Report of...

Emission Sampling

Performed for...

Post Foods, LLC
Battle Creek, Michigan

On...

FG-20108 Baking
(Grape Nuts Line – Bldg. 20)

April 7-9, 2015

Project #: 050.24

By...

Network Environmental, Inc.
Grand Rapids, MI

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: Post Foods, LLC — County: Calhoun

Source Address: 275 Cliff Street — City: Battle Creek

AQD Source ID (SRN): B1548 — ROP No.: MI-ROP-B1548-2014b — ROP Section No.: 1

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 04/07/2015 To 04/09/2015

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

VOC, PM, PM10 AND PM2.5 emission test results for the Grape Nuts cereal process (EU20108,EU20109, and EU20110)

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

Don Holtan	Plant Manager	2699661000x1138
Name of Responsible Official (print or type)	Title	Phone Number

Signature of Responsible Official — Date: 5/12/15

* Photocopy this form as needed.

EQP 5736 (Rev 11-04)

I. INTRODUCTION

Network Environmental, Inc. was retained by Post Foods, LLC of Battle Creek, Michigan, to conduct an emission study at their facility. The purpose of the study was to document compliance with Michigan Department of Environmental Quality (MDEQ) – Air Quality Division Permit To Install No. 31-14A. The following sources from FG-20108 Baking (Grape Nuts Line located in Building 20) were sampled:

Source	Compounds Sampled
4-Pass Dryer (EU20109)	Particulate (Filterable & Condensable) & VOC's
3-Pass Dryer (EU20110)	Particulate (Filterable & Condensable) & VOC's
Oven (EU20108)	Particulate (Filterable & Condensable) & VOC's

The following test methods were employed to conduct the sampling:

- Filterable Particulate Matter – U.S. EPA Method 17
- Condensable Particulate Matter – U.S. EPA Method 202
- Exhaust Gas Parameters (air flow rate, temperature, moisture & density) – U.S. EPA Reference Methods 1 through 4.

The sampling was performed over the period of April 7-9, 2015 by Stephan K. Byrd, R. Scott Cargill, Richard D. Eerdmans and David D. Engelhardt of Network Environmental, Inc.. Assisting with the sampling was Mr. Robert Mason of Post Foods, LLC. Mr. Tom Gasloli and Ms. Dorothy Bohn of the MDEQ – Air Quality Division were present to observe the sampling and source operation.

II.1 TABLE 1
PARTICULATE EMISSION RESULTS
GRAPE NUTS LINE
POST FOODS, LLC
BATTLE CREEK, MICHIGAN

Source	Sample	Date	Time	Air Flow Rate DSCFM (1)	Particulate Concentration Lbs/1000 Lbs, Dry (2)			Particulate Mass Rate Lbs/Hr (3)		
					Front Half Filterable	Back Half Condensable	Total	Front Half Filterable	Back Half Condensable	Total
4-Pass Dryer (EU20109)	1	4/7/15	10:22-11:39	8,758	0.0017	0.00047	0.0022	0.066	0.019	0.085
	2	4/7/15	12:04-13:21	8,164	0.0016	0.00199	0.0036	0.060	0.073	0.133
	3	4/7/15	13:47-15:23	8,043	0.0014	0.00050	0.0018	0.048	0.018	0.066
	Average			**8,322**	**0.0016**	**0.00099**	**0.0026**	**0.058**	**0.036**	**0.095**
3-Pass Dryer (EU20110)	1	4/9/15	09:24-10:39	3,010	0.0012	0.0085	0.0097	0.016	0.114	0.131
	2	4/9/15	15:39-16:56	2,921	0.0010	0.0096	0.0106	0.013	0.125	0.138
	Average			**2,965**	**0.0011**	**0.0090**	**0.0101**	**0.015**	**0.120**	**0.134**
Oven (EU20108)	1	4/9/15	11:59-13:14	7,684	0.00025	0.0018	0.0020	0.009	0.061	0.070
	2	4/9/15	13:39-14:54	7,370	0.00042	0.0013	0.0017	0.014	0.041	0.055
	Average			**7,527**	**0.00034**	**0.0015**	**0.0019**	**0.011**	**0.051**	**0.063**

(1) DSCFM = Dry Standard Cubic Feet Per Minute (Standard Temperature & Pressure = 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

II.2 TABLE 2
TOTAL HYDROCARBON (VOC) EMISSION RESULTS
GRAPE NUTS LINE
POST FOODS, LLC
BATTLE CREEK, MICHIGAN

Source	Sample	Date	Time	Air Flow Rate SCFM (1)	VOC Concentration PPM (2)	VOC Mass Rate Lbs/Hr (3)
4-Pass Dryer (EU20109)	1	4/7/15	10:21-11:21	9,623	33.6	2.21
	2	4/7/15	12:04-13:04		42.8	2.81
	3	4/7/15	13:43-14:43		36.2	2.38
	Average				**37.5**	**2.47**
3-Pass Dryer (EU20110)	1	4/9/15	08:51-09:51	3,452	10.6	0.25
	2	4/9/15	15:20-16:20		9.9	0.23
	3	4/9/15	16:35-17:35		9.5	0.22
	Average				**10.0**	**0.23**
Oven (EU20108)	1	4/9/15	11:19-12:19	7,883	34.8	1.87
	2	4/9/15	12:36-13:36		30.5	1.64
	3	4/9/15	14:05-15:05		24.9	1.34
	Average				**30.1**	**1.62**

(1) SCFM = Standard Cubic Feet Per Minute (STP = 68 °F & 29.92 in. Hg). Shown is the average air flow rate measured during the particulate sampling.
(2) PPM = Parts Per Million (v/v) On A Wet (Actual) Basis As Propane
(3) Lbs/Hr = Pounds of VOC Per Hour As Propane

III. DISCUSSION OF RESULTS

The results of the sampling are summarized in Tables 1 through 2 (Sections II.1 through II.2). The results are presented as follows:

III.1 Particulate Emission Results (Table 1)

Table 1 summarizes the particulate emission results as follows:

- Source
- Sample
- Date
- Time
- Air Flow Rate (DSCFM) – Dry Standard Cubic Feet Per Minute (STP = 68 °F & 29.92 in. Hg)
- Particulate Concentrations (Lbs/1000 Lbs, Dry) – Pounds Of Particulate Per Thousand Pounds Of Exhaust Gas On A Dry Basis
- Particulate Mass Emission Rate (Lbs/Hr) – Pounds Of Particulate Per Hour

A more detailed breakdown of each individual particulate sample can be found in Appendix A.

It should be noted that only two (2) particulate samples (each) were collected for the 3-Pass Dryer and the Oven because of production breakdowns and limitations.

III.2 Total Hydrocarbon (VOC) Emission Results (Table 2)

Table 2 summarizes the VOC emission results as follows:

- Source
- Sample
- Date
- Time
- Air Flow Rate (SCFM) – Standard Cubic Feet Per Minute (STP = 68 °F & 29.92 in. Hg)
- VOC Concentration (PPM) – Parts Per Million (v/v) On An Actual (Wet) Basis As Propane
- VOC Mass Emission Rate (Lbs/Hr) – Pounds Of VOC Per Hour As Propane

IV. SAMPLING AND ANALYTICAL PROTOCOL

The sampling location for each source was as follows:

- 4-Pass Dryer (EU20109) – A 38 inch I.D. diameter exhaust stack with 2 sample ports in a location approximately 2.5 duct diameters downstream and 2 duct diameters upstream from the nearest disturbances. Twenty- Four (24) sampling points were used for the isokinetic sampling on this source.

- 3-Pass Dryer (EU20110) – A 19 inch I.D. diameter exhaust stack with 2 sample ports in a location approximately 2.5 duct diameters downstream and 2 duct diameters upstream from the nearest disturbances. Twenty-Four (24) sampling points were used for the isokinetic sampling on this source.

- Oven (EU20108) – A 24 inch I.D. diameter exhaust stack with 2 sample ports in a location approximately 2 duct diameters downstream and 2 duct diameters upstream from the nearest disturbances. Twenty-Four (24) sampling points were used for the isokinetic sampling on this source.

The following test methods were employed to conduct the sampling:

- Filterable Particulate Matter – U.S. EPA Method 17
- Condensable Particulate Matter – U.S. EPA Method 202
- Exhaust Gas Parameters (air flow rate, temperature, moisture & density) – U.S. EPA Reference Methods 1 through 4.

IV.1 Particulate – The particulate emission sampling was conducted in accordance with U.S. EPA Method 17. Method 17 is an in-stack filtration method. Each sample was seventy-two (72) minutes in duration and had minimum sample volumes of thirty (30) dry standard cubic feet. The samples were collected isokinetically and analyzed for Particulate by gravimetric analysis.

In addition to the standard front half analysis, the back half condensable particulate matter was determined in accordance with U.S. EPA Method 202 (Dry Impinger Technique). The back half samples were extracted and analyzed for condensable particulate in accordance with Method 202. 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 Total Hydrocarbons (VOC) – The VOC sampling was conducted in accordance with U.S. EPA Reference Method 25A. A J.U.M. Model 3-500 flame ionization detector (FID) analyzer was used to monitor the exhausts. A heated teflon sample line was used to transport the exhaust gases to the analyzer. The analyzer produces instantaneous readouts of the VOC concentrations (PPM).

The analyzer was calibrated by system injection (from the back of the stack probe to the analyzer) prior to the testing. A span gas of 453.7 PPM Propane was used to establish the initial instrument calibration. Calibration gases of 151.1 PPM and 247.1 PPM Propane were used to determine the calibration error of the analyzer. After each sample, a system zero and system injection of 151.1 PPM Propane were performed to establish system drift and system bias during the test period. All calibration gases used were EPA Protocol Calibration Gases. Three (3) samples were collected from each of the sources. Each sample was sixty (60) minutes in duration.

The analyzer was calibrated to the output of the data acquisition system (DAS) used to collect the data from the exhausts. The analyzer averages were corrected for calibration error and drift using formula EQ.7E-5 from 40 CFR Part 60, Appendix A, Method 7E. Figure 2 is a diagram of the VOC sampling train.

IV.3 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. Air flow rates, temperatures and moistures were determined using the Method 17/202 sampling trains. Bag samples were collected from the exhaust of the Method 17/202 sampling trains and analyzed by Orsat for O_2 and CO_2 content. All the quality assurance and quality control procedures listed in the methods were incorporated in the sampling and analysis.

This report was prepared by:

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This report was reviewed by:

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President

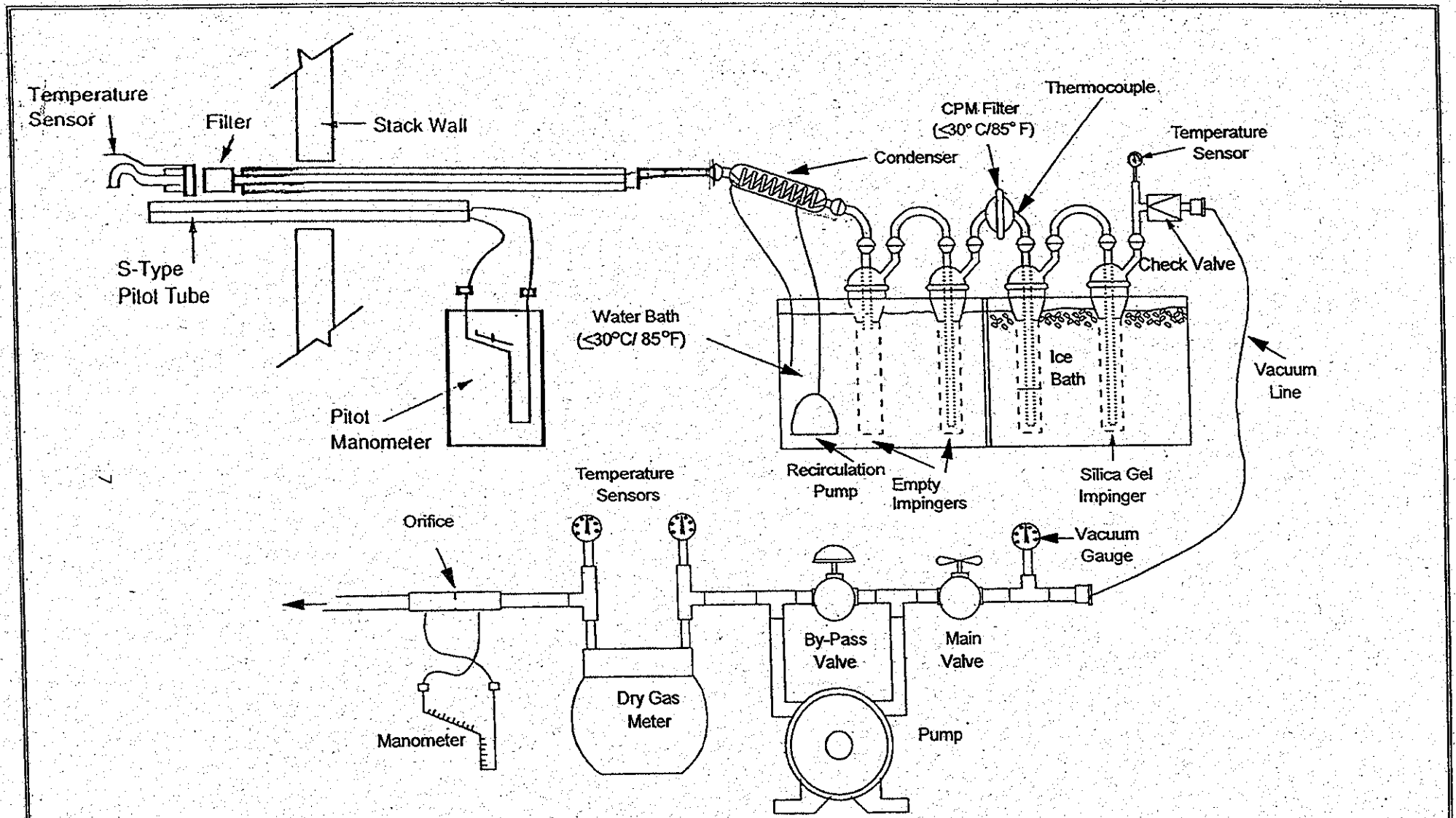

Figure 1

Method 17/202 Sampling Train

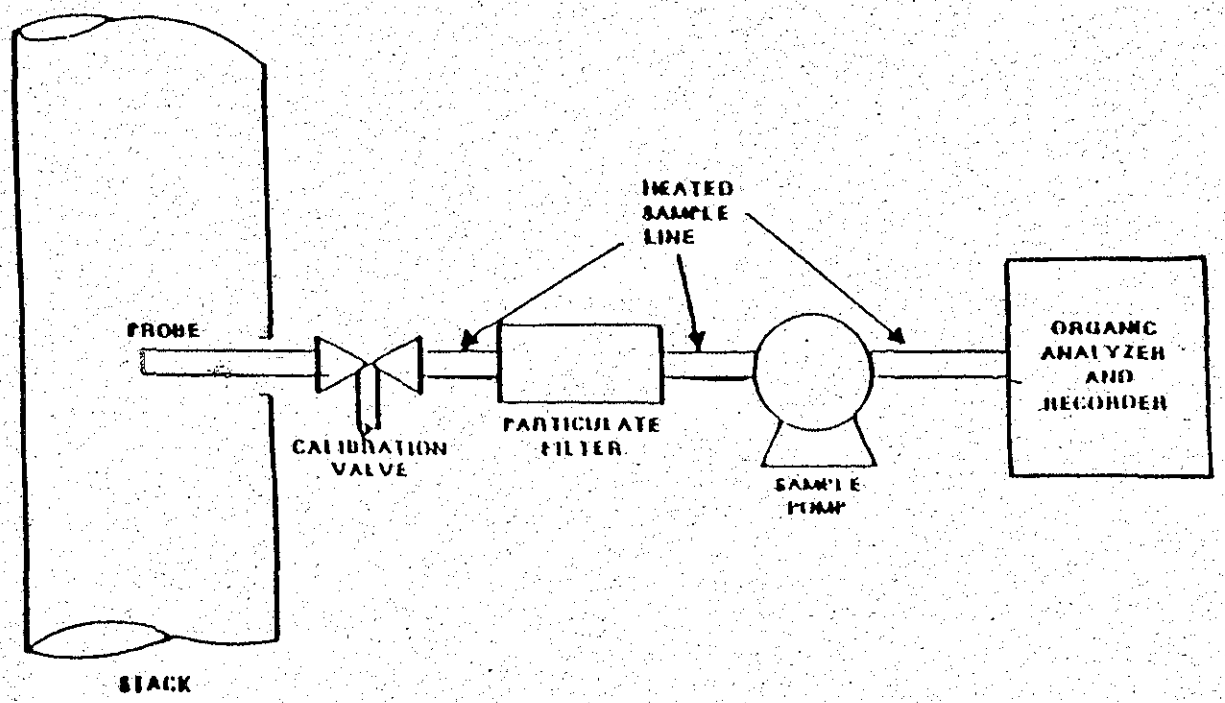

Figure 2

Method 25A
Sampling Train