DIOXIN AND FURAN, HYDROGEN CHLORIDE AND PARTICUATE MATTER COMPLIANCE TEST REPORT FRITZ ENTERPRISES, INC. RIVER ROUGE, MICHIGAN

Test Date: August 28, 2013

Report Date: October 25, 2013

Prepared for:

SNC Lavalin America Inc.
6585 Penn Ave.
Pittsburgh, PA 15206

Prepared by:

Air/Compliance Consultants, Inc.
1050 William Pitt Way
Pittsburgh, Pennsylvania 15238
412-826-3636

Project No. 13-184

Air/Compliance Consultants, Inc.

CERTIFICATION STATEMENT

This statement certifies that "to the best of their knowledge," based on state and federal regulations, operating permits, plan approvals applicable to each source tested, and reasonable inquiry, the statements and information presented in the attached document are true, accurate, and complete.

DIOXIN AND FURAN, HYDROGEN CHLORIDE AND PARTICUATE MATTER COMPLIANCE TEST REPORT
FRITZ ENTERPRISES, INC.
RIVER ROUGE, MICHIGAN

Test Date: August 28, 2013

Project No. 13-184

William P. Cowell/kj — 10/25/13

William P. Cowell, QSTI
Project Scientist and On-site Supervisor
Air/Compliance Consultants, Inc.

10/28/13

William J. Ondriezek, Jr., QSTI
Source Testing and Quality Manager
Air/Compliance Consultants, Inc.

10/24/13

David Splan
Plant Manager and Representative
Fritz Enterprises, Inc.

TABLE of CONTENTS

TABLES

FIGURE

TABLE OF CONTENTS (cont'd)

APPENDICES

DIOXIN AND FURAN, HYDROGEN CHLORIDE AND PARTICUATE MATTER COMPLIANCE TEST REPORT FRITZ ENTERPRISES, INC. RIVER ROUGE, MICHIGAN

1 TEST RESULTS SUMMARY

Installation Permit Number: 15-01A Source Name: Aluminum Furnace		Source ID: Fabric Filter Exhaust Stack	
Pollutant	**Average Result**	**Limit**	**Compliant / Non-compliant**
Dioxins and Furans	1.7 X 10^{-4} grains of D/F TEQ per ton of feed/charge	2.1 X 10^{-4} grains of D/F TEQ per ton of feed/charge	Compliant
Hydrogen Chloride	4.22 lb/hr	2.0 lb/hr	Non-compliant
Particulate Matter	0.0067 lb/1000 lb exhaust gas	0.0095 lb/1000 lb exhaust gas	Compliant

2 INTRODUCTION

Air/Compliance Consultants, Inc. (ACCI) was contracted to perform an emission evaluation of the aluminum furnace fabric filter exhaust stack outlet at Fritz Products, Inc. (Fritz) located in River Rouge, Michigan. Performance testing was conducted to comply with United States Environmental Protection Agency (USEPA), Title 40, Code of Federal Regulations (CFR), Part 63 and their Michigan Department of Environmental Quality Operating Permit No. 15-01A.

The aluminum furnace fabric filter outlet stack was tested for dioxin/furan (D/F) concentrations, particulate matter (PM), and hydrogen chloride (HCl) in accordance with the approved test protocol. The approved test protocol and relevant agency and client correspondence can be found in Appendix A.

3 CONTACT INFORMATION

Company	Consultant	Testing Firm
Mr. David Splan Fritz Enterprises, Inc. 1650 West Jefferson Trenton, Michigan 48183 (734) 362-5240 – Telephone dsplan@fritzinc.com	Mr. Joseph Duckett SNC Lavalin America, Inc. 6585 Penn Avenue Pittsburgh, Pennsylvania 15206 412-365-3329 – Telephone joseph.duckett@snclavalin.com	Mr. William Cowell, QSTI Air/Compliance Consultants, Inc. 1050 William Pitt Way Pittsburgh, Pennsylvania 15238 (412) 826-3636 – Telephone wcowell@air-comp.com

4 TEST DATES AND PERSONNEL INFORMATION

Testing was conducted August 28, 2013. The following table details the personnel present for this test program:

Organization	Personnel	Responsibility
EPA	Ms. Katharina Bellairs	On-Site Agency Representative
MDEQ	Mr. Thomas Maza	On-Site Agency Representative
	Ms. Katherine Koster	On-Site Agency Representative
Fritz Enterprises, Inc.	Mr. David Splan	Test Liaison
SNC Lavalin America, Inc.	Mr. Joseph Duckett	Test Liaison
ACCI	Mr. William Cowell, QSTI, Sr. Scientist I	Team Leader, Operator; RM 5/23
	Mr. Todd Haas, QSTI, Project Scientist I	Operator; RM 320
	Mr. Richard Williams, QSTI, Scientist II	Equipment Handler; RM 5/23

5 ANALYTICAL LABORATORY CONTACT INFORMATION

USEPA Method 5/23

Maxxam Analytics Inc.
Mr. Clayton Johnson
5555 North Service Road
Burlington, Ontario, Canada L7L5H7
(905) 332-8788 –Telephone
clayton.johnson@maxxamanalytics.com
PA Lab Registration #68-01745

6 PROCESS DESCRIPTION, PROCESS DATA, AND MISCELLANEOUS SUBPART RRR REQUIREMNTS

6.1 Process Description

Fritz Enterprises (Fritz) operates a Group I secondary aluminum production unit (SAPU) in River Rouge, Michigan. Aluminum scrap is introduced to a melting furnace fired with natural gas, where the scrap is melted. Gaseous chlorine is added as a flux into the bottom of the bath and solid sodium chloride and potassium chloride are spread over the top of the bath, also as a flux. The impurities form a layer on the surface of the melt and are skimmed off several times during the melting cycle. The molten aluminum is then poured into molds. The exhaust from the melting

furnace is captured by two ducts. The ducts combine into a common duct which directs the exhaust to a cyclone, a negative pressure fabric filter system and then discharges to the atmosphere through a stack. The MDEQ has determined that this plant is subject to the requirements of 40 Code of Federal Regulations (CFR) Part 63, Subpart RRR – "*National Emission Standards for Hazardous Air Pollutants for Secondary Aluminum Production*" (Subpart RRR). The facility must comply with dioxin and furan (D/F) standards of Subpart RRR. The facility must also meet the PM and HCl limits expressed in their operating permit.

6.2 Process Data

Pertinent process operating and production parameters recorded during the test:

- Feed/Charge Rate (by calculation from production rate)
- Aluminum Production Rate
- Inlet Fabric Filter Temperature
- Reactive Chlorine Flux Rate
- Lime Feed Rate

6.3 Miscellaneous Subpart RRR Requirements

6.3.1 Inlet Gas Temperature to the Fabric Filter

As required by Subpart RRR, these procedures were used to establish the inlet temperature range into the fabric filter:

- Continuously measure and record temperature at the inlet to the fabric filter using the required temperature monitoring device every 15 minutes during the performance tests;
- Determine and record the 15-minute block average temperatures for the 3 test runs; and
- Determine and record the 3-hour block average of the recorded temperature measurements for the 3-test runs.

6.3.2 Flux Injection Rate

As required by Subpart RRR, these procedures were used to establish the total reactive chlorine flux injection rate:

- Continuously measure and record the weight of the gaseous or liquid reactive flux injected for each 15-minute period, determine and record the 15-minute block average weights and calculate and record the total weight of the gaseous or liquid reactive flux for the 3 test runs;
- Record the identity, composition, and total weight of each addition of solid reactive flux for the 3 test runs; and

- Determine the total reactive chlorine flux injection rate using the procedures in Subpart RRR, Section 63.1512(o).

6.3.3 Feed/Charge Weight Measurements

As required by Subpart RRR, the aluminum production weights were measured and recorded for each of the 3 test runs and the total weight of scrap charge was calculated and recorded.

Process Data can be found in Appendix B.

7 TEST PROCEDURES

Testing was conducted in accordance with the procedures outlined in the USEPA, Title 40, CFR, Part 60, Appendix A, Testing Methods. All field data sheets can be found in Appendix C.

7.1 Velocity and Volumetric Flow Rate – USEPA Methods 1 and 2

USEPA Method 1, *Sample and Velocity Traverses for Stationary Sources,* was followed to select sample points across the duct. USEPA Method 2, *Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube),* was used in conjunction with USEPA Methods 3 and 4 to determine the gas velocity and volumetric flow rate at the stack.

Each set of velocity determinations includes the measurement of gas velocity pressure and gas temperature at each of the USEPA Method 1 traverse points. The velocity pressures were measured with a Type S Pitot tube. Pitot tube calibration followed the geometric calibration protocol specified in Section 4.1 of 40 CFR Appendix A, Method 2. Gas temperature measurements were made using a Type K thermocouple and digital pyrometer. The thermocouple was calibrated in accordance with Section 4.3 of 40 CFR Appendix A, Method 2. A cyclonic flow check was performed prior to testing to verify that cyclonic flow conditions do not exist at the exhaust stack. A copy of the cyclonic flow check is included in Appendix C. Figure 1 details the stack dimensions and sampling points used in the field.

7.2 Gas Composition and Molecular Weight – USEPA Method 3

The oxygen (O_2) concentration, carbon dioxide (CO_2) concentration, and molecular weight of the stack gas was obtained and analyzed in accordance with USEPA Method 3, *Gas Analysis for the Determination of Dry Molecular Weight.* A Fyrite analyzer or equivalent was used to measure the oxygen and carbon dioxide concentrations.

7.3 Moisture Content – USEPA Method 4

The flue gas moisture content at the stack was determined in accordance with USEPA Method 4, *Determination of Moisture Content in Stack Gases.* The gas moisture was determined by quantitatively condensing the water in chilled impingers. The amount of moisture condensed was determined by the volume of condensate collected and weight differential in the silica gel. A dry gas meter was used to measure the volume of gas sampled. The amount of water condensed and the volume of gas sampled was used to calculate the gas moisture content in accordance with USEPA Method 4. The moisture sampling train was incorporated with the USEPA Method 5 and 23 trains.

7.4 FPM and Dioxin / Furan Concentration – USEPA Methods 5 and 23

The filterable particulate matter (FPM) emissions, determined in accordance with USEPA Method 5, *Determination of Particulate Emissions from Stationary Sources*, was combined with USEPA Method 23, *Determination of Polychlorinated Dibenzo-p-dioxins and Polychlorinated Dibenzofurans from Municipal Waste Combustors.*

7.4.1 Sampling Train Setup and Operation

The sampling apparatus contains a glass-lined temperature-controlled probe equipped with a Type S Pitot tube and a sharp-edged stainless-steel buttonhook nozzle. The exit of the probe was connected to a high-efficiency glass fiber filter supported in a glass-filter holder inside an oven heated to 248°F ± 25°F. The exit of the filter holder was connected to a water-jacketed condenser followed by a water jacketed packed column of adsorbent material (XAD-2) and a knock-out impinger followed by a series of four full-sized impingers. The condenser and XAD-2 trap was continually cooled with a water circulating pump inserted in the ice bath and tubing leading to the two glass pieces. Temperature entering the XAD-2 trap was monitored with an in-gas thermocouple and maintained at a temperature below 68°F. The knockout impinger was

empty and the second and third impingers each contained 100 ml of deionized water. The fourth impinger was empty and the fifth impinger contained a pre-weighed amount of silica gel.

The impinger train was connected to a commercially available metering system. Prior to sampling, the dry gas meter was calibrated utilizing the procedures detailed in USEPA Method 5.

The sample train was assembled, allowed to reach operating temperature, and leak checked by plugging the nozzle with a rubber septum and pulling a vacuum of approximately 15" of Hg. Sampling did not proceed until an acceptable leak check of less than 0.02 cfm is achieved.

7.4.2 Testing Procedures

Once an acceptable leak check was achieved, the sampling train was placed at the first traverse point and sampling began immediately. The sampling train was operated at an isokinetic rate with an isokinetic variation greater than 90% and less than 110%. Three runs were performed; each run was at least 180 minutes in duration and had a minimum sample volume of 108 dry standard cubic feet (DSCF). At the conclusion of each test run, the sample train was cooled sufficiently, utilizing ambient air or ice, to allow the nozzle to be plugged with the rubber septum. The sampling train was leak-checked at a vacuum equal to or greater than the maximum value reached during sampling.

7.4.3 Sample Recovery

Container 1 – The filter was removed from the filter holder and placed in a labeled glass petri dish and sealed with Teflon® tape. Since PM was to be derived from this filter, the lab supplied pre-weighed filters for inclusion in the Method 23 sampling train. Following USEPA Method 5 procedures, the filter was desiccated for a minimum of 24 hours and weighed to a constant weight. The term constant weight means a difference of no more than 0.5 milligrams (mg) or 1% of total weight less tare weight (whichever is greater) between two consecutive weighings, with no less than 6 hours of desiccation time between weighings.

Adsorbent Module – The module was removed for the sample train, sealed with Teflon® tape, and labeled. The module was stored on ice for transport to the laboratory.

Container 2A – Material in the nozzle, probe, and front half of the filter holder and connecting

glassware was quantitatively rinsed with acetone. Acetone rinses were performed a minimum of 3 times, and consisted of at least 200 milliliters (ml) or 30 ml per foot. The volume of each rinse was added to Container No. 2A, an amber glass sample bottle. The contents of Container 2A were gravimetrically analyzed for particulate matter upon evaporation. The residue was then reconstituted with acetone and combined in Container 2B for submittal to the laboratory for Method 23 analysis.

Container 2B – Material in the back half of the filter holder was rinsed 3 times with acetone, and material in the nozzle, probe, both halves of the filter holder and connecting glassware were then quantitatively rinsed with Methylene chloride ($MeCl_2$) three times into an amber glass sample bottle.

Container 3 – Material in the nozzle, probe, both halves of the filter holder and connecting glassware was quantitatively rinsed with Toluene three times. The volumes of these rinses were recorded and stored in an amber glass sample bottle designated as Container 3. As permitted, the toluene rinse was combined at the laboratory with the methylene chloride/acetone rinse.

Impinger Contents – The impinger contents were measured to within 1 ml utilizing a graduated cylinder and discarded. The volume was recorded to calculate moisture content of the effluent gas.

Silica Gel – The silica gel was transferred to the original container and weighed to the nearest ± 0.5 g.

All samples were maintained at 39°F or lower and protected from light. Each fraction was recorded on the sample chain of custody and transported to the laboratory for analysis, along with one complete blank sample train. The Polychlorinated dibenzodioxins (PCDD) and Polychlorinated dibenzofurans (PCDF) were extracted from the sample, separated by high-resolution gas chromatography, and measured by high-resolution mass spectroscopy. Analytical results, along with all method quality assurance/quality control data, are included in Appendix D.

7.5 Hydrogen Chloride – USEPA Method 320

USEPA Method 320, *Vapor Phase Organic & Inorganic Emissions by Extractive FTIR,* was used to measure HCl emissions from the fabric filter exhaust stack. The FTIR analyzer

determines individual concentrations by measuring the infrared spectrum produced by atomic motion that is unique to each compound. The FTIR uses an infrared spectral-reference library that has been validated against the on-line Environmental Protection Agency (EPA) library or against National Institute for Standards and Technology (NIST) traceable gas mixtures. To determine HCl emissions, a "recipe" created by MKS based on extensive experience and process knowledge was created and used.

7.5.1 Sampling System Setup

Sample gas was drawn by a heated sample pump to the back of the FTIR system. Sampling components prior to the FTIR (i.e., probe, filter, sample line) were heated to approximately 390°F to prevent condensation. Prior to sampling, the entire system was leak checked by capping off the end of the sample probe and drawing a vacuum on the entire system. The analyzer output was recorded on an MKS data acquisition system (DAS), using MKS's own MG2000 software package.

7.5.2 Pre-test Determinations

A certified standard calibration gas with a certified concentration of Ethylene was used as the calibration transfer standard and combined with a sulfur hexafluoride (SF_6) tracer used for quality assurance spikes. A certified standard calibration gas with a certified concentration of HCl was also used as the calibration transfer standard and combined with a sulfur hexafluoride (SF_6) tracer used for quality assurance spikes. This data can be found in Appendix E.

7.5.3 Sampling

The gas sample was drawn from a central point in the stack and analyzed using an MKS Model 2030 Fourier transform infrared spectroscopy (FTIR) analyzer as a hot and wet sample. Infrared spectrum readings were recorded for a minimum of 64 times each minute over the course of each of three 3-hour test runs.

7.6 Calibrations

The following field equipment calibrations are contained in Appendix E:

- Nozzle
- Pitot Tube
- Thermocouple
- Dry Gas Meter and Orifice

- Calibration Gas Certificates
- Qualified Source Testing Individual (QSTI) Certifications

7.7 Calculations

Emission calculations were completed by using a computer spreadsheet format. The results of each pertinent parameter are detailed on the spreadsheet for each sampling run. A sample calculation for one complete test run is provided in Appendix F.

8 TESTING SUMMARY

A summary of the test results can be found in Table 1. Table 2 contains nomenclature.

9 CONCLUSION

A compliance test program was completed on the Group 1 Melting Furnace fabric filter exhaust stack. Test results represent data that is considered to be representative of the emission rates at the prevailing operating conditions.

To the best of ACCI's knowledge, this source test report has been checked for completeness and the results contained herein are accurate, error-free, and representative of the actual emissions measured during testing.

TABLES

Table 1. Dioxin/Furan, Hydrogen Chloride and Particulate Matter Test Results, Group 1 Melting Furnace Fabric Filter Baghouse Exhaust Stack
Fritz Enterprises, Inc., River Rouge Facility, River Rouge, Michigan

Test Data		Run 1	Run 2	Run 3	Average	
Date		8/28/2013	8/28/2013	8/28/2013		
Start Time		7:50 AM	11:30 AM	3:05 PM		
End Time		10:58 AM	2:38 PM	6:10 PM		
Flow Rate	(ACFM)	24,724	24,885	24,840	24,816	
Flow Rate	(SCFM)	22,097	22,271	21,993	22,121	
Flow Rate	(DSCFM)	21,544	21,789	21,425	21,586	
Dry Standard Exhaust Gas Flow Rate	(1000 lb exhaust gas/hr)	96.9	97.9	96.4	97.1	
Sample Volume	(DSCF)	145.039	143.505	139.308	142.618	
Carbon Dioxide	(dry volume %)	0.27	0.17	0.40	0.28	
Oxygen	(dry volume %)	20.67	20.73	20.67	20.69	
Water Vapor	(volume %)	2.50	2.16	2.58	2.42	
Stack Temperature	(°F)	115.1	116.0	120.6	117.3	
Percent of Isokinetic Sampling	(%)	103.1	100.9	99.6	101.2	
Operation						
Scrap Charge Rate	(ton/hr)	5.45	5.45	5.56	5.49	
Chlorine Rate	(lb/hr)	101.67	97.67	101.00	100.11	
Cover Flux Rate	(lb/hr)	146.67	77.00	166.67	130.11	
Total Charge Rate	(ton/hr)	5.57	5.54	5.69	5.60	
Baghouse Pressure Drop (CAN#1)	(in w.c.)	2.8	NA	3.0	2.9	
Baghouse Pressure Drop (CAN#2)	(in w.c.)	1.6	1.2	NA	1.4	
Baghouse Pressure Drop (CAN#3)	(in w.c.)	NA	3.9	3.8	3.8	
Inlet Baghouse Temperature	(°F)	133	132	142	136	
Results						**Limit**
Dioxins and Furans						
TEF Mass Collected	(ng)	5.42	9.26	5.49	6.72	
TEF Emission Concentration	(ng/m^3)	1.32	2.28	1.39	1.66	
TEF Emission Rate	(ng/hr)	48,329	84,316	50,625	61,090	
TEF Emission Rate	(gr/ton of total charge)	1.3E-04	2.3E-04	1.4E-04	1.7E-04	2.1.E-04
Particulate Matter						
Total Front-Half PM	(mg)	11.5	72.9	13.6	32.7	
Particulate Concentration	(gr/DSCF)	0.0012	0.0078	0.0015	0.0035	
Particulate Emission Rate	(lb/hr)	0.23	1.46	0.28	0.66	
Particulate Emission Rate	(lb/1000 lb exhaust)	0.0023	0.0150	0.0029	0.0067	0.0095
Hydrochloric Acid (HCl) Method 320						
Emission Concentration	(ppm_w)	31.89	33.17	35.71	33.59	
Emission Concentration	(ppm_d)	32.71	33.90	36.66	34.42	
Emission Rate	(lb/hr)	4.00	4.19	4.46	4.22	2.00
Emission Rate	(lb/ton of total charge)	0.72	0.76	0.78	0.75	

Table 2.

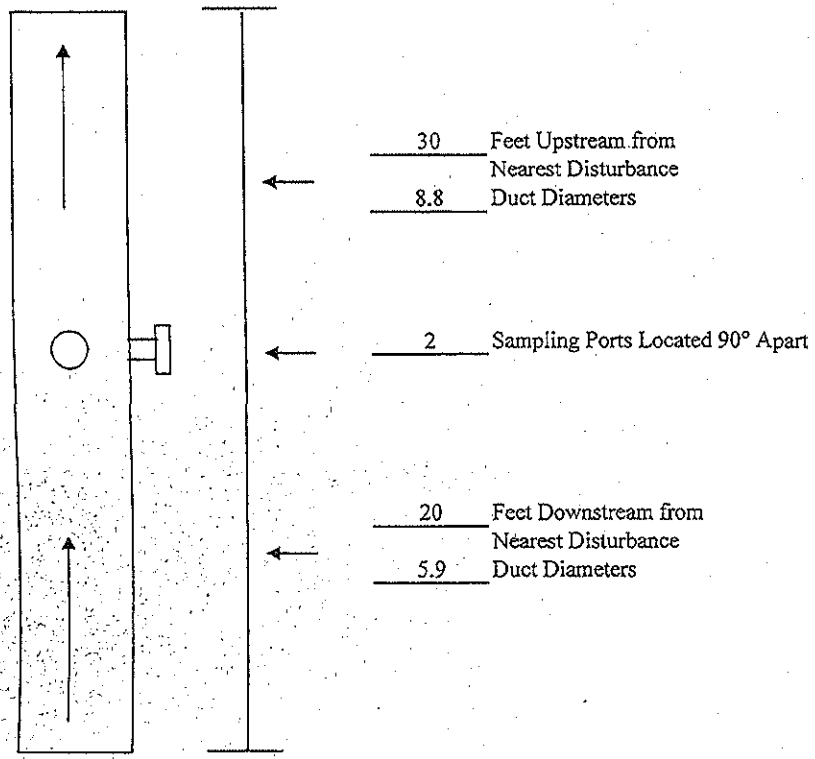
TABLE NOMENCLATURE

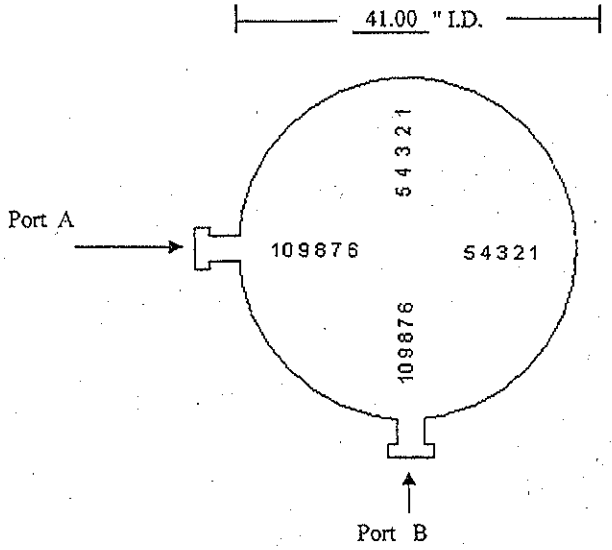
SYMBOL		DESCRIPTION	SYMBOL		DESCRIPTION	SYMBOL		DESCRIPTION
%	-	Percent	gpm	-	Gallons per minute	O_2	-	Oxygen
% Volume	-	Percent by volume	gr/DSCF	-	Grains per dry standard cubic feet	OSHA	-	Occupational Safety & Health Administration
°F	-	Degrees Fahrenheit	H_2O	-	Water	PADEP	-	PA Department of Environmental Protection
<	-	Less than	H_2SO_4	-	Sulfuric acid	Pb	-	Lead
>	-	Greater than	HAP	-	Hazardous air pollutant	PEL	-	Permissible exposure limit
AB	-	Acetone Blank	Hg	-	Mercury	PM	-	Particulate matter
ACFM	-	Actual cubic feet per minute	HI	-	Heat input	PM_{10}	-	Particulate matter less than 10 microns
BACT	-	Best Available Control Technology	Hp	-	Horsepower	ppb	-	Parts per billion
BHP	-	Brake horsepower	hr	-	Hour	PPE	-	Personal protective equipment
BTU	-	British thermal units	IC	-	Ion chromatography	ppm	-	Parts per million
BTU/scf	-	British thermal units per standard cubic feet	in H_2O	-	Inches of Water	ppm_{dv}	-	Parts per million, dry volume
C_3H_8	-	Propane	in Hg	-	Inches of Mercury	ppm_{wv}	-	Parts per million, wet volume
CE	-	Capture efficiency	Kg	-	Kilograms	psia	-	Pounds per square inch absolute
CEMS	-	Continuous emission monitor system	lb	-	Pound	psig	-	Pounds per square inch gauge
cf	-	Cubic foot	lb/hr	-	Pound per hour	PTI	-	Permit to Install
CFR	-	Code of Federal Regulations	lb/lb-mole	-	Pound per pound mole	PTE	-	Permanent total enclosure
CH_4	-	Methane	MACT	-	Maximum Achievable Control Technology	RA	-	Relative Accuracy
C_2H_6	-	Ethane	m^3	-	Cubic meters	RATA	-	Relative Accuracy Test Audit
Cl_2	-	Chlorine	MDL	-	Minimum detection limit	RM	-	Reference Method
CO	-	Carbon monoxide	mg	-	Milligrams	RMD	-	Relative mean difference
CO_2	-	Carbon dioxide	mg/g	-	Milligrams per gram	rpm	-	Revolutions per minute
COG	-	Coke oven gas	min	-	Minute	S	-	Sulfur
DACF	-	Dry actual cubic feet	mL	-	Milliliter	SCF	-	Standard cubic feet
DACM	-	Dry actual cubic meters	mm HG	-	Millimeters of mercury	SCFM	-	Standard cubic feet per minute
DE	-	Destruction efficiency	MMBtu	-	Million British thermal units	SCM	-	Standard cubic meters
DSCF	-	Dry standard cubic feet	MNOC	-	Maximum normal operating capacity	SO_2	-	Sulfur dioxide
DSCFM	-	Dry standard cubic feet per minute	MSDS	-	Material Safety Data Sheet	STD	-	Standard
FID	-	Flame Ionization Detector	MW	-	Megawatts	TEQ	-	Toxicity Equivalence Quotient
ft	-	Foot	N_2	-	Nitrogen	THC	-	Total hydrocarbons
ft/sec	-	Feet per second	ND	-	Non-detectable	tph	-	Tons per hour
Ft^2	-	Square feet	NDO	-	Natural draft opening	tpy	-	Tons per year
Ft^3	-	Cubic feet	NESHAP	-	National Emission Standard for Hazardous Air Pollutants	µg	-	Micrograms
ft^3/lb-mole	-	Cubic feet per pound mole	ng	-	Nanograms	USEPA	-	United States Environmental Protection Agency
g	-	Grams	NMEVOC	-	Non-methane, non-ethane volatile organic compounds	VE	-	Visible emissions
g/bhp-hr	-	Grams of brake horsepower per hour	NMVOC	-	Non-methane volatile organic compound	VOC	-	Volatile organic compound
g/mL	-	Gram per milliliter	NO_2	-	Nitrous Oxide	vol.	-	Volume
GC	-	Gas Chromatography	NO_x	-	Oxides of Nitrogen	w/o	-	With out

FIGURE

AIR/COMPLIANCE CONSULTANTS, INC.
USEPA METHOD 1 DATA SHEET

Note: This figure was revised on June 21, 2013 after performing diagnostic work and realizing stack disturbances changed after plant modifications





Point Number Each Port	Method 1 Value (inches)
10	1.1
9	3.4
8	6.0
7	9.3
6	14.0
5	27.0
4	31.7
3	35.0
2	37.6
1	39.9

Air/Compliance Consultants, Inc.

Schematic of Sampling Point Locations and Duct Dimensions
Fritz Products, Inc., River Rouge, Michigan

Figure 1