DEQ

MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
AIR QUALITY DIVISION

RENEWABLE OPERATING PERMIT REPORT CERTIFICATION

Authorized by 1994 P.A. 451, as amended. Failure to provide this information may result in civil and/or criminal penalties.

Reports submitted pursuant to R 336.1213 (Rule 213), subrules (3)(c) and/or (4)(c), of Michigan's Renewable Operating Permit (ROP) program must be certified by a responsible official. Additional information regarding the reports and documentation listed below must be kept on file for at least 5 years, as specified in Rule 213(3)(b)(ii), and be made available to the Department of Environmental Quality, Air Quality Division upon request.

Source Name: St. Marys Cement, Inc. County: Charlevoix

Source Address: 16000 Bells Bay Road City: Charlevoix

AQD Source ID (SRN): B1559 ROP No.: B1559-2014 ROP Section No.:

Please check the appropriate box(es):

☐ **Annual Compliance Certification (Pursuant to Rule 213(4)(c))**

Reporting period (provide inclusive dates): From _____ To _____

☐ 1. During the entire reporting period, this source was in compliance with **ALL** terms and conditions contained in the ROP, each term and condition of which is identified and included by this reference. The method(s) used to determine compliance is/are the method(s) specified in the ROP.

☐ 2. During the entire reporting period this source was in compliance with all terms and conditions contained in the ROP, each term and condition of which is identified and included by this reference, **EXCEPT** for the deviations identified on the enclosed deviation report(s). The method used to determine compliance for each term and condition is the method specified in the ROP, unless otherwise indicated and described on the enclosed deviation report(s).

☐ **Semi-Annual (or More Frequent) Report Certification (Pursuant to Rule 213(3)(c))**

Reporting period (provide inclusive dates): From _____ To _____

☐ 1. During the entire reporting period, **ALL** monitoring and associated recordkeeping requirements in the ROP were met and no deviations from these requirements or any other terms or conditions occurred.

☐ 2. During the entire reporting period, all monitoring and associated recordkeeping requirements in the ROP were met and no deviations from these requirements or any other terms or conditions occurred, **EXCEPT** for the deviations identified on the enclosed deviation report(s).

☒ **Other Report Certification**

Reporting period (provide inclusive dates): From May 27, 2015 To _____

Additional monitoring reports or other applicable documents required by the ROP are attached as described:

Particulate Matter Emissions Report

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in this report and the* supporting enclosures are true, accurate and complete

Randy Pryor	Plant Manager	231-547-9971
Name of Responsible Official (print or type)	Title	Phone Number
[signature]		7-20-15
Signature of Responsible Official		Date

* Photocopy this form as needed.

EQP 5736 (Rev 11-04)

1.0 INTRODUCTION

1.1 Identification, Location and Dates of Tests

Environmental Stack Testing (EST) was retained by St. Marys Cement (SMC) to conduct an air emissions compliance test designed to quantify the concentration of particulate matter (PM) associated with the in-line kiln and raw mill stacks (SVMAIN and SVBYPASS stacks) at their facility located in Charlevoix, Michigan.

1.2 Purpose of Testing

The compliance test was conducted by SMC to satisfy the PM testing requirements described in the Michigan Department of Environmental Quality (MDEQ) Renewable Operating Permit (ROP) MI-ROP-B1559-2014.

1.3 Project Contact Information

Location	Contact
Test Facility	Mr. Cortney Schmidt 231-237-1342 Cortney.Schmidt@vcimentos.com
Test Company Representative	Ms. Brooke Gillespie 616-361-6785 Environmentalstacktesting@gmail.com
State Representative	Mr. David Patterson 517-284-6782 Pattersond2@michigan.gov
State Representative	Mr. Kurt Childs 231-876-4411 Childsk@michigan.gov

2.0 SUMMARY OF RESULTS

The following table presents a summary of the PM test results.

Summary of Particulate Matter Emission Rates, Raw Mill Online

	Emission Rate lb/1000 lbs exhaust gas (wet) Corrected to 50% excess air			Allowable Limit lb/1000 lbs exhaust gas (wet) Corrected to 50% excess air
Source	SVMAIN	SVBYPASS	Total Combined	
Run 1	0.007	0.107	0.11	0.25
Run 2	0.003	0.039	0.04	
Run 3	0.001	0.046	0.05	
Average	0.004	0.064	0.068	

Please See Table 1 for detailed results of the sampling and analytical results.

3.0 DESCRIPTION OF SOURCES

The facility is based upon a dry process operation and acquires shale and limestone materials from a nearby quarry, as well as other locations, and purchases mill scale, slag, fly ash, bauxite, sand, iron ore, and gypsum.

SMC prepares the raw materials through pyro-processing that takes place in a kiln and raw mill (in-line kiln/raw mill). The raw materials are dried in the raw mill by recirculated gas from the kiln system. The materials are fed through a preheater/precalciner countercurrent to the hot gas stream from the flash furnace. After passing through the kiln, the raw materials are in the form of a clinker, which is milled with other constituents to form Portland cement.

The raw material conversion process area, referred to as the in-line kiln/raw mill, contains two process stacks identified as the SVMAIN and SVBYPASS stacks. Two baghouses control the particulate matter generated from the process operations.

4.0 REFERENCE TEST METHOD PROCEDURES

Three test runs of 60 minutes per run were conducted for PM on each stack simultaneously. Testing was conducted with the roller mill up.

The following is a list of the test methods used during the performance test.

4.1 Traverse Points

U.S. EPA Method 1- *Sample and Velocity Traverses for Stationary Sources* was used to determine the minimum number of sampling points and to establish their locations within each exhaust duct. In applying Method 1, it is necessary to determine the distances between the test ports and the last flow disturbance prior to the test ports (B), and the distance between the test ports and the first flow disturbance following the test ports (A). By convention, these distances are typically divided by the stack diameter and expressed as duct diameters (D).

4.2 Stack Gas Velocity, Flow Rate, and Temperature

All exhaust stack gas velocity and temperature measurements were conducted in accordance with U.S. EPA Method 2 - *Determination of Stack Gas Velocity and Volumetric Flow Rate (Type S Pitot Tube)* by measuring the delta P at each of the pre-determined traverse points using an S-type pitot tube connected to an appropriately sized inclined water column manometer and exhaust gas temperature with a "Type K" thermocouple.

4.3 Molecular Weight

The molecular weight was determined in accordance with U.S. EPA Method 3A *Determination of Oxygen and Carbon Dioxide Concentration in Emissions from Stationary Sources (Instrumental Analyzer Procedure)* The flue gas O_2 and CO_2 values were determined using a non-dispersive infrared (NDIR) analyzer to measure the absorption of specific wavelengths of infrared radiation (IR). While the exhaust gas is analyzed, the IR detector signal is processed and sent to a display on located on the analyzer. Once the exhaust gas values associated with each sample reached a constant level on the instrument, they were recorded and used to determine the average O_2 and CO_2 concentrations for each test run. Prior to testing the exhaust gas the analyzer was calibrated with the appropriate U.S. EPA Protocol 1 span gases.

4.4 Moisture Content

The stack gas moisture content was determined in accordance with U.S. EPA Method 4 *Determination of Moisture in Stack Gases* in conjunction with the U.S. EPA Method 5 sampling apparatus. To determine the moisture content, stack gas was passed through a series of impingers. The impingers were contained in an ice bath to assure condensation of the flue gas stream moisture. After each test, the amount of water vapor collected was measured and used to calculate the percent moisture in the stack gas.

4.5 Particulate Matter

Particulate samples were withdrawn isokinetically from the source following the guidelines of U.S. EPA Method 5, *Determination of Particulate Emissions From Stationary Sources*. The sampling train consisted of a nozzle, a heated probe, a heated 83 mm glass fiber filter, a series of chilled impingers, and a metering console. The particulate samples were collected in the nozzle, probe and filters. At the conclusion of each

test run, the filter was removed from the filter holder, visually inspected and placed into a separate petri dish, and the front half of the filter holder was rinsed with acetone into a separate sample bottle. Acetone and filter blanks were collected during the times that particulate testing occurred. At the laboratory, U.S. EPA Method 5 analytical procedures were used to analyze the samples for filterable particulate. The acetone rinses were evaporated and desiccated to dryness and the residue weighed to determine the amount of particulate collected. The filters were also desiccated to remove the uncombined water and then weighed to determine the amount of collected particulate. The filter catch and acetone rinses are reported as milligrams of filterable particulate, which is used to calculate an emission rate in lb/1000 lbs exhaust gas measured in wet conditions and corrected to 50 percent excess air.

5.0 QUALITY ASSURANCE

Acetone and filter blanks were collected during the times that particulate testing occurred. At the laboratory, U.S. EPA Method 5 analytical procedures were used to analyze the samples for filterable particulate. The acetone rinses were evaporated and desiccated to dryness and the residue weighed to determine the amount of particulate collected. The filters were also desiccated to remove the uncombined water and then weighed to determine the amount of collected particulate. The filter catch and acetone rinses are reported as milligrams of filterable particulate, which is used to calculate an emission rate in lb/1000 lbs exhaust gas measured in wet conditions and corrected to 50 percent excess air.

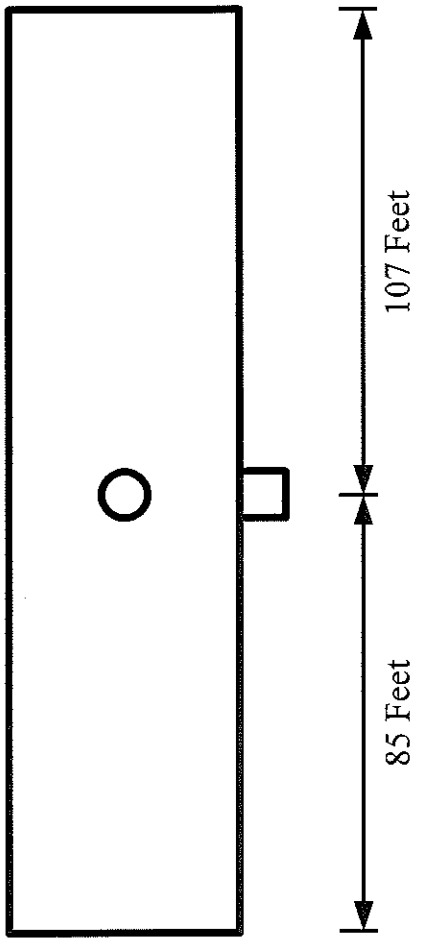
6.0 SUMMARY OF RESULTS

The results of all testing is presented in Table 1.

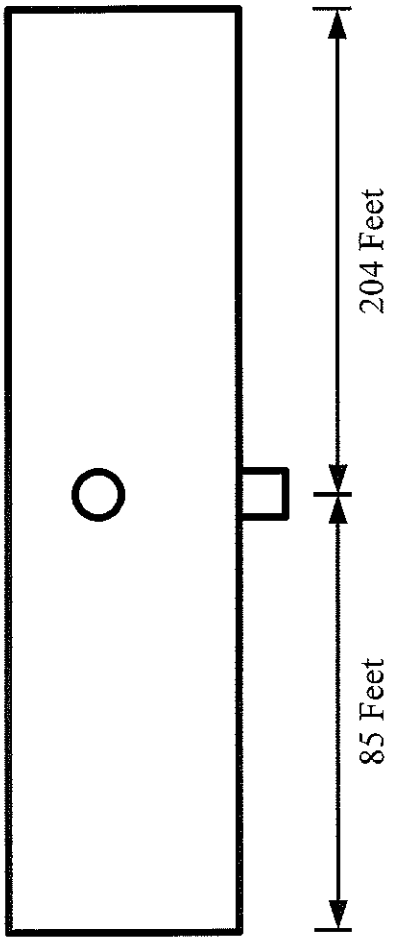
Relative to the limit described in MI-ROP-B1559-2014, the Main and Bypass exhaust stacks are in compliance with the particulate matter emission rate of 0.25 lb/1000 lbs exhaust gas measured wet and corrected to 50 percent excess air.

FIGURES

SVBYPASS STACK



SVMAIN STACK



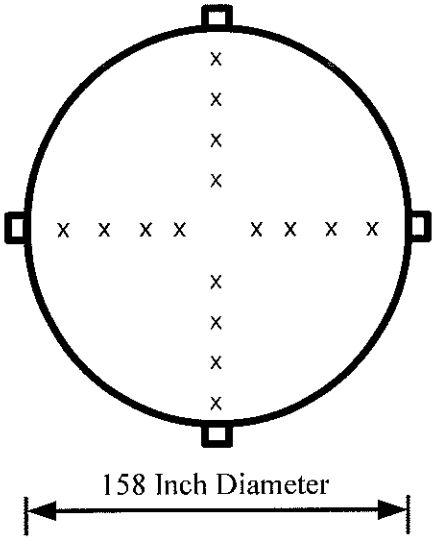
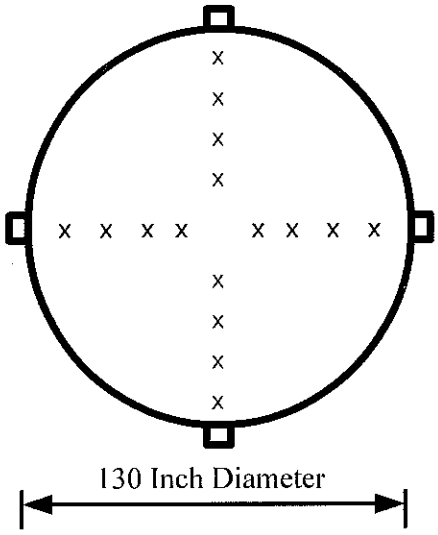
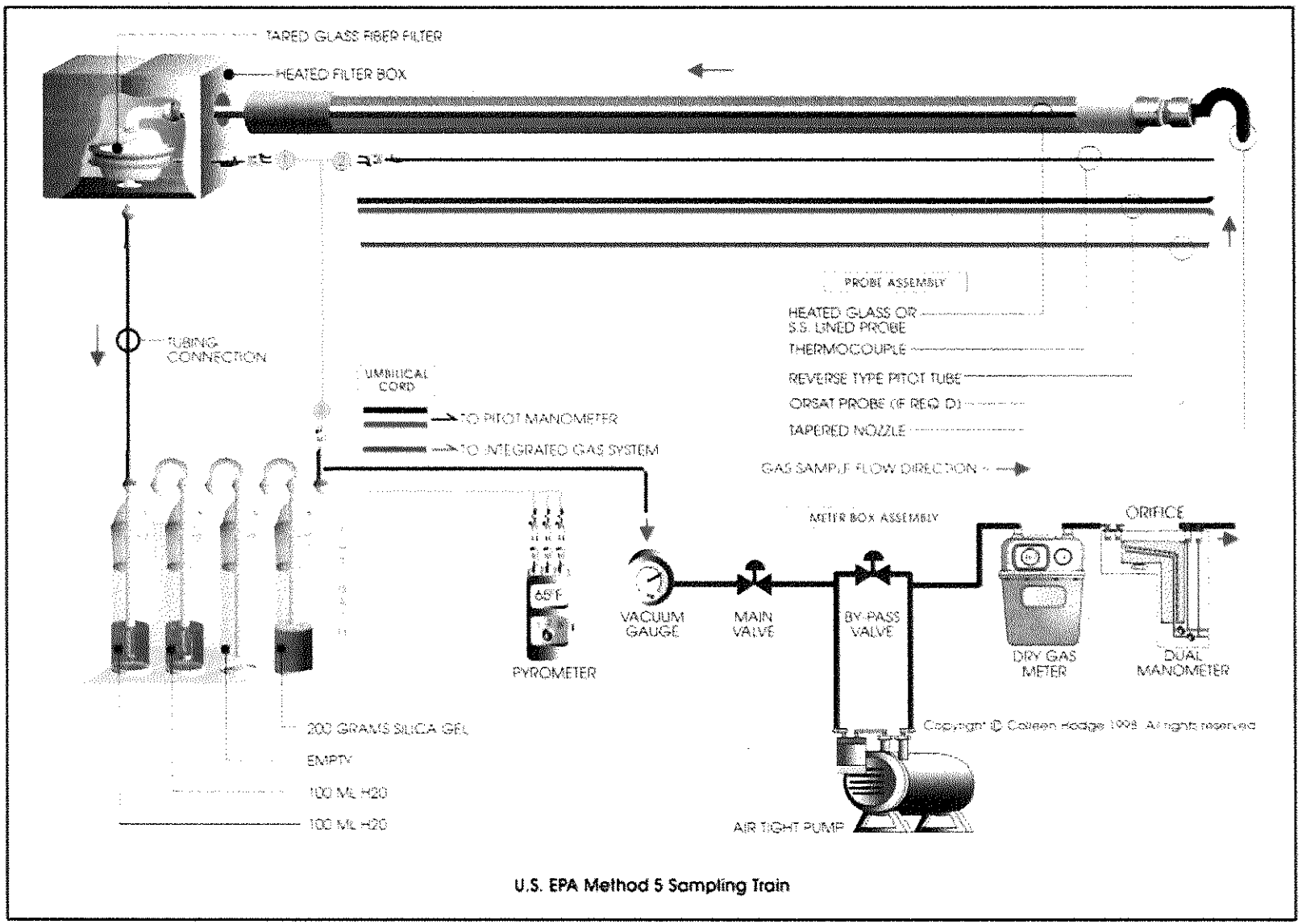


Figure #1

Sampling And Traverse Point Location

Environmental Stack Testing





U.S. EPA Method 5 Sampling Train

TABLES

TABLE 1

Summary of Particulate Matter Emission Rates, Raw Mill Online

St. Marys Cement

U.S. EPA Method 5

May 27, 2015

Run No.	1	2	3	Average
Run Time	1019-1201	1342-1521	1846-2016	
	Process Conditions			
	Volumetric Flow Rates (Main Stack)			
Stack Gas Flow Rate, ACFM:	547,743	480,030	511,081	512,951
Stack Gas Flow Rate, SCFM:	409,903	36,033	380,496	275,477
Stack Gas Flow Rate, DSCFM:	356,085	311,977	328,645	332,236
	Fixed Gases (Main Stack)			
Oxygen, percent, dry:	11.69	12.36	13.10	12.38
Carbon Dioxide, percent, dry:	15.09	13.58	12.50	13.72
	Volumetric Flow Rates (Bypass Stack)			
Stack Gas Flow Rate, ACFM:	49,500	50,086	49,944	49,843
Stack Gas Flow Rate, SCFM:	38,247	38,774	38,528	38,516
Stack Gas Flow Rate, DSCFM:	37,677	38,006	38,082	37,922
	Fixed Gases (Bypass Stack)			
Oxygen, percent, dry:	19.50	19.50	19.70	19.57
Carbon Dioxide, percent, dry:	1.50	1.50	1.10	1.37

Run No.	1	2	3	Average
	Emission Rate (lb/1000 lbs exhaust gas (wet) corrected to 50% excess air)			
Main Stack lb/1000 lbs exhaust gas (wet) corrected to 50% excess air	0.007	0.003	0.001	0.004
Bypass Stack lb/1000 lbs exhaust gas (wet) corrected to 50% excess air	0.107	0.039	0.046	0.064
Combined (Total Particulate) lb/1000 lbs exhaust gas (wet) corrected to 50% excess air	0.114	0.042	0.047	0.068
MI-ROP-B1559-2014 Permit Limit				0.25