MURPHY
OIL USA, INC.

MERAUX REFINERY
P. O. BOX 100
MERAUX LA 70075-0100

August 22, 2008

FEDERAL EXPRESS: 8646 7135 9550

Ms. Jennifer Mouton
Environmental Technology Division
Office of Environmental Assessment
Louisiana Department of Environmental Quality
602 North Fifth Street
Baton Rouge, LA 70802
(225) 219-3700

Re: Performance Test Results - #2 SRU Incinerator
Murphy Oil USA, Inc. Meraux Refinery, Agency Interest: #1238
2500 East St. Bernard Hwy., St. Bernard Parish, Meraux, LA
Title V General Permit Number: 2500-00001-V3

Ms. Mouton,

Murphy Oil USA, Inc. is hereby submitting two copies of the test results of the Title V compliance stack testing performed at Murphy Oil USA, Inc. (MOUSA)'s Meraux Refinery for the following units:

#2 SRU Incinerator (EQT0019, EPN: 1-93)

MOUSA conducted these tests on April 23, 2008 in accordance with Specific Requirement 175 of 2500-00001-V2 (in effect at the time). Should you have any questions regarding this submission, please contact me at (504) 271-4141.

Very truly yours,

MURPHY OIL USA, INC.

Matthew S. Dobbins
Sr. Environmental Engineer
Meraux Refinery

Enclosures

cc: LDEQ SE Regional Office, New Orleans, LA
(w/Table I, Emission Test Results)

Re: Murphy Oil USA, Inc. Meraux Refinery
Performance Test Report (#2 SRU Incinerator)
8/22/08

bcc: (w/Table I)
L. Bourgeois
A. Marchand
M. Braud
L. Clark
S. Faller
D. Patnoad

File: (w/ attachments)
Air: DEQ Reports: Performance Test (#2 SRU Incinerator)

File: (w/o attachments)
Air: DEQ: Correspondence 2008

G:\Air\Title V\Stack Tests\Results\080822.#2 SRU Incinerator results.doc

MURPHY OIL USA, INC.
MERAUX REFINERY

P.O. BOX 100

MERAUX, LOUISIANA 70075-0100

EMISSION COMPLIANCE TESTS

SRU NO. 2 INCINERATOR
(source ID 1-93, EQT0019)

APRIL 23, 2008

PERMIT NUMBER: 2500-00001-V2

ETS®
Emission Testing Services, Inc.
P.O. BOX 15075
BATON ROUGE, LOUISIANA 70895

Phone 225-925-8405 Fax 225-925-2343
Email: reporting@emissiontesting.com
www.emissiontesting.com

LELAP Certificate Number 02059 issued to ETS by LDEQ

ETS Project Number: 28046B

Final Report: 15-Aug-2008, 79 Pages
Draft Report: 29-May-2008, 79 Pages

CERTIFICATION of TEST REPORT

MURPHY OIL USA, INC.
MERAUX REFINERY

EMISSION COMPLIANCE TESTS

SRU NO. 2 INCINERATOR
(source ID 1-93, EQT0019)

APRIL 23, 2008

Testing Conducted by:

EMISSION TESTING SERVICES, INC.

Emission Testing Services, Inc. (ETS) is certified by the Louisiana Department of Environmental Quality (LDEQ), certificate number 02059, as a qualified environmental testing laboratory under the Louisiana Environmental Laboratory Accreditation Program (LELAP).

I certify that I have personally examined and am familiar with the information submitted herein, and based on my inquiries of those individuals immediately responsible for obtaining the information; I believe the submitted information is true, accurate, and complete.

Matthew Dobbins
Murphy Oil USA, Inc.
Sr. Environmental Engineer

Kevin Thibodeaux
Emission Testing Services, Inc.
Project Leader

Barry Gipson
Emission Testing Services, Inc.
Manager

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STANDARD RESULT NOTATIONS

< None detected (less than or equal to). Result is the minimum detection limit. Actual result value may be less including the value zero (0).

! Result is the sum or average of multiple results where one or more of the results have a positive detection and one or more results are None Detected. The magnitude of the None Detected result(s) is significant (>30%) in comparison to the positive detection results. Actual result may be less; however, does not include the value zero (0) and is not less than the result calculated using the positive detection results and the None Detected results as zero (0).

I. INTRODUCTION

Emission Testing Services, Inc. (ETS) was contracted by Murphy Oil USA, Inc. (Murphy Oil) to conduct emission tests at the Murphy Oil Meraux Refinery located in St. Bernard Parish, Louisiana. Tests were conducted on the SRU No. 2 Incinerator (source ID 1-93, EQT001922) to determine the emission rates of oxides of nitrogen and carbon monoxide; and to determine the opacity of visible emissions. Tests were conducted to demonstrate compliance with emission permit limits. The SRU No. 2 Incinerator operates under permit number 2500-00001-V2 issued by the Louisiana Department of Environmental Quality (LDEQ).

Emission tests were conducted following EPA test methods. EPA Methods 7E and 10 were used to determine the emission rates of oxides of nitrogen and carbon monoxide. The opacity of visible emissions was determined using EPA Method 9. EPA Methods 1 – 4 were used to determine the number and location of sample points and the velocity, moisture, molecular weight, and volumetric flow rate of the stack gas.

The ETS test team consisted of Project Leader Kevin Thibodeaux and test crew members Keith Delk, Garrett Haydel, and David LaJoie. Matthew Dobbins represented Murphy Oil and coordinated testing with plant operations. The LDEQ was not represented onsite during the emission tests.

II. SUMMARY

Discussion of Tests

On April 23, 2008, emission tests were conducted at the Murphy Meraux Refinery. Emissions from the SRU No. 2 Incinerator were tested in order to determine the emission rates of oxides of nitrogen and carbon monoxide; and the opacity of visible emissions. Three, 1-hour duration tests were conducted.

SRU No. 2 Incinerator Test Results

Tests on emission on the SRU No. 2 Incinerator were conducted with the unit operating at design maximum rates. Oxides of nitrogen emissions averaged 0.630 lb/hr, which is less than the maximum permit limit of 3.10 lb/hr. Carbon monoxide emissions averaged <0.002 lb/hr, which is less than the maximum permit limit of 3.65 lb/hr. Visible emissions from the SRU No. 2 Incinerator could not be detected, which is less than the permit maximum of 20% opacity. Test results are presented in Table I.

Notations and Conclusions

Test Method Modifications, Deviations, and Unusual Conditions

All tests were conducted using EPA test methods without modification. During the tests, there were no deviations from these methods and no unusual conditions were noted.

Test Conclusions

Quality assurance and quality control procedures meeting EPA and LDEQ requirements were used during the emission tests. All quality indicators were within the range of acceptable results demonstrating that these test data are accurate, complete, and representative of emissions conditions. Overall, the quality of data obtained during the tests are acceptable to meet project objectives.

TABLE I
EMISSION TEST RESULTS

MURPHY OIL USA, INC.
MERAUX REFINERY

SRU NO. 2 INCINERATOR
SOURCE ID 1-93

		Permit Limit Max.	RUN 1	RUN 2	RUN 3	AVERAGE
DATE			23-Apr-08	23-Apr-08	23-Apr-08	
TIME			1648-1749	1803-1905	1917-2021	
OXIDES of NITROGEN	PPMv dry		17.1	17.0	16.3	16.8
	lb/hr	3.10	0.643	0.634	0.615	0.630
	lb/mmBtu					
CARBON MONOXIDE	PPMv dry		< 0.1	< 0.1	< 0.1	< 0.1
	lb/hr	3.65	< 0.002	< 0.002	< 0.002	< 0.002
VISIBLE EMISSIONS	Max. Observation, % Opacity		0	0	0	0
	Max. 6-min Avg., % Opacity		0	0	0	0
	Test Avg., % Opacity		0	0	0	0
OXYGEN	vol%		5.40	5.40	5.60	5.47
CARBON DIOXIDE	vol%		6.7	6.7	6.5	6.6
STACK GAS DATA	Temperature, F		1446	1433	1435	1438
	Moisture, Vol%		10.71	10.44	10.88	10.68
	Velocity, ft/sec		51.57	50.68	51.37	51.21
	Flow Rate, acfm		21177	20814	21095	21029
	Flow Rate, dscfm		5256	5215	5256	5242
UNIT OPERATING DATA						
Fuel Firing Rate,	mscf/hr		9088.67	8977	8875	8980.22
	mmBtu/hr		8.26	8.16	8.07	8.16

III. PROCEDURE

Emission tests were conducted using EPA test methods documented in the Code of Federal Regulations (CFR), Title 40, Part 60, Appendix A. A brief description of each method used during the tests follows.

LOCATION of SAMPLE POINTS

Stack gas velocity, flow rate, and moisture were determined on samples collected from a series of sample traverse points selected per EPA Method 1.

Oxygen, oxides of nitrogen, and carbon monoxide were determined on samples collected from a series of sample traverse points selected per EPA Method 7E.

Carbon dioxide samples were collected from a single sample point located near the center of the stack.

EPA METHOD 1
SAMPLE and VELOCITY TRAVERSES for STATIONARY SOURCES

EPA Method 1 is applicable to stacks having a diameter greater than or equal to 12 inches. The method recommends that sample points be located 8 stack diameters downstream and 2 stack diameters upstream from the nearest flow disturbances; however, any distances greater than a minimum 2 stack diameters downstream and a minimum 0.5 stack diameters upstream from the nearest disturbances are acceptable. These distances help insure the collection of a representative sample in the absence of cyclonic flow. The absence of cyclonic flow is verified by measuring the flow yaw angle at each sample traverse point. An average yaw angle of 20 degrees or less is acceptable.

The SRU No. 2 Incinerator has a stack diameter of 35.425 inches. The sampling point was located 38.36 stack diameters upstream and 9.40 stack diameters downstream from the nearest flow disturbances. Based on the upstream and downstream position of the sampling plane, 12 sample points were selected and laid out on 2 perpendicular traverses (diameters) of the stack with 6 sample points per traverse. Access to the sample points was obtained via 2 ports through the stack wall. Cyclonic flow was not detected.

EPA METHOD 2
DETERMINATION of STACK GAS VELOCITY and VOLUMETRIC FLOW RATE
(Type S Pitot Tube)

Stack gas volumetric flow rate was determined from the velocity, moisture, pressure, and temperature of the stack gas and the cross-sectional area of the stack at the sampling point. Stack gas velocity was determined by measuring the velocity head pressure at each sample traverse point using a Type S pitot tube. The type S pitot tube was calibrated against a NIST traceable standard pitot tube prior to the tests.

EPA METHOD 3
GAS ANALYSIS for CARBON DIOXIDE, OXYGEN, EXCESS AIR, and DRY MOLECULAR WEIGHT

Molecular weight of the stack gas was calculated based on oxygen and carbon dioxide concentration data obtained using an Orsat analyzer with the balance of the gas components assumed to be nitrogen.

Orsat analysis was conducted in a stack gas sample that was continuously collected into a Tedlar gas sample bag (integrated sample) over the entire duration of each test run. Sample gas was collected using a stainless steel sample probe and routed through a Teflon sample line to the Tedlar bag.

EPA METHOD 3A
DETERMINATION of OXYGEN and CARBON DIOXIDE CONCENTRATIONS in EMISSIONS from STATIONARY SOURCES
(Instrumental Analyzer Procedure)

Concentration of oxygen in the gas sample was continuously determined throughout the test period. A sample of the stack gas was extracted using a stainless steel probe and was transferred through a heated Teflon sample line to a sample-conditioning unit that removed particulate and moisture from the sample. From the sample-conditioning unit, the sample gas was routed to the test analyzer. The test analyzer was calibrated before and after each test using a set of calibration gas standards prepared per EPA Protocol 1. Results from the analyzer were used to verify the absence of sample line leaks, as a stack gas oxygen reference, and as a basis for gaseous component concentration corrections to specific oxygen basis when required. Oxygen data obtained using this method were not used to determine stack gas molecular weight.

EPA METHOD 4
DETERMINATION of MOISTURE CONTENT in STACK GASES

Moisture of the stack gas was determined by continuously extracting a sample of the stack gas over the duration of the test run. Sample was extracted using a stainless steel nozzle and heated glass sample probe. Sample gas was transferred from the probe through a heated Teflon sample line to a set of four impingers, connected in series, which were immersed in an ice-water bath. The first two impingers initially contained a known mass of DI water, the third was empty, and the fourth contained a known mass of silica gel. Water vapor in the sample gas was condensed and trapped in the impingers. The volume of dry gas exiting the impingers was measured using a dry gas meter.

After sampling, the impingers were weighed to determine the mass of moisture condensate collected.

EPA METHOD 7E
DETERMINATION of NITROGEN OXIDES EMISSIONS from STATIONARY SOURCES

Concentration of oxides of nitrogen in the gas sample was continuously determined throughout the test period. A sample of the stack gas was extracted using a stainless steel probe and was transferred through a heated Teflon sample line to a sample-conditioning unit that removed particulate and moisture from the sample. From the sample-conditioning unit, the sample gas was routed to the test analyzer. The test analyzer was calibrated before and after each test using a set of calibration gas standards prepared per EPA Protocol 1.

EPA METHOD 9
VISUAL DETERMINATION of the OPACITY of EMISSIONS from STATIONARY SOURCES

The opacity of visible emissions was determined by a trained, certified observer. The observer positioned himself in an area so that he had a clear view of the emissions plume with the sun oriented in the 140 degree sector to his back and, as much as possible, viewed the plume perpendicular to the plume direction. Opacity readings were taken every 15-seconds. The observer viewed the plume during each reading just long enough to determine the opacity. The plume was not continuously observed.

EPA METHOD 10
DETERMINATION of CARBON MONOXIDE EMISSIONS from STATIONARY SOURCES

Concentration of carbon monoxide in the gas sample was continuously determined throughout the test period. A sample of the stack gas was extracted using a stainless steel probe and was transferred through a heated Teflon sample line to a sample-conditioning unit that removed particulate and moisture from the sample. From the sample-conditioning unit, the sample gas was routed to the test analyzer. The test analyzer was calibrated before and after each test using a set of calibration gas standards prepared per EPA Protocol 1.

IV. ANALYTICAL TECHNIQUE

All samples collected during the emission tests were analyzed using EPA or EPA approved test methods. A brief description of each method used during the tests follows.

EPA METHOD 3
GAS ANALYSIS for CARBON DIOXIDE, OXYGEN, EXCESS AIR, and DRY MOLECULAR WEIGHT

Concentration of carbon dioxide in the gas sample was determined using an Orsat gas analyzer. The analyzer utilizes the principle of differential sample volume on a sample measured before and after chemical absorption of oxygen in the sample.

EPA METHOD 3A
DETERMINATION of OXYGEN and CARBON DIOXIDE CONCENTRATIONS in EMISSIONS from STATIONARY SOURCES
(Instrumental Analyzer Procedure)

Concentration of oxygen in the gas sample was continuously determined using a test analyzer that utilizes an electrochemical cell detector. The test analyzer was calibrated before and after each test using a set of calibration gas standards prepared per EPA Protocol 1.

EPA METHOD 4
DETERMINATION of MOISTURE CONTENT in STACK GASES

Moisture of the stack gas was determined by gravimetric analysis of water vapor condensed from the sample gas.

EPA METHOD 7E
DETERMINATION of NITROGEN OXIDES EMISSIONS from STATIONARY SOURCES

Concentration of oxides of nitrogen in the gas sample was continuously determined using a test analyzer that utilizes a chemiluminescence detector. The test analyzer was calibrated before and after each test using a set of calibration gas standards prepared per EPA Protocol 1.

EPA METHOD 10
DETERMINATION of CARBON MONOXIDE from STATIONARY SOURCES

Concentration of carbon monoxide in the gas sample was continuously determined using a nondispersive infrared test analyzer. The test analyzer was calibrated before and after each test using a set of calibration gas standards prepared per EPA Protocol 1.

V. QUALITY ASSURANCE/ QUALITY CONTROL

Test results were validated using rigorous quality assurance (QA) and quality control (QC) procedures documented in ETS' Standard Operating Procedures (SOP). Each SOP meets or exceeds EPA requirements and has been reviewed by the LDEQ under the Louisiana Environmental Laboratory Accreditation Program (LELAP).

The QA/QC programs ensure that the test data are representative of the source conditions by verifying the completeness, accuracy, and precision of the test data. QA/QC functions cover all aspects of the test including field-testing, sampling, sample analysis, sample storage and transport, and data processing and reporting.

Emission testing at Murphy included a series of QA/QC functions that were completed satisfactorily within the required limits. Therefore, data collected during testing should be considered accurate, precise, complete, and representative of stack conditions.

VI. TEST DATA and CALCULATIONS

Data Processing and Calculation Methods

All emission test data, laboratory analytical data, and unit operation data are presented in this section along with the associated data reduction calculations.

Data from the field data forms were manually input into a computer for data processing and calculation. Integrity of manual data input is maintained by using a double entry system. Accuracy of computer calculations is verified by processing a known set of data developed using manual calculation. Additional control of data input and processing is conducted through review of results by more than one individual.

SRU No. 2 Incinerator

Emission tests were conducted on the SRU No. 2 Incinerator to determine the concentration of oxygen and carbon dioxide; and the concentration and mass emission rates of oxides of nitrogen and carbon monoxide; and to determine the opacity of visible emissions.

Oxygen and carbon dioxide concentrations were determined using EPA Methods 3A and 3. Oxides of nitrogen and carbon monoxide emissions were determined using EPA Methods 7E and 10. The opacity of visible emissions was determined using EPA Method 9. Stack gas velocity, flow rate, molecular weight, and moisture were measured using EPA Methods 2, 3, and 4. Prior to the tests, EPA Method 1 was used to verify the absence of cyclonic flow.

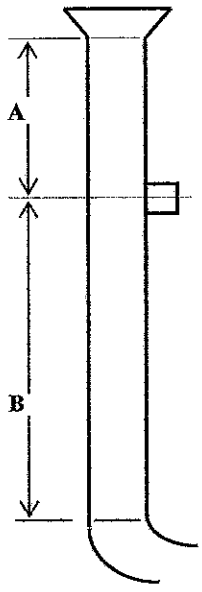
Stack gas velocity, moisture, and flow rate were determined using a combined sample probe from a series of sample points, Figure I, selected per EPA Method 1. Prior to the emission tests, oxygen, oxides of nitrogen, and carbon monoxide concentration was determined at a series of three sample traverse points, Figure II, in order to determine if concentrations were stratified. As a result, a series of sampling points, Figure III, were selected per EPA Method 7E in order to collect samples for analysis of oxygen, oxides of nitrogen, and carbon monoxide. Carbon dioxide concentration was determined from a sample collected from a single sample point, Figure IV, located near the center of the stack.

ETS

EMISSION TESTING SERVICES INC.

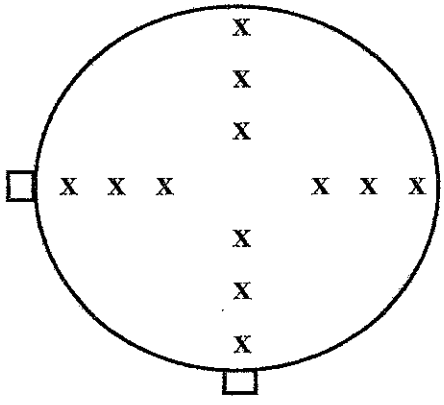
TRAVERSE POINT LAYOUT

METHOD-1-4



CLIENT:	MURPHY OIL		
DATE:	4/23/2008		
UNIT TESTED:	#2-SRU INCINERATOR		
LOCATION:	MERAUX,LA.		
UPSTREAM DIST. (A): (INCHES)	1359	DIAMETERS:	38.36
DOWNSTREAM DIST. (B): (INCHES)	333	DIAMETERS:	9.40
INSIDE DIAMETER (INCHES):	35.425		
COUPLING LENGTH (INCHES):	50.25		
COUPLING TYPE:	4"-8-BOLT 150 LB FLANGE		

CROSS SECTIONAL LAYOUT



TOTAL TRAVERSE POINTS= 12

TRAVERSE POINT	DISTANCE % OF DIAMETER	STACK DIAMETER	COUPLING LENGTH	TRAVERSE POINTS
1	4.4	35.425	50.25	51.81
2	14.6	35.425	50.25	55.42
3	29.6	35.425	50.25	60.74
4	70.4	35.425	50.25	75.19
5	85.4	35.425	50.25	80.50
6	95.6	35.425	50.25	84.12

SIGNATURE: _____

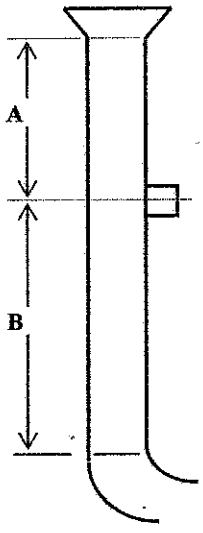
FIGURE I
6.2.2

ETS

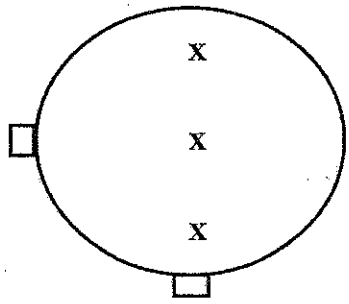
EMISSION TESTING SERVICES INC.

TRAVERSE POINT LAYOUT

STRATIFICATION CHECK 3A,7E,&10



CLIENT:	MURPHY OIL
DATE:	04/23/08
UNIT TESTED:	#2-SRU INCINERATOR
LOCATION:	MERAUX,LA.
UPSTREAM DIST. (A):	1359
DOWNSTREAM DIST. (B):	333
INSIDE DIAMETER (INCHES):	35.425
COUPLING LENGTH (INCHES):	50.25
COUPLING TYPE:	4"-8-BOLT 150 LB FLANGE



CROSS SECTIONAL LAYOUT

TOTAL TRAVERSE POINTS= 3

TRAVERSE POINT	DISTANCE % OF DIAMETER	STACK DIAMETER	COUPLING LENGTH	TRAVERSE POINTS
1	0.167	35.425	50.25	56.17
2	0.500	35.425	50.25	67.96
3	0.833	35.425	50.25	79.76

SIGNATURE: _____

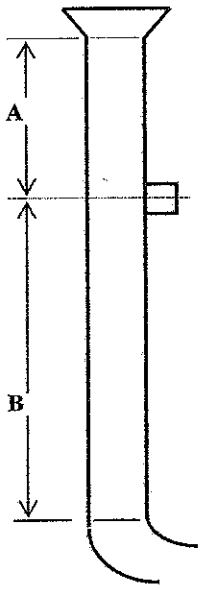
FIGURE II
6.2.3

ETS

EMISSION TESTING SERVICES INC.

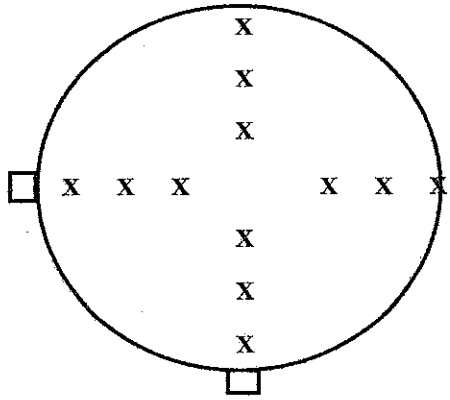
TRAVERSE POINT LAYOUT

METHODS 3A,7E,&10



CLIENT:	MURPHY OIL		
DATE:	4/23/2008		
UNIT TESTED:	#2-SRU INCINERATOR		
LOCATION:	MERAUX,LA.		
UPSTREAM DIST. (A): (INCHES)	1359	DIAMETERS:	38.36
DOWNSTREAM DIST. (B): (INCHES)	333	DIAMETERS:	9.40
INSIDE DIAMETER (INCHES):	35.425		
COUPLING LENGTH (INCHES):	50.25		
COUPLING TYPE:	4"-8-BOLT 150 LB FLANGE		

CROSS SECTIONAL LAYOUT



TOTAL TRAVERSE POINTS=

TRAVERSE POINT	DISTANCE % OF DIAMETER	STACK DIAMETER	COUPLING LENGTH	TRAVERSE POINTS
1	4.4	35.425	50.25	51.81
2	14.6	35.425	50.25	55.42
3	29.6	35.425	50.25	60.74
4	70.4	35.425	50.25	75.19
5	85.4	35.425	50.25	80.50
6	95.6	35.425	50.25	84.12

SIGNATURE: _____

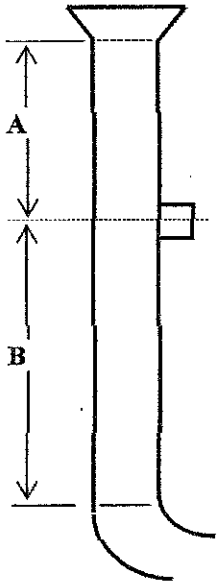
FIGURE III
6.2.4

ETS

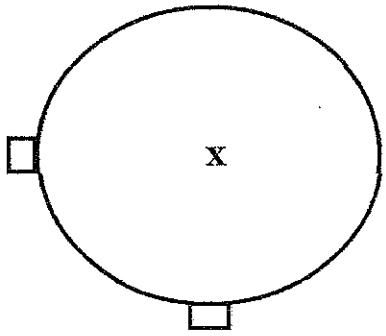
EMISSION TESTING SERVICES INC.

TRAVERSE POINT LAYOUT

METHODS 3 FOR CO2



CLIENT:	MURPHY OIL
DATE:	04/23/08
UNIT TESTED:	#2-SRU INCINERATOR
LOCATION:	MERAUX,LA.
UPSTREAM DIST. (A):	1359
DOWNSTREAM DIST. (B):	333
INSIDE DIAMETER (INCHES):	35.425
COUPLING LENGTH (INCHES):	50.25
COUPLING TYPE:	4"-8-BOLT 150 LB FLANGE



CROSS SECTIONAL LAYOUT

TOTAL TRAVERSE POINTS= 1

TRAVERSE POINT	DISTANCE % OF DIAMETER	STACK DIAMETER	COUPLING LENGTH	TRAVERSE POINTS
1	0.500	35.425	50.25	67.96

SIGNATURE: _____

FIGURE IV
6.2.5

ETS
EMISSION TESTING SERVICES, INC.

VERIFICATION OF ABSENCE of CYCLONIC FLOW

COMPANY: Murphy Oil

DATE: 4/23/08

SOURCE: SRU #2

STACK DIAMETER 35.425

LOCATION: Meraux

OPERATOR: Keith DeLR

	REFERENCE ANGLE		REFERENCE ANGLE
1	10	13	
2	8	14	
3	12	15	
4	6	16	
5	7	17	
6	5	18	
7	9	19	
8	11	20	
9		21	
10		22	
11		23	
12		24	

AVERAGE 8.5 *

* THE AVERAGE IS THE ABSOLUTE VALUE OF EACH DEGREE POINT DIVIDED BY THE NUMBER OF POINTS.

REFERENCE ANGLE CANNOT EXCEED 20 DEGREES OF AVERAGE OVERALL VALUE.

SRU No. 2 Incinerator
EPA Methods 2, 3, and 4

During the emission tests, stack gas velocity, flow rate, and moisture were determined using a combined sampling train. Test data and calculations are presented on the following pages.

ETS

EMISSION TESTING SERVICES, INC.

WEIGHT GAIN LOG SHEET

CLIENT: Murphy Oil

OPERATOR: Keith Delle

SOURCE: SRU # 2

RUN NUMBER: 1	SAMPLE BOX #: KW	DATE: 4/23/08

IMPINGER WEIGHT GAIN

	INITIAL VOLUME (ml)	INITIAL WEIGHT (grams)	FINAL WEIGHT (grams)	WEIGHT GAIN (grams)
IMP #1		544.3	632.3	88
IMP #2		545.4	552.3	6.9
IMP #3		449.4	450.4	1.0
IMP #4		667.2	675.0	7.8
IMP #5				
			TOTAL WT. GAIN:	103.7

LIQUID SAMPLE WEIGHTS

SAMPLE ID	PRE WEIGHT (grams)	POST WEIGHT (grams)	TOTAL SAMPLE (grams)

RUN NUMBER: 2	SAMPLE BOX #: KW	DATE: 4/23/08

IMPINGER WEIGHT GAIN

	INITIAL VOLUME (ml)	INITIAL WEIGHT (grams)	FINAL WEIGHT (grams)	WEIGHT GAIN (grams)
IMP #1		562.1	647.3	85.2
IMP #2		532.4	539.9	7.5
IMP #3		461.0	462.9	1.9
IMP #4		589.4	595.7	6.3
IMP #5				
			TOTAL WT. GAIN:	100.9

LIQUID SAMPLE WEIGHTS

SAMPLE ID	PRE WEIGHT (grams)	POST WEIGHT (grams)	TOTAL SAMPLE (grams)

RUN NUMBER: 3	SAMPLE BOX #: KW	DATE: 4/23/08

IMPINGER WEIGHT GAIN

	INITIAL VOLUME (ml)	INITIAL WEIGHT (grams)	FINAL WEIGHT (grams)	WEIGHT GAIN (grams)
IMP #1		556.5	647.3	90.8
IMP #2		552.3	558.0	5.7
IMP #3		450.4	451.8	1.4
IMP #4		686.3	693.3	7.0
IMP #5				
			TOTAL WT. GAIN:	104.9

LIQUID SAMPLE WEIGHTS

SAMPLE ID	PRE WEIGHT (grams)	POST WEIGHT (grams)	TOTAL SAMPLE (grams)

ETS® EMISSION TESTING SERVICES, INC., FIELD DATA, METHOD(S) 1-4

PLANT: Murphy Oil | SAMPLE BOX NO.: KW | PITOT TUBE ID.: P-T-10 | STACK DIAMETER, in.: 35.425'
DATE: 4/23/08 | METER BOX NO.: 6 | PITOT TUBE FACTOR: .838 | METER Δ H@: 1.7607
LOCATION: Meraux, LA | BAROMETRIC PRESSURE: 30.13 | FILTER ID.: N/A | METER D.G.M.F.: 1.0046
STACK ID.: SRU #2 | AMBIENT TEMP.: N/A | FILTER TYPE: N/A | K-FACTOR: N/A
RUN NO.: 1 | OPERATOR: Keith Delk | NOZZLE DIAMETER, IN: N/A | T-FACTOR: N/A

Traverse Point Number	Sampling Time (θ), min.	Static Pressure (in. H_2O)	Stack Temp. (Ts), °F	Velocity Head (ΔPs)	Velocity Head ($\sqrt{\Delta P_s}$)	Pressure Differential Across Orifice Meter (ΔH) in., H_2O Actual	Pressure Differential Across Orifice Meter (ΔH) in., H_2O Desired	Dry Gas Meter Volume (Vm), ft^3	Gas Sample Temperature at Dry Gas Meter Inlet (Tm_{in}), °F	Gas Sample Temperature at Dry Gas Meter Outlet (Tm_{out}), °F	Probe Temp. °F	Sample Box Temp. °F	Temp of Gas Leaving Last Impinger °F	Pump Vacuum in. Hg gauge
on@ 1	1638	-1.5	1436	.26	.510	1.50	1.50	18.270	94	89	251	248	57	4.0
2	7:30		1445	.28	.529	↓	↓	23.580	100	90	248	254	59	4.0
3	15:00		1445	.23	.480			28.785	105	91	252	251	62	4.0
4	22:30		1447	.20	.447	↓	↓	34.465	107	93	255	248	64	4.0
off @	1708							39.352						
on@ 1	1714		1441	.24	.490	1.50	1.50	39.352	96	94	252	253	59	4.0
2	7:30		1446	.22	.469	↓	↓	44.675	101	95	254	252	61	4.0
3	15:00		1452	.21	.458			50.010	106	96	250	247	62	4.0
4	22:30		1456	.20	.447	↓	↓	55.340	110	96	253	251	64	4.0
off@	1714							60.728						
AVERAGE	60.0	-1.5	1446.0		.4789	1.50		42.458	97.7					

6.2.9

Total Impinger Weight Gain: 103.7

ORSAT MEASUREMENT			
CO2	O2	CO	N2
6.7	5.4		

Orsat leak check ✓
Method (3 or 3A) 3/3A
Barometer ID Unit 1

COMMENTS:

Pitot tube leak check, impact side good @ 2.7
Pitot tube leak check, static side good @ 2.4
Pre-leak Rate @ 10.0 in.Hg .002 ft3/min.
Post-leak Rate @ 12.0 in.Hg .003 ft3/min.

ETS REFERENCE SOPS – 002, 004, 005, 006, 009, 010, 012, 013, 017

ETS®
Emission Testing Services, Inc.

Client : Murphy Oil
Source : SRU No. 2 Incinerator
Test Date: 23-Apr-08
Run No. : 1

EPA METHOD 2, DETERMINATION of STACK GAS VELOCITY and VOLUMETRIC FLOW RATE
EPA METHOD 3, DETERMINATION of STACK GAS MOLECULAR WEIGHT
EPA METHOD 4, DETERMINATION of STACK GAS MOISTURE

A	Cross-sectional area of the stack, ft2
Acf	Stack gas flow rate, actual ft3/min
Bws	Stack gas moisture fraction, vol%/100 (Bws = SBws when Bws > SBws)
CCi	Component 1,2,3,... conc. vol%/100
Cp	Pitot tube calibration coefficient
D1	Diameter of round stack, in.
dH	Meter orifice press. diff., in.H2O
dP	Stack gas velocity head, in.H2O
ews	saturation vapor press, in.Hg @Ts
F1	Conversion factor, 13.6 in.H2O/ in.Hg
F2	Conversion factor, 453.59 g/lb
F3	Conversion factor, 12 in./ ft
F4	Conversion factor, 3600 sec/hr
F5	Conversion factor, 60 sec/hr
F4	Conversion factor, 3600 sec/hr
F5	Conversion factor, 60 sec/min
Kp	Pitot tube constant, 85.49
MCi	Mole wt of component, lb/lb-mole
Md	Stack gas mole weight, dry lb/lb-mole
MH2O	Mole weight of water, 18.015 lb/lb-mole
Ms	Stack gas mole weight, wet lb/lb-mole
Pa	Stack gas static pressure, in.H2O
Pbar	Barometric pressure, in.Hg
pi	Mathmatical constant, 3.14159
Ps	Stack gas absolute pressure, in.Hg
Pstd	Std. absolute pressure, 29.92 in.Hg
Qsd	Stack gas vol. flow rate, dry std. ft3/hr
R	Ideal gas constant, 21,85
SBws	Saturation moisture fraction @ Ts
Tm	Dry gas meter temp, F
Ts	Stack gas temp, F
Tstd	Standard temp, 528.0 R
Vi	Water vapor condensed, imp 1, g
Vii	Water vapor condensed, Imp 2, g
Viii	Water vapor condensed, imp 3, g
Viv	Water vapor condensed, imp 4, g
Vm	Sample volume indicated, dry ft3
Vmstd	Sample volume, dry standard ft3
Vs	Stack gas velocity, ft/sec
Vw	Total water vapor condensed, std ft3
Y	Dry gas meter calibration factor

$$Ps = (Pbar) + (Pa / F1) = (\ 30.130\ ) + (\ -1.5000\ /\ 13.6\ ) = 30.020$$

$$Vw = \left\{\frac{(Vi + Vii + Viii + Viv)(R)(Tstd)}{(F2)(Pstd)(MH2O)}\right\} = \left\{\frac{(\ 88.0 + 6.90 + 1.00 + 7.80\ )(\ 21.85\ )(\ 528\ )}{(\ 453.59\ )(\ 29.92\ )(\ 18.015\ )}\right\} = 4.89333$$

$$Vmstd = \left\{\frac{(Vm)(Y)(Pbar + (dH/F1))(Tstd)}{(Pstd)(Tm + 460)}\right\} = \left\{\frac{(\ 42.458\ )(\ 1.00460\ )(\ 30.130 + (\ 1.5000\ /\ 13.6\ ))(\ 528.0\ )}{(\ 29.92\ )(\ 97.7 + 460.0\ )}\right\} = 40.81503$$

$$Bws = \left\{\frac{(Vw)}{(Vw + Vmstd)}\right\} = 0.10706$$

$$SBws = \left\{\frac{(esw)}{(Ps)}\right\} = \left\{\frac{(\ 30.020\ )}{(\ 30.020\ )}\right\} = 1.00000$$

Bws = 0.10706

$$Md = \left\{\begin{array}{l}(MC1)(CC1) + (MC2)(CC2) + \\ (MC3)(CC3) + (MC4)(CC4) + \\ (MC5)(CC5) + (MC6)(CC6) + \\ (MC7)(CC7) + (MC8)(CC8) + \\ (MC9)(CC9) + (MC10)(CC10)\end{array}\right\} = \left\{\begin{array}{llll}\text{Oxygen} & (\ 31.999\ )(\ 0.0540\ ) + & \text{Carbon Dioxide} & (\ 44.010\ )(\ 0.0670\ ) + \\ & (\ )(\ ) + & & (\ )(\ ) + \\ & (\ )(\ ) + & & (\ )(\ ) + \\ & (\ )(\ ) + & & (\ )(\ ) + \\ & (\ )(\ ) + & \text{Nitrogen} & (\ 28.013\ )(\ 0.8790\ )\end{array}\right\} = 29.300$$

$$Ms = (Md)(1 - Bws) + (MH2O)(Bws) = (\ 29.300\ )(1 - 0.10706) + (\ 18.015\ )(\ 0.10706\ ) = 28.092$$

$$A = \left\{(D1)/((F3)(2))\right\}^2\{pi\} = \left\{(\ 35.425\ )/((\ 12.000\ )(\ 2\ ))\right\}^2\{\ 3.14159\} = 6.84458$$

$$Vs = \left\{(Kp)(Cp)(dP^{\frac{1}{2}})\right\}\left\{\frac{(Ts + 460)}{(Ps)(Ms)}\right\}^{\frac{1}{2}} = \left\{(\ 85.49\ )(\ 0.83800\ )(\ 0.47878\ )\right\}\left\{\frac{(\ 1446.0\ + 460\ )}{(\ 30.020\ )(\ 28.092\ )}\right\}^{\frac{1}{2}} = 51.5662$$

$$Acf = (F5)(Vs)(A) = (\ 60\ )(\ 51.5662\ )(\ 6.84458\ ) = 21176.93$$

$$Qsd = \left\{\frac{(F4)(1 - Bws)(Vs)(A)(Tstd)(Ps)}{(Ts + 460)(Pstd)}\right\} = \left\{\frac{(\ 3600\ )(1 - 0.10706\ )(\ 51.5662\ )(\ 6.84458\ )(528)(\ 30.020\ )}{(\ 1446.0 + 460\ )(\ 29.92\ )}\right\} = \begin{array}{ll}315351.33 & \text{dscf/hr} \\ 5255.86 & \text{dscf/min}\end{array}$$

ETS® EMISSION TESTING SERVICES, INC., FIELD DATA, METHOD(S) 1-4

PLANT: Murphy Oil | SAMPLE BOX NO.: RM | PITOT TUBE ID.: P-T-10 | STACK DIAMETER, in.: 35.425"
DATE: 4/1/08 | METER BOX NO.: 6 | PITOT TUBE FACTOR: .838 | METER Δ H@: 1.7607
LOCATION: Meraux, LA | BAROMETRIC PRESSURE: 30.11 | FILTER ID.: N/A | METER D.G.M.F.: 1.0046
STACK ID.: SRU #2 | AMBIENT TEMP.: N/A | FILTER TYPE: N/A | K-FACTOR: N/A
RUN NO.: 2 | OPERATOR: Keith Delk | NOZZLE DIAMETER, IN: N/A | T-FACTOR: N/A

Traverse Point Number	Sampling Time (θ), min.	Static Pressure (in. H_2O)	Stack Temp. (Ts), °F	Velocity Head (ΔPs)	Velocity Head ($\sqrt{\Delta P_s}$)	Pressure Differential Across Orifice Meter (ΔH) in., H_2O Actual	Pressure Differential Across Orifice Meter (ΔH) in., H_2O Desired	Dry Gas Meter Volume (Vm), ft^3	Gas Sample Temperature at Dry Gas Meter Inlet (Tm_{in}), °F	Gas Sample Temperature at Dry Gas Meter Outlet (Tm_{out}), °F	Probe Temp. °F	Sample Box Temp. °F	Temp of Gas Leaving Last Impinger °F	Pump Vacuum in. Hg gauge
onQ 1	1803	-1.5	1425	.25	.500	1.50	1.50	60.913	92	89	247	251	59	3.0
2	7:30		1429	.26	.510	↓	↓	66.230	99	89	249	254	62	3.0
3	15:00		1435	.23	.480			71.455	102	90	253	252	63	3.0
4	22:30		1437	.19	.439	↓	↓	76.685	104	91	250	256	65	3.0
offQ	1833							81.964						
onQ 1	1837		1427	.24	.490	1.50	1.50	81.964	95	90	247	253	60	3.0
2	7:30		1431	.22	.469	↓	↓	87.235	99	90	253	252	61	3.0
3	15:00		1436	.20	.447			92.540	103	91	251	255	63	3.0
4	22:30		1440	.20	.447	↓	↓	97.875	104	91	254	253	64	3.0
offQ	1907							103.220						
AVERAGE	60.0	-1.5	1432.5		.4728	1.50		42.307	94.9					

6.2.11

Total Impinger Weight Gain: 100.9

ORSAT MEASUREMENT			
CO2	O2	CO	N2

Orsat leak check ✓
Method (3 or 3A) 3/3A
Barometer ID Unit 1

COMMENTS:

Pitot tube leak check, impact side good @ 3.1
Pitot tube leak check, static side good @ 2.8
Pre-leak Rate @ 10.0 in.Hg .006 ft3/min.
Post-leak Rate @ _____ in.Hg _____ ft3/min.

ETS®
Emission Testing Services, Inc.

Client : Murphy
Source : SRU No. 2 Incinerator
Test Date: 23-Apr-08
Run No. : 2

EPA METHOD 2, DETERMINATION of STACK GAS VELOCITY and VOLUMETRIC FLOW RATE
EPA METHOD 3, DETERMINATION of STACK GAS MOLECULAR WEIGHT
EPA METHOD 4, DETERMINATION of STACK GAS MOISTURE

A	Cross-sectional area of the stack, ft2
Acf	Stack gas flow rate, actual ft3/min
Bws	Stack gas moisture fraction, vol%/100 (Bws = SBws when Bws > SBws)
CCi	Component 1,2,3,... conc. vol%/100
Cp	Pitot tube calibration coefficient
D1	Diameter of round stack, in.
dH	Meter orifice press. diff., in.H2O
dP	Stack gas velocity head, in.H2O
ews	saturation vapor press, in.Hg @Ts
F1	Conversion factor, 13.6 in.H2O/ in.Hg
F2	Conversion factor, 453.59 g/lb
F3	Conversion factor, 12 in./ ft
F4	Conversion factor, 3600 sec/hr
F5	Conversion factor, 60 sec/hr

F4	Conversion factor, 3600 sec/hr
F5	Conversion factor, 60 sec/min
Kp	Pitot tube constant, 85.49
MCi	Mole wt of component, lb/lb-mole
Md	Stack gas mole weight, dry lb/lb-mole
MH2O	Mole weight of water, 18.015 lb/lb-mole
Ms	Stack gas mole weight, wet lb/lb-mole
Pa	Stack gas static pressure, in.H2O
Pbar	Barometric pressure, in.Hg
pi	Mathmatical constant, 3.14159
Ps	Stack gas absolute pressure, in.Hg
Pstd	Std. absolute pressure, 29.92 in.Hg
Qsd	Stack gas vol. flow rate, dry std. ft3/hr
R	Ideal gas constant, 21,85

SBws	Saturation moisture fraction @ Ts
Tm	Dry gas meter temp, F
Ts	Stack gas temp, F
Tstd	Standard temp, 528.0 R
Vi	Water vapor condensed, imp 1, g
Vii	Water vapor condensed, imp 2, g
Viii	Water vapor condensed, imp 3, g
Viv	Water vapor condensed, imp 4, g
Vm	Sample volume indicated, dry ft3
Vmstd	Sample volume, dry standard ft3
Vs	Stack gas velocity, ft/sec
Vw	Total water vapor condensed, std ft3
Y	Dry gas meter calibration factor

$$Ps = (Pbar) + (Pa / F1) = (\ 30.110\ ) + (\ -1.5000\ /\ 13.6\ ) = 30.000$$

$$Vw = \left\{\frac{(Vi + Vii + Viii + Viv)(R)(Tstd)}{(F2)(Pstd)(MH2O)}\right\} = \left\{\frac{(\ 85.2 + 7.50 + 1.90 + 6.30\ )(\ 21.85\ )(\ 528\ )}{(\ 453.59\ )(\ 29.92\ )(\ 18.015\ )}\right\} = 4.76121$$

$$Vmstd = \left\{\frac{(Vm)(Y)(Pbar + (dH/F1))(Tstd)}{(Pstd)(Tm + 460)}\right\} = \left\{\frac{(\ 42.307\ )(\ 1.00460\ )(\ 30.110 + (\ 1.5000\ /\ 13.6\ ))(\ 528.0\ )}{(\ 29.92\ )(\ 94.9 + 460.0\ )}\right\} = 40.84438$$

$$Bws = \left\{\frac{(Vw)}{(Vw + Vmstd)}\right\} = 0.10440$$

$$SBws = \left\{\frac{(esw)}{(Ps)}\right\} = \left\{\frac{(\ 30.000\ )}{(\ 30.000\ )}\right\} = 1.00000$$

$$Bws = 0.10440$$

$$Md = \left\{\begin{array}{l}(MC1)(CC1) + (MC2)(CC2) + \\ (MC3)(CC3) + (MC4)(CC4) + \\ (MC5)(CC5) + (MC6)(CC6) + \\ (MC7)(CC7) + (MC8)(CC8) + \\ (MC9)(CC9) + (MC10)(CC10)\end{array}\right\} = \left\{\begin{array}{llll}\text{Oxygen} & (\ 31.999\ )(\ 0.0540\ ) & \text{Carbon Dioxide} & (\ 44.010\ )(\ 0.0670\ ) + \\ & (\ )(\ ) + & & (\ )(\ ) + \\ & (\ )(\ ) + & & (\ )(\ ) + \\ & (\ )(\ ) + & & (\ )(\ ) + \\ & (\ )(\ ) + \text{Nitrogen} & & (\ 28.013\ )(\ 0.8790\ )\end{array}\right\} = 29.300$$

$$Ms = (Md)(1 - Bws) + (MH2O)(Bws) = (\ 29.300\ )(1 - 0.10440\ ) + (\ 18.015\ )(\ 0.10440\ ) = 28.122$$

$$A = \left\{(D1)/((F3)(2))\right\}^2\{pi\} = \left\{(\ 35.425\ )/((\ 12.000\ )(\ 2\ ))\right\}^2\{\ 3.14159\ \} = 6.84458$$

$$Vs = \left\{(Kp)(Cp)(dP^{\frac{1}{2}})\right\}\left\{\frac{(Ts + 460)}{(Ps)(Ms)}\right\}^{\frac{1}{2}} = \left\{(\ 85.49\ )(\ 0.83800\ )(\ 0.47234\ )\right\}\left\{\frac{(\ 1432.5\ + 460\ )}{(\ 30.000\ )(\ 28.122\ )}\right\}^{\frac{1}{2}} = 50.6820$$

$$Acf = (F5)(Vs)(A) = (\ 60\ )(\ 50.6820\ )(\ 6.84458\ ) = 20813.82$$

$$Qsd = \left\{\frac{(F4)(1 - Bws)(Vs)(A)(Tstd)(Ps)}{(Ts + 460)(Pstd)}\right\} = \left\{\frac{(\ 3600\ )(\ 1 - 0.10440\ )(\ 50.6820\ )(\ 6.84458\ )(528)(\ 30.000\ )}{(\ 1432.5 + 460\ )(\ 29.92\ )}\right\} = \begin{array}{ll}312874.88 & \text{dscf/hr} \\ 5214.58 & \text{dscf/min}\end{array}$$

ETS® EMISSION TESTING SERVICES, INC., FIELD DATA, METHOD(S) 1-4

PLANT: Murphy O;l | SAMPLE BOX NO.: 1CW | PITOT TUBE ID.: P-T-10 | STACK DIAMETER, in.: 35.425"
DATE: 4/23/08 | METER BOX NO.: 6 | PITOT TUBE FACTOR: .838 | METER Δ H@: 1.7607
LOCATION: Meraux, LA | BAROMETRIC PRESSURE: 30.13 | FILTER ID.: N/A | METER D.G.M.F.: 1.0046
STACK ID.: SRU #2 | AMBIENT TEMP.: N/A | FILTER TYPE: N/A | K-FACTOR: N/A
RUN NO.: 3 | OPERATOR: Keith Delk | NOZZLE DIAMETER, IN: N/A | T-FACTOR: N/A

Traverse Point Number	Sampling Time (θ), min.	Static Pressure (in. H_2O)	Stack Temp. (Ts), °F	Velocity Head (ΔPs)	Velocity Head ($\sqrt{\Delta P_S}$)	Pressure Differential Across Orifice Meter (ΔH) in., H_2O Actual	Pressure Differential Across Orifice Meter (ΔH) in., H_2O Desired	Dry Gas Meter Volume (Vm), ft^3	Gas Sample Temperature at Dry Gas Meter Inlet (Tm_{in}), °F	Gas Sample Temperature at Dry Gas Meter Outlet (Tm_{out}), °F	Probe Temp. °F	Sample Box Temp. °F	Temp of Gas Leaving Last Impinger °F	Pump Vacuum in. Hg gauge
on@ 1	1917	7.5	1436	.23	.480	1.50	1.50	103.351	86	87	249	252	58	3.0
2	7:30		1436	.25	.500			108.245	92	87	252	256	60	3.0
3	15:00		1435	.24	.490			113.145	98	87	251	253	61	3.0
4	22:30		1437	.20	.447	↓	↓	118.590	100	87	248	250	63	3.0
off@	1948							124.035						
on@ 1	1952		1428	.24	.490	1.50	1.56	124.035	94	87	246	248	61	3.0
2	7:30		1431	.24	.490			129.420	98	89	247	251	62	3.0
3	15:00		1436	.22	.469			134.580	101	89	250	254	64	3.0
4	22:30		1439	.21	.458	↓	↓	139.855	103	90	252	253	65	3.0
off@	2022							145.118						
AVERAGE	60.0	.15	1433.3		.4780	1.50		41.767	92.2					

6.2.13

Total Impinger Weight Gain: 104.9

ORSAT MEASUREMENT			
CO2	O2	CO	N2
6.5	5.6		

Orsat leak check ✓
Method (3 or 3A) 3/3A
Barometer ID Unit 1

COMMENTS:

Pitot tube leak check, impact side good @ 3.6
Pitot tube leak check, static side good @ 4.1
Pre-leak Rate @ 10.0 in.Hg .001 ft3/min.
Post-leak Rate @ 10.0 in.Hg .002 ft3/min.

ETS®
Emission Testing Services, Inc.

Client : Murphy
Source : SRUnNo. 2 Incinerator
Test Date: 23-Apr-08
Run No. : 3

EPA METHOD 2, DETERMINATION of STACK GAS VELOCITY and VOLUMETRIC FLOW RATE
EPA METHOD 3, DETERMINATION of STACK GAS MOLECULAR WEIGHT
EPA METHOD 4, DETERMINATION of STACK GAS MOISTURE

A	Cross-sectional area of the stack, ft2
Acf	Stack gas flow rate, actual ft3/min
Bws	Stack gas moisture fraction, vol%/100 (Bws = SBws when Bws > SBws)
CCi	Component 1,2,3,... conc. vol%/100
Cp	Pitot tube calibration coefficient
D1	Diameter of round stack, in.
dH	Meter orifice press. diff., in.H2O
dP	Stack gas velocity head, in.H2O
ews	saturation vapor press, in.Hg @Ts
F1	Conversion factor, 13.6 in.H2O/ in.Hg
F2	Conversion factor, 453.59 g/lb
F3	Conversion factor, 12 in./ ft
F4	Conversion factor, 3600 sec/hr
F5	Conversion factor, 60 sec/hr

F4	Conversion factor, 3600 sec/hr
F5	Conversion factor, 60 sec/min
Kp	Pitot tube constant, 85.49
MCi	Mole wt of component, lb/lb-mole
Md	Stack gas mole weight, dry lb/lb-mole
MH2O	Mole weight of water, 18.015 lb/lb-mole
Ms	Stack gas mole weight, wet lb/lb-mole
Pa	Stack gas static pressure, in.H2O
Pbar	Barometric pressure, in.Hg
pi	Mathmatical constant, 3.14159
Ps	Stack gas absolute pressure, in.Hg
Pstd	Std. absolute pressure, 29.92 in.Hg
Qsd	Stack gas vol. flow rate, dry std. ft3/hr
R	Ideal gas constant, 21,85

SBws	Saturation moisture fraction @ Ts
Tm	Dry gas meter temp, F
Ts	Stack gas temp, F
Tstd	Standard temp, 528.0 R
Vi	Water vapor condensed, imp 1, g
Vii	Water vapor condensed, imp 2, g
Viii	Water vapor condensed, imp 3, g
Viv	Water vapor condensed, imp 4, g
Vm	Sample volume indicated, dry ft3
Vmstd	Sample volume, dry standard ft3
Vs	Stack gas velocity, ft/sec
Vw	Total water vapor condensed, std ft3
Y	Dry gas meter calibration factor

$$Ps = (Pbar) + (Pa / F1) = (\ 30.130\ ) + (\ -1.5000\ /\ 13.6\ ) = 30.020$$

$$Vw = \left\{\frac{(Vi + Vii + Viii + Viv)(R)(Tstd)}{(F2)(Pstd)(MH2O)}\right\} = \left\{\frac{(\ 90.8 + 5.70 + 1.40 + 7.00\ )(\ 21.85\ )(\ 528\ )}{(\ 453.59\ )(\ 29.92\ )(\ 18.015\ )}\right\} = 4.94996$$

$$Vmstd = \left\{\frac{(Vm)(Y)(Pbar + (dH/F1))(Tstd)}{(Pstd)(Tm + 460)}\right\} = \left\{\frac{(\ 41.767\ )(\ 1.00460\ )(\ 30.130 + (\ 1.5000\ /\ 13.6\ ))(\ 528.0\ )}{(\ 29.92\ )(\ 92.2 + 460.0\ )}\right\} = 40.55069$$

$$Bws = \left\{\frac{(Vw)}{(Vw + Vmstd)}\right\} = 0.10879$$

$$SBws = \left\{\frac{(esw)}{(Ps)}\right\} = \left\{\frac{(\ 30.020\ )}{(\ 30.020\ )}\right\} = 1.00000$$

$$Bws = 0.10879$$

$$Md = \left\{\begin{array}{l}(MC1)(CC1) + (MC2)(CC2) + \\ (MC3)(CC3) + (MC4)(CC4) + \\ (MC5)(CC5) + (MC6)(CC6) + \\ (MC7)(CC7) + (MC8)(CC8) + \\ (MC9)(CC9) + (MC10)(CC10)\end{array}\right\} = \left\{\begin{array}{llllll}\text{Oxygen} & (\ 31.999\ )(\ 0.0560\ ) + & \text{Carbon Dioxide} & (\ 44.010\ )(\ 0.0650\ ) + \\ & (\ )(\ ) + & & (\ )(\ ) + \\ & (\ )(\ ) + & & (\ )(\ ) + \\ & (\ )(\ ) + & & (\ )(\ ) + \\ & (\ )(\ ) + & \text{Nitrogen} & (\ 28.013\ )(\ 0.8790\ )\end{array}\right\} = 29.276$$

$$Ms = (Md)(1 - Bws) + (MH2O)(Bws) = (\ 29.276\ )(1 - 0.10879\ ) + (\ 18.015\ )(\ 0.10879\ ) = 28.051$$

$$A = \{(D1)/((F3)(2))\}^2\{pi\} = \{(\ 35.425\ )/((12.000)(2))\}^2\{3.14159\} = 6.84458$$

$$Vs = \left\{(Kp)(Cp)(dP^{\frac{1}{2}})\right\}\left\{\frac{(Ts + 460)}{(Ps)(Ms)}\right\}^{\frac{1}{2}} = \left\{(85.49)(\ 0.83800\ )(\ 0.47797\ )\right\}\left\{\frac{(\ 1435.0\ + 460\ )}{(\ 30.020\ )(\ 28.051\ )}\right\}^{\frac{1}{2}} = 51.3678$$

$$Acf = (F5)(Vs)(A) = (60)(\ 51.3678\ )(\ 6.84458\ ) = 21095.46$$

$$Qsd = \left\{\frac{(F4)(1 - Bws)(Vs)(A)(Tstd)(Ps)}{(Ts + 460)(Pstd)}\right\} = \left\{\frac{(3600)(\ 1 - 0.10879\ )(\ 51.3678\ )(\ 6.84458\ )(528)(\ 30.020\ )}{(\ 1435.0 + 460\ )(29.92)}\right\} = \begin{array}{ll}315348.25 & \text{dscf/hr} \\ 5255.80 & \text{dscf/min}\end{array}$$

SRU No. 2 Incinerator
EPA Methods 3A, 7E, and 10
(Oxygen, oxides of nitrogen, and carbon monoxide)

Test Data and Calculations

During the emission tests, a sample of the stack gas was continuously drawn from the stack and analyzed to determine the concentrations of oxygen, oxides of nitrogen, and carbon monoxide using EPA Methods 3A, 7E, and 10. Results of the tests are summarized on the following pages along with calculation of emission rates.

Test analyzer response was recorded using a computer data acquisition system. One minute average data were recorded on magnetic media and then printed in a format that aids interpretation of the data without editing or processing of the data. These data are presented following the data summary and calculations.

Each test analyzer was calibrated before and after each test run by challenging the analyzer with a set of certified calibration gas standards. Analyzer response was recorded using the computer data acquisition system. Calibration data are presented on each page of applicable test data.

ETS®
Emission Testing Services, Inc.

Client : Murphy Oil
Source : SRU No. 2 Incinerator

EPA METHOD 7E, DETERMINATION of OXIDES of NITROGEN EMISSION RATE

CNOx	NOx concentration, PPMv actual O2
ENOx	NOx emission rate, lb/hr
F1	Conversion factor, 1 part/ 1.00E+06 PPMv
MW	Molecular weight of NO2, 46.006 lb/lb-mole
Qsd	Stack gas volumetric flow rate, dry std ft3/hr
Rvol	Volume of 1 lb-mole ideal gas at std conditions, 385.546 ft3/lb-mole @ 528 R & 29.92 in.Hg

---- Run 1 23-Apr-08 ---------

$$ENOx = \left\{ \frac{(CNOx)(MW)(Qsd)}{(Rvol)(F1)} \right\} = \left\{ \frac{(17.09)(46.006)(315351.3)}{(385.546)(1.00E+06)} \right\} = 0.6431$$

---- Run 2 23-Apr-08 ---------

$$ENOx = \left\{ \frac{(CNOx)(MW)(Qsd)}{(Rvol)(F1)} \right\} = \left\{ \frac{(16.97)(46.006)(312874.9)}{(385.546)(1.00E+06)} \right\} = 0.6336$$

---- Run 3 23-Apr-08 ---------

$$ENOx = \left\{ \frac{(CNOx)(MW)(Qsd)}{(Rvol)(F1)} \right\} = \left\{ \frac{(16.33)(46.006)(315348.2)}{(385.546)(1.00E+06)} \right\} = 0.6145$$

ETS®
Emission Testing Services, Inc.

Client : Murphy Oil
Source : SRU No. 2 Incinerator

EPA METHOD 10, DETERMINATION of CARBON MONOXIDE EMISSION RATE

CCO	CO concentration, PPMv actual O2
ECO	CO emission rate, lb/hr
F1	Conversion factor, 1 part/ 1.00E+06 PPMv
MW	Molecular weight of CO, 28.011 lb/lb-mole
Qsd	Stack gas volumetric flow rate, dry std ft3/hr
Rvol	Volume of 1 lb-mole ideal gas at std conditions, 385.546 ft3/lb-mole @ 528 R & 29.92 in.Hg

---- Run 1 23-Apr-08 ----------

$$ECO = \left\{\frac{(CCO)(MW)(Qsd)}{(Rvol)(F1)}\right\} = \left\{\frac{(< 0.10)(28.011)(315351.3)}{(385.546)(1.00E+06)}\right\} = < 0.0023$$

---- Run 2 23-Apr-08 ----------

$$ECO = \left\{\frac{(CCO)(MW)(Qsd)}{(Rvol)(F1)}\right\} = \left\{\frac{(< 0.10)(28.011)(312874.9)}{(385.546)(1.00E+06)}\right\} = < 0.0023$$

---- Run 3 23-Apr-08 ----------

$$ECO = \left\{\frac{(CCO)(MW)(Qsd)}{(Rvol)(F1)}\right\} = \left\{\frac{(< 0.10)(28.011)(315348.2)}{(385.546)(1.00E+06)}\right\} = < 0.0023$$

ETS

EMISSION TESTING SERVICES INC.

NOX CONVERTER EFFICIENCY TEST

CLIENT:	MURPHY OIL	**OPERATOR:**	KEVIN THIBODEAUX
SOURCE:	#12-72,15-72,19-72,14-72,17-72a,b,c,1-93	**SLOPE:**	11.267638
DATE:	4/21/2008	**INTERCEPT:**	-0.8747
		CORRELATION:	1.0000
		SPAN RANGE:	111.8017

CALIBRATION STATISTICS

	CYLINDER VALUE	INIT VOLT	CONC PPM	CAL ERROR < 2%	FINAL VOLT	CONC %	SPAN DRIFT < 3%
ZERO	0.00	0.05	-0.27	0.24	0.05	-0.27	0.00
MID	48.50	4.43	49.03	0.47	4.43	49.03	0.00
HIGH	101.00	9.02	100.74	0.23	9.02	100.74	0.00

CALIBRATION BIAS

	CYLINDER VALUE	INIT VOLT	CONC PPM	RESP BIAS < 5%	FINAL VOLT	CONC PPM	RESP BIAS < 5%	SPAN DRIFT < 3%
ZERO	0.00	0.06	-0.21	0.05	0.06	-0.21	0.05	0.00
HIGH	101.00	9.00	100.56	0.17	9.00	100.56	0.17	0.00

TIME	NOX-PPM	CHALLENGE CONCENTRATION
11:03:28	51.56	51.00
11:04:28	52.72	
11:05:28	52.50	
11:06:29	53.10	
11:07:29	53.93	**% EFFICIENCY**
AVG	**52.76**	**103.45**

Acceptable efficiency is greater than or equal to 90%

This NO2 to NO converter efficiency test is a modified version of that specified in EPA Method 7E. This modified methodology has been approved and accepted by the LDEQ as the preferred methodology. The gas standard used in this test is not required to be certified per EPA Protocol No. 1.

OPERATORS SIGNATURE

ETS®

EMISSION TESTING SERVICES, INC.

RESPONSE TIME SHEET

Source:	# 1-93,19-72,16-72 #12-72,17-72 A,B,C,&14-72	Date:	4/21/2008
Monitor:	TECO MODEL 10B NOX	Location:	MERAUX,LA.
Serial Number:	10A/R=20150=189	CLIENT:	MURPHY OIL

High Level Gas Concentration: 101.0 PPM

TEST RUN

ACTUAL TIME BEGIN	ACTUAL TIME END	UPSCALE SECONDS	ACTUAL TIME BEGIN	ACTUAL TIME END	DOWNSCAL SECONDS
0.00	44.27	44.27	0.00	48.23	48.23
0.00	45.17	45.17	0.00	47.95	47.95
0.00	45.22	45.22	0.00	48.04	48.04
	AVERAGE	44.89		AVERAGE	48.07

System Response Time (slower of A or B) = 48.07 SEC.

COMMENTS:

ETS REFERENCE SOPS-007,020

ETS®

EMISSION TESTING SERVICES INC.

METHOD-3A

CLIENT:	MURPHY OIL	**OPERATOR:**	KEVIN THIBODEAUX
SOURCE:	#2-SRU INCINERATOR 1-93	**PARAMETER:**	OXYGEN
DATE:	4/23/2008	**LOAD %:**	MAX
RUN # :	STRATIFICATION CHECK	**SLOPE:**	24.5029
ANALYZER ID :	ETS-O2-2	**INTERCEPT:**	0.1030
		CORRELATION:	1.00000
		SPAN RANGE:	24.6058

CALIBRATION STATISTICS

CYLINDER NUMBER		CYLINDER VALUE	INIT VOLT	CONC PPM	CAL ERROR +/-5%	FINAL VOLT	CONC PPM	SPAN DRIFT +/-3%
AAL9800	ZERO	0.00	0.00	-0.02	0.07	0.00	0.10	0.49
ALM056038	LOW	10.00	0.41	10.03	0.14	0.41	10.03	0.00
AAL069542	HIGH	20.10	0.82	20.08	0.07	0.82	20.08	0.00
				0.10	0.42		0.10	0.00

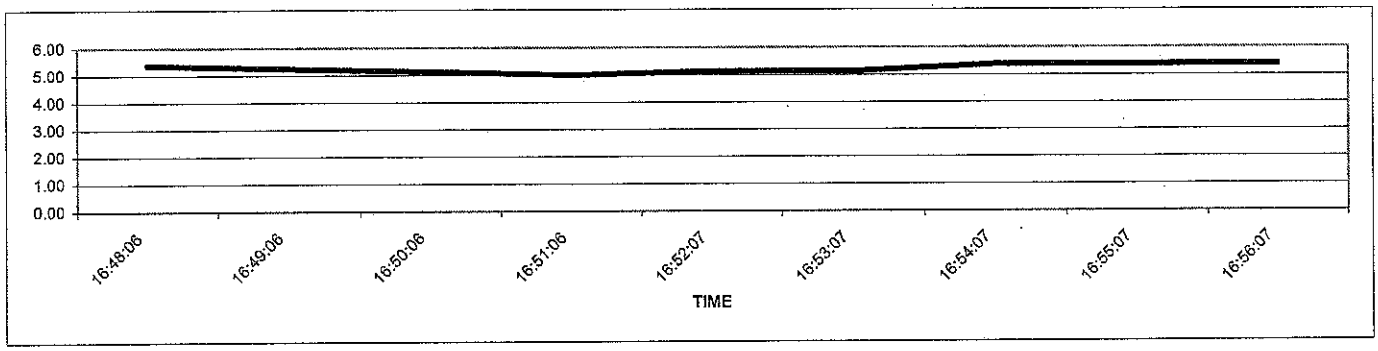
CALIBRATION BIAS

	CYLINDER VALUE	INIT VOLT	CONC PPM	RESP BIAS +/-5%	FINAL VOLT	CONC PPM	RESP BIAS +/-5%	SPAN DRIFT +/-3%
BIAS LOW	0.00	0.00	0.10	0.49	0.01	0.34	0.97	0.97
BIAS HIGH	20.10	0.81	19.98	0.40	0.81	19.84	0.97	0.57

OXYGEN

TIME	O2-%		
16:48:06	5.37		
16:49:06	5.25	**PT. 1 AVG**	**5.25**
16:50:06	5.13		
16:51:06	5.01		
16:52:07	5.13	**PT. 2 AVG**	**5.09**
16:53:07	5.13		
16:54:07	5.37		
16:55:07	5.37	**PT. 3 AVG**	**5.37**
16:56:07	5.37		
		AVG	**5.24**

POINTS	%-DEVIATION
1	0.26
2	2.85
3	2.59



OPERATORS SIGNATURE

ETS REFERENCE SOP-007

ETS®

EMISSION TESTING SERVICES INC.

METHOD-7E

CLIENT:	MURPHY OIL	**OPERATOR:**	KEVIN THIBODEAUX
SOURCE:	#2-SRU INCINERATOR 1-93	**PARAMETER:**	OXIDES OF NITROGEN
DATE:	4/23/2008	**LOAD %:**	MAX
RUN # :	STRATIFICATION CHECK	**SLOPE:**	11.1515
ANALYZER ID :	ETS-NOX-6A	**INTERCEPT:**	-0.4245
		CORRELATION:	0.99980
		SPAN RANGE:	111.0901

CALIBRATION STATISTICS

CYLINDER NUMBER		CYLINDER VALUE	INIT VOLT	CONC PPM	CAL ERROR +/-5%	FINAL VOLT	CONC PPM	SPAN DRIFT +/-3%
AAL9800	ZERO	0.00	-0.01	-0.59	0.53	-0.02	-0.64	0.05
ALM005516	LOW	48.50	4.49	49.67	1.05	4.50	49.72	0.05
ALM028187	HIGH	101.00	9.04	100.42	0.52	9.08	100.80	0.34

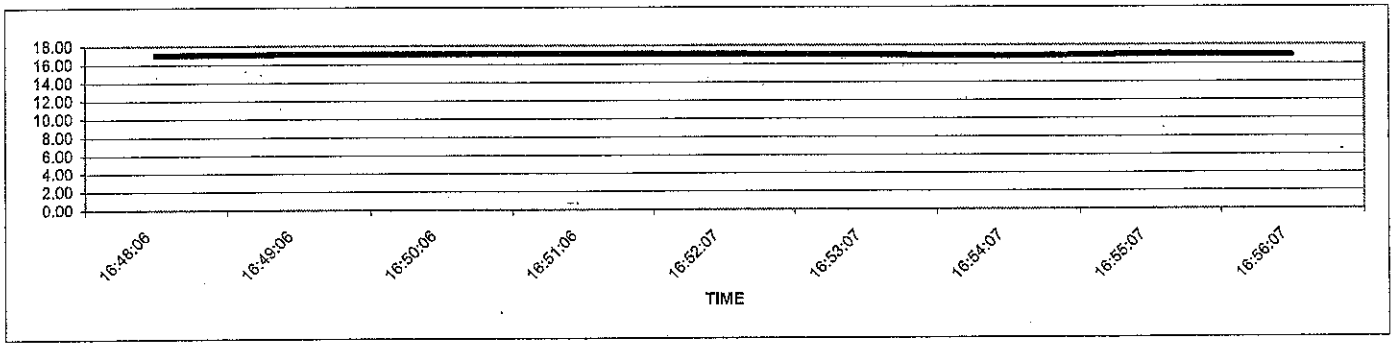
CALIBRATION BIAS

	CYLINDER VALUE	INIT VOLT	CONC PPM	RESP BIAS +/-5%	FINAL VOLT	CONC PPM	RESP BIAS +/-5%	SPAN DRIFT +/-3%
BIAS LOW	0.00	0.01	-0.32	0.25	0.03	-0.04	0.54	0.25
BIAS HIGH	101.00	9.02	100.18	0.21	9.07	100.74	0.05	0.50

OXIDES OF NITROGEN

TIME	NOX-PPM		
16:48:06	17.02		
16:49:06	17.13	**PT. 1 AVG**	**17.09**
16:50:06	17.13		
16:51:06	17.13		
16:52:07	17.08	**PT. 2 AVG**	**17.06**
16:53:07	16.97		
16:54:07	16.80		
16:55:07	17.02	**PT. 3 AVG**	**16.91**
16:56:07	16.91		
		AVG	**17.02**

POINTS	%-DEVIATION
1	0.43
2	0.21
3	0.64



OPERATORS SIGNATURE

ETS REFERENCE SOP-007

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METHOD-10

CLIENT:	MURPHY OIL	**OPERATOR:**	KEVIN THIBODEAUX
SOURCE:	#2-SRU INCINERATOR 1-93	**PARAMETER:**	CARBON MONOXIDE
DATE:	4/23/2008	**LOAD %:**	MAX
RUN # :	STRATIFICATION CHECK	**SLOPE:**	10.1074
ANALYZER ID :	ETS-CO-6	**INTERCEPT:**	0.4973
		CORRELATION:	0.99992
		SPAN RANGE:	101.5713

CALIBRATION STATISTICS

CYLINDER NUMBER		CYLINDER VALUE	INIT VOLT	CONC PPM	CAL ERROR +/-5%	FINAL VOLT	CONC PPM	SPAN DRIFT +/-3%
AAL9800	ZERO	0.00	-0.02	0.30	0.30	-0.02	0.30	0.00
1L23430	LOW	53.00	5.13	52.32	0.67	5.13	52.37	0.05
ALM049728	HIGH	92.70	9.16	93.08	0.38	9.16	93.03	0.05

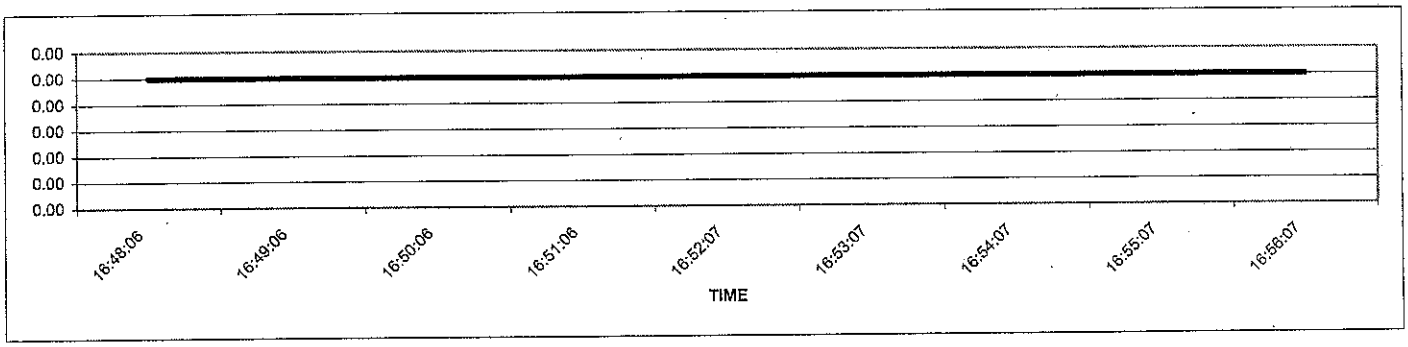
CALIBRATION BIAS

	CYLINDER VALUE	INIT VOLT	CONC PPM	RESP BIAS +/-5%	FINAL VOLT	CONC PPM	RESP BIAS +/-5%	SPAN DRIFT +/-3%
BIAS LOW	0.00	0.00	0.50	0.19	-0.01	0.35	0.05	0.15
BIAS HIGH	92.70	9.14	92.88	0.20	9.15	93.00	0.03	0.12

CARBON MONOXIDE

TIME	CO-PPM		
16:48:06	0.00		
16:49:06	0.00	**PT. 1 AVG**	**0.00**
16:50:06	0.00		
16:51:06	0.00		
16:52:07	0.00	**PT. 2 AVG**	**0.00**
16:53:07	0.00		
16:54:07	0.00		
16:55:07	0.00	**PT. 3 AVG**	**0.00**
16:56:07	0.00		
		AVG	**0.00**

POINTS	%-DEVIATION
1	0.00
2	0.00
3	0.00



OPERATORS SIGNATURE

ETS REFERENCE SOP-007

ETS.

EMISSION TESTING SERVICES INC.

METHOD-3A

CLIENT:	MURPHY OIL	**OPERATOR:**	KEVIN THIBODEAUX
SOURCE:	#2-SRU INCINERATOR 1-93	**PARAMETER:**	OXYGEN
DATE:	4/23/2008	**LOAD %:**	MAX
RUN # :	1	**SLOPE:**	24.5029
ANALYZER ID:	ETS-O2-2	**INTERCEPT:**	0.1030
		CORRELATION:	1.00000
		SPAN RANGE:	24.6058

CALIBRATION STATISTICS

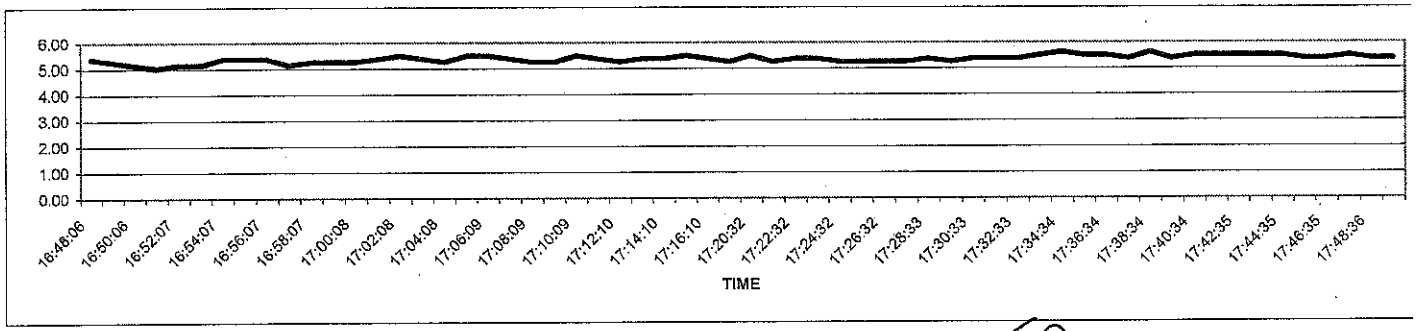
CYLINDER NUMBER		CYLINDER VALUE	INIT VOLT	CONC PPM	CAL ERROR +/-5%	FINAL VOLT	CONC PPM	SPAN DRIFT +/-3%
AAL9800	ZERO	0.00	0.00	-0.02	0.07	0.00	0.10	0.49
ALM056038	LOW	10.00	0.41	10.03	0.14	0.41	10.03	0.00
AAL069542	HIGH	20.10	0.82	20.08	0.07	0.82	20.08	0.00
				0.10	0.42		0.10	0.00

CALIBRATION BIAS

	CYLINDER VALUE	INIT VOLT	CONC PPM	RESP BIAS +/-5%	FINAL VOLT	CONC PPM	RESP BIAS +/-5%	SPAN DRIFT +/-3%
BIAS LOW	0.00	0.00	0.10	0.49	0.01	0.34	0.97	0.97
BIAS HIGH	20.10	0.81	19.98	0.40	0.81	19.84	0.97	0.57

OXYGEN

TIME	O2-%		TIME	O2-%		TIME	O2-%		TIME	O2-%
16:48:06	5.37	1	17:03:08	5.37	4	17:20:32	5.50	7	17:35:34	5.50
16:49:06	5.25		17:04:08	5.25		17:21:32	5.25		17:36:34	5.50
16:50:06	5.13		17:05:09	5.50		17:22:32	5.37		17:37:34	5.37
16:51:06	5.01		17:06:09	5.50		17:23:32	5.37		17:38:34	5.62
16:52:07	5.13		17:07:09	5.37		17:24:32	5.25		17:39:34	5.37
16:53:07	5.13	2	17:08:09	5.25	5	17:25:32	5.25	8	17:40:34	5.50
16:54:07	5.37		17:09:09	5.25		17:26:32	5.25		17:41:35	5.50
16:55:07	5.37		17:10:09	5.50		17:27:32	5.25		17:42:35	5.50
16:56:07	5.37		17:11:10	5.37		17:28:33	5.37		17:43:35	5.50
16:57:07	5.13		17:12:10	5.25		17:29:33	5.25		17:44:35	5.50
16:58:07	5.25	3	17:13:10	5.37	6	17:30:33	5.37	9	17:45:35	5.37
16:59:08	5.25		17:14:10	5.37		17:31:33	5.37		17:46:35	5.37
17:00:08	5.25		17:15:10	5.50		17:32:33	5.37		17:47:35	5.50
17:01:08	5.37		17:16:10	5.37		17:33:33	5.50		17:48:36	5.37
17:02:08	5.50		17:17:11	5.25		17:34:34	5.62		17:49:36	5.37
									AVG	**5.36**



OPERATORS SIGNATURE

ETS®

EMISSION TESTING SERVICES INC.

METHOD-7E

CLIENT:	MURPHY OIL	**OPERATOR:**	KEVIN THIBODEAUX
SOURCE:	#2-SRU INCINERATOR 1-93	**PARAMETER:**	OXIDES OF NITROGEN
DATE:	4/23/2008	**LOAD %:**	MAX
RUN # :	1	**SLOPE:**	11.1515
ANALYZER ID:	ETS-NOX-6A	**INTERCEPT:**	-0.4245
		CORRELATION:	0.99980
		SPAN RANGE:	111.0901

CALIBRATION STATISTICS

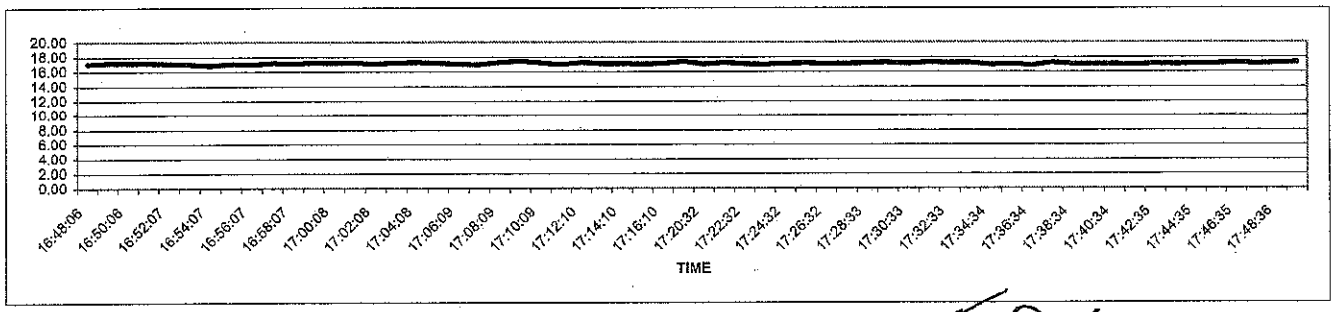
CYLINDER NUMBER		CYLINDER VALUE	INIT VOLT	CONC PPM	CAL ERROR +/-5%	FINAL VOLT	CONC PPM	SPAN DRIFT +/-3%
AAL9800	ZERO	0.00	-0.01	-0.59	0.53	-0.02	-0.64	0.05
ALM005516	LOW	48.50	4.49	49.67	1.05	4.50	49.72	0.05
ALM028187	HIGH	101.00	9.04	100.42	0.52	9.08	100.80	0.34

CALIBRATION BIAS

	CYLINDER VALUE	INIT VOLT	CONC PPM	RESP BIAS +/-5%	FINAL VOLT	CONC PPM	RESP BIAS +/-5%	SPAN DRIFT +/-3%
BIAS LOW	0.00	0.01	-0.32	0.25	0.03	-0.04	0.54	0.25
BIAS HIGH	101.00	9.02	100.18	0.21	9.07	100.74	0.05	0.50

OXIDES OF NITROGEN

TIME	NOX-PPM		TIME	NOX-PPM		TIME	NOX-PPM		TIME	NOX-PPM	
16:48:06	17.02	1	17:03:08	17.19	4	17:20:32	16.97	7	17:35:34	17.02	10
16:49:06	17.13		17:04:08	17.24		17:21:32	17.19		17:36:34	16.86	
16:50:06	17.13		17:05:09	17.13		17:22:32	17.02		17:37:34	17.19	
16:51:06	17.13		17:06:09	16.97		17:23:32	16.91		17:38:34	17.02	
16:52:07	17.08		17:07:09	16.91		17:24:32	17.08		17:39:34	17.02	
16:53:07	16.97	2	17:08:09	17.24	5	17:25:32	17.13	8	17:40:34	17.02	11
16:54:07	16.80		17:09:09	17.40		17:26:32	17.02		17:41:35	16.91	
16:55:07	17.02		17:10:09	17.19		17:27:32	17.08		17:42:35	17.08	
16:56:07	16.91		17:11:10	16.91		17:28:33	17.13		17:43:35	16.97	
16:57:07	17.13		17:12:10	17.24		17:29:33	17.24		17:44:35	17.08	
16:58:07	17.08	3	17:13:10	17.08	6	17:30:33	17.08	9	17:45:35	17.08	12
16:59:08	17.19		17:14:10	17.08		17:31:33	17.24		17:46:35	17.19	
17:00:08	17.13		17:15:10	17.02		17:32:33	17.19		17:47:35	17.08	
17:01:08	17.19		17:16:10	17.08		17:33:33	17.19		17:48:36	17.13	
17:02:08	17.02		17:17:11	17.35		17:34:34	16.91		17:49:36	17.24	
									AVG	**17.09**	



OPERATORS SIGNATURE

ETS REFERENCE SOP-007

ETS

EMISSION TESTING SERVICES INC.

METHOD-10

CLIENT:	MURPHY OIL	**OPERATOR:**	KEVIN THIBODEAUX
SOURCE:	#2-SRU INCINERATOR 1-93	**PARAMETER:**	CARBON MONOXIDE
DATE:	4/23/2008	**LOAD %:**	MAX
RUN # :	1	**SLOPE:**	10.1074
ANALYZER ID:	ETS-CO-6	**INTERCEPT:**	0.4973
		CORRELATION:	0.99992
		SPAN RANGE:	101.5713

CALIBRATION STATISTICS

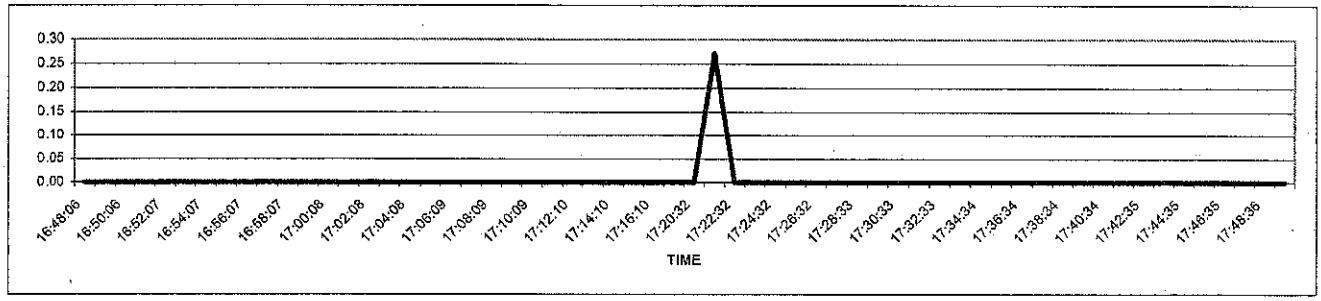
CYLINDER NUMBER		CYLINDER VALUE	INIT VOLT	CONC PPM	CAL ERROR +/-5%	FINAL VOLT	CONC PPM	SPAN DRIFT +/-3%
AAL9800	ZERO	0.00	-0.02	0.30	0.30	-0.02	0.30	0.00
1L23430	LOW	53.00	5.13	52.32	0.67	5.13	52.37	0.05
ALM049728	HIGH	92.70	9.16	93.08	0.38	9.16	93.03	0.05

CALIBRATION BIAS

	CYLINDER VALUE	INIT VOLT	CONC PPM	RESP BIAS +/-5%	FINAL VOLT	CONC PPM	RESP BIAS +/-5%	SPAN DRIFT +/-3%
BIAS LOW	0.00	0.00	0.50	0.19	-0.01	0.35	0.05	0.15
BIAS HIGH	92.70	9.14	92.88	0.20	9.15	93.00	0.03	0.12

CARBON MONOXIDE

	TIME	CO-PPM		TIME	CO-PPM		TIME	CO-PPM		TIME	CO-PPM	
	16:48:06	0.00	1	17:03:08	0.00	4	17:20:32	0.00	7	17:35:34	0.00	10
	16:49:06	0.00		17:04:08	0.00		17:21:32	0.27		17:36:34	0.00	
	16:50:06	0.00		17:05:09	0.00		17:22:32	0.00		17:37:34	0.00	
	16:51:06	0.00		17:06:09	0.00		17:23:32	0.00		17:38:34	0.00	
	16:52:07	0.00		17:07:09	0.00		17:24:32	0.00		17:39:34	0.00	
	16:53:07	0.00	2	17:08:09	0.00	5	17:25:32	0.00	8	17:40:34	0.00	11
	16:54:07	0.00		17:09:09	0.00		17:26:32	0.00		17:41:35	0.00	
	16:55:07	0.00		17:10:09	0.00		17:27:32	0.00		17:42:35	0.00	
	16:56:07	0.00		17:11:10	0.00		17:28:33	0.00		17:43:35	0.00	
	16:57:07	0.00		17:12:10	0.00		17:29:33	0.00		17:44:35	0.00	
	16:58:07	0.00	3	17:13:10	0.00	6	17:30:33	0.00	9	17:45:35	0.00	12
	16:59:08	0.00		17:14:10	0.00		17:31:33	0.00		17:46:35	0.00	
	17:00:08	0.00		17:15:10	0.00		17:32:33	0.00		17:47:35	0.00	
	17:01:08	0.00		17:16:10	0.00		17:33:33	0.00		17:48:36	0.00	
	17:02:08	0.00		17:17:11	0.00		17:34:34	0.00		17:49:36	0.00	
										AVG	**0.00**	



OPERATORS SIGNATURE

ETS REFERENCE SOP-007

ETS®

EMISSION TESTING SERVICES INC.

METHOD-3A

CLIENT:	MURPHY OIL	**OPERATOR:**	KEVIN THIBODEAUX
SOURCE:	#2-SRU INCINERATOR 1-93	**PARAMETER:**	OXYGEN
DATE:	4/23/2008	**LOAD %:**	MAX
RUN # :	2	**SLOPE:**	24.6495
ANALYZER ID:	ETS-O2-2	**INTERCEPT:**	0.0034
		CORRELATION:	1.00000
		SPAN RANGE:	24.6529

CALIBRATION STATISTICS

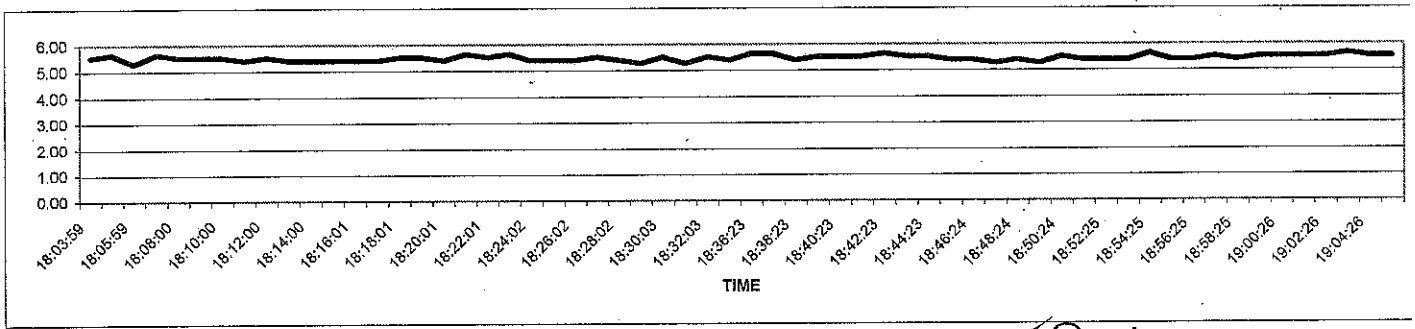
CYLINDER NUMBER		CYLINDER VALUE	INIT VOLT	CONC PPM	CAL ERROR +/-5%	FINAL VOLT	CONC PPM	SPAN DRIFT +/-3%
AAL9800	ZERO	0.00	0.00	0.00	0.01	-0.01	-0.24	0.98
ALM056038	LOW	10.00	0.41	9.99	0.03	0.41	10.11	0.49
AAL069542	HIGH	20.10	0.82	20.10	0.01	0.81	19.98	0.49
				0.00	0.01		0.00	0.00

CALIBRATION BIAS

	CYLINDER VALUE	INIT VOLT	CONC PPM	RESP BIAS +/-5%	FINAL VOLT	CONC PPM	RESP BIAS +/-5%	SPAN DRIFT +/-3%
BIAS LOW	0.00	0.01	0.24	0.98	0.00	0.00	0.98	0.98
BIAS HIGH	20.10	0.81	19.86	0.98	0.81	19.86	0.49	0.00

OXYGEN

TIME	O2-%		TIME	O2-%		TIME	O2-%		TIME	O2-%
18:03:59	5.52	1	18:19:01	5.52	4	18:36:23	5.64	7	18:51:24	5.39
18:04:59	5.64		18:20:01	5.39		18:37:23	5.64		18:52:25	5.39
18:05:59	5.27		18:21:01	5.64		18:38:23	5.39		18:53:25	5.39
18:06:59	5.64		18:22:01	5.52		18:39:23	5.52		18:54:25	5.64
18:08:00	5.52		18:23:02	5.64		18:40:23	5.52		18:55:25	5.39
18:09:00	5.52	2	18:24:02	5.39	5	18:41:23	5.52	8	18:56:25	5.39
18:10:00	5.52		18:25:02	5.39		18:42:23	5.64		18:57:25	5.52
18:11:00	5.39		18:26:02	5.39		18:43:23	5.52		18:58:25	5.39
18:12:00	5.52		18:27:02	5.52		18:44:23	5.52		18:59:25	5.52
18:13:00	5.39		18:28:02	5.39		18:45:24	5.39		19:00:26	5.52
18:14:00	5.39	3	18:29:02	5.27	6	18:46:24	5.39	9	19:01:26	5.52
18:15:00	5.39		18:30:03	5.52		18:47:24	5.27		19:02:26	5.52
18:16:01	5.39		18:31:03	5.27		18:48:24	5.39		19:03:26	5.64
18:17:01	5.39		18:32:03	5.52		18:49:24	5.27		19:04:26	5.52
18:18:01	5.52		18:33:03	5.39		18:50:24	5.52		19:05:26	5.52
									AVG	**5.47**



OPERATORS SIGNATURE

ETS

EMISSION TESTING SERVICES INC.

METHOD-7E

CLIENT:	MURPHY OIL	**OPERATOR:**	KEVIN THIBODEAUX
SOURCE:	#2-SRU INCINERATOR 1-93	**PARAMETER:**	OXIDES OF NITROGEN
DATE:	4/23/2008	**LOAD %:**	MAX
RUN # :	2	**SLOPE:**	11.1038
ANALYZER ID:	ETS-NOX-6A	**INTERCEPT:**	-0.3362
		CORRELATION:	0.99982
		SPAN RANGE:	110.7018

CALIBRATION STATISTICS

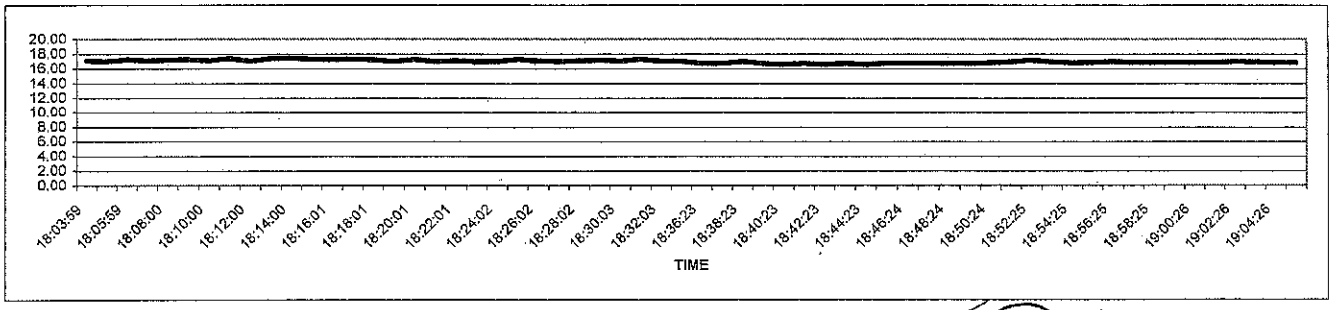
CYLINDER NUMBER		CYLINDER VALUE	INIT VOLT	CONC PPM	CAL ERROR +/-5%	FINAL VOLT	CONC PPM	SPAN DRIFT +/-3%
AAL9800	ZERO	0.00	-0.02	-0.55	0.50	-0.03	-0.72	0.15
ALM005516	LOW	48.50	4.50	49.60	0.99	4.43	48.89	0.64
ALM028187	HIGH	101.00	9.08	100.45	0.49	9.02	99.80	0.59

CALIBRATION BIAS

	CYLINDER VALUE	INIT VOLT	CONC PPM	RESP BIAS +/-5%	FINAL VOLT	CONC PPM	RESP BIAS +/-5%	SPAN DRIFT +/-3%
BIAS LOW	0.00	0.03	0.04	0.54	0.00	-0.34	0.34	0.34
BIAS HIGH	101.00	9.07	100.40	0.05	9.01	99.70	0.10	0.64

OXIDES OF NITROGEN

TIME	NOX-PPM		TIME	NOX-PPM		TIME	NOX-PPM		TIME	NOX-PPM	
18:03:59	17.08	1	18:19:01	16.97	4	18:36:23	16.70	7	18:51:24	16.92	10
18:04:59	16.97		18:20:01	17.24		18:37:23	16.70		18:52:25	17.13	
18:05:59	17.24		18:21:01	16.97		18:38:23	16.97		18:53:25	16.92	
18:06:59	17.08		18:22:01	17.08		18:39:23	16.70		18:54:25	16.81	
18:08:00	17.19		18:23:02	16.92		18:40:23	16.59		18:55:25	16.86	
18:09:00	17.24	2	18:24:02	16.97	5	18:41:23	16.70	8	18:56:25	16.97	11
18:10:00	17.08		18:25:02	17.24		18:42:23	16.59		18:57:25	16.86	
18:11:00	17.35		18:26:02	17.08		18:43:23	16.70		18:58:25	16.86	
18:12:00	17.02		18:27:02	16.97		18:44:23	16.59		18:59:25	16.86	
18:13:00	17.35		18:28:02	17.08		18:45:24	16.75		19:00:26	16.86	
18:14:00	17.41	3	18:29:02	17.13	6	18:46:24	16.75	9	19:01:26	16.86	12
18:15:00	17.30		18:30:03	17.02		18:47:24	16.75		19:02:26	16.97	
18:16:01	17.24		18:31:03	17.30		18:48:24	16.70		19:03:26	16.92	
18:17:01	17.30		18:32:03	17.02		18:49:24	16.70		19:04:26	16.86	
18:18:01	17.19		18:33:03	17.02		18:50:24	16.81		19:05:26	16.86	
									AVG	**16.97**	



OPERATORS SIGNATURE

ETS REFERENCE SOP-007

ETS®

EMISSION TESTING SERVICES INC.

METHOD-10

CLIENT:	MURPHY OIL	**OPERATOR:**	KEVIN THIBODEAUX
SOURCE:	#2-SRU INCINERATOR 1-93	**PARAMETER:**	CARBON MONOXIDE
DATE:	4/23/2008	**LOAD %:**	MAX
RUN # :	2	**SLOPE:**	10.1122
ANALYZER ID:	ETS-CO-6	**INTERCEPT:**	0.4744
		CORRELATION:	0.99993
		SPAN RANGE:	101.5966

CALIBRATION STATISTICS

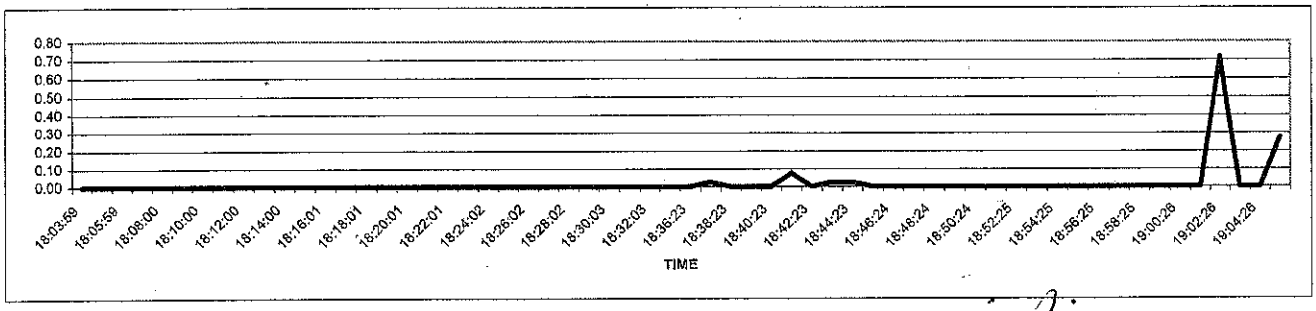
CYLINDER NUMBER		CYLINDER VALUE	INIT VOLT	CONC PPM	CAL ERROR +/-5%	FINAL VOLT	CONC PPM	SPAN DRIFT +/-3%
AAL9800	ZERO	0.00	-0.02	0.28	0.27	-0.01	0.38	0.10
1L23430	LOW	53.00	5.13	52.37	0.62	5.16	52.66	0.29
ALM049728	HIGH	92.70	9.16	93.05	0.35	9.23	93.80	0.73

CALIBRATION BIAS

	CYLINDER VALUE	INIT VOLT	CONC PPM	RESP BIAS +/-5%	FINAL VOLT	CONC PPM	RESP BIAS +/-5%	SPAN DRIFT +/-3%
BIAS LOW	0.00	-0.01	0.33	0.05	0.00	0.47	0.10	0.15
BIAS HIGH	92.70	9.15	93.02	0.03	9.19	93.41	0.38	0.38

CARBON MONOXIDE

TIME	CO-PPM		TIME	CO-PPM		TIME	CO-PPM		TIME	CO-PPM	
18:03:59	0.00	1	18:19:01	0.00	4	18:36:23	0.00	7	18:51:24	0.00	10
18:04:59	0.00		18:20:01	0.00		18:37:23	0.02		18:52:25	0.00	
18:05:59	0.00		18:21:01	0.00		18:38:23	0.00		18:53:25	0.00	
18:06:59	0.00		18:22:01	0.00		18:39:23	0.00		18:54:25	0.00	
18:08:00	0.00		18:23:02	0.00		18:40:23	0.00		18:55:25	0.00	
18:09:00	0.00	2	18:24:02	0.00	5	18:41:23	0.07	8	18:56:25	0.00	11
18:10:00	0.00		18:25:02	0.00		18:42:23	0.00		18:57:25	0.00	
18:11:00	0.00		18:26:02	0.00		18:43:23	0.02		18:58:25	0.00	
18:12:00	0.00		18:27:02	0.00		18:44:23	0.02		18:59:25	0.00	
18:13:00	0.00		18:28:02	0.00		18:45:24	0.00		19:00:26	0.00	
18:14:00	0.00	3	18:29:02	0.00	6	18:46:24	0.00	9	19:01:26	0.00	12
18:15:00	0.00		18:30:03	0.00		18:47:24	0.00		19:02:26	0.72	
18:16:01	0.00		18:31:03	0.00		18:48:24	0.00		19:03:26	0.00	
18:17:01	0.00		18:32:03	0.00		18:49:24	0.00		19:04:26	0.00	
18:18:01	0.00		18:33:03	0.00		18:50:24	0.00		19:05:26	0.27	
									AVG	**0.02**	



OPERATORS SIGNATURE

ETS REFERENCE SOP-007

ETS

EMISSION TESTING SERVICES INC.

METHOD-3A

CLIENT:	MURPHY OIL	**OPERATOR:**	KEVIN THIBODEAUX
SOURCE:	#2-SRU INCINERATOR 1-93	**PARAMETER:**	OXYGEN
DATE:	4/23/2008	**LOAD %:**	MAX
RUN # :	3	**SLOPE:**	24.4973
ANALYZER ID:	ETS-O2-2	**INTERCEPT:**	0.1451
		CORRELATION:	0.99986
		SPAN RANGE:	24.6424

CALIBRATION STATISTICS

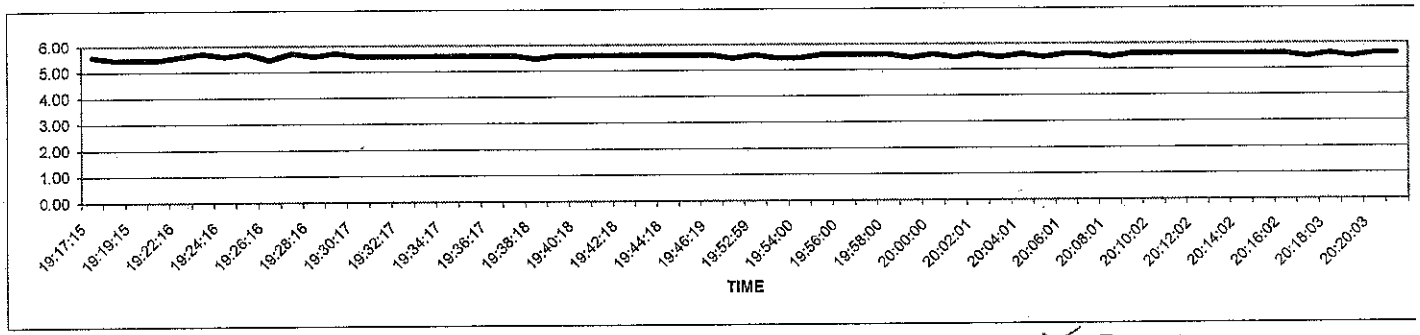
CYLINDER NUMBER		CYLINDER VALUE	INIT VOLT	CONC PPM	CAL ERROR +/-5%	FINAL VOLT	CONC PPM	SPAN DRIFT +/-3%
AAL9800	ZERO	0.00	-0.01	-0.09	0.38	-0.01	0.02	0.47
ALM056038	LOW	10.00	0.41	10.19	0.78	0.41	10.19	0.02
AAL069542	HIGH	20.10	0.81	20.00	0.40	0.81	20.01	0.05
				0.15	0.59		0.15	0.00

CALIBRATION BIAS

	CYLINDER VALUE	INIT VOLT	CONC PPM	RESP BIAS +/-5%	FINAL VOLT	CONC PPM	RESP BIAS +/-5%	SPAN DRIFT +/-3%
BIAS LOW	0.00	0.00	0.15	0.97	0.00	0.16	0.55	0.05
BIAS HIGH	20.10	0.81	19.88	0.49	0.81	20.02	0.03	0.56

OXYGEN

TIME	O2-%		TIME	O2-%		TIME	O2-%		TIME	O2-%
19:17:15	5.58	1	19:33:17	5.58	4	19:52:59	5.58	7	20:07:01	5.58
19:18:15	5.46		19:34:17	5.58		19:53:00	5.46		20:08:01	5.46
19:19:15	5.46		19:35:17	5.58		19:54:00	5.46		20:09:01	5.58
19:20:16	5.46		19:36:17	5.58		19:55:00	5.58		20:10:02	5.58
19:22:16	5.58		19:37:18	5.58		19:56:00	5.58		20:11:02	5.58
19:23:16	5.70	2	19:38:18	5.46	5	19:57:00	5.58	8	20:12:02	5.58
19:24:16	5.58		19:39:18	5.58		19:58:00	5.58		20:13:02	5.58
19:25:16	5.70		19:40:18	5.58		19:59:00	5.46		20:14:02	5.58
19:26:16	5.46		19:41:18	5.58		20:00:00	5.58		20:15:02	5.58
19:27:16	5.70		19:42:18	5.58		20:01:01	5.46		20:16:02	5.58
19:28:16	5.58	3	19:43:18	5.58	6	20:02:01	5.58	9	20:17:02	5.46
19:29:17	5.70		19:44:18	5.58		20:03:01	5.46		20:18:03	5.58
19:30:17	5.58		19:45:19	5.58		20:04:01	5.58		20:19:03	5.46
19:31:17	5.58		19:46:19	5.58		20:05:01	5.46		20:20:03	5.58
19:32:17	5.58		19:47:19	5.46		20:06:01	5.58		20:21:03	5.58
									AVG	**5.56**



OPERATORS SIGNATURE

ETS

EMISSION TESTING SERVICES INC.

METHOD-7E

CLIENT:	MURPHY OIL	**OPERATOR:**	KEVIN THIBODEAUX
SOURCE:	#2-SRU INCINERATOR 1-93	**PARAMETER:**	OXIDES OF NITROGEN
DATE:	4/23/2008	**LOAD %:**	MAX
RUN # :	3	**SLOPE:**	11.1581
ANALYZER ID:	ETS-NOX-6A	**INTERCEPT:**	-0.0732
		CORRELATION:	0.99988
		SPAN RANGE:	111.5082

CALIBRATION STATISTICS

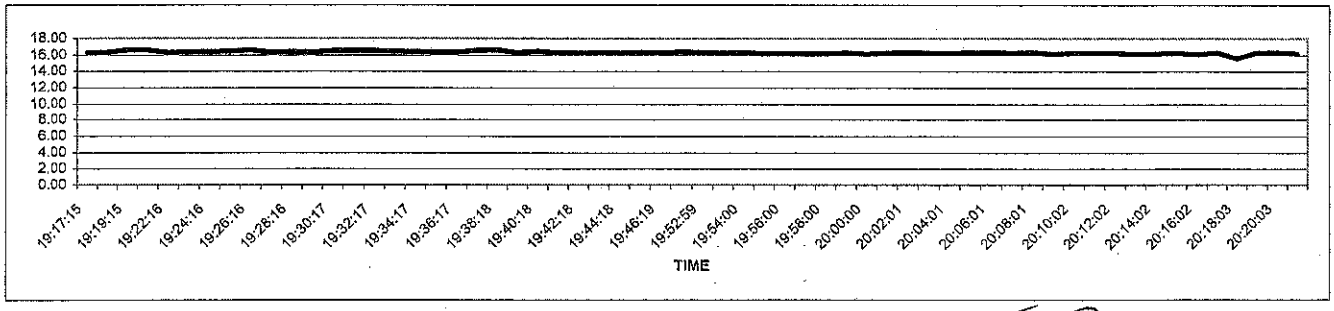
CYLINDER NUMBER		CYLINDER VALUE	INIT VOLT	CONC PPM	CAL ERROR +/-5%	FINAL VOLT	CONC PPM	SPAN DRIFT +/-3%
AAL9800	ZERO	0.00	-0.03	-0.45	0.41	-0.02	-0.32	0.12
ALM005516	LOW	48.50	4.43	49.40	0.80	4.45	49.58	0.16
ALM028187	HIGH	101.00	9.02	100.56	0.40	9.04	100.80	0.21

CALIBRATION BIAS

	CYLINDER VALUE	INIT VOLT	CONC PPM	RESP BIAS +/-5%	FINAL VOLT	CONC PPM	RESP BIAS +/-5%	SPAN DRIFT +/-3%
BIAS LOW	0.00	0.00	-0.07	0.34	0.02	0.15	0.42	0.20
BIAS HIGH	101.00	9.01	100.45	0.10	9.03	100.72	0.07	0.24

OXIDES OF NITROGEN

TIME	NOX-PPM		TIME	NOX-PPM		TIME	NOX-PPM		TIME	NOX-PPM	
19:17:15	16.31	1	19:33:17	16.47	4	19:52:59	16.31	7	20:07:01	16.25	10
19:18:15	16.36		19:34:17	16.42		19:53:00	16.25		20:08:01	16.36	
19:19:15	16.64		19:35:17	16.36		19:54:00	16.36		20:09:01	16.14	
19:20:16	16.64		19:36:17	16.36		19:55:00	16.20		20:10:02	16.25	
19:22:16	16.31		19:37:18	16.58		19:56:00	16.20		20:11:02	16.25	
19:23:16	16.42	2	19:38:18	16.64	5	19:57:00	16.20	8	20:12:02	16.25	11
19:24:16	16.42		19:39:18	16.31		19:58:00	16.20		20:13:02	16.14	
19:25:16	16.47		19:40:18	16.47		19:59:00	16.31		20:14:02	16.20	
19:26:16	16.64		19:41:18	16.31		20:00:00	16.14		20:15:02	16.25	
19:27:16	16.36		19:42:18	16.25		20:01:01	16.25		20:16:02	16.09	
19:28:16	16.42	3	19:43:18	16.31	6	20:02:01	16.36	9	20:17:02	16.31	12
19:29:17	16.36		19:44:18	16.25		20:03:01	16.25		20:18:03	15.60	
19:30:17	16.53		19:45:19	16.36		20:04:01	16.25		20:19:03	16.31	
19:31:17	16.53		19:46:19	16.25		20:05:01	16.31		20:20:03	16.36	
19:32:17	16.53		19:47:19	16.42		20:06:01	16.36		20:21:03	16.20	
									AVG	**16.33**	



OPERATORS SIGNATURE

ETS REFERENCE SOP-007

ETS

EMISSION TESTING SERVICES INC.

METHOD-10

CLIENT:	MURPHY OIL	**OPERATOR:**	KEVIN THIBODEAUX
SOURCE:	#2-SRU INCINERATOR 1-93	**PARAMETER:**	CARBON MONOXIDE
DATE:	4/23/2008	**LOAD %:**	MAX
RUN # :	3	**SLOPE:**	10.0439
ANALYZER ID:	ETS-CO-6	**INTERCEPT:**	0.4234
		CORRELATION:	0.99990
		SPAN RANGE:	100.8622

CALIBRATION STATISTICS

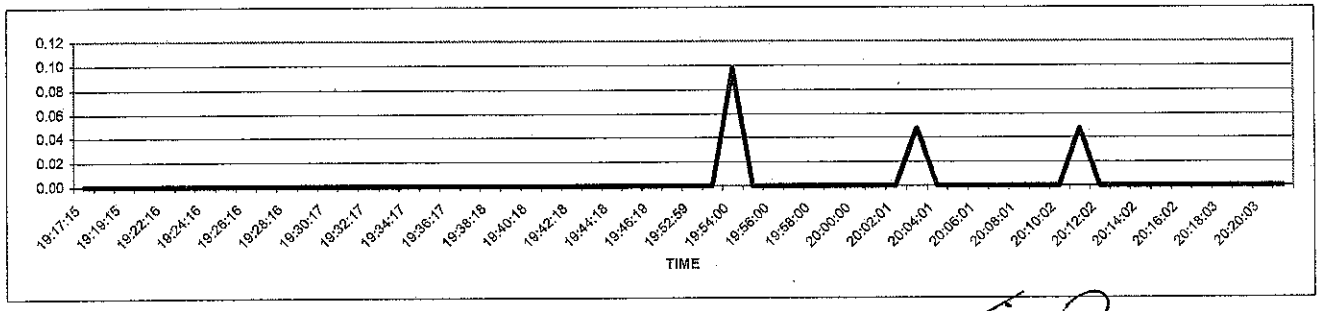
CYLINDER NUMBER		CYLINDER VALUE	INIT VOLT	CONC PPM	CAL ERROR +/-5%	FINAL VOLT	CONC PPM	SPAN DRIFT +/-3%
AAL9800	ZERO	0.00	-0.01	0.33	0.32	-0.02	0.22	0.10
1L23430	LOW	53.00	5.16	52.26	0.73	5.19	52.55	0.29
ALM049728	HIGH	92.70	9.23	93.11	0.41	9.28	93.63	0.51

CALIBRATION BIAS

	CYLINDER VALUE	INIT VOLT	CONC PPM	RESP BIAS +/-5%	FINAL VOLT	CONC PPM	RESP BIAS +/-5%	SPAN DRIFT +/-3%
BIAS LOW	0.00	0.00	0.42	0.10	0.01	0.52	0.30	0.10
BIAS HIGH	92.70	9.19	92.73	0.38	9.21	92.93	0.70	0.20

CARBON MONOXIDE

TIME	CO-PPM		TIME	CO-PPM		TIME	CO-PPM		TIME	CO-PPM	
19:17:15	0.00	1	19:33:17	0.00	4	19:52:59	0.00	7	20:07:01	0.00	10
19:18:15	0.00		19:34:17	0.00		19:53:00	0.00		20:08:01	0.00	
19:19:15	0.00		19:35:17	0.00		19:54:00	0.10		20:09:01	0.00	
19:20:16	0.00		19:36:17	0.00		19:55:00	0.00		20:10:02	0.00	
19:22:16	0.00		19:37:18	0.00		19:56:00	0.00		20:11:02	0.05	
19:23:16	0.00	2	19:38:18	0.00	5	19:57:00	0.00	8	20:12:02	0.00	11
19:24:16	0.00		19:39:18	0.00		19:58:00	0.00		20:13:02	0.00	
19:25:16	0.00		19:40:18	0.00		19:59:00	0.00		20:14:02	0.00	
19:26:16	0.00		19:41:18	0.00		20:00:00	0.00		20:15:02	0.00	
19:27:16	0.00		19:42:18	0.00		20:01:01	0.00		20:16:02	0.00	
19:28:16	0.00	3	19:43:18	0.00	6	20:02:01	0.00	9	20:17:02	0.00	12
19:29:17	0.00		19:44:18	0.00		20:03:01	0.05		20:18:03	0.00	
19:30:17	0.00		19:45:19	0.00		20:04:01	0.00		20:19:03	0.00	
19:31:17	0.00		19:46:19	0.00		20:05:01	0.00		20:20:03	0.00	
19:32:17	0.00		19:47:19	0.00		20:06:01	0.00		20:21:03	0.00	
									AVG	**0.00**	



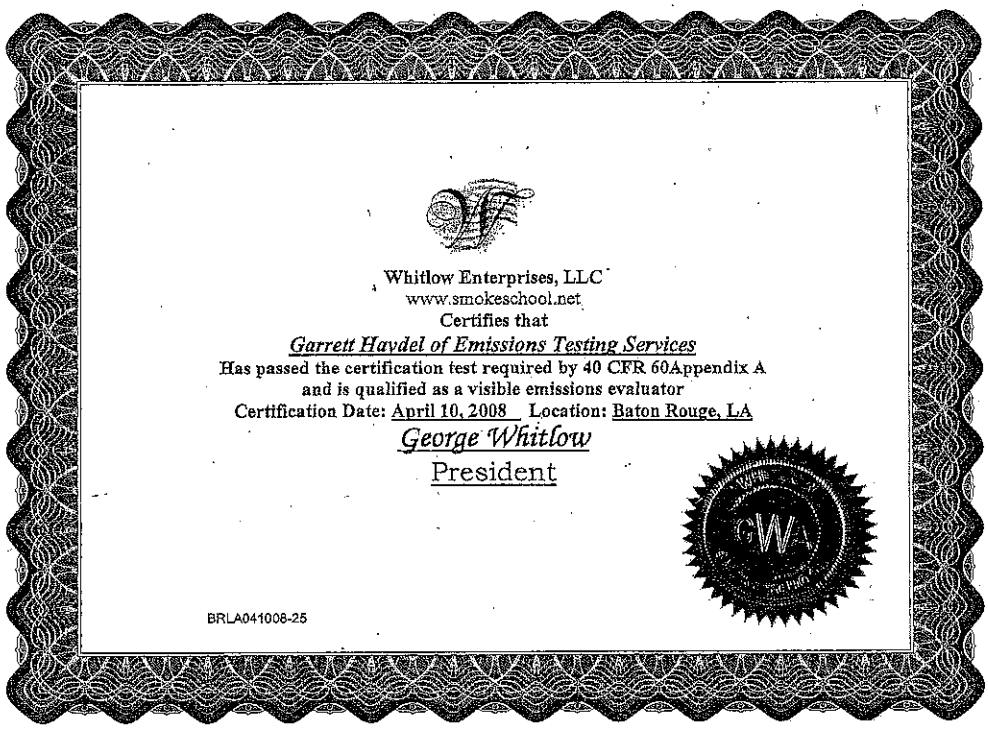
OPERATORS SIGNATURE

ETS REFERENCE SOP-007

SRU No. 2 Incinerator
EPA Method 9
(visible emissions)

The opacity of visible emissions was observed and recorded by ETS' Garrett Haydel using EPA Method 9. Mr. Haydel obtained his visible emission observation certification from the Louisiana Department of Environmental Quality. A Copy of the certification is presented below.

Visible emissions opacity was recorded every 15 seconds during three, 60-minute duration test runs. Results of the opacity observations are presented on the following pages.



Whitlow Enterprises, LLC
www.smokeschool.net
Certifies that
Garrett Haydel of Emissions Testing Services
Has passed the certification test required by 40 CFR 60Appendix A
and is qualified as a visible emissions evaluator
Certification Date: April 10, 2008 Location: Baton Rouge, LA
George Whitlow
President

BRLA041008-25

VISIBLE EMISSION OBSERVATION FORM

SOURCE NAME: SRU #2		
ADDRESS:		
CITY: Meraux	STATE: LA	ZIP:
PHONE:	SOURCE ID NUMBER:	

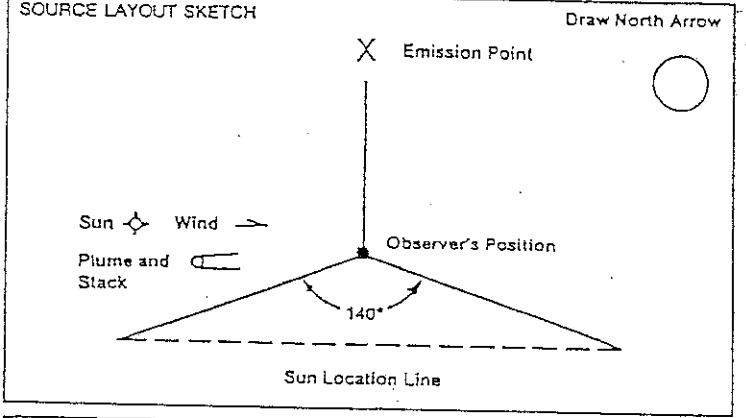
PROCESS EQUIPMENT:	OPERATING MODE:
CONTROL EQUIPMENT:	OPERATING MODE:

DESCRIBE EMISSION POINT	
START	STOP
HEIGHT ABOVE GROUND LEVEL	HEIGHT RELATIVE TO OBSERVER
START STOP	START STOP
DISTANCE FROM OBSERVER	DIRECTION FROM OBSERVER
START STOP	START STOP

DESCRIBE EMISSIONS	
START N/A	STOP N/A
EMISSION COLOR	PLUME TYPE CONTINUOUS ☐
START STOP	FUGITIVE ☐ INTERMITTENT ☐
WATER DROPLETS PRESENT	IS WATER DROPLET PLUME
NO ☐ YES ☐	ATTACHED ☐ DETACHED ☐
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED	
START Exit	STOP Same

DESCRIBE BACKGROUND		
START	STOP	
BACKGROUND COLOR	SKY CONDITIONS	
START STOP	START STOP	
WIND SPEED	WIND DIRECTION	
START 0-5 mph STOP 0-5 mph	START STOP	
AMBIENT TEMP	WET BULB TEMP	RH, percent
START STOP		

SOURCE LAYOUT SKETCH



COMMENTS: Run # 1

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS

SIGNATURE

TITLE DATE

OBSERVATION DATE	START TIME	STOP TIME

SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	0	0	0	0	31	0	0	0	0
2	0	0	0	0	32	0	0	0	0
3	0	0	0	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0
30	0	0	0	0	60	0	0	0	0

AVERAGE OPACITY FOR HIGHEST PERIOD: 0	NUMBER OF READINGS ABOVE 0 % WERE 0
RANGE OF OPACITY READINGS: 0 MINIMUM	0 MAXIMUM

OBSERVER'S NAME (PRINT): Garrett Haydel	
OBSERVER'S SIGNATURE: Garrett Haydel	DATE: 4-23
ORGANIZATION: E.T.S.	
CERTIFIED BY	DATE
VERIFIED BY	DATE

VISIBLE EMISSION OBSERVATION FORM

SOURCE NAME: SRU #2		
ADDRESS:		
CITY: Meraux	STATE: LA	ZIP:
PHONE:	SOURCE ID NUMBER:	

PROCESS EQUIPMENT:	OPERATING MODE:
CONTROL EQUIPMENT:	OPERATING MODE:

DESCRIBE EMISSION POINT

START	STOP
HEIGHT ABOVE GROUND LEVEL: START / STOP	HEIGHT RELATIVE TO OBSERVER: START / STOP
DISTANCE FROM OBSERVER: START / STOP	DIRECTION FROM OBSERVER: START / STOP

DESCRIBE EMISSIONS

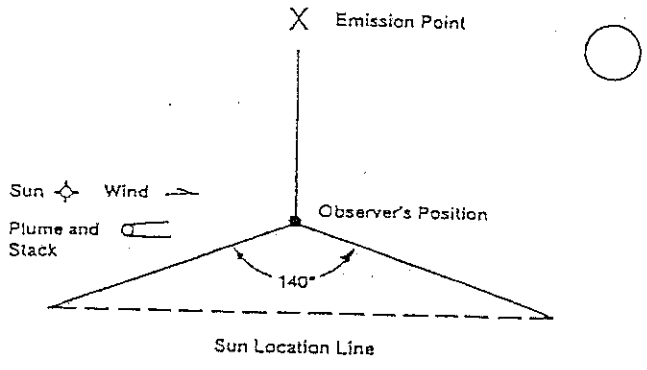
START: N/A	STOP: N/A
EMISSION COLOR: START / STOP	PLUME TYPE: CONTINUOUS ☐ FUGITIVE ☐ INTERMITTENT ☐
WATER DROPLETS PRESENT: NO ☐ YES ☐	IS WATER DROPLET PLUME: ATTACHED ☐ DETACHED ☐
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED: START	STOP

DESCRIBE BACKGROUND

START	STOP	
BACKGROUND COLOR: START / STOP	SKY CONDITIONS: START Clear STOP Clear	
WIND SPEED: START 5 mph STOP 5 mph	WIND DIRECTION: START / STOP	
AMBIENT TEMP: START / STOP	WET BULB TEMP	RH, percent

SOURCE LAYOUT SKETCH

Draw North Arrow



COMMENTS

Run #2

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS

SIGNATURE

TITLE

DATE

OBSERVATION DATE	START TIME	STOP TIME

SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	0	0	0	0	31	0	0	0	0
2	0	0	0	0	32	0	0	0	0
3	0	0	0	0	33	0	0	0	0
4	0	0	0	0	34	0	0	0	0
5	0	0	0	0	35	0	0	0	0
6	0	0	0	0	36	0	0	0	0
7	0	0	0	0	37	0	0	0	0
8	0	0	0	0	38	0	0	0	0
9	0	0	0	0	39	0	0	0	0
10	0	0	0	0	40	0	0	0	0
11	0	0	0	0	41	0	0	0	0
12	0	0	0	0	42	0	0	0	0
13	0	0	0	0	43	0	0	0	0
14	0	0	0	0	44	0	0	0	0
15	0	0	0	0	45	0	0	0	0
16	0	0	0	0	46	0	0	0	0
17	0	0	0	0	47	0	0	0	0
18	0	0	0	0	48	0	0	0	0
19	0	0	0	0	49	0	0	0	0
20	0	0	0	0	50	0	0	0	0
21	0	0	0	0	51	0	0	0	0
22	0	0	0	0	52	0	0	0	0
23	0	0	0	0	53	0	0	0	0
24	0	0	0	0	54	0	0	0	0
25	0	0	0	0	55	0	0	0	0
26	0	0	0	0	56	0	0	0	0
27	0	0	0	0	57	0	0	0	0
28	0	0	0	0	58	0	0	0	0
29	0	0	0	0	59	0	0	0	0
30	0	0	0	0	60	0	0	0	0

AVERAGE OPACITY FOR HIGHEST PERIOD: 0	NUMBER OF READINGS ABOVE: 0 % WERE 0
RANGE OF OPACITY READINGS: MINIMUM 0	MAXIMUM 0

OBSERVER'S NAME (PRINT): Garrett Haydel	
OBSERVER'S SIGNATURE: Garrett Haydel	DATE: 4-24
ORGANIZATION: E.T.S.	
CERTIFIED BY	DATE
VERIFIED BY	DATE

VISIBLE EMISSION OBSERVATION FORM

SOURCE NAME: SRU #2		
ADDRESS:		
CITY: Meraux	STATE: LA	ZIP:
PHONE:	SOURCE ID NUMBER:	

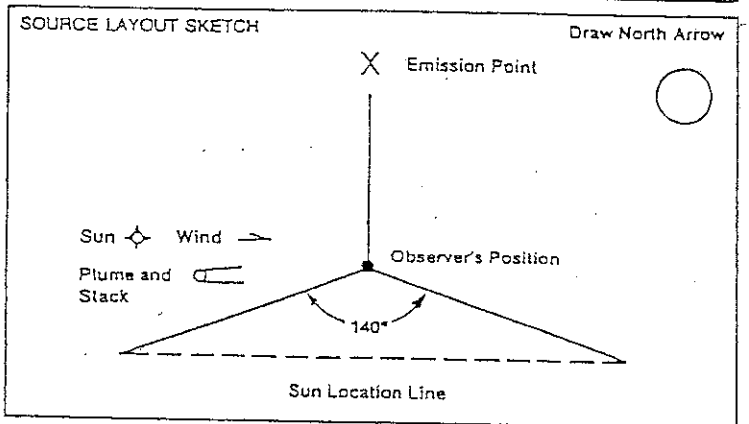
PROCESS EQUIPMENT:	OPERATING MODE:
CONTROL EQUIPMENT:	OPERATING MODE:

DESCRIBE EMISSION POINT	
START	STOP
HEIGHT ABOVE GROUND LEVEL	HEIGHT RELATIVE TO OBSERVER
START STOP	START STOP
DISTANCE FROM OBSERVER	DIRECTION FROM OBSERVER
START STOP	START STOP

DESCRIBE EMISSIONS	
START N/A	STOP N/A
EMISSION COLOR	PLUME TYPE CONTINUOUS ☐
START STOP	FUGITIVE ☐ INTERMITTENT ☐
WATER DROPLETS PRESENT	IS WATER DROPLET PLUME
NO ☐ YES ☐	ATTACHED ☐ DETACHED ☐
POINT IN THE PLUME AT WHICH OPACITY WAS DETERMINED	
START Exit of Stack	STOP Same

DESCRIBE BACKGROUND		
START	STOP	
BACKGROUND COLOR	SKY CONDITIONS	
START STOP	START STOP	
WIND SPEED	WIND DIRECTION	
START 0 STOP 0	START STOP	
AMBIENT TEMP	WET BULB TEMP	RH, percent
START STOP		

SOURCE LAYOUT SKETCH



OBSERVATION DATE				START TIME				STOP TIME	
SEC / MIN	0	15	30	45	SEC / MIN	0	15	30	45
1	0	0	0	0	31				
2	0	0	0	0	32				
3	0	0	0	0	33				
4	0	0	0	0	34				
5	0	0	0	0	35				
6	0	0	0	0	36				
7	0	0	0	0	37				
8	0	0	0	0	38				
9	0	0	0	0	39				
10	0	0	0	0	40				
11	0	0	0	0	41				
12	0	0	0	0	42				
13	0	0	0	0	43				
14	0	0	0	0	44				
15	0	0	0	0	45				
16	0	0	0	0	46				
17	0	0	0	0	47				
18	0	0	0	0	48				
19	0	0	0	0	49				
20	0	0	0	0	50				
21	0	0	0	0	51				
22	0	0	0	0	52				
23	0	0	0	0	53				
24	0	0	0	0	54				
25	0	0	0	0	55				
26	0	0	0	0	56				
27	0	0	0	0	57				
28	0	0	0	0	58				
29	0	0	0	0	59				
30	0	0	0	0	60				

AVERAGE OPACITY FOR HIGHEST PERIOD: 0	NUMBER OF READINGS ABOVE 0 % WERE 0
RANGE OF OPACITY READINGS	
MINIMUM 0	MAXIMUM 0

COMMENTS: Run #3 lead for 30 min	
Stopped due to lack of daylight	

OBSERVER'S NAME (PRINT): Garrett Haydel	
OBSERVER'S SIGNATURE: Garrett Haydel	DATE: 4-23-08
ORGANIZATION: E.T.S.	
CERTIFIED BY	DATE
VERIFIED BY	DATE

I HAVE RECEIVED A COPY OF THESE OPACITY OBSERVATIONS	
SIGNATURE	
TITLE	DATE

SRU No. 2 Incinerator
Unit Operating Data

During the emission tests, Murphy collected unit-operating data. These data are presented on the following pages.

#2 SRU Performance Test

EPN 1-93

Run #1			Run #2			Run #3		
TIME	Natural Gas Flow (SCFH)	Heater Firing Rate (MMBtu/hr)	TIME	Natural Gas Flow (SCFH)	Heater Firing Rate (MMBtu/hr)	TIME	Natural Gas Flow (SCFH)	Heater Firing Rate (MMBtu/hr)
4/23/08 16:48:00	9318.41	8.47	4/23/08 18:03:00	9017.44	8.20	4/23/08 19:17:00	8935.89	8.12
4/23/08 16:49:00	9222.53	8.38	4/23/08 18:04:00	9027.81	8.21	4/23/08 19:18:00	8891.26	8.08
4/23/08 16:50:00	9243.06	8.40	4/23/08 18:05:00	9061.00	8.24	4/23/08 19:19:00	8950.67	8.14
4/23/08 16:51:00	9303.53	8.46	4/23/08 18:06:00	9014.64	8.19	4/23/08 19:20:00	8905.34	8.09
4/23/08 16:52:00	9303.53	8.46	4/23/08 18:07:00	8989.14	8.17	4/23/08 19:21:00	8872.35	8.06
4/23/08 16:53:00	9321.38	8.47	4/23/08 18:08:00	9045.51	8.22	4/23/08 19:22:00	8872.35	8.06
4/23/08 16:54:00	9385.67	8.53	4/23/08 18:09:00	8988.14	8.17	4/23/08 19:23:00	8968.27	8.15
4/23/08 16:55:00	9269.17	8.43	4/23/08 18:10:00	9043.74	8.22	4/23/08 19:24:00	8917.56	8.11
4/23/08 16:56:00	9209.30	8.37	4/23/08 18:11:00	9025.30	8.20	4/23/08 19:25:00	8989.06	8.17
4/23/08 16:57:00	9292.46	8.45	4/23/08 18:12:00	8997.25	8.18	4/23/08 19:26:00	8875.18	8.07
4/23/08 16:58:00	9292.46	8.45	4/23/08 18:13:00	8968.07	8.15	4/23/08 19:27:00	8918.78	8.11
4/23/08 16:59:00	9156.69	8.32	4/23/08 18:14:00	8991.72	8.17	4/23/08 19:28:00	8895.05	8.09
4/23/08 17:00:00	9158.84	8.33	4/23/08 18:15:00	8976.50	8.16	4/23/08 19:29:00	8895.05	8.09
4/23/08 17:01:00	9137.80	8.31	4/23/08 18:16:00	8976.65	8.16	4/23/08 19:30:00	8869.57	8.06
4/23/08 17:02:00	9162.67	8.33	4/23/08 18:17:00	9012.66	8.19	4/23/08 19:31:00	8860.73	8.05
4/23/08 17:03:00	9123.30	8.29	4/23/08 18:18:00	8987.79	8.17	4/23/08 19:32:00	8852.33	8.05
4/23/08 17:04:00	9104.25	8.28	4/23/08 18:19:00	9022.86	8.20	4/23/08 19:33:00	8854.33	8.05
4/23/08 17:05:00	9044.52	8.22	4/23/08 18:20:00	9014.04	8.19	4/23/08 19:34:00	8895.23	8.09
4/23/08 17:06:00	9040.07	8.22	4/23/08 18:21:00	8980.98	8.16	4/23/08 19:35:00	8861.07	8.05
4/23/08 17:07:00	9019.73	8.20	4/23/08 18:22:00	8940.26	8.13	4/23/08 19:36:00	8861.07	8.05
4/23/08 17:08:00	8991.94	8.17	4/23/08 18:23:00	8964.32	8.15	4/23/08 19:37:00	8861.07	8.05
4/23/08 17:09:00	9013.94	8.19	4/23/08 18:24:00	9013.66	8.19	4/23/08 19:38:00	8886.59	8.08
4/23/08 17:10:00	9013.94	8.19	4/23/08 18:25:00	9012.12	8.19	4/23/08 19:39:00	8886.59	8.08
4/23/08 17:11:00	9022.79	8.20	4/23/08 18:26:00	9005.07	8.19	4/23/08 19:40:00	8836.49	8.03
4/23/08 17:12:00	9059.79	8.24	4/23/08 18:27:00	8978.51	8.16	4/23/08 19:41:00	8876.97	8.07
4/23/08 17:13:00	9026.91	8.21	4/23/08 18:28:00	8950.58	8.14	4/23/08 19:42:00	8852.61	8.05
4/23/08 17:14:00	9087.31	8.26	4/23/08 18:29:00	8970.08	8.15	4/23/08 19:43:00	8824.84	8.02
4/23/08 17:15:00	9076.73	8.25	4/23/08 18:30:00	8976.48	8.16	4/23/08 19:44:00	8880.02	8.07
4/23/08 17:16:00	9028.87	8.21	4/23/08 18:31:00	8914.84	8.10	4/23/08 19:45:00	8900.51	8.09
4/23/08 17:17:00	9008.14	8.19	4/23/08 18:32:00	8965.30	8.15	4/23/08 19:46:00	8869.30	8.06
4/23/08 17:18:00	9085.85	8.26	4/23/08 18:33:00	8934.08	8.12	4/23/08 19:47:00	8917.62	8.11
4/23/08 17:19:00	9052.31	8.23	4/23/08 18:34:00	8904.93	8.09	4/23/08 19:48:00	8967.69	8.15
4/23/08 17:20:00	9030.79	8.21	4/23/08 18:35:00	8979.16	8.16	4/23/08 19:49:00	8958.10	8.14
4/23/08 17:21:00	9058.74	8.23	4/23/08 18:36:00	8966.27	8.15	4/23/08 19:50:00	8938.98	8.13
4/23/08 17:22:00	9084.55	8.26	4/23/08 18:37:00	8935.23	8.12	4/23/08 19:51:00	8869.84	8.06
4/23/08 17:23:00	9084.55	8.26	4/23/08 18:38:00	8987.52	8.17	4/23/08 19:52:00	8877.57	8.07
4/23/08 17:24:00	9053.77	8.23	4/23/08 18:39:00	8937.78	8.12	4/23/08 19:53:00	8879.09	8.07
4/23/08 17:25:00	9084.77	8.26	4/23/08 18:40:00	9009.09	8.19	4/23/08 19:54:00	8900.16	8.09
4/23/08 17:26:00	9064.52	8.24	4/23/08 18:41:00	9000.02	8.18	4/23/08 19:55:00	8880.00	8.07
4/23/08 17:27:00	9076.70	8.25	4/23/08 18:42:00	9026.21	8.20	4/23/08 19:56:00	8875.71	8.07
4/23/08 17:28:00	9057.90	8.23	4/23/08 18:43:00	9054.91	8.23	4/23/08 19:57:00	8875.71	8.07
4/23/08 17:29:00	9117.97	8.29	4/23/08 18:44:00	9023.19	8.20	4/23/08 19:58:00	8894.52	8.09
4/23/08 17:30:00	9117.97	8.29	4/23/08 18:45:00	9027.69	8.21	4/23/08 19:59:00	8867.01	8.06
4/23/08 17:31:00	8990.59	8.17	4/23/08 18:46:00	9027.69	8.21	4/23/08 20:00:00	8878.50	8.07
4/23/08 17:32:00	8969.33	8.15	4/23/08 18:47:00	9027.69	8.21	4/23/08 20:01:00	8843.02	8.04
4/23/08 17:33:00	8946.79	8.13	4/23/08 18:48:00	9061.78	8.24	4/23/08 20:02:00	8849.20	8.04
4/23/08 17:34:00	8956.85	8.14	4/23/08 18:49:00	9062.17	8.24	4/23/08 20:03:00	8862.18	8.06
4/23/08 17:35:00	8894.03	8.08	4/23/08 18:50:00	9102.67	8.27	4/23/08 20:04:00	8852.77	8.05
4/23/08 17:36:00	8996.09	8.18	4/23/08 18:51:00	9077.46	8.25	4/23/08 20:05:00	8827.92	8.02
4/23/08 17:37:00	9016.29	8.20	4/23/08 18:52:00	9026.07	8.20	4/23/08 20:06:00	8806.18	8.00
4/23/08 17:38:00	8871.91	8.06	4/23/08 18:53:00	9000.89	8.18	4/23/08 20:07:00	8786.01	7.99
4/23/08 17:39:00	8968.26	8.15	4/23/08 18:54:00	8931.32	8.12	4/23/08 20:08:00	8833.39	8.03
4/23/08 17:40:00	8968.26	8.15	4/23/08 18:55:00	8899.15	8.09	4/23/08 20:09:00	8856.74	8.05
4/23/08 17:41:00	9018.32	8.20	4/23/08 18:56:00	8873.41	8.07	4/23/08 20:10:00	8830.40	8.03
4/23/08 17:42:00	9062.64	8.24	4/23/08 18:57:00	8809.40	8.01	4/23/08 20:11:00	8864.78	8.06
4/23/08 17:43:00	9084.85	8.26	4/23/08 18:58:00	8887.97	8.08	4/23/08 20:12:00	8853.18	8.05
4/23/08 17:44:00	9032.26	8.21	4/23/08 18:59:00	8849.34	8.04	4/23/08 20:13:00	8881.08	8.07
4/23/08 17:45:00	9037.53	8.22	4/23/08 19:00:00	8878.88	8.07	4/23/08 20:14:00	8806.61	8.01
4/23/08 17:46:00	9062.89	8.24	4/23/08 19:01:00	8866.39	8.06	4/23/08 20:15:00	8783.98	7.98
4/23/08 17:47:00	9075.97	8.25	4/23/08 19:02:00	8913.96	8.10	4/23/08 20:16:00	8839.60	8.04
4/23/08 17:48:00	9056.01	8.23	4/23/08 19:03:00	8839.91	8.04	4/23/08 20:17:00	8850.13	8.04
4/23/08 17:49:00	9078.69	8.25	4/23/08 19:04:00	8841.28	8.04	4/23/08 20:18:00	8804.15	8.00
AVERAGE	**9,088.67**	**8.26**		**8977**	**8.16**		**8875**	**8.07**
	SCFH	*MMBtu/hr*		*SCFH*	*MMBtu/hr*		*SCFH*	*MMBtu/hr*
	909 Mbtu/scf			*909 Mbtu/scf*			*909 Mbtu/scf*	

C:\Documents and Settings\Owner\My Documents\REPORTS\2008 REPORTS\28046B\[2008 Stack Test firing data.xls]28046A

VII. APPENDIX

The following appendices are presented as supporting documentation to this test report.

A. Resumes of Test Personnel
B. Test Equipment Calibrations
C. Test Analyzer Calibration Gas Certifications
D. Test Analyzer Descriptions and Specifications
E. Permit Number 2500-00001-V2 Excerpts
F. Correspondence, Murphy and LDEQ

ETS®
Emission Testing Services, Inc.

Resume

KEVIN L. THIBODEAUX
Senior Sampling Specialist

EDUCATION

High School Graduate
U.S. EPA Round Robin Sample Integrity Audits
Participates in on-going Air-Pollution Training Institute Courses (APTI)

CERTIFICATIONS

General Safety & Health Orientation Program
Respiratory Equipment Medical Certification
MSA Qualitative Fit Test Record
EPA Certified Opacity Reader (EPA Method 9)

EXPERIENCE

08/98 to Present Emission Testing Services, Inc. Senior Sampling Specialist

Performs EPA Approved reference methods for compliance testing as well as other non-routine source evaluations. Responsibilities also include job preparation, equipment calibration, and equipment maintenance. Assists in training Grade 1 and 2 technicians. Able to conduct and provide project management for all manual emission test methods including 40 CFR 60, Methods 5, 6, 7, 8, 11, 12, 18, 26 and 29. Able to perform all tests required in 40 CFR 60, Methods 2 and 4 without use of a computer. Able to prepare and load for an emission test that requires a sample train. Is proficient in completion of project field logs and data sheets. Assists in the calibration and maintenance of consoles, pitot tubes, thermocouples and barometers. Proficient in the collection of organic samples using EPA Method 18. Is well versed in the calculation of stack gas flow rates with and without use of a computer. Able to perform all procedures required in 40 CFR 60, Method 1 without use of a computer. Able to perform all procedures required in 40 CFR 60, Method 3 (Orsat analysis). Able to setup and assist in leak check as well as weigh-in of a Method 4 sample train.

ETS®
Emission Testing Services, Inc.

Resume

R. KEITH DELK, JR.
Testing Trainee Technician

EDUCATION

High School Graduate

CERTIFICATIONS

General Safety & Health Orientation Program
Respiratory Equipment Medical Certification
MSA Qualitative Fit Test Record

EXPERIENCE

01/08 to Present Emission Testing Services, Inc. Testing Trainee Technician

Supports in performing EPA approved reference methods for compliance testing as-well-as other non-routine source evaluations. Responsibilities also include job preparation, equipment calibration, and maintenance.

ETS®
Emission Testing Services, Inc.

Resume

GARRETT S. HAYDEL
Testing Trainee Technician

EDUCATION

Southeastern Louisiana University
B.S. Business Management

CERTIFICATIONS

General Safety & Health Orientation Program
Respiratory Equipment Medical Certification
MSA Qualitative Fit Test Record

EXPERIENCE

03/08 to Present Emission Testing Services, Inc. Testing Trainee Technician

Supports in performing EPA approved reference methods for compliance testing as-well-as other non-routine source evaluations. Responsibilities also include job preparation, equipment calibration, and maintenance.

ETS®
Emission Testing Services, Inc.

Resume

DAVID E. LaJOIE, II
Testing Trainee Technician

EDUCATION

Louisiana State University
Obtaining BS in Arts and Sciences, Psychology

CERTIFICATIONS

General Safety & Health Orientation Program
Respiratory Equipment Medical Certification
MSA Qualitative Fit Test Record

EXPERIENCE

01/08 to Present Emission Testing Services, Inc. Testing Trainee Technician

Supports in performing EPA approved reference methods for compliance testing as-well-as other non-routine source evaluations. Responsibilities also include job preparation, equipment calibration, and maintenance.

ETS
EMISSION TESTING SERVICES

METER BOX CALIBRATION DATA AND CALCULATIONS FORM

(English Units)

One Revolution of meter =	0.1	ft3	Wet Test Meter Cal Factor:	1.002	
Leak Check Good @:	0.002		Meter Box Number:	6	
Barometric Pres., Pb:	29.84		Date Calibrated:	1/21/08	

Orifice Setting ΔH in. H20	Wet Test Meter Reading (Vwm), ft3	Dry Gas Meter Readings			Wet Test Meter Reading (Twm), deg. F	Wet Test Meter Pressure (Pw) in. H2O	Dry Gas Meter			Run Time (Θ), Min.
		Initial (Vdi), ft3	Final (Vdf), ft3	Total (Vdm), ft3			Inlet (Tdi), deg. F	Outlet (Tdf), deg. F	Avg (Tdm), deg. F	
0.50	5	325.538	330.635	5.097	73	0.50	83.0	77.0	80.0	12.32
1.00	5	330.635	335.738	5.103	73	0.50	90.0	79.0	84.5	8.77
1.50	5	335.738	340.850	5.112	73	0.75	94.0	80.0	87.0	7.28
2.00	5	340.850	345.975	5.125	73	1.00	95.0	81.0	88.0	6.38
3.00	5	320.574	325.538	4.964	73	1.20	84.0	77.0	80.5	5.26

Dry Gas Meter Gauge Pressure in. H20 (Gp)	Dry Gas Meter Gp Pdm=------+ Pb 13.6 (Pdm)	Wet Test Meter Pw Pwm=------+ Pb 13.6 (Pwm)
0.5	29.8768	29.8768
1.0	29.9135	29.8768
1.5	29.9503	29.8951
2.0	29.9871	29.9135
3.0	30.0606	29.9282

$$Ydm = \frac{(Vwm)*(Pwm)*(Tdm+460)*(Ywm)}{(Vdm)*(Pdm)*(Twm+460)}$$

	Ydm	Tolerance
	0.9958	0.0088
	1.0017	0.0029
	1.0039	0.0007
	1.0026	0.0020
	1.0190	-0.0143
Average	1.0046	

$$\Delta H@ = \frac{0.0317*\Delta H}{Pb*(tda+460)} * \frac{(TW+460)^2}{VW}$$

	ΔH@	Tolerance
	1.6966	0.0641
	1.7052	0.0555
	1.7545	0.0062
	1.7934	-0.0327
	1.8538	-0.0932
Average	1.7607	

Ydm = Ratio of reading of wet test meter to dry test meter; tolerance for individual values "0.02 from average.

ΔH@ = Orifice pressure differential that equates to 0.75 cfm of air @ 68oF and 29.92 inches of mercury, in H20: tolerance for individual values "0.20 from average.

Serial #: 52279

Calibration: ☑ Pass ☐ Fail
+/- 5% from previous

Calibrated by: _____

ETS

EMISSION TESTING SERVICES, INC.

THERMOCOUPLE CALIBRATION

Meter Box Number: 6
Barometric Pressure: 29.84
Serial #:

Date: 01/28/08
Calibrated By: JOHN KRAMER
+\- 1.5% from previous: ☑ PASS ☐ FAIL

LOW CHECK POINT

	Omga CL27 Reading				Thermocouple Reading			
Channel Type	Trial 1	Trial 2	Trial 3	Average	Trial 1	Trial 2	Trial 3	Average
Stack	100	100	100	100	100	101	101	100.67
Probe	100	100	100	100	101	100	100	100.33
Hot Box	100	100	100	100	101	101	100	100.67
Umbilical	100	100	100	100	100	101	101	100.67

	Average Reading			% Error (Diff / Avg CL27) * 100
Channel Type	Omega CL27	Thermocouple	Difference	-1.5 % < %Error < +1.5 %
Stack	100	100.67	0.67	0.67
Probe	100	100.33	0.33	0.33
Hot Box	100	100.67	0.67	0.67
Umbilical	100	100.67	0.67	0.67

MID CHECK POINT

	Omega CL27 Reading				Thermocouple Reading			
Channel Type	Trial 1	Trial 2	Trial 3	Average	Trial 1	Trial 2	Trial 3	Average
:k	500	500	500	500	501	499	500	500.00
Probe	500	500	500	500	500	499	500	499.67
Hot Box	500	500	500	500	500	499	500	499.67
Umbilical	500	500	500	500	499	499	499	499.00

	Average Reading			% Error (Diff / Avg CL27) * 100
Channel Type	Omega CL27	Thermocouple	Difference	-1.5 % < %Error < +1.5 %
Stack	500	500.00	0.00	0.00
Probe	500	499.67	-0.33	-0.07
Hot Box	500	499.67	-0.33	-0.07
Umbilical	500	499.00	-1.00	-0.20

HIGH CHECK POINT

	Omega CL27 Reading				Thermocouple Reading			
Channel Type	Trial 1	Trial 2	Trial 3	Average	Trial 1	Trial 2	Trial 3	Average
Stack	950	950	950	950	948	948	947	947.67
Probe	950	950	950	950	949	949	948	948.67
Hot Box	950	950	950	950	947	948	948	947.67
Umbilical	950	950	950	950	948	950	950	949.33

	Average Reading			% Error (Diff / Avg CL27) * 100
Channel Type	Omega CL27	Thermocouple	Difference	-1.5 % < %Error < +1.5 %
Stack	950	947.67	-2.33	-0.25
Probe	950	948.67	-1.33	-0.14
Box	950	947.67	-2.33	-0.25
Umbilical	950	949.33	-0.67	-0.07

ETS

:MISSION TESTING SERVICES, INC.

Pitot Tube Number: P-T-10
Calibrated By: David Lajoie

CP(std): STD - 0.99
Date Calibrated: 3\20\08

Point Number	Stardard Pitot ^{a}P (in. H2O)	"S" Type Pitot ^{a}P, in H2O Impact Side	Static Side
Low	0.150	0.220	0.220
Mid	0.680	0.940	0.930
High	0.890	1.200	1.200

CALCULATIONS ==========

$$Cp(s) = Cp(std) \times \left[\frac{{}^{a}P(std)}{{}^{a}P(s)} \right]^{1/2}$$

$$\text{Deviation} = Cp(s) - CP \quad \text{(Impact Side or Static Side)}$$

$$\text{Avg. Dev.} = \frac{|Cp(s) - CP|}{3} \quad \text{(Impact Side or Static Side)}$$

Impact Side Cp (s)	Deviation	Static Side Cp(s)	Deviation
0.8175	0.020	0.8175	0.021
0.8420	0.005	0.8465	0.008
0.8526	0.015	0.8526	0.014
Cp = 0.8374		Cp = 0.8389	

Cp(Static Side) - Cp(Impact Side)	=	0.002	(Must be <= 0.01)
Average Deviation (Impact Side)	=	0.013	(Must be <= 0.01)
Average Deviation (Static Side)	=	0.014	(Must be <= 0.01)

Cp = **0.838**

t Tube Leak Check ☑ PASSED ☐ FAILED

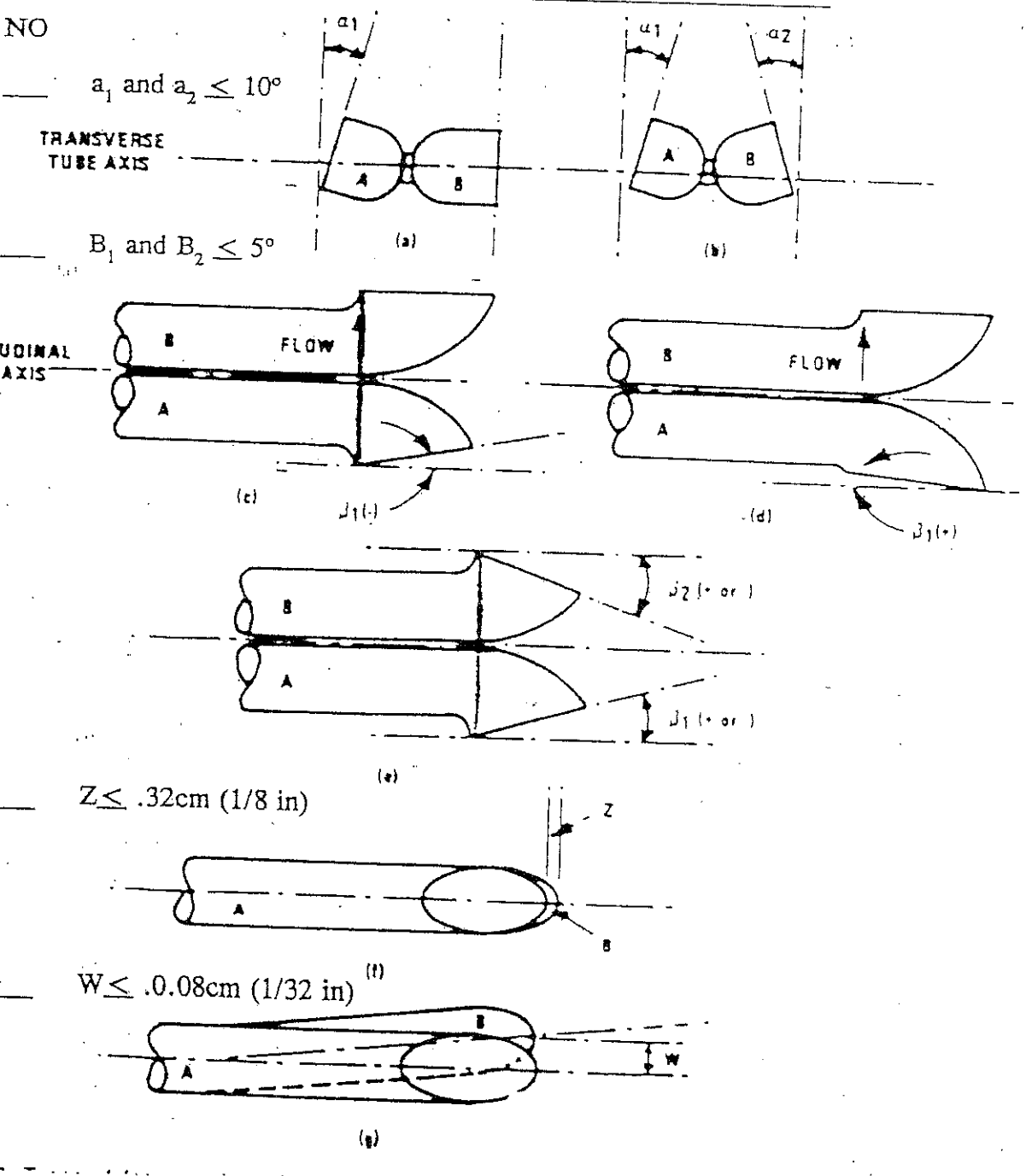
ETS

EMISSION TESTING SERVICES, INC.

TUBE NUMBER P-T-10 DATE 4/21/08

INSPECTOR NAME Keith Dellc

	YES	NO	
1	✓		a_1 and $a_2 \leq 10°$
2	✓		B_1 and $B_2 \leq 5°$
3	✓		$Z \leq .32$cm (1/8 in)
4	✓		$W \leq .0.08$cm (1/32 in)



SIGNATURE Keith Dellc

ETSR

EMISSION TESTING SERVICES, INC.

BAROMETER CALIBRATION SHEET

CLIENT: MURPHY OIL DATE: 04-18-08

SOURCE ID: 12-72,1-93,17-72a,b,c,14-72,19-72,&16-72

OPERATOR: KEVIN THIBODEAUX

**************BAROMETER**************

BAROMETER ID: UNIT 1

CALIBRATION DATA:

INITIAL CALIBRATION: 29.8 INITIAL 29.8 FINAL

ADJUSTMENT: ☐ Yes ☒ No

*******************CALIBRATION REFERENCE*******************

ID: PRINCO,HG

ELEVATION: BATON ROUGE ELEVATION DIFF: N/A

BAROMETER READING: 29.82

COMMENTS: _____

ETS REFERENCE SOPS-002, 004, 005, 030

AIR LIQUIDE | Scott Specialty Gases
Air Liquide America Specialty Gases LLC

Shipped From: 9810 BAY AREA BLVD
PASADENA TX 77507
Phone: 281-474-5800 Fax: 281-474-5857

C E R T I F I C A T E O F A N A L Y S I S

EMISSION TESTING SERVICES

10461 MAMMOTH DRIVE

BATON ROUGE LA 70814

PROJECT #: 04-60346-002
PO#: 20071120-RM01
ITEM #: 0401813 AL
DATE: 09Jan2008

CYLINDER #: AAL9800
FILL PRESSURE: 02000 PSIG

PURE MATERIAL: NITROGEN CAS# 7727-37-9

GRADE: ZERO GAS

PURITY: 99.998%

IMPURITY	MAXIMUM CONCENTRATIONS
THC	0.5 PPM

Scott Specialty Gases
9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-585

Dual-Analyzed Calibration Standard

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: 20070321-RM01
Project No.: 04-53145-007

Customer

EMISSION TESTING SERVICES

10461 MAMMOTH DRIVE
BATON ROUGE LA 70814

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: ALM056038 **Certification Date:** 11Apr2007 **Exp. Date:** 11Apr2010
Cylinder Pressure*:** 1900 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
OXYGEN	10.0 %	+/- 1%	Direct NIST and NMi
NITROGEN	BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 2350	01May2009	K003567	23.48 %	OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
SERVOMEX/MODEL 244A/701/716	23Mar2007	PARAMAGNETIC

ANALYZER READINGS

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

First Triad Analysis

OXYGEN

Date: 11Apr2007 Response Unit:%

Z1 = 0.00000	R1 = 0.98500	T1 = 0.42080
R2 = 0.98490	Z2 = 0.00000	T2 = 0.42070
Z3 = 0.00000	T3 = 0.42060	R3 = 0.98470

Avg. Concentration: 10.03 %

Second Triad Analysis

Calibration Curve

Concentration = A + Bx + Cx2 + Dx3 + Ex4

r = .9999998

Constants:	A = .004395985
B = 23.82394065	C =
D =	E =

APPROVED BY: Jamie Stanton
JAMIE STANTON

SUPERVISOR:
SUSAN BRANDON

Scott Specialty Gases
9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-5857

Dual-Analyzed Calibration Standard

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: 20061003-RM01
Project No.: 04-48614-003

Customer

EMISSION TESTING SERVICES

10461 MAMMOTH DRIVE
BATON ROUGE LA 70814

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol for Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: AAL069542 **Certification Date:** 19Oct2006 **Exp. Date:** 19Oct2009
Cylinder Pressure*:** 2015 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
OXYGEN	20%	+/- 1%	Direct NIST and NMi
NITROGEN	BALANCE		

*** Do not use when cylinder pressure is below 150 psig.
** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARDS

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 2350	01May2009	K003567	25.48 %	OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
SERVOMEX/MODEL 244A/701716	16Oct2006	PARAMAGNETIC

ANALYZER READINGS

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

First Triad Analysis | Second Triad Analysis | Calibration Curve

OXYGEN

Date: 19Oct2006	Response Unit:VOLTS	
Z1=0.00000	R1=0.98500	T1=0.84520
R2=0.98660	Z2=0.00180	T2=0.84710
Z3=0.00310	T3=0.84770	R3=0.98900
Avg. Concentration:	20.13	%

Concentration = A + Bx + Cx2 + Dx3 + Ex4
r = .9999998
Constants: A=.007236732
B=23.8223372 C=
D= E=

APPROVED BY: _____ SUPERVISOR: _____
RAMIEN ROUHANI SUSAN BRANDON

Scott Specialty Gases

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-5857

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: 20061003-RM01
Project No.: [illegible]2

Customer

EMISSION TESTING SERVICES

10461 MAMMOTH DRIVE
BATON ROUGE LA 70814

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol for Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: ALM005516 Certification Date: 26Oct2006 Exp. Date: 25Oct2008

Cylinder Pressure***: 2015 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
NITRIC OXIDE	48.5	PPM	+/- 1%	Direct NIST and NMI
NITROGEN - OXYGEN FREE		BALANCE		
TOTAL OXIDES OF NITROGEN	48.5	PPM		Reference Value Only

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G-1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1683	15Aug2009	AAL070185	49.82 PPM	NITRIC OXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//1602651	20Oct2006	FTIR

ANALYZER READINGS

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

First Triad Analysis

NITRIC OXIDE

Date: 17Oct2006	Response Unit:PPM	
Z1=-0.07962	R1=50.46437	T1=48.11909
R2=50.50977	Z2=0.06468	T2=48.18087
Z3=0.09189	T3=48.47482	R3=50.57636
Avg. Concentration:	48.59	PPM

Second Triad Analysis

Date: 26Oct2006	Response Unit: PPM	
Z1=-0.04926	R1=50.15555	T1=46.56922
R2=50.18899	Z2=0.02543	T2=46.52241
Z3=0.04571	T3=46.95409	R3=50.38919
Avg. Concentration:	48.42	PPM

Calibration Curve

Concentration=A+Bx+Cx2+Dx3+Ex4

r=9.99984E-1

Constants:	A=0.00000E+0
B=9.51308E-1	C=1.95000E-4
D=0.00000E+0	E=0.00000E+0

Special Notes: ITEM# NO 2

APPROVED BY: _____
Lara Nash

RATA CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-585

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: 20061203-RM01
Project No.: 04-50101-001

Customer

EMISSION TESTING SERVICES

10461 MAMMOTH DRIVE
BATON ROUGE LA 70814

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: ALM017982 **Certification Date:** 26Dec2006 **Exp. Date:** 25Dec2008
Cylinder Pressure*:** 2015 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
NITRIC OXIDE	101	PPM	+/- 1%	Direct NIST and NMi
NITROGEN - OXYGEN FREE		BALANCE		
TOTAL OXIDES OF NITROGEN	101	PPM		Reference Value Only

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1685	01Jan2010	AAL071076	246.1 PPM	NITRIC OXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//1602651	07Dec2006	FTIR

ANALYZER READINGS

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

First Triad Analysis | Second Triad Analysis | Calibration Curve

NITRIC OXIDE

Date: 18Dec2006	Response Unit:PPM	
Z1=-0.39410	R1=97.61960	T1=101.0342
R2=97.84169	Z2=-0.05597	T2=101.1948
Z3=0.08950	T3=101.2084	R3=98.13910
Avg. Concentration:	101.7	PPM

Date: 26Dec2006	Response Unit: PPM	
Z1=-0.03778	R1=246.8176	T1=101.4563
R2=247.5892	Z2=0.12974	T2=101.6268
Z3=0.21711	T3=102.1452	R3=248.7775
Avg. Concentration:	101.0	PPM

Concentration=A+Bx+Cx2+Dx3+Ex4	
r=1.00000E+0	
Constants:	A=0.00000E+0
B=9.82467E-1	C=2.08000E-4
D=0.00000E+0	E=0.00000E+0

APPROVED BY: _____
Lara Nash

COMPLIANCE CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

1290 COMBERMERE STREET,TROY,MI 48083 Phone: 248-589-2950 Fax: 248-589-2134

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
1290 COMBERMERE STREET
TROY,MI 48083

P.O. No.: 20040804-RM1
Project No.: 05-21811-009

Customer

EMISSION TESTING SERVICES
GAYLE POURCIAU
PO BOX 15075
BATON ROUGE LA 70895

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: ALM058715 Certification Date: 31Aug2004 Exp. Date: 01Mar2005
Cylinder Pressure***: 1980 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
NITROGEN DIOXIDE	51.0	PPM	+/- 2%	GMIS
NITROGEN		BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol procedures , September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
GMIS NO2/AIR	09Nov2005	ALM019150	106.0 PPM	NITROGEN DIOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
BECKMAN/951/010177	31Aug2004	CHEMILUMINESCENCE

THIS CYLINDER IS USED ONLY
FOR NOX CONVERTER EFFICIENCY
TEST AND WAS PREPARED ACCORDING
TO EPA TRACEABILITY
PROTOCOL.

APPROVED BY: Adrianna Nace

RATA CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-585

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: 20070321-RM01
Project No.: 04-53145-001

Customer

EMISSION TESTING SERVICES

10461 MAMMOTH DRIVE
BATON ROUGE LA 70814

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: 1L23480 Certification Date: 16Apr2007 Exp. Date: 15Apr2010

Cylinder Pressure***: 1963 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
CARBON MONOXIDE	53.0 PPM	+/- 1%	Direct NIST and NMI
NITROGEN	BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1678	15Aug2009	ALM044707	51.13 PPM	CARBON MONOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//1602651	28Mar2007	FTIR

ANALYZER READINGS

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

First Triad Analysis

CARBON MONOXIDE

Date: 09Apr2007	Response Unit:PPM	
Z1=-0.08258	R1=51.23472	T1=53.12048
R2=51.31708	Z2=-0.08149	T2=53.27362
Z3=-0.07467	T3=53.29426	R3=51.32439
Avg. Concentration:	53.06	PPM

Second Triad Analysis

Date: 16Apr2007	Response Unit: PPM	
Z1=0.00369	R1=51.22116	T1=53.16120
R2=51.25807	Z2=0.00509	T2=53.20550
Z3=0.06466	T3=53.21054	R3=51.38445
Avg. Concentration:	53.03	PPM

Calibration Curve

Concentration=A+Bx+Cx2+Dx3+Ex4

r=9.99995E-1

Constants:	A=0.00000E+0
B=9.83636E-1	C=6.22000E-4
D=1.00000E-6	E=0.00000E+0

APPROVED BY: _____
Tom Nguyen

RATA CLASS

Scott Specialty Gases

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD,PASADENA,TX 77507 Phone: 281-474-5800 Fax: 281-474-585

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

SCOTT SPECIALTY GASES
9810 BAY AREA BLVD
PASADENA,TX 77507

P.O. No.: 20070321-RM01
Project No.: 04-53145-002

Customer

EMISSION TESTING SERVICES

10461 MAMMOTH DRIVE
BATON ROUGE LA 70814

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: ALM049728 **Certification Date:** 17Apr2007 **Exp. Date:** 16Apr2010
Cylinder Pressure*:** 1925 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)	ANALYTICAL ACCURACY**	TRACEABILITY
CARBON MONOXIDE	92.7 PPM	+/- 1%	Direct NIST and NMi
NITROGEN	BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 1679	01May2011	ALM027398	94.90 PPM	CARBON MONOXIDE

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
FTIR//1602651	28Mar2007	FTIR

ANALYZER READINGS

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

First Triad Analysis

CARBON MONOXIDE

Date: 09Apr2007	Response Unit:PPM	
Z1=-0.01694	R1=95.22923	T1=93.08872
R2=95.42580	Z2=-0.00830	T2=93.24093
Z3=0.02308	T3=93.26513	R3=95.46466
Avg. Concentration:	92.73	PPM

Second Triad Analysis

Date: 17Apr2007	Response Unit: PPM	
Z1=-0.02924	R1=95.05640	T1=92.91630
R2=95.16387	Z2=0.00384	T2=93.01234
Z3=0.02599	T3=93.02727	R3=95.16867
Avg. Concentration:	92.75	PPM

Calibration Curve

Concentration=A+Bx+Cx2+Dx3+Ex4	
r=9.99995E-1	
Constants:	A=0.00000E+0
B=5.33532E-1	C=1.82000E-4
D=0.00000E+0	E=0.00000E+0

APPROVED BY: _____
Tom Nguyen

OXYGEN/ CARBON DIOXIDE ANALYZER
PRINCIPLE of OPERATION and SPECIFICATIONS

SERVOMEX
MODEL NUMBER 1400B4 STD/FLS

I. PRINCIPLE of OPERATION

The Servomex oxygen/ carbon dioxide analyzer uses a magneto-dynamic paramagnetic technique for oxygen measurement and a single-beam, single-wave length infrared technique for carbon dioxide measurement.

II. SPECIFICATIONS

Ranges	
O2	0.1 to 100 vol%
CO2	0 to 1 vol%
	0 to 2 vol%
	0 to 5 vol%
	0 to 10 vol%
	0 to 25 vol%
	0 to 50 vol%
	0 to 100 vol%
Detection Limits	
O2 Minimum	0.1 vol%
O2 Maximum	100 vol%
CO2 Minimum	0.1 vol%
CO2 Maximum	100 vol%
Response Time, 90%	
O2	< 10 sec
CO2	< 30 sec
Interferences	
None	

Precision	
O2	+/- 0.1 vol%
CO2	+/- 1% FS
Linearity	
O2	+/- 0.1 vol%
CO2	+/- 1% FS
Drift	
Zero, 24-hr	+/- 0.2%
Span, 24-hr	+/- 0.2%

OXIDES of NITROGEN ANALYZER
PRINCIPLE of OPERATION and SPECIFICATIONS

THERMO ENVIRONMENTAL INSTRUMENTS
MODEL NUMBER 10

I. PRINCIPLE of OPERATION

The model 10 NO-NOx analyzer utilizes the principle of chemiluminescence for the detection of nitrogen oxide (NO). Detection of NO in the sample gas is accomplished by blending ozone (O3) with the sample gas in a reaction chamber. The reaction produces a characteristic luminescence with an intensity that is linearly proportional to the concentration of NO. The luminescence intensity is measured using an optical filter and photomultiplier at a narrow wavelength band that is unique to the NO and O3 reaction. In order to measure NOx (NO plus NO2), the sample gas is diverted through a NO2 to NO converter prior to entering the reaction chamber.

II. SPECIFICATIONS

Ranges	
NO	0 to 2.5 PPMv
	0 to 10 PPMv
	0 to 25 PPMv
	0 to 100 PPMv
	0 to 250 PPMv
	0 to 1000 PPMv
	0 to 2500 PPMv
	0 to 10000 PPMv
Detection Limits	
Minimum	0.1% FS
Maximum	10000 PPMv
Response Time, 90%	
NO	1.5 sec
NO2	1.7 sec

Precision	
NO	+/- 1.0 PPMv
Linearity	
NO	+/- 1%
Drift	
Zero, 12-hr	< 1.2%
Span, 12-hr	< 1.2%
Noise	0.05 RMS
Sample Flow Rate	0.2 – 2 l/min

Interferences
Negligible for H20, carbon, and sulfur compounds

CARBON MONOXIDE ANALYZER
PRINCIPLE of OPERATION and SPECIFICATIONS

THERMO ENVIRONMENTAL INSTRUMENTS
MODEL NUMBER 48

I. PRINCIPLE of OPERATION

The model 48 CO analyzer utilizes non-dispersive infrared (NDIR) detection of CO enhanced by gas filter correlation (GFC). Sample gas is passed through an optical White Cell in which an IR beam passes. The White Cell provides a long beam path length in a relatively small cell by utilizing optical mirrors to produce multiple passes of the IR beam through the cell. The IR beam is first passed through a GFC chopper wheel and a narrow bandpass interference filter before entering the cell. The CO molecules in the cell absorb IR proportional to the CO concentration. The IR beam exiting the cell is measured using an IR detector.

II. SPECIFICATIONS

Ranges		Precision	
CO	0 to 1 PPMv	CO	+/- 0.1 PPMv
	0 to 2 PPMv		
	0 to 5 PPMv		
	0 to 10 PPMv	Linearity	
	0 to 20 PPMv	CO	+/- 1%
	0 to 50 PPMv		
	0 to 100 PPMv		
	0 to 200 PPMv	Drift	
	0 to 500 PPMv	Zero, 24-hr	+/- 0.2 PPMv
	0 to 1000 PPMv	Span, 24-hr	+/- 1% FS
Detection Limits		Sample Flow Rate	0.5 – 2 l/min
Minimum	0.1 PPMv		
Maximum	1000 PPMv	Noise	0.05 RMS
Response Time	1 min		

Interferences
Negligible for H2O and CO2

DEPARTMENT OF ENVIRONMENTAL QUALITY
KATHLEEN BABINEAUX BLANCO
GOVERNOR
MIKE D. McDANIEL, Ph.D.
SECRETARY

Certified Mail No. 7004 1160 0003 2552 0903

Agency Interest No. 1238
Activity No.: PER20050006

Mr. Ernie Cagle
Refinery Manager
Meraux Refinery, Murphy Oil U.S.A., Inc.
2500 E. St. Bernard Highway
Meraux, Louisiana 70075

RE: Part 70 Part Operating Permit Renewal/Modification, Meraux Refinery, Murphy Oil U.S.A., Inc., Meraux, St. Bernard Parish, Louisiana

Dear Mr. Cagle:

This is to inform you that the permit renewal and modification for the above referenced facility has been approved under LAC 33:III.501. The permit is both a state preconstruction and Part 70 Operating Permit. The submittal was approved on the basis of the emissions reported and the approval in no way guarantees the design scheme presented will be capable of controlling the emissions as to the types and quantities stated. A new application must be submitted if the reported emissions are exceeded after operations begin. The synopsis, data sheets and conditions are attached herewith.

It will be considered a violation of the permit if all proposed control measures and/or equipment are not installed and properly operated and maintained as specified in the application.

Operation of this facility is hereby authorized under the terms and conditions of this permit. This authorization shall expire at midnight on the 20th of November, 2012 unless a timely and complete renewal application has been submitted six months prior to expiration. Terms and conditions of this permit shall remain in effect until such time as the permitting authority takes final action on the application for permit renewal. The permit number and Agency Interest No. cited above should be referenced in future correspondence regarding this facility.

Done this 20th day of November, 2007

Permit No.: 2500-00001-V2

Sincerely,

Chuck Carr Brown, Ph.D.
Assistant Secretary

SGQ
cc: EPA Region VI

ENVIRONMENTAL SERVICES
: PO BOX 4313, BATON ROUGE, LA 70821-4313
P:225-219-3181 F:225-219-3309
WWW.DEQ.LOUISIANA.GOV

INVENT[illegible]IES

AI ID: 1238 - Murphy Oil [illegible] Inc - Meraux Refinery
Activity Number: PER20050006
Permit Number: 2500-00001-V2
Air - Title V Regular Permit Renewal

Subject Item Inventory:

ID	Description	Tank Volume	Max. Operating Rate	Normal Operating Rate	Contents	Operating Time
Meraux Refinery						
EQT0009	1-00 - Hydrocracker/Hydrotreater/Fractionator Charge Heaters			275 MM BTU/hr	CAP	8760 hr/yr (All Year)
EQT0010	1-06 - Boiler TB-01			110 MM BTU/hr	CAP	8760 hr/yr (All Year)
EQT0011	1-07 - Boiler B-7			250 MM BTU/hr	CAP	8760 hr/yr (All Year)
EQT0012	1-3 - Slop Oil Tank	34104 gallons			CAP	8760 hr/yr (All Year)
EQT0013	1-76 - East and West Vacuum Heaters			196.2 MM BTU/hr	CAP	8760 hr/yr (All Year)
EQT0014	1-80 - ROSE Heater			135 MM BTU/hr	CAP	3512 hr/yr (All Year)
EQT0015	1-88F - Compressor-101B			145 horsepower	CAP	3512 hr/yr (All Year)
EQT0017	1-88H - Compressor-203			450 horsepower	CAP	8760 hr/yr (All Year)
EQT0018	1-92 - Marine Vapor Rcovery Flare			19 MM bbl/yr	Gasoline Loading Only	8760 hr/yr (All Year)
EQT0019	1-93 - SRU No. 2 Incinerator			17.53 MM BTU/hr	CAP	8760 hr/yr (All Year)
EQT0020	1-94 - API Separator Flare			.71 MM BTU/hr		8760 hr/yr (All Year)
EQT0021	1-97 - Oily Water Stripper Feed Tank	21000 gallons		154700 bbl/yr		8760 hr/yr (All Year)
EQT0022	12-72A - No. 1 Crude Heater			396 MM BTU/hr	CAP	8760 hr/yr (All Year)
EQT0023	14-72 - Hydrobon Charge Heater			46.88 MM BTU/hr	CAP	8760 hr/yr (All Year)
EQT0024	15-72 - Hydrobon Debut Reboiler			44.48 MM BTU/hr	CAP	8760 hr/yr (All Year)
EQT0025	150-1 - Middle Distillates Tank	6.22 million gallons			CAP	8760 hr/yr (All Year)
EQT0026	150-2 - Wastewater Tank	6.4 million gallons				8760 hr/yr (All Year)
EQT0027	16-72 - Hydrobon Depent Reboiler			50 MM BTU/hr	CAP	8760 hr/yr (All Year)
EQT0028	17-72a,b,c - Platformer Charge Heater			360 MM BTU/hr	CAP (3 Stacks)	8760 hr/yr (All Year)
EQT0029	19-72 - Platformer Debut Reboiler			49.76 MM BTU/hr	CAP	8760 hr/yr (All Year)
EQT0030	2-00 - Boiler B-5			250 MM BTU/hr	CAP	8760 hr/yr (All Year)
EQT0032	2-77 - No. 2 FCC Stack		29725 lb/hr	26000 lb/hr	Coke burn rate	8760 hr/yr (All Year)
EQT0033	2-92 - MDH Product Fractionator Heater and Charge Heater			200.64 MM BTU/hr	CAP	8760 hr/yr (All Year)
EQT0034	2-97 - Oily Water Stripper Feed Tank	21000 gallons		154700 bbl/yr		8760 hr/yr (All Year)
EQT0035	20-72 - North Flare Stack			19.7 MM BTU/hr		8760 hr/yr (All Year)
EQT0036	200-1 - Gasoline Tank	7.41 million gallons			CAP	8760 hr/yr (All Year)
EQT0037	200-2 - Gasoline Tank	7.37 million gallons			CAP	8760 hr/yr (All Year)
EQT0038	200-3 - Gasoline Tank	7.41 million gallons			CAP	8760 hr/yr (All Year)
EQT0039	200-4 - Crude Oil Tank	7.26 million gallons			CAP	8760 hr/yr (All Year)
EQT0040	200-5SW - Sour Water Tank	7.46 million gallons			CAP	8760 hr/yr (All Year)
EQT0041	200-6 - Middle Distillates Tank	7.6 million gallons			CAP	8760 hr/yr (All Year)
EQT0042	200-7 - Heavy Oil Tank	8.48 million gallons		40 lb/hr	Coke burn rate	8760 hr/yr (All Year)
EQT0043	21-72 - Platform Regenerator Vent Gas				IFR	8760 hr/yr (All Year)
EQT0044	25-2 - Sour Water Tank	1.2 million gallons		250 MM BTU/hr	CAP	8760 hr/yr (All Year)
EQT0048	3-00 - Boiler B-6					

APPENDIX E
7.6.2

INVENTORIES

AI ID: 1238 - Murphy Oil ... Inc - Meraux Refinery
Activity Number: PER20050006
Permit Number: 2500-00001-V2
Air - Title V Regular Permit Renewal

Stack Information:

ID	Description	Velocity (ft/sec)	Flow Rate (cubic ft/min-actual)	Diameter (feet)	Discharge Area (square feet)	Height (feet)	Temperature (oF)
Meraux Refinery							
EQT0009	1-00 - Hydrocracker/Hydrotreater/Fractionator Charge Heaters	21.5	85195.8	9.17		226	600
EQT0010	1-06 - Boiler TB-01	38.46	28997.5	4		33	345
EQT0011	1-07 - Boiler B-7	51	52338.93	4.67		150	298
EQT0012	1-3 - Slop Oil Tank			21.25		16	110
EQT0013	1-76 - East and West Vacuum Heaters	20	53020	7.5		110	300
EQT0014	1-80 - ROSE Heater	10.83	41587.2	8		110	350
EQT0015	1-88F - Compressor-101B	151	775	.83		20	750
EQT0017	1-88H - Compressor-203	151	445	.25		8	750
EQT0018	1-92 - Marine Vapor Rcovery Flare	65.62		.82		88	538
EQT0019	1-93 - SRU No. 2 Incinerator	107	20377	2		200	500
EQT0020	1-94 - API Separator Flare	.01	11.5	5		40	1500
EQT0021	1-97 - Oily Water Stripper Feed Tank				.15	14.25	68.06
EQT0022	12-72A - No. 1 Crude Heater	23.2	114862	10.25		170	350
EQT0023	14-72 - Hydrobon Charge Heater	14.43	13525	4.71		126	725
EQT0024	15-72 - Hydrobon Debut Reboiler	13.21	12384	4.46		125	625
EQT0025	150-1 - Middle Distillates Tank			165		40	100.02
EQT0026	150-2 - Wastewater Tank			165		40	90
EQT0027	16-72 - Hydrobon Depent Reboiler	11.69	10957	4.46		125	500
EQT0028	17-72a,b,c - Platformer Charge Heater	16.93	44356	7.5		180	580
EQT0029	19-72 - Platformer Debut Reboiler	6.31	4091	3.71		125	510
EQT0030	2-00 - Boiler B-5	51	52338.93	4.67		150	298
EQT0032	2-77 - No. 2 FCC Stack	80.5	180556	7		180	600
EQT0033	2-92 - MDH Product Fractionator Heater and Charge Heater	14.9	56874	9		150	350
EQT0034	2-97 - Oily Water Stripper Feed Tank				.15	14.25	68.06
EQT0035	20-72 - North Flare Stack	65.6	35424	4.5		200	1832
EQT0036	200-1 - Gasoline Tank			215		32	68.06
EQT0037	200-2 - Gasoline Tank			215		32	68.06
EQT0038	200-3 - Gasoline Tank			215		32	68.06
EQT0039	200-4 - Crude Oil Tank			215		32	68.06
EQT0040	200-5SW - Sour Water Tank				66	32	100.02
EQT0041	200-6 - Middle Distillates Tank			190		40	185.02
EQT0042	200-7 - Heavy Oil Tank	.58	1.7	3		80	100
EQT0043	21-72 - Platform Regenerator Vent Gas			80		32	68.06
EQT0044	25-2 - Sour Water Tank						

EMISSION RATES FOR CRITERIA POLLUTANTS

AI ID: 1238 - Murphy Oil USA Inc - Meraux Refinery
Activity Number: PER20050006
Permit Number: 2500-00001-V2
Air - Title V Regular Permit Renewal

	CO			NOx			PM10			SO2			VOC		
Subject Item	Avg lb/hr	Max lb/hr	Tons/Year	Avg lb/hr	Max lb/hr	Tons/Year	Avg lb/hr	Max lb/hr	Tons/Year	Avg lb/hr	Max lb/hr	Tons/Year	Avg lb/hr	Max lb/hr	Tons/Year
Meraux Refinery															
EQT 0009 1-00		25.15			27.50			2.28			8.14			1.65	
EQT 0010 1-06		10.06			11.00			0.91			3.25			0.66	
EQT 0011 1-07		22.87			10.00			2.07			7.40			1.50	
EQT 0012 1-3														3.80	
EQT 0013 1-76		53.96			19.62			1.62			5.80			1.18	
EQT 0014 1-80		12.35			13.50			1.12			3.99			0.81	
EQT 0015 1-86F		0.97			4.50			0.32			0.30			0.36	
EQT 0017 1-86H		3.01			13.95			0.99			0.92			1.13	
EQT 0018 1-92	1.83	45.80	8.02	2.35	59.80	10.29	0.91	24.80	3.99				6.48	119.60	28.39
EQT 0019 1-93		3.65			3.10			2.06			18.30			0.60	
EQT 0020 1-94	0.03	0.03	0.14	0.07	0.07	0.32	0.01	0.01	0.03	0.001	0.001	0.002	0.18	0.18	0.81
EQT 0021 1-97													0.01	0.01	0.03
EQT 0022 12-72A		36.22			39.60			3.28			11.71			2.37	
EQT 0023 14-72		4.29			11.72			0.39			1.39			0.28	
EQT 0024 15-72		4.07			6.85			0.37			1.32			0.27	
EQT 0025 150-1														3.68	
EQT 0026 150-2													4.62	4.76	20.26
EQT 0027 16-72		4.57			7.70			0.41			1.48			0.30	
EQT 0028 17-72a,b,c		32.93			28.80			2.98			10.65			2.16	
EQT 0029 19-72		4.55			7.66			0.41			1.47			0.30	
EQT 0030 2-00		22.87			20.00			2.07			7.40			1.50	
EQT 0032 2-77	197.72	224.00	866.00	26.22	94.70	114.83	26.03	29.73	114.00	45.59	291.31	199.70	<0.001	<0.001	<0.001
EQT 0033 2-92		18.35			20.06			1.66			5.94			1.20	

APPENDIX E
7.6.4

TPOR0145

EQT0018 1-92, Marine Vapor Recovery Flare

151	[LAC 33:III.1105]	Opacity <= 20 percent, except for a combined total of six hours in any 10 consecutive day period, for burning in connection with pressure valve releases for control over process upsets. Which Months: All Year Statistical Basis: None specified
152	[LAC 33:III.1311.C]	Opacity <= 20 percent; except emissions may have an average opacity in excess of 20 percent for not more than one six-minute period in any 60 consecutive minutes. Which Months: All Year Statistical Basis: Six-minute average
153	[LAC 33:III.2108.F.2]	Equipment/operational data recordkeeping by electronic or hard copy at the regulation's specified frequency. Keep records of the information specified in LAC 33:III.2108.F.2.a-e, as applicable.
154	[LAC 33:III.2108.G.1]	Loading gasoline into ships or barges is prohibited unless all loading and vapor lines, arms and hoses are equipped with fittings which make vapor-tight connections and provide tight shut-off when disconnected.
155	[LAC 33:III.2108.G.2]	Prevent spills or leaks during attachment or disconnection of filling lines, hoses or arms. Do not spill liquids or handle in any other manner that would result in evaporation to the atmosphere.
156	[LAC 33:III.2108.G.3]	Maintain all equipment associated with the loading of gasoline into ships or barges to be leak-free, gas-tight and in good working order.
157	[LAC 33:III.5107, 5109]	Compliance with all the applicable requirements of NESHAP, 40 CFR 63, Subpart CC - HAPs from Refineries is deemed as compliance with all the applicable requirements of LAC 33:III.5107 and LAC 33:III.5109.A.

EQT0019 1-93, SRU No. 2 Incinerator

158	[40 CFR 60.104(a)(2)(i)]	Sulfur dioxide <= 250 ppmv @ 0% excess air (dry basis). Subpart J. [40 CFR 60.104(a)(2)(i)] Which Months: All Year Statistical Basis: None specified
159	[40 CFR 60.105(a)(5)(i)]	Sulfur dioxide monitored by continuous emission monitor (CEM) continuously. Subpart J. [40 CFR 60.105(a)(5)(i), 40 CFR 60.105(a)(5)(ii)] Which Months: All Year Statistical Basis: None specified
160	[40 CFR 60.105(a)(5)]	Sulfur dioxide monitored by continuous emission monitor (CEM) continuously. Include an oxygen monitor for correcting the data for excess air. Subpart J. [40 CFR 60.105(a)(5)] Which Months: All Year Statistical Basis: None specified
161	[40 CFR 60.106]	Determine compliance with standards using the test methods and procedures specified in 40 CFR 60.106(a) through (k). Subpart J.
162	[40 CFR 60.107]	Shall comply with all the applicable requirements of reporting and recordkeeping as per NSPS, 40 CFR 60, Subpart J. Subpart J.
163	[40 CFR 63.1560]	Compliance with NSPS, 40 CFR 60, Subpart J is considered compliance with all the applicable requirements of NESHAP, 40 CFR 63, Subpart UUU and LAC 33:III.Chapter 15. [40 CFR 63.1560, LAC 33:III.1509]
164	[40 CFR 63.1560]	Shall comply with all the applicable requirements of NESHAP, 40 CFR 63, Subpart UUU - NESHAP for Petroleum Refineries: Catalytic Cracking Units, Catalytic Reforming Units, and Sulfur Recovery Units. Subpart UUU.
165	[40 CFR 63.1568(a)(1)]	Sulfur dioxide <= 250 ppmv (dry basis) at 0% excess air. Subpart UUU. [40 CFR 63.1568(a)(1)] Which Months: All Year Statistical Basis: Three-hour rolling average
166	[40 CFR 63.1568(b)(5)]	Demonstrate initial compliance with each applicable emission limitation according to 40 CFR 63 Subpart UUU Table 33. Subpart UUU. [40 CFR 63.1568(b)(5)]
167	[40 CFR 63.1568(c)(1)]	Demonstrate continuous compliance with each applicable emission limitation in 40 CFR 63 Subpart UUU Tables 29 and 30 according to the methods specified in 40 CFR 63 Subpart UUU Tables 34 and 35. Subpart UUU. [40 CFR 63.1568(c)(1)]

EQT0019 1-93, SRU No. 2 Incinerator

168	[LAC 33:III.1101.B]	Opacity <= 20 percent, except during the cleaning of a fire box or building of a new fire, soot blowing or lancing, charging of an incinerator, equipment changes, ash removal or rapping of precipitators, which may have an opacity in excess of 20 percent for not more than one six-minute period in any 60 consecutive minutes. Which Months: All Year Statistical Basis: None specified
169	[LAC 33:III.1313.C]	Total suspended particulate <= 0.6 lb/MMBTU of heat input. Which Months: All Year Statistical Basis: None specified
170	[LAC 33:III.1507.B.1]	Submit report: Due in writing to the Office of Environmental Compliance, Emergency and Radiological Services Division, Single Point of Contact (SPOC), within seven calendar days of an upset which has caused excess emissions, and if on-line operating changes will eliminate a temporary condition. Submit report if requesting exemption from the emission limitations of LAC 33:III.1503.A. Explain the conditions and duration of the upset and list the steps necessary to remedy, prevent and limit the excess emissions.
171	[LAC 33:III.1511.A]	Sulfur dioxide monitored by continuous emission monitor (CEM) continuously. Ensure that the measurement system is certified according to Performance Specification 2 of 40 CFR 60, Appendix B, and quality assured by the procedures in 40 CFR 60, Appendix F. Which Months: All Year Statistical Basis: None specified
172	[LAC 33:III.1513]	Equipment/operational data recordkeeping by electronic or hard copy at the approved frequency. Record and keep on site for at least two years the data required to demonstrate compliance with the provisions of LAC 33:III.Chapter 15. Record all emissions data in the units of the standard using the averaging time of the standard. Make records available to a representative of DEQ or the U.S. EPA on request.
173	[LAC 33:III.1513]	Submit quarterly reports of three-hour excess emissions and reports of emergency conditions, in accordance with LAC 33:I.Chapter 39.
174	[LAC 33:III.1513]	Submit report: Due annually, by the 31st of March, in accordance with LAC 33:III.918. Report data required to demonstrate compliance with the provisions of LAC 33:III.Chapter 15.
175	[LAC 33:III.501.C.6]	Conduct a performance/emissions test: Due within 180 days after the issuance of the permit. The stack test's purpose is to demonstrate compliance with the emission limits of this permit. Test methods and procedures shall be in accordance with New Source Performance Standards, 40 CFR 60, Appendix A, Method 7E - Determination of Nitrogen Oxides Emissions from Stationary Sources; Method 10 - Determination of Carbon Monoxide Emissions from Stationary Sources; Method 5 - Determination of Particulate Emissions from Stationary Sources; Method 9 - Visual Determination of the opacity of emissions from stationary sources; and Method 25A or 25B - Determination of Total Gaseous Organic Concentration using a Flame Ionization Analyzer or Nondispersive Infrared Analyzer. Use alternate stack test methods only with the prior approval of the Office of Environmental Assessment, Environmental Technology Division, Engineering Services. As required by LAC 33:III.913, provide necessary sampling ports in stacks or ducts and such other safe and proper sampling and testing facilities for proper determination of the emission limits. Sulfur dioxide emissions shall be demonstrated by the existing sulfur dioxide monitoring system as per 40 CFR 60, Subpart J. Other methods in 40 CFR 60.106 may be utilized for the above referenced methods if applicable.

EQT0020 1-94, API Separator Flare

176	[40 CFR 63.647]	Wastewater: Compliance with all the applicable requirements of NESHAP, 40 CFR 61.342(e) is deemed as compliance with 40 CFR 63, Subpart CC - HAPs from Refineries. No monitoring surrounding the API Separator is required as the benzene concentration is less than 10 ppmv. Subpart CC. [40 CFR 63.647, 40 CFR 63.653-654]
177	[40 CFR 63.654(a)]	Comply with the recordkeeping and reporting provisions in 40 CFR 61.356 and 61.357 of 40 CFR 61 Subpart FF, unless complying with the wastewater provisions specified in 40 CFR 63.640(o)(2)(ii). Subpart CC. [40 CFR 63.654(a)]

APPENDIX E
7.6.6

MURPHY
OIL USA, INC.

MERAUX REFINERY
P. O. BOX 100
MERAUX LA 70075-0100

March 18, 2008

FEDERAL EXPRESS: 8623 2430 9950

Ms. Gerri Garwood
Office of Environmental Assessment
Environmental Technology Division
Engineering Group I
Louisiana Department of Environmental Quality
Baton Rouge, LA 70821-4314

RE: **Notification of Intent to Conduct Performance Tests – EPN: 12-72, 14-72, 16-72, 17-72, 1-93**
Murphy Oil USA, Inc., Meraux Refinery **(AI Number: 1238)**
2500 E. St. Bernard Hwy, St. Bernard Parish, Meraux, LA
Title V Permit Number: 2500-00001-V2

Dear Ms. Garwood,

Murphy Oil USA, Inc., Meraux Refinery (MOUSA) is submitting the attached Notification of Intent to Test, per LDEQ *Procedures of Air Emissions Testing* (pub. 7/29/97), to conduct Performance Tests for State Only requirements (ref. LAC 33:III.501.C.6.) on the following units:

#2 SRU Incinerator (EQT0019, EPN: 1-93)	Hydrobon Depentanizer Reboiler (EQT0027, EPN: 16-72)
Crude Heater (EQT0022, EPN: 12-72)	Platformer Charge Heater (EQT028, EPN: 17-72a, b, c)
Hydrobon Heater (EQT023, EPN: 14-72)	Platformer Debutanizer Reboiler (EQT029, EPN: 19-72)

Per our e-mail correspondence on February 7, 2008, LDEQ has waived the requirements for Method 5 – Determination of Particulate Emissions from Stationary Sources (as the units are fired on refinery fuel gas or natural gas, only) and for Method 25A or 25B – Determination of Total Gaseous Organic Concentration. MOUSA will conduct Method 9 opacity monitoring on each stack.

MOUSA is conducting these tests in accordance with Specific Requirements 175, 207, 218, 234, 259, and 266, respectively, of the above referenced permit. The tests are scheduled for April 21-May 2, 2008, and will be conducted by Emission Testing Services, Inc. of Baton Rouge, LA. Murphy Oil will notify LDEQ (NO) regarding the test dates.

If there are any questions, please contact me at (504) 271-4141.

Very truly yours,

MURPHY OIL USA. INC.

Matthew S. Dobbins
Senior Environmental Engineer
Murphy Oil USA, Inc., Meraux Refinery

Enclosures