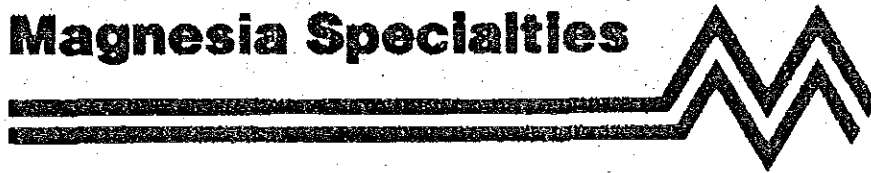


Report of a...

Particulate Emission Study

performed for ...

**Martin Marietta
Magnesia Specialties**



Manistee, Michigan

on the

#1 Herreshoff Exhaust

October 30, 2014

043.17

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Network Environmental, Inc.
Grand Rapids, MI

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MICHIGAN DEPARTMENT OF ENVIRONMENTAL QUALITY
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**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 Martin Marietta Magnesia Specialties, LLC County Manistee

Source Address 1800 Eastlake Road City Manistee

AQD Source ID (SRN) A3900 ROP No. MI-ROP-A3900-2009 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 10/30/2014 To 10/30/2014

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

FGPERICLASEPLANT - Section V.I Reporting

NO. 1 HERRESHOFF STACK TEST REPORT OF RESULTS - PARTICULATE EMISSION STUDY

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

<u>Jim Reithel</u>	<u>VP of Chemical Operations</u>	<u>231-723-1205</u>
Name of Responsible Official (print or type)	Title	Phone Number
		<u>11-25-14</u>
Signature of Responsible Official		Date

* Photocopy this form as needed.

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I. INTRODUCTION

Network Environmental, Inc. was retained by Martin Marietta Magnesia Specialties of Manistee, Michigan to conduct an emission study at their facility. The purpose of the study was to determine the total particulate emissions from their #1 Herreshoff exhaust in order to meet the 2014 emission testing requirements of Renewable Operating Permit (ROP) No. MI-ROP-A3900-2009.

The sampling in the study was conducted by Richard D. Eerdmans and David D. Engelhardt of Network Environmental, Inc. on October 30, 2014. U.S. EPA Reference Method 5 was used for the total particulate determinations. In addition to the particulate sampling, the exhaust gas parameters (air flow rate, temperature, moisture and density) were determined by employing U.S. EPA Reference Methods 1 through 4.

Assisting in the study were Mr. Robert Gutowski of Martin Marietta Magnesia Specialties and the operating staff of the facility. Mr. Rob Dickman of the Michigan Department of Environmental Quality (MDEQ) – Air Quality Division was present to observe the testing and source operation.

II. PRESENTATION OF RESULTS

**II.1 TABLE 1
PARTICULATE EMISSION RESULTS SUMMARY
#1 HERRESHOFF EXHAUST
MARTIN MARIETTA MAGNESIA SPECIALTIES
MANISTEE, MICHIGAN
OCTOBER 30, 2014**

Sample	Time	Air Flow Rate DSCFM ⁽¹⁾	Particulate Concentration Lbs/1000 Lbs, Dry ⁽²⁾	Particulate Mass Rate Lbs/Hr ⁽³⁾
1	09:28-10:38	16,528	0.145	10.90
2	11:14-12:20	16,729	0.162	12.34
3	12:53-14:00	16,517	0.137	10.34
Average		16,591	0.148	11.19

(1) DSCFM = Dry Standard Cubic Feet Per Minute (STP = 68 °F & 29.92 in. Hg)

(2) Lbs/1000 Lbs, Dry = Pounds of Particulate Per Thousand Pounds of Exhaust Gas On a Dry Basis

(3) Lbs/Hr = Pounds of Particulate Per Hour

III. DISCUSSION OF RESULTS

The total particulate emission results are summarized in Table 1 (Section II.1). A more detailed presentation of the particulate sampling can be found in Appendix A.

III.1 Particulate Concentrations – The particulate emission concentrations in terms of pounds of particulate per thousand pounds of exhaust gas on a dry basis (Lbs/1000 Lbs, Dry) were 0.145 Lbs/1000 Lbs, Dry for sample one, 0.162 Lbs/1000 Lbs, Dry for sample two, and 0.137 Lbs/1000 Lbs, Dry for sample three. The average of the three samples was 0.148 Lbs/1000 Lbs, Dry.

III.2 Particulate Mass Emission Rates – The particulate mass emission rates in terms of pounds of particulate per hour (Lbs/Hr) were 10.90 Lbs/Hr for sample one, 12.34 Lbs/Hr for sample two, and 10.34 Lbs/Hr for sample three. The average of the three samples was 11.19 Lbs/Hr.

III.3 Emission Limit – According to ROP No. MI-ROP-A3900-2009, "the particulate emissions from the No. 1 Herreshoff furnace shall not exceed 0.2 pounds per 1,000 pounds of exhaust gases",

IV. SOURCE DESCRIPTION

The source sampled is the exhaust of the #1 Herreshoff. Exhaust air from the herreshoff is first passed through an electrostatic precipitator (ESP) before being emitted to the atmosphere through the 53 inch I.D. exhaust stack. The source operating parameters were monitored by Martin Marietta Magnesia Specialties staff and can be found in Appendix B.

V. SAMPLING AND ANALYTICAL PROTOCOL

The sampling location was on the 53 inch I.D. exhaust stack at a location approximately ten (10) duct diameters downstream and seven (7) duct diameters upstream from the nearest disturbances. Twelve (12) sampling points (six per port) were used for the particulate and air flow determinations. A diagram of the sampling location can be found in Appendix F.

Prior to the sampling, a preliminary velocity traverse, cyclonic/turbulent flow check and moisture train were conducted. The measurement location and air flows met the criteria established in U.S. EPA Reference

Method 1.

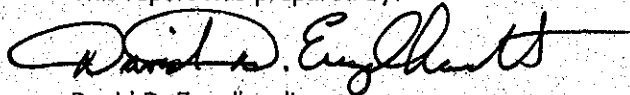
The sampling/traverse points were as follows:

<u>Sample Point</u>	<u>Dimension (Inches)</u>
1	2.31
2	7.75
3	15.69
4	37.31
5	45.25
6	50.69

V.1 Particulate - The total particulate emission sampling was conducted in accordance with U.S. EPA Reference Method 5. Method 5 is an out of stack filtration method. Three (3) samples were collected from the Herreshoff exhaust. Each sample was sixty (60) minutes in duration, and had a minimum sample volume of thirty (30) dry standard cubic feet. The samples were collected isokinetically from the exhaust through a heated probe and collected on a heated filter (maintained at 250 °F plus or minus 25 °F). The filters and probe/nozzle rinses were analyzed for total particulate by gravimetric analysis. All the quality assurance and quality control procedures listed in the method were incorporated in the sampling and analysis. The particulate sampling train is shown in Figure 1.

V.2 Exhaust Gas Parameters - The exhaust gas parameters (air flow rate, temperature, moisture, and density) were determined in conjunction with the other sampling by employing U.S. EPA Reference Methods 1 through 4. Moisture was determined from the Method 5 sampling train. Integrated bag samples were collected from the back of the Method 5 sampling train and analyzed by Orsat to determine gas density. All the quality assurance and quality control procedures listed in the methods were incorporated in the sampling and analysis.

This report was prepared by:

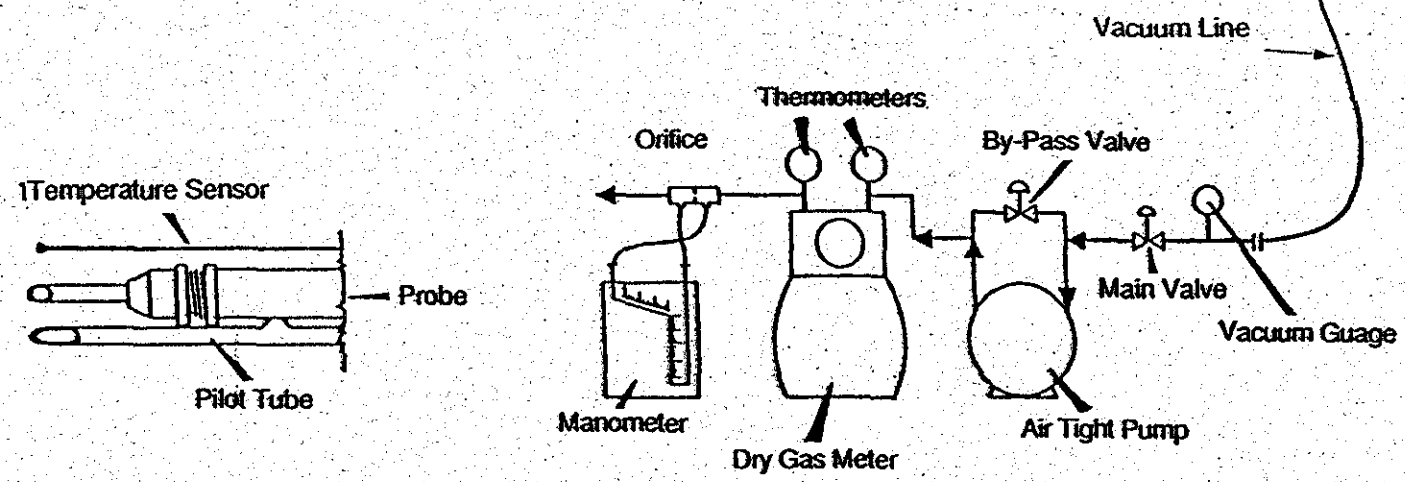
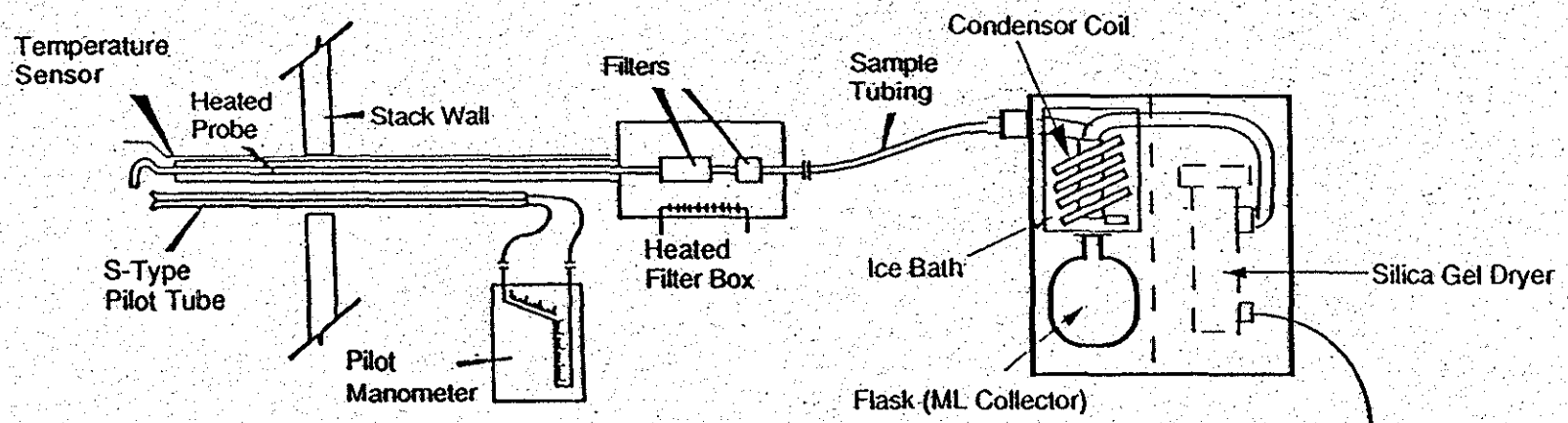


David D. Engelhardt
Vice President

This report was reviewed by:



Stephan K. Byrd
President



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Figure 1
Particulate Sampling Train