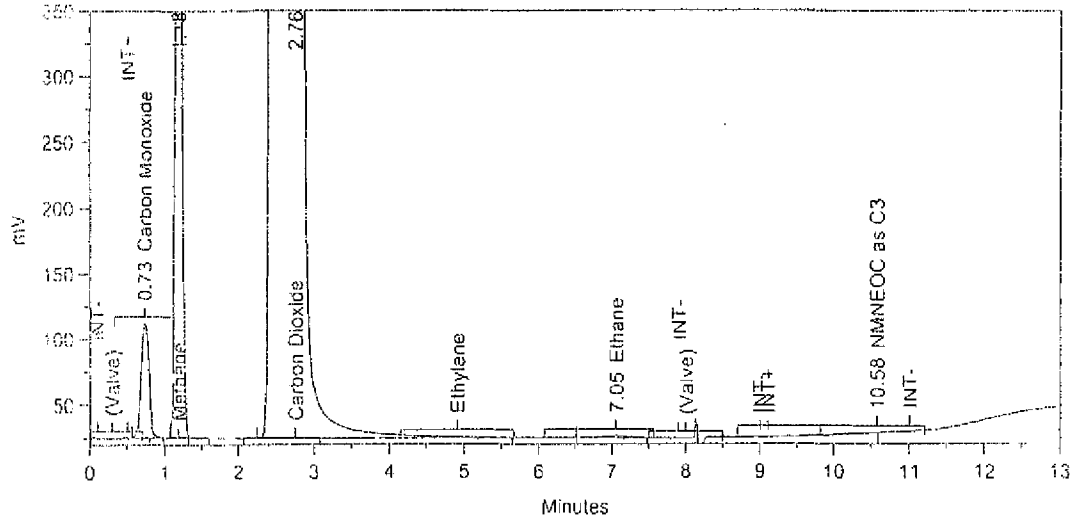
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.715	Carbon Monoxide	105.3064	1.927	645860.7	2.040	BV	0.125	85950.32	5.048
2	1.161	Methane	543.4189	9.945	3334620.0	10.533	VB	0.084	661628.30	38.855
3	2.721	Carbon Dioxide	4811.0530	88.050	27624380.0	87.259	BB	0.483	953458.40	55.993
4	7.020	Ethane	3.4395	0.063	39782.1	0.126	BB	0.425	1561.45	0.092
5	10.409	NMNEOC as C3	0.8055	0.015	13352.7	0.042	BB	1.002	222.14	0.013

Total Area = 31658000.0, Total Amount = 5464.023, Total Height = 1702821.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 1 (2 of 2), Tk 79



Sample Name: AIR GAS, ICE 1 (2 of 2), Tk 79
Acquired from Chrom6--Det6A via port 6 on 9/10/13 02:16:14pm by Dr. Kitto

Data File: D:\CPWIN\DATA6\24813-7.18R
Date Stamp: 9/10/13 02:16:14pm
Sequence File: SEP1013A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

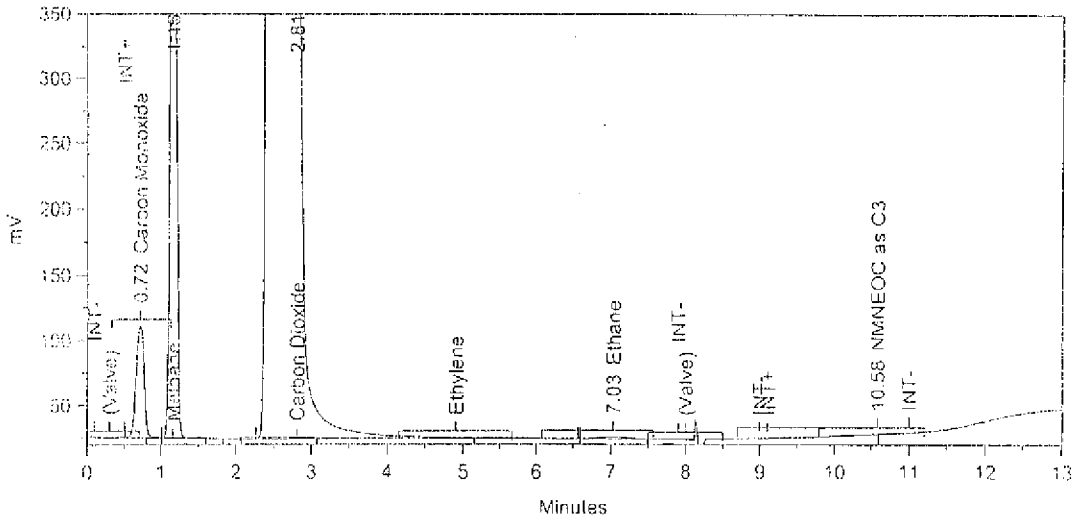
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.734	Carbon Monoxide	107.6043	1.935	659954.3	2.047	BB	0.127	86456.04	4.945
2	1.184	Methane	581.6006	10.456	3568917.0	11.071	BB	0.084	706932.20	40.438
3	2.757	Carbon Dioxide	4868.8980	87.536	27956520.0	86.723	BB	0.489	953159.30	54.523
5	7.053	Ethane	3.3207	0.060	38407.7	0.119	BB	0.407	1570.89	0.090
6	10.575	NMNEOC as C3	0.7645	0.014	12672.0	0.039	BB	2.914	72.48	0.004

Total Area = 32236470.0, Total Amount = 5562.188, Total Height = 1748191.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 1 (2 of 2), Tk 79 Dup



Sample Name: AIR GAS, ICE 1 (2 of 2), Tk 79 Dup
Acquired from Chrom6--Det6A via port 6 on 9/10/13 02:35:40pm by Dr. Kitto

Data File: D:\CPWIN\DATA6\24813-7.19R
Date Stamp: 9/10/13 02:35:40pm
Sequence File: SEP1013A.SEQ #1
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

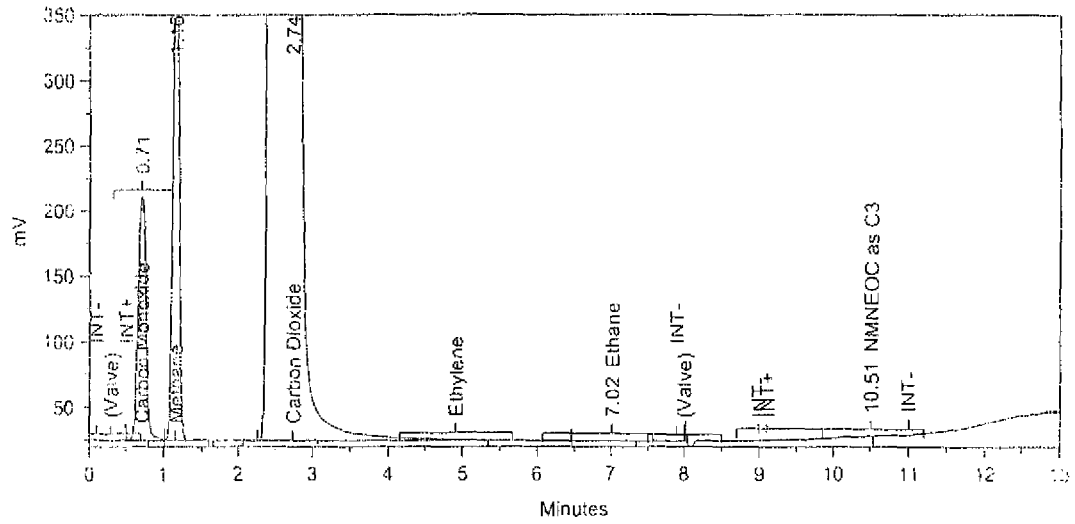
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.717	Carbon Monoxide	107.4115	1.942	658771.6	2.056	BV	0.128	85802.27	4.940
2	1.164	Methane	574.5137	10.389	3525429.0	11.001	VB	0.084	696098.20	40.080
3	2.811	Carbon Dioxide	4844.0520	87.597	27813860.0	86.788	BB	0.486	953274.80	54.887
5	7.030	Ethane	5.2224	0.058	37270.2	0.116	BB	0.406	1531.75	0.088
6	10.582	NMNEOC as C3	0.7562	0.014	12535.0	0.039	BB	2.710	77.08	0.004

Total Area = 32047860.0, Total Amount = 5529.956, Total Height = 1736784.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 2 (1 of 2), Tk 90



Sample Name: **AIR GAS, ICE 2 (1 of 2), Tk 90**
Acquired from Chrom6--Det6A via port 6 on 9/10/13 03:01:24pm by Dr. Kitto

Data File: **D:\CPWIN\DATA6\24813-8.20R**
Date Stamp: 9/10/13 03:01:24pm
Sequence File: SEP1013A.SEQ #2
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

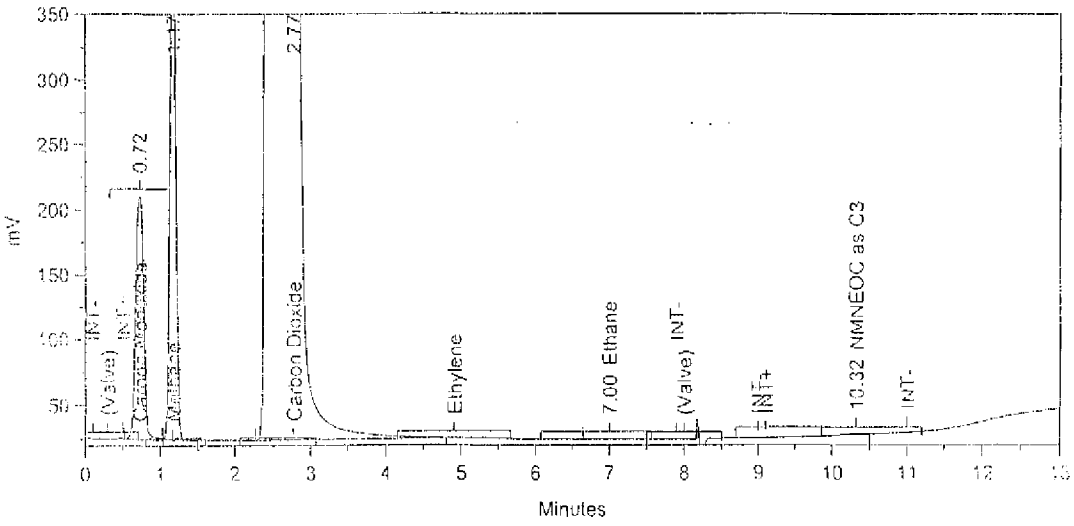
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.714	Carbon Monoxide	233.5734	4.270	1432542.0	4.524	BV	0.128	186133.50	11.699
2	1.163	Methane	373.4747	6.827	2291779.0	7.238	VB	0.085	450944.70	28.344
3	2.741	Carbon Dioxide	4861.8850	88.874	27916260.0	88.169	BB	0.488	953368.20	59.923
5	7.017	Ethane	0.8736	0.016	10104.5	0.032	BB	0.426	395.22	0.025
6	10.505	NMNEOC as C3	0.7044	0.013	11676.7	0.037	BB	1.269	153.34	0.010

Total Area = 31662360.0, Total Amount = 5470.512, Total Height = 1590995.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 2 (1 of 2), Tk 90 Dup



Sample Name: AIR GAS, ICE 2 (1 of 2), Tk 90 Dup
Acquired from Chrom6--Det6A via port 6 on 9/10/13 03:18:51pm by Dr. Kitto

Data File: D:\CPWIN\DATA6\24813-8.21R
Date Stamp: 9/10/13 03:18:50pm
Sequence File: SEP1013A.SEQ #2
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

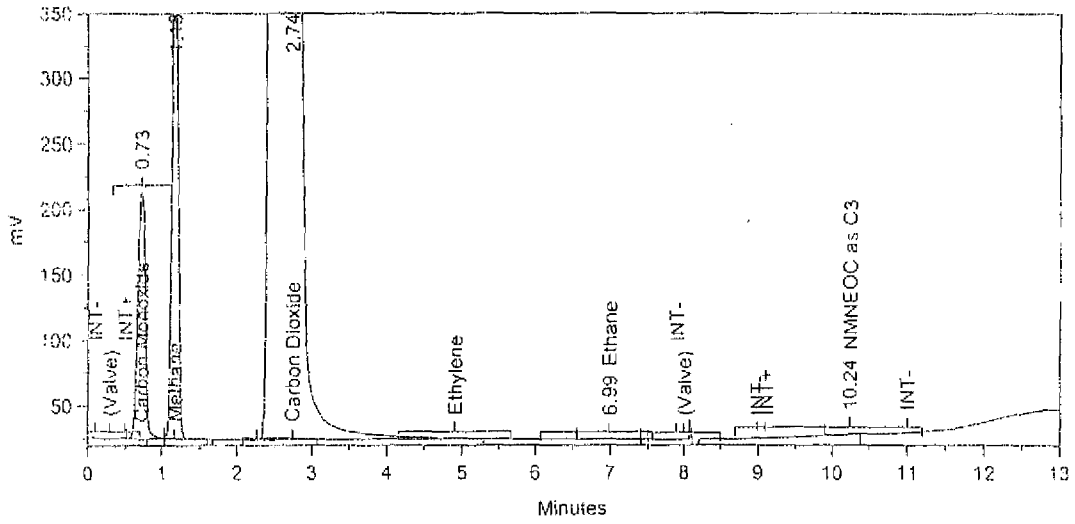
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.723	Carbon Monoxide	232.5233	4.259	1426102.0	4.513	BV	0.128	186027.70	11.690
2	1.173	Methane	371.4619	6.804	2279428.0	7.214	VB	0.084	450728.50	28.323
3	2.774	Carbon Dioxide	4854.0360	88.909	27871190.0	88.206	BB	0.487	953642.70	59.926
4	6.998	Ethane	0.8403	0.015	9718.5	0.031	BB	0.417	388.08	0.024
5	10.316	NMNEOC as C3	0.6835	0.013	11330.4	0.036	BB	0.328	576.60	0.036

Total Area = 31597760.0, Total Amount = 5459.545, Total Height = 1591364.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 2 (2 of 2), Tk 91



Sample Name: **AIR GAS, ICE 2 (2 of 2), Tk 91**
Acquired from Chrom6--Det6A via port 6 on 9/10/13 03:36:22pm by Dr. Kitto

Data File: **D:\CPWIN\DATA6\24813-9.22R**
Date Stamp: 9/10/13 03:36:22pm
Sequence File: SEP1013A.SEQ #2
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

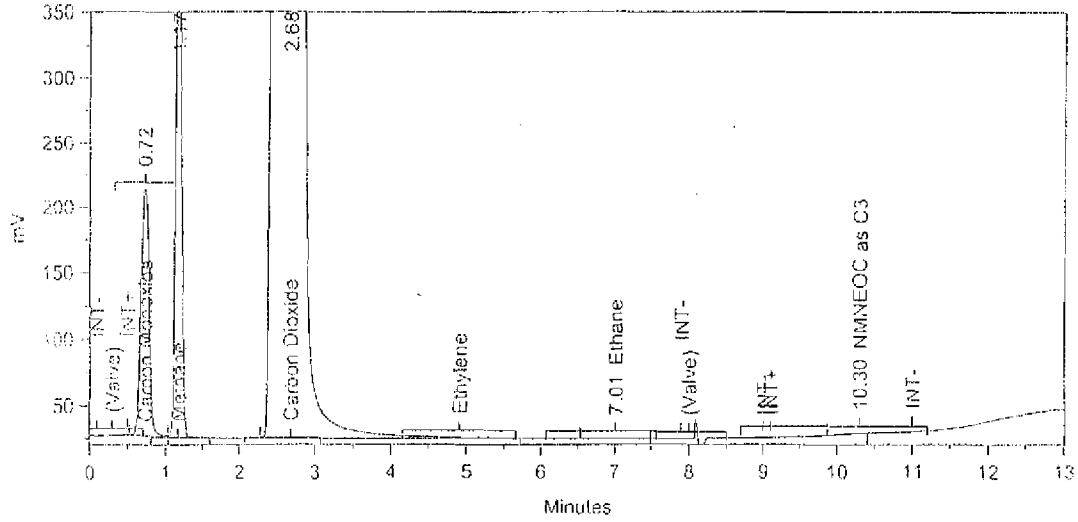
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.726	Carbon Monoxide	233.0342	4.288	1429235.0	4.545	BV	0.126	188411.10	11.919
2	1.175	Methane	359.9113	6.623	2208549.0	7.023	VB	0.084	437563.80	27.681
3	2.738	Carbon Dioxide	4839.8050	89.062	27789470.0	88.369	BB	0.486	953660.50	60.331
4	6.987	Ethane	0.8497	0.016	9827.5	0.031	BB	0.382	428.89	0.027
6	10.238	NMNEOC as C3	0.6090	0.011	10094.6	0.032	BB	0.359	648.95	0.041

Total Area = 31447180.0, Total Amount = 5434.208, Total Height = 1580713.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

AIR GAS, ICE 2 (2 of 2), Tk 91 Dup



Sample Name: **AIR GAS, ICE 2 (2 of 2), Tk 91 Dup**
Acquired from Chrom6--Det6A via port 6 on 9/10/13 03:54:16pm by Dr. Kitto

Data File: **D:\CPWIN\DATA6\24813-9.23R**
Date Stamp: 9/10/13 03:54:16pm
Sequence File: SEP1013A.SEQ #2
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3, Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3, Date Stamp: 7/13/12 04:27:18pm

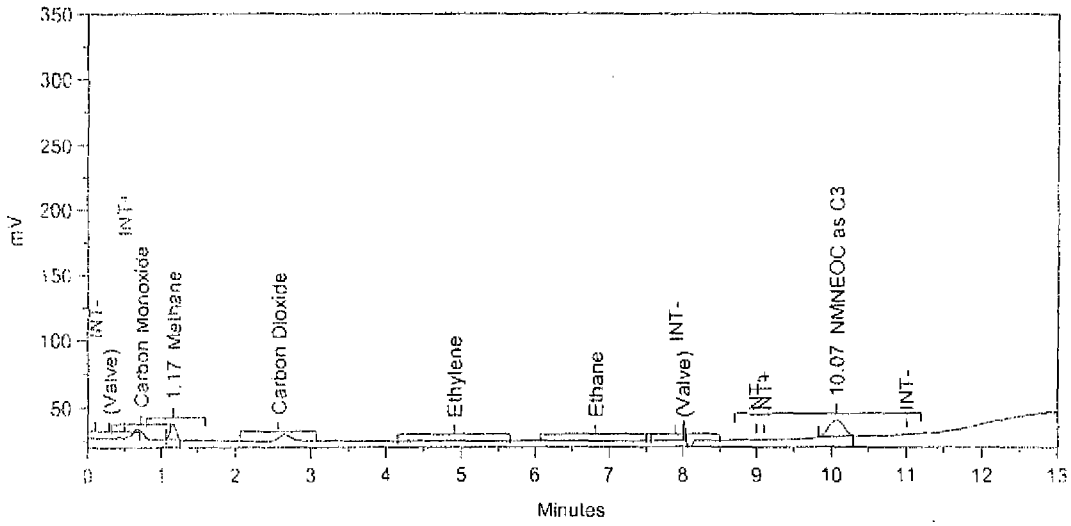
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.723	Carbon Monoxide	231.2386	4.262	1418223.0	4.517	BV	0.126	187710.30	11.896
2	1.173	Methane	357.9359	6.597	2196427.0	6.995	VB	0.084	436071.60	27.636
3	2.676	Carbon Dioxide	4835.4490	89.115	27764460.0	88.423	BB	0.485	953265.40	60.413
4	7.012	Ethane	0.8511	0.016	9844.4	0.031	BB	0.415	394.92	0.025
5	10.302	NMNEOC as C3	0.6230	0.012	10491.9	0.033	BB	0.369	473.63	0.030

Total Area = 31399450.0, Total Amount = 5426.107, Total Height = 1577916.0, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

CCV 10 PPMV STD



Sample Name: **CCV 10 PPMV STD**
Acquired from Chrom6--Det6A via port 6 on 9/10/13 06:06:09pm by Dr. Kitto

Data File: **D:\CPWIN\DATA6\SEP1013S.30R**
Date Stamp: 9/10/13 06:06:08pm
Sequence File: SEP1013A.SEQ #3
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

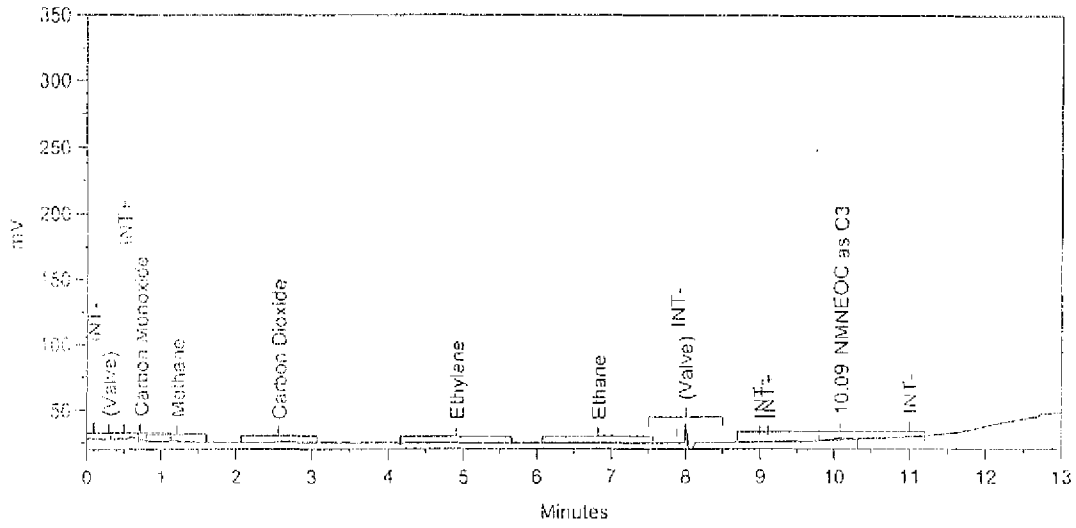
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
2	1.166	Methane	10.0575	49.946	61716.8	26.975	BB	0.089	11614.00	48.757
3	10.070	NMNEOC as C3	10.0794	50.054	167078.5	73.025	BB	0.228	12206.37	51.243

Total Area = 228795.3, Total Amount = 20.137, Total Height = 23820.36, Sample Units = ppmv @C3
* Some peaks have been manually integrated,

1.0 PPMV STD Backflush



Sample Name: **1.0 PPMV STD Backflush**
Acquired from Chrom6--Det6A via port 6 on 9/10/13 06:23:38pm by Dr. Kitto

Data File: D:\CPWIN\DATA6\SEP1013S.31R
Date Stamp: 9/10/13 06:23:38pm
Sequence File: SEP1013A.SEQ #3
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

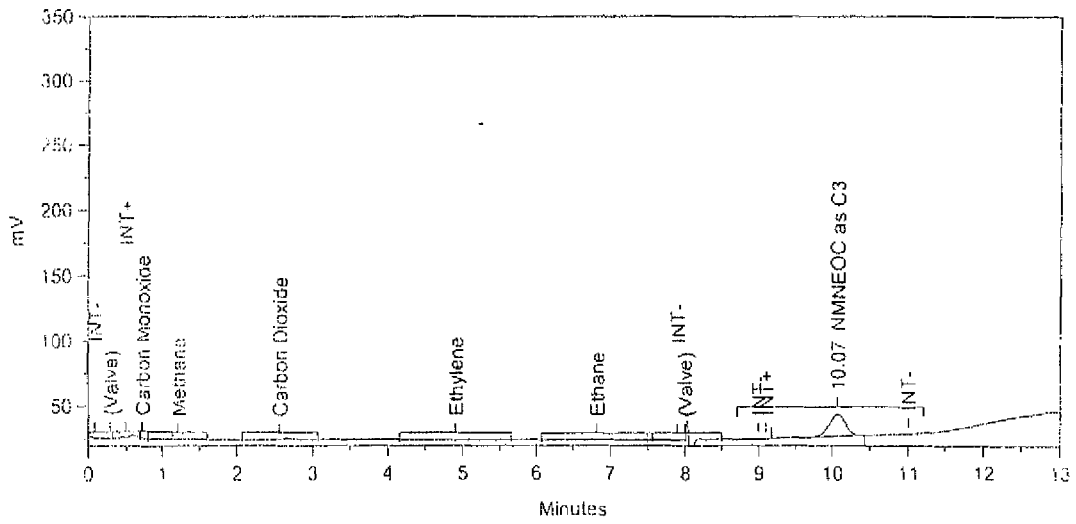
Run Time = 13.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	10.094	NMNEOC as C3	1.0098	100.000	16738.5	100.000	BB	0.260	1074.75	100.000

Total Area = 16738.5, Total Amount = 1.01, Total Height = 1074.75, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

LCS STD



Sample Name: LCS STD
Acquired from Chrom6--Det6A via port 6 on 9/10/13 06:39:35pm by Dr. Kitto

Data File: D:\CPWIN\DATA6\SEP1013S.32R
Date Stamp: 9/10/13 06:39:34pm
Sequence File: SEP1013A.SEQ #3
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

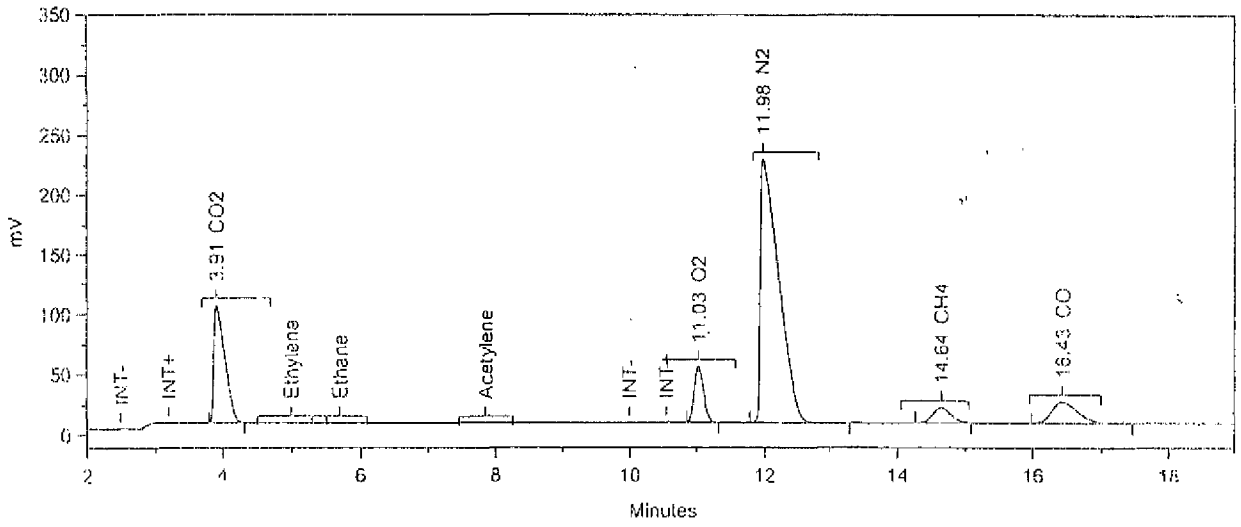
Run Time = 13.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	10.073	NMNEOC as C3	15.7949	100.000	261818.9	100.000	BB	0.256	17074.50	100.000

Total Area = 261818.9, Total Amount = 15.795, Total Height = 17074.5, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

TCD STD



Sample Name: TCD STD
Acquired from HHV/BTU--TCD via port 8 on 9/5/13 12:34:28pm by Dr. Kitto

Data File: D:\CPWIN\DATA8\SEP0513S.07R
Date Stamp: 9/5/13 12:34:28pm
Sequence File: SEP0513.SEQ #7
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

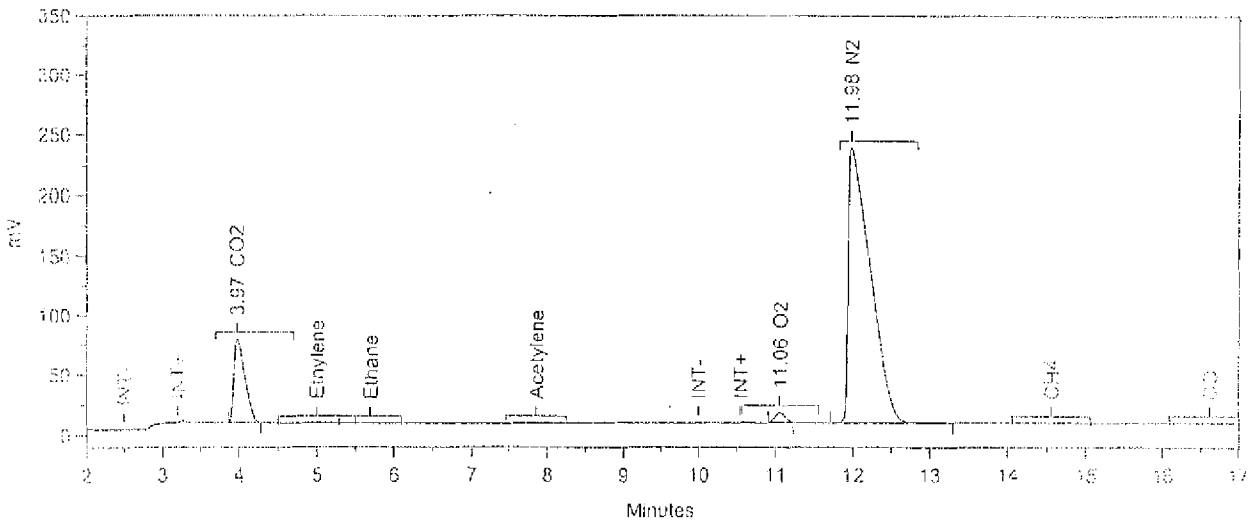
Run Time = 19.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.914	CO2	15.2613	15.197	1079719.0	16.610	BB	0.185	97396.73	24.675
2	11.031	O2	7.1433	7.113	441832.7	6.797	BB	0.159	46295.95	11.729
3	11.984	N2	66.4339	66.154	4269215.0	65.674	BB	0.323	220587.20	55.884
4	14.644	CH4	4.5771	4.558	240228.0	3.695	BB	0.314	12742.01	3.228
5	16.434	CO	7.0071	6.978	469576.7	7.224	BB	0.442	17701.72	4.485

Total Area = 6500571.0, Total Amount = 100.423, Total Height = 394723.6, Sample Units = Mole %
* Some peaks have been manually integrated.

AIR GAS, Tank 1of2 #78



Sample Name: AIR GAS, Tank 1of2 #78
Acquired from HHV/BTU--TCD via port 8 on 9/5/13 02:33:59pm by Dr. Kitto

Data File: D:\CPWIN\DATA8\24813-6.00R
Date Stamp: 9/5/13 02:33:58pm
Sequence File: SEP0513.SEQ #9
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

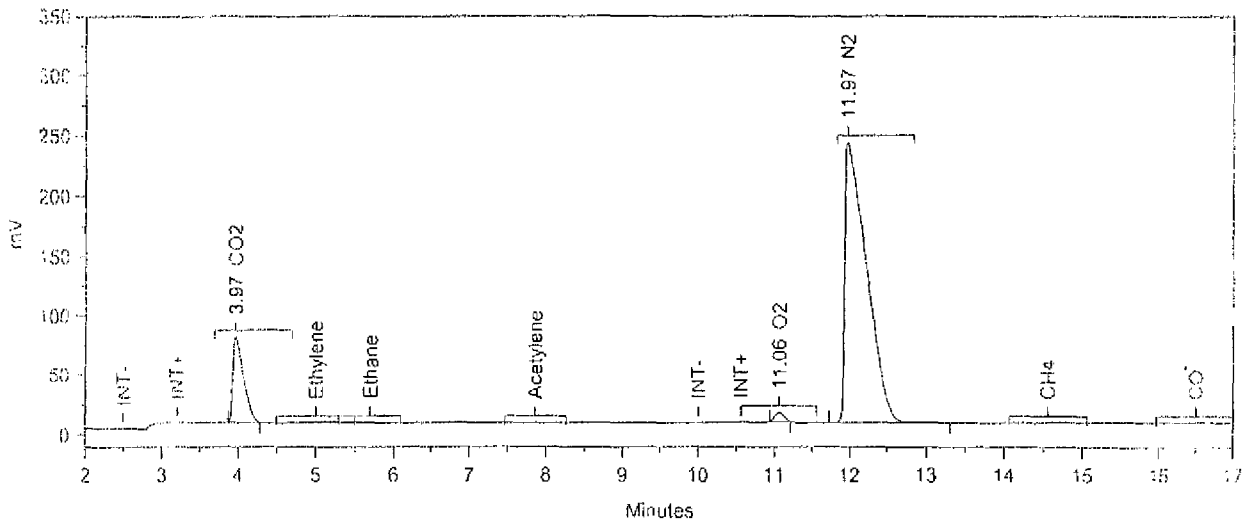
Run Time = 17.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PSA	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.973	CO2	9.5562	11.843	676089.3	12.891	BB	0.162	69669.47	22.678
2	11.063	O2	1.1749	1.456	72668.0	1.386	BB	0.148	8199.57	2.669
3	11.980	N2	69.9599	86.701	4495806.0	85.723	BB	0.327	229338.40	74.653

Total Area = 5244564.0, Total Amount = 80.691, Total Height = 307207.4, Sample Units = Mole %
* Some peaks have been manually integrated.

AIR GAS, Tank 2of2 #79



Sample Name: AIR GAS, Tank 2of2 #79
Acquired from HHV/BTU--TCD via port 8 on 9/5/13 02:53:26pm by Dr. Kitto

Data File: D:\CPWIN\DATA8\24813-7.00R
Date Stamp: 9/5/13 02:53:26pm
Sequence File: SEP0513.SEQ #10
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

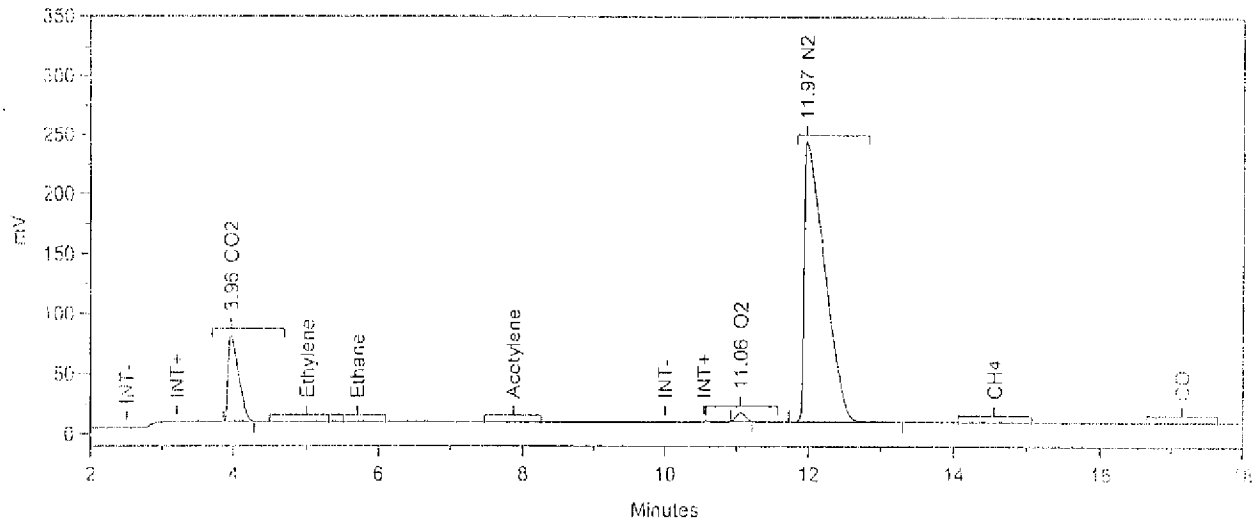
Run Time = 17.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.968	CO2	9.8782	11.895	698866.1	12.946	BB	0.163	71578.92	22.872
2	11.058	O2	1.0174	1.225	62928.3	1.166	BB	0.144	7302.68	2.333
3	11.971	N2	72.1525	86.880	4636710.0	85.889	BB	0.330	234078.00	74.795

Total Area = 5398505.0, Total Amount = 83.048, Total Height = 312959.6, Sample Units = Mole %
* Some peaks have been manually integrated.

AIR GAS, Tank 1of2 #90



Sample Name: AIR GAS, Tank 1of2 #90
Acquired from HHV/BTU--TCD via port 8 on 9/5/13 03:12:41pm by Dr. Kitto

Data File: D:\CPWIN\DATA8\24813-8.11R
Date Stamp: 9/5/13 03:12:40pm
Sequence File: SEP0513.SEQ #11
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23, Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2, Date Stamp: 7/9/13 12:45:02pm

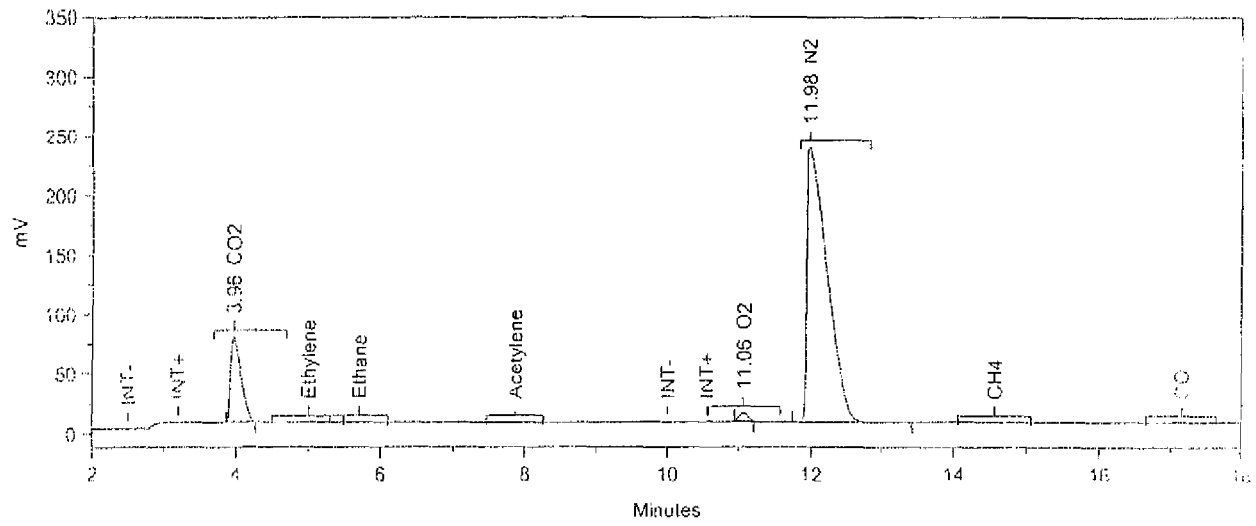
Run Time = 18.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.964	CO2	9.9479	11.979	703798.8	13.036	BB	0.163	71914.77	22.980
2	11.057	O2	1.0219	1.231	63205.3	1.171	BB	0.147	7184.31	2.296
3	11.970	N2	72.0754	86.791	4631752.0	85.793	BB	0.330	233840.80	74.724

Total Area = 5398756.0, Total Amount = 83.045, Total Height = 312939.9, Sample Units = Mole %
* Some peaks have been manually integrated.

AIR GAS, Tank 2of2 #91



Sample Name: **AIR GAS, Tank 2of2 #91**
Acquired from HHV/BTU--TCD via port 8 on 9/5/13 03:31:31pm by Dr. Kitto

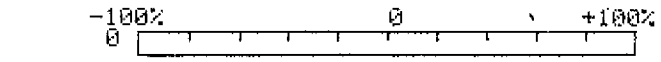
Data File: D:\CPWIN\DATA8\24813-9.12R
Date Stamp: 9/5/13 03:31:30pm
Sequence File: SEP0513.SEQ #12
Method File: D:\CPWIN\DATA8\TCD0108.MET
Version 23. Date Stamp: 8/16/13 01:19:48pm
Calibration File: D:\CPWIN\DATA8\TCD0713.CAL
Version 2. Date Stamp: 7/9/13 12:45:02pm

Run Time = 18.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.15 min. Peak Threshold = .1 Area Reject = 1000
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	3.964	CO2	9.7414	11.978	689192.6	13.035	BB	0.162	70960.47	23.005
3	11.064	O2	0.9456	1.163	58490.7	1.106	BB	0.144	6766.01	2.193
4	11.977	N2	70.6384	86.859	4539406.0	85.858	BB	0.328	230736.80	74.802

Total Area = 5287090.0, Total Amount = 81.325, Total Height = 308463.2, Sample Units = Mole %
* Some peaks have been manually integrated.



TIME[min]

RANGE : x5
[READY]
TC FURNACE TEMP : OK 697°C
DEHUMIDIFIER TEMP : OK 1.1°C
BASELINE POSITION : OK
BASELINE FLUCTUATION: OK
BASELINE NOISE : OK

DATE 09(SEP)-06-2013 07:03

SAMPLE# 100 TC BLANK-ICB
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1-	368	0.515			
2	277	0.388			
3	0	0.000			
4	0	0.000			
5	0	0.000			
MN	69	0.097			
SD	138	0.194			
CV	200 %				

COR CONC DIL 0.097 [x 1.0]
COR CONC INJ 0.097 [x 1.0]

DATE 09(SEP)-06-2013 07:17

SAMPLE# 100 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	0	0.000			
2	0	0.000			
3	0	0.000			
4	0	0.000			
MN	0	0.000			
SD	0	0.000			
CV	0.00 %				

COR CONC DIL 0.000 [x 1.0]
COR CONC INJ 0.000 [x 1.0]

SAMPLE# 100 TOC(TC-IC) 0.097 PPM ✓

DATE 09(SEP)-06-2013 07:28

ICV- 10 ppm STD

```
SAMPLE#  10   TC
 [x 5,  100µl, C#  1, #WASH 3, SP  0min]
    #  AREA PPM      C#  µl RG
    1  7320  10.25
    2  7413  10.38
    3  7407  10.37
   - - - - - - - - - - - - - -
   MN  7380  10.33
   SD    52  0.073
   CV  0.70 %
   COR CONC DIL  10.33 [x 1.0]
   COR CONC INJ  10.33 [x 1.0]

        DATE  09(SEP)-06-2013  07:37


SAMPLE#  10   IC
 [x 5,  100µl, C#  3, #WASH 3, SP  0min]
    #  AREA PPM      C#  µl RG
    1     0  0.000
    2     0  0.000
    3     0  0.000
   - - - - - - - - - - - - - -
   MN     0  0.000
   SD     0  0.000
   CV  0.00 %
   COR CONC DIL  0.000 [x 1.0]
   COR CONC INJ  0.000 [x 1.0]

SAMPLE#  10   TOC(TC-IC)    10.33 PPM

        DATE  09(SEP)-06-2013  07:45
```

#14 SAMPLE# 14 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	21595	30.25			
2	21548	30.18			
3	21152	29.63			
MN	21431	30.02			
SD	243	0.341			
CV	1.13 %				

COR CONC DIL 60.05 [x 2.0]
COR CONC INJ 60.05 [x 1.0]

DATE 09(SEP)-06-2013 08:34

SAMPLE# 14 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	19377	27.19			
2	19536	27.41			
3	19297	27.08			
MN	19403	27.23			
SD	121	0.170			
CV	0.62 %				

COR CONC DIL 54.46 [x 2.0]
COR CONC INJ 54.46 [x 1.0]

SAMPLE# 14 TOC(TC-IC) 5.590 PPM ✓

DATE 09(SEP)-06-2013 08:42

#15 AIR-GAS 13-626

SAMPLE# 15 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	31754	44.48			
2	31127	43.61			
3	29983	42.00			
MN	30954	43.36			
SD	897	1.258			
CV	2.90 %				

COR CONC DIL 86.73 [x 2.0]
COR CONC INJ 86.73 [x 1.0]

DATE 09(SEP)-06-2013 08:17

SAMPLE# 15 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	29236	41.03			
2	28722	40.31			
3	28220	39.60			
MN	28726	40.31			
SD	508	0.713			
CV	1.76 %				

COR CONC DIL 80.63 [x 2.0]
COR CONC INJ 80.63 [x 1.0]

SAMPLE# 15 TOC(TC-IC) 6.100 ppm ✓

DATE 09(SEP)-06-2013 08:25

#16

SAMPLE# 16 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	43871	61.46			
2	42334	59.31			
3	42227	59.16			
MN	42810	59.98			
SD	919	1.288			
CV	2.14 %				

COR CONC DIL 119.9 [x 2.0]
COR CONC INJ 119.9 [x 1.0]

DATE 09(SEP)-06-2013 08:51

SAMPLE# 16 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	42374	59.47			
2	41637	58.43			
3	40801	57.26			
MN	41604	58.39			
SD	787	1.104			
CV	1.89 %				

COR CONC DIL 116.7 [x 2.0]
COR CONC INJ 116.7 [x 1.0]

SAMPLE# 16 TOC(TC-IC) 3.200 ppm ✓

DATE 09(SEP)-06-2013 09:03

SAMPLE# 17 TC
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	41292	57.85			
2	40402	56.60			
3	39839	55.81			
MN	40511	56.75			
SD	732	1.026			
CV	1.80 %				

COR CONC DIL 113.5 [x 2.0]
COR CONC INJ 113.5 [x 1.0]

DATE 09(SEP)-06-2013 09:12

SAMPLE# 17 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	40105	56.28			
2	39565	55.52			
3	38915	54.61			
MN	39528	55.47			
SD	595	0.836			
CV	1.50 %				

COR CONC DIL 110.9 [x 2.0]
COR CONC INJ 110.9 [x 1.0]

SAMPLE# 17 TOC(TC-IC) 2.600 PPM

DATE 09(SEP)-06-2013 09:20

SAMPLE# 5 TC CCV1. 5 ppm STD
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1	3694	5.175			
2	3625	5.078			
3	3559	4.986			
MN	3626	5.080			
SD	67	0.094			
CV	1.86 %				
COR CONC DIL		5.080 [x 1.0]			
COR CONC INJ		5.080 [x 1.0]			

DATE 09(SEP)-06-2013 13:29

SAMPLE# 5 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	ppm	C#	µl	RG
1-	0	0.000			
2	196	0.275			
3	193	0.270			
4	191	0.268			
MN	193	0.271			
SD	2	0.003			
CV	1.30 %				
COR CONC DIL		0.271 [x 1.0]			
COR CONC INJ		0.271 [x 1.0]			

SAMPLE# 5 TOC(TC-IC) 4.809 ppm ✓

DATE 09(SEP)-06-2013 13:37

SAMPLE# 40 TC CCV2. 40ppm STD
[x 5, 100µl, C# 1, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1	27398	38.38			
2	28045	39.29			
3	28068	39.32			
MN	27837	39.00			
SD	380	0.533			
CV	1.36 %				
COR CONC DIL		39.00 [x 1.0]			
COR CONC INJ		39.00 [x 1.0]			

DATE 09(SEP)-06-2013 14:59

SAMPLE# 40 IC
[x 5, 100µl, C# 3, #WASH 3, SP 0min]

#	AREA	PPM	C#	µl	RG
1-	362	0.508			
2-	600	0.842			
3	545	0.764			
4	490	0.687			
5	440	0.617			
MN	491	0.690			
SD	52	0.073			
CV	10.6 %				
COR CONC DIL		0.690 [x 1.0]			
COR CONC INJ		0.690 [x 1.0]			

SAMPLE# 40 TOC(TC-IC) 38.31 PPM ✓

DATE 09(SEP)-06-2013 15:10

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SCAQMD Method 25.1 / 25.3 Calibration Curve (GC/FID/TCA)

ANALYTE: **Carbon Monoxide** Analysis Date: 7/12/2012 Analyst: AK/AR

Theoretical Concentration (ppmv)	Retention Time (min)	Response Area	Response Area (Mean)	Std Deviation	Theoretical Concentration (ppmv)	C.O.V	Calculated Concentration (From Mean)	Recovery (+/- 10%)
0.00	0.00	0.00						
0.00	0.00	0.00	0.00	0.00	0.00	N/A	0.00	N/A
0.00	0.00	0.00						
9.84	0.73	70895						
9.84	0.73	70934	70610	528	9.84	0.75	10.10	103
9.84	0.73	70001						
19.68	0.72	126363						
19.68	0.75	129792	127875	1750	19.68	1.37	19.95	101
19.68	0.75	127471						
49.20	0.75	301193						
49.20	0.75	306645	305785	4228	49.20	1.38	49.18	100
49.20	0.75	309516						
98.40	0.75	589717						
98.40	0.75	593429	599025	13041	98.40	2.18	97.76	99
98.40	0.75	613930						

Calb. Type Linear **Slope: =** (Y-6775.2)/6037.8 **R^2 Value:** 0.9997 *Must be > 0.990*

Calibration Verification Standards:
Check Standard Concentrations: 9.68 ppmv, 49.2 ppmv, and 98.4 ppmv

CCV	Retention Time	Result (ppmv)	% Recovery
Low 9.68 ppmv	0.73	10.00	102
Mid 49.2 ppmv	0.73	49.4	100
High 98.4 ppmv	0.75	97.1	99

Must be +/- 10 % of Theoretical Concentration

A R 7/16/12
Analyst (Initial & date)

7/16/12
Lab Manager (Initial & date)

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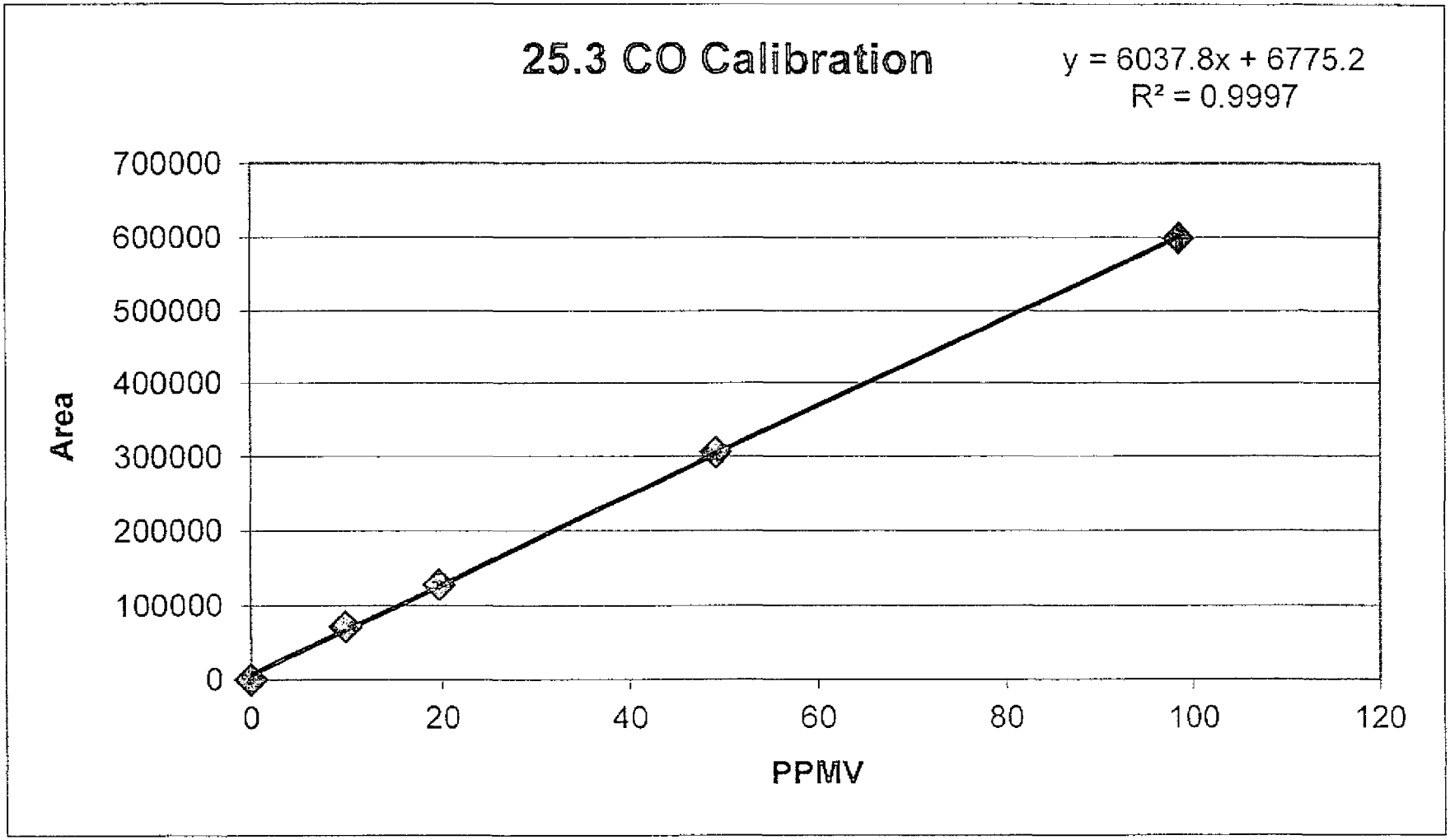

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SCAQMD Method 25.1 / 25.3 Calibration Curve (GC/FID/TCA)

ANALYTE: **Methane** Analysis Date: 7/12/2012 Analyst: AK/AR

Theoretical Concentration (ppmv)	Retention Time (min)	Response Area	Response Area (Mean)	Std Deviation	Theoretical Concentration (ppmv)	C.O.V	Calculated Concentration (From Mean)	Recovery (+/- 10%)
0.00	0.00	0.00						
0.00	0.00	0.00	0.00	0.00	0.00	N/A	**0.00**	N/A
0.00	0.00	0.00						
1.004	1.22	6010						
1.004	1.21	6649	6273	334	1.004	5.33	**1.014**	101
1.004	1.21	6160						
9.680	1.21	60011						
9.680	1.21	63222	61890	1674	9.680	2.70	**9.990**	103
9.680	1.21	62436						
19.36	1.21	126717						
19.36	1.22	122203	124992	2438	19.36	1.95	**19.97**	103
19.36	1.22	126057						
48.40	1.23	307550						
48.40	1.22	303344	299480	10548	48.40	3.52	**48.22**	100
48.40	1.22	287545						
96.80	1.22	581881						
96.80	1.23	584251	591272	14263	96.80	2.41	**95.88**	99
96.80	1.22	607684						

Calb. Type: Linear **Slope: =** (Y-2463)/6100.9 **R^2 Value:** 0.9999 *Must be > 0.990*

Calibration Verification Standards:
Check Standard Concentrations: 9.68 ppmv, 48.4 ppmv, and 96.8 ppmv

CCV	Retention Time	Result (ppmv)	% Recovery
Low 9.68 ppmv	1.21	9.78	101
Mid 48.4 ppmv	1.22	48.6	100
High 96.8 ppmv	1.22	94.8	98

Must be +/- 10 % of Theoretical Concentration

A.R 7/16/12
Analyst (Initial & date)

7/18/12
Lab Manager (Initial & date)

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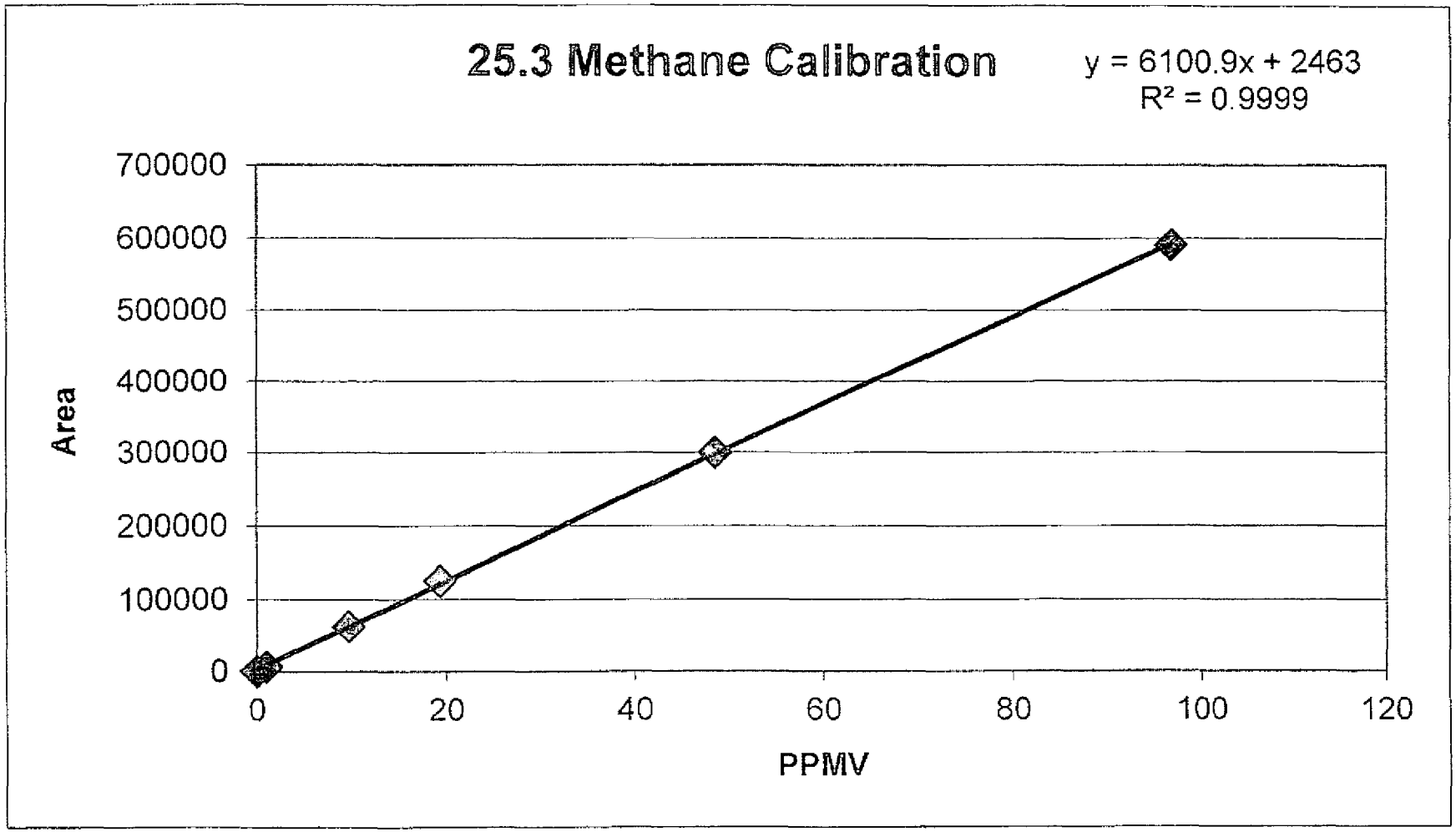

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SCAQMD Method 25.1 / 25.3 Calibration Curve (GC/FID/TCA)

ANALYTE: **Carbon Dioxide** Analysis Date: 7/12/2012 Analyst: AK/AR

Theoretical Concentration (ppmv)	Retention Time (min)	Response Area	Response Area (Mean)	Std Deviation	Theoretical Concentration (ppmv)	C.O.V	Calculated Concentration (From Mean)	Recovery (+/- 10%)
0.00	0.00	0.00						
0.00	0.00	0.00	0.00	0.00	0.00	N/A	**0.00**	N/A
0.00	0.00	0.00						
29.4	2.57	178685						
29.4	2.57	160366	172013	10122	29.4	5.88	**30.0**	102
29.4	2.56	176988						
58.8	2.56	362279						
58.8	2.58	362881	361596	1731	58.8	0.48	**60.2**	102
58.8	2.58	359628						
147	2.58	898256						
147	2.58	868249	864189	36267	147	4.20	**148**	101
147	2.58	826063						
294	2.58	1642801						
294	2.58	1670240	1672923	31550	294	1.89	**292**	99
294	2.58	1705729						

Calb. Type Linear **Slope: =** (Y-12813)/5681.5 **R^2 Value:** 0.9996 *Must be > 0.990*

Calibration Verification Standards:
Check Standard Concentrations: 29.4 ppmv & 294 ppmv

CCV	Retention Time	Result (ppmv)	% Recovery
Low 29.4 ppmv	2.57	29.6	101
High 294 ppmv	2.58	291	99

Must be +/- 10 % of Theoretical Concentration

A.R 7/16/12
Analyst (Initial & date)

7/16/12
Lab Manager (Initial & date)

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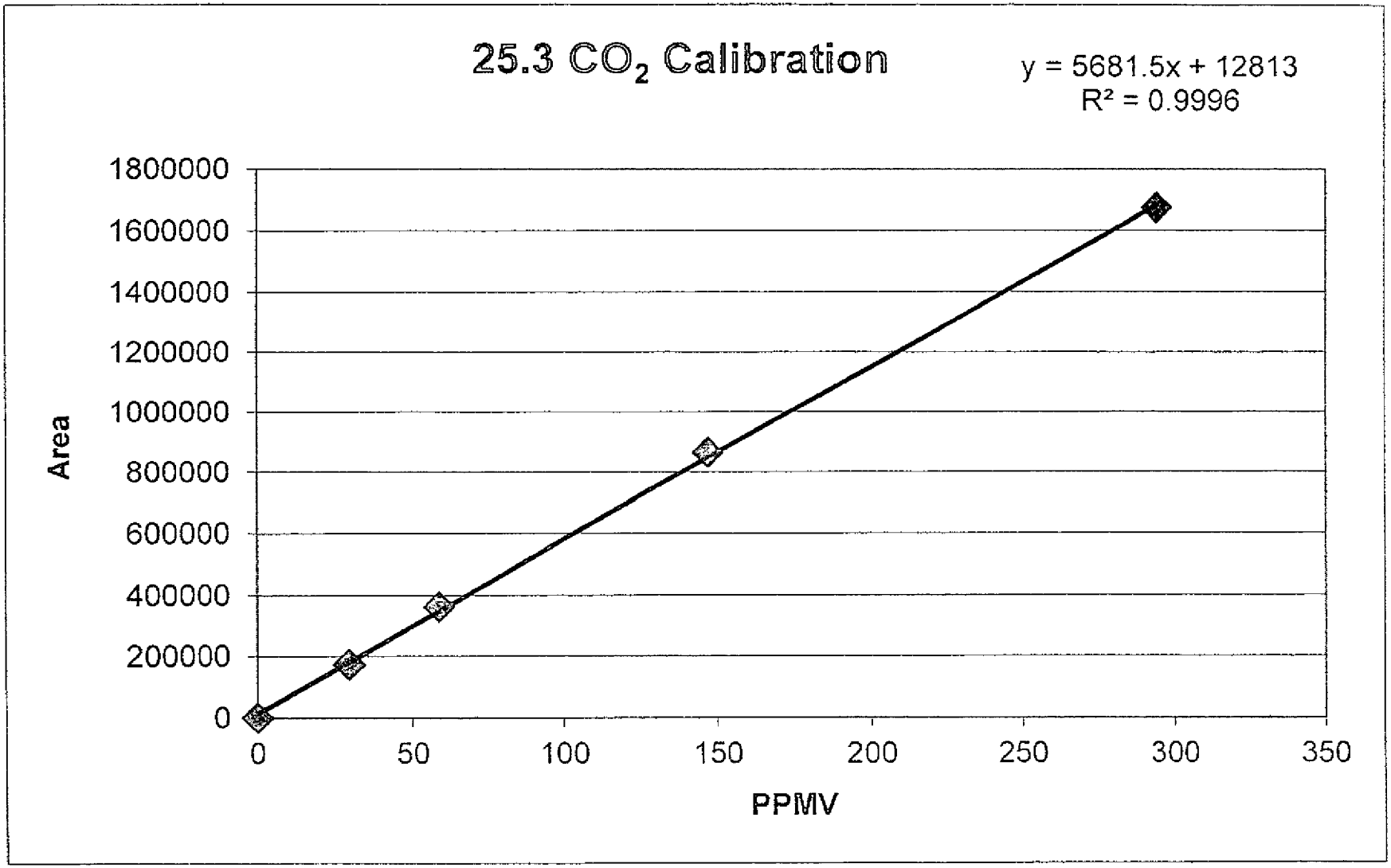

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SCAQMD Method 25.1 / 25.3 Calibration Curve (GC/FID/TCA)

ANALYTE: **Ethylene** Analysis Date: 7/12/2012 Analyst: AK/AR

Theoretical Concentration (ppmv)	Retention Time (min)	Response Area	Response Area (Mean)	Std Deviation	Theoretical Concentration (ppmv)	C.O.V	Calculated Concentration (From Mean)	Recovery (+/- 10%)
0.00	0.00	0.00						
0.00	0.00	0.00	0.00	0.00	0.00	N/A	**0.00**	N/A
0.00	0.00	0.00						
9.70	4.91	116732						
9.70	4.91	109861	116215	6111.9	9.70	5.26	**9.87**	102
9.70	4.89	122052						
19.4	4.90	241680						
19.4	4.91	227987	235897	7090	19.40	3.01	**19.6**	101
19.4	4.91	238023						
48.5	4.91	596701						
48.5	4.91	586850	578930	22787	48.50	3.94	**48.4**	100
48.5	4.90	553240						
97.0	4.91	1116573						
97.0	4.91	1130711	1131147	14797	97.00	1.31	**96.6**	100
97.0	4.91	1146157						

Calb. Type Linear **Slope: =** (Y-5491.5)/11654 **R^2 Value:** 0.9998 *Must be > 0.990*

Calibration Verification Standards:
Check Standard Concentrations: 9.70 ppmv, 48.5 ppmv & 97.0 ppmv

CCV	Retention Time	Result (ppmv)	% Recovery
Low 9.70 ppmv	4.91	9.52	98
Mid 48.5 ppmv	4.91	48.6	100
High 97.0 ppmv	4.91	95.5	98

Must be +/- 10 % of Theoretical Concentration

A R 7/16/12
Analyst (Initial & date)

7/16/12
Lab Manager (Initial & date)

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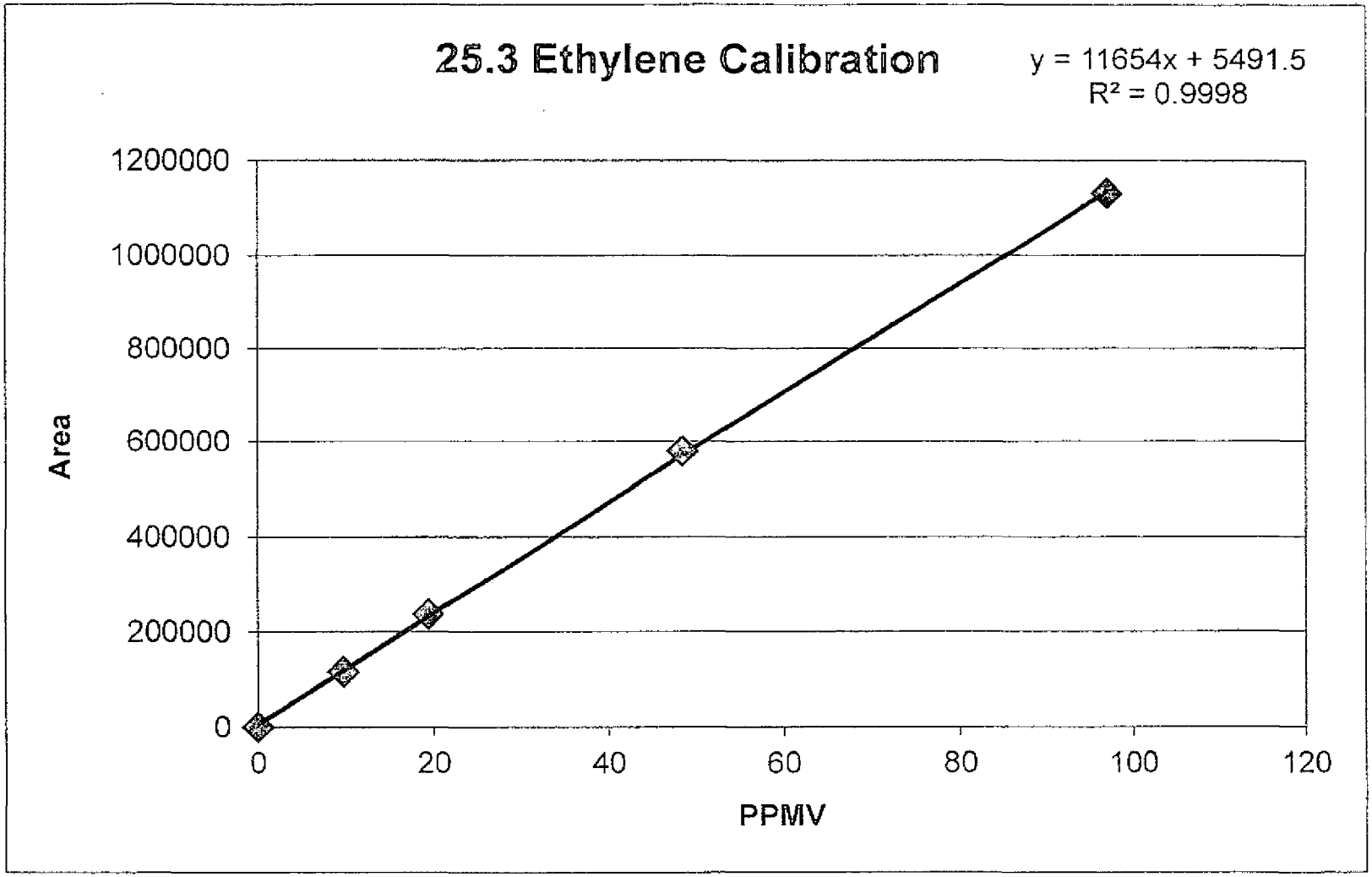

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SCAQMD Method 25.1 / 25.3 Calibration Curve (GC/FID/TCA)

ANALYTE: **Ethane** Analysis Date: 7/12/2012 Analyst: AK/AR

Theoretical Concentration (ppmv)	Retention Time (min)	Response Area	Response Area (Mean)	Std Deviation	Theoretical Concentration (ppmv)	C.O.V	Calculated Concentration (From Mean)	Recovery (+/- 10%)
0.00	0.00	0.00						
0.00	0.00	0.00	0.00	0.00	0.00	N/A	**0.00**	N/A
0.00	0.00	0.00						
9.87	6.83	119921						
9.87	6.85	108222	115327	6241	9.87	5.41	**10.02**	102
9.87	6.81	117838						
19.74	6.81	238607						
19.74	6.83	226141	233163	6381	19.74	2.74	**20.07**	102
19.74	6.82	234742						
49.35	6.83	587522						
49.35	6.82	582212	572106	22261	49.35	3.89	**49.58**	100
49.35	6.83	546585						
98.70	6.83	1126947						
98.70	6.82	1136874	1139830	14587	98.70	1.28	**99.08**	100
98.70	6.83	1155668						

Calb. Type Linear **Slope: =** (Y-2229.3)/11535 **R^2 Value:** 1 *Must be > 0.990*

Calibration Verification Standards:
Check Standard Concentrations: 9.87 ppmv, 49.35 ppmv & 98.70 ppmv

CCV	Retention Time	Result (ppmv)	% Recovery
Low 9.87 ppmv	6.84	9.96	101
Mid 49.35 ppmv	6.83	49.85	101
High 98.70 ppmv	6.83	98.6	100

Must be +/- 10 % of Theoretical Concentration

A-R 7/16/12
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7/16/12
Lab Manager (Initial & date)

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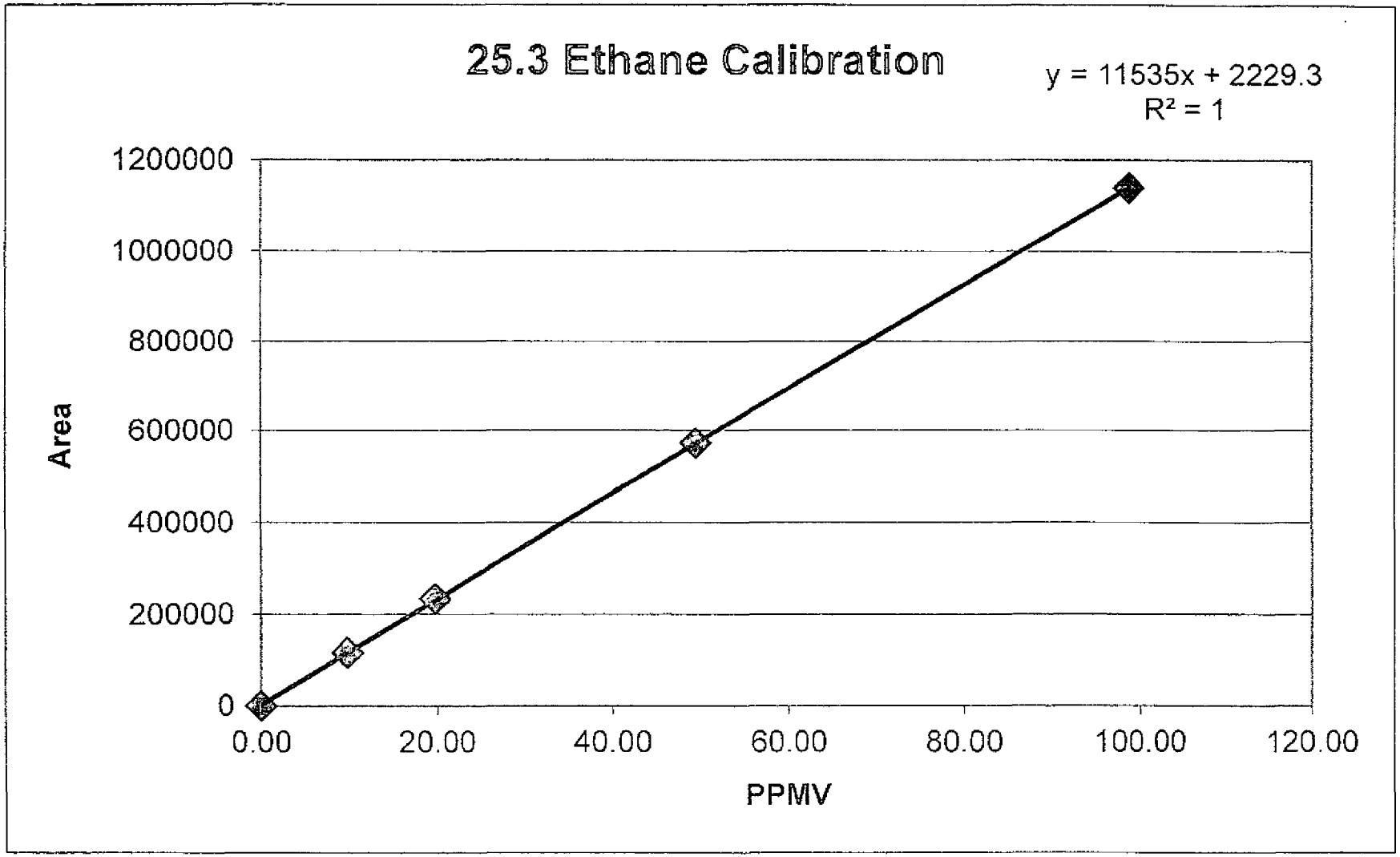

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SCAQMD Method 25.1 / 25.3 Calibration Curve (GC/FID/TCA)

ANALYTE: **NMNEOC** Analysis Date: 7/12/2012 Analyst: AK/JM

Theoretical Concentration (ppmv)	Retention Time (min)	Response Area	Response Area (Mean)	Std Deviation	Theoretical Concentration (ppmv)	C.O.V	Calculated Concentration (From Mean)	Recovery (+/- 10%)
0.00	0.00	0.00						
0.00	0.00	0.00	0.00	0.00	0.00	N/A	**0.00**	N/A
0.00	0.00	0.00						
1.004	10.01	12349						
1.004	10.10	13583	12728	742.04	1.004	5.83	**1.012**	101
1.004	10.13	12252						
9.980	10.00	164519						
9.980	9.99	154178	161625	6502	9.980	4.02	**10.05**	101
9.980	9.94	166178						
19.96	9.94	346983						
19.96	9.97	330285	338494	8353	19.96	2.47	**20.18**	101
19.96	9.97	338214						
49.90	9.96	858799						
49.90	9.97	843040	834031	30294	49.90	3.63	**49.80**	100
49.90	9.93	800254						
99.80	9.96	1625975						
99.80	9.93	1638435	1649758	31034	99.80	1.88	**99.83**	100
99.80	9.93	1684863						

Calb. Type Linear **Slope:** = (Y-664.5)/16567 **R2 Value:** 0.9999 *Must be > 0.990*

Calibration Verification Standards:
Check Standard Concentrations: 9.98 ppmv, 49.9 ppmv, and 99.8 ppmv

CCV	Retention Time	Result (ppmv)	% Recovery
Low 9.98 ppmv	9.99	10.1	101
Mid 49.9 ppmv	9.96	50.2	101
High 99.8 ppmv	9.96	99	100

Must be +/- 10 % of Theoretical Concentration

A-R 7/16/12
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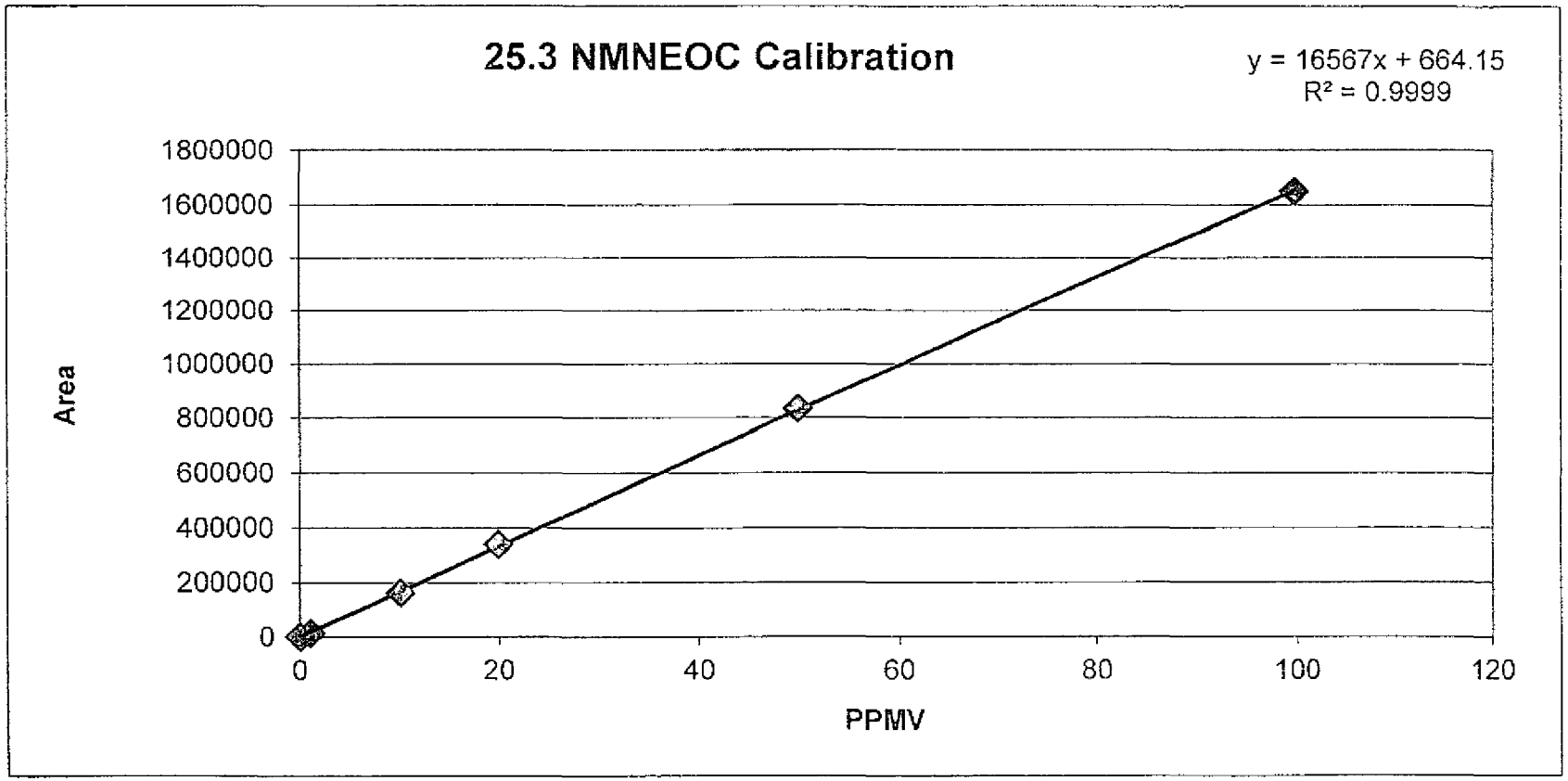
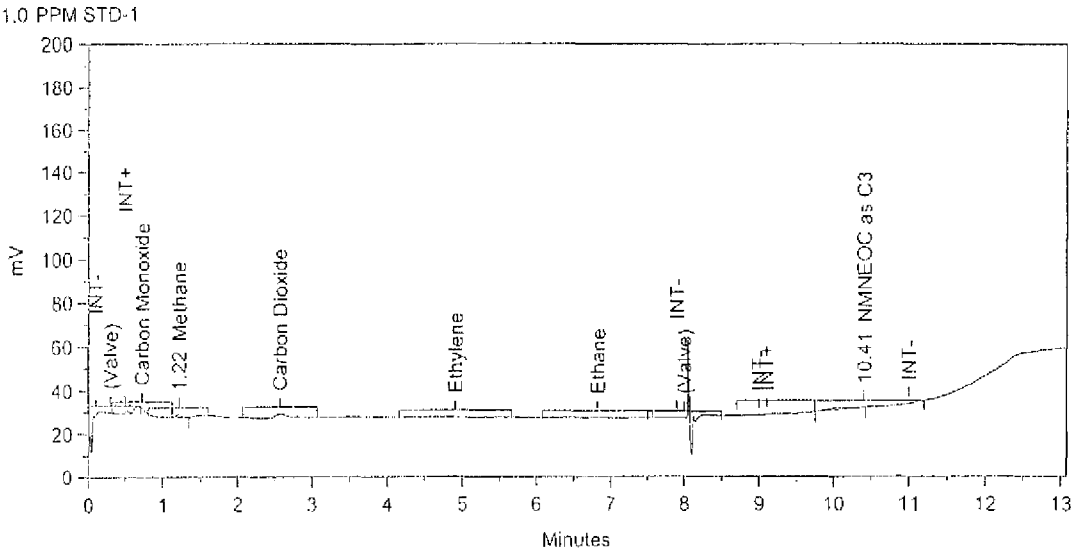




Sample Name: **1.0 PPM STD-1**
Acquired from Chrom6--Det6A via port 6 on 7/13/12 01:19:13pm by Dr. Kitto

Data File: **D:\CPWIN\DATA6\KUL1312S.02R**
Date Stamp: 7/13/12 01:19:12pm
Sequence File: JUL1312.SEQ #2
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

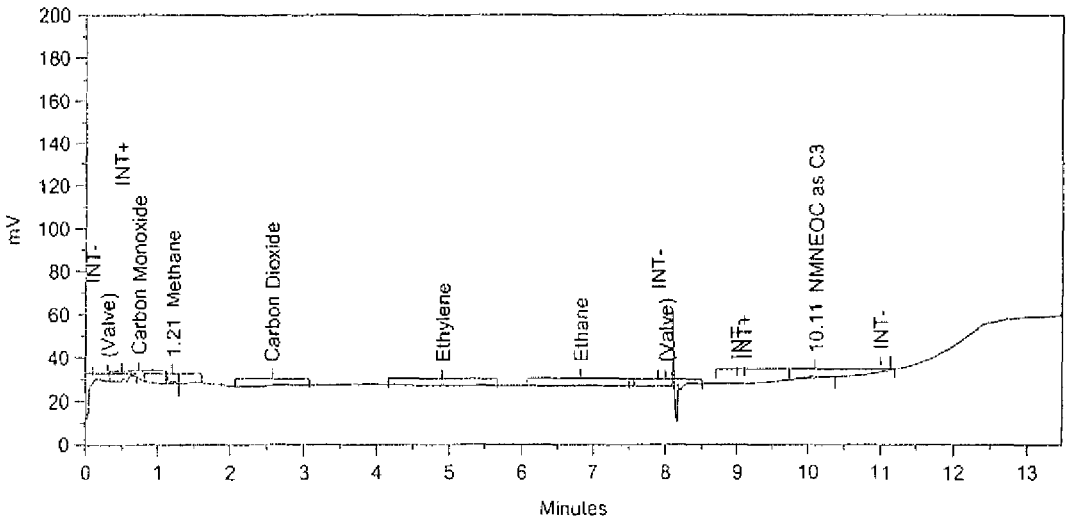
Run Time = 13.07 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	RetTime	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	1.224	Methane	1.0251	50.039	6290.3	27.048	BB	0.080	1303.78	93.113
4	10.410	NMNEOC as C3	1.0235	49.961	16965.4	72.952	BB	2.932	96.43	6.887

Total Area = 23255.7, Total Amount = 2.049, Total Height = 1400.2, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

1.0 PPM STD-2



Sample Name: **1.0 PPM STD-2**
Acquired from Chrom6--Det6A via port 6 on 7/13/12 01:42:23pm by Dr. Kitto

Data File: **D:\CPWIN\DATA6\JUL1312S.03R**
Date Stamp: 7/13/12 01:42:22pm
Sequence File: JUL1312.SEQ #3
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

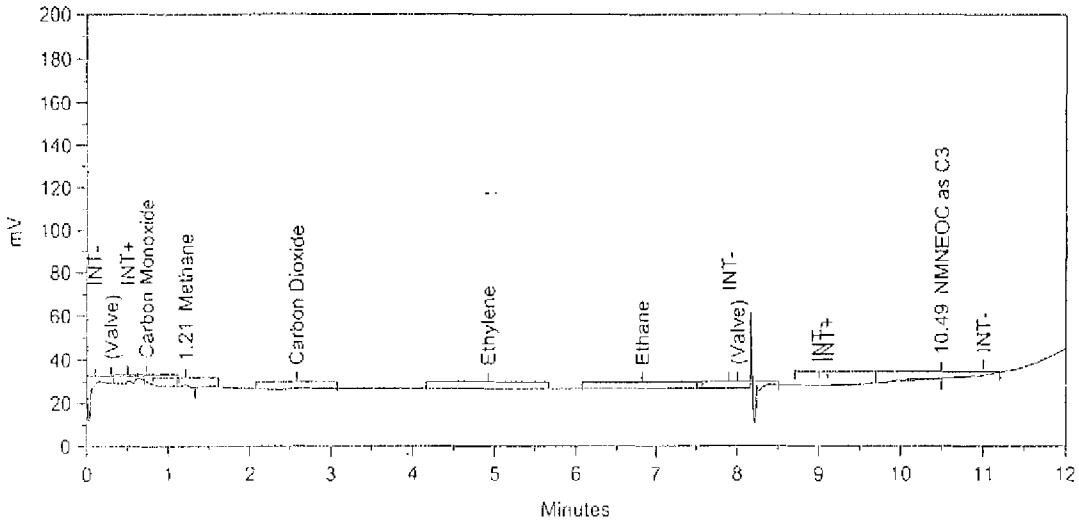
Run Time = 13.47 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	1.209	Methane	1.0135	50.516	6219.0	27.426	BB	0.081	1274.40	58.001
3	10.106	NMNEOC as C3	0.9928	49.484	16456.4	72.574	BB	0.297	922.81	41.999

Total Area = 22675.4, Total Amount = 2.006, Total Height = 2197.21, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

1.0 PPM STD-3



Sample Name: **1.0 PPM STD-3**
Acquired from Chrom6--Det6A via port 6 on 7/13/12 02:00:21pm by Dr. Kitto

Data File: **D:\CPWIN\DATA6\JUL1312S.04R**
Date Stamp: 7/13/12 02:00:20pm
Sequence File: JUL1312.SEQ #4
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

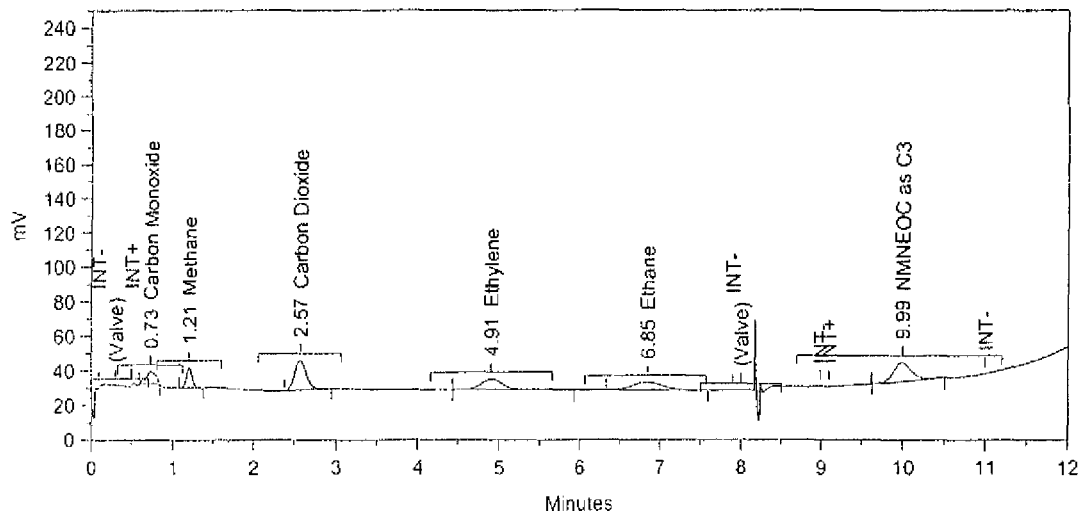
Run Time = 12.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	1.209	Methane	1.0038	49.601	6160.0	26.704	BB	0.083	1239.89	97.997
2	10.494	NMNEOC as C3	1.0200	50.399	16907.6	73.296	BB	11.117	25.35	2.003

Total Area = 23067.5, Total Amount = 2.024, Total Height = 1265.24, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

10 PPM STD-1



Sample Name: **10 PPM STD-1**
Acquired from Chrom6--Det6A via port 6 on 7/11/12 05:08:17pm by Dr. Kitto

Data File: **D:\CPWIN\DATA6\KUL1112S.02R**
Date Stamp: 7/11/12 05:08:16pm
Sequence File: JUL1112.SEQ #2
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

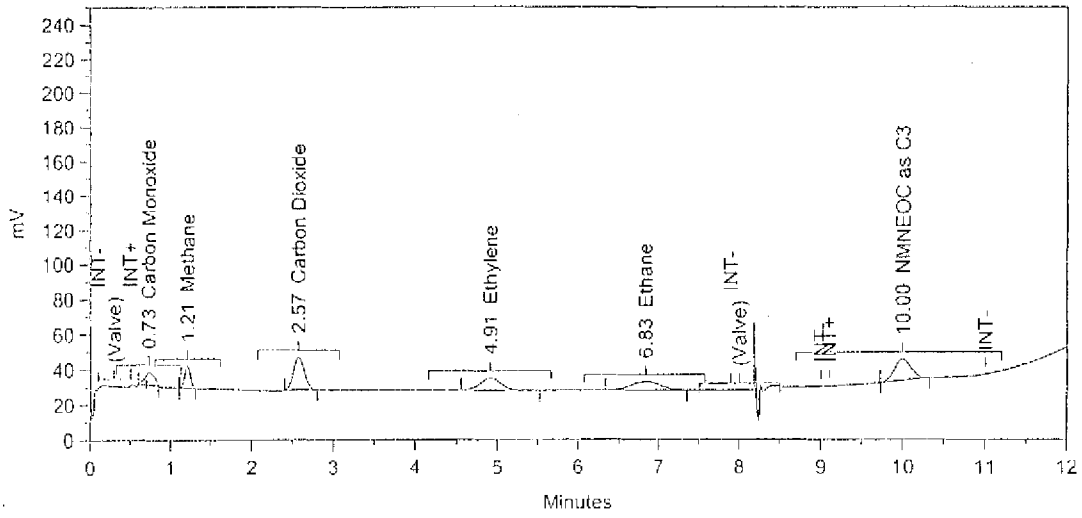
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.729	Carbon Monoxide	10.0087	12.675	61384.6	8.956	BB	0.144	7100.42	12.260
2	1.214	Methane	9.7795	12.385	60010.6	8.756	BB	0.084	11844.27	20.452
3	2.573	Carbon Dioxide	29.6206	37.512	170077.3	24.815	BB	0.165	17170.23	29.648
6	4.907	Ethylene	9.5159	12.051	111641.6	16.289	BB	0.302	6168.66	10.652
7	6.845	Ethane	9.9615	12.615	115215.7	16.811	BB	0.422	4555.07	7.865
9	9.994	NMNEOC as C3	10.0771	12.762	167039.2	24.372	BB	0.251	11074.50	19.123

Total Area = 685369.1, Total Amount = 78.963, Total Height = 57913.14, Sample Units = ppmv @C3
* Some peaks have been manually integrated,

10 PPM STD-2



Sample Name: **10 PPM STD-2**
Acquired from Chrom6--Det6A via port 6 on 7/11/12 05:27:37pm by Dr. Kitto

Data File: **D:\CPWIN\DATA6\JUL1112S.03R**
Date Stamp: 7/11/12 05:27:36pm
Sequence File: JUL1112.SEQ #3
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

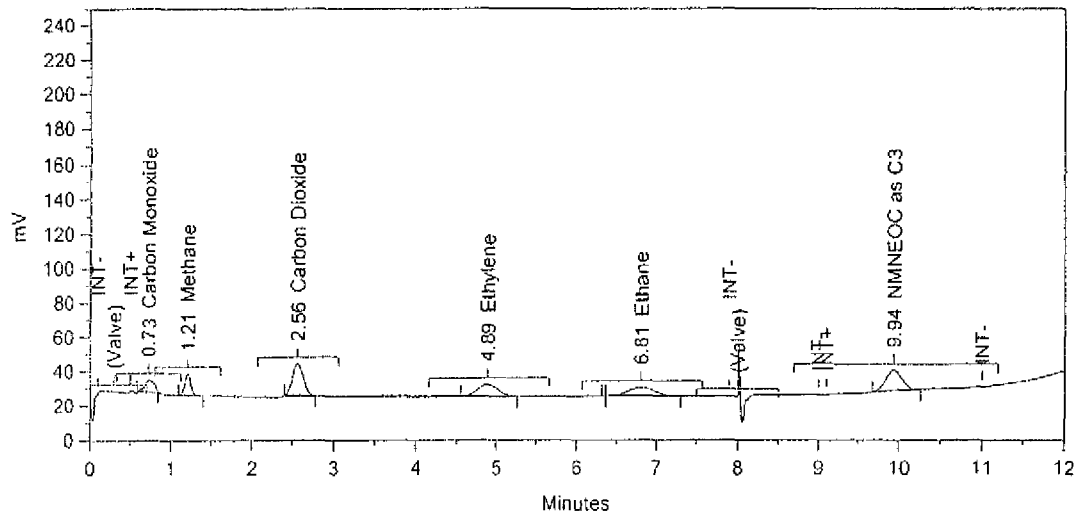
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

Pk#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.729	Carbon Monoxide	10.1499	12.569	62250.9	8.899	BB	0.143	7261.39	11.690
3	1.211	Methane	10.0165	12.403	61464.8	8.786	BB	0.083	12413.40	19.983
4	2.570	Carbon Dioxide	30.4018	37.647	174562.7	24.954	BB	0.157	18545.16	29.854
5	4.909	Ethylene	10.0403	12.433	117793.4	16.839	BV	0.286	6855.09	11.035
6	6.827	Ethane	10.0771	12.479	116552.9	16.661	VB	0.401	4848.98	7.806
8	10.000	NMNEOC as C3	10.0700	12.470	166921.8	23.861	BB	0.228	12194.75	19.631

Total Area = 699546.4, Total Amount = 80.756, Total Height = 62118.77, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

10 PPM STD-3



Sample Name: **10 PPM STD-3**
Acquired from Chrom6--Det6A via port 6 on 7/12/12 12:22:32pm by Dr. Kitto

Data File: **D:\CPWIN\DATA6\KUL1212S.02R**
Date Stamp: 7/12/12 12:22:32pm
Sequence File: JUL1212.SEQ #2
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

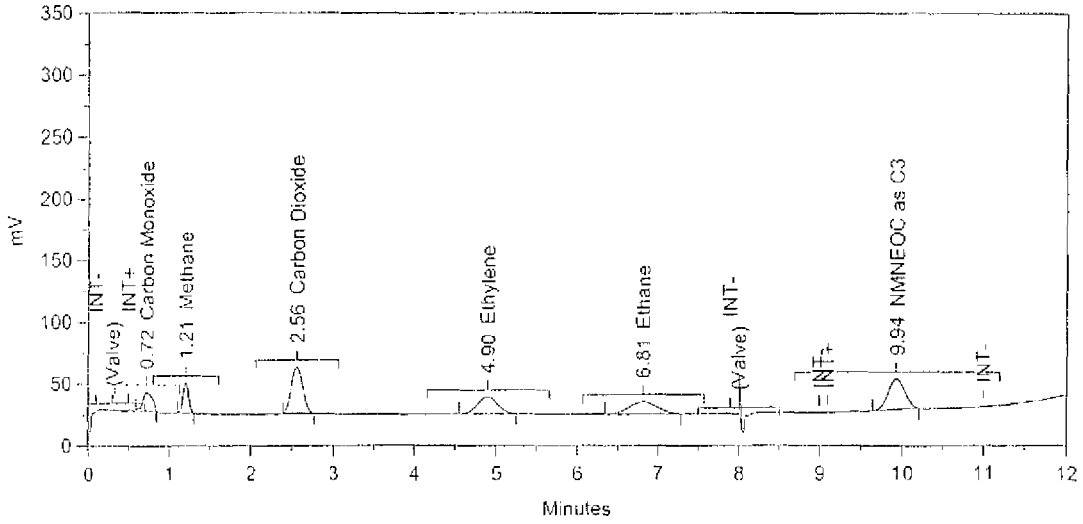
Run Time = 12.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.728	Carbon Monoxide	10.1378	12.601	62176.8	8.921	BB	0.144	7201.44	11.681
2	1.210	Methane	10.1747	12.647	62436.0	8.958	BB	0.085	12306.25	19.960
3	2.562	Carbon Dioxide	30.0614	37.365	172608.2	24.766	BB	0.154	18672.05	30.286
4	4.894	Ethylene	10.0447	12.485	117845.4	16.909	BB	0.288	6808.76	11.044
6	6.868	Ethane	10.0236	12.459	115933.8	16.634	BB	0.401	4812.70	7.806
7	9.940	NMNEOC as C3	10.0116	12.444	165954.5	23.811	BB	0.233	11852.06	19.224

Total Area = 696954.6, Total Amount = 80.454, Total Height = 61653.27, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

20 PPM STD-1



Sample Name: **20 PPM STD-1**
Acquired from Chrom6--Det6A via port 6 on 7/12/12 09:24:47am by Dr. Kitto

Data File: **D:\CPWIN\DATA6\JUL1212S.03R**
Date Stamp: 7/12/12 09:24:46am
Sequence File: JUL1212.SEQ #3
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

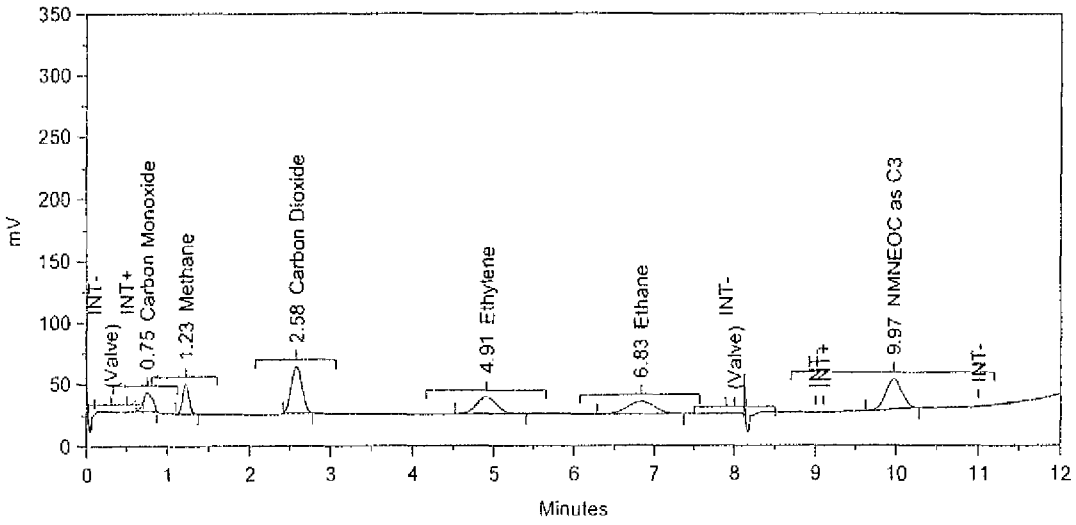
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.724	Carbon Monoxide	19.7092	12.303	120879.3	8.694	BB	0.140	14346.08	11.657
2	1.205	Methane	19.9700	12.466	122543.3	8.813	BB	0.085	24121.74	19.600
3	2.560	Carbon Dioxide	60.4068	37.708	346847.5	24.945	BB	0.155	37280.07	30.291
4	4.896	Ethylene	19.6910	12.292	231015.6	16.615	BB	0.287	13432.86	10.915
5	6.812	Ethane	20.1259	12.563	232778.8	16.742	BB	0.403	9620.86	7.817
6	9.938	NMNEOC as C3	20.2916	12.667	336357.8	24.191	BB	0.231	24270.55	19.721

Total Area = 1390422.0, Total Amount = 160.394, Total Height = 123072.2, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

20 PPM STD-2



Sample Name: **20 PPM STD-2**
Acquired from Chrom6--Det6A via port 6 on 7/12/12 09:46:50am by Dr. Kitto

Data File: **D:\CPWIN\DATA6\JUL1212S.04R**
Date Stamp: 7/12/12 09:46:50am
Sequence File: JUL1212.SEQ #4
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

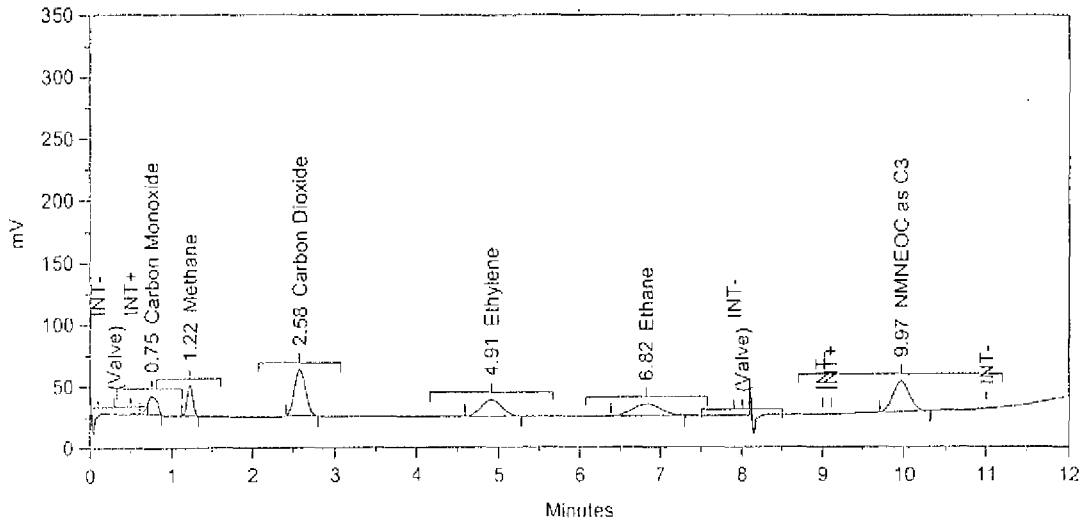
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000 .

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.749	Carbon Monoxide	19.9611	12.483	122424.4	8.820	BB	0.141	14481.50	11.837
2	1.226	Methane	19.9146	12.454	122203.1	8.804	BB	0.085	23856.40	19.499
3	2.579	Carbon Dioxide	59.8814	37.448	343830.5	24.770	BB	0.154	37227.28	30.428
4	4.914	Ethylene	19.7916	12.377	232196.3	16.728	BB	0.294	13157.35	10.754
5	6.831	Ethane	20.2591	12.669	234319.5	16.881	BB	0.413	9446.77	7.721
6	9.971	NMNEOC as C3	20.0971	12.568	333133.3	23.999	BB	0.230	24174.79	19.760

Total Area = 1388107.0, Total Amount = 159.905, Total Height = 122344.1, Sample Units = ppmv @C3
* Some peaks have been manually integrated,

20 PPM STD-3



Sample Name: **20 PPM STD-3**
Acquired from Chrom6--Det6A via port 6 on 7/12/12 10:07:52am by Dr. Kitto

Data File: **D:\CPWIN\DATA6\JUL1212S.05R**
Date Stamp: 7/12/12 10:07:52am
Sequence File: JUL1212.SEQ #5
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

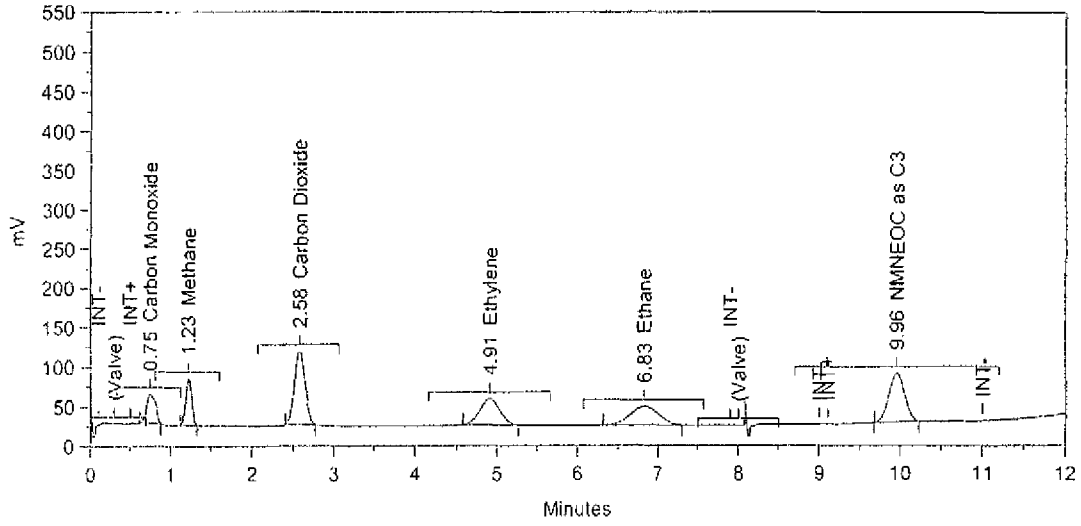
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.749	Carbon Monoxide	20.1732	12.610	123725.2	8.934	BB	0.141	14577.21	11.819
2	1.224	Methane	20.0392	12.527	122968.1	8.880	BB	0.084	24287.69	19.691
3	2.578	Carbon Dioxide	60.3086	37.700	346283.7	25.006	BB	0.156	37092.38	30.073
4	4.909	Ethylene	19.4562	12.162	228261.8	16.483	BB	0.286	13323.13	10.802
5	6.818	Ethane	19.8384	12.401	229453.1	16.569	BB	0.402	9523.79	7.721
6	9.965	NMNEOC as C3	20.1562	12.600	334113.2	24.127	BB	0.227	24537.38	19.894

Total Area = 1384805.0, Total Amount = 159.972, Total Height = 123341.6, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

50 PPM STD-1



Sample Name: **50 PPM STD-1**
Acquired from Chrom6--Det6A via port 6 on 7/12/12 10:26:55am by Dr. Kitto

Data File: **D:\CPWIN\DATA6\JUL1212S.06R**
Date Stamp: 7/12/12 10:26:54am
Sequence File: JUL1212.SEQ #6
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

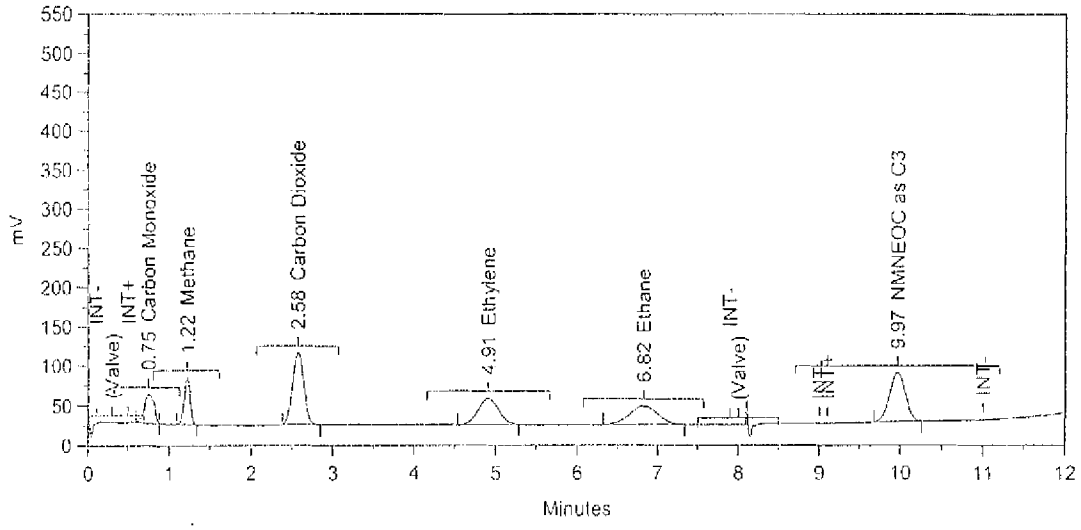
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.747	Carbon Monoxide	49.4363	12.465	303200.4	8.810	BB	0.139	36290.91	11.875
2	1.225	Methane	48.6390	12.264	298466.9	8.672	BB	0.085	58853.68	19.259
3	2.578	Carbon Dioxide	149.8237	37.777	860266.3	24.997	BB	0.155	92431.91	30.246
4	4.910	Ethylene	48.6388	12.264	570633.9	16.581	BB	0.287	33082.82	10.826
5	6.827	Ethane	49.8530	12.570	576605.4	16.754	BB	0.407	23618.87	7.729
7	9.957	NMNEOC as C3	50.2146	12.661	832367.2	24.186	BB	0.226	61317.84	20.065

Total Area = 3441540.0, Total Amount = 396.605, Total Height = 305596.1, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

50 PPM STD-2



Sample Name: **50 PPM STD-2**
Acquired from Chrom6--Det6A via port 6 on 7/12/12 10:46:03am by Dr. Kitto

Data File: **D:\CPWIN\DATA6\JUL1212S.07R**
Date Stamp: 7/12/12 10:46:02am
Sequence File: JUL1212.SEQ #7
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

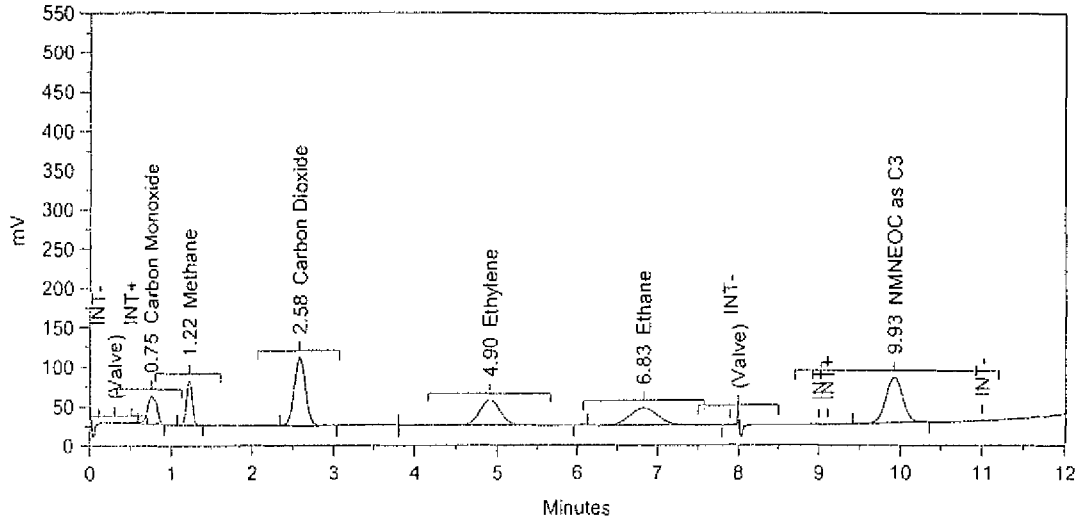
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.748	Carbon Monoxide	49.2917	12.452	302313.6	8.797	BB	0.142	35529.01	11.754
3	1.224	Methane	49.1303	12.411	301481.9	8.772	BB	0.085	58848.36	19.468
4	2.577	Carbon Dioxide	148.7512	37.576	854108.2	24.852	BB	0.158	90327.34	29.882
5	4.909	Ethylene	48.7456	12.314	571885.8	16.640	BB	0.290	32874.77	10.876
6	6.824	Ethane	49.8615	12.596	570703.7	16.781	BB	0.409	23474.37	7.766
7	9.966	NMNEOC as C3	50.0860	12.652	830236.1	24.158	BB	0.226	61228.71	20.255

Total Area = 3436729.0, Total Amount = 395.866, Total Height = 302282.6, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

50 PPM STD-3



Sample Name: **50 PPM STD-3**
Acquired from Chrom6--Det6A via port 6 on 7/12/12 11:04:46am by Dr. Kitto

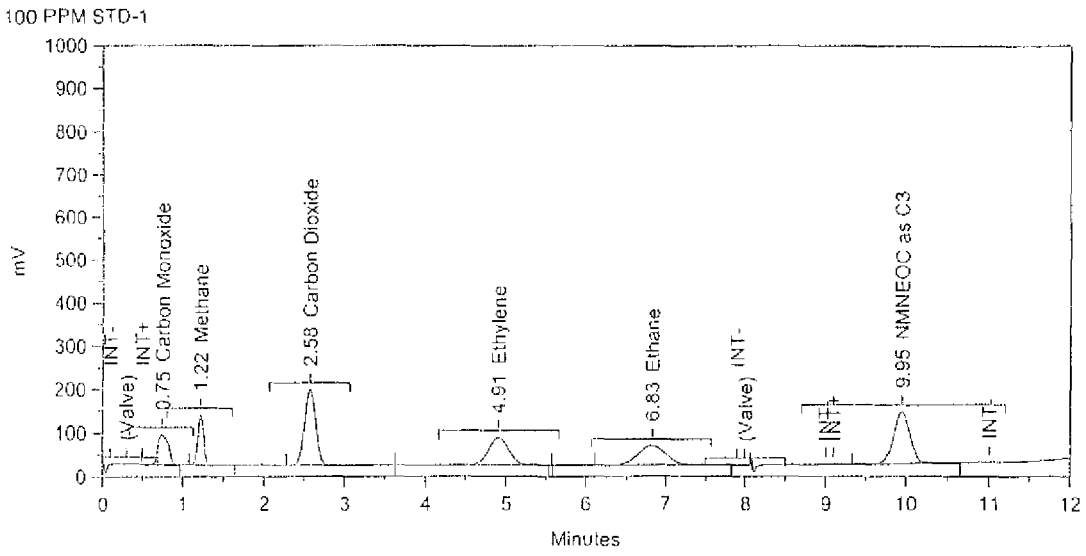
Data File: **D:\CPWIN\DATA6\JUL1212S.08R**
Date Stamp: 7/12/12 11:04:46am
Sequence File: JUL1212.SEQ #8
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.753	Carbon Monoxide	48.8183	12.636	299410.4	8.912	BB	0.142	35024.73	12.079
2	1.224	Methane	46.8840	12.135	287697.4	8.563	BB	0.084	56815.44	19.595
3	2.576	Carbon Dioxide	144.7607	37.468	831195.4	24.741	BB	0.159	86875.15	29.962
5	4.903	Ethylene	47.7801	12.367	560559.0	16.685	BB	0.297	31476.17	10.856
6	6.826	Ethane	49.0173	12.687	566940.2	16.875	BB	0.419	22532.56	7.771
7	9.926	NMNEOC as C3	49.0975	12.708	813850.3	24.224	BB	0.237	57231.07	19.738

Total Area = 3359653.0, Total Amount = 386.358, Total Height = 289955.1, Sample Units = ppmv @C3
* Some peaks have been manually integrated,



Sample Name: **100 PPM STD-1**
Acquired from Chrom6--Det6A via port 6 on 7/12/12 11:24:30am by Dr. Kitto

Data File: **D:\CPWIN\DATA6\JUL1212S.09R**
Date Stamp: 7/12/12 11:24:30am
Sequence File: JUL1212.SEQ #9
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

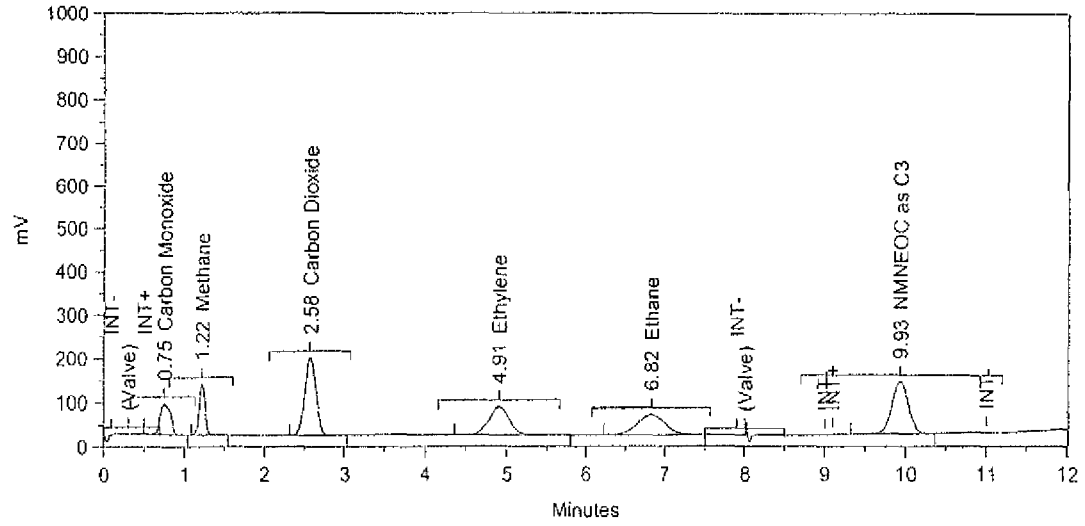
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.750	Carbon Monoxide	97.0931	12.511	595487.2	8.818	BB	0.144	69108.45	11.869
2	1.224	Methane	94.8249	12.219	581880.5	8.616	BB	0.086	113226.00	19.445
3	2.577	Carbon Dioxide	290.7675	37.468	1669545.0	24.721	BB	0.161	173179.80	29.742
6	4.908	Ethylene	95.4701	12.302	1120061.0	16.585	BB	0.295	63298.09	10.871
8	6.828	Ethane	98.5743	12.702	1140121.0	16.882	BB	0.418	45406.17	7.798
9	9.955	NMNEOC as C3	99.3214	12.798	1646372.0	24.378	BB	0.232	118063.10	20.276

Total Area = 6753468.0, Total Amount = 776.051, Total Height = 582281.5, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

100 PPM STD-2



Sample Name: **100 PPM STD-2**
Acquired from Chrom6--Det6A via port 6 on 7/12/12 11:43:50am by Dr. Kitto

Data File: **D:\CPWIN\DATA6\JUL1212S.10R**
Date Stamp: 7/12/12 11:43:50am
Sequence File: JUL1212.SEQ #10
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

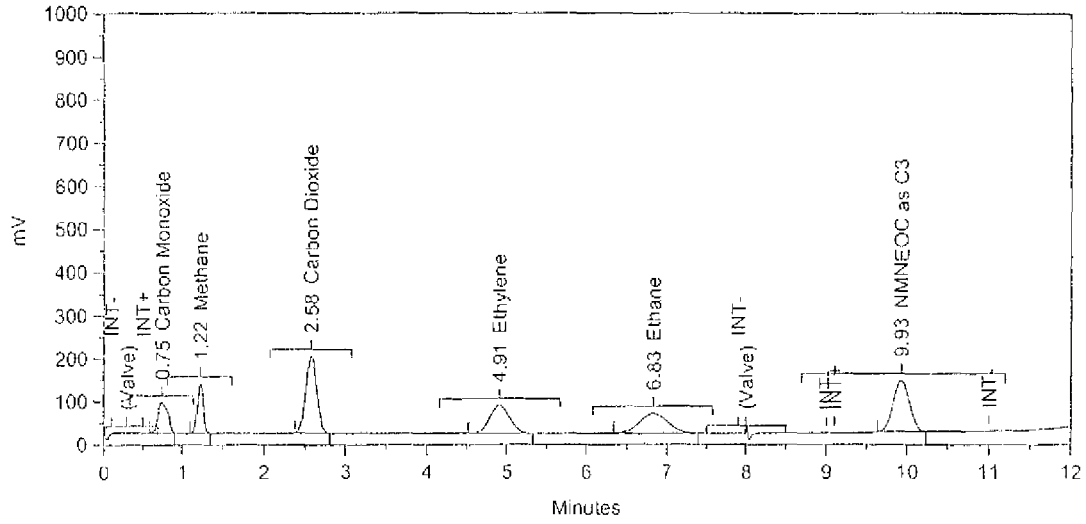
Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.750	Carbon Monoxide	97.5865	12.529	598513.2	8.824	BB	0.144	69417.22	11.873
2	1.225	Methane	95.2111	12.224	584250.8	8.613	BB	0.086	113668.40	19.441
3	2.579	Carbon Dioxide	290.8884	37.347	1670240.0	24.624	BB	0.159	174619.30	29.866
4	4.909	Ethylene	96.5797	12.400	1133079.0	16.705	BB	0.295	63976.95	10.942
5	6.824	Ethane	98.8822	12.695	1143683.0	16.861	BB	0.417	45665.88	7.810
6	9.934	NMNEOC as C3	99.7357	12.805	1653239.0	24.373	BB	0.235	117328.70	20.067

Total Area = 6783005.0, Total Amount = 778.884, Total Height = 584676.4, Sample Units = ppmv @C3
* Some peaks have been manually integrated,

100 PPM STD-3



Sample Name: **100 PPM STD-3**
Acquired from Chrom6--Det6A via port 6 on 7/12/12 12:04:16pm by Dr. Kitto

Data File: **D:\CPWIN\DATA6\JUL1212S.11R**
Date Stamp: 7/12/12 12:04:16pm
Sequence File: JUL1212.SEQ #11
Method File: D:\CPWIN\DATA6\GC6NMOC.MET
Version 3. Date Stamp: 7/13/12 04:02:00pm
Calibration File: D:\CPWIN\DATA6\GC6M253.CAL
Version 3. Date Stamp: 7/13/12 04:27:18pm

Run Time = 14.0 min Sample Rate = 15.0 per sec.
Amount Inj. = 1.000 Dilution Factor = 1.000
Sample Weight = 1.000 Int Std Amount = 1.000

Starting Peak Width = 0.05 min. Peak Threshold = .1 Area Reject = 100
* Some peaks have been manually integrated.

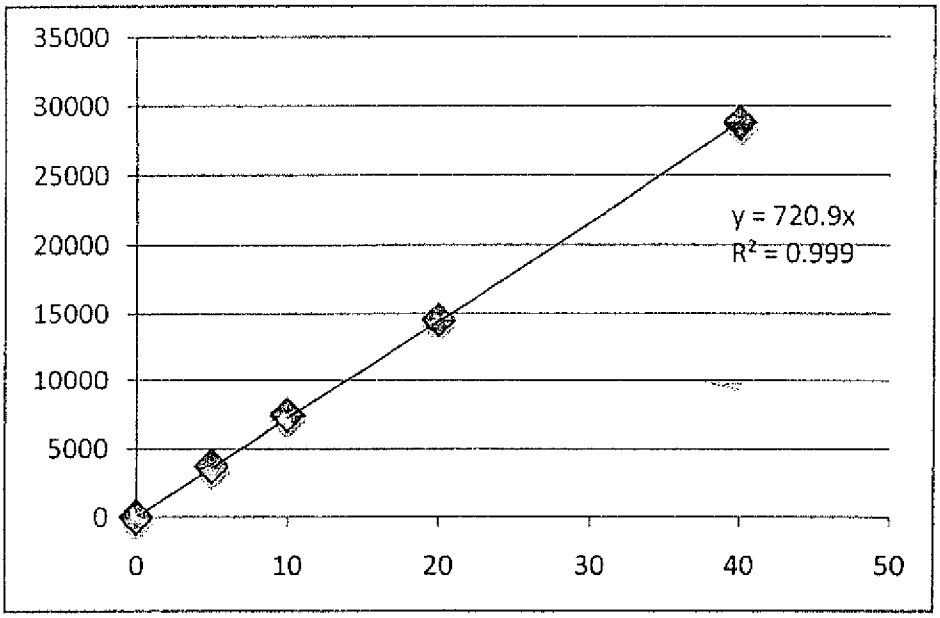
PK#	Ret Time	Name	Amount	Amount%	Area	Area%	Type	Width	Height	Height%
1	0.747	Carbon Monoxide	98.5975	12.490	604714.2	8.808	BB	0.143	70496.76	11.796
2	1.224	Methane	97.5952	12.363	598880.3	8.723	BB	0.086	115956.50	19.403
3	2.577	Carbon Dioxide	295.1435	37.387	1694672.0	24.684	BB	0.158	179060.90	29.963
4	4.907	Ethylene	97.8755	12.398	1148281.0	16.726	BB	0.292	65604.35	10.978
5	6.828	Ethane	99.7787	12.639	1154052.9	16.810	BB	0.412	46732.21	7.820
6	9.931	NMNEOC as C3	100.4340	12.722	1664813.0	24.249	BB	0.252	119757.00	20.039

Total Area = 6865414.0, Total Amount = 789.424, Total Height = 597607.8, Sample Units = ppmv @C3
* Some peaks have been manually integrated.

TC Calibration

5.0 ppmC		*10.0 ppmC*		*20 ppmC*		*40 ppmC*	
Injection	Area	Injection	Area	Injection	Area	Injection	Area
1	3701	1	7559	1	14484	1	28797
2	3695	2	7421	2	14443	2	28847
3	3672	3	7303	3	14568	3	28555
Mean	**3689**	**Mean**	**7428**	**Mean**	**14498**	**Mean**	**28733**
SD	**15**	**SD**	**128**	**SD**	**63**	**SD**	**156**
CV	**0.41%**	**CV**	**1.72%**	**CV**	**0.43%**	**CV**	**0.54%**

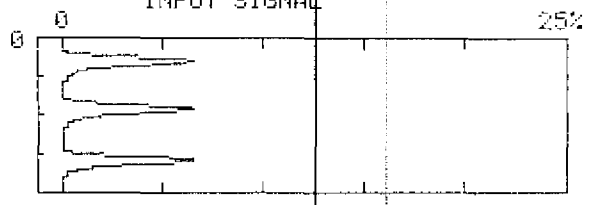
PPM	Area	No. Inj	SD	CV
0	0	0	0	0
5	3689	3	15	0.41%
10	7428	3	128	1.72%
20	14498	3	63	0.43%
40	28733	3	156	0.54%



TOC Calibration

TC

INPUT SIGNAL



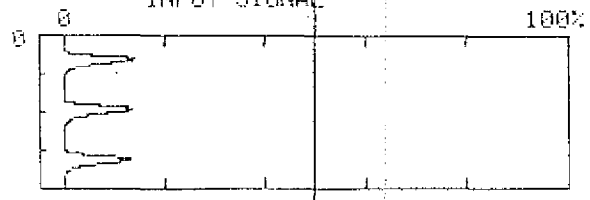
TIME [min]

CAL CURVE F# 1
1st STANDARD TC 5.0ppm
[x 5, 100µl, #WASH 3, SP 0min]

#	AREA
1	3701
2	3695
3	3672
MN	3689
SD	15
CV	0.41 %

DATE 05(MAY)-15-2012 22:15

INPUT SIGNAL

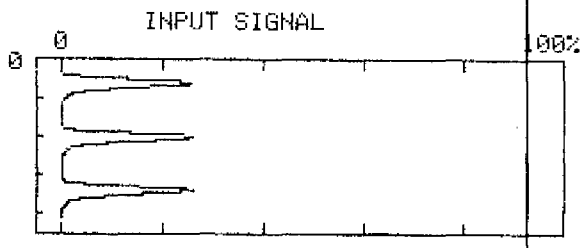


TIME [min]

CAL CURVE F# 1
2nd STANDARD TC 10.0ppm
[x 5, 100µl, #WASH 3, SP 0min]

#	AREA
1	7559
2	7421
3	7303
MN	7427
SD	128
CV	1.72 %

DATE 05(MAY)-15-2012 22:25

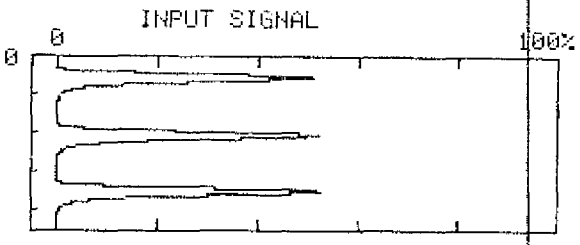


TIME [min]

CAL CURVE F# 1
3rd STANDARD TC 20.0ppm
[x 5, 100µl, #WASH 3, SP 0min]

#	AREA
1	14484
2	14443
3	14568
MN	14498
SD	63
CV	0.43 %

DATE 05(MAY)-15-2012 22:35



TIME [min]

CAL CURVE F# 1
4th STANDARD TC 40.0ppm
[x 5, 100µl, #WASH 3, SP 0min]

#	AREA
1	28797
2	28848
3	28555
MN	28733
SD	156
CV	0.54 %

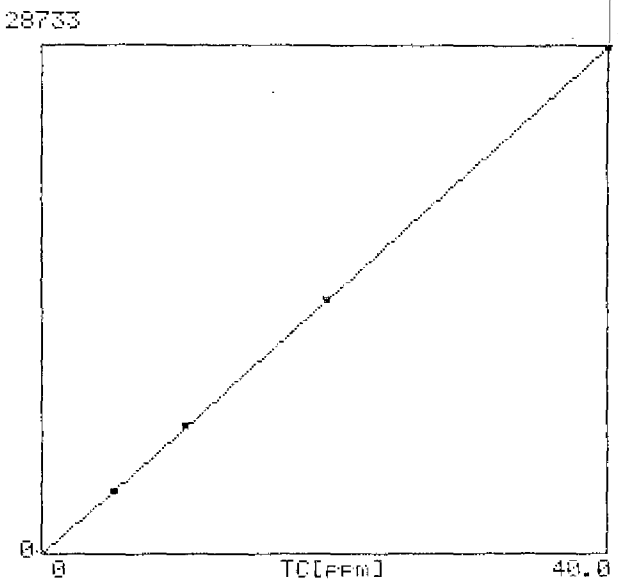
DATE 05(MAY)-15-2012 22:46

28733



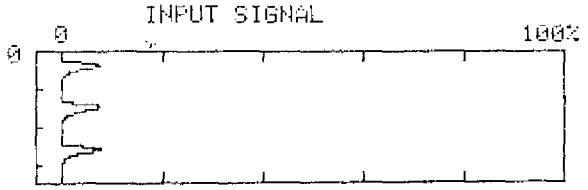
```
 2 28848
 3 28555
- - - - - -
MN 28733
SD   156
CV  0.54 %

      DATE  05(MAY)-15-2012  22:46
```




```
CAL CURVE F# 1
 TC 4-POINT  (SHIFT TO ORIGIN)
 LEAST SQUARES r=1.000

 [CONDITIONS]
   TC CATALYST          : NORMAL SENS
   INJ VOL/SYRINGE SIZE: 100/250µl
   RANGE                : x5
   SPARGE TIME          : 0min
   NO OF WASHES         : 3
   DATE                 : 05(MAY)-15-2012
 [DATA]
   STD CONC    AREA #INJ  SD    CV
    40.0ppm  28733  3   156 0.54%
    20.0ppm  14498  3    63 0.43%
    10.0ppm   7427  3   128 1.72%
     5.0ppm   3689  3    15 0.41%
```

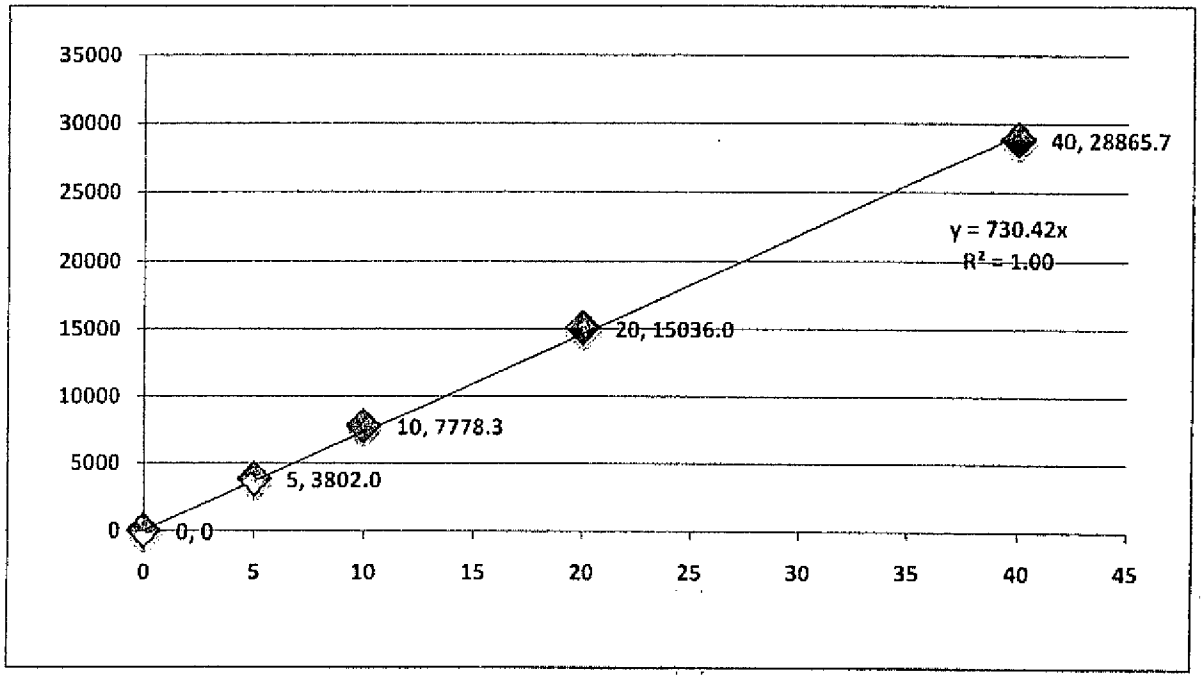



```
CAL CURVE F# 2
  1st STANDARD   IC    5.0ppm
        [x 5,  100µl, #WASH 3, SP  0min]
   #  AREA
```

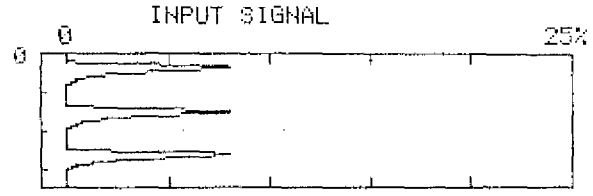
IC Calibration

5.0 ppmC		*10.0 ppmC*		*20 ppmC*		*40 ppmC*	
Injection	Area	Injection	Area	Injection	Area	Injection	Area
1	3787	1	7711	1	15005	1	28700
2	3801	2	7826	2	15078	2	28809
3	3818	3	7798	3	15025	3	29088
Mean	**3802**	**Mean**	**7778**	**Mean**	**15036**	**Mean**	**28865.7**
SD	**15**	**SD**	**24**	**SD**	**37**	**SD**	**200**
CV	**0.40%**	**CV**	**0.34%**	**CV**	**0.25%**	**CV**	**0.69%**

PPM	Area	No. Inj	SD	CV
0	0	0	0	0
5	3802.0	3	15	**0.40%**
10	7778.3	3	24	**0.34%**
20	15036.0	3	37	**0.25%**
40	28865.7	3	200	**0.69%**



IC Calibration

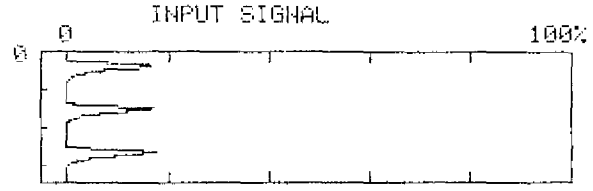


TIME [min]

CAL CURVE F# 3
1st STANDARD IC 5.0ppm
[x 5, 100µl, #WASH 3, SP 0min]

#	AREA
1	3787
2	3801
3	3816
MN	3802
SD	15
CV	0.40 %

DATE 05(MAY)-16-2012 19:43

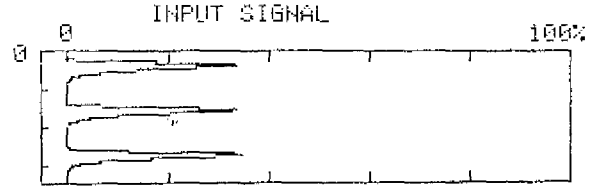


TIME [min]

CAL CURVE F# 3
2nd STANDARD IC 10.0ppm
[x 5, 100µl, #WASH 3, SP 0min]

#	AREA
1	7711
2	7826
3	7798
MN	7778
SD	59
CV	0.77 %

DATE 05(MAY)-16-2012 19:53

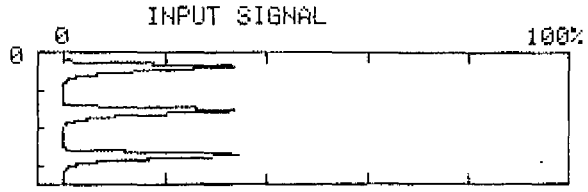


TIME [min]

CAL CURVE F# 3
3rd STANDARD IC 20.0ppm
[x 5, 100µl, #WASH 3, SP 0min]

#	AREA
1	15005
2	15078

DATE 05(MAY)-16-2012 19:53

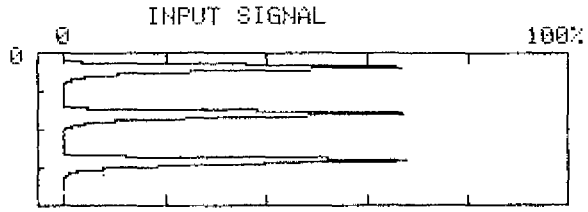


TIME [min]

CAL CURVE F# 3
3rd STANDARD IC 20.0ppm
[x 5, 100µl, #WASH 3, SP 0min]

#	AREA
1	15005
2	15078
3	15025
MN	15036
SD	37
CV	0.25 %

DATE 05(MAY)-16-2012 20:02



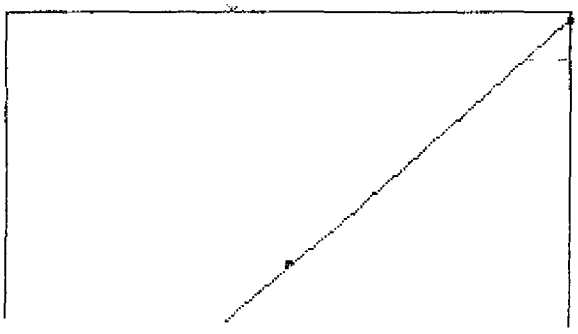
TIME [min]

CAL CURVE F# 3
4th STANDARD IC 40.0ppm
[x 5, 100µl, #WASH 3, SP 0min]

#	AREA
1	28700
2	28809
3	29088
MN	28865
SD	200
CV	0.69 %

DATE 05(MAY)-16-2012 20:11

28865



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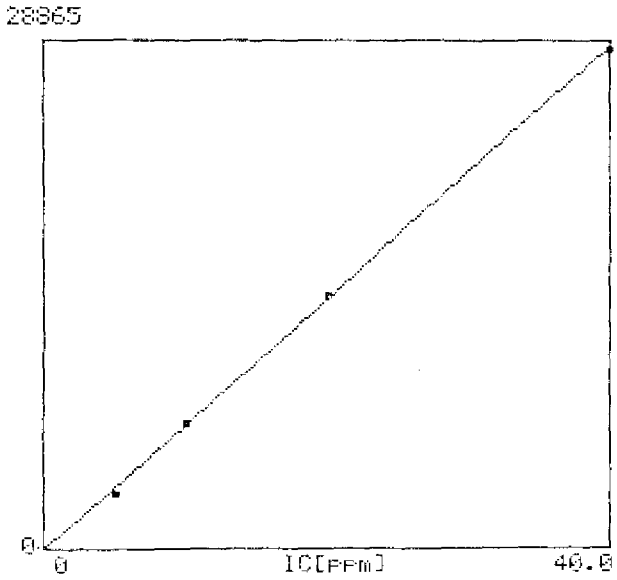
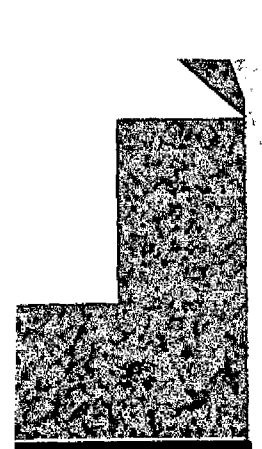


CAL CURVE F# 3
IC 4-POINT (SHIFT TO ORIGIN)
PROTECTED
LEAST SQUARES r=1.000

[CONDITIONS]
INJ VOL/SYRINGE SIZE: 100/250µl
RANGE : x5
SPARGE TIME : 0min
NO OF WASHES : 3
DATE : 05(MAY)-16-2012

[DATA]

STD CONC	AREA	#INJ	SD	CV
40.0ppm	28865	3	200	0.69%
20.0ppm	15036	3	37	0.25%
10.0ppm	7778	3	59	0.77%
5.0ppm	3802	3	15	0.40%





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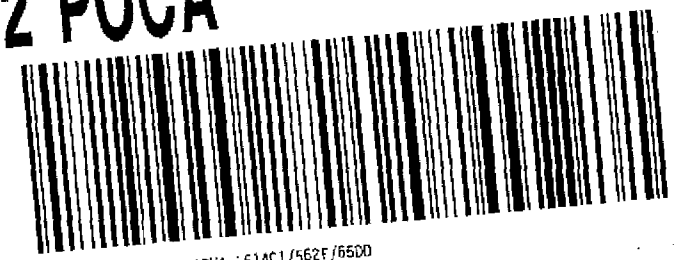

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☐ FedEx 2Day Freight Second business day.** Thursday shipments will be delivered on Monday unless SATURDAY Delivery is selected.

☐ FedEx 3Day Freight Third business day.** Saturday Delivery NOT available.

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☐ No Signature Required Package may be left without obtaining a signature for delivery.

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☐ Indirect Signature If no one is available at recipient's address, someone at a neighboring address may sign for delivery. For residential deliveries only. Fee applies.

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MesaWater.org

Cher Snyder
Senior Enforcement Manager
South Coast Air Quality Management District
21865 E Copley Drive
Diamond Bar, CA 91765

Subject: 2013 Source Test Reports Submittal – [Facility ID 95067, A/N 499284 – 499284,499285,499286 & Facility ID 98380, A/N – 499279,499280, 499281, 499282]

Dear Ms. Snyder:

Enclosed is a copy of the source test report for water-pumping engines located at the Reservoir I and Reservoir II Pumping Facility, Mesa Water District in Costa Mesa, California. This report is being submitted to satisfy the requirements of Rule 1110.2 subparagraph (f)(1)(C). The source tests were performed on August 21, 26, 29 and September 5, 2013.

Should you have any questions or concerns, please contact me at (949) 574-1031.

Sincerely,

Tracy Manning
Water Quality and Compliance Supervisor
Mesa Water District
(949) 574-1031 (Direct Line)
(714) 272-3376 (Cell)
(949) 574-1033 (Fax)
TracyM@MesaWater.Org

cc: Phil Lauri, District Engineer

Enclosures:
1. Air Gas Testing & Consulting Services Report No. 91913RP

CLASS Notif #:	415374	Rec'd:	11/13/2015
STID:	2015-198	A/N:	499279, 499280
Facility:	98380		
Inspector ID:	KM08	Team:	
REPORT			

499281

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SOURCE TEST REPORT

Rule 1110.2 Emissions Testing of Three Internal Combustion Engines at Mesa Water District - Reservoir II for NOx, CO, and VOC

Prepared for:

Mesa Water District
1965 Placentia Ave
Costa Mesa, CA 92627

Equipment Location:

Reservoir II
2340 Orange Avenue
Costa Mesa, CA 92627

Facility ID: 98380

Test Dates: September 16, 17 & 23, 2015
Report Date: November 10, 2015

Project: 9840

Prepared by:

Almega Environmental & Technical Services
10602 Walker Street
Cypress, CA 90630

Prepared by: _____
Surya Adhikari, Project Manager

Reviewed by: _____
Charles Figueroa, Sr. Project Manager

Almega
ENVIRONMENTAL

SOURCE TEST REPORT

Rule 1110.2 Emissions Testing of Three Internal Combustion Engines at Mesa Water District - Reservoir II for NOx, CO, and VOC

Prepared for:

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1965 Placentia Ave
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Equipment Location:

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Costa Mesa, CA 92627

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Test Dates: September 16, 17 & 23, 2015
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Project: 9840

Prepared by:

Almega Environmental & Technical Services
10602 Walker Street
Cypress, CA 90630

Prepared by: _____
Surya Adhikari, Project Manager

Reviewed by: _____
Charles Figueroa, Sr. Project Manager

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Attachment 2 – Source Test Protocol

1.0 EXECUTIVE SUMMARY

Key project information is provided in the summary below. Test results are summarized in Tables 1-1 to 1-3.

Customer	Mesa Water District 1965 Placentia Avenue Costa Mesa, CA 92627 Contact: Ms. Kaying Lee, tel. (949) 207-5491
Equipment Location	Reservoir II 2340 Orange Ave Costa Mesa, CA 92627
Facility ID	98380
Permit Numbers	G4002 (ICE No. 1), G4003 (ICE No. 2), and G4004 (ICE No. 3)
Equipment	Three Rich Burn Natural Gas Fired Internal Combustion Engines (ICEs)
Test Objective	Measure emissions of NO_X, CO, and VOC to demonstrate the compliance with SCAQMD Rule 1110.2 (f) (1) (C) and applicable permit requirements
Test Requested by	Ms. Kaying Lee of Mesa Water District
Test Dates	September 16, 17 & 23, 2015
Testing Firm	Almega Environmental & Technical Services 10602 Walker Street Cypress, CA 90630 Contact: Surya Adhikari, tel. (714) 889-4000
Test Personnel	Dean Yonemori and Robert Leyva of Almega Environmental & Technical Services
Regulatory Agency	South Coast Air Quality Management District (SCAQMD) 21865 East Copley Drive Diamond Bar, CA 91765-4182 Contact: Mr. Marcel Saulis, tel. (909) 396-3093
Measurements CEMS: NO_X, CO, O_2 and CO_2 VOC, as TGNMO	 SCAQMD Method 100.1 SCAQMD Method 25.3

TABLE 1-1. SUMMARY OF RESULTS

Facility: Mesa Water
City, State: Costa Mesa, CA
Unit Tested: Reservoir II- Engine #1

Parameter	Units	TEST RESULTS			Permit Limit(s)
		1-High	1-Normal	1-Low	
Test Date:	mm/dd/yy	09/23/15	09/23/15	09/23/15	
Start Time:	hh:mm	10:27	11:02	12:17	
End Time:	hh:mm	10:41	11:31	12:31	
SCAQMD Method 100.1 - CEMS					
Stack Diluent Gases					
Oxygen (O_2) Content, as found	dry %	-0.04	0.01	0.11	
Oxygen (O_2) Content, "<"	dry %	<2.00	<2.00	<2.00	
Carbon Dioxide (CO_2) Content	dry %	12.08	12.05	12.00	
Pollutant Gases					
NOx Emissions					
Concentration, measured	ppmv	5.58	5.26	15.54	
Concentration @ 15% O_2 (w/as found O_2)	ppmv corr.	1.57	1.49	4.41	**11 ppmv**
Concentration @ 15% O_2 (w/"<" O_2)	ppmv corr.	<1.74	<1.64	<4.85	
Mass Emission Rate	lb/hr	0.014	0.010	0.022	
Mass Emission Rate	lb/mmscf	6.13	5.79	17.16	
CO Emissions					
Concentration, measured	ppmv	163	188	179	
Concentration @ 15% O_2 (w/as found O_2)	ppmv corr.	45.8	53.1	50.9	**76 ppmv**
Concentration @ 15% O_2 (w/"<" O_2)	ppmv corr.	< 50.7	< 58.7	< 56.0	
Mass Emission Rate	lb/hr	0.24	0.22	0.15	
Mass Emission Rate	lb/mmscf	109	126	121	
VOC Emissions					
Concentration, measured	ppmv	--	42.6	--	
Concentration @ 15% O_2 (w/tank O_2)	ppmv corr.	--	12.3	--	**30 ppmv**
Mass Emission Rate	lb/hr	--	0.028	--	
Mass Emission Rate	lb/mmscf	--	16.3	--	
Process Data					
Actual RPM	rpm	979	885	808	
Maximum RPM	rpm	1,000	1,000	1,000	
% of RPM (% load)	%	97.9	88.5	80.8	
Fuel Usage	scfh	2,206	1,726	1,280	
Stack Flow Rate, Calc.	dscfm	332	261	194	
Firing Rate, Calc.	mmbtu/hr	2.32	1.81	1.34	
Catalyst Temperature, Inlet	degree F	1,033	980	905	
Catalyst Temperature, Outlet	degree F	1,046	997	926	
Engine Operating hours	hrs	18,176.6	--	--	
Operating hours since last source test	hrs	1,750	--	--	
AFRC Actual	v	0.799	0.806	0.802	
AFRC Faults/Alarms	none	none	none	none	

"<" - Result is below the reporting limit (20% of analyzer range) and is thus reported as less-than ("<") this limit.

TABLE 1-2. SUMMARY OF RESULTS

Facility: Mesa Water
City, State: Costa Mesa, CA
Unit Tested: Reservoir II- Engine #2

Parameter	Units	TEST RESULTS			Permit Limit(s)
		1-High	1-Normal	1-Low	
Test Date:	m/d/y	09/16/15	09/16/15	09/17/15	
Start Time:	hh:mm	12:43	13:47	14:40	
End Time:	hh:mm	13:00	14:50	14:54	
SCAQMD Method 100.1 - CEMS					
Stack Diluent Gases					
Oxygen (O2) Content, as found	dry %	-0.04	-0.02	0.00	
Oxygen (O2) Content, "<"	dry %	< 2.00	< 2.00	< 2.00	
Carbon Dioxide (CO2) Content	dry %	12.08	12.06	12.07	
Pollutant Gases					
NOx Emissions					
Concentration, measured	ppmv	< 5.00	8.86	< 5.00	
Concentration @ 15% O_2 (w/as found O_2)	ppmv corr.	<1.41	2.50	<1.41	**11 ppmv**
Concentration @ 15% O_2 (w/"<" O_2)	ppmv corr.	<1.56	<2.77	<1.56	
Mass Emission Rate	lb/hr	<0.012	0.017	<0.0075	
Mass Emission Rate	lb/mmscf	<0.091	0.16	<0.092	
CO Emissions					
Concentration, measured	ppmv	159	112	182	
Concentration @ 15% O_2 (w/as found O_2)	ppmv corr.	44.9	31.7	51.5	**76 ppmv**
Concentration @ 15% O_2 (w/"<" O_2)	ppmv corr.	<49.7	<35.1	<56.9	
Mass Emission Rate	lb/hr	0.24	0.13	0.17	
Mass Emission Rate	lb/mmscf	106	75.1	122	
VOC Emissions					
Concentration, measured	ppmv	--	21.5	--	
Concentration @ 15% O_2 (w/tank O_2)	ppmv corr.	--	6.36	--	**30 ppmv**
Mass Emission Rate	lb/hr	--	0.015	--	
Mass Emission Rate	lb/mmscf	--	8.22	--	
Process Data					
Actual RPM	rpm	978	886	801	
Maximum RPM	rpm	1,000	1,000	1,000	
% of RPM (% load)	%	97.8	88.6	80.1	
Fuel Flow Rate	scfh	2,259	1,768	1,359	
Stack Flow Rate, calc.	dscfm	340	267	205	
Firing Rate, calc.	mmbtu/hr	2.37	1.86	1.43	
Catalyst Temperature, Inlet	degree F	982	922	842	
Catalyst Temperature, Outlet	degree F	1,011	962	894	
Engine Operating hours	hrs	18,367.1	--	--	
Operating hours since last source test	hrs	1,912	--	--	
AFRC Actual	v	0.787	0.777	0.793	
AFRC Faults/Alarms	none	none	none	none	

"<" - Result is below the reporting limit (20% of analyzer range) and is thus reported as less-than ("<") this limit.

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TABLE 1-3. SUMMARY OF RESULTS

Facility: Mesa Water
City, State: Costa Mesa, CA
Unit Tested: Reservoir II- Engine #3

Parameter	Units	TEST RESULTS			Permit Limit(s)
		1-High	1-Normal	1-Low	
Test Date:	mm/dd/yy	09/17/15	09/17/15	09/17/15	
Start Time:	hh:mm	16:03	16:50	17:36	
End Time:	hh:mm	16:17	17:19	17:50	
SCAQMD Method 100.1 - CEMS					
Stack Diluent Gases					
Oxygen (O_2) Content, as found	dry %	- 0.05	- 0.05	- 0.03	
Oxygen (O_2) Content, "<"	dry %	< 2.00	< 2.00	< 2.00	
Carbon Dioxide (CO_2) Content	dry %	12.10	12.09	12.10	
Pollutant Gases					
NOx Emissions					
Concentration, measured	ppmv	<5.00	< 5.00	<5.00	
Concentration @ 15% O_2 (w/as found O_2)	ppmv corr.	<1.41	< 1.41	<1.41	**11 ppmv**
Concentration @ 15% O_2 (w/"<" O_2)	%	<1.56	<1.56	<1.56	
Mass Emission Rate	lb/hr	<0.012	<0.0096	<0.0074	
Mass Emission Rate	lb/mmscf	<5.48	<5.48	<5.48	
CO Emissions					
Concentration, measured	ppmv	188	162	181	
Concentration @ 15% O_2 (w/as found O_2)	ppmv corr.	53.0	45.7	51.0	**76 ppmv**
Concentration @ 15% O_2 (w/"<" O_2)	ppmv corr.	< 58.7	< 50.6	< 56.5	
Mass Emission Rate	lb/hr	0.28	0.19	0.16	
Mass Emission Rate	lb/mmscf	125	108	121	
VOC Emissions					
Concentration, measured	ppmv	--	36.4	--	
Concentration @ 15% O_2 (w/tank O_2)	ppmv corr.	--	10.5	--	**30 ppmv**
Mass Emission Rate	lb/hr	--	0.024	--	
Mass Emission Rate	lb/mmscf	--	13.9	--	
Process Data					
Actual RPM	rpm	981	890	801	
Maximum RPM	rpm	1,000	1,000	1,000	
% of RPM (% load)	%	98.1	89.0	80.1	
Fuel Usage	scfh	2,227	1,754	1,356	
Stack Flow Rate, Calc.	dscfm	335	264	204	
Firing Rate, calc.	mmbtu/hr	2.34	1.84	1.42	
Catalyst Temperature, Inlet	degree F	1,033	981	910	
Catalyst Temperature, Outlet	degree F	1,041	988	922	
Engine Operating hours	hrs	19,771.1	--	--	
Operating hours since last source test	hrs	1,916	--	--	
AFRC Actual	v	0.790	0.800	0.795	
AFRC Faults/Alarms	none	none	none	none	

"<" - Result is below the reporting limit (20% of analyzer range) and is thus reported as less-than ("<") this limit.

2.0 INTRODUCTION

Almega Environmental & Technical Services (Almega) has been contracted by Mesa Water District (Mesa Water) to conduct stationary source emissions testing of four natural gas fired Internal Combustion Engines (ICEs Nos. 1, 2, 3 & 4) located at Mesa Water Reservoir II, 2340 Orange Avenue, in Costa Mesa, California. The purpose of the test was to measure the emissions from the exhaust of each ICEs for oxides of nitrogen (NOx), carbon monoxide (CO), oxygen (O_2), carbon dioxide (CO_2), and volatile organic compounds (VOC) to demonstrate compliance with the South Coast Air Quality Management District (SCAQMD) Rule 1110.2 (f)(1)(C) and applicable SCAQMD Permit to operate for each engine.

This test report reflects the testing conducted on three Internal Combustion Engines (ICE Nos. 1, 2, & 3) located at Mesa Water Reservoir II.

Table 2-1 describes the test matrix employed during the testing:

Table 2-1. TEST MATRIX

Criteria	Test Method	Run Time*	Number of Test Runs	Location	Applicable Requirement
NOx, CO, O_2, and CO_2	SCAQMD M 100.1	30 Min.	1 Normal load/per ICE	Exhaust Stack	SCAQMD Rule 1110.2
NOx, CO, O_2, and CO_2	SCAQMD M 100.1	≥15 Min.	1 Low & 1 High load/per ICE	Exhaust Stack	SCAQMD Rule 1110.2
VOC (TGNMO)	SCAQMD M 25.3	30 Min.	1 Normal load/per ICE	Exhaust Stack	SCAQMD Rule 1110.2

* Engine 2 testing on 9/16/15 consisted of one 60-minute run at normal load (M 100.1 & M 25.3).

Almega performed the source testing while each IC engine was operated at high, normal, and low operating load conditions. Sampling was performed at the exhaust of each three ICEs (Engines 1, 2, and 3). Testing was conducted as specified in the reference methods and approved test protocol evaluation dated February 6, 2015.

2.1 Document Outline

This report is organized as follows. Section 1.0 is a summary of the project and test results. Section 2.0 describes the project, its objectives and approach. Section 3.0 discusses test results. Section 4.0 describes the equipment tested and applicable sampling locations. Section 5.0 describes the sampling and analysis procedures used to conduct the testing. And Section 6.0 describes Quality Assurance and Quality Control activities performed. The Appendices contain test results, calculated data, raw field data, facility process and test data, calibration records, certification documents, and Laboratory data package.

3.0 TEST RESULTS AND DISCUSSION

The testing was conducted after the arrival of Almega's test personnel and set-up of test equipment. The source was operated by plant personnel during testing activities. The test program was coordinated by Ms. Kaying Lee from the Mesa Water.

3.1 Test Discussion

Test results are summarized in Table 1-1 to Table 1-3 and discussed below.

The test results for NOx, CO, and VOC emissions from all three Internal Combustion Engines (ICE Nos. 1, 2, & 3) meet the concentration limits imposed by the applicable SCAQMD permit to operate and SCAQMD Rule 1110.2.

Operating parameters such as fuel type, fuel flow rate, engine revolutions per minute (RPM), non-selective catalytic reduction (NSCR) catalyst inlet/outlet temperature, air-to-fuel ratio controller (AFRC) alarms, AFRC actual values, engine elapsed time, and hours since last source test are summarized in Table 1-1 to 1-3 and detail information can be found in Appendix F.

Prior to start of Engine 2 at the low load test on September 17, the NOx concentration was found to be over the allowable limit. The results were documented and testing was resumed after facility made the required adjustment per Rule 1110.2 (f)(1)(C)(ii).

Appendices reference a test on Engine 4 which is not summarized and reported in this report. Process data indicated that this testing was conducted at the incorrect operating loads. Therefore, Engine 4 test was repeated at the proper operating loads to demonstrate compliance with Rule/Permit conditions. A separate report will be submitted for this engine.

3.1.1 Others

- All measured concentrations were corrected for bias zero and bias calibration drifts according to SCAQMD Method 100.1 (See Appendix C1).
- All instruments performed properly during testing and their performance specifications were within the allowable limits specified in Method 100.1 (See Appendix C1).
- An NO_2 to NO converter efficiency check was performed on the reference method NOx analyzer prior to the test. The average converter efficiency was greater than 90% (Appendix E).
- The CEMS conditioner dew point was maintained below 37°F (See Appendix F).
- During the first day of testing on September 16, testing of Engine 2 was performed at normal load for 60 minutes and high load for 18 minutes.

- CEMS probe was traversed across the stack to ensure that sample from multiple points is collected for the representative sampling. During the first day of testing on September 16, twelve points traverse (six points per port) was performed for normal load. But on second day and the third day of testing on September 17 and 23, sampling was performed by traversing the CEMS probe along one cross- sectional axis of the stack, using three points at 16.7, 50, and 83.3 percent of the stack diameter (See Appendix C2 and C3).

- During the test, when the measured concentrations fell below the quantifiable limit of SCAQMD Method 100.1, the minimum reporting limit (20% of the analytical range) was reported according to Method 100.1. For Engines 2 and 3, a low-level NOx calibration gas (2.513 ppmv) was injected to verify the analyzer accuracy at the lower level.

- Rich burn engines are characterized by low O_2 measurements and therefore NOx and CO concentrations were corrected to 15% O_2 by using the "as found" oxygen concentration to evaluate the concentration limits for these parameters. NOx and CO concentrations are also reported at 15% O_2 using the reporting limit of the oxygen CEMS analysis per Method 100.1. The VOC concentration was corrected to 15% O_2 by using the Method 25.3/10.1 measured oxygen which is believed as better indicator for compliance. The stack flow rate was calculated via EPA Method 19 using the CO_2 based F-Factor.

- A comparative analysis of O_2, CO_2, and CO between the Method 25.3/M10.1 and M100.1 results is tabulated in Appendix D1 per the Rule 1110.2 standard source test protocol requirement. This comparison shows the Method 25.3 samples were properly collected and adequately represent the exhausts gas constituents.

- Because the totalizing fuel meter did not update a minimum of ten volumetric units during the test period to obtain a read at each interval, fuel flow rate was quantified based on timing of the rotating dial which was recorded for minimum of 60 seconds during each operating loads. Engine brake horsepower (BHP) data during the test was not available.

Testing was performed as specified in the reference methods and approved test protocol. No modifications to proposed sampling and analysis procedures other than noted above were required.

3.2 Test Chronology

Testing for NOx, CO, O_2, CO_2, and VOC was conducted. The following are reported:

Parameter-Measurement	Test Date & Time
NOx, CO, O_2, CO_2, and VOC	ICE 1: September 23, 2015 (10:27-12:31)
	ICE 2: September 16, 2015 (12:07-14:50) September 17, 2015 (14:40-14:54)
	ICE 3: September 17, 2015 (16:03-17:50)

4.0 EQUIPMENT AND PROCESS DESCRIPTION

Mesa Water District's primary purpose is to manage and deliver water and water-related services to customers within its service area. Mesa Water distributes a combination of imported water and local groundwater to approximately 23,500 retail accounts (population of over 108,000) in an 18-square-mile area, which includes the city of Costa Mesa, parts of Newport Beach, and unincorporated areas of Orange County, including the John Wayne Airport. Mesa Water District owns and operates four internal combustion engines for operations at the Reservoir II facility in Costa Mesa, California. These engines are used to drive water pumps. The equipment tested is described below.

4.1 Equipment Description

All four engines are identical: Waukesha, Model No. 2895G, natural gas fired, four cycle, six cylinders, rich burn, naturally aspirated, maximum rating at 369 BHP with a non-selective catalytic reduction converter, Johnson Matthey Model No. ES-ASA(1000), and an air-fuel ratio controller, Compliance Controls, Model MECR-11-FT-60, driving a water pump.

4.2 Operating Conditions During Test

The process was operated continuously during the test period. Source testing was performed at high, normal, and low operating loads, as required by Rule 1110.2. Process parameters are summarized in Tables 1-1 to 1-3 and detail information can be found in Appendix F.

4.3 Sampling Locations

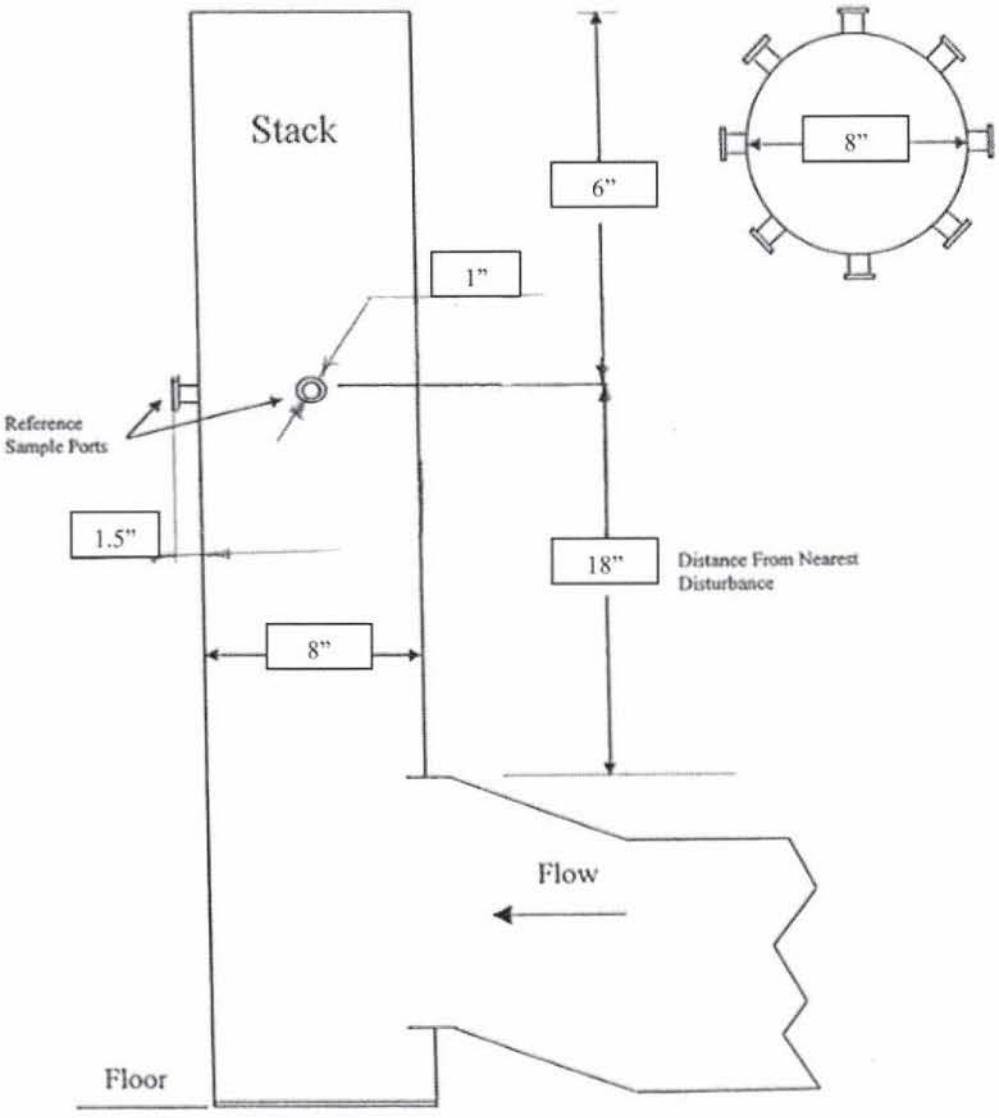
The reference method sampling locations are located on the exhaust stack. A general schematic of the stack with sampling locations are shown in Figure 4.1. The exhaust stacks of Engines 1-3 have identical dimensions. The reference method sampling locations meet the following specifications:

IC Engines 1-3

Sampling Location Configuration for Reference Method CEMS Probe:	
Upstream	6 in. (0.75 duct diameter)
Downstream	18 in. (2.25 duct diameter)
Port Length	1.5 in. (measured from outside wall)
Port Inside Diameter	1.0 in
Number of sampling ports	2 (located at 90° intervals)
Stack Diameter	8.0 in. (internal diameter)

All sampling locations meet the requirements of SCAQMD Method 1.2.

Figure 4-1. General Stack Schematic (ICEs 1-3)



5.0 SAMPLING AND ANALYTICAL PROCEDURES

Test measurements were performed according to sampling and analysis procedures promulgated by the South Coast Air Quality Management District (SCAQMD), California Air Resources Board (CARB), or US Environmental Protection Agency (EPA). The sampling and analysis procedures used for this test program are summarized below. Any modifications or deviations not addressed herein are discussed in Section 3 of this report.

5.1 SCAQMD Method 100.1 – Continuous Monitoring of Gaseous Emissions, CEMS
5.2 SCAQMD Method 25.3 – VOC, as TGNMO

5.1 SCAQMD Method 100.1 - Continuous Monitoring of Gaseous Emissions, CEMS

In this method, gaseous components of the stack gas (e.g. NO_X, CO, O_2, and CO_2) are measured continuously according to SCAQMD Method 100.1 using Almega's mobile continuous emissions monitoring system (CEMS). Figure 5-1 is a schematic of Almega's CEMS.

The CEMS extracts and conditions a representative stack gas sample and analyzes the gas using one or more analytical instruments. Typical CEMS instrumentation is described in Table 5-1. The extraction and conditioning system consists of a stainless steel heated probe, a short heated TFE sample line, a conditioning system, a TFE-diaphragm pump and a TFE transport (sample) line. The sample conditioning system, consists of water knockout impingers and/or a thermoelectric condenser, removes moisture before the gas is delivered to the analyzers. Sample flow and delivery are controlled using a flow control panel that includes valves, pressure gauges, and flow meters (rotameters). The flow control panel allows the user to deliver sample gas to any and all instruments. Instrument readings are recorded using a real-time strip chart and an electronic data acquisition system (DAS). Other pertinent data such as calibration gas cylinder numbers and concentrations, test location, dates, times, and operator identification are also recorded on the strip chart and on the field data form.

Sampling included pretest and post-test calibration and bias checks for each sampling run. Raw concentration data were corrected for sampling system bias according to Method 100.1 using the following equation:

$$C_{CORR} = C_{MA} \times \frac{(C_i - BIAS_{ZERO})}{(BIAS_{SPAN} - BIAS_{ZERO})}$$

Where:
C_{CORR} = Concentration, corrected for drift and bias
C_i = Average measured concentration (raw value)
$BIAS_{ZERO}$ = Average instrument response during zero bias check
C_{MA} = Certified concentration of applicable span gas
$BIAS_{SPAN}$ = Average instrument response during span bias check

The following QA/QC activities were performed during testing.

- Prior to testing, each individual analyzer was calibrated (adjusted) by introducing zero, hi-span and mid-span gases directly into each analyzer and by making corresponding adjustments.

- Prior to testing, calibration error, linearity and system bias checks were performed on each analyzer. Calibration error and linearity checks were performed by injecting known calibration gases directly to each instrument. Injecting calibration gases at the sampling-probe/junction or at the sampling probe tip performs system bias checks.

- The system response time for each parameter was determined at the moment when the calibration gas for the bias check reached 95% of its expected concentration value.

- A leak check was conducted before sampling and periodically thereafter to ensure that no leakage occurs in the entire sampling apparatus. The leak check was performed on the vacuum side by sealing the probe tip and increasing vacuum to above 20 inches of mercury. After the vacuum stabilizes, it should hold constantly at about 20 in. Hg. On the pressure side, the pressure gauge indicator should drop to zero and flow to each individual rotameter also should drop to zero to indicate a successful leak check.

- Calibration gases used to span instrumentation conform to EPA Protocol 1. Certificates of analysis for calibration gases are included in the report.

- An NO_2-to-NO conversion efficiency (CE) check was performed in the instrument range utilized for the NOx sampling and according to the procedure in Method 100.1. The result of the CE check is included in the report.

Figure 5-1. Continuous Emissions Monitoring System

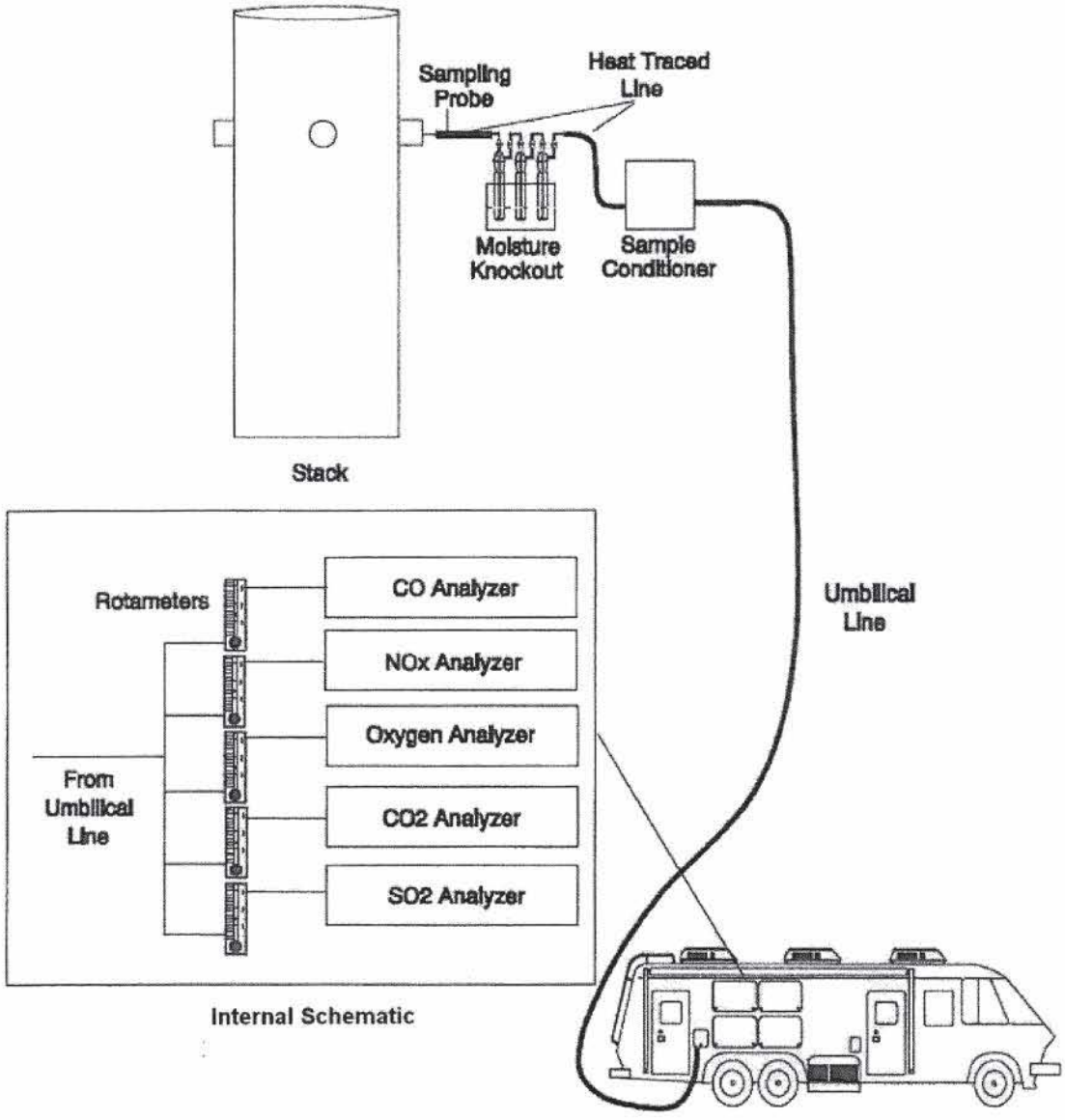


TABLE 5-1. ALMEGA CEMS – GENERAL EQUIPMENT SPECIFICATIONS

ANALYZERS					
Specification	**O2**	**CO2**	**NOx**	**CO**	**SO2**
Manufacturer	Teledyne	Servomex	T-API	Thermo Electron	Western Research
Model	326RA	1400B	200AH	48C	921
Analytical Principle	E-Chemical Cell	NDIR	Chemiluminescent	NDIR-GCC	NDUV
Ranges	%: 0-5, -10, -25	%: 0-5, -10, -20	ppmv: 0-2.5, -10, -25, -50, -100, -250, -1,000	ppmv: 0-20, -50, -100, -200, -500, -1k, x10	ppmv: 0-10, -25, -50, -100, -200, -300
Accuracy, % of Full Scale	± 1%	± 1%	± 1%	± 1%	+ 0.5%
Repeatability, % of Full Scale	0.5%	0.5%	0.5%	0.5%	0.5%
Sensitivity, % of Full Scale	0.5%	0.5%	0.5%	0.5%	<2% of Range
Zero/Span Drift, % of Full Scale	± 1%, in 24 Hrs	± 1%, in 24 Hrs	± 1%, in 24 Hrs	± 1%, in 24 Hrs	-
Response Time	3 Seconds	<2 Seconds	1.7 Seconds	<2.0 Seconds	30 seconds
Linearity, % of Full Scale	< 1%	< 1%	< 1%	< 1%	< 1%
Output	1V DC, 5V DC	0.1V DC, 1V DC	1V DC, 10V DC	1V DC, 10V DC	0-1V DC

OTHER CEMS EQUIPMENT				
Specification	**Sample Conditioner**		**Stripchart Recorder**	
System used	Primary	Back-up	System used	Primary
Manufacturer	Almega	Universal	Manufacturer	Yokogawa
Model	(in-house)	Model 1090	Model	Model HR 2400
Principle	Refrigeration	Refrigeration	Pen Response	3 sec.
Max. Inlet Temperature	>700 F	500 F	Input Voltage	user-selectable
Max. Inlet Pressure	50 psi	50 psi	Chart Speed	user-selectable
Max. Flow Rate	10 SCFH	7.0 Lpm	Chart Width	10 inches
Max. Water Concentration	50%	50%	Output	user-selectable
Outlet Dew-Point Temperature	< 37 F	35 F ± 2 F	No. of Channels	30 user-select. 30 calc'd
Dew-Point Stability		± 0.5 F	Colors	10 color, user-selectable

5.2 SCAQMD Method 25.3 – VOC, as TGNMO

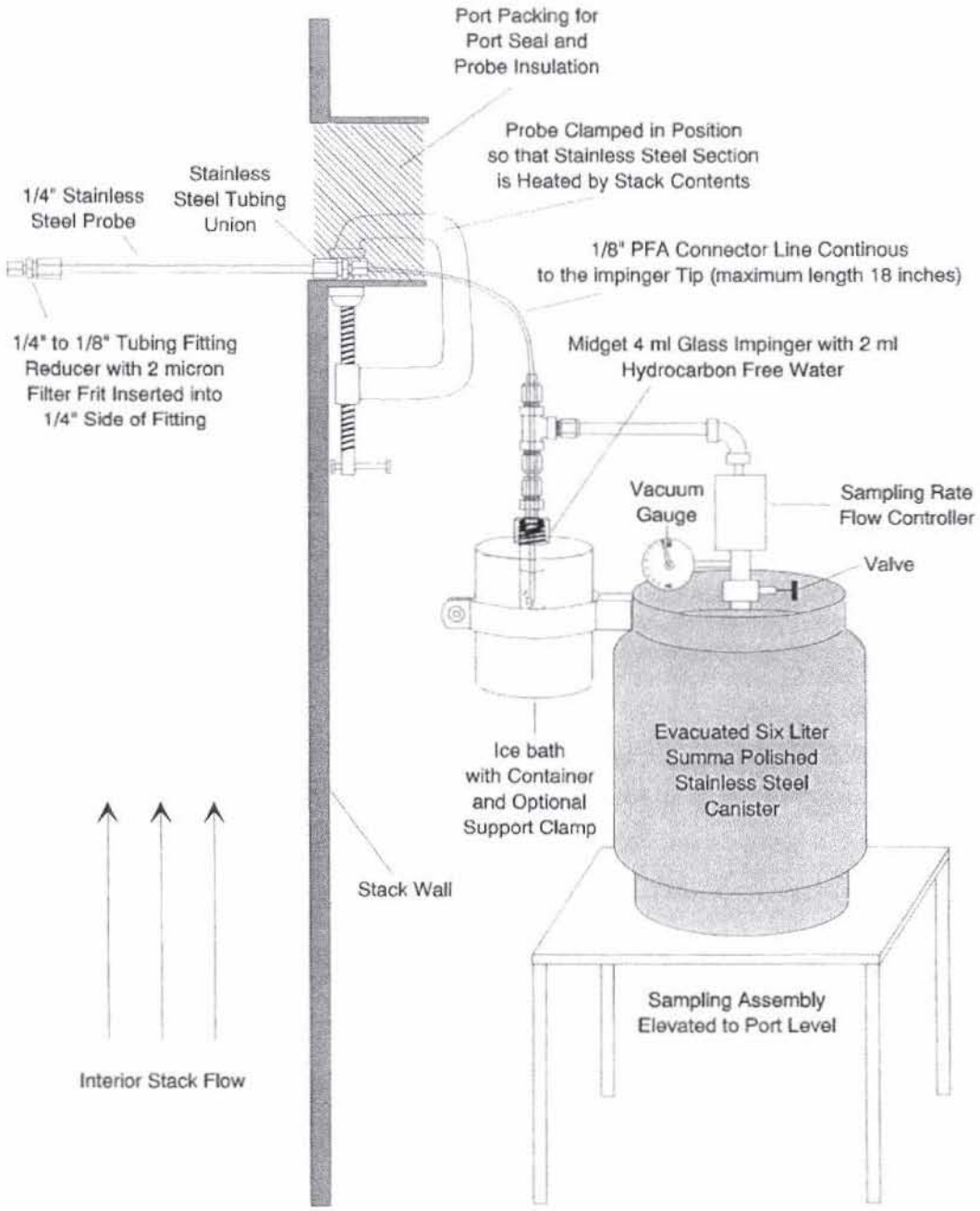
This method applies to the measurement of low-concentration (≤ 50 ppmv) Volatile Organic Compounds (VOC) or total gaseous non-methane organics (TGNMO) as carbon in source emissions. In this Method, gaseous samples are withdrawn from the gas stream at a constant rate through duplicate chilled condensate traps and collected in evacuated sample tanks. The sampling system is depicted in Figure 5-2. Each sampling train (there are two) consisted of an in-stack filter (optional), sample probe, water-chilled mini-impinger, a flow control system, and an evacuated sample tank. The flow controller incorporated a combination vacuum/pressure gauge, which was connected directly to the canister. The TGNMO was determined by combining the analytical results obtained from independent analyses of the condensate traps (condensable fraction) and the sample tanks (gaseous fraction).

Prior to testing, the sampling system was pre-cleaned and evacuated in preparation for sample collection. On-site, the sampling system was leak-checked and the impingers were placed in an ice-slurry (the impingers are chilled for at least 30 minutes prior to sampling). Then the sample probe was placed in the stack, facing downstream to prevent collection of particulate matter. Pretest data was recorded and the sample valve was opened. The flow controller was based on a critical orifice that was preset to flow at a rate of 80-cc/min ± 15%. Periodically, sampling train readings (i.e. tank vacuum) were recorded on the field data sheet. Sampling was stopped when 1/2 hour had elapsed. Then, the sampling train was removed from the stack and a leak check was performed. Samples were logged in and delivered to the laboratory for analysis.

The analytical system consisted of two major sub-systems: a total organic carbon (TOC) analyzer capable of differentiating between total carbon (TC) and inorganic carbon (IC) and a non-methane organics (NMO) analyzer. The NMO analyzer was a gas chromatograph (GC) with back flush capability for NMO analysis and was equipped with an oxidation catalyst, reduction catalyst, and flame ionization detector (FID). The system for the recovery and conditioning of the organics captured in the condensate trap consisted of a heat source, oxidation catalyst, non-dispersive infrared (NDIR) CO_2 analyzer and an intermediate collection vessel (ICV). Analyses were performed as follows.

NMO collected in the water impinger were analyzed in the TOC analyzer. The TOC analyzer determined both TC and IC. And the TOC was calculated as the difference between TC and IC.
The organic content of the sample fraction collected in the sampling tank was measured by injecting a gas sample into the GC to separate the NMO from carbon monoxide (CO), CO_2 and CH_4. The NMO were oxidized to CO_2, reduced to CH_4, and measured by the FID. In this manner, the variable response of the FID (associated with different type of organic compounds) was eliminated. The sampling apparatus and sample analysis services were provided by Almega, which is a SCAQMD-approved laboratory.

Figure 5-2. Sampling Apparatus for TGNMO per SCAQMD Method 25.3
(Figure shows one train – actual method was run in duplicates simultaneously.)



6.0 QUALITY ASSURANCE AND QUALITY CONTROL

Almega applies stringent quality assurance and quality control (QA/QC) procedures to ensure the validity of measurements for all test methods. The following section discusses general and project-specific QA/QC measures.

6.1 General QA/QC

Almega's QA/QC procedures follow guidelines from the "Quality Assurance Handbook for Air Pollution Measurement Systems," Volumes I through III. And, procedures for pretest preparation and calibration of sampling equipment are followed. Standardized written procedures, calculator programs, and computer spreadsheets are used for test planning, pre-survey, equipment checklist, preliminary calculations, testing, data analysis, and reporting. Pretest equipment preparation and maintenance include organization of the following equipment prior to testing:

- Mobile RM CEM test van: Check fluids, fuel, mechanical conditions, verify operation of CEM instruments, sample lines and sample conditioner prior to the date of the source test.

- Sampling Equipment: Check meter boxes, pitot tubes, manometers and thermocouples to ensure in good working conditions and in proper calibrations. Pre-clean sampling trains and seal all openings prior to use.

Calibrations are performed in accordance with Chapter III of the SCAQMD Source Test Manual (March 1989). Table 6-1 shows the test equipment calibration schedules. Table 6-2 shows the test equipment maintenance schedules.

6.2 Project-Specific QA/QC

This project included specific QA/QC activities required to validate the test results. These QA/QC activities are based on the test methods discussed in Section 5 and generally acceptable test procedures. Reference Methods used for source testing are promulgated by the South Coast Air Quality Management District (SCAQMD), the California Air Resource Board (CARB), or the US Environmental Protection Agency (EPA). Any deviations from published Methods are approved in advance by the regulatory agency (i.e. SCAQMD), prior to implementation if possible. Project-specific QA/QC activities and results that may impact test results are discussed in Section 3.

TABLE 6-1. TEST EQUIPMENT CALIBRATION SCHEDULE

Equipment	Calibration Period	Standard or Method of Calibration
Thermocouples	6 Months and 2 Months	Mercury Thermometer, three point (ice, boiling water, hot oil)
Dry Gas Meters	6 Months and 2 Months	Critical orifice
Field Barometers	6 Months, Check prior to usage	Mercury Barometer
S-Type Pitot	6 Months Check prior to usage	EPA Method 2, Measure physical configuration. Reshape pitot tips or calibrate if configuration does not meet the limits.
Pressure gauges	6 Months 2 Months	Five-point calibration against manometer Three-point check
Temp. Meters	6 Months	Precision Potentiometer
CEM Systems	Bimonthly, or as needed	Specified by Manufacturer

TABLE 6-2. TEST EQUIPMENT MAINTENANCE

Equipment	Check For	Correction	Frequency
CEM Systems	Absence of malfunction, noise, drift, conversion efficiency for NOx analyzer	As required by the manufacture, or depending on performance	Bimonthly
Pumps	Absence of leakage, flow, proper vacuum	Replace parts, inspect, clean	300 hours of usage
Flow Devices	Levelling, zeroing, obstruction, deformation	Clean, replace, or re-calibrate	300 hours of usage
Calibration Gases	Expiration date, tank pressure	Re-certify, order new gases	2 months and prior to field testing
Regulators	Malfunction, Gauge precision	Repair or replace	3 months and prior to field testing
Gas Divider	Malfunction, precision	Repair or replace	Monthly and before field testing
Condensers	Leakage, temperature	Repair or replace	Monthly and before field testing
Heated lines	Leakage, temperature, cleanliness	Repair, replace, clean	Monthly and before field testing

APPENDICES

APPENDIX A

GENERAL CALCULATIONS AND FORMULAE

GENERAL CALCULATIONS

Standard conditions: 29.92 in. Hg, 60°F

Gas Moisture at standard conditions (scf): $V_{WTR} = K2*V_{COND}$
K2 = 0.04707 @ 68 °F, 0.0464 @ 60°F

Sample volume at standard conditions (scf):
Vmstd =K1*Vmacf*Ym*(Pbar+dH/13.6)/(Tm+460)
K1 = 17.64 @ 68°F, 17.38 @ 60°F

Percent of water: $\%H_2O = 100*Vmstd/(Vmstd+Vwtr)$

Dry molecular weight: $M_d = (44*\%CO_2+32*\%O_2+28*(\%N_2+\%CO))/100$

Wet molecular weight: $M_w = M_d*(1-\%H_2O/100)+18*(\%H_2O/100)$

Stack gas pressure (In. Hg): $P_{stk} = P_{bar}+P_{sta}/13.6$

Average velocity head: Ave. dP = $\{SQRT\ (dP)\}^2$

Stack gas velocity (fps): $V = 85.49*C_p*SQRT(dP)*SQRT((T_S+460)/(P_{STK}*M_w))$

Percent of excess air: $\%EXCA = 100*(\%O_2-0.5\%CO)/(0.264(\%N_2-(\%O_2-0.5\%CO)))$

Stack gas flow (dscfm): $Q_{STK} = 60(1-\%H_2O/100)*V*A*(528/(T_s+460))*P_{stk}/29.92$

Concentration at 3% O_2: $PPM\ @\ 3\%\ O_2 = PPM_{measured}*17.9/(20.9-\%O_2)$

Emissions lb/MMBtu:

lb/MMBtu = lb/hr /HI (heat input rate in MMBtu/hr)

Emissions lb/hr:
lb/hr = $PPM*10^{-6}*((MW\ lb/lb\text{-}mole)/SV)*dscfm*60$
MMBtu/hr = facility fuel usage (scfh)*HHV (1050 Btu/scf)* 10^{-6}

CALCULATIONS FOR METHOD 100.1:

Corrected PPM = $(PPM_{measured}-C_o)*C_{ma}/(C_m-C_o)$

Where: C_o = Average of initial and final bias zeros
C_m = Average of initial and final bias calibrations
C_{ma} = Certified gas value used for the bias calibration.

GENERAL CALCULATIONS – continued

CALCULATIONS FOR METHOD 100.1, continued

Calibration Error=	100*(Certified value-Analyzer response)/Analyzer range
Percent Bias=	100*(Direct Analyzer response-Bias response)/Analyzer range
System Zero/Span Drifts=	100*(Final-Initial)/Analyzer range
Linearity=	100*(Analyzer mid. gas response-Predicted value)/range

Where the Predictive Value for the mid gas is found by a straight line drawn between the span gas and zero gas calibration points which can be calculated from the straight line equation, Y=mx+b where m is the slope of the line and b is the Y-intercept. The calculation is done by a computer spreadsheet for Method 100.1.

DEFINITIONS

A:	Stack cross area, square feet
Cp:	Pitot coefficient
@H:	Orifice pressure, in. H_2O
MW:	Molecular weight
Md:	Dry molecular weight of flue gas
Mw:	Wet molecular weight of flue gas
Pbar:	Barometric pressure, in. Hg
Psta:	Static pressure, in. H_2O
Pstk:	Stack pressure, in. Hg
P:	Stack differential pressure, in. H_2O
Qstk:	Stack gas flow, scfm
Tm:	Meter temperature, °F
Ts:	Stack gas temperature, °F
Vcond:	Volume of water condensation, ml
Vm:	Meter volume, acf
Vmstd:	Sample gas at standard conditions, scf
Vwtr:	Water vapor volume, scf
Ym:	Meter correction factor
SV:	Specific molar volume, 379.5 dscf/lb-mole at 60°F, or 385.3 dscf/lb-mole at 68°F
FF:	Fuel flow rate (scf/hr)
Fd:	Dry fuel factor, for natural gas Fd=8710 dscf/MMBtu at 68°F

APPENDIX B

APPROVALS AND CERTIFICATIONS

Appendix B1

SCAQMD and CARB Testing Approvals

South Coast
Air Quality Management District
21865 Copley Drive, Diamond Bar, CA 91765-4178
(909) 396-2000 · www.aqmd.gov

Almega

June 10, 2015

Mr. John W. Phillips
Almega Environmental
10602 Walker Street
Cypress, CA 90630

Subject: LAP Approval Notice
Reference # 93LA0827

Dear Mr. Phillips:

We completed our review of the renewal application you submitted for approval under the South Coast Air Quality Management District's Laboratory Approval Program (SCAQMD LAP). We are pleased to inform you that your firm is approved for the period beginning June 30, 2015, and ending June 30, 2016 for the following methods, subject to the requirements in the LAP Conditions For Approval Agreement and conditions listed in the attachment to this letter:

SCAQMD Methods 1-4	SCAQMD Method 7.1
SCAQMD Method 10.1	SCAQMD Rule 1121/ 1146.2 Protocols
SCAQMD Method 100.1	SCAQMD Rule 1420/1420.1 – (Lead) Source Sampling
SCAQMD Method 25.1 (Sampling)	SCAQMD Rule 1420/1420.1 – (Lead) Ambient Sampling
SCAQMD Method 25.1 (Analysis)	SCAQMD Rule 462 Testing
SCAQMD Method 25.3 (Analysis)	ASTM D6522-00/ USEPA CTM-030
SCAQMD Methods 5.1 and 6.1	

Thank you for participating in the SCAQMD LAP. Your cooperation helps us to achieve the goal of the LAP: to maintain high standards of quality in the sampling and analysis of source emissions. You may direct any questions or information to LAP Coordinator, Glenn Kasai. He may be reached by telephone at (909) 396-2271, or via e-mail at gkasai@aqmd.gov.

Sincerely,

Rudy Eden, Senior Manager
Laboratory Services &
Source Test Engineering

RE:GK/gk

cc: Dipankar Sarkar

150610 LapRenewal.doc

ATTACHMENT

Conditions For Almega Environmental's LAP Approval

1) Almega shall adhere to the following requirements when conducting portable analyzer tests using CTM-030 or ASTM D6522:

   a) Deviations to CTM-030 or ASTM D6522 shall be documented in the Test Critique section of the test report;

   b) The test report shall be formatted and organized in a manner consistent with the example portable analyzer test report, dated September 24, 2011, and the District Source Test Manual, Chapter II; and,

   c) NO_2 measurements may be quantified to 10% of the NO_2 span under the following conditions:

      - Calibrations shall be conducted per Sections 7.3 and 7.6 of CTM-030 at the span, mid-span (40-60% of span), low-span (10% of span), and zero level. The low-span calibration shall satisfy the requirements in Section 4.2 of CTM-030;
      - A linearity check shall be conducted once every five days using the low-span calibration gas; and,
      - If the measured NO_2 emission is less than 10% of the NO_2 span, it shall be reported as less than 10% of the span, and added to the NO emission to determine the total NOx concentration.

State of California

Air Resources Board

Approved Independent Contractor

Almega Environmental & Technical Services

This is to certify that the company listed above has been approved by the Air Resources Board to conduct compliance testing pursuant to California Code of Regulations, Title 17, Section 91207, until June 30, 2016, for the test methods listed below:

ARB Source Test Methods:

1, 2, 3, 4, 5, 8

100 (CO, CO_2, NO_x, O_2, SO_2)

Dr. Michael T. Benjamin, Chief
Monitoring and Laboratory Division

State of California

Air Resources Board

Approved Independent Contractor

Almega Environmental & Technical Services

This is to certify that the company listed above has been approved by the Air Resources Board to provide compliance testing pursuant to California Code of Regulations, Title 17, Section 91207, until June 30, 2016, for the method listed below:

Visible Emissions Evaluation

Dr. Michael T. Benjamin, Chief
Monitoring and Laboratory Division

Appendix B2

Certification of No Conflict-of-Interest

Certification of No Conflict-of-Interest

Almega Environmental & Technical Services
10602 Walker Street
Cypress, CA 90630

I certify that I am responsible for the testing operations of Almega and am authorized to sign this certificate on the Company's behalf.

Almega may conduct tests as an independent tester pursuant to SCAQMD Rule 304(k). I further certify that Almega has no conflict-of-interests, and is not related or owned in any way to the company being tested.

Company being tested:	Mesa Water
Facility ID No.:	98380
Permit Numbers:	G4002, G4003, and G4004
Signature:	
Name (printed or typed):	Surya Adhikari
Title:	Project Manager
Date:	October 14, 2015

APPENDIX C

CONTINUOUS MONITORING OF GASEOUS EMISSIONS, CEMS

Appendix C1

CEMS – Results and Calculations

Reference Method Data Summary

Facility: Mesa Water
Location: Costa Mesa, CA
Source: Reservoir II- Engine #1

Run Information				Flue Gas Information			Pollutant 1: NOx (MW: 46 lb/lb-mole)			Pollutant 2: CO (MW: 28 lb/lb-mole)		
Run No.	Test Date	Start Time	End Time	O2 dry % as found	O2 dry% "<"	CO2 dry %	dry ppm	dry ppm @15%O2	dry ppm @15%O2	dry ppm	dry ppm @15%O2	dry ppm @15%O2
1-High	09/23/15	10:27	10:41	-0.04	<2.00	12.08	5.58	1.57	<1.74	162.52	45.79	<50.73
1-Normal	09/23/15	11:02	11:31	0.01	<2.00	12.05	5.26	1.49	<1.64	187.93	53.07	<58.67
1-Low	09/23/15	12:17	12:31	0.11	<2.00	12.00	15.54	4.41	<4.85	179.49	50.93	<56.03

Note: "<"- concentrations below 20% of analytical range, reporting limit is reported per SCAQMD Method 100.1.

Almega

Almega ENVIRONMENTAL

Facility: **Mesa Water**
Location: **Costa Mesa, CA**
Source: **Reservoir II- Engine #1**

Run No.: **1-High**
Test Date: **09/23/15**
Run Start Time: **10:27**
Run End Time: **10:41**

TEST DATA VARIABLE	DESCRIPTION	Pollutant 1 NOx	Pollutant 2 CO	Diluent 1 O2	Diluent 2 CO2
A	ANALYTICAL RANGE	**25**	**500**	**10**	**20**
	Unit of Measurement	**ppmd**	**ppmd**	**% dry**	**% dry**
	CALIBRATION GAS INFORMATION				
B	Zero Gas	**0.00**	**0.00**	**0.00**	**0.00**
C	Mid Gas Concentration	**12.20**	**225.8**	**4.503**	**9.016**
	Mid Gas Cylinder S/N:	CC405991	SG9152339BAI	CC14859	CC14859
D	High Gas Concentration	**23.11**	**453.8**	**8.716**	**18.03**
	High Gas Cylinder S/N:	CC1599	CC39463	CC119210	CC119210
	Primary Gas Cylinder S/N:				
E	UPSCALE CALIBRATION GAS USED	**12.20**	**225.80**	**4.503**	**9.016**
	L=Low, M=Mid, H=High	**M**	**M**	**M**	**M**
	INITIAL CALIBRATION ERROR TEST				
F	Zero Gas Response	**0.01**	**-0.08**	**0.00**	**0.00**
G	Mid Gas Response	**12.32**	**225.52**	**4.51**	**8.98**
H	High Gas Reponse	**23.19**	**453.60**	**8.73**	**18.03**
	INITIAL SYSTEM CALIBRATION CHECK				
I	Zero Gas Response	**0.15**	**-0.08**	**0.01**	**0.01**
J'	Upscale Gas Response	**12.13**	**224.71**	**4.51**	**8.93**
	FINAL SYSTEM CALIBRATION CHECK				
K	Zero Gas Response	**0.03**	**-0.30**	**0.01**	**0.03**
L'	Upscale Gas Response	**12.28**	**228.86**	**4.50**	**8.95**
	FINAL CALIBRATION ERROR CHECK				
M	Zero Gas Response	**0.10**	**-0.20**	**0.01**	**-0.01**
N'	Mid Gas Response	**12.41**	**224.76**	**4.51**	**8.94**
O	High Gas Reponse	**23.17**	**450.99**	**8.72**	**17.92**
				x	
P	AS MEASURED FLUE GAS CONCENTRATI	**5.63**	**163.17**	**-0.03**	**11.97**

CALCULATIONS						FORMULA
	AVERAGE SYSTEM CALIBRATION					
Q	Zero Response	0.09	-0.19	0.01	0.02	(I+K)/2
R	Upscale Response	12.21	226.79	4.51	8.94	(J+L)/2
				x		
S	CORRECTED CONC.	5.58	162.52	-0.04	12.08	E*(P-Q)/(R-Q)

QA/QC CALCULATIONS

CALIBRATION GAS SELECTION, % of Rang					
Low Gas					C*100/A
Mid Gas	48.8	45.2	45.0	45.1	C*100/A
High Gas	92.4	90.8	87.2	90.2	D*100/A
CALIBRATION ERROR, % of Range					
Initial Zero Gas Error	0.04	-0.02	0.00	0.00	(F-B)*100/A
Initial Mid Gas Error	0.48	-0.06	0.07	-0.18	(G-C)*100/A
Initial High Gas Error	0.32	-0.04	0.14	0.00	(H-D)*100/A
Final Zero Gas Error	0.40	-0.04	0.10	-0.05	(M-B)*100/A
Final Mid Gas Error	0.84	-0.21	0.07	-0.38	(N-C)*100/A
Final High Gas Error	0.24	-0.56	0.00	-0.55	(O-D)*100/A
LINEARITY, % of Range					
Initial	0.29	-0.03	0.00	-0.18	{(G-F)-[(H-F)*C]/D}*100/A
Final	0.52	0.09	0.02	-0.08	{(N-M)-[(O-M)*C]/D}*100/A
SAMPLING SYSTEM BIAS, % of Range					
Initial Zero Gas Bias	0.56	0.00	0.10	0.05	(I-F)*100/A
Initial Upscale Gas Bias	-0.76	-0.16	0.00	-0.25	(J-G[or G', or H]*100/A
Final Zero Gas Bias	-0.28	-0.02	0.00	0.20	(K-M)*100/A
Final Upscale Gas Bias	-0.52	0.82	-0.10	0.05	(L-N[or N', or O]*100/A
CALIBRATION DRIFT, % of Range					
Zero	-0.48	-0.04	0.00	0.10	(K-I)*100/A
Upscale	0.60	0.83	-0.10	0.10	(L'-J')*100/A

Almega ENVIRONMENTAL

Facility: **Mesa Water**
Location: **Costa Mesa, CA**
Source: **Reservoir II- Engine #1**

Run No.: **1-Normal**
Test Date: **09/23/15**
Run Start Time: **11:02**
Run End Time: **11:31**

TEST DATA		Pollutant 1	Pollutant 2	Diluent 1	Diluent 2
VARIABLE	DESCRIPTION	NOx	CO	O2	CO2
A	ANALYTICAL RANGE	**25**	**500**	**10**	**20**
	Unit of Measurement	**ppmd**	**ppmd**	**% dry**	**% dry**
	CALIBRATION GAS INFORMATION				
B	Zero Gas	**0.00**	**0.00**	**0.00**	**0.00**
C	Mid Gas Concentration	**12.20**	**225.8**	**4.503**	**9.016**
	Mid Gas Cylinder S/N:	CC405991	SG9152339BAL	CC14859	CC14859
D	High Gas Concentration	**23.11**	**453.8**	**8.716**	**18.03**
	High Gas Cylinder S/N:	CC1599	CC39463	CC119210	CC119210
	Primary Gas Cylinder S/N:				
E	UPSCALE CALIBRATION GAS USED	**12.20**	**225.80**	**4.50**	**9.02**
	L=Low, M=Mid, H=High	**M**	**M**	**M**	**M**
	INITIAL CALIBRATION ERROR TEST				
F	Zero Gas Response	**0.01**	**-0.08**	**0.00**	**0.00**
G	Mid Gas Response	**12.32**	**225.52**	**4.51**	**8.98**
H	High Gas Reponse	**23.19**	**453.60**	**8.73**	**18.03**
	INITIAL SYSTEM CALIBRATION CHECK				
I	Zero Gas Response	**0.15**	**-0.08**	**0.01**	**0.01**
J'	Upscale Gas Response	**12.13**	**224.71**	**4.51**	**8.93**
	FINAL SYSTEM CALIBRATION CHECK				
K	Zero Gas Response	**0.03**	**-0.30**	**0.01**	**0.03**
L'	Upscale Gas Response	**12.28**	**228.86**	**4.50**	**8.95**
	FINAL CALIBRATION ERROR CHECK				
M	Zero Gas Response	**0.10**	**-0.20**	**0.01**	**-0.01**
N	Mid Gas Response	**12.41**	**224.76**	**4.51**	**8.94**
O	High Gas Reponse	**23.17**	**450.99**	**8.72**	**17.92**
				x	
P	AS MEASURED FLUE GAS CONCENTRATIC	**5.31**	**188.72**	**0.02**	**11.94**

CALCULATIONS						FORMULA
	AVERAGE SYSTEM CALIBRATION					
Q	Zero Response	0.09	-0.19	0.01	0.02	(I+K)/2
R	Upscale Response	12.21	226.79	4.51	8.94	(J+L)/2
				x		
S	CORRECTED CONC.	5.26	187.93	0.01	12.05	E*(P-Q)/(R-Q)

QA/QC CALCULATIONS

CALIBRATION GAS SELECTION, % of Range					
Low Gas					C'*100/A
Mid Gas	48.8	45.2	45.0	45.1	C*100/A
High Gas	92.4	90.8	87.2	90.2	D*100/A
CALIBRATION ERROR, % of Range					
Initial Zero Gas Error	0.04	-0.02	0.00	0.00	(F-B)*100/A
Initial Mid Gas Error	0.48	-0.06	0.07	-0.18	(G-C)*100/A
Initial High Gas Error	0.32	-0.04	0.14	0.00	(H-D)*100/A
Final Zero Gas Error	0.40	-0.04	0.10	-0.05	(M-B)*100/A
Final Mid Gas Error	0.84	-0.21	0.07	-0.38	(N-C)*100/A
Final High Gas Error	0.24	-0.56	0.00	-0.55	(O-D)*100/A
LINEARITY, % of Range					
Initial	0.29	-0.03	0.00	-0.18	{(G-I)-[(H-F)*C]/D}*100/A
Final	0.52	0.09	0.02	-0.08	{(N-M)-[(O-M)*C]/D}*100/A
SAMPLING SYSTEM BIAS, % of Range					
Initial Zero Gas Bias	0.56	0.00	0.10	0.05	(I-F)*100/A
Initial Upscale Gas Bias	-0.76	-0.16	0.00	-0.25	(J-G[or G', or H]*100/A
Final Zero Gas Bias	-0.28	-0.02	0.00	0.20	(K-M)*100/A
Final Upscale Gas Bias	-0.52	0.82	-0.10	0.05	(L-N[or N', or O]*100/A
CALIBRATION DRIFT, % of Range					
Zero	-0.48	-0.04	0.00	0.10	(K-I)*100/A
Upscale	0.60	0.83	-0.10	0.10	(L'-J)*100/A

Almega ENVIRONMENTAL

Facility: **Mesa Water**
Location: **Costa Mesa, CA**
Source: **Reservoir II- Engine #1**

Run No.: **1-Low**
Test Date: **09/23/15**
Run Start Time: **12:17**
Run End Time: **12:31**

TEST DATA VARIABLE	DESCRIPTION	Pollutant 1 NOx	Pollutant 2 CO	Diluent 1 O2	Diluent 2 CO2
A	ANALYTICAL RANGE	**25**	**500**	**10**	**20**
	Unit of Measurement	**ppmd**	**ppmd**	**% dry**	**% dry**
	CALIBRATION GAS INFORMATION				
B	Zero Gas	**0.00**	**0.00**	**0.00**	**0.00**
C	Mid Gas Concentration	**12.20**	**225.8**	**4.503**	**9.016**
	Mid Gas Cylinder S/N:	CC405991	SG9152339BAL	CC14859	CC14859
D	High Gas Concentration	**23.11**	**453.8**	**8.716**	**18.03**
	High Gas Cylinder S/N:	CC1599	CC39463	CC119210	CC119210
	Primary Gas Cylinder S/N:				
E	UPSCALE CALIBRATION GAS USED	**12.20**	**225.80**	**4.50**	**9.02**
	L=Low, M=Mid, H=High	**M**	**M**	**M**	**M**
	INITIAL CALIBRATION ERROR TEST				
F	Zero Gas Response	**0.01**	**-0.08**	**0.00**	**0.00**
G	Mid Gas Response	**12.32**	**225.52**	**4.51**	**8.98**
H	High Gas Reponse	**23.19**	**453.60**	**8.73**	**18.03**
	INITIAL SYSTEM CALIBRATION CHECK				
I	Zero Gas Response	**0.03**	**-0.30**	**0.01**	**0.03**
J'	Upscale Gas Response	**12.28**	**228.86**	**4.50**	**8.95**
	FINAL SYSTEM CALIBRATION CHECK				
K	Zero Gas Response	**0.30**	**-0.40**	**0.02**	**0.03**
L'	Upscale Gas Response	**12.42**	**223.27**	**4.50**	**8.92**
	FINAL CALIBRATION ERROR CHECK				
M	Zero Gas Response	**0.10**	**-0.20**	**0.01**	**-0.01**
N	Mid Gas Response	**12.41**	**224.76**	**4.51**	**8.94**
O	High Gas Reponse	**23.17**	**450.99**	**8.72**	**17.92**
				x	
P	AS MEASURED FLUE GAS CONCENTRATI	**15.68**	**179.62**	**0.12**	**11.88**

CALCULATIONS						FORMULA
	AVERAGE SYSTEM CALIBRATION					
Q	Zero Response	0.17	-0.35	0.02	0.03	(I+K)/2
R	Upscale Response	12.35	226.07	4.50	8.94	(J+L)/2
				x		
S	CORRECTED CONC.	15.54	179.49	0.11	12.00	E*(P-Q)/(R-Q)

QA/QC CALCULATIONS

CALIBRATION GAS SELECTION, % of Rang					
Low Gas					C*100/A
Mid Gas	48.8	45.2	45.0	45.1	C*100/A
High Gas	92.4	90.8	87.2	90.2	D*100/A
CALIBRATION ERROR, % of Range					
Initial Zero Gas Error	0.04	-0.02	0.00	0.00	(F-B)*100/A
Initial Mid Gas Error	0.48	-0.06	0.07	-0.18	(G-C)*100/A
Initial High Gas Error	0.32	-0.04	0.14	0.00	(H-D)*100/A
Final Zero Gas Error	0.40	-0.04	0.10	-0.05	(M-B)*100/A
Final Mid Gas Error	0.84	-0.21	0.07	-0.38	(N-C)*100/A
Final High Gas Error	0.24	-0.56	0.00	-0.55	(O-D)*100/A
LINEARITY, % of Range					
Initial	0.29	-0.03	0.00	-0.18	{(G-F)-[(H-F)*C]/D}*100/A
Final	0.52	0.09	0.02	-0.08	{(N-M)-[(O-M)*C]/D}*100/A
SAMPLING SYSTEM BIAS, % of Range					
Initial Zero Gas Bias	0.08	-0.04	0.10	0.15	(I-F)*100/A
Initial Upscale Gas Bias	-0.16	0.67	-0.10	-0.15	(J-G[or G', or H]*100/A
Final Zero Gas Bias	0.80	-0.04	0.10	0.20	(K-M)*100/A
Final Upscale Gas Bias	0.04	-0.30	-0.10	-0.10	(L-N[or N', or O]*100/A
CALIBRATION DRIFT, % of Range					
Zero	1.08	-0.02	0.10	0.00	(K-I)*100/A
Upscale	0.56	-1.12	0.00	-0.15	(L'-J')*100/A

AETS CEMS Data -- Run-by-Run Basis

	1-High				
	Time	NOx	CO	O2	CO2
#	AVG	5.63	163.17	-0.03	11.97
1	10:27	9.04	135.07	-0.03	11.96
2	10:28	10.25	139.04	-0.03	11.96
3	10:29	5.87	166.68	-0.03	11.96
4	10:30	6.33	189.04	-0.03	11.96
5	10:31	8.41	163.51	-0.03	11.96
6	10:32	7.37	152.90	-0.03	11.97
7	10:33	5.81	168.24	-0.03	11.97
8	10:34	6.36	145.13	-0.03	11.97
9	10:35	4.64	153.87	-0.03	11.97
10	10:36	3.16	195.02	-0.03	11.96
11	10:37	4.61	175.24	-0.03	11.97
12	10:38	4.37	151.53	-0.03	11.97
13	10:39	2.59	170.50	-0.03	11.97
14	10:40	2.71	175.28	-0.03	11.97
15	10:41	2.97	166.55	-0.03	11.98

AETS CEMS Data -- Run-by-Run Basis

	1-Normal				
	Time	NOx	CO	O2	CO2
#	AVG	5.31	188.72	0.02	11.94
1	11:02	5.29	186.39	0.01	11.94
2	11:03	5.11	188.85	0.02	11.94
3	11:04	5.38	180.92	0.02	11.94
4	11:05	5.37	185.80	0.01	11.94
5	11:06	5.20	195.10	0.01	11.94
6	11:07	4.88	196.19	0.02	11.94
7	11:08	5.46	182.35	0.02	11.95
8	11:09	5.10	197.62	0.02	11.95
9	11:10	6.00	181.60	0.02	11.95
10	11:11	5.52	186.59	0.02	11.94
11	11:12	4.51	189.46	0.02	11.94
12	11:13	5.20	175.19	0.02	11.94
13	11:14	5.30	182.17	0.02	11.94
14	11:15	4.74	189.97	0.02	11.94
15	11:16	5.16	178.55	0.02	11.94
16	11:17	4.96	189.59	0.02	11.94
17	11:18	4.81	191.28	0.02	11.94
18	11:19	5.25	187.48	0.02	11.93
19	11:20	4.96	188.03	0.02	11.93
20	11:21	5.02	187.59	0.02	11.94
21	11:22	5.07	193.89	0.02	11.93
22	11:23	4.71	196.16	0.02	11.93
23	11:24	4.98	186.62	0.02	11.93
24	11:25	4.82	190.09	0.02	11.93
25	11:26	5.86	185.38	0.02	11.94
26	11:27	6.36	190.74	0.02	11.94
27	11:28	5.93	191.76	0.02	11.93
28	11:29	6.02	191.84	0.02	11.94
29	11:30	6.42	196.30	0.02	11.93
30	11:31	5.96	198.03	0.02	11.94

AETS CEMS Data -- Run-by-Run Basis

	1-Low				
	Time	NOx	CO	O2	CO2
#	AVG	15.68	179.62	0.12	11.88
1	12:17	14.60	176.37	0.12	11.88
2	12:18	15.19	195.39	0.12	11.88
3	12:19	15.28	188.94	0.12	11.88
4	12:20	15.97	176.14	0.11	11.88
5	12:21	15.93	180.16	0.12	11.88
6	12:22	15.20	185.28	0.12	11.88
7	12:23	15.19	182.59	0.11	11.88
8	12:24	14.79	181.57	0.12	11.88
9	12:25	15.93	178.46	0.12	11.88
10	12:26	16.85	171.98	0.13	11.88
11	12:27	17.30	175.57	0.13	11.87
12	12:28	15.72	204.21	0.13	11.88
13	12:29	15.01	187.27	0.12	11.88
14	12:30	15.88	157.70	0.12	11.88
15	12:31	16.39	152.73	0.12	11.87

Reference Method Data Summary

Facility: Mesa Water
Location: Costa Mesa, CA
Source: Reservoir II- Engine #2

Run Information				Flue Gas Information			Pollutant 1: NOx (MW: 46 lb/lb-mole)			Pollutant 2: CO (MW: 28 lb/lb-mole)		
Run No.	Test Date	Start Time	End Time	O2 dry % as found	O2 dry % "<"	CO2 dry %	dry ppm	dry ppm @15%O2	dry ppm @15%O2	dry ppm	dry ppm @15%O2	dry ppm @15%O2
1-High	09/16/15	12:43	13:00	-0.04	<2.00	12.08	<5.00	<1.41	<1.56	159.26	44.86	<49.72
1-Normal	09/16/15	13:47	14:50	-0.02	<2.00	12.06	8.86	2.50	<2.77	112.32	31.68	<35.06
1-Low	09/17/15	14:40	14:54	0.00	<2.00	12.07	<5.00	<1.41	<1.56	182.33	51.47	<56.92

Note: "<"- concentrations below 20% of analytical range, reporting limit is reported per SCAQMD Method 100.1.

Almega ENVIRONMENTAL

Almega ENVIRONMENTAL

Facility: **Mesa Water**
Location: **Costa Mesa, CA**
Source: **Reservoir II- Engine #2**

Run No.: **1-High**
Test Date: **09/16/15**
Run Start Time: **12:43**
Run End Time: **13:00**

TEST DATA VARIABLE	DESCRIPTION	Pollutant 1 NOx	Pollutant 2 CO	Diluent 1 O2	Diluent 2 CO2
A	ANALYTICAL RANGE	**25**	**500**	**10**	**20**
	Unit of Measurement	**ppmd**	**ppmd**	**% dry**	**% dry**
	CALIBRATION GAS INFORMATION				
B	Zero Gas	**0.00**	**0.00**	**0.00**	**0.00**
C	Mid Gas Concentration	**12.20**	**226.2**	**4.503**	**9.016**
	Mid Gas Cylinder S/N:	CC405991	CC216	CC14859	CC14859
D	High Gas Concentration	**23.11**	**453.8**	**8.716**	**18.03**
	High Gas Cylinder S/N:	CC1599	CC39463	CC119210	CC119210
	Primary Gas Cylinder S/N:				
E	UPSCALE CALIBRATION GAS USED	**12.20**	**226.20**	**4.50**	**9.02**
	L=Low, M=Mid, H=High	**M**	**M**	**M**	**M**
	INITIAL CALIBRATION ERROR TEST				
F	Zero Gas Response	**-0.02**	**0.00**	**-0.01**	**0.01**
G	Mid Gas Response	**12.28**	**229.72**	**4.57**	**8.95**
H	High Gas Reponse	**23.17**	**453.87**	**8.80**	**17.99**
	INITIAL SYSTEM CALIBRATION CHECK				
I	Zero Gas Response	**0.10**	**-0.25**	**0.01**	**0.01**
J'	Upscale Gas Response	**11.90**	**226.18**	**4.54**	**8.90**
	FINAL SYSTEM CALIBRATION CHECK				
K	Zero Gas Response	**-0.05**	**-0.10**	**-0.02**	**0.03**
L'	Upscale Gas Response	**12.08**	**225.07**	**4.48**	**8.93**
	FINAL CALIBRATION ERROR CHECK				
M	Zero Gas Response	**-0.13**	**-0.04**	**-0.01**	**0.00**
N'	Mid Gas Response	**12.44**	**227.73**	**4.59**	**8.94**
O	High Gas Reponse	**23.60**	**450.87**	**8.74**	**17.95**
		x		*x*	
P	AS MEASURED FLUE GAS CONCENTRATI(	**0.92**	**158.81**	**-0.05**	**11.94**

CALCULATIONS						FORMULA
	AVERAGE SYSTEM CALIBRATION					
Q	Zero Response	0.03	-0.18	-0.01	0.02	(I+K)/2
R	Upscale Response	11.99	225.63	4.51	8.92	(J+L)/2
		x		*x*		
S	CORRECTED CONC.	0.92	159.26	-0.04	12.08	E*(P-Q)/(R-Q)

QA/QC CALCULATIONS

CALIBRATION GAS SELECTION, % of Rang					
Low Gas					C*100/A
Mid Gas	48.8	45.2	45.0	45.1	C*100/A
High Gas	92.4	90.8	87.2	90.2	D*100/A
CALIBRATION ERROR, % of Range					
Initial Zero Gas Error	-0.08	0.00	-0.10	0.05	(F-B)*100/A
Initial Mid Gas Error	0.32	0.70	0.67	-0.33	(G-C)*100/A
Initial High Gas Error	0.24	0.01	0.84	-0.20	(H-D)*100/A
Final Zero Gas Error	-0.52	-0.01	-0.10	0.00	(M-B)*100/A
Final Mid Gas Error	0.96	0.31	0.87	-0.38	(N-C)*100/A
Final High Gas Error	1.96	-0.59	0.24	-0.40	(O-D)*100/A
LINEARITY, % of Range					
Initial	0.23	0.70	0.28	-0.25	{(G-F)-[(H-F)*C]/D}*100/A
Final	0.17	0.60	0.79	-0.18	{(N-M)-[(O-M)*C]/D}*100/A
SAMPLING SYSTEM BIAS, % of Range					
Initial Zero Gas Bias	0.48	-0.05	0.20	0.00	(I-F)*100/A
Initial Upscale Gas Bias	-1.52	-0.71	-0.30	-0.25	(J-G[or G', or H]*100/A
Final Zero Gas Bias	0.32	-0.01	-0.10	0.15	(K-M)*100/A
Final Upscale Gas Bias	-1.44	-0.53	-1.10	-0.05	(L-N[or N', or O]*100/A
CALIBRATION DRIFT, % of Range					
Zero	-0.60	0.03	-0.30	0.10	(K-I)*100/A
Upscale	0.72	-0.22	-0.60	0.15	(L'-J')*100/A

Almega ENVIRONMENTAL

Facility: **Mesa Water**
Location: **Costa Mesa, CA**
Source: **Reservoir II- Engine #2**

Run No.: **1-Normal**
Test Date: **09/16/15**
Run Start Time: **13:47**
Run End Time: **14:50**

TEST DATA		Pollutant 1	Pollutant 2	Diluent 1	Diluent 2	
VARIABLE	DESCRIPTION	NOx	CO	O2	CO2	
A	ANALYTICAL RANGE	**25**	**500**	**10**	**20**	
	Unit of Measurement	**ppmd**	**ppmd**	**% dry**	**% dry**	
	CALIBRATION GAS INFORMATION					
B	Zero Gas	**0.00**	**0.00**	**0.00**	**0.00**	
C	Mid Gas Concentration	**12.20**	**226.2**	**4.503**	**9.016**	
	Mid Gas Cylinder S/N:	CC405991	CC216	CC14859	CC14859	
D	High Gas Concentration	**23.11**	**453.8**	**8.716**	**18.03**	
	High Gas Cylinder S/N:	CC1599	CC39463	CC119210	CC119210	
	Primary Gas Cylinder S/N:					
E	UPSCALE CALIBRATION GAS USED	**12.20**	**226.20**	**4.50**	**9.02**	
	L=Low, M=Mid, H=High	**M**	**M**	**M**	**M**	
	INITIAL CALIBRATION ERROR TEST					
F	Zero Gas Response	**-0.02**	**0.00**	**-0.01**	**0.01**	
G	Mid Gas Response	**12.28**	**229.72**	**4.57**	**8.95**	
H	High Gas Reponse	**23.17**	**453.87**	**8.80**	**17.99**	
	INITIAL SYSTEM CALIBRATION CHECK					
I	Zero Gas Response	**-0.05**	**-0.10**	**-0.02**	**0.03**	
J'	Upscale Gas Response	**12.08**	**225.07**	**4.48**	**8.93**	
	FINAL SYSTEM CALIBRATION CHECK					
K	Zero Gas Response	**-0.08**	**0.01**	**-0.01**	**0.04**	
L'	Upscale Gas Response	**12.16**	**229.28**	**4.51**	**8.92**	
	FINAL CALIBRATION ERROR CHECK					
M	Zero Gas Response	**-0.13**	**-0.04**	**-0.01**	**0.00**	
N	Mid Gas Response	**12.44**	**227.73**	**4.59**	**8.94**	
O	High Gas Reponse	**23.60**	**450.87**	**8.74**	**17.95**	
				x		
P	AS MEASURED FLUE GAS CONCENTRATI(	**8.79**	**112.78**	**-0.03**	**11.93**	

CALCULATIONS						FORMULA
	AVERAGE SYSTEM CALIBRATION					
Q	Zero Response	-0.07	-0.05	-0.02	0.04	(I+K)/2
R	Upscale Response	12.12	227.18	4.50	8.93	(J+L)/2
				x		
S	CORRECTED CONC.	8.86	112.32	-0.02	12.06	E*(P-Q)/(R-Q)

QA/QC CALCULATIONS

CALIBRATION GAS SELECTION, % of Range					
Low Gas					C'*100/A
Mid Gas	48.8	45.2	45.0	45.1	C*100/A
High Gas	92.4	90.8	87.2	90.2	D*100/A
CALIBRATION ERROR, % of Range					
Initial Zero Gas Error	-0.08	0.00	-0.10	0.05	(F-B)*100/A
Initial Mid Gas Error	0.32	0.70	0.67	-0.33	(G-C)*100/A
Initial High Gas Error	0.24	0.01	0.84	-0.20	(H-D)*100/A
Final Zero Gas Error	-0.52	-0.01	-0.10	0.00	(M-B)*100/A
Final Mid Gas Error	0.96	0.31	0.87	-0.38	(N-C)*100/A
Final High Gas Error	1.96	-0.59	0.24	-0.40	(O-D)*100/A
LINEARITY, % of Range					
Initial	0.23	0.70	0.28	-0.25	{(G-F)-[(H-F)*C]/D}*100/A
Final	0.17	0.60	0.79	-0.18	{(N-M)-[(O-M)*C]/D}*100/A
SAMPLING SYSTEM BIAS, % of Range					
Initial Zero Gas Bias	-0.12	-0.02	-0.10	0.10	(I-F)*100/A
Initial Upscale Gas Bias	-0.80	-0.93	-0.90	-0.10	(J-G[or G', or H]*100/A
Final Zero Gas Bias	0.20	0.01	0.00	0.20	(K-M)*100/A
Final Upscale Gas Bias	-1.12	0.31	-0.80	-0.10	(L-N[or N', or O]*100/A
CALIBRATION DRIFT, % of Range					
Zero	-0.12	0.02	0.10	0.05	(K-I)*100/A
Upscale	0.32	0.84	0.30	-0.05	(L'-J')*100/A

Almega ENVIRONMENTAL

Facility: **Mesa Water**
Location: **Costa Mesa, CA**
Source: **Reservoir II- Engine #2**

Run No.: **1-Low**
Test Date: **09/17/15**
Run Start Time: **14:40**
Run End Time: **14:54**

TEST DATA VARIABLE	DESCRIPTION	Pollutant 1 NOx	Pollutant 2 CO	Diluent 1 O2	Diluent 2 CO2
A	ANALYTICAL RANGE	**50**	**500**	**10**	**20**
	Unit of Measurement	**ppmd**	**ppmd**	**% dry**	**% dry**
	CALIBRATION GAS INFORMATION				
B	Zero Gas	**0.00**	**0.00**	**0.00**	**0.00**
C	Mid Gas Concentration	**23.11**	**226.2**	**4.503**	**9.016**
	Mid Gas Cylinder S/N:	CC1599	CC216	CC14859	CC14859
D	High Gas Concentration	**45.20**	**453.8**	**8.716**	**18.03**
	High Gas Cylinder S/N:	CC135694	CC39463	CC119210	CC119210
	Primary Gas Cylinder S/N:				
E	UPSCALE CALIBRATION GAS USED	**23.11**	**226.20**	**4.50**	**9.02**
	L=Low, M=Mid, H=High	**M**	**M**	**M**	**M**
	INITIAL CALIBRATION ERROR TEST				
F	Zero Gas Response	**0.00**	**0.02**	**0.00**	**-0.02**
G	Mid Gas Response	**23.42**	**226.08**	**4.53**	**8.99**
H	High Gas Reponse	**45.05**	**454.28**	**8.76**	**18.05**
	INITIAL SYSTEM CALIBRATION CHECK				
I	Zero Gas Response	**0.05**	**-0.02**	**0.03**	**0.00**
J'	Upscale Gas Response	**22.96**	**224.33**	**4.49**	**8.94**
	FINAL SYSTEM CALIBRATION CHECK				
K	Zero Gas Response	**0.05**	**0.10**	**0.03**	**0.04**
L'	Upscale Gas Response	**23.32**	**223.91**	**4.44**	**8.91**
	FINAL CALIBRATION ERROR CHECK				
M	Zero Gas Response	**0.09**	**0.00**	**0.03**	**0.00**
N	Mid Gas Response	**23.28**	**229.99**	**4.49**	**8.95**
O	High Gas Reponse	**45.33**	**454.20**	**8.68**	**17.94**
		x		*x*	
P	AS MEASURED FLUE GAS CONCENTRATION	**2.11**	**180.66**	**0.03**	**11.94**

CALCULATIONS						FORMULA
	AVERAGE SYSTEM CALIBRATION					
Q	Zero Response	0.05	0.04	0.03	0.02	(I+K)/2
R	Upscale Response	23.14	224.12	4.47	8.93	(J+L)/2
		x		*x*		
S	CORRECTED CONC.	2.06	182.33	0.00	12.07	E*(P-Q)/(R-Q)

QA/QC CALCULATIONS

CALIBRATION GAS SELECTION, % of Range					
Low Gas					C*100/A
Mid Gas	46.2	45.2	45.0	45.1	C*100/A
High Gas	90.4	90.8	87.2	90.2	D*100/A
CALIBRATION ERROR, % of Range					
Initial Zero Gas Error	0.00	0.00	0.00	-0.10	(F-B)*100/A
Initial Mid Gas Error	0.62	-0.02	0.27	-0.13	(G-C)*100/A
Initial High Gas Error	-0.30	0.10	0.44	0.10	(H-D)*100/A
Final Zero Gas Error	0.18	0.00	0.30	0.00	(M-B)*100/A
Final Mid Gas Error	0.34	0.76	-0.13	-0.33	(N-C)*100/A
Final High Gas Error	0.26	0.08	-0.36	-0.45	(O-D)*100/A
LINEARITY, % of Range					
Initial	0.77	-0.07	0.04	-0.13	{(G-F)-[(H-F)*C]/D}*100/A
Final	0.12	0.72	-0.09	-0.10	{(N-M)-[(O-M)*C]/D}*100/A
SAMPLING SYSTEM BIAS, % of Range					
Initial Zero Gas Bias	0.10	-0.01	0.30	0.10	(I-F)*100/A
Initial Upscale Gas Bias	-0.92	-0.35	-0.40	-0.25	(J-G[or G', or H]*100/A
Final Zero Gas Bias	-0.08	0.02	0.00	0.20	(K-M)*100/A
Final Upscale Gas Bias	0.08	-1.22	-0.50	-0.20	(L-N[or N', or O]*100/A
CALIBRATION DRIFT, % of Range					
Zero	0.00	0.02	0.00	0.20	(K-I)*100/A
Upscale	0.72	-0.08	-0.50	-0.15	(L'-J')*100/A

AETS CEMS Data -- Run-by-Run Basis

Almega ENVIRONMENTAL

	09/16/15				
	1-High				
	Time	NOx	CO	O2	CO2
#	AVG	0.92	158.81	-0.05	11.94
1	12:43:59	1.40	166.99	-0.04	11.90
2	12:44:59	1.14	160.79	-0.05	11.93
3	12:45:59	0.78	157.76	-0.05	11.93
4	12:46:59	0.70	148.81	-0.05	11.93
5	12:47:59	0.88	141.19	-0.05	11.94
6	12:48:59	1.20	171.65	-0.05	11.93
7	12:49:59	0.61	175.65	-0.05	11.94
8	12:50:59	0.92	160.66	-0.05	11.94
9	12:51:59	0.74	152.30	-0.05	11.93
10	12:52:59	0.96	149.96	-0.05	11.94
11	12:53:59	0.80	149.67	-0.05	11.94
12	12:54:59	0.85	156.93	-0.05	11.94
13	12:55:59	0.79	161.24	-0.05	11.94
14	12:56:59	0.65	164.75	-0.05	11.95
15	12:57:59	1.14	149.86	-0.05	11.95
16	12:58:59	0.91	162.31	-0.05	11.96
17	12:59:59	0.98	167.40	-0.05	11.95
18	13:00:59	1.16	160.59	-0.05	11.94

AETS CEMS Data -- Run-by-Run Basis

Almega ENVIRONMENTAL

	09/16/15				
	1-Normal				
	Time	NOx	CO	O2	CO2
#	AVG	8.79	112.78	-0.03	11.93
1	13:47:59	8.95	104.37	-0.030	11.94
2	13:48:59	8.50	112.21	-0.030	11.93
3	13:49:59	8.76	97.83	-0.030	11.93
4	13:50:59	8.44	129.57	-0.030	11.93
5	13:51:59	8.16	109.36	-0.030	11.93
6	13:52:59	8.88	112.51	-0.030	11.93
7	13:53:59	9.19	111.75	-0.030	11.94
8	13:54:59	9.49	108.30	-0.040	11.93
9	13:55:59	9.82	111.50	-0.030	11.94
10	13:56:59	9.08	117.19	-0.030	11.94
11	13:57:59	9.12	109.93	-0.030	11.93
12	13:58:59	7.77	124.09	-0.030	11.93
13	13:59:59	8.60	96.20	-0.040	11.93
14	14:00:59	9.79	101.69	-0.040	11.94
15	14:01:59	10.31	105.73	-0.040	11.94
16	14:02:59	9.76	120.06	-0.030	11.92
17	14:03:59	8.76	119.77	-0.030	11.92
18	14:04:59	8.36	125.19	-0.030	11.93
19	14:05:59	8.38	116.08	-0.040	11.92
20	14:06:59	8.50	125.00	-0.030	11.93
21	14:07:59	8.45	116.82	-0.030	11.94
22	14:08:59	8.62	114.34	-0.030	11.94
23	14:09:59	8.60	118.37	-0.030	11.94
24	14:10:59	8.95	107.69	-0.030	11.94
25	14:11:59	9.53	113.14	-0.030	11.94
26	14:12:59	8.68	115.57	-0.030	11.93
27	14:13:59	8.53	111.14	-0.030	11.93
28	14:14:59	8.55	119.35	-0.030	11.93
29	14:15:59	9.30	105.95	-0.030	11.93
30	14:16:59	9.69	116.09	-0.030	11.94
31	14:21:59	8.48	107.52	-0.030	11.92
32	14:22:59	8.77	112.32	-0.030	11.92
33	14:23:59	9.21	106.86	-0.030	11.91
34	14:24:59	9.33	110.61	-0.030	11.92
35	14:25:59	8.98	112.97	-0.030	11.92
36	14:26:59	8.63	116.22	-0.030	11.92
37	14:27:59	7.97	112.07	-0.030	11.92
38	14:28:59	8.39	121.08	-0.030	11.93
39	14:29:59	7.89	125.18	-0.030	11.93
40	14:30:59	8.00	113.66	-0.030	11.93
41	14:31:59	8.29	111.53	-0.030	11.93
42	14:32:59	9.10	105.33	-0.030	11.93
43	14:33:59	9.10	112.84	-0.030	11.93
44	14:34:59	8.58	115.78	-0.030	11.93
45	14:35:59	8.15	113.12	-0.030	11.93
46	14:36:59	8.80	113.83	-0.030	11.93
47	14:37:59	8.43	116.23	-0.030	11.93
48	14:38:59	8.28	118.14	-0.030	11.93
49	14:39:59	8.10	117.63	-0.030	11.93
50	14:40:59	7.82	114.53	-0.030	11.93
51	14:41:59	8.61	101.73	-0.030	11.92
52	14:42:59	8.94	115.15	-0.030	11.93
53	14:43:59	8.46	121.56	-0.030	11.93
54	14:44:59	8.44	108.97	-0.030	11.93
55	14:45:59	9.19	102.29	-0.030	11.92
56	14:46:59	9.74	101.03	-0.030	11.92
57	14:47:59	9.32	120.16	-0.030	11.92
58	14:48:59	8.31	110.50	-0.030	11.93
59	14:49:59	8.90	105.08	-0.030	11.92
60	14:50:59	9.41	105.93	-0.030	11.92

AETS CEMS Data -- Run-by-Run Basis

Almega ENVIRONMENTAL

	09/17/15				
	1-Low				
	Time	NOx	CO	O2	CO2
#	AVG	2.11	180.66	0.03	11.94
1	14:40:58	1.21	179.57	0.03	11.95
2	14:41:58	1.60	186.47	0.03	11.95
3	14:42:58	2.04	179.84	0.03	11.94
4	14:43:58	2.33	178.33	0.03	11.94
5	14:44:58	2.32	182.20	0.03	11.94
6	14:45:58	2.39	183.16	0.03	11.94
7	14:46:58	2.35	181.38	0.03	11.94
8	14:47:58	2.33	184.32	0.03	11.94
9	14:48:58	2.35	181.02	0.03	11.94
10	14:49:58	2.39	181.24	0.03	11.95
11	14:50:58	2.07	186.81	0.03	11.94
12	14:51:58	2.04	180.95	0.03	11.94
13	14:52:58	2.11	173.77	0.03	11.93
14	14:53:58	2.10	173.51	0.03	11.94
15	14:54:58	2.05	177.31	0.03	11.94

Reference Method Data Summary

Facility: Mesa Water
Location: Costa Mesa, CA
Source: Reservoir II- Engine #3

Run Information				Flue Gas Information			Pollutant 1: NOx (MW: 46 lb/lb-mole)			Pollutant 2: CO (MW: 28 lb/lb-mole)		
Run No.	Test Date	Start Time	End Time	O2 dry % as found	O2 dry % "<"	CO2 dry %	dry ppm	dry ppm @15%O2	dry ppm @15%O2	dry ppm	dry ppm @15%O2	dry ppm @15%O2
1-High	09/17/15	16:03	16:17	-0.05	<2.00	12.10	<5.00	<1.41	<1.56	188.01	52.96	<58.69
1-Normal	09/17/15	16:50	17:19	-0.05	<2.00	12.09	<5.00	<1.41	<1.56	162.18	45.68	<50.63
1-Low	09/17/15	17:36	17:50	-0.03	<2.00	12.10	<5.00	<1.41	<1.56	180.85	50.99	<56.46

Note: "<"- concentrations below 20% of analytical range, reporting limit is reported per SCAQMD Method 100.1.

Almega ENVIRONMENTAL

Facility: **Mesa Water**
Location: **Costa Mesa, CA**
Source: **Reservoir II- Engine #3**

Run No.: **1-High**
Test Date: **09/17/15**
Run Start Time: **16:03**
Run End Time: **16:17**

TEST DATA VARIABLE	DESCRIPTION	Pollutant 1 NOx	Pollutant 2 CO	Diluent 1 O2	Diluent 2 CO2
A	ANALYTICAL RANGE	**50**	**500**	**10**	**20**
	Unit of Measurement	**ppmd**	**ppmd**	**% dry**	**% dry**
	CALIBRATION GAS INFORMATION				
B	Zero Gas	**0.00**	**0.00**	**0.00**	**0.00**
C	Mid Gas Concentration	**23.11**	**226.2**	**4.503**	**9.016**
	Mid Gas Cylinder S/N:	CC1599	CC216	CC14859	CC14859
D	High Gas Concentration	**45.20**	**453.8**	**8.716**	**18.03**
	High Gas Cylinder S/N:	CC135694	CC39463	CC119210	CC119210
	Primary Gas Cylinder S/N:				
E	UPSCALE CALIBRATION GAS USED	**23.11**	**226.20**	**4.50**	**9.02**
	L=Low, M=Mid, H=High	**M**	**M**	**M**	**M**
	INITIAL CALIBRATION ERROR TEST				
F	Zero Gas Response	**0.00**	**0.02**	**0.00**	**-0.02**
G	Mid Gas Response	**23.42**	**226.08**	**4.53**	**8.99**
H	High Gas Reponse	**45.05**	**454.28**	**8.76**	**18.05**
	INITIAL SYSTEM CALIBRATION CHECK				
I	Zero Gas Response	**0.05**	**0.10**	**0.03**	**0.04**
J'	Upscale Gas Response	**23.32**	**223.91**	**4.44**	**8.91**
	FINAL SYSTEM CALIBRATION CHECK				
K	Zero Gas Response	**0.10**	**0.00**	**0.04**	**0.03**
L	Low Gas Response	**2.84**			
L'	Upscale Gas Response	**23.33**	**223.74**	**4.43**	**8.91**
	FINAL CALIBRATION ERROR CHECK				
M	Zero Gas Response	**0.09**	**0.00**	**0.03**	**0.00**
N'	Mid Gas Response	**23.28**	**229.99**	**4.49**	**8.95**
O	High Gas Reponse	**45.33**	**454.20**	**8.68**	**17.94**
		x		*x*	
P	AS MEASURED FLUE GAS CONCENTRATI	**3.17**	**186.04**	**-0.01**	**11.94**

CALCULATIONS						FORMULA
	AVERAGE SYSTEM CALIBRATION					
Q	Zero Response	0.08	0.05	0.04	0.04	(I+K)/2
R	Upscale Response	23.33	223.83	4.44	8.91	(J+L)/2
		x		*x*		
S	CORRECTED CONC.	3.07	188.01	-0.05	12.10	E*(P-Q)/(R-Q)

QA/QC CALCULATIONS

CALIBRATION GAS SELECTION, % of Rang					
Low Gas					C'*100/A
Mid Gas	46.2	45.2	45.0	45.1	C'*100/A
High Gas	90.4	90.8	87.2	90.2	D*100/A
CALIBRATION ERROR, % of Range					
Initial Zero Gas Error	0.00	0.00	0.00	-0.10	(F-B)*100/A
Initial Low Gas Error					(G'-C')*100/A
Initial Mid Gas Error	0.62	-0.02	0.27	-0.13	(G-C)*100/A
Initial High Gas Error	-0.30	0.10	0.44	0.10	(H-D)*100/A
Final Zero Gas Error	0.18	0.00	0.30	0.00	(M-B)*100/A
Final Low Gas Error					(N'-C')*100/A
Final Mid Gas Error	0.34	0.76	-0.13	-0.33	(N-C)*100/A
Final High Gas Error	0.26	0.08	-0.36	-0.45	(O-D)*100/A
LINEARITY, % of Range					
Initial	0.77	-0.07	0.04	-0.13	{(G-F)-[(H-F)*C]/D}*100/A
Final	0.12	0.72	-0.09	-0.10	{(N-M)-[(O-M)*C]/D}*100/A
SAMPLING SYSTEM BIAS, % of Range					
Initial Zero Gas Bias	0.10	0.02	0.30	0.30	(I-F)*100/A
Initial Upscale Gas Bias	-0.20	-0.43	-0.90	-0.40	(J-G[or G', or H]*100/A
Final Zero Gas Bias	0.02	0.00	0.10	0.15	(K-M)*100/A
Final Low Gas Bias	0.88				(L-N[or N', or O]*100/A
Final Upscale Gas Bias	0.10	-1.25	-0.60	-0.20	(L-N[or N', or O]*100/A
CALIBRATION DRIFT, % of Range					
Zero	0.10	-0.02	0.10	-0.05	(K-I)*100/A
Upscale	0.02	-0.03	-0.10	0.00	(L'-J')*100/A

Almega ENVIRONMENTAL

Facility: **Mesa Water**
Location: **Costa Mesa, CA**
Source: **Reservoir II- Engine #3**

Run No.: **1-Normal**
Test Date: **09/17/15**
Run Start Time: **16:50**
Run End Time: **17:19**

TEST DATA		Pollutant 1	Pollutant 2	Diluent 1	Diluent 2
VARIABLE	DESCRIPTION	NOx	CO	O2	CO2
A	ANALYTICAL RANGE	**50**	**500**	**10**	**20**
	Unit of Measurement	**ppmd**	**ppmd**	**% dry**	**% dry**
	CALIBRATION GAS INFORMATION				
B	Zero Gas	**0.00**	**0.00**	**0.00**	**0.00**
C	Mid Gas Concentration	**23.11**	**226.2**	**4.503**	**9.016**
	Mid Gas Cylinder S/N:	CC1599	CC216	CC14859	CC14859
D	High Gas Concentration	**45.20**	**453.8**	**8.716**	**18.03**
	High Gas Cylinder S/N:	CC135694	CC39463	CC119210	CC119210
	Primary Gas Cylinder S/N:				
E	UPSCALE CALIBRATION GAS USED	**23.11**	**226.20**	**4.50**	**9.02**
	L=Low, M=Mid, H=High	**M**	**M**	**M**	**M**
	INITIAL CALIBRATION ERROR TEST				
F	Zero Gas Response	**0.00**	**0.02**	**0.00**	**-0.02**
G	Mid Gas Response	**23.42**	**226.08**	**4.53**	**8.99**
H	High Gas Reponse	**45.05**	**454.28**	**8.76**	**18.05**
	INITIAL SYSTEM CALIBRATION CHECK				
I	Zero Gas Response	**0.10**	**0.00**	**0.04**	**0.03**
J'	Upscale Gas Response	**23.33**	**223.74**	**4.43**	**8.91**
	FINAL SYSTEM CALIBRATION CHECK				
K	Zero Gas Response	**0.05**	**0.02**	**0.05**	**0.05**
L'	Upscale Gas Response	**23.83**	**227.02**	**4.52**	**8.90**
	FINAL CALIBRATION ERROR CHECK				
M	Zero Gas Response	**0.09**	**0.00**	**0.03**	**0.00**
N	Mid Gas Response	**23.28**	**229.99**	**4.49**	**8.95**
O	High Gas Reponse	**45.33**	**454.20**	**8.68**	**17.94**
		x			
P	AS MEASURED FLUE GAS CONCENTRATI(	**1.60**	**161.60**	**0.00**	**11.93**

CALCULATIONS						FORMULA
	AVERAGE SYSTEM CALIBRATION					
Q	Zero Response	0.08	0.01	0.05	0.04	(I+K)/2
R	Upscale Response	23.58	225.38	4.48	8.91	(J+L)/2
		x				
S	CORRECTED CONC.	1.50	162.18	-0.05	12.09	E*(P-Q)/(R-Q)

QA/QC CALCULATIONS

CALIBRATION GAS SELECTION, % of Range					
Low Gas					C'*100/A
Mid Gas	46.2	45.2	45.0	45.1	C*100/A
High Gas	90.4	90.8	87.2	90.2	D*100/A
CALIBRATION ERROR, % of Range					
Initial Zero Gas Error	0.00	0.00	0.00	-0.10	(F-B)*100/A
Initial Low Gas Error					(G'-C')*100/A
Initial Mid Gas Error	0.62	-0.02	0.27	-0.13	(G-C)*100/A
Initial High Gas Error	-0.30	0.10	0.44	0.10	(H-D)*100/A
Final Zero Gas Error	0.18	0.00	0.30	0.00	(M-B)*100/A
Final Low Gas Error					(N'-C')*100/A
Final Mid Gas Error	0.34	0.76	-0.13	-0.33	(N-C)*100/A
Final High Gas Error	0.26	0.08	-0.36	-0.45	(O-D)*100/A
LINEARITY, % of Range					
Initial	0.77	-0.07	0.04	-0.13	{(G-F)-[(H-F)*C]/D}*100/A
Final	0.12	0.72	-0.09	-0.10	{(N-M)-[(O-M)*C]/D}*100/A
SAMPLING SYSTEM BIAS, % of Range					
Initial Zero Gas Bias	0.20	0.00	0.40	0.25	(I-F)*100/A
Initial Upscale Gas Bias	-0.18	-0.47	-1.00	-0.40	(J-G[or G', or H]*100/A
Final Zero Gas Bias	-0.08	0.00	0.20	0.25	(K-M)*100/A
Final Upscale Gas Bias	1.10	-0.59	0.30	-0.25	(L-N[or N', or O]*100/A
CALIBRATION DRIFT, % of Range					
Zero	-0.10	0.00	0.10	0.10	(K-I)*100/A
Upscale	1.00	0.66	0.90	-0.05	(L'-J')*100/A

Almega ENVIRONMENTAL

Facility: **Mesa Water**
Location: **Costa Mesa, CA**
Source: **Reservoir II- Engine #3**

Run No.: **1-Low**
Test Date: **09/17/15**
Run Start Time: **17:36**
Run End Time: **17:50**

TEST DATA VARIABLE	DESCRIPTION	Pollutant 1 NOx	Pollutant 2 CO	Diluent 1 O2	Diluent 2 CO2
A	ANALYTICAL RANGE	**50**	**500**	**10**	**20**
	Unit of Measurement	**ppmd**	**ppmd**	**% dry**	**% dry**
	CALIBRATION GAS INFORMATION				
B	Zero Gas	**0.00**	**0.00**	**0.00**	**0.00**
C	Mid Gas Concentration	**23.11**	**226.2**	**4.503**	**9.016**
	Mid Gas Cylinder S/N:	CC1599	CC216	CC14859	CC14859
D	High Gas Concentration	**45.20**	**453.8**	**8.716**	**18.03**
	High Gas Cylinder S/N:	CC135694	CC39463	CC119210	CC119210
	Primary Gas Cylinder S/N:				
E	UPSCALE CALIBRATION GAS USED	**23.11**	**226.20**	**4.50**	**9.02**
	L=Low, M=Mid, H=High	**M**	**M**	**M**	**M**
	INITIAL CALIBRATION ERROR TEST				
F	Zero Gas Response	**0.00**	**0.02**	**0.00**	**-0.02**
G	Mid Gas Response	**23.42**	**226.08**	**4.53**	**8.99**
H	High Gas Reponse	**45.05**	**454.28**	**8.76**	**18.05**
	INITIAL SYSTEM CALIBRATION CHECK				
I	Zero Gas Response	**0.10**	**0.00**	**0.04**	**0.03**
J'	Upscale Gas Response	**23.33**	**223.74**	**4.43**	**8.91**
	FINAL SYSTEM CALIBRATION CHECK				
K	Zero Gas Response	**0.05**	**0.02**	**0.05**	**0.05**
L'	Upscale Gas Response	**23.83**	**227.02**	**4.52**	**8.90**
	FINAL CALIBRATION ERROR CHECK				
M	Zero Gas Response	**0.09**	**0.00**	**0.03**	**0.00**
N	Mid Gas Response	**23.28**	**229.99**	**4.49**	**8.95**
O	High Gas Reponse	**45.33**	**454.20**	**8.68**	**17.94**
		x		*x*	
P	AS MEASURED FLUE GAS CONCENTRATI	**2.61**	**180.20**	**0.02**	**11.93**

CALCULATIONS						FORMULA
	AVERAGE SYSTEM CALIBRATION					
Q	Zero Response	0.08	0.01	0.05	0.04	(I+K)/2
R	Upscale Response	23.58	225.38	4.48	8.91	(J+L)/2
		x		*x*		
S	CORRECTED CONC.	2.49	180.85	-0.03	12.10	E*(P-Q)/(R-Q)

QA/QC CALCULATIONS

CALIBRATION GAS SELECTION, % of Rang					
Low Gas					C*100/A
Mid Gas	46.2	45.2	45.0	45.1	C*100/A
High Gas	90.4	90.8	87.2	90.2	D*100/A
CALIBRATION ERROR, % of Range					
Initial Zero Gas Error	0.00	0.00	0.00	-0.10	(F-B)*100/A
Initial Low Gas Error					(G'-C')*100/A
Initial Mid Gas Error	0.62	-0.02	0.27	-0.13	(G-C)*100/A
Initial High Gas Error	-0.30	0.10	0.44	0.10	(H-D)*100/A
Final Zero Gas Error	0.18	0.00	0.30	0.00	(M-B)*100/A
Final Low Gas Error					(N'-C')*100/A
Final Mid Gas Error	0.34	0.76	-0.13	-0.33	(N-C)*100/A
Final High Gas Error	0.26	0.08	-0.36	-0.45	(O-D)*100/A
LINEARITY, % of Range					
Initial	0.77	-0.07	0.04	-0.13	{(G-F)-[(H-F)*C]/D}*100/A
Final	0.12	0.72	-0.09	-0.10	{(N-M)-[(O-M)*C]/D}*100/A
SAMPLING SYSTEM BIAS, % of Range					
Initial Zero Gas Bias	0.20	0.00	0.40	0.25	(I-F)*100/A
Initial Low Gas Bias					(J-G[or G', or H]*100/A
Initial Upscale Gas Bias	-0.18	-0.47	-1.00	-0.40	(J-G[or G', or H]*100/A
Final Zero Gas Bias	-0.08	0.00	0.20	0.25	(K-M)*100/A
Final Upscale Gas Bias	1.10	-0.59	0.30	-0.25	(L-N[or N', or O]*100/A
CALIBRATION DRIFT, % of Range					
Zero	-0.10	0.00	0.10	0.10	(K-I)*100/A
Upscale	-1.00	0.66	0.90	-0.05	(L'-J')*100/A

AETS CEMS Data -- Run-by-Run Basis

	1-High			
	Time	NOx	CO	O2	CO2
#	AVG	3.17	186.04	-0.01	11.94
1	16:03:58	3.90	173.58	-0.01	11.94
2	16:04:58	2.94	203.61	-0.01	11.95
3	16:05:58	3.96	162.34	-0.01	11.95
4	16:06:58	3.15	167.36	-0.01	11.94
5	16:07:58	4.08	175.34	0.00	11.95
6	16:08:58	3.16	173.58	-0.01	11.94
7	16:09:58	2.43	206.77	-0.01	11.94
8	16:10:58	3.03	176.04	-0.01	11.95
9	16:11:58	3.77	163.70	-0.01	11.95
10	16:12:58	2.60	176.67	-0.01	11.95
11	16:13:58	2.10	214.68	-0.01	11.94
12	16:14:58	2.67	205.97	-0.01	11.94
13	16:15:58	3.77	182.62	-0.01	11.94
14	16:16:58	2.60	209.47	-0.01	11.93
15	16:17:58	3.32	198.94	-0.01	11.94

AETS CEMS Data -- Run-by-Run Basis

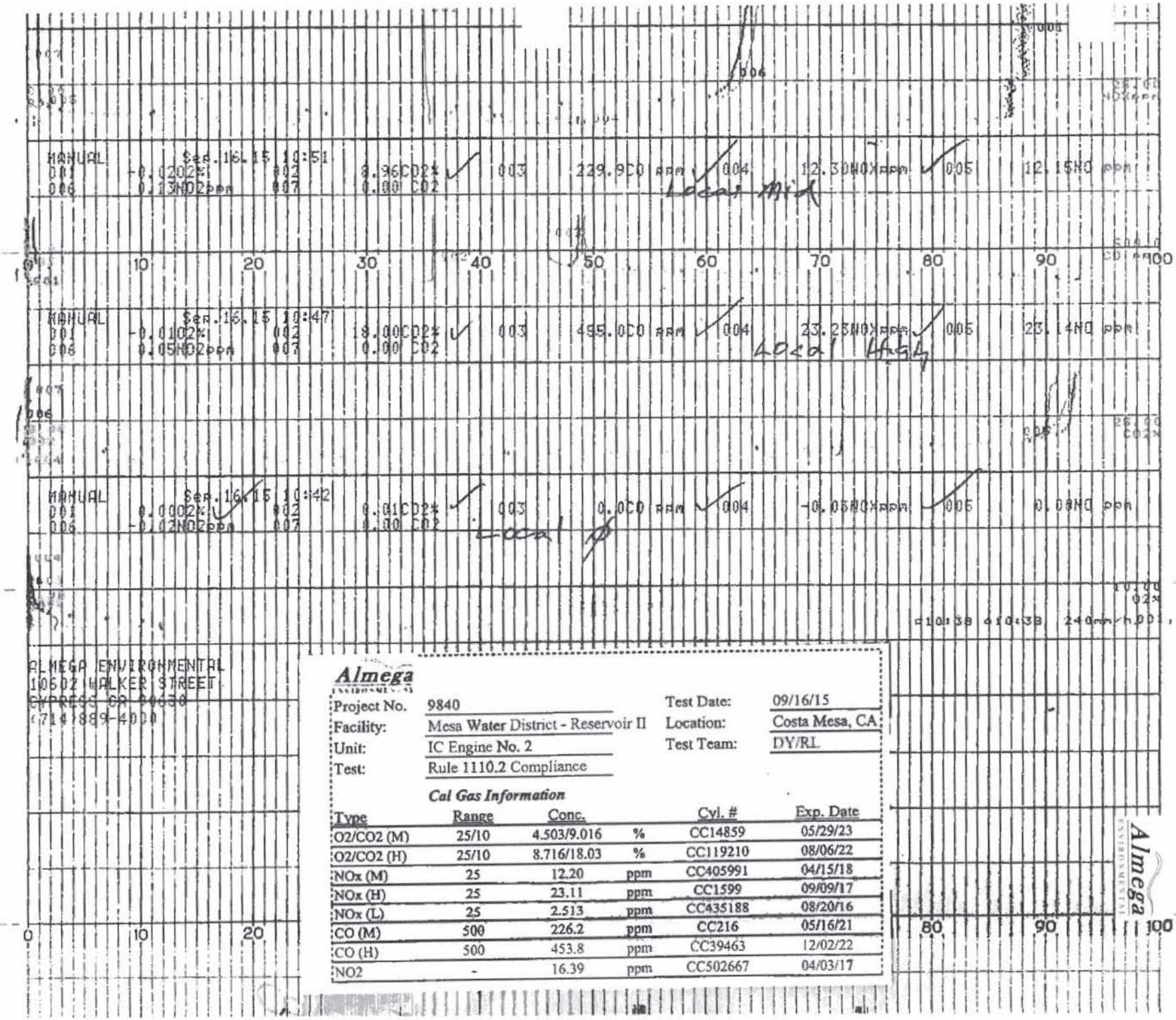
	1-Normal				
	Time	NOx	CO	O2	CO2
#	AVG	1.60	161.60	0.00	11.93
1	16:50:58	1.50	170.30	0.00	11.90
2	16:51:58	1.78	159.52	0.00	11.91
3	16:52:58	1.66	164.70	0.00	11.92
4	16:53:58	1.69	169.69	0.00	11.92
5	16:54:58	1.69	178.84	0.00	11.92
6	16:55:58	2.33	157.37	0.00	11.93
7	16:56:58	1.53	168.30	0.00	11.93
8	16:57:58	1.70	169.59	0.00	11.92
9	16:58:58	1.64	164.56	0.00	11.92
10	16:59:58	1.34	163.26	0.00	11.92
11	17:00:58	1.38	170.92	0.00	11.92
12	17:01:58	2.60	156.95	0.00	11.93
13	17:02:58	1.55	167.47	0.00	11.93
14	17:03:58	2.40	156.60	0.00	11.93
15	17:04:58	1.61	165.87	0.00	11.92
16	17:05:58	1.53	156.02	0.00	11.93
17	17:06:58	1.23	161.33	0.00	11.93
18	17:07:58	1.18	157.77	0.00	11.92
19	17:08:58	1.26	162.69	0.00	11.93
20	17:09:58	1.55	157.33	0.00	11.94
21	17:10:58	1.98	162.50	0.00	11.93
22	17:11:58	2.77	160.87	0.00	11.93
23	17:12:58	0.95	150.89	0.00	11.93
24	17:13:58	0.95	153.61	0.00	11.93
25	17:14:58	2.48	154.42	0.00	11.94
26	17:15:58	1.02	159.56	0.00	11.93
27	17:16:58	0.84	159.37	0.00	11.92
28	17:17:58	1.61	155.77	0.00	11.93
29	17:18:58	1.33	154.92	0.00	11.93
30	17:19:58	1.06	156.92	0.00	11.93

AETS CEMS Data -- Run-by-Run Basis

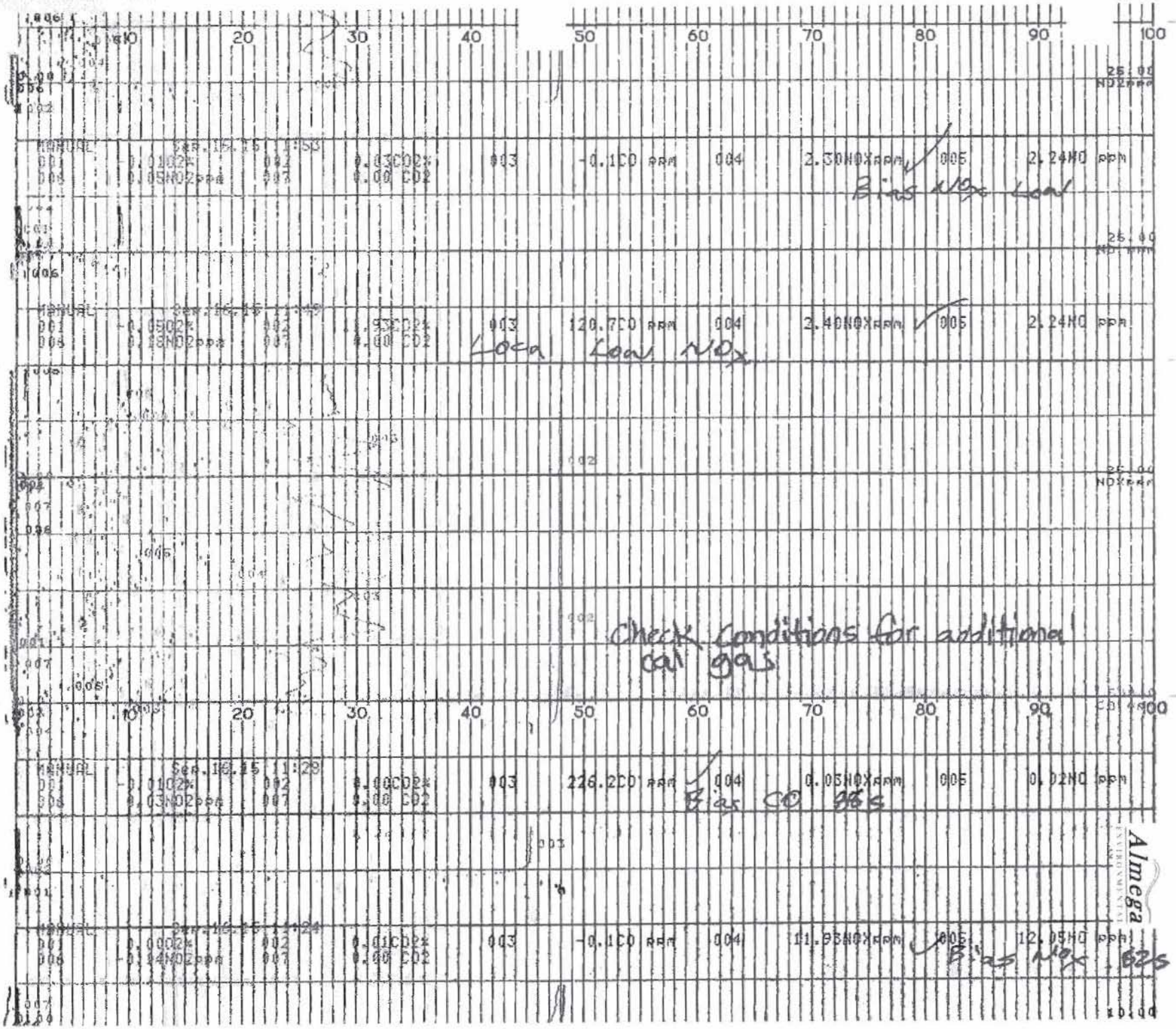
	1-Low				
	Time	NOx	CO	O2	CO2
#	AVG	2.61	180.20	0.02	11.93
1	17:36:58	2.52	187.20	0.01	11.93
2	17:37:58	2.66	191.50	0.01	11.93
3	17:38:58	2.57	181.30	0.01	11.93
4	17:39:58	2.79	174.16	0.02	11.94
5	17:40:58	2.65	184.36	0.02	11.94
6	17:41:58	2.96	172.97	0.02	11.94
7	17:42:58	2.64	190.62	0.02	11.94
8	17:43:58	2.55	186.28	0.02	11.94
9	17:44:58	2.46	180.44	0.02	11.93
10	17:45:58	2.46	175.69	0.02	11.93
11	17:46:58	2.57	180.04	0.02	11.93
12	17:47:58	2.52	169.00	0.02	11.93
13	17:48:58	2.67	164.12	0.02	11.94
14	17:49:58	2.57	185.10	0.02	11.93
15	17:50:58	2.59	180.15	0.02	11.94

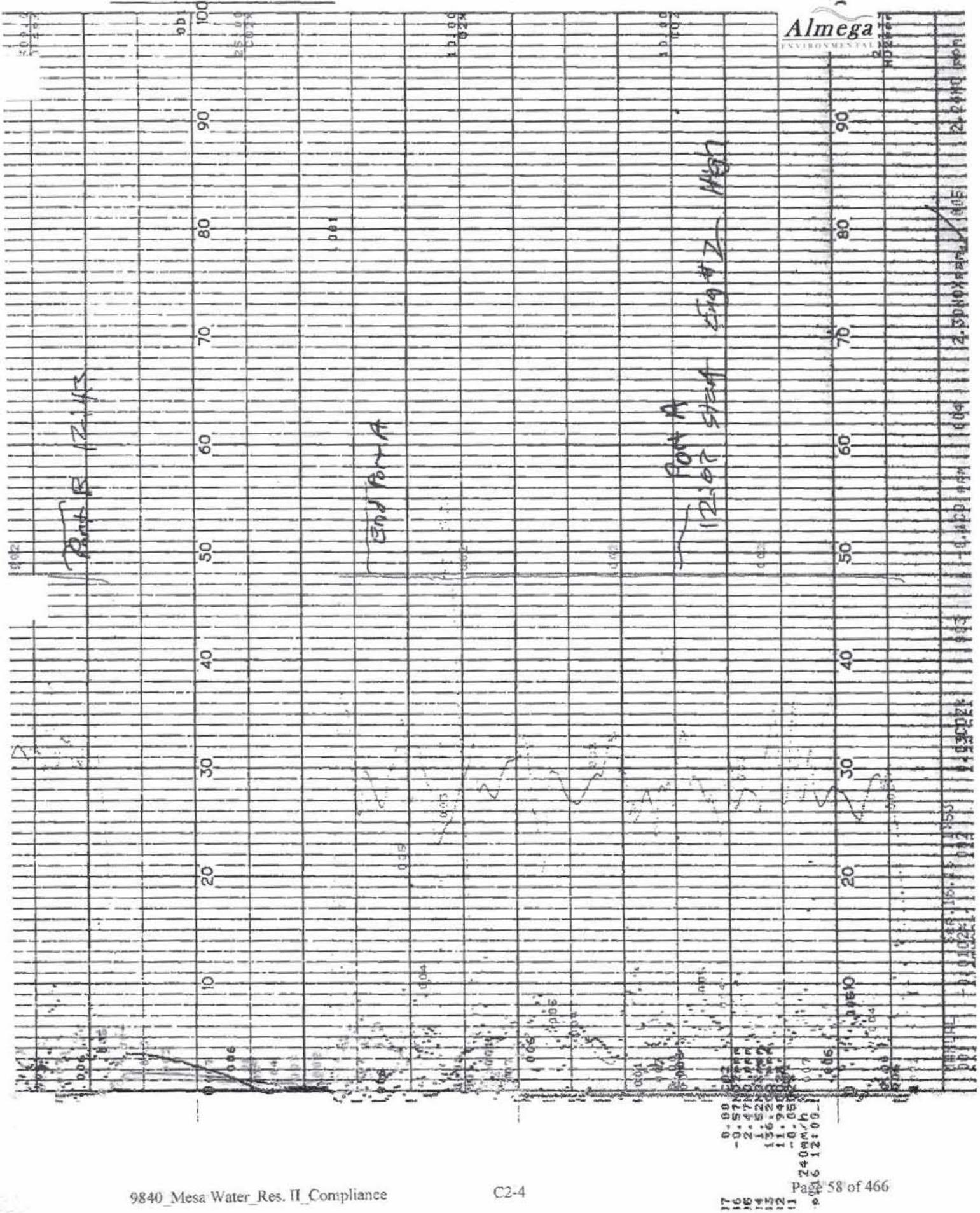
Appendix C2

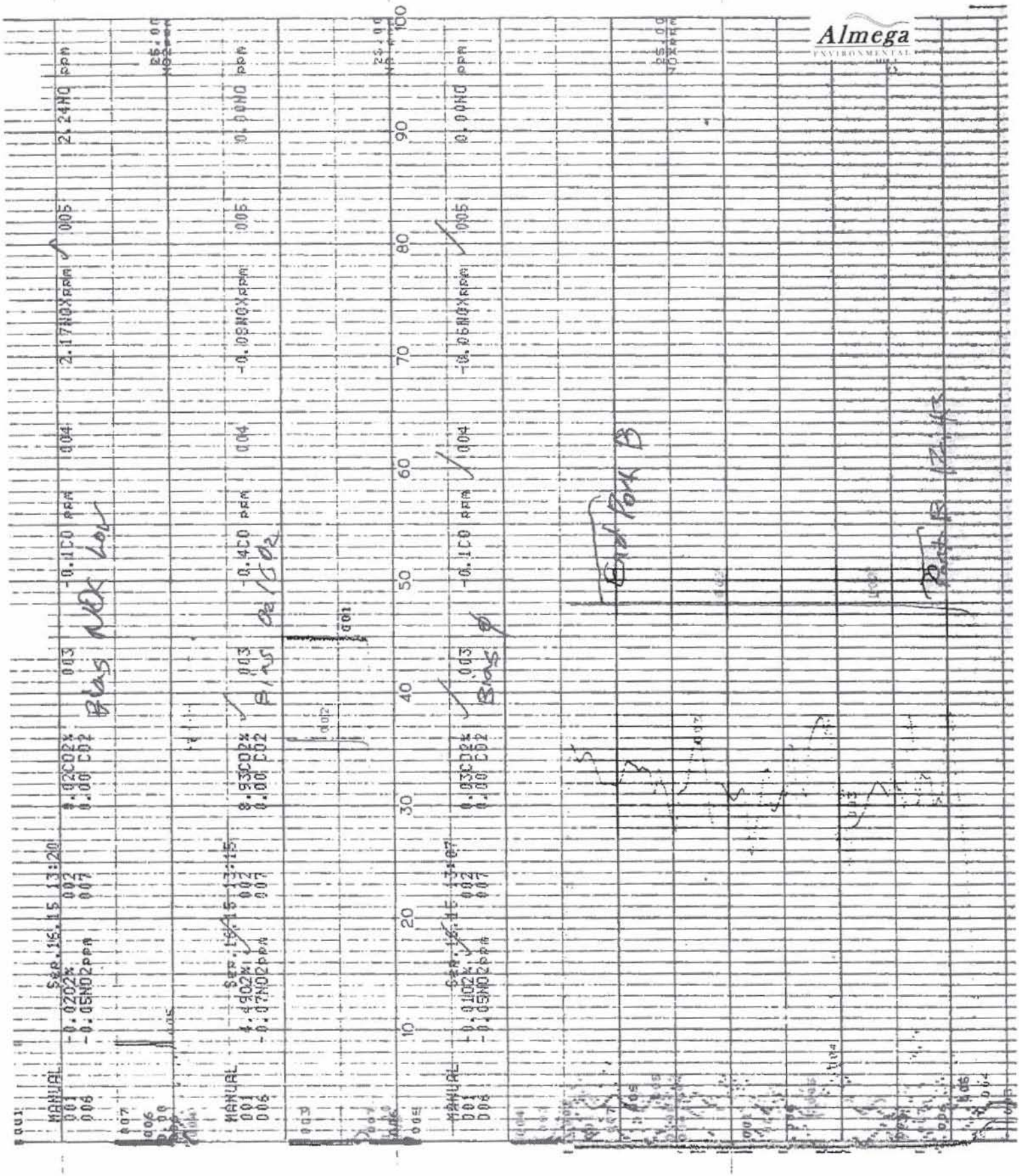
CEMS – Strip Chart


MANUAL Sep.16,15 10:51
001 +0.02O2%
006 0.13NO2ppm
002
003 8.96CO2%
007 0.00 CO2
003 229.9CO ppm
004 12.30NOXppm
005 12.15NO ppm
Local mid
MANUAL Sep.16,15 10:47
001 +0.01O2%
006 0.05NO2ppm
002
003 18.00CO2%
007 0.00 CO2
003 495.0CO ppm
004 23.23NOXppm
005 23.14NO ppm
Local High
MANUAL Sep.16,15 10:42
001 0.00O2%
006 -0.02NO2ppm
002
003 0.01CO2%
007 0.00 CO2
003 0.0CO ppm
004 -0.05NOXppm
005 0.08NO ppm
Local 0
0 10 20 30 40 50 60 70 80 90 100
ALMEGA ENVIRONMENTAL
10602 WALKER STREET
CYPRESS, CA 90630
(714)899-4000
Almega
Project No. 9840
Facility: Mesa Water District - Reservoir II
Unit: IC Engine No. 2
Test: Rule 1110.2 Compliance
Test Date: 09/16/15
Location: Costa Mesa, CA
Test Team: DY/RL
Cal Gas Information
Type | Range | Conc. | | Cyl. # | Exp. Date
O2/CO2 (M) | 25/10 | 4.503/9.016 | % | CC14859 | 05/29/23
O2/CO2 (H) | 25/10 | 8.716/18.03 | % | CC119210 | 08/06/22
NOx (M) | 25 | 12.20 | ppm | CC405991 | 04/15/18
NOx (H) | 25 | 23.11 | ppm | CC1599 | 09/09/17
NOx (L) | 25 | 2.513 | ppm | CC435188 | 08/20/16
CO (M) | 500 | 226.2 | ppm | CC216 | 05/16/21
CO (H) | 500 | 453.8 | ppm | CC39463 | 12/02/22
NO2 | - | 16.39 | ppm | CC502667 | 04/03/17

Almega
ENVIRONMENTAL


MANUAL Sep.16.15 11:53
001 -0.01O2% 002 0.03CO2% 003 -0.1CO ppm 004 2.30NOXppm 005 2.24NO ppm
006 0.05NO2ppm 007 0.00 CO2
Bias NOx Low
MANUAL Sep.16.15 11:49
001 -0.05O2% 002 11.93CO2% 003 120.7CO ppm 004 2.40NOXppm 005 2.24NO ppm
006 0.18NO2ppm 007 0.00 CO2
Local Low NOx
Check conditions for additional cal gas
MANUAL Sep.16.15 11:28
001 -0.01O2% 002 0.00CO2% 003 226.2CO ppm 004 0.05NOXppm 005 0.02NO ppm
006 0.03NO2ppm 007 0.00 CO2
Bias CO 86s
MANUAL Sep.16.15 11:24
001 0.00O2% 002 0.01CO2% 003 -0.1CO ppm 004 11.95NOXppm 005 12.05NO ppm
006 -0.14NO2ppm 007 0.00 CO2
Bias NOx 62s
Almega


Almega
ENVIRONMENTAL
Port B 12:43
End Port A
Port A
12:07 Start Eng #2 High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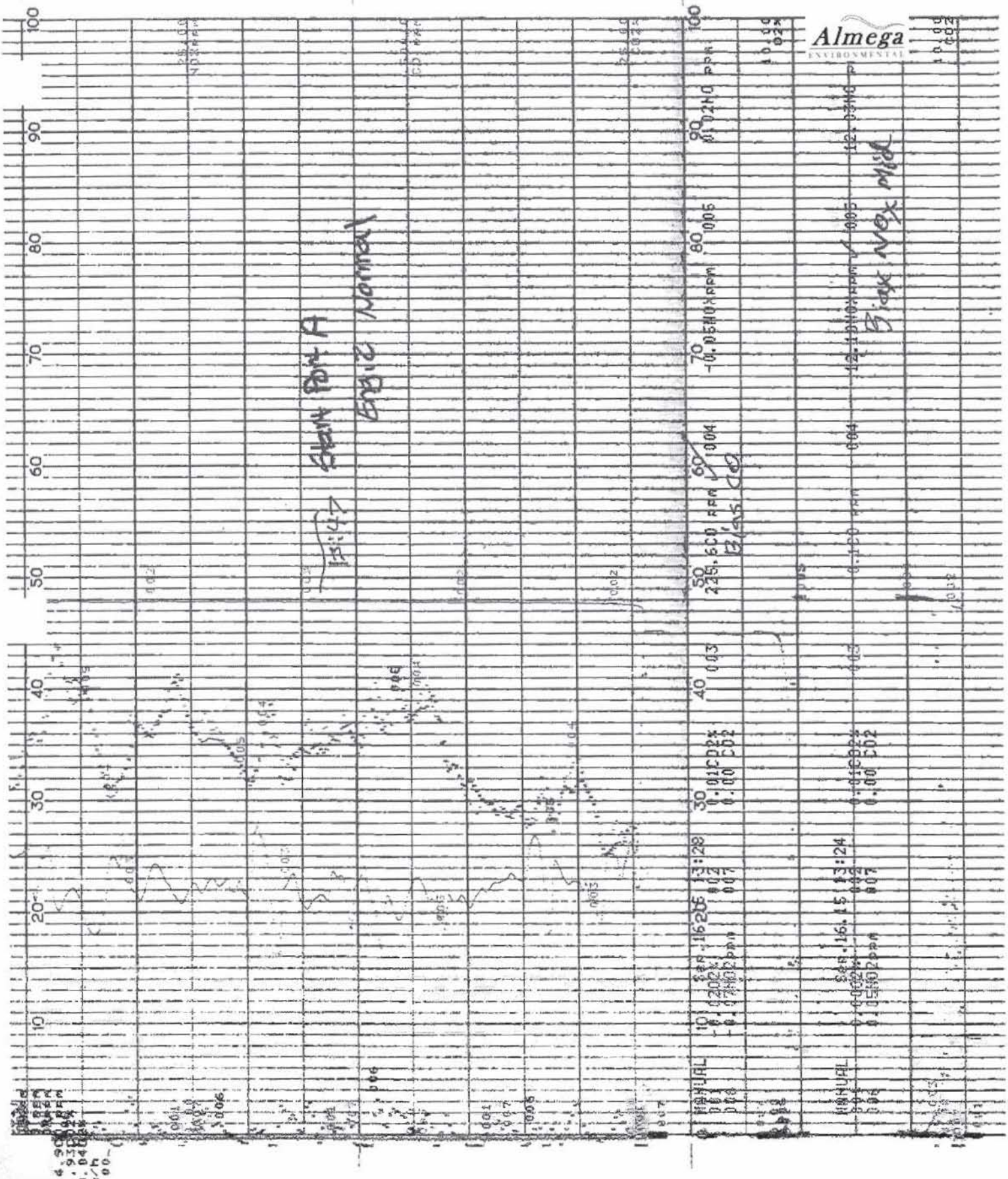
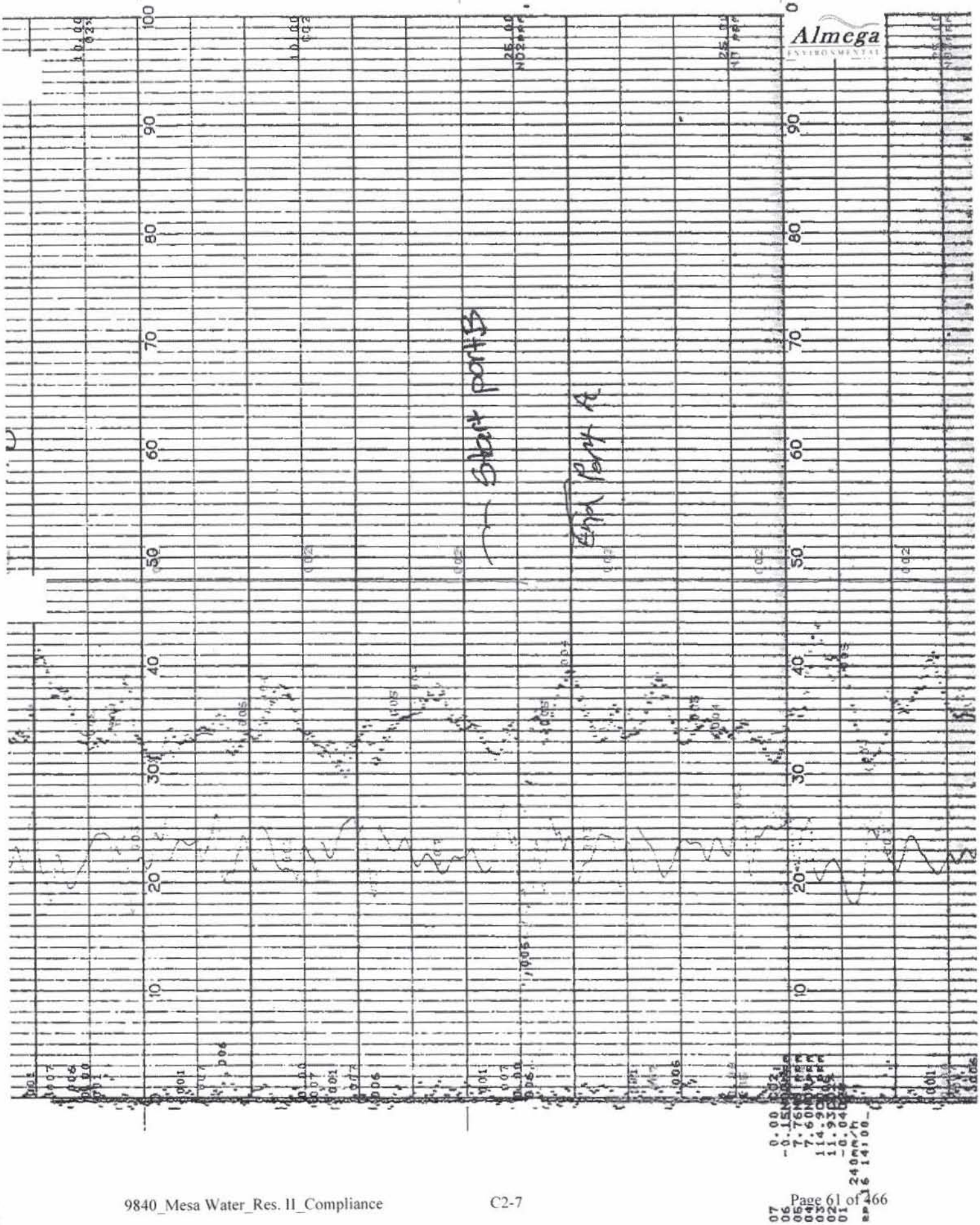
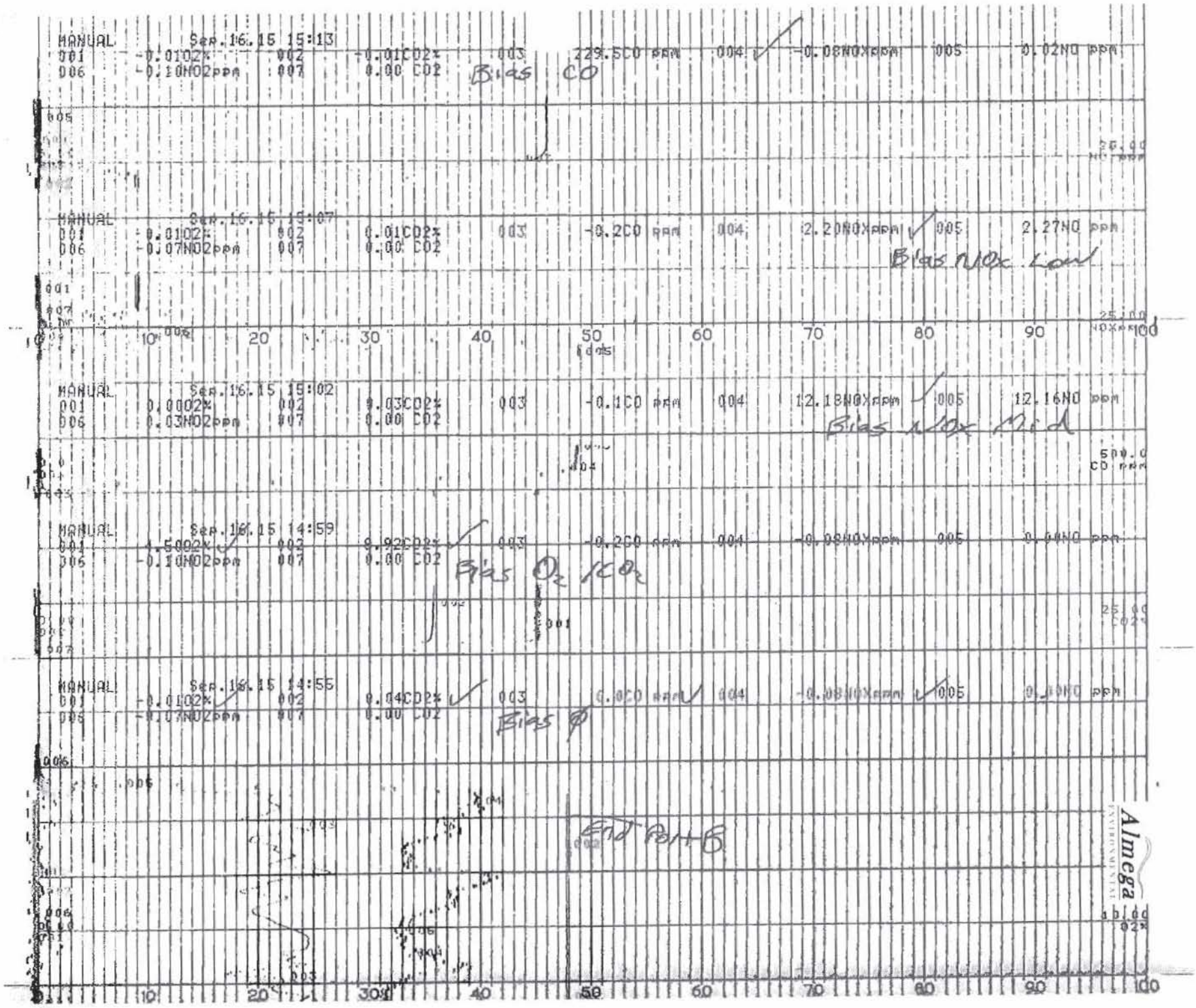
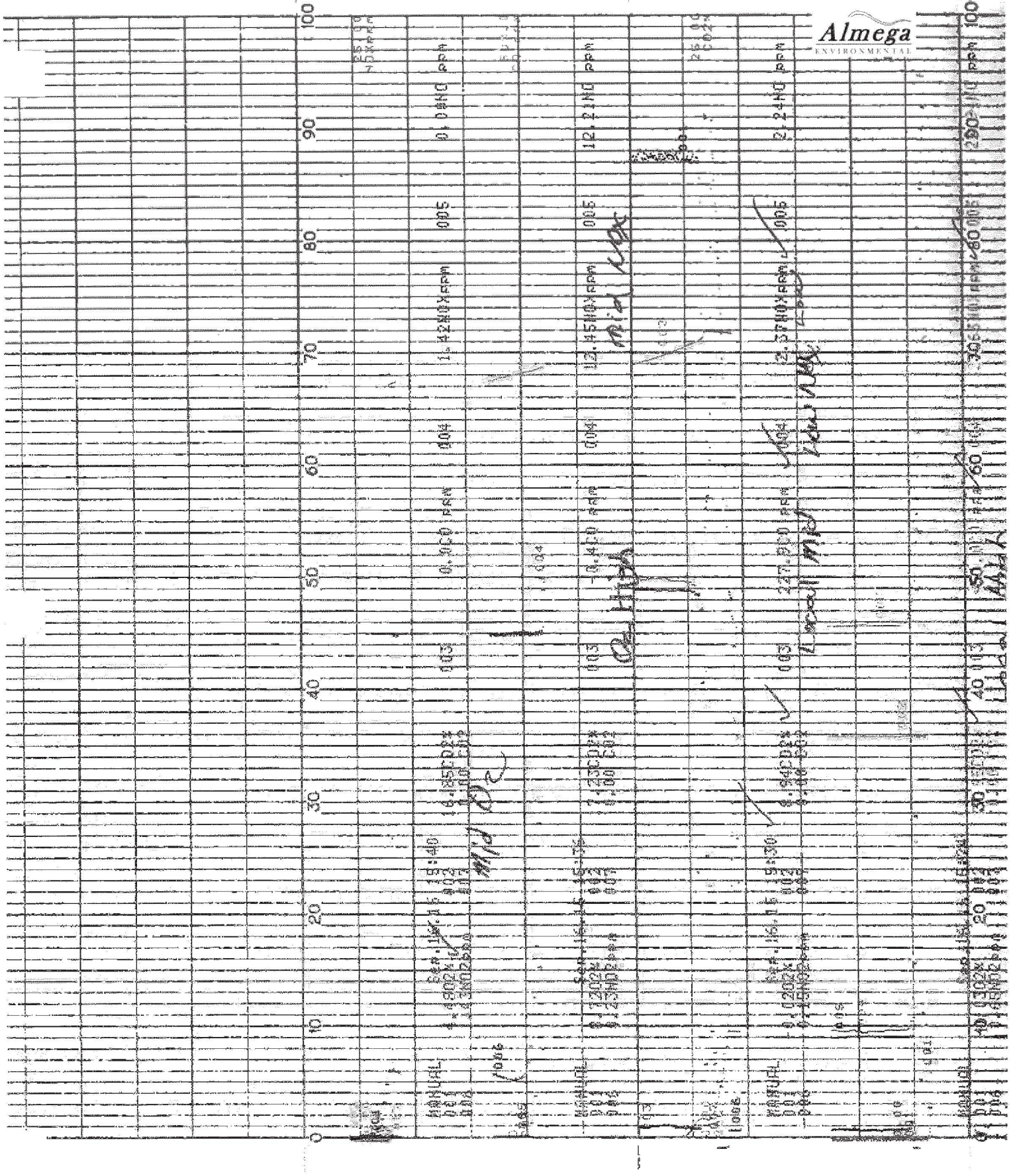
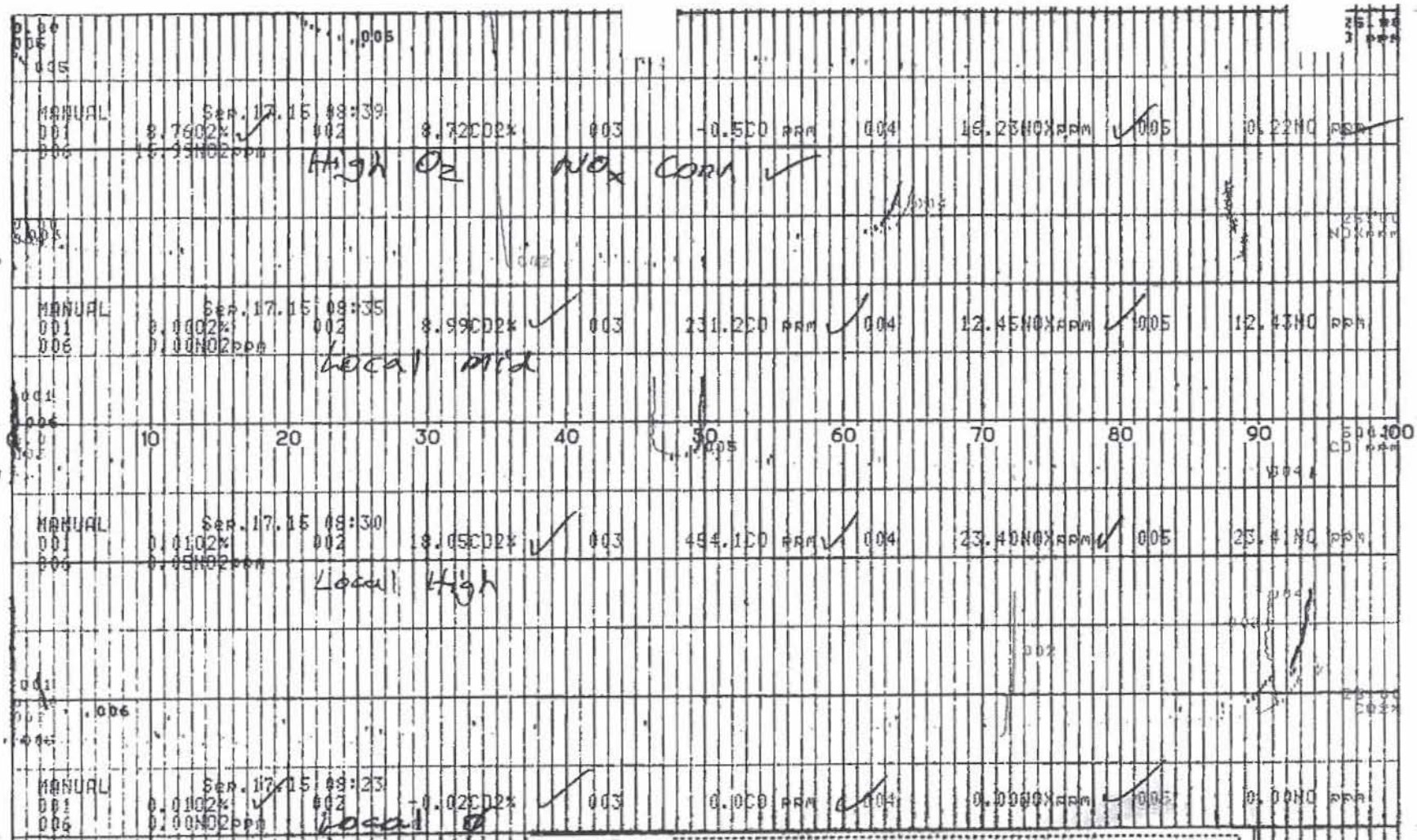
ENVIRONMENTAL


Almega
ENVIRONMENTAL
Start Point A
Engine Normal
Bias CO
Bias NOx Mid


Almega
ENVIRONMENTAL
Start point
End point


MANUAL Sep.16.15 15:13
001 -0.01O2%
002
003 -0.01CO2%
004 229.5CO ppm
005 0.02NO ppm
006 -0.10NO2ppm
007 0.00 CO2
Bias CO
MANUAL Sep.16.15 15:07
001 -0.01O2%
002
003 0.01CO2%
004 -0.2CO ppm
005 2.27NO ppm
006 -0.07NO2ppm
007 0.00 CO2
Bias NOx Low
MANUAL Sep.16.15 15:02
001 0.00O2%
002
003 0.03CO2%
004 -0.1CO ppm
005 12.16NO ppm
006 0.03NO2ppm
007 0.00 CO2
Bias NOx Mid
MANUAL Sep.16.15 14:59
001 4.50O2%
002
003 0.92CO2%
004 -0.2CO ppm
005 0.00NO ppm
006 -0.10NO2ppm
007 0.00 CO2
Bias O2 100%
MANUAL Sep.16.15 14:55
001 -0.01O2%
002
003 0.04CO2%
004 0.0CO ppm
005 0.00NO ppm
006 -0.07NO2ppm
007 0.00 CO2
Bias 0
End Bias
10 20 30 40 50 60 70 80 90 100
Almega





Almega ENVIRONMENTAL

Project No.	9840	Test Date:	09/17/15
Facility:	Mesa Water District - Reservoir II	Location:	Costa Mesa, CA
Unit:	IC Engine No. 3 / Eng 2 low load	Test Team:	DY/RL
Test:	Rule 1110.2 Compliance		

Cal Gas Information

Type	Range	Conc.		Cyl. #	Exp. Date
O2/CO2 (M)	25/10	4.503/9.016	%	CC14859	05/29/23
O2/CO2 (H)	25/10	8.716/18.03	%	CC119210	08/06/22
NOx (M)	25	12.20	ppm	CC405991	04/15/18
NOx (H)	25	23.11	ppm	CC1599	09/09/17
NOx (L)	25	2.513	ppm	CC435188	08/20/16
CO (M)	500	226.2	ppm	CC216	05/16/21
CO (H)	500	453.8	ppm	CC39463	12/02/22
NO2	-	16.39	ppm	CC502667	04/03/17