

Report of...

Compliance Emission Testing

Performed for the ...

Michigan Sugar Company
Bay City, Michigan

At the ...

Sebewaing, Michigan Facility

On ...

Pulp Dryers 1, 2 & 3

February 1-2, 2017

022.42

Network Environmental, Inc.
Grand Rapids, MI

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I. INTRODUCTION

Network Environmental, Inc. was retained by the Michigan Sugar Company to perform compliance emission sampling on the Pulp Dryer Exhausts at their Sebewaing, Michigan facility. The purpose of the study was to meet the testing requirements of Michigan Department of Environment Quality (MDEQ) – Air Quality Division Renewable Operating Permit No. MI-ROP-B2873-2012. The ROP has established the following emission limits for this source:

Pollutant	Emission Limit
PM	0.10 Lbs/1000 Lbs, Actual

The following reference test methods were employed to conduct the sampling:

- PM – U.S. EPA Method 17
- Exhaust Gas Parameters – U.S. EPA Methods 1 through 4

The sampling was performed February 1 & 2, 2017 by Stephan K. Byrd and Richard D. Eerdmans of Network Environmental, Inc. Assisting with the study was Mr. Steven Smock and the staff at the Sebewaing facility. Mr. David Patterson and Ms. Sharon LeBlanc of the Michigan Department of Environmental Quality (MDEQ) – Air Quality Division were present to observe the sampling and source operation.

II. PRESENTATION OF RESULTS

**II.1 TABLE 1
PM EMISSION RESULTS SUMMARY
PULP DRYERS #1 & #2 EXHAUST
MICHIGAN SUGAR COMPANY
SEBEWAING, MICHIGAN**

Sample	Date	Time	Air Flow Rate SCFM ⁽¹⁾	Concentration	Emission Rate
				Lbs/1000 Lbs, Actual ⁽²⁾	Lbs/Hr ⁽³⁾
1	2/1/17	09:24-10:29	60,819	0.017	4.262
2	2/1/17	10:48-11:54	60,028	0.017	4.245
3	2/1/17	12:13-13:17	59,868	0.015	3.719
Average			60,238	0.016	4.075

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

(2) Lbs/1000 Lbs, Actual = Pounds of Particulate Per Thousand Pounds of Exhaust Gas on an Actual Basis (Moisture included)

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

**II.2 TABLE 2
PM EMISSION RESULTS SUMMARY
PULP DRYER #3 EXHAUST
MICHIGAN SUGAR COMPANY
SEBAWAING, MICHIGAN**

Sample	Date	Time	Air Flow Rate SCFM ⁽¹⁾	Concentration	Emission Rate
				Lbs/1000 Lbs, Actual ⁽²⁾	Lbs/Hr ⁽³⁾
1	2/2/17	08:53-09:58	60,180	0.071	17.707
2	2/2/17	10:24-11:30	60,246	0.063	15.479
3	2/2/17	11:51-12:57	61,670	0.062	15.685
Average			60,699	0.065	16.290

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

(2) Lbs/1000 Lbs, Actual = Pounds of Particulate Per Thousand Pounds of Exhaust Gas on an Actual Basis (Moisture Included).

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

III. DISCUSSION OF RESULTS

The results of the emission sampling are summarized in Table 1-2 (Sections II.1 and II.2). The results are presented as follows:

III.1 PM Emission Results (Tables 1 & 2)

Table 1 and 2 summarize the PM emission results as follows:

- Sample
- Date
- Time
- Air Flow Rate (SCFM) – Standard Cubic Feet Per Minute (STP = 68° F & 29.92 in. Hg)
- Particulate Concentration (Lbs/1000 Lbs, Actual) – Pounds of Particulate Per Thousand Pounds of Exhaust Gas on An Actual Basis
- Particulate Mass Emission Rate (Lbs/Hr) – Pounds of Particulate Per Hour

The results for PM are presented as total front half filterable particulate. A more detailed breakdown for each sample can be found in Appendix A.

IV. SAMPLING AND ANALYTICAL PROTOCOL

IV.1 PM – The total particulate sampling was conducted in accordance with U.S. EPA Method 17. Method 17 is an in-stack filtration method. The samples were collected isokinetically on filters. Three (3) samples were collected from each exhaust. Each sample was sixty (60) minutes in duration and had a minimum sample volume of thirty (30) dry standard cubic feet.

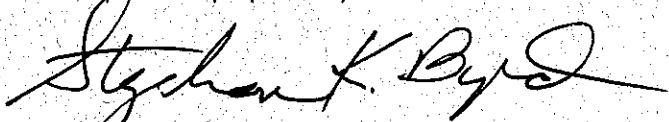
The nozzle rinses and filters were analyzed gravimetrically for particulate in accordance with Method 17. All the quality assurance and quality control procedures listed in the methods were incorporated in the sampling and analysis. The particulate sampling train is shown in Figure 1.

IV.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 Methods 1 through 4. Oxygen and carbon dioxide content were determined by orsat analysis. Moisture was determined by the

isokinetic sampling trains. All the quality assurance and quality control procedures listed in the methods were incorporated in the sampling and analysis.

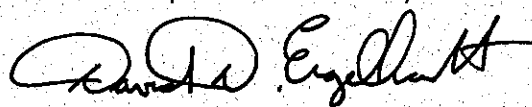
IV.3 Sampling Location – The sampling location for Pulp Dryers #1 and #2 exhaust was on the 72 inch I.D. exhaust stack at a location that exceeded the optimum criteria of U.S. EPA Method 1. The sampling location for Pulp Dryer #3 exhaust was on the 96 inch I.D. exhaust stack at a location that exceeded the optimum criteria of U.S. EPA Method 1.

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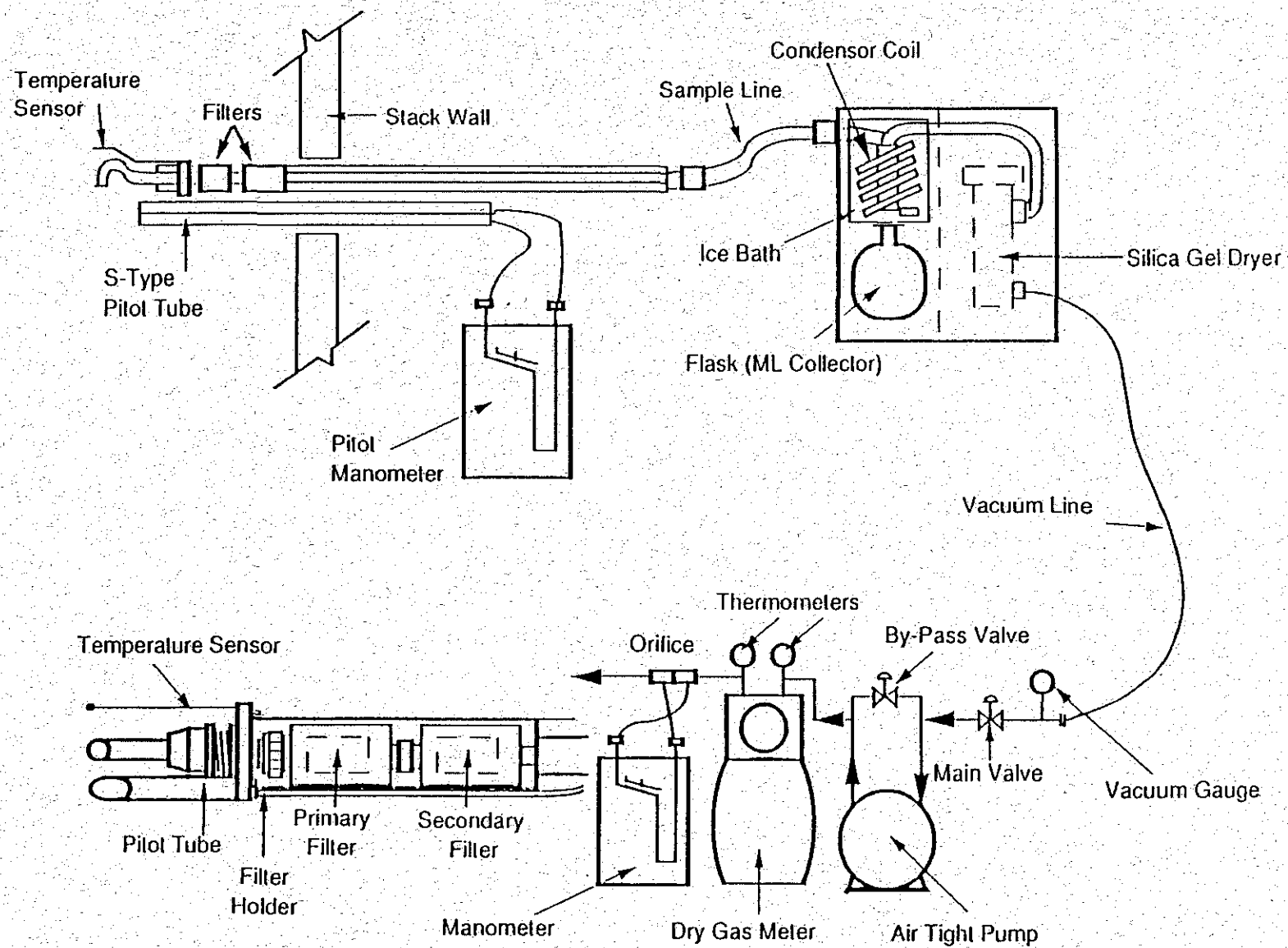


Figure 1
Particulate Sampling Train