Executive Summary

Dow Silicones Corporation, a subsidiary of the Dow Chemical Company, operates a chemical manufacturing facility in Midland, Michigan. The facility uses a thermal oxidizer with a caustic scrubber and two ionizing wet scrubbers to control emissions. The treatment system includes a continuous emission monitoring system (CEMS) that continuously measures stack gas concentration of nitrogen oxides (NOx), carbon dioxide (CO_2), oxygen (O_2), total hydrocarbons (THC) and air flow rate.

An annual Performance Specification Test was completed on October 20th, 2020 to certify treatment system CEMS. All treatment system CEMS met required performance specifications. An annual compliance test measuring emissions of VOC was completed on October 20th, 2020. The unit met required permit limits.

An annual compliance test measuring emissions of PM_{10} and CO was completed on October 21st, 2020. The unit met required permit limits.

AQD has published a guidance document entitled "Format for Submittal of Source Emission Test Plans and Reports" (February 2008). The following is a summary of the emissions test program and results in the format suggested by the aforementioned document.

The results of the test results are summarized in the tables below.

Performance Results for Emission Reporting Tags

Monitor	Results	Allowable	Pass/Fail
NOx Mass Emissions (Lb/hr)	7 %	20% RA using RM or 10% ARA using EL	Pass
	2 %		Pass
			Pass
TOC Conc. Emissions (ppmv @ 3% O2)	9 %	20% RA using RM or 10 % ARA	Pass
	< 1 %		Pass
			Pass
			Pass

Please note that the relative accuracy performance results for NOx and TOC emission reporting tags reflect the relative accuracy based on a comparison with the reference method and emission reporting tags.

Performance Results for Specific System

Monitor	Results	Allowable	Pass/Fail
NOx Conc. (ppmv)	< 1 %	20% RA using RM or 10% ARA using EL	Pass
			Pass
Vol Flow Meter (scfm)	5 %	20% RA using RM or 10% ARA using EL	Pass
			Pass
SIC Flow Meter (scfm)	2 %	20% RA using RM or 10% ARA using EL	Pass
			Pass
CO2 (%)	2.0 %	No greater than 20.0% of mean value of RM or the absolute difference between RM and CEMS <= 1.0%	Pass
	0.1 %		Pass
			Pass
O2 Conc. (%)	2.8 %	No greater than 20.0% of mean value of RM or the absolute difference between RM and CEMS <= 1.0%	Pass
	0.3 %		Pass
			Pass

Operational Rates during RATA

Run	Run Time	Gas Flow Dry Vent (lb/hr)	Gas Flow Wet Vent (lb/hr)	Gas Flow MeCl (lb/hr)	Gas Flow THROX Out Stack (scfm)	Silicon Loading (lb/hr)	Heat Input (mmBtu/hr)
Run 1	0850/0910	1130	380	321	11951	0.63	28.2
Run 2	0911/0931	1099	383	303	12666	0.87	28.0
Run 3	0932/0952	1138	391	290	11794	0.77	28.1
Run 4	1010/1030	1196	394	316	11683	0.61	28.3
Run 5	1031/1051	1231	392	287	11692	0.66	28.3
Run 6	1052/1112	1237	396	323	11684	0.68	28.3
Run 7	1130/1150	1148	411	418	11833	0.62	28.6
Run 8	1151/1211	1185	407	352	11755	0.64	28.6
Run 9	1212/1232	1147	435	299	11608	0.59	28.1
Run 10	1255/1315	1148	426	275	11510	0.56	28.1
Run 11	1316/1336	1168	453	285	11642	0.74	28.3
Run 12	1337/1357	1148	422	382	11671	0.75	28.6
Average	**N/A**	**1165**	**408**	**321**	**11791**	**0.68**	**28.3**

Emission Results THC

Sample Type	Test Method	Sampling Time (Min/Run)	Allowable Emission Rate	Actual Emission Rate*
VOC Emissions (lb/hr)	EPA Method 25A	60	6.6 lb/hr	< 0.1 lb/hr

* Emissions based on average of three one-hour runs.

Testing Run Data VOC

PARAMETER	RUN 1	RUN 2	RUN 3	AVERAGE
Run Date	10/20/20	10/20/20	10/20/20	N/A
Run Times	0850/0950	1010/1110	1130/1230	N/A
Stack Gas Flow Std Cond (scfm)	11162	11162	11026	11117
Conc. TOC as Carbon (ppmv)	< 2.3	< 2.3	< 2.3	< 2.3
TOC as Carbon Emissions (Lb/Hr)	**< 0.1**	**< 0.1**	**< 0.1**	**< 0.1**

Please note flow used for VOC emissions are the average of the 3 RATA runs during sample time (for example Run 1 = average of Runs 1-3 during RATA)

Emission Results PM/CO

Sample Type	Test Method	Sampling Time (Min/Run)	Allowable Emission Rate	Actual Emission Rate*
PM_{10} as Total Particulate Matter	EPA Method 5/202	60	3.5 lb/hr 13.4 ton/yr	0.6 lb/hr 2.5 ton/yr
Carbon Monoxide	EPA Method 10	60	90 ton/yr	< 1 ton/yr

* Emissions based on average of three one-hour runs.

Testing Run Data PM/CO

PARAMETER	RUN 1	RUN 2	RUN 3	AVERAGE
Run Date	10/21/2020	10/21/2020	10/21/2020	N/A
Run Times	0840/0910 0915/0945	1015/1045 1050/1120	1255/1325 1330/1400	N/A
Stack Gas Flow Std Cond (dscfm)	9327	9568	9464	9453
PM Conc (g/dscf)	0.00049	0.00039	0.00051	0.00046
PM Emissions (lb/hr)	0.6	0.5	0.6	0.6
PM Emissions (ton/yr)	2.5	2.1	2.8	2.5
CO Conc (ppmvd)	< 0.6	< 0.6	< 0.6	< 0.6
CO Emissions (ton/yr)	**< 1**	**< 1**	**< 1**	**< 1**

Operational Rates during PM/CO

Run	Run Time	Gas Flow Dry Vent (lb/hr)	Gas Flow Wet Vent (lb/hr)	Gas Flow MeCl (lb/hr)	Gas Flow THROX Out Stack (scfm)	Silicon Loading (lb/hr)	Heat Input (mmBtu/hr)
Run 1	0840/0945	1109	459	265	11637	0.61	28.1
Run 2	1015/1120	1114	454	268	11537	0.81	28.0
Run 3	1255/1400	1256	441	327	11793	1.02	28.6
Average	**N/A**	**1160**	**451**	**287**	**11656**	**0.81**	**28.2**

1. Summary of Test Program/Introduction

Dow Silicones Corporation, a subsidiary of the Dow Chemical Company, operates a chemical manufacturing facility in Midland, Michigan. The facility uses a thermal oxidizer with a caustic scrubber and two ionizing wet scrubbers to control emissions. The treatment system includes a continuous emission monitoring system (CEMS) that continuously measures stack gas concentration of nitrogen oxides (NOx), carbon dioxide (CO_2), oxygen (O_2), total hydrocarbons (THC) and air flow rate.

An annual compliance test measuring emissions of PM_{10}, CO and VOC are required. Additionally, each of the CEMS are required to meet the analyte specific performance specification annually.

AQD has published a guidance document entitled "Format for Submittal of Source Emission Test Plans and Reports" (February 2008). The following is a summary of the emissions test program and results in the format suggested by the aforementioned document.

a) Identification, location and dates of tests

An annual Performance Specification Test/VOC Compliance test was completed on October 20th, 2020 at the Dow Silicones thermal heat recovery oxidation (THROX) unit in Midland Michigan.

An annual compliance test measuring emissions of PM_{10} and CO was completed on October 21st, 2020 at the Dow Silicones thermal heat recovery oxidation (THROX) unit in Midland Michigan.

b) Purpose of testing

The purpose of this test was to demonstrate compliance with the regulations for the THROX at Dow Silicones Corporation, a wholly owned subsidiary of The Dow Chemical Company in Midland, Michigan. The specific objectives were:

- Determine the relative accuracy of the continuous NOx, O_2, CO_2, THC and flow monitor systems on the THROX stack.
- Determine PM_{10} (filterable and condensable), CO and VOC emissions.

c) Brief Description of source

The THROX and IWS are utilized to treat emissions from various processes at the chemical facility. The typical feed rate to the THROX is approximately 28 MMBtu/hr. The permitted maximum operating rate for the THROX is 95 MMBTU/hr. The proposed production operating rate for this test is >30 MMBTU/hr.

d) Test program contacts

The contact for the source and test report is:

Ms. Amanda Karapas, Air Specialist
The Dow Chemical Company
1400 Building
Midland, Michigan 48674
989-708-5405

Names and affiliation of personnel including their roles of the test program is summarized below.

Role	Role Description	Name	Affiliation
Process Focal Point	• Coordinate plant operation during the test • Ensure the unit is operating at the agreed upon conditions in the test plan • Collect any process data required • Provide all technical support related to process operation	Lindsay White	Dow
Environmental Focal Point	• Ensure all regulatory requirements and citations are reviewed and considered for the testing	Becky Meyerholt	Dow
Test Plan Coordinator	• Leadership of the sampling program • Develop the overall testing plan • Determine the correct sample methods.	Chuck Glenn	Dow
Test Plan Coordinator Back-up	• Leadership of the sampling program • Develop the overall testing plan • Determine the correct sample methods.	Spencer Hurley	Dow
Technical Reviewer	• Completes technical review of the test data	Michael Abel	Dow
Field Team Leader	• Ensures field sampling meets the quality assurance objectives of the plan	James Edmister	AECOM
Sample Project Leader	• Ensures data generated meets the quality assurance objectives of the plan	Daniel Nuñez	AECOM
Analytical Project Manager	• Oversees laboratory analysis • Ensures data generated meets the quality assurance objectives of the plan	Ashley Miller	Enthalpy

2. Summary of Results

a) Operating Data – See Appendix C for Raw Data

Data during RATA/VOC Compliance

Run	Run Time	Gas Flow Dry Vent (lb/hr)	Gas Flow Wet Vent (lb/hr)	Gas Flow MeCl (lb/hr)	Gas Flow THROX Out Stack (scfm)	Silicon Loading (lb/hr)	Heat Input (mmBtu/hr)
Run 1	0850/0910	1130	380	321	11951	0.63	28.2
Run 2	0911/0931	1099	383	303	12666	0.87	28.0
Run 3	0932/0952	1138	391	290	11794	0.77	28.1
Run 4	1010/1030	1196	394	316	11683	0.61	28.3
Run 5	1031/1051	1231	392	287	11692	0.66	28.3
Run 6	1052/1112	1237	396	323	11684	0.68	28.3
Run 7	1130/1150	1148	411	418	11833	0.62	28.6
Run 8	1151/1211	1185	407	352	11755	0.64	28.6
Run 9	1212/1232	1147	435	299	11608	0.59	28.1
Run 10	1255/1315	1148	426	275	11510	0.56	28.1
Run 11	1316/1336	1168	453	285	11642	0.74	28.3
Run 12	1337/1357	1148	422	382	11671	0.75	28.6
Average	**N/A**	**1165**	**408**	**321**	**11791**	**0.68**	**28.3**

Data during CO/PM Compliance

Run	Run Time	Gas Flow Dry Vent (lb/hr)	Gas Flow Wet Vent (lb/hr)	Gas Flow MeCl (lb/hr)	Gas Flow THROX Out Stack (scfm)	Silicon Loading (lb/hr)	Heat Input (mmBtu/hr)
Run 1	0840/0945	1109	459	265	11637	0.61	28.1
Run 2	1015/1120	1114	454	268	11537	0.81	28.0
Run 3	1255/1400	1256	441	327	11793	1.02	28.6
Average	**N/A**	**1160**	**451**	**287**	**11656**	**0.81**	**28.2**

b) Applicable permit number, State Registration Number (SRN) and Emission Unit ID or designation for the source.

- MI-ROP- A4043-2019
  - PTI 91-07E
  - FGTHROX
  - Vent SV2514-006

c) Results expressed in units consistent with the emission limitation applicable to the source and comparison with emission regulations

All monitors met the Performance Specification Test requirements. The results of the Performance Specification Test are summarized in the tables below.

Performance Results for Emission Reporting Tags

Monitor	Results	Allowable	Pass/Fail
NOx Mass Emissions (Lb/hr)	7 %	20% RA using RM or 10% ARA using EL	Pass
	2 %		Pass
			Pass
TOC Conc. Emissions (ppmv @ 3% O2)	9 %	20% RA using RM or 10 % ARA	Use ARA
	< 1 %		Pass
			Pass
			Pass

Performance Results for Specific System

Monitor	Results	Allowable	Pass/Fail
NOx Conc. (ppmv)	< 1 %	20% RA using RM or 10% ARA using EL	Pass
			Pass
Vol Flow Meter (scfm)	5 %	20% RA using RM or 10% ARA using EL	Pass
			Pass
SIC Flow Meter (scfm)	2 %	20% RA using RM or 10% ARA using EL	Pass
			Pass
CO2 (%)	2.0 %	No greater than 20.0% of mean value of RM or the absolute difference between RM and CEMS <= 1.0%	Pass
	0.1 %		Pass
			Pass
O2 Conc. (%)	2.8 %	No greater than 20.0% of mean value of RM or the absolute difference between RM and CEMS <= 1.0%	Pass
	0.3 %		Pass
			Pass

Testing Run Data VOC

PARAMETER	RUN 1	RUN 2	RUN 3	AVERAGE
Run Date	10/21/2020	10/21/2020	10/21/2020	N/A
Run Times	0850/0950	1010/1110	1130/1230	N/A
Stack Gas Wet Flow Std Cond (scfm)	11162	11162	11026	11117
Conc. TOC as Carbon (ppmv)	< 2.3	< 2.3	< 2.3	< 2.3
THC as Propane Emissions (Lb/Hr)	**< 0.1**	**< 0.1**	**< 0.1**	**< 0.1**

Please note flow used for VOC emissions are the average of the 3 RATA runs during sample time (for example Run 1 = average of Runs 1-3 during RATA)

Testing Run Data PM/CO

PARAMETER	RUN 1	RUN 2	RUN 3	AVERAGE
Run Date	10/21/2020	10/21/2020	10/21/2020	N/A
Run Times	0840/0910 0915/0945	1015/1045 1050/1120	1255/1325 1330/1400	N/A
Sampling Time (minutes)	60	60	60	60
Lab Barometric Pressure ("Hg)	29.29	29.29	29.29	29.29
Average Meter ΔH ("H2O)	1.05	1.04	1.07	1.05
Meter Pressure ("Hg)	29.37	29.37	29.37	29.37
Total Gas Volume collected (ft^3)	33.827	34.307	34.320	34.151
Dry Gas Meter Cal Factor	0.984	0.984	0.984	0.984
Average Meter Temperature (deg R)	523	523	524	523
Dry Gas Meter Sample Volume @ STP (ft^3)	32.983	33.429	33.380	33.264
Impinger Weight Gain (g)	98.7	100.1	94.9	97.9
Volume of Water Vapor Collected @ STP (ft^3)	4.654	4.720	4.475	4.616
Moisture Content (mole fraction)	0.124	0.124	0.118	0.122
Moisture Content (%)	12.4%	12.4%	11.8%	12.2%
Dry Gas Fraction	87.6%	87.6%	88.2%	87.8%
Concentration O2, dry basis (%)	10.9	11.0	11.2	11.0
Concentration CO2, dry basis (%)	4.9	4.9	4.8	4.9
Concentration N2, dry basis (%)	84.2	84.1	84.0	84.1
Stack Gas Molecular Weight (wet lb/lb mole)	29.2	29.2	29.2	29.2
Stack Gas Molecular Weight (dry lb/lb mole)	27.8	27.8	27.9	27.9
Measured Static Pressure ("H2O)	-0.07	-0.07	-0.07	-0.07
Absolute Stack Pressure ("Hg)	29.28	29.28	29.28	29.28
AVG (dp)^1/2	0.043	0.045	0.044	0.044
AVG (dp)^1/2	0.207	0.213	0.209	0.210
Average Stack Temperature (deg F)	584	583	584	584
Stack Gas Velocity (ft/s)	12.60	12.91	12.71	12.74
Stack Area (sq ft)	15.90	15.90	15.90	15.90
Stack Gas Wet Flow (acfm)	12027	12318	12128	12158
Stack Gas Wet Flow Std Cond (scfm)	10643	10919	10733	10765
Stack Gas Dry Flow (dscfm)	9327	9568	9464	9453
Nozzle Volume @ Stack Cond (cf/hr)	43.263	43.767	43.498	43.51
% Isokinetic	101.8%	100.6%	101.5%	101.3%
PM Conc (g/dscf)	0.00049	0.00039	0.00051	0.00046
PM Emissions (lb/hr)	**0.6**	**0.5**	**0.6**	**0.6**
PM Emissions (ton/yr)	**2.6**	**2.1**	**2.8**	**2.5**
CO Conc (ppmvd)	< 0.6	< 0.6	< 0.6	< 0.6
CO Emissions (ton/yr)	**< 1**	**< 1**	**< 1**	**< 1**

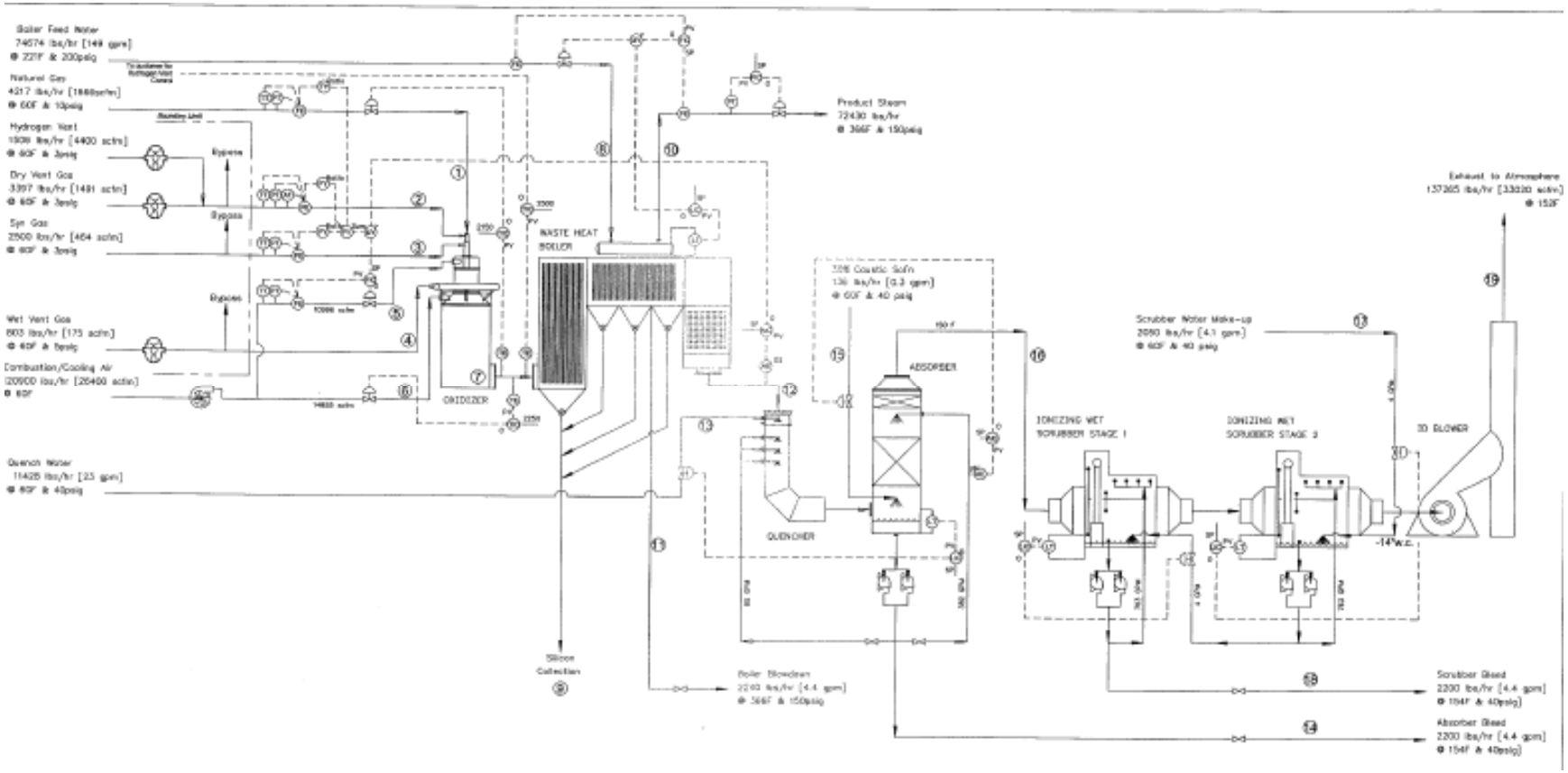
3. Source Description

a) Description of process, including operation of emission control equipment

The unit is designed to thermally treat vent streams from across the Michigan Operations Site. As necessary, natural gas is used as a supplemental fuel. Destruction of organic compounds takes place in the combustion chamber, which operates at a minimum of 1800°F. The permitted maximum operating rate for the THROX is 95 MMBTU/hr. The typical operating rate is approximately 28 MMBTU/hr.

After the combustion gases exit the oxidizer chamber, they enter the boiler section where heat is recovered to generate steam. Next, the gases enter the quench section, then a packed bed absorber. The absorber uses caustic water to neutralize hydrogen chloride in the vapor. Finally, the gases pass through two (2) ionizing wet scrubbers in series. The ionizing wet scrubbers remove particulate by passing the stream through a charged field. The particles become charged and are attracted to the charged plates, then they are removed by a continuous flow of water down the plates and through the packed beds.

Process flow sheet or diagram



b) Type and quantity of raw and finished materials processed during the tests

THROX and its associated air pollution control equipment are utilized to treat emissions from various processes at the chemical facility

c) Maximum and normal rated capacity of the process

During the performance tests, the unit will be operated at greater than 50% of normal operating rates. The operating rate for this unit will be determined based on mmBtu/Hr rate.

Parameter	Maximum	Normal	Actual
Heat Input (mmBtu/hr) During RATA/VOC	~ 95 mmBtu/hr	~ 28 mmBtu/hr	~ 28 mmBtu/hr
Heat Input (mmBtu/hr) During CO/PM	~ 95 mmBtu/hr	~ 28 mmBtu/hr	~ 28 mmBtu/hr

d) A description of process instrumentation monitored during the test

Process Variable	Process Tag Unit
NOx (ppm)	ppm
THC (ppm)	ppm
CO2 (%)	%
O2 (%)	%
Flow (scfm) – monitoring solutions	scfm
Flow (scfm) – SIC	scfm
Total Feed (mmbtu/hr)	mmbtu/hr
Gas Dry Flow Vent	lb/hr
Gas Wet Flow Vent	lb/hr
Gas Flow MeCl	lb/hr
Silicon Loading	lb/hr

4. Sampling and Analytical Procedures

a) Description of sampling train(s), field procedures, recovery and analytical procedures

Relative Accuracy Test Methods

The relative accuracies of the CEMS will be determined by comparison to EPA methods for measurement of each component gas. The performance specifications (PS) require the use of the following methods:

- PS 2 - Method 7E for NO_x;
- PS 3 - Method 3A for O_2;
- PS 3 - Method 3A for CO_2;
- PS 6 - Methods 1, 2, 3 and 4 for flow; and
- PS 8 - Method 25A for THC

Procedures

Relative Accuracy

The above methods were performed using mobile continuous emission monitors provided by The Dow Chemical Company internal testing team. Gas was withdrawn from the stack and transported to monitors located at ground level. A stainless-steel probe was inserted into the stack and used to collect sample gas. A Teflon sample line heated to 250°F transported sample gas from the probe to the analyzers. The analyzers were kept at a constant temperature inside the mobile laboratory.

Sample gas was collected continuously from the stack for a period of 21 minutes. Although the data supports no stratification, sampling was completed at three traverse points with probe movement completed every 7 minutes. At the mobile laboratory, the stack gas is routed to a condenser and then transported to the analyzers for analysis.

The Relative Accuracy Tests was conducted by comparison of the CEMS response to a value measured by a Performance Test Method (PTM) which, in this case, was Method 7E for NOx, EPA Method 25A for THC, EPA Methods 1-4 for Flowrate and 3A for O_2.

EPA Method 1 (Sample Point Determination)
The number and location of traverse points in the stack was determined according to the procedures outlined in EPA Method 1.

EPA Method 2 (Flue Gas Velocity and Volumetric Flow Rate)
The flue gas velocity and volumetric flow rate was determined according to the procedures outline in 40 CFR 60, Appendix A, EPA Method 2. Velocity measurements were made using S-type pitot tubes conforming to the geometric specifications outlined in EPA Method 2. Differential pressures were measured with a low-flow manometer. Flue gas temperature, velocity, and volumetric flow rate data was recorded.

EPA Method 3A (Flue Gas Composition and Molecular Weight)
EPA Method 3A (Instrumental Method) was utilized to determine the diluent during each run on the outlet.

An analyzer measured O_2 content on the basis of the strong paramagnetic properties of O_2 relative to other compounds present in combustion gases. In the presence of a magnetic field, O_2 molecules become temporary magnets. The analyzer determines the sample gas O_2 concentration by detecting the displacement torque of the sample test body in the presence of a magnetic field.

An analyzer measured CO_2 based on its absorption of infrared radiation. The infrared unit uses a single beam, single wavelength technique, with wavelength selection being achieved by a carefully specified narrow band optical filter making it highly selective for CO_2 measurement in the presence of other infrared-absorbing gases.

EPA Method 4 (Moisture)
A calibrated Method 5 console pulled stack gas samples through a Method 5 probe equipped with a glass liner to determine percent moisture of the stack gas. Stack gas was bubbled through two impingers containing water, one empty impinger, and one impinger containing silica gel. All of the impingers were weighed prior to sampling. The impinger train was kept iced in order to knock out all moisture in the stack gas. After the final leak check following each run, the exterior of the impingers were dried off and the impingers were weighed to determine percent moisture.

EPA Method 7E (NO_X Sampling and Analysis)

EPA Method 7E was utilized to determine nitrogen oxide concentrations during each run on the outlet.

An analyzer measured NOx using chemiluminescence technology. Ozone is combined with nitric oxide to form nitrogen dioxide in an activated state. The activated NO_2 luminesces broadband visible to infrared light as it reverts to a lower energy state. A photomultiplier and associated electronics counts the photons that are proportional to the amount of NO present. Since the stream contains both NO and NO_2, the amount of nitrogen oxide (NO_2) must first be converted to nitric oxide, NO, by passing the sample through a converter before the above ozone activation reaction is applied. The above reaction yields the amount of NO and NO_2 combined in the air sample.

Please note Dow Silicones Corporation has elected to complete a post-run bias and drift assessment after each set of three 21-minute runs for all analytes as allowed in EPA Method 7E 8.5 for all gas phase analyzer methods. EPA Method 7E section 8.5 reads as follows:

Post-Run System Bias Check and Drift Assessment. How do I confirm that each sample I collect is valid? After each run, repeat the system bias check or 2-point system calibration error check (for dilution systems) to validate the run. Do not make adjustments to the measurement system (other than to maintain the target sampling rate or dilution ratio) between the end of the run and the completion of the post-run system bias or system calibration error check. Note that for all post-run system bias or 2-point system calibration error checks, you may inject the low-level gas first and the upscale gas last, or vice-versa. You may risk sampling for multiple runs before performing the post-run bias or system calibration error check provided you pass this test at the conclusion of the group of runs. A failed final test in this case will invalidate all runs subsequent to the last passed test.

EPA Method 25A (Total VOC Sampling and Analysis)

EPA Method 25A was utilized to determine total THC as propane concentrations during each run on the outlet.

A gas sample is extracted from the source through a heated line to a flame ionization analyzer (FIA). Results were reported as volume concentration to carbon equivalent as found in EPA M25A.

Process CEMS Instruments

Monitor System	**EQUIPMENT**	**ID #**
Oxygen FGTHROX	Brad Gaus Model 4705	S/N: 10687
Carbon Dioxide FGTHROX	California Analytical Instruments Model ZRE	S/N: N4K1905
Total Hydrocarbon FGTHROX	California Analytical Instruments Model 600 HFID	S/N: C01027
Nitrogen Oxides FGTRHOX	Thermo Scientific Model 42I	S/N: 0733125534
Air Flow FGTHROX	Monitoring Solutions Model CEM Flow	S/N: 012808-000-1017
Air Flow FGTHROX	SIC Model FLSE100-PK17835HSHS	S/N: 13488341

Performance Test
The PM_{10} and CO emissions were determined using the following methods:

- Methods 1-4 for volumetric flow rate;
- Methods 5 and 202 for PM_{10} (filterable and condensable);
- Method 10 for CO; and
- Method 25A for THC as Propane

EPA Method 1 (Sample Point Determination)
EPA Method 2 (Flue Gas Velocity and Volumetric Flow Rate)
EPA Method 3A (Flue Gas Composition and Molecular Weight)
EPA Method 4 (Moisture)
EPA Method 25A (Total VOC Sampling and Analysis)

Same description as mentioned above. However, all readings were completed over a one-hour period for three test runs.

EPA Method 10 (CO Sampling and Analysis)
EPA Method 10 was utilized to determine carbon monoxide concentrations during each run on the outlet.

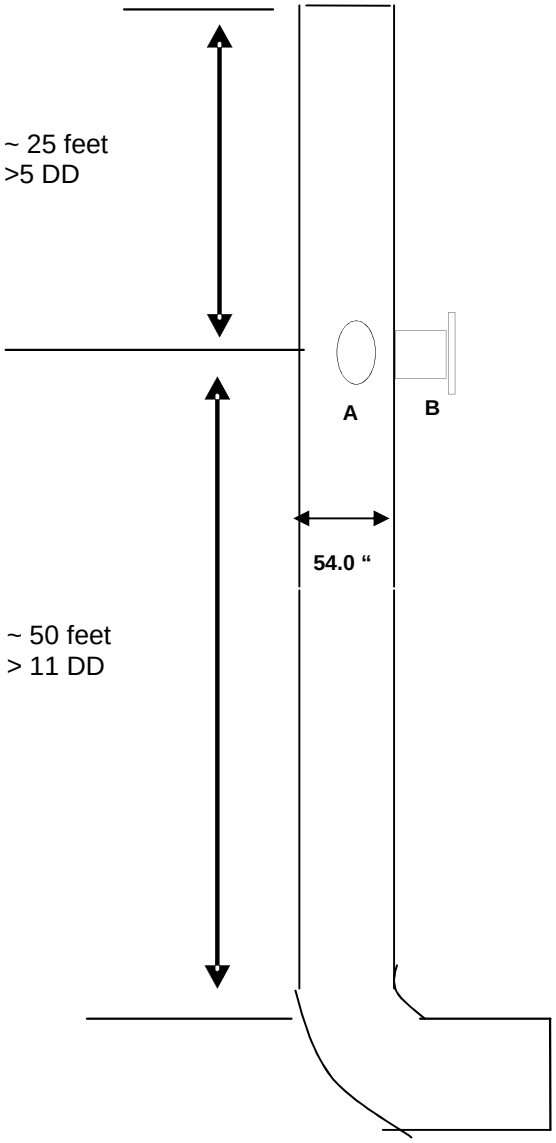
An analyzer measured CO based on its absorption of infrared radiation. The infrared unit uses a single beam, single wavelength technique, with wavelength selection being achieved by a carefully specified narrow band optical filter making it highly selective for CO measurement in the presence of other infrared-absorbing gases.

EPA M202 in Conjunction with EPA M5 (Filterable and Condensable Particulate Matter Sampling and Analysis)
EPA Method 202 was utilized in conjunction with EPA Method 17 to determine both filterable (FPM) and condensable particulate matter (CPM) concentrations during each run on the outlet.

Using EPA Method 5 methodology, filterable particulate matter (FPM) is withdrawn isokinetically from the source and collected on a glass fiber filter maintained at stack temperature. The FPM mass is determined gravimetrically after the removal of uncombined water.

EPA Method 202 methodology is used to collect condensable particulate matter (CPM) in dry impingers after filterable PM has been collected on a filter maintained as specified in Method 5 of appendix A-6 to part 60. The organic and aqueous fractions of the impingers and an out-of-stack CPM filter are then taken to dryness and weighed. The total of the impinger fractions and the CPM filter represents the CPM. Analysis for FPM and CPM will be completed by Enthalpy Analytical.

b) Dimensioned sketch showing all sampling ports in relation to breeching and to upstream and downstream disturbances or obstruction of gas flow



c) Sketch of cross-sectional view of stack indicating traverse point locations and exact stack dimensions

Isokinetic 12 Point Circular Traverse Layout for Outlet

Division: MIOP
Facility/Block: DSC 2514 THROX

Stack ID: 54 inches
Port Ext: 6 inches

Duct Downstream Length: 50 Feet
Duct Upstream Length: 25 Feet

Duct Downstream Diameters: 11 Diameters
Duct Upstream Diameters: 5.5 Diameters

Traverse Point	Stack ID	Port Ext	Traverse Pt Distance	Traverse Pt Distance	Final Probe Mark
1	54	6	2 6/16	2 6/16	8 6/16
2	54	6	7 14/16	7 14/16	13 14/16
3	54	6	16	16	22
4	54	6	38	38	44
5	54	6	46 2/16	46 2/16	52 2/16
6	54	6	51 10/16	51 10/16	57 10/16

5. Test Results and Discussion

a) Detailed tabulation of results including process operating conditions and flue gas conditions

Detailed results can be found in section 2(c).

b) Discussion of significance of results relative to operating parameter and emission regulations

All CEM systems were within in allowed ranges. All air permit limits were achieved during sampling.

c) Discussion of variations from normal sampling procedures or operating condition which could have affected the results.

N/A

d) Discussion of any process or control equipment upset condition which occurred during test

N/A

e) Description of any major maintenance performed on the air pollution devices during the three month period prior to testing

The unit was shut down for maintenance during the month of September which included safety system testing and regulatory inspections. No major equipment was modified during the three months period prior to testing.

f) In the event of a re-test, a description of any changes made to the process or air pollution devices since the last test.

N/A

g) Results of any quality assurance audit sample analysis required by the reference method

N/A

h) Calibration sheets for the dry gas meter, orifice meter, pitot tube and any other equipment or analytical procedure that require calibration

All calibration verification information is located in Appendix B.

i) Sample calculations of all formulas used to calculate the results