

Particulate Matter Emissions Test Report

Prepared for:

Zeeland Farm Services, Inc.

Zeeland, Michigan

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AIR QUALITY DIVISION

Source Address:

Zeeland Farm Services. Inc. 2468 84th Avenue Zeeland, Michigan 49464

> Project No. 049AS-482538 December 6, 2018

Montrose Air Quality Services, LLC. 4949 Fernlee Avenue Royal Oak, Michigan 48073 (248) 548-8070

EXECUTIVE SUMMARY

Montrose Air Quality Services, LLC. (MAQS) was retained by Zeeland Farm Services, Inc. (ZFS) to conduct a compliance emissions test program on four sources at the ZFS facility in Zeeland, Michigan. Testing at the EUDRYING exhaust included measurement of particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) and particulate matter less than 10 microns in diameter (PM_{10}) using USEPA Methods 201A and 202. Testing of EUPREPEQUIPMENT included measurement of filterable particulate matter (PM) and condensable particulate matter (CPM) using USEPA Methods 5 and 202 with all particulate matter assumed to be less than 2.5 microns in size. Testing of EUHANDLING and EUHANDLING2 included measurement of PM using USEPA Method 5. The emissions test program was completed on October 16, 17, 18, and 19, 2018.

Testing of EUHANDLING, EUHANDLING2, and EUPREPEQUIPMENT consisted of triplicate 90-minute test runs¹. Testing of EUDRYING consisted of triplicate test runs of approximately 180 minutes each. The emissions test program was required by Michigan Department of Environmental Quality Air Quality Division Renewable Operating Permit (MI-ROP-M4204-2018). The results of the emission test program are summarized by Table E-I.

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Test Dates: October 16, 17,18, and 19, 2018						
Test Location ID	Exhaust Gas Parameters Emission Limit		Result			
	To Be Evaluated					
	PM	0.03 lb/1000lb*	0.003 lb/1000lb*			
EUDRYING	PM ₁₀ (Five Stacks Combined)	12.65 lb/hr	0.78 lb/hr ^a			
	PM _{2.5} (Five Stacks Combined)	ined) 10.12 lb/nr				
EUPREPEQUIPMENT	PM	0.044 lb/1000lb*	0.006 lb/1000lb*			
(Baghouse)	PM ₁₀	5.55 lb/hr	0.48 lb/hr			
(Bagnouse)	PM _{2.5}	4.44 lb/hr	0.48 lb/hr			
	РМ	0.023 g/dscm	0.001 g/dscm			
EUHANDLING	FIVI	0.019 lb/1000lb*	0.0001 lb/1000lb*			
EURANDLING	PM_{10}	0.86 lb/hr	0.041 lb/hr			
	PM _{2.5}	0.69 lb/hr	0.041 lb/hr			
EUHANDLING2	PM	0.023 g/dscm	0.0006 g/dscm			
	£ 1V1	0.019 lb/1000lb*	0.0005 lb/1000lb*			
EURANDLINGZ	PM ₁₀	0.51 lb/hr	0.014 lb/hr			
4 1 1 , 8 1 f •	PM _{2.5}	0.41 lb/hr	0.014 lb/hr			

Table E-I
EUDRYING, EUPREPEQUIPMENT,
EUHANDLING, and EUHANDLING2
Fest Dates: October 16, 17,18, and 19, 2018

*: calculated on a dry basis

^a: One representative stack for EUDRYING was tested. The emission rate results have been multiplied by 5 to represent the total emissions for all five stacks combined.

¹ With the on-site approval of MDEQ, test runs for EUHANDLING were extended by two to four minutes each at the last traverse point to encompass the entire batch cycle.

1. Introduction

Montrose Air Quality Services, LLC. (MAQS) was retained by Zeeland Farm Services, Inc. (ZFS) to conduct a compliance emissions test program on four sources at the ZFS facility in Zeeland, Michigan. Testing at the EUDRYING exhaust included measurement of particulate matter less than 2.5 microns in diameter ($PM_{2.5}$) and particulate matter less than 10 microns in diameter (PM_{10}) using USEPA Methods 201A and 202. Testing of EUPREPEQUIPMENT included measurement of filterable particulate matter (PM) and condensable particulate matter (CPM) using USEPA Methods 5 and 202 with all particulate matter assumed to be less than 2.5 microns in size. Testing of EUHANDLING and EUHANDLING2 included measurement of PM using USEPA Method 5. The emissions test program was completed on October 16, 17, 18, and 19, 2018.

Testing of EUHANDLING, EUHANDLING2, and EUPREPEQUIPMENT consisted of triplicate 90-minute test runs². Testing of EUDRYING consisted of triplicate test runs of approximately 180 minutes each. The emissions test program was required by Michigan Department of Environmental Quality Air Quality Division Renewable Operating Permit (MI-ROP-M4204-2018). The results of the emission test program are summarized by Table 1.

1.a Identification, Location, and Dates of Test

Testing was conducted at ZFS's Zeeland, Michigan plant located at 2525 84th Avenue Zeeland, Michigan 49464. Testing was conducted on October 16, 17, 18, and 19, 2018. EUPREPEQUIPMENT testing was completed on October 16. EUDRYING testing was completed on October 17 and 18. EUHANDLING testing was completed on October 17 and 18. EUHANDLING2 testing was completed on October 18 and 19.

1.b Purpose of Testing

AQD issued Renewable Operating Permit (MI-ROP-M4204-2018). This permit limits exhaust gas PM concentration for the units as summarized by Table 2.

 $^{^2}$ With the on-site approval of MDEQ, test runs for EUHANDLING were extended by two to four minutes each at the last traverse point to encompass the entire batch cycle.

1.c Source Description

Soybeans are received in one of two collection pits (EUHANDLING and EUHANDLING2). Emissions from each receiving pit are controlled by a separate baghouse to control the emissions vented to the atmosphere.

The beans are passed through a grain dryer to dry the beans (EUDRYING). A maximum capacity of approximately 3,000 bushels of soybeans can pass through the dryer per hour. EUDRYING contains five exhaust points, each controlled by a separate cyclone.

Soybeans are passed through a processing area (EUPREPEQUIPMENT) to prepare the beans before the oil is extracted. A maximum rated capacity of 1,050 tons of soybeans per day are handled, cleaned, cracked and dehulled, ground, conditioned, and flaked within this area. Emissions from the vertical seed conditioner are controlled by a cyclone, and all other equipment is controlled by a baghouse.

1.d Test Program Contacts

The contact for the source and test report is:

Brandon LaRosa Environmental Engineer Zeeland Farm Services, Inc. 2525 84th Ave Zeeland, Michigan 49464 (616) 879-1715

Names and affiliations for personnel who were present during the testing program are summarized by Table 3.

2. Summary of Results

Sections 2.a through 2.d summarize the results of the emissions compliance test program.

2.a Operating Data

Operating data collected by ZFS is included in Appendix E.

2.b Applicable Permit

The applicable permit for this emissions test program is MI-ROP-M4204-2018

2.c Results

The overall results of the emission test program are summarized by Table 1.

3. Source Description

Sections 3.a through 3.e provide a detailed description of the process.

3.a Process Description

The operation of EUDRYING and EUPREPEQUIPMENT is continuous in nature. The operation of EUHANDLING and EUHANDLING2 is batch in nature. The procedure is as follows:

- 1. A truck containing soybeans enters the receiving building, ensuring the unloading equipment lines up with the receiving pit, and applies the brakes.
- 2. The truck unloads the soybeans into the pit.
- 3. After the truck is empty, the truck leaves the receiving building
- 4. A new truck enters the receiving building only after the previous truck has exited.

3.b Raw and Finished Materials

The raw and finished material for the equipment being tested is soybeans.

3.c Process Capacity

The facility is permitted to process a maximum 1,050 tons of soybeans per day. The bean dryer (EUDRYER) has a maximum capacity of approximately 3,000 bushels per hour.

3.d Process Instrumentation

The process is not equipped with a continuous emission monitoring system.

4. Sampling and Analytical Procedures

Sections 4.a through 4.d provide a summary of the sampling and analytical procedures used.

4.a Sampling Train and Field Procedures

The following U.S. EPA reference test methods found in 40 CFR, Part 60, Appendix A were used:

- Method 1 "Sample and Velocity Traverses for Stationary Sources"
- Method 2 "Determination of Stack Gas Velocity and Volumetric Flowrate"

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- Method 3 "Determination of Oxygen and Carbon Dioxide Concentrations in Emissions From Stationary Sources (Fyrite Procedure)" AIR QUALITY DIVISION
- Method 4 "Determination of Moisture Content in Stack Gases"

Stack gas velocity traverses were conducted in accordance with the procedures outlined in Method 1 and Method 2. S-type pitot tubes with thermocouple assemblies, calibrated in accordance with Method 2 were used to measure exhaust gas velocity pressures (using a manometer) and temperatures during testing. The s-type pitot tube dimensions were within specified limits, therefore, a baseline pitot tube coefficient of 0.84 (dimensionless) was assigned. One stack gas velocity traverse was conducted per test run.

Cyclonic flow checks were performed at the sampling location. The existence of cyclonic flow is determined by measuring the flow angle at each sample point. The flow angle is the angle between the direction of flow and the axis of the stack. If the average of the absolute values of the flow angles is greater than 20 degrees, cyclonic flow exists.

Molecular weight determinations (Extractor) were evaluated according to USEPA Method 3, "Gas Analysis for the Determination of Dry Molecular Weight." The equipment used for this evaluation consisted of a one-way squeeze bulb with connecting tubing and a set of Fyrite[®] combustion gas analyzers. Carbon dioxide and oxygen content were analyzed using the Fyrite[®] procedure. Moisture content was determined gravimetrically in the particulate matter testing.

To evaluate PM, $PM_{2.5}$, PM_{10} , and CPM mass emission rates from each stack, MAQS used the following reference test methods codified at Title 40, Part 60, Appendix A and 40, Part 51, Appendix M of the Code of Federal Regulations:

- Method 5 "Determination of Particulate Emissions from Stationary Sources"
- Method 201a "Determination of PM₁₀ and PM_{2.5} Emissions From Stationary Sources"
- Method 202 "Determination of Condensable Particulate Emissions from Stationary Sources"

40 CFR 60, Appendix A, Method 5, "Determination of Particulate Emissions from Stationary Sources" and 40 CFR 51, Appendix M, Method 202, "Dry Impinger Method for Determining Condensable Particulate Emissions from Stationary Sources" were used to measure PM concentrations and calculate PM emission rates from EUPREPEQUIPMENT, EUHANDLING, and EUHANDLING2 (see Figure 1 for a schematic of the Method 5 sampling train used on EUHANDLING and EUHANDLING2 and Figure 2 for a schematic of the Method 5/202 sampling train used on EUPREPEQUIPMENT).

MAQS's Nutech[®] Model 2010 modular isokinetic stack sampling system consists of (1) a stainless-steel nozzle, (2) a glass lined probe, (3) a heated filter holder containing a pre weighed

90-mm glass fiber filter, (4) a vertical condenser, (5) an empty pot bellied impinger, (6) an empty modified Greenburg-Smith (GS) impinger, (7) unheated filter holder with a teflon filter, (8) a second modified GS impinger with 100 ml of deionized water, and a third modified GS impinger containing approximately 300 g of silica gel desiccant, (9) a length of sample line, and (10) a Nutech[®] control case equipped with a pump, dry gas meter, and calibrated orifice.

40 CFR 51, Appendix M, Method 201A, "Determination of PM_{10} and $PM_{2.5}$ Emissions From Stationary Sources" and 40 CFR 51, Appendix M, Method 202, "Dry Impinger Method for Determining Condensable Particulate Emissions from Stationary Sources" was used to measure PM concentrations and calculate PM emission rates from EUDRYING (see Figure 3 for a schematic of the sampling train).

MAQS's Nutech[®] Model 2010 modular isokinetic stack sampling system consists of (1) a stainless-steel nozzle, (2a) a stainless-steel PM_{10} head, (2b) a stainless-steel $PM_{2.5}$ head, (3) an in stack stainless-steel filter housing, (4) a borosilicate glass probe liner, (5) a vertical condenser, (6) an empty pot-bellied impinger, (7) an empty modified Greenburg-Smith (GS) impinger, (8) unheated borosilicate filter holder with a teflon filter and Teflon filter support, (9) a second modified GS impinger with 100 ml of deionized water, and a third modified GS impinger containing approximately 300 g of silica gel desiccant, (10) a length of sample line, and (11) a Nutech[®] control case equipped with a pump, dry gas meter, and calibrated orifice.

4.b Recovery and Analytical Procedures

A sampling train leak test was conducted before and after each test run. After completion of the final leak test for each test run, the filter was recovered, the nozzle, probe, PM_{10} and $PM_{2.5}$ head (M201A only), and front half of the filter housing was brushed and triple rinsed with acetone. The acetone rinses were collected in a pre-cleaned sample container. The impinger train was then purged with nitrogen for one hour at a flow rate of 18 liters per minute. The CPM filter were recovered and placed in a petri dish. The back half of the filter housing, the condenser, the pot-bellied impinger, the moisture drop out impinger, and the front half of the CPM filter housing and all connecting glassware was triple rinsed with deionized water which will be collected in a pre-cleaned sample container. The same glassware was then rinsed with acetone and collected in a pre-cleaned sample container labeled as the organic fraction. The glassware was then double rinsed with hexane which was added to the same organic fraction sample bottle.

MAQS labeled each container with the test number, test location, and test date, and marked the level of liquid on the outside of the container. In addition, blank samples of the acetone, DI water, hexane, and filter were collected. MAQS personnel transported all samples to MAQS's laboratory (for filter and acetone gravimetric analysis) in Royal Oak, Michigan and the 202 samples were delivered to Enthalpy Analytical in Durham, North Carolina for analysis.

4.c Sampling Ports

Figures 4, 5, 6, and 7 show relevant sampling ports and traverse point locations.

4.d Traverse Points

The traverse points are included in the stack drawings as Figures 4, 5, 6, and 7.

5. Test Results and Discussion

Sections 5.a through 5.k provide a summary of the test results.

5.a Results Tabulation

The overall results of the emissions test program are summarized by Table 1. Detailed results for the emissions test program are summarized by Tables 4-7.

5.b Discussion of Results

The overall results of the emission test program are summarized by Table 1 and detailed in Tables 4-7.

5.c Process or Control Device Upsets

No upset conditions occurred during testing.

5.d Control Device Maintenance

Only routine maintenance activities were performed on the control devices in the three-month period prior to testing.

5.e Re-Test

The emissions test program was not a re-test.

5.f Audit Sample Analyses

Audit samples were not required for this emissions test program.

5.g Calibration Sheets

Relevant equipment calibration documents are provided in Appendix B.

5.h Sample Calculations

Sample calculations are provided in Appendix C.

5.i Field Data Sheets

Field documents relevant to the emissions test program are presented in Appendix A.

5.j Laboratory Data

MAQS personnel conducted analysis on all samples in MAQS's laboratory (for filter and acetone gravimetric analysis) in Royal Oak, Michigan and the 202 samples were analyzed by Enthalpy Analytical in Durham, North Carolina. Laboratory analytical data is provided in Appendix D.

MEASUREMENT UNCERTAINTY STATEMENT

Both qualitative and quantitative factors contribute to field measurement uncertainty and should be taken into consideration when interpreting the results contained within this report. Whenever possible, MAQS personnel reduce the impact of these uncertainty factors through the use of approved and validated test methods. In addition, MAQS personnel perform routine instrument and equipment calibrations and ensure that the calibration standards, instruments, and equipment used during test events meet, at a minimum, test method specifications as well as the specifications of our Quality Manual and ASTM D 7036-04. The limitations of the various methods, instruments, equipment, and materials utilized during this test have been reasonably considered, but the ultimate impact of the cumulative uncertainty of this project is not fully identified within the results of this report.

Limitations

All testing performed was done in conformance to the ASTM D7036-04 standard. The information and opinions rendered in this report are exclusively for use by Johns Manville. MAQS will not distribute or publish this report without Johns Manville's consent except as required by law or court order. MAQS accepts responsibility for the competent performance of its duties in executing the assignment and preparing reports in accordance with the normal standards of the profession, but disclaims any responsibility for consequential damages.

This report was prepared by:

Paul Diven Project Manager

This report was reviewed byr

Randal Þýsar District Manager

Table 4 Particulate Matter Emission Rates

NetroProzite Information P-1 P-2 P-3 Average Meter Temperture Tra(F) 62.9 63.0 73.5 64.0 Meter Temperture Tra(F) 62.9 62.0 73.5 64.0 Sample Volume (Vm Site AT) 64.8 64.3 77.5 69.2 Sample Volume (Vm Site AT) 1.6.8 1.4.7 1.7.16 1.6.20 Genetics (Ve, Site D) 1.6.83 1.4.57 1.7.16 1.6.20 Genetics (Ve, Site D) 0.7.15 0.77.29 0.78.3 5.2.3 5.2.3 5.2.3 5.2.3 5.2.3 5.2.3 5.2.3 5.2.3 5.2.3 5.2.3 5.2.3 5.2.3 5.2.3 5.2.3	Company Source Designation Test Date	ZFS EUDrying 10/17/2018	10/17/2018	10/18/2018	
Meter Temperature Tm (F) 62.9 68.0 7.3.5 68.1 Meter Temperature Tm (G) 22.5 22.5 22.8 22.6 22.8 22.6 22.8 22.6 22.5 5.1.6 5.3 5.2.5 5.1.6 5.3 5.2.5 5.1.6 5.3 5.2.5 5.1.6 5.3 5.2.5 5.1.6 5.3 5.2.5 5.1.6 5.3 5.2.5 5.1.6 5.3 5.2.5 5.1.6 5.3 5.2.6 2.6.6 <t< th=""><th></th><th>INTACOL</th><th></th><th>10/10/2010</th><th></th></t<>		INTACOL		10/10/2010	
Meter Persone - Pin (in, Hg) 29.5 29.5 29.8 29.6 Sample Velume (Ym. Sid fh) 66.8 66.3 70.5 69.2 Sample Velume (Ym. Sid fh) 16.8 1.437 1.116 1.620 Candenstor (Volum (Vm. Sid fh) 0.0739 0.073 0.074<	Meter/Nozzle Information	P-1	P-2	P-3	Average
Measure Sample Volume (Vm) 66.9 69.1 71.3 69.8 Simple Volume (Vm:Sld n3) 1.95 1.93 2.00 1.66 Simple Volume (Vm:Sld n3) 1.95 1.93 2.00 1.66 Gale Density (Field) Horlh3 (vect) 0.0739 0.0739 0.0739 0.0737 Cala Density (Field) Horlh3 (vect) 2.30 3.16 5.33 5.33 Total weigh dissing leg (ag (bg (bg (bg (bg (bg (bg (bg (bg (bg (b	Meter Temperature Tm (F)	62.9	68,0	73.5	68,1
Sample Volume (VmStd fit) 66.8 64.3 70.5 60.2 Sample Volume (VmStd fit) 1.58 1.457 1.716 1.602 Condensate Volume (Vmstd fit) 1.68 1.457 1.716 1.602 Ga Density (Fick) (hold) (hold) (gh) 0.073 0.0737 0.0737 0.0737 Ga Density (Fick) (hold) (gh) 0.01 1.0 5.10 5.13 2.10 State Density (Fick) (hold) (gh) 0.001 0.000179 0.000179 0.000179 0.000179 Nork/Sacc An (g. fit) 0.00179 0.000179 0.000179 0.000179 0.000179 Nork/Sacc Barne	Meter Pressure - Pm (in Hg)	29,5	29.5		
Sample Volume (Vm.SdL m3) 1.95 1.93 2.00 1.66 Condenses Volume (Vm.SdL m3) 1.95 1.67 1.71.6 1.620 Gia Density (Fd.(dbLbM3) (vm) 0.0739 0.0739 0.0739 0.0739 Total veight of anguled pac (m g Pb) (vm) 5.20 5.16 5.33 5.33 Total veight of anguled pac (m g Pb) (vm) 5.20 5.16 5.33 5.33 Stack Data	Measured Sample Volume (Vm)				
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Gas Density (F2640) HoEN3) (vse) 0.0739 0.0739 0.0739 0.0739 Teal vsejh of annybel gas (mg [h9) (vsu) 5.20 5.16 5.33 5.23 Teal vsejh of annybel gas (mg [h9) (vsu) 5.20 5.16 5.33 5.23 Stack Fragmentum - T2 (P) 0.000179 0.000179 0.000179 0.000179 Stack Data					
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Tead veryin of sampled gas (m g bb) (ver) 5.20 5.16 5.33 5.23 5.16 Norzle Stac, - An (eg. 1) 0.000179 <t< td=""><td></td><td></td><td></td><td></td><td></td></t<>					
Todal verying of campled gas (mg lbb) (dm) 5.13 5.09 5.25 5.16 Stack Data 0.000179 0.000179 0.000179 0.000179 Stack Data					
backmetic Variation - 1 92.0 92.4 88.6 91.0 Stack Dan	Total weight of sampled gas (m g lbs) (dry)	5.13	5,09	5.25	5,16
Stack Data Stack Temperature - Ts (F) 86.2 84.6 89.3 86.7 Molecular Weight Stack Ga-evel (Moh) 28.8 28.9 29.9 29.9 29.9 29.9 29.9 29.7 29.5 38.7 38.8 38.3 8.7	Nozzle Size - An (sq. fl.)				0.000179
Average Stack Temperature - Ts (F) 86.2 H4.6 89.3 86.7 Molecular Weight Stack Gav, dry (Md) 28.8 28.9 0.987 0.997		92.0	92.4		91.0
Molecial: Weight Stack Ga-dry (Md) 28.8 28.8 28.8 28.8 28.8 28.8 28.8 28.8 0.987 0.823 8.3 <t< td=""><td>Stack Data</td><td></td><td></td><td></td><td></td></t<>	Stack Data				
Malecalar Weight Stack Gasweit (Ms) 28.6 28.6 28.6 28.6 Stack Gas Specific Gravity (Gs) 0.987 0.988 0.987 Percent Musitume (Ravion) 0.2040 0.0299 0.238 0.229 Vier Vapor Volume (fraction) 0.0244 0.020 0.0238 0.0227 Vier Vapor Volume (fraction) 0.2044 0.020 0.023 0.027 Vierage Stack Vietory Vs (Mrce) 42.4 42.0 43.6 42.7 Vierage Stack Vietory Vs (Mrce) 42.0 13.6 0.27.7 22.1 69.9 21.203 Flowarde ft (Standard Weight (mg) 20.015 19.973 20.195 19.737 15.97 Flowarde ft (Standard Ber) 1.0 1.1 1.0 0.7 1.7 1.7 Flowarde ft (Standard Ber) 1.0 0.1 0.9 0.3 3.7 4.1 0.7 Fordal Eiterable PM terstma Digu and 2.5µ 0 0.1 0.9 0.3 3.7 1.1 0.7 Fordal Eiterable PM terstma Digu and 2.5µ 1.0 0	Average Stack Temperature - Ts (F)				
Stack Cas Specific Gravity (Gs) 0.987 0.987 0.987 0.987 Precend Moistine (faction) 0.0240 0.0229 0.02238 0.0229 Water Vapor Volume (faction) 0.0340 0.0299 0.02238 0.0229 Near Age Stack (Wacity - Vs (Mixec) 42.4 42.0 43.6 42.7 Area of Stack (Wacity - Vs (Mixec) 42.4 42.0 43.6 42.7 Area of Stack (Wacity - Vs (Mixec) 8.3 8.3 8.3 8.3 Februards of (Standard Wey) 20.015 19.979 20.195 19.279 Flowste of (Standard Dry) 19.53 552 572 579 Total Flitterable Particulate Weights (mg) 1 0 1 0.7 Total Flitterable Photo 1 0 1 0.9 0.3 Total Flitterable Photo 10 0 1.1 1.28 1.3 Total Flitterable Photo 10 0.1 0.9 0.3 Tetal Flitterable Photo 10 0.1 0.9 0.3 Total Grendre					
Percent Maistune (Bws) 2.40 2.09 2.38 2.29 Persuen - SP ('Hg) 0.0235 0.0225 Persuen - SP ('Hg) 2.24 29.4 29.7 29.5 Average Stack Victory - Vs (M/sec) 42.4 42.0 43.6 42.7 Area of Stack (II2) 8.3 8.3 8.3 8.3 8.3 Exhaust Gn Flowrafe Exhaust Gn Flowrafe Exhaust Gn Flowrafe ('Actual) 20.090 20.902 21.699 21.300 Flowrate It' (Standar Weights (mg) 20.015 19.895 20.687 20.199 Flowrate It' (Standard Weights (mg) 553 552 572 559 Total Efficable PM greater than 10µ 1.44 1.1 2.7 1.7 Total fitterable PM greater than 10µ 0.1 0.9 0.3 Total Fitterable PM greater than 10µ 0.1 0.9 0.3 Total fitterable PM 100 0.0 0.0 0.0 0.1 0.9 0.3 Total Fitterable PM10 1.0 0.2 1.9 Total Fitterable PM10 1.7 1.7 1.7 Total Gitterable PM10 1.0 0.001 0.002 0.0001 Condensible Particulate Total Condensible Particulate 0.7 0.7 1.7 Total Gitterable PM10 1.0 0.001 0.002 0.0001 Condensible Particulate 3.9 3.7 4.1 3.9 Condensible Particulate Concentration Fibrable Particulate Concentration Fibrable Particulate Concentration Fibrable Particulate Concentration Fibrable Particulate Concentration Fibrable Particulate Concentration Fibrable Particulate Concentration F					
Water Vapor Volume (fraction) 0.0240 0.0299 0.0228 0.0229 Pressure - Fe (Fig) 29.4 29.7 29.5 Average Stack Velocity - Vs (fi/sec) 42.4 42.0 43.6 42.7 Avera of Stack (fi/2) 8.3 8.3 8.3 8.3 Exhand Gas Flowrate Exhand Gas Flowrate 21,099 21,209 21,209 Flowrate fi (Standard Dr.) 19,353 552 256.87 20,199 Flowrate fi (Standard Dr.) 19,353 552 572 559 Total Eliferable Particulate Weights (mg) 1 0 1 0.7 Total filterable Photoreon 10µ 1.44 1.1 2.7 1.7 Total filterable Photoreon 10µ 1.44 1.1 0.7 1.0 Total filterable Photoreon 10µ 1.44 1.1 2.7 1.7 Total filterable Photoreon 10µ 1.44 1.1 2.7 1.7 Total filterable Photoreon 10µ 1.0 0.7 1.7 1.0 Total filterable Photoreon 10µ 0.					
Pressue - Ps (+Hg)					0.0229
Average Stack Velocity -Vs (Usec) 42.4 42.0 43.6 42.7 Avera of Stack (12) 8.3 8.3 8.3 8.3 Exhaust Gas Flowrate Exhaust Gas Flowrate 20.902 21.699 21.230 Flowrate R ¹ (Standard Mry) 19.2536 19.975 20.972 21.335 Flowrate R ¹ (Standard Mry) 553 552 572 559 Total Filterable Particulate Weights (mg) 553 552 572 17 Total filterable Particulate Weights (mg) 1.44 1.1 2.7 1.7 Total filterable PM test than 2.5 µ* 0 0.1 0.9 0.3 Total filterable PM test than 2.5 µ* 0 0.1 0.9 0.3 Total Filterable PM10 1.0 0.2 1.9 1.0 Total Filterable PM10 1.0 0.2 1.9 1.0 Total Filterable PM10 1.0 0.2 1.8 3.2 Total Filterable PM10 1.0 0.7 1.7 1.0 Total Filterable PM10 0.0 <td>Pressure - Ps ("Hg)</td> <td></td> <td></td> <td></td> <td></td>	Pressure - Ps ("Hg)				
Exhaust Gos Flowrate Provide R ² (Actual) 21,090 20,902 21,690 21,230 Flowrate R ² (Standard Dry) 19,835 10,897 20,195 19,937 Flowrate R ² (Standard Dry) 19,536 19,479 20,195 19,937 Flowrate R ² (Standard Dry) 553 552 572 559 Total Filterable Particulate Weights (mg) 1 0.1 1 0.7 Total filterable PM greater than 10µ 1.44 1.1 2.7 1.7 Total filterable PM testwen 10µ and 2.5µ 1 0.1 0.9 0.3 Total Filterable PM2.5 0.0 0.1 0.9 0.3 Total Filterable PM10 1.0 0.2 1.9 1.0 Total Filterable PM10 1.0 0.2 1.9 1.0 Total Condensible Particulate 0.7 0.7 1.7 1.0 Toragatic Condensible Particulate 3.9 3.7 4.1 3.2 Total Filterable PM10 0.7 1.7 1.7 1.7 Total Conden	Average Stack Velocity -Vs (fl/sec)	42.4	42.0	43.6	42.7
Flowrate fl ² (Actual) 21,090 20,902 21,699 21,230 Flowrate fl ² (Standard Dry) 19,536 19,895 20,695 19,199 Flowrate fl ² (Standard Dry) 19,536 19,479 20,195 19,797 Flowrate fl ² (Standard Cry) 553 552 572 559 Total Filterable PM greater than 10µ 1.44 1.1 2.7 1.7 Total filterable PM between 10µ and 2.5µ 1 0.1 0.9 0.3 Total filterable PM tot set than 2.5µ* 0 0.1 0.9 0.3 Total Filterable PM tot set than 2.5µ* 0 0.1 0.9 0.3 Total Filterable PM10 10 0.2 1.9 1.0 Total Condensible PArticulate Weights (mg) 0.7 1.7 1.0 0.0 Organic Condensible Particulate 2.9 2.7 4.1 3.2 2 Total Condensible Particulate 2.3 4.0 8.7 6.0 Total Condensible Particulate Concentration 1.7 1.7 1.7 1.7	Area of Stack (fl2)	8.3	8.3	8.3	8,3
Flowsteil (* Standard Wei) 20,015 19,895 20,687 20,195 19,179 Flowsteil (* Standard dry) 19,536 19,479 20,195 19,179 Flowsteil (* Standard dry) 553 552 572 559 Total Effterable PM greater than 10µ 1.44 1.1 2.7 1.7 Total filterable PM between 10µ and 2.5µ 1 0.1 0.9 0.3 Total Filterable PM between 10µ and 2.5µ 1 0.1 0.9 0.3 Total Filterable PM10 1.0 0.2 1.9 1.0 Total Filterable PM2.5 0.0 0.1 0.9 0.3 Total Filterable PM10 1.0 0.2 1.9 1.0 Total Condensible Particulate Weights (mg) 0.7 1.7 1.0 0.0 Organic Condensible Particulate 3.9 3.7 4.1 3.2 2.1 Total Condensible Particulate 2.9 2.7 4.1 3.2 2.1 Total Condensible Particulate 5.3 4.0 8.7 6.0	Exhaust Gas Flowrate			· · · · · · · · · · · · · · · · · · ·	· · · ·
Flowrate n ² (Standard Dry) 19,536 19,777 Flowrate n ² (standard dry) 553 552 572 559 Total Fitterable Particulate Weights (mg)	Flowrate ft ³ (Actual)				21,230
Flowrate m ² (standard dry) 553 552 572 559 Total Filterable PM greater than 10μ 1.44 1.1 2.7 1.7 Total filterable PM greater than 10μ 1.44 1.1 2.7 1.7 Total filterable PM between 10µ and 2.5µ 1 0.1 0.9 0.3 Total filterable PM tot set than 2.5µ* 0 0.1 0.9 0.3 Total Filterable PM10 1.0 0.2 1.9 1.0 Total Filterable PM1 2.4 1.3 4.6 2.8 Total Condensible PArticulate Weights (mg) 0.7 1.7 1.0 0.0 0.7 1.7 1.0 Organic Condensible Particulate 3.9 3.7 4.1 3.9 2.7 4.1 3.9 Condensible Particulate 2.3 4.0 8.7 6.0 0.001 0.002 0.001 Total Filterable Particulate Concentration 0.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7 1.7					20,199
Total Filterable PM filterable PM greater than 10µ 1.44 1.1 2.7 1.7 1.7 1.7 1.7 1.7 1.7 7 1.7 1.7 1.7 1.7 1.7 Cola filterable PM ess than 2.5µ* 0 0.1 0.9 0.3 Total Filterable PM10 1.0 0.2 1.9 1.0 Total Filterable PM10 1.0 0.2 1.9 1.0 Total Filterable PM10 2.4 1.3 4.6 2.8 Total Condensible Particulate 3.9 3.7 4.1 3.2 Total Filterable PM10 1.7 1.7 1.7 1.7 Total Condensible Particulate 2.3 4.0 8.7 6.0 Total Filterable Part Condensible Particulate 5.3 4.0 8.7 6.0 Filterable Part Condensible Particulate 5.3 4.0 8.7 6.0 Filterable Part Part Condec Concentration </td <td></td> <td></td> <td></td> <td></td> <td>19,737</td>					19,737
Total filterable PM geater than 10µ 1.44 1.1 2.7 1.7 Total filterable PM between 10µ and 2.5µ 1 0.1 0.9 0.3 Total filterable PM test than 2.5µ* 0 0.1 0.9 0.3 Total Filterable PM10 10 0.2 1.9 1.0 Total Filterable PM10 10 0.2 1.9 1.0 Total Filterable PM10 1.0 0.7 1.7 1.0 Total Filterable PM1 2.4 1.3 4.6 2.8 Total Condensible Particulate 3.9 3.7 4.1 3.9 Condensible Particulate 2.9 2.7 4.1 3.2 Total Condensible Particulate 5.3 4.0 8.7 60 Filterable Particulate Conceotration 1.7 1.7 1.0 1.4 Ib/1000 Ib (wet) 0.001 0.002 0.001 0.002 0.001 Ib/1000 Ib (wet) 0.001 0.002 0.001 0.002 0.001 Ib/1000 Ib (wet) 0.002	· · · · · · · · · · · · · · · · · · ·				
Total filterable PM leaves 10a and 2.5μ 1 0.1 1 0.7 Total filterable PM less than 2.5μ* 0 0.1 0.9 0.3 Total filterable PM 10 10 0.2 1.9 1.0 Total Filterable PM 10 10 0.2 1.9 1.0 Total Filterable PM 10 2.4 1.3 4.6 2.8 Total Filterable PM 10 0.7 0.7 1.7 1.0 norganic Condensible Particulate 3.9 3.7 4.1 3.9 Condensible Particulate 2.9 2.7 4.1 3.2 Total Filterable Particulate Concentration 1.7 1.7 1.0 Ibritool b (dry) 0.001 0.001 0.002 0.001 Ibritool b (dry) 0.001 0.001 0.002 0.001 Ibritool b (dry) 0.001 0.001 0.002 0.001 Ibritool b (dry) 0.001 0.002 0.001 0.002 0.001 Ibritool b (dry) 0.001 0.001 0.002 <					
Total filterable PM less than 2.5µ* 0 0.1 0.9 0.3 Total Filterable PM 10 1.0 0.2 1.9 1.0 Total Filterable PM 10 1.0 0.2 1.9 1.0 Total Filterable PM 2.4 1.3 4.6 2.8 Drganic Condensible Particulate Weights (mg) 0.7 1.7 1.0 Oroganic Condensible Particulate 3.9 3.7 4.1 3.9 Condensible Particulate 2.9 2.7 4.1 3.2 Total Condensible Particulate 2.9 2.7 4.1 3.2 Total Condensible Particulate 5.3 4.0 8.7 6.0 Filterable Particulate Concentration 1.7 1.7 1.7 6.0 Filterable Particulate Concentration 0.001 0.002 0.001 0.002 0.001 B/10000 Ib (vet) 0.001 0.001 0.002 0.001 0.002 0.001 Total Condensible Particulate Concentration					
Total Filterable PM2.5 0.0 0.1 0.9 0.3 Total Filterable PM10 1.0 0.2 1.9 1.0 Total Filterable PM 2.4 1.3 4.6 2.8 Total Condensible Particulate 0.7 0.7 1.7 1.0 nonganic Condensible Particulate 3.9 3.7 4.1 3.9 Condensible Particulate 2.9 2.7 4.1 3.2 Total Condensible Particulate 5.3 4.0 8.7 6.6 Filterable Particulate Concentration 1.7 1.7 1.3 2.7 4.1 3.2 Fold Oble (dry) 0.001 0.001 0.002 0.001 Ib/1000 Ib (dry) 0.001 0.002 0.001 Ib/1000 Ib (dry) 0.001 0.002 0.001 Condensible Particulate Concentration					
Total Filterable PM10 1.0 0.2 1.9 1.0 Total Filterable PM1 2.4 1.3 4.6 2.8 Total Condensible Particulate Weights (mg)	Total interacte PW less than 2.5µ	v	0.1	0.9	0.5
Total Filterable PM10 1.0 0.2 1.9 1.0 Total Filterable PM1 2.4 1.3 4.6 2.8 Total Condensible Particulate Weights (mg)	Total Filterable PM2.5	0,0	0.1	0.9	0.3
Total Condensible Particulate Weights (mg) Organic Condensible Particulate 0.7 0.7 1.7 1.0 Inorganic Condensible Particulate 3.9 3.7 4.1 3.9 Condensible Particulate 2.9 2.7 4.1 3.2 Total Enterable Particulate 2.9 2.7 4.1 3.2 Total Enterable Particulate Concentration 5.3 4.0 8.7 6.6 EiNterable Particulate Concentration 0.001 0.002 0.001 Ib/1000 Ib (wt) 0.001 0.002 0.001 Ib/1000 Ib (wt) 0.003 0.0010 0.002 0.001 Ib/1000 Ib (wt) 0.009 0.05 0.18 0.11 Condensible Particulate Emission Rate	Total Filterable PM10				
Organic Condensible Particulate 0.7 0.7 1.7 1.0 Integratic Condensible Particulate 3.9 3.7 4.1 3.9 Condensible Particulate 2.9 2.7 4.1 3.2 Total Condensible Particulate 5.3 4.0 8.7 6.6 Filterable Particulate Concentration	Total Filterable PM	2,4	1.3	4.6	2.8
Inorganic Condensible Particulate 3.9 3.7 4.1 3.9 Condensible Particulate 2.9 2.7 4.1 3.2 Total Condensible Particulate 5.3 4.0 8.7 6.6 Filterable and Condensible Particulate 5.3 4.0 8.7 6.6 Filterable Particulate Concentration 0.001 0.001 0.002 0.001 Ib/1000 Ib (dry) 1.3 0.7 2.3 1.4 gr/dscf 0.009 0.05 0.18 0.11 Condensible Particulate Emission Rate 0.001 0.002 0.001 Ib/1000 Ib (wet) 0.001 0.001 0.002 0.001 Ib/1000 Ib (wet) 0.001 0.002 0.001 0.002 0.001 Ib/1000 Ib (dry) 0.001 0.002 0.0002 0.0001 0.002 0.0001 gr/dscf 0.0006 0.0006 0.0009 0.0007 0.0001 0.002 0.001 0.002 0.001 0.002 0.001 0.002 0.001 0.	Total Condensible Particulate Weights (mg)				
Condensible Blank Correction 1.7 1.7 1.7 1.7 Total Condensible Particulate 2.9 2.7 4.1 3.2 Total Filterable and Condensible Particulate 5.3 4.0 8.7 6.0 Filterable Particulate Concentration	Organic Condensible Particulate	0.7	0,7	1.7	1,0
Fortal Condensible Particulate 2.9 2.7 4.1 3.2 Total Filterable and Condensible Particulate 5.3 4.0 8.7 6.0 Filterable Particulate Concentration	Inorganic Condensible Particulate	3.9	3,7	4.1	3.9
Fotal Filterable and Condensible Particulate 5.3 4.0 8.7 6.0 Filterable Particulate Concentration 0.001 0.001 0.002 0.001 Ib/1000 lb (xet) 0.001 0.001 0.002 0.001 g/dscl 0.0005 0.0003 0.0010 0.0006 g/dscl 0.0005 0.0003 0.0010 0.0006 Filterable Particulate Emission Rate 1.1 0.002 0.0011 Ib/1 no 0.009 0.001 0.002 0.001 Ib/1000 lb (wet) 0.001 0.001 0.002 0.001 Ib/1000 lb (wet) 0.001 0.002 0.001 Ib/1000 lb (wet) 0.002 0.0002 0.0002 Condensible Particulate Emission Rate	Condensible Blank Correction				
Filterable Particulate Concentration Filterable Particulate Concentration [b/1000] b (vet) 0.001 0.001 0.002 0.001 (b/1000] b (dry) 0.001 0.002 0.001 0.002 0.001 mg/dscr 0.0005 0.0003 0.0010 0.0002 0.001 mg/dscr 0.009 0.05 0.18 0.11 Condensible Particulate Emission Rate					
lb/1000 lb (wet) 0.001 0.001 0.002 0.001 lb/1000 lb (dry) 0.001 0.002 0.001 g/dscr 0.0005 0.0003 0.0010 0.0006 g/dscr 0.0005 0.0003 0.0010 0.0006 Filterable Particulate Emission Rate 0.009 0.05 0.18 0.11 Condensible Particulate Concentration 0.001 0.002 0.001 lb/1000 lb (wet) 0.001 0.002 0.001 lb/1000 lb (wet) 0.001 0.002 0.001 g/dscr 0.0006 0.0006 0.0002 0.0007 g/dscr 0.0006 0.0006 0.0009 0.0007 0.0007 Condensible Particulate Emission Rate 0.11 0.10 0.15 0.12 lb/1n0 0.002 0.002 0.004 0.003 lb/1000 lb (wet) 0.002 0.002 0.004 0.003 lb/1000 lb (wet) 0.0012 0.002 0.0013 0.002 lb/1000 lb (dry) 0.00					
bb/1000 lb (dry) 0.001 0.002 0.001 ng/dscr (dry) 1.3 0.7 2.3 1.4 gr/dscf 0.0005 0.0010 0.0005 felterable Particulate Emission Rate		0.001	0.001	0.002	0,001
gr/dscf 0.0005 0.0010 0.0010 Filterable Particulate Emission Rate	lb/1000 lb (dry)	0.001			0,001
Filtexable Particulate Emission Rate 0.09 0.05 0.18 0.11 Condensible Particulate Concentration 0.001 0.002 0.001 1b/1000 lb (wet) 0.001 0.001 0.002 0.001 1b/1000 lb (wet) 0.001 0.002 0.001 mg/dscr 0.0006 0.0006 0.0009 0.0007 Condensible Particulate Emission Rate 0.11 0.10 0.15 0.12 Fortal Particulate Concentration 0.002 0.002 0.004 0.003 1b/1000 lb (wet) 0.0012 0.002 0.0019 0.0013 1b/100 lb (wet) 0.0016 0.0012 0.0025 0.002 1b/100 lb (wet) 0.0016 0.0012 0.0025 0.002 1b/100 lb (wet) 0.0016 0.0012 0.0025 0.002 </td <td>nıg/dscm (dry)</td> <td></td> <td></td> <td></td> <td></td>	nıg/dscm (dry)				
bb/hr 0.09 0.05 0.18 0.11 Condensible Particulate Concentration	gr/dscf Filterable Porticulate Emission Rate	0.0005	0.0003	0,0010	0.0006
bb/1000 bb (wet) 0.001 0.002 0.001 bb/1000 bb (dy) 0.001 0.002 0.001 mg/dscm (dy) 1.5 1.4 2.0 1.6 gr/dscf 0.0006 0.0006 0.0009 0.0007 Condensible Particulate Emission Rate	lb/hr	0.09	0.05	0,18	0.11
Instruction Instruction Instruction Instruction Implementation 0.0006 0.0009 0.0009 0.0007 Condensible Particulate Emission Rate 0.11 0.10 0.15 0.12 Total Particulate Concentration 0.0002 0.0002 0.0004 0.003 Ib/1000 lb (wet) 0.002 0.002 0.004 0.003 Ib/1000 lb (wet) 0.0012 0.0002 0.004 0.003 Ib/1000 lb (dry) 0.0012 0.0009 0.0019 0.0013 og/dscf 0.0012 0.0019 0.0012 0.002 0.0012 Total Particulate Emission Rate 15 0.15 0.33 0.23 Total Particulate Emission Rate 15 0.0012 0.0025 0.002 Ib/1000 lb (dry) 0.002 0.001 0.003 0.002 Ib/1000 lb (dry) 0.002 0.001 0.003 0.002 Ib/1000 lb (dry) 0.001 0.001 0.0003 0.0009 Total PM10 Emission Rate 15	lb/1000 lb (wet)	0.001	0,001	0.002	0.001
gridscf 0.0006 0.0006 0.0009 0.0007 Condensible Particulate Emission Rate 0.11 0.10 0.15 0.12 Di/ Iron 0.16 0.11 0.10 0.15 0.12 Di/ Iron 0.000 b (wet) 0.002 0.002 0.004 0.003 Ib/1000 lb (wet) 0.002 0.002 0.004 0.003 gr/dscf 0.0012 0.0009 0.0019 0.0013 gr/dscf 0.0012 0.0009 0.0019 0.0013 Total Particulate Emission Rate	lb/1000 lb (dry)	0.001	0.001	0.002	0,001
Condensible Particulate Emission Rate 0.11 0.10 0.15 0.12 Ib' hr 0.11 0.10 0.15 0.12 Fotal Particulate Concentration	mg/dscm (dry)				
Fotal Particulate Concentration 0.002 0.002 0.004 0.003 lb/1000 lb (wet) 0.002 0.002 0.004 0.003 lb/1000 lb (dry) 0.002 0.002 0.004 0.003 gr/dscr (dry) 2.7 2.0 4.3 3.0 gr/dscr (dry) 0.0012 0.0009 0.0019 0.0013 Total Particulate Emission Rate 0.20 0.15 0.33 0.23 Total PM10 Concentration 0.0016 0.0012 0.6025 0.002 lb/1000 lb (wet) 0.0016 0.0012 0.6025 0.002 lb/1000 lb (dry) 0.002 0.001 0.0003 0.602 lb/1000 lb (dry) 0.002 0.001 0.0003 0.602 gr/dscf 0.6069 0.0006 0.0013 0.0009 Total PM10 Emission Rate	gr/dsci Condensible Particulate Emission Rate	0,0006	0.0006	0,0009	0.0007
bb/1000 lb (wet) 0.002 0.002 0.004 0.003 lb/1000 lb (dry) 0.002 0.002 0.004 0.003 ng/dscr 0.002 0.002 0.004 0.003 ng/dscr 0.0012 0.0009 0.0019 0.0013 Total Particulate Emission Rate	lb/ hr Total Particulate Concentration	0.11	0.10	0,15	0.12
ng/dscm (dry) 2.7 2.0 4.3 3.0 gr/dscf 0.0012 0.0009 0.0019 0.0013 Drdaf Particulate Emission Rate	1b/1000 lb (wet)				
gr/dscf 0.0012 0.0019 0.0013 Total Particulate Emission Rate 0.0013 0.0019 0.0013 Ib/ hr 0.20 0.15 0.33 0.23 Total PM10 Concentration 0.0016 0.0012 0.6025 0.002 Ib/1000 lb (wet) 0.0016 0.0012 0.6025 0.002 Ib/1000 lb (dy1) 0.002 0.001 0.003 0.6029 ng/dscri (dy1) 2.0 1.5 3.0 2.2 rdscri (dy2) 0.015 0.11 0.23 0.0009 Total PM10 Emission Rate	1b/1000 lb (dry)				
Fotal Particulate Emission Rate 0.20 0.15 0.33 0.23 Ib' hr 0.20 0.15 0.33 0.23 Fotal PM10 Concentration 0.0016 0.0012 0.6025 0.002 Ib' loool b (dry) 0.002 0.001 0.003 0.002 Ib' loool b (dry) 2.0 1.5 3.0 2.2 gridscf 0.0006 0.0003 0.0009 Fotal PM10 Emission Rate 0.15 0.11 0.23 0.16 Total PM105.5 Concentration 0.001 0.001 0.002 0.001 Ib'looo Ib (wet) 0.001 0.001 0.002 0.001 Ib'looo Ib (dry) 0.001 0.001 0.002 0.002 mg/dscm (dry) 1.5 1.4 2.5 1.8	nıg/dscm (dry) /dscf				
Total PM10 Concentration Formula Science bb/1000 lb (wet) 0.0016 0.0012 0.0025 0.002 bb/1000 lb (dry) 0.002 0.001 0.003 0.002 g/dscn (dry) 2.0 1.5 3.0 2.2 gr/dscf 0.0069 0.0006 0.0013 0.0009 Total PM10 Emission Rate	rotal Particulate Emission Rate				0.0013
bb/1000 lb (wet) 0.0016 0.0012 0.0025 0.002 bb/1000 lb (dry) 0.002 0.001 0.003 0.002 ng/dscr 0.0069 0.006 0.003 0.002 ng/dscr 0.0069 0.0006 0.0013 0.0009 Total PN10 Emission Rate 0.15 0.11 0.23 0.16 Total PN12.5 Concentration 1 0.001 0.002 0.001 1b/1000 lb (wet) 0.001 0.001 0.002 0.002 ng/dscri (dry) 1.5 1.4 2.5 1.8 ng/dscri (dry) 1.5 1.4 2.5 1.8	lb/ hr Folal PM 10 Concentration	0.20	0.15	0.33	0.23
ng/dscm (dry) 2.0 1.5 3.0 2.2 gr/dscf 0.0009 0.0006 0.0013 0.0009 Fotal PM10 Emission Rate 0.15 0.11 0.23 0.16 Total PM2.5 Concentration 0.0001 0.001 0.002 0.001 bb/1000 lb (wet) 0.001 0.001 0.002 0.001 bb/1000 lb (dry) 0.001 0.001 0.002 0.002 ng/dscm (dry) 1.5 1.4 2.5 1.8 gr/dscf 0.0006 0.0006 0.0011 0.0008	1b/1000 lb (wet)	0,0016	0.0012	0,0025	0.002
gr/dscf 0.0009 0.0013 0.0009 Total PM10 Emission Rate	lb/1000 lb (dry)		0.001		0,002
lb/ hr 0.15 0.11 0.23 0.16 Total PM2.5 Concentration	gr/dscf				2.2 0.0009
Data PM2.5 Concentration 1b/1000 lb (wet) 0.001 0.001 0.001 1b/1000 lb (dry) 0.001 0.001 0.002 0.002 ng/dscm (dry) 1.5 1.4 2.5 1.8 reface 0.0006 0.0096 0.0011 0.0008	Total PM10 Emission Rate				
ib/1000 lb (dry) 0.001 0.002 0.002 ng/dscm (dry) 1.5 1.4 2.5 1.8 gr/dscf 0.0006 0.0006 0.0011 0.0008	Total PM2.5 Concentration				
ng/dscm (dry) 1.5 1.4 2.5 1.8 gr/dscf 0.0006 0.0011 0.0008	1b/1000 lb (wet) 1b/1000 lb (day)				
gr/dscf 0.0006 0.0011 0.0008					
Total PM2.5 Emission Rate	gr/dscf				0,0008
ib/ hr 0,11 0,10 0.19 0,13					

Table 5 Particulate Matter Emission Rates

Company Source Designation	ZFS PREPEQUII			
Test Date	10/16/2018	10/16/2018	10/16/2018	
Meter/Nozzle Information	P-I	P-2	P-3	Average
Meter Temperature Tm (F)	62.9	67.7	73.0	67.8
Meter Pressure - Pm (in. Hg)	29.6	29.6	29.5	29.6
Measured Sample Volume (Vm)	83.7	82.9	83.0	83.2
Sample Volume (Vm-Std ft3)	82.5	80.8	80.0	81.1
Sample Volume (Vm-Std m3)	2.34	2.29	2.27	2,30
Condensate Volume (Vw-std)	2.023	2.056	2.098	2.059
Gas Density (Ps(std) lbs/ft3) (wet)	0.0739	0,0738	0.0738	0.0738
Gas Density (Ps(std) lbs/ft3) (dry)	0.0745	0.0745	0.0745	0.0745
Total weight of sampled gas (m g lbs) (wet)	6.24	6.12	6.06	6,14
Total weight of sampled gas (m g lbs) (dry)	6.15	6.02	5.96	6,05
Nozzle Size - An (sg. ft.)	0.000229	0.000229	0.000229	0.000229
Isokinetic Variation - I	100.1	100.4	100.7	100.4
Stack Data				
Average Stack Temperature - Ts (F)	110.4	112.8	113.9	112.4
Molecular Weight Stack Gas- dry (Md)	28.8	28.8	28.8	28.8
Molecular Weight Stack Gas-wet (Ms)	28.6	28.6	28.6	28.6
Stack Gas Specific Gravity (Gs)	0.987	0.986	0.986	0,986
Percent Moisture (Bws)	2.39	2.48	2.56	2.48
Water Vapor Volume (fraction)	0.0239	0.0248	0,0256	0.0248
Pressure - Ps ("Hg)	29.3	29.3	29.3	29.3
Average Stack Velocity -Vs (ft/sec)	75.1	73.9	73.2	74.1
Area of Stack (ft2)	4.9	4.9	4.9	4.9
Exhaust Gas Flowrate				· · · · · · · · · · · · · · · · · · ·
Flowrate ft ³ (Actual)	22,121	21,748	21,542	21,804
Flowrate fl ³ (Standard Wet)	20,086	19,629	19,386	19,700
Flowrate ft ³ (Standard Dry)	19,605	19,142	18,891	19,213
Flowrate m ³ (standard dry)	555	542	535	544
Total Particulate Weights (mg)				
Total Nozzle/Probe/Filter	10.9	12.9	12.0	11.9
Organic Condensible Particulate	0.9	1.1	1.0	1.0
Inorganic Condensible Particulate	3.8	4.2	4.3	4.1
Condensible Blank Correction	1.7	1.7	1.7	1.7
Total Condensible Particulate	3.0	3.5	3.6	3.4
Total Filterable and Condensible Particulate	13.9	16.4	15.6	15.3
	· · · · · · · · · · · · · · · · · · ·			· · · · · · · · · · · · · · · · · · ·
	0.001	0.00-		
lb/1000 lb (wet)	0.004	0.005	0.004	0.004
lb/1000 lb (dry)	0.004	0.005	0.004	0.004
lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry)	0.004 4.7	0.005 5.6	0.004 5.3	0.004 5.2
lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf	0.004	0.005	0.004	0.004
lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf Filterable Particulate Emission Rate	0.004 4.7	0.005 5.6	0.004 5.3	0.004 5.2
lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf Filterable Particulate Emission Rate lb/ hr	0.004 4.7 0.0020	0.005 5.6 0.0025	0.004 5.3 0.0023	0.004 5.2 0.0023
lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf Filterable Particulate Emission Rate lb/ hr Condensible Particulate Concentration	0.004 4.7 0.0020	0.005 5.6 0.0025	0.004 5.3 0.0023	0.004 5.2 0.0023
lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf Filterable Particulate Emission Rate lb/ hr Condensible Particulate Concentration lb/1000 lb (wet)	0.004 4.7 0.0020 0.34	0.005 5.6 0.0025 0.41	0.004 5.3 0.0023 0.38	0.004 5.2 0.0023
lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf Filterable Particulate Emission Rate lb/ hr Condensible Particulate Concentration lb/1000 lb (wet) lb/1000 lb (dry)	0.004 4.7 0.0020 0.34 0.001	0.005 5.6 0.0025 0.41 0.001	0.004 5.3 0.0023 0.38	0.004 5.2 0.0023 0.38
lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf Filterable Particulate Emission Rate lb/ hr Condensible Particulate Concentration lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry)	0.004 4.7 0.0020 0.34 0.001 0.001	0.005 5.6 0.0025 0.41 0.001 0.001	0.004 5.3 0.0023 0.38 0.001 0.001	0.004 5.2 0.0023 0.38 0.001 0.001
lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry)	0.004 4.7 0.0020 0.34 0.001 0.001 1.3	0.005 5.6 0.0025 0.41 0.001 0.001 1.5	0.004 5.3 0.0023 0.38 0.001 0.001 1.6	0.004 5.2 0.0023 0.38 0.001 0.001 1.5
lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf Filterable Particulate Emission Rate lb/ hr Condensible Particulate Concentration lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf Condensible Particulate Emission Rate	0.004 4.7 0.0020 0.34 0.001 0.001 1.3 0.0006	0.005 5.6 0.0025 0.41 0.001 0.001 1.5 0.0007	0.004 5.3 0.0023 0.38 0.001 0.001 1.6 0.0007	0.004 5.2 0.0023 0.38 0.001 0.001 0.001 1.5 0.0006
lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf Filferable Particulate Emission Rate lb/ hr Condensible Particulate Concentration lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf Condensible Particulate Emission Rate lb/ hr	0.004 4.7 0.0020 0.34 0.001 0.001 1.3	0.005 5.6 0.0025 0.41 0.001 0.001 1.5	0.004 5.3 0.0023 0.38 0.001 0.001 1.6	0.004 5.2 0.0023 0.38 0.001 0.001 1.5
lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf Filterable Particulate Emission Rate lb/ hr Condensible Particulate Concentration lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf Condensible Particulate Emission Rate lb/ hr Fotal Particulate Concentration	0.004 4.7 0.0020 0.34 0.001 0.001 1.3 0.0006 0.09	0.005 5.6 0.0025 0.41 0.001 0.001 1.5 0.0007 0.11	0.004 5.3 0.0023 0.38 0.001 0.001 1.6 0.0007 0.11	0.004 5.2 0.0023 0.38 0.001 0.001 1.5 0.0006 0.11
lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf Filterable Particulate Emission Rate lb/ hr Condensible Particulate Concentration lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf Condensible Particulate Emission Rate lb/1000 lb (dry) mg/dscm (dry) gr/dscf Condensible Particulate Emission Rate lb/ hr Total Particulate Concentration lb/1000 lb (wet)	0.004 4.7 0.0020 0.34 0.001 0.001 1.3 0.0006 0.09 0.005	0.005 5.6 0.0025 0.41 0.001 0.001 1.5 0.0007 0.11 0.006	0.004 5.3 0.0023 0.38 0.001 0.001 1.6 0.0007 0.11 0.006	0.004 5.2 0.0023 0.38 0.001 0.001 1.5 0.0006 0.11 0.006
lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf Filterable Particulate Emission Rate lb/ hr Condensible Particulate Concentration lb/1000 lb (wet) lb/1000 lb (dry) mg/dscm (dry) gr/dscf Condensible Particulate Emission Rate lb/1 lb/ hr Condensible Particulate Emission Rate lb/ hr Total Particulate Concentration lb/1000 lb (wet) lb/1000 lb (wet) lb/1000 lb (wet)	0.004 4.7 0.0020 0.34 0.001 0.001 1.3 0.0006 0.09 0.009 0.005 0.005	0.005 5.6 0.0025 0.41 0.001 0.001 1.5 0.0007 0.11 0.006 0.006 0.006	0.004 5.3 0.0023 0.38 0.001 0.001 1.6 0.0007 0.11 0.006 0.006	0.004 5.2 0.0023 0.38 0.001 0.001 1.5 0.0006 0.11 0.006 0.006
lb/1000 lb (wet) lb/1000 lb (dry) ng/dscm (dry) gr/dscf Filterable Particulate Emission Rate lb/ hr Condensible Particulate Concentration lb/1000 lb (wet) lb/1000 lb (dry) ng/dscm (dry) gr/dsef Condensible Particulate Emission Rate lb/ hr Fotal Particulate Concentration lb/1000 lb (wet)	0.004 4.7 0.0020 0.34 0.001 0.001 1.3 0.0006 0.09 0.005	0.005 5.6 0.0025 0.41 0.001 0.001 1.5 0.0007 0.11 0.006	0.004 5.3 0.0023 0.38 0.001 0.001 1.6 0.0007 0.11 0.006	0.004 5.2 0.0023 0.38 0.001 0.001 1.5 0.0006 0.11 0.006

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Table 6Particulate Matter Emission Rates

Company	ZFS			
Source Designation	Pit 2/EU Han	dling		
Test Date	10/17/2018	10/17/2018	10/18/2018	
Meter/Nozzle Information	P-1	P-2	P-3	Average
Meter Temperature Tm (F)	48.5	47.2	42.2	46.0
Meter Pressure - Pm (in. Hg)	29.5	29.6	29.9	29.6
Measured Sample Volume (Vm)	69.6	69.6	73.2	70.8
Sample Volume (Vm-Std ft3)	70.3	70.5	75.9	72.2
Sample Volume (Vm-Std m3)	1.99	2.00	2.15	2.05
Condensate Volume (Vw-std)	0.556	0.467	0.448	0.490
Gas Density (Ps(std) lbs/ft3) (wet)	0.0743	0.0743	0.0744	0.0743
Gas Density (Ps(std) lbs/ft3) (dry)	0.0745	0.0745	0.0745	0.0745
Total weight of sampled gas (m g lbs) (wet)	5.26	5.28	5.68	5.41
Total weight of sampled gas (m g lbs) (dry)	5.24	5.26	5.65	5.38
Nozzle Size - An (sq. ft.)	0.000229	0.000229	0.000229	0.000229
Isokinetic Variation - I	100.1	99.5	99.1	99.6
Stack Data			······································	
Average Stack Temperature - Ts (F)	51.8	51.6	45.0	49.4
Molecular Weight Stack Gas- dry (Md)	28.8	28.8	28.8	28.8
Molecular Weight Stack Gas-wet (Ms)	28.8	28.8	28.8	28.8
Stack Gas Specific Gravity (Gs)	0.993	0.993	0.994	0.993
Percent Moisture (Bws)	0.79	0.66	0.59	0.68
Water Vapor Volume (fraction)	0.0079	0.0066	0.0059	0.0068
Pressure - Ps ("Hg)	29.3	29.4	29.7	29.5
Average Stack Velocity -Vs (ft/sec)	55,3	55.1	57.4	55.9
Area of Stack (fl2)	3.1	3.1	3.1	3.1
Exhaust Gas Flowrate	· _		······································	
Flowrate ft ³ (Actual)	10,422	10,375	10,805	10,534
Flowrate ft ³ (Standard Wet)	10,532	10,514	11,218	10,755
Flowrate ft ³ (Standard Dry)	10,449	10,445	11,152	10,682
Flowrate m ³ (standard dry)	296	296	316	302
Total Particulate Weights (mg)				
Nozzle/Probe/Filter	3.0	1.8	1.5	2.1
Total Particulate Concentration	· · · ·			······································
lb/1000 lb (wet)	0.001	0.001	0.001	0.001
lb/1000 lb (dry)	0.001	0.001	0.001	0.001
mg/dscm (dry)	1.5	0.9	0.7	1.0
gr/dscf	0.0007	0.0004	0.0003	0.0005
g/dscm	0.00151	0.00090	0.00070	0.00104
Total Particulate Emission Rate				
lb/ hr	0.059	0.035	0.029	0.041
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Table 7Particulate Matter Emission Rates

Company	ZFS			
Source Designation	Pit 3/EU Handling 2			
Test Date	10/18/2018	10/18/2018	10/18/2018	
Meter/Nozzle Information	P-1	P-2	P-3	Average
Meter Temperature Tm (F)	50.7	53.8	58.4	54.3
Meter Pressure - Pm (in. Hg)	30.0	30.0	29.6	29.8
Measured Sample Volume (Vm)	74.9	74.6	74.5	74.7
Sample Volume (Vm-Std ft3)	77.1	76.3	74.6	76.0
Sample Volume (Vm-Std m3)	2.18	2.16	2.11	2.15
Condensate Volume (Vw-std)	0.547	0.533	0.552	0.544
Gas Density (Ps(std) lbs/ft3) (wet)	0.0743	0.0743	0.0743	0.0743
Gas Density (Ps(std) lbs/ft3) (dry)	0.0745	0.0745	0.0745	0.0745
Total weight of sampled gas (m g lbs) (wet)	5.77	5.71	5.58	5.69
Total weight of sampled gas (m g lbs) (dry)	5.74	5.69	5.56	5.66
Nozzle Size - An (sq. ft.)	0.000175	0.000175	0.000175	0.000175
Isokinetic Variation - I	98.7	99.1	99.7	99.2
Stack Data				· · · · · · · · · · · · · · · · · · ·
Average Stack Temperature - Ts (F)	45.2	48.2	56.0	49.8
Molecular Weight Stack Gas- dry (Md)	28.8	28.8	28.8	28.8
Molecular Weight Stack Gas-wet (Ms)	28.8	28.8	28.8	28.8
Stack Gas Specific Gravity (Gs)	0.993	0.993	0.993	0.993
Percent Moisture (Bws)	0.70	0.69	0.73	0.71
Water Vapor Volume (fraction)	0.0070	0.0069	0.0073	0.0071
Pressure - Ps ("Hg)	29.7	29.7	29.4	29.6
Average Stack Velocity -Vs (ft/sec)	80.2	79.6	79.6	79.8
Area of Stack (ft2)	1.4	1,4	1.4	1.4
Exhaust Gas Flowrate				· · · · ·
Flowrate ft ³ (Actual)	6,520	6,469	6,464	6,485
Flowrate ft ³ (Standard Wet)	6,770	6,677	6,492	6,646
Flowrate ft ³ (Standard Dry)	6,722	6,631	6,444	6,599
Flowrate m ³ (standard dry)	190	188	182	187
Total Particulate Weights (mg)				
Nozzle/Probe/Filter	0.6	0.5	2.5	1.2
Total Particulate Concentration			I	
lb/1000 lb (wet)	0.000	0.000	0.001	0.000
lb/1000 lb (dry)	0.000	0.000	0.001	0.0005
mg/dscm (dry)	0.3	0.2	1.2	0.6
gr/dscf	0.0001	0.0001	0.0005	0.0002
g/dscm	0,0003	0.0002	0.0012	0.0006
Total Particulate Emission Rate		· · · · · · · · · · · · · · · · · · ·		
lb/ hr	0.007	0.006	0.029	0.014
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