

Interpoll Laboratories, Inc.
4500 Ball Road N.E.
Circle Pines, Minnesota 55014-1819

TEL: (763) 786-6020
FAX: (763) 786-7854

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AIR QUALITY DIV.

**RESULTS OF THE MAY 12-14, 2015
AIR EMISSION COMPLIANCE
TESTING AT THE LOUISIANA PACIFIC SIDING
PLANT IN NEWBERRY, MICHIGAN**

Submitted to:

LOUISIANA-PACIFIC CORPORATION
7299 North C.R.403
Newberry, Michigan 49868

Attention:

Matthew Hieshetter
Plant Environmental Manager

Reviewed by:


Kathleen Eickstadt
Coordinator

Report Number 15-34236
June 15, 2015
DVH



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 Louisiana-Pacific County Luce
Source Address 7299 N County Road 403 City Newberry
AQD Source ID (SRN) N0780 ROP No. MI-ROP-N0780-2011 ROP Section No. NA

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 _____ To _____
Additional monitoring reports or other applicable documents required by the ROP are attached as described:
Compliance stack test report: EUPRESS: VII Reporting: 5. Submit complete report
Compliance stack testing completed May, 12, 13, and 14, 2015

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

Kurt Chamberlain Plant Manager 906-293-3265
Name of Responsible Official (print or type) Title Phone Number
[Signature] Signature of Responsible Official 07 JUL 15 Date

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1 INTRODUCTION

On May 12-14, 2015, Interpoll Laboratories personnel conducted Air Emission tests at the Louisiana Pacific Corporation (LP) OSB Plant Located in Newberry, Michigan on the following sources:

<u>Source</u>	<u>Methods</u>
Konus	PM-10, PM, NO _x , CO, VOC's, VE
Press Vents	PM/PM-10, CO, NO _x , VOC's, MDI, Formaldehyde, Phenol, VE

On-site testing was performed by Chris Warneke, Steve Edson, Colin Kelly, Trey Grealish and Andrew Strong. Coordination between testing activities and plant operation was provided by Matt Hieshetter of LP. The tests were witnessed by Joel Asher and Tom Gasloli, both members of the Michigan Department of Environmental Quality.

Particulate evaluations were performed in accordance with EPA Methods 2-5, CFR Title 40, Part 60, Appendix A (revised July 1, 2014). A preliminary determination of the gas linear velocity profile was made at each test location before the first particulate determination to allow selection of the appropriate nozzle diameter for isokinetic sample withdrawal. An Interpoll Labs sampling train, which meets or exceeds specifications in the above-cited reference was used to isokinetically extract particulate samples by means of a heated glass-lined probe. Wet catch samples were collected in the back half of the Method 5 sampling train and analyzed in accordance with EPA Method 202.

Oxides of nitrogen, carbon monoxide, oxygen, carbon dioxide and total hydrocarbon concentrations were determined in accordance with Methods 6C, 7E, 10, 3A and 25A (Ibid). A slipstream of sample gas was withdrawn from the exhaust gas stream using a heated stainless steel probe equipped with a filter to remove interfering particulate material. The particulate-free gas was transported to the analyzers by means of a heat-traced probe and filter assembly. After passing through the filter, the gas passed through a chilled condenser-type moisture removal system. The particulate-free dry gas was then transported to the analyzers with the excess exhausted to the atmosphere through a calibrated orifice, which was used to ensure that the flow from the stack exceeds the requirements of the analyzers.

The analog response of each analyzer was recorded with a computer datalogger and backed up with a strip chart recorder. The NO_x, CO, O₂, CO₂ and VOC analyzers were calibrated with EPA Protocol standard gases. The instrument was calibrated before and after each run. The sample probe was moved through a three-point traverse (1/6, 3/6, 5/6 of the stack diameter) to measure gaseous concentrations.

NCASI 98.01 was used to measure the HAP concentrations. The stack gas sample was extracted using a heated glass probe and Teflon filter holder loaded with a glass fiber filter to remove any particulate material present. The sample collection system is composed of three midjet impingers in series. Each of the three impingers is loaded with approximately 10ml of high purity water. The sampling rate was set at approximately 400 cc per minute. The volume sampled was recorded using a calibrated dry gas meter (DGM). One spike and one duplicate run were performed. During the spike test, one of the two systems was spiked with representative targeted analytes to determine compound capture efficiencies. Following the conclusion of sampling (typically 60 minutes), the impinger contents were recovered and labeled. All spike recoveries fell within the method requirements of 70-130%. All duplicate test runs also met the method criteria.

The analytical procedure for formaldehyde is incorporated by reference from the NCASI chilled impinger technique. The method utilizes the acetylacetone colorimetric technique. This procedure involves the reaction of acetylacetone with formaldehyde to produce a colored derivative, which was measured by colorimetric analysis. Note that this requires a UV spectrophotometer capable of yielding absorbance values at 412nm. Refer to NCASI Method CI/WP 98.01 for details.

Total gaseous hydrocarbon concentrations were determined instrumentally using a VIG Model 20 heated flame ionization detector (HFID) calibrated against methane or propane in air standards. The THC concentration was continuously monitored by extracting a slipstream of exhaust gas by means of a heated probe and filter holder. A heat-traced teflon line was used to transport the sample gas from the filter holder outlet to the analyzer inlet.

MDI concentrations were determined in accordance with EPA Method 207. This method employs collection of MDI with 1,2-PP in toluene reagent, with analysis by HPLC.

Testing on the press and unloader vents were conducted from four test ports oriented across

degrees on the stack. A 12-point traverse was used to collect particulate samples. Each traverse point was sampled 5 minutes for a total sampling time of 120 minutes per run.

The results of the test are summarized in Section 2. Detailed results are presented in Section 3. Field data and all other supporting information are presented in the appendices.

2 SUMMARY AND DISCUSSION

The results of the compliance tests are summarized in the following tables. An overview of all results is presented below:

<u>PARAMETER</u>	<u>LIMIT¹</u>	<u>MEASURED</u>
<u>WEST PRESS VENT</u>		
PM/PM-10²(LB/HR)	24.0	1.9
Carbon Monoxide(LB/HR)	4.64	0.71
VOC's(LBC/HR)	73.6	1.42
Oxides of Nitrogen(LB/HR)	1.36	≤ 0.13
MDI(LB/HR)	0.53	0.14
Formaldehyde(LB/HR)	3.1	1.12
Phenol(LB/HR)	2.0	< 0.53
Visible Emissions (Highest 6 minute avg.-%)	N/A	0
<u>EAST PRESS VENT</u>		
PM/PM-10(LB/HR)	24.0	1.735
Carbon Monoxide(LB/HR)	4.64	0.37
VOC's(LBC/HR)	73.6	1.42
Oxides of Nitrogen(LB/HR)	1.36	0.53
MDI(LB/HR)	0.53	0.17
Formaldehyde(LB/HR)	3.1	1.72
Phenol(LB/HR)	2.0	< 0.30
Visible Emissions (Highest 6 minute avg.-%)	N/A	0

¹ Combined limits for both No.1 and No.2 Press Vents.

² PM/PM-10 sampling on the West and East Press Vents and the TOH utilized EPA Methods 5 and 202.

<u>PARAMETER</u>	<u>LIMIT</u>	<u>MEASURED</u>
<u>KONUS THERMAL OIL HEATER</u>		
PM-10(LB/HR)	4.3	0.52
..(LB/1000 Lbs Flue Gas @ 50% Excess Air)	0.081	0.024
Particulate		
.....(LB/HR)	4.3	0.50
..(LB/1000 Lbs Flue Gas @ 50% Excess Air)	0.081	0.023
Oxides of Nitrogen		
.....(LB/HR)	15.5	3.96
.....(LB/mmBTu)	0.4	0.25
Carbon Monoxide		
.....(LB/HR)	26	0.56
.....(LB/mmBTu)	0.87	0.035
VOC's		
.....(LBC/HR)	0.77	<0.038
Visible Emissions		
.....(Highest 6 minute avg.-%)	N/A	0

No difficulties were encountered in the field by Interpoll Labs or in the laboratory evaluation of the samples, which were conducted by Interpoll Labs. On the basis of these facts and a complete review of the data and results, it is our opinion that the results reported herein are accurate and closely reflect the actual values, which existed at the time the test was performed.

Test 1 Summary of the May 12, 2015, Particulate Emission Compliance Test on the West Press Vent Stack at the Louisiana Pacific facility in Newberry, Michigan.

Item		Run 1	Run 2	Run 3	Average
Date of test		05-12-15	05-12-15	05-12-15	
Time (Start/Finish)	(Hrs)	0940 / 1144	1235 / 1438	1535 / 1756	
Volumetric Flow					
Actual	(ACFM)	103,459	100,923	103,563	102,649
Standard	(DSCFM)	93,492	91,679	94,064	93,078
Gas Temperature	(°F)	93	93	92	93
Moisture Content	(%v/v)	1.32	0.92	1.02	1.09
Gas Composition	(%v/v, dry)				
Carbon Dioxide		0.03	0.03	0.03	0.03
Oxygen		20.90	20.90	20.90	20.90
Nitrogen		79.07	79.07	79.07	79.07
Sample Volume	(dscf)	88.02	86.25	88.87	87.71
Isokinetic Variation	(%)	99.3	99.6	100.0	99.6
Particulate Results-EPA Methods 5 & 202 (Dry Impinger Technique)					
<i>Dry Catch Only</i>					
Sample Mass (Nozzle, PW, Filter)	(g)	0.0106	0.0067	0.0078	
Concentration - Actual	(GR/ACF)	0.00168	0.00109	0.00123	0.00133
Concentration - Standard	(GR/DSCF)	0.00186	0.00120	0.00135	0.00147
Emission Rate	(LB/HR)	1.489	0.942	1.091	1.174
<i>Organic CPM</i>					
Sample Mass	(g)	0.0037	0.0036	0.0045	
Concentration - Actual	(GR/ACF)	0.00059	0.00059	0.00071	0.000627
Concentration - Standard	(GR/DSCF)	0.00065	0.00064	0.00078	0.000691
Emission Rate	(LB/HR)	0.520	0.506	0.630	0.552
<i>Inorganic CPM</i>					
Sample Mass	(g)	0.0008	0.0014	0.0016	
Concentration - Actual	(GR/ACF)	0.00013	0.00023	0.00025	0.000202
Concentration - Standard	(GR/DSCF)	0.00014	0.00025	0.00028	0.000223
Emission Rate	(LB/HR)	0.112	0.196	0.224	0.177
<i>Total Particulate (Dry + Organic + Inorganic)</i>					
Sample Mass	(g)	0.0151	0.0117	0.0139	
Concentration - Actual	(GR/ACF)	0.00239	0.00190	0.00219	0.002162
Concentration - Standard	(GR/DSCF)	0.00265	0.00209	0.00241	0.002384
Emission Rate	(LB/HR)	2.121	1.644	1.945	1.903

Test 2 Summary of the May 12, 2015, Oxides of Nitrogen, Carbon Monoxide and VOC Emission
 Test on the Press Vent Stack (West) at the Louisiana Pacific Facility located in Newberry, MI.

Item		Run 1	Run 2	Run 3	Average
Date of test		05-12-15	05-12-15	05-12-15	
Time runs were done	(Hrs)	0940 / 1040	1235 / 1335	1535 / 1635	
Volumetric Flow					
Actual	(ACFM)	103,453	100,887	103,542	102,627
Standard	(DSCFM)	93,488	91,642	94,043	93,058
Gas Temperature	(°F)	93	93	92	93
Moisture Content	(%v/v)	1.32	0.92	1.02	1.09
Gas Composition (%v/v, dry)					
Carbon Dioxide		0.01	0.10	0.04	0.05
Oxygen		21.05	21.16	21.15	21.12
Nitrogen		78.94	78.74	78.80	78.83
Results					
Nox					
Concentration - ppm, dry	(ppm, d) <	0.050	0.512	< 0.050	≤ 0.204
Emission Rate	(LB/HR) <	0.03	0.34	< 0.03	≤ 0.134
CO					
Concentration - ppm, dry	(ppm, d)	1.513	2.320	1.406	1.746
Emission Rate	(LB/HR)	0.62	0.93	0.58	0.707
VOC					
Concentration - ppm, dry	(ppm C, d)	3.04	22.57	5.26	10.291
Emission Rate	(LB C/HR)	0.13	3.54	0.59	1.420

Nox analyzer LDL 0.05 ppm

Results of NCASI 98.01 Determinations

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 Louisiana Pacific
 Newberry, MI

Test Number 3
Press Vent Stack (West)

		Run 1		Run 2		Run 3		Average	
Date of Test		05-12-15		05-12-15		05-12-15			
Time of Runs									
	Start (Hrs)	0940		1225		1535			
	End (Hrs)	1040		1325		1635			
	Total (Min)	60		60		60			
Moisture Content	(%v/v)	1.3		0.9		1.0			
Volumetric Flow Rate	(DSCFM)	93,024		92,247		93,919			
Sample Volume	(DSL)	23.33	Duplicate 27.70	19.20	Spike 25.55	17.96			
	(%)	1.26		83.44					
Phenol	(ppm,d)	< 0.19	0.18	0.73	1.30	< 0.26	< 0.39		
	(LB/HR)	< 0.26	0.25	0.98		< 0.36	< 0.53		
	(%)	3.32		91.56					
Formaldehyde	(ppm,d)	0.56	0.54	6.72	7.37	0.50	2.59		
	(LB/HR)	0.24	0.23	2.90		0.22	1.12		
	(%)	4.42		80.47					

Test 4 Summary of the May 13, 2015 MDI Emission Compliance Test on the Press Vent Stack (West)
at the Louisiana Pacific facility in Newberry, MI.

Item		Run 1	Run 2	Run 3	Average
Date of test		05-13-15	05-13-15	05-13-15	
Time runs were done	(Hrs)	0915 / 1017	1110 / 1212	1305 / 1406	
Volumetric Flow					
Actual	(ACFM)	105,179	104,481	105,547	105,069
Standard	(DSCFM)	97,422	96,293	96,607	96,774
Gas Temperature	(°F)	60	60	66	62
Moisture Content	(%v/v)	0.81	0.71	0.64	0.72
Gas Composition (%v/v, dry)					
Carbon Dioxide		0.03	0.03	0.03	0.03
Oxygen		20.90	20.90	20.90	20.90
Nitrogen		79.07	79.07	79.07	79.07
Isokinetic Variation	(%)	99.8	99.8	99.8	99.8
MDI Results					
Sample Volume	(DSCF)	41.47	41.01	41.14	41.21
Total Micrograms in Sample	(ug)	350.0	489.0	496.0	445.0
Concentration	(gr/dscf)	0.0001302	0.0001839	0.0001860	0.0001667
Concentration	(ppm,d)	0.02864	0.04046	0.04091	0.03667
Emission Rate	(LB/HR)	0.1087	0.1518	0.15401	0.1382
Emission Rate	(g/sec)	0.013699	0.019129	0.019405	0.017411

Test 5 Summary of the May 12, 2015, Particulate Emission Compliance Test on the East Press Vent Stack at the Louisiana Pacific facility in Newberry, Michigan.

Item		Run 1	Run 2	Run 3	Average
Date of test		05-12-15	05-12-15	05-12-15	
Time (Start/Finish)	(Hrs)	0940 / 1144	1235 / 1439	1535 / 1758	
Volumetric Flow					
Actual	(ACFM)	102,123	100,233	91,105	97,820
Standard	(DSCFM)	93,344	91,451	82,993	89,263
Gas Temperature	(°F)	84	85	87	85
Moisture Content	(%v/v)	1.50	1.49	1.30	1.43
Gas Composition (%v/v, dry)					
Carbon Dioxide		0.03	0.03	0.03	0.03
Oxygen		20.90	20.90	20.90	20.90
Nitrogen		79.07	79.07	79.07	79.07
Sample Volume	(dscf)	81.20	81.43	75.78	79.47
Isokinetic Variation	(%)	97.7	100.0	102.5	100.1
Particulate Results-EPA Methods 5 & 202 (Dry Impinger Technique)					
<i>Dry Catch Only</i>					
Sample Mass (Nozzle, PW, Filter)	(g)	0.006	0.0089	0.0073	
Concentration - Actual	(GR/ACF)	0.00104	0.00154	0.00135	0.00131
Concentration - Standard	(GR/DSCF)	0.00114	0.00169	0.00149	0.00144
Emission Rate	(LB/HR)	0.912	1.322	1.057	1.097
<i>Organic CPM</i>					
Sample Mass	(g)	0.002058252	0.003758252	0.002858252	
Concentration - Actual	(GR/ACF)	0.00036	0.00065	0.00053	0.000513
Concentration - Standard	(GR/DSCF)	0.00039	0.00071	0.00058	0.000562
Emission Rate	(LB/HR)	0.313	0.558	0.414	0.428
<i>Inorganic CPM</i>					
Sample Mass	(g)	0.001441748	0.001441748	0.001341748	
Concentration - Actual	(GR/ACF)	0.00025	0.00025	0.00025	0.000249
Concentration - Standard	(GR/DSCF)	0.00027	0.00027	0.00027	0.000273
Emission Rate	(LB/HR)	0.219	0.214	0.194	0.209
<i>Total Particulate (Dry + Organic + Inorganic)</i>					
Sample Mass	(g)	0.0095	0.0141	0.0115	
Concentration - Actual	(GR/ACF)	0.00165	0.00244	0.00213	0.002074
Concentration - Standard	(GR/DSCF)	0.00181	0.00267	0.00234	0.002273
Emission Rate	(LB/HR)	1.444	2.094	1.666	1.735

Results of NCASI 98.01 Determinations

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LP - Newberry

Newberry, MI

Test Number 6
East Press Vent

		Run 1		Run 2		Run 3		Average			
Date of Test		05-12-15		05-12-15		05-12-15					
Time of Runs											
Start	(Hrs)	0940		1235		1535					
End	(Hrs)	1040		1335		1635					
Total	(Min)	60		60		60					
Moisture Content	(%v/v)	1.5		1.5		1.3					
Volumetric Flow Rate	(DSCFM)	93,344		91,451		82,993					
Sample Volume	(DSL)	22.82	Duplicate 23.02	23.48	Spike 24.02	23.49					
Phenol	(ppm,d)	<	0.23	0.23	<	0.22	0.79	<	0.22	<	0.23
	(LB/HR)	<	0.32	0.32	<	0.30		<	0.27	<	0.30
	(%)	0.08		118.83							
Formaldehyde	(ppm,d)	6.16		6.10	0.92	1.96	5.41		4.15		
	(LB/HR)	2.69		2.67	0.39		2.10		1.72		
	(%)	0.90		94.10							

Test 7 Summary of the May 12, 2015, Oxides of Nitrogen, Carbon Monoxide and VOC Emission Test on the East Press Stack at the Louisiana Pacific Facility in Newberry, Michigan.

Item		Run 1	Run 2	Run 3	Average
Date of test		05-12-15	05-12-15	05-12-15	
Time runs were done (Hrs)		0940 / 1040	1235 / 1335	1535 / 1635	
Volumetric Flow					
Actual	(ACFM)	102,123	100,233	91,105	97,820
Standard	(DSCFM)	93,344	91,451	82,993	89,263
Gas Temperature (°F)		84	85	87	85
Moisture Content (%v/v)		1.50	1.49	1.30	1.43
Gas Composition (%v/v, dry)					
Carbon Dioxide		0.10	0.03	-0.06	0.02
Oxygen		20.98	21.09	21.06	21.04
Nitrogen		78.92	78.88	79.00	78.93
Results					
Nox					
Concentration - ppm, dry	(ppm, d)	1.014	0.633	0.833	0.826
Emission Rate	(LB/HR)	0.68	0.41	0.49	0.529
CO					
Concentration - ppm, dry	(ppm, d)	1.153	0.710	0.983	0.949
Emission Rate	(LB/HR)	0.47	0.28	0.36	0.369
VOC					
Concentration - ppm, dry	(ppm, d)	17.03	7.60	18.57	14.401
Emission Rate	(LB/HR)	2.57	0.92	2.59	2.026

Test 8 Summary of the May 13, 2015, MDI Emission Compliance Test on the East Press Vent Stack at the Louisiana Pacific facility in Newberry, Michigan.

Item		Run 1	Run 2	Run 3	Average
Date of test		05-13-15	05-13-15	05-13-15	
Time runs were done	(Hrs)	0915 / 1019	1110 / 1213	1305 / 1409	
Volumetric Flow					
Actual	(ACFM)	89,520	98,963	96,853	95,112
Standard	(DSCFM)	82,657	91,021	88,184	87,287
Gas Temperature	(°F)	82	87	86	85
Moisture Content	(%v/v)	0.40	1.99	1.55	1.31
Gas Composition (%v/v, dry)					
Carbon Dioxide		0.03	0.03	0.03	0.03
Oxygen		20.90	20.90	20.90	20.90
Nitrogen		79.07	79.07	79.07	79.07
Isokinetic Variation	(%)	98.9	101.1	99.8	99.9
MDI Results					
Sample Volume	(DSCF)	35.49	39.98	38.23	37.90
Total Micrograms in Sample	(ug)	507.0	695.0	434.0	545.3
Concentration	(gr/dscf)	0.0002204	0.0002682	0.0001752	0.0002213
Concentration	(ppm,d)	0.04849	0.05900	0.03853	0.04867
Emission Rate	(LB/HR)	0.1562	0.2093	0.13239	0.1659
Emission Rate	(g/sec)	0.019675	0.026367	0.016681	0.020908

Test 9 Summary of the May 14, 2015, Particulate Emission Compliance Test on the Thermal Oil Heater Stack at the Louisiana Pacific facility in Newberry, Michigan.

Item	Run 1	Run 2	Run 3	Average
Date of test	05-14-15	05-14-15	05-14-15	
Time (Start/Finish) (Hrs)	0905 / 1109	1130 / 1337	1515 / 1717	
Volumetric Flow				
Actual (ACFM)	16,268	16,641	14,233	15,714
Standard (DSCFM)	10,435	10,619	9,099	10,051
Gas Temperature (°F)	282	284	272	279
Moisture Content (%v/v)	8.66	8.92	10.22	9.27
Gas Composition (%v/v, dry)				
Carbon Dioxide	4.57	4.55	5.01	4.71
Oxygen	15.68	15.82	15.36	15.62
Nitrogen	79.74	79.63	79.63	79.67
Sample Volume (dscf)	97.36	100.37	86.94	94.89
Isokinetic Variation (%)	98.8	100.1	101.2	100.0
Particulate Results-EPA Methods 5 & 202 (Dry Impinger Technique)				
<i>Dry Catch Only</i>				
Sample Mass (Nozzle, PW, Filter) (g)	0.0405	0.0327	0.0335	
Concentration - Actual (GR/ACF)	0.00412	0.00321	0.00380	0.00371
Concentration - Standard (GR/DSCF)	0.00642	0.00503	0.00595	0.00580
Emission Rate (LB/HR)	0.574	0.457	0.464	0.498
Emission Factor (LB/MMBTU)	0.035	0.028	0.031	0.031
<i>Organic CPM</i>				
Sample Mass (g)	0.0007	0.0008	0.0012	
Concentration - Actual (GR/ACF)	0.00007	0.00008	0.00014	0.000095
Concentration - Standard (GR/DSCF)	0.00011	0.00012	0.00021	0.000149
Emission Rate (LB/HR)	0.010	0.011	0.017	0.013
Emission Factor (LB/MMBTU)	0.001	0.001	0.001	0.001
<i>Inorganic CPM</i>				
Sample Mass (g)	0.0005	0.0003	0.0007	
Concentration - Actual (GR/ACF)	0.00006	0.00003	0.00008	0.000056
Concentration - Standard (GR/DSCF)	0.00010	0.00005	0.00012	0.000088
Emission Rate (LB/HR)	0.008	0.004	0.010	0.007
Emission Factor (LB/MMBTU)	0.001	0.000	0.001	0.000
<i>Total Particulate (Dry + Organic + Inorganic)</i>				
Sample Mass (g)	0.0418	0.0338	0.0354	
Concentration - Actual (GR/ACF)	0.00425	0.00332	0.00402	0.003860
Concentration - Standard (GR/DSCF)	0.00663	0.00520	0.00628	0.006035
Emission Rate (LB/HR)	0.592	0.473	0.490	0.518
Emission Factor (LB/MMBTU)	0.036	0.029	0.033	0.033

Test 10 Summary of the May 14, 2015, Oxides of Nitrogen, Carbon Monoxide and VOC Emission Test on the Thermal Oil Heater at the Louisiana Pacific Facility located in Newberry, MI.

Item		Run 1	Run 2	Run 3	Average
Date of test		05-14-15	05-14-15	05-14-15	
Time runs were done (Hrs)		0905 / 1005	1130 / 1230	1400 / 1500	
Volumetric Flow					
Actual	(ACFM)	16,268	16,641	14,233	15,714
Standard	(DSCFM)	10,435	10,619	9,099	10,051
Moisture Content (%v/v)		8.66	8.92	10.22	9.27
Gas Composition (%v/v, dry)					
Carbon Dioxide		4.57	4.55	5.01	4.71
Oxygen		15.68	15.82	15.36	15.62
Nitrogen		79.74	79.63	79.63	79.67
Results					
Nox					
Concentration - ppm, dry (ppm, d)		55.684	54.724	54.402	54.937
Emission Rate (LB/MMBTU)		0.256	0.258	0.235	0.250
Emission Rate (LB/HR)		4.16	4.16	3.55	3.957
CO					
Concentration - ppm, dry (ppm, d)		18.071	5.901	14.680	12.884
Emission Rate (LB/MMBTU)		0.051	0.017	0.039	0.035
Emission Rate (LB/HR)		0.82	0.27	0.58	0.559
VOC ⁽¹⁾					
Concentration - ppm, dry (ppm, d) <		3.28	<	3.29	<
Emission Rate (LB/HR) <		0.041	<	0.038	<

⁽¹⁾These values were determined based on a detection limit of 1.0 ppm on this FID analyzer.

The results of all field and laboratory evaluations are presented in this section. Gas composition and moisture is presented first followed by the computer printout of the particulate, oxides of nitrogen, opacity, carbon monoxide, total hydrocarbons, formaldehyde, phenol and MDI results. Preliminary measurements including test port locations are given in the appendices.

The results have been calculated on a personal computer using programs written in using Microsoft Excel spreadsheets specifically for source testing calculations. EPA-published equations have been used as the basis of the calculation techniques in these programs. The emission rates have been calculated using the product of the concentration times flow method.

3.1 Results of Orsat and Moisture Determinations

Test Number 1
Press Vent Stack (West)

Results of Gas Composition and Moisture Analyses --- Methods 3A and 4 (% v/v)

Date of Run		Run 1	Run 2	Run 3
		05-12-15	05-12-15	05-12-15
Dry basis				
Carbon Dioxide.....	(%)	0.03	0.03	0.03
Oxygen.....	(%)	20.90	20.90	20.90
Nitrogen.....	(%)	79.07	79.07	79.07
Wet basis				
Carbon Dioxide.....	(%)	0.03	0.03	0.03
Oxygen.....	(%)	20.62	20.71	20.69
Nitrogen.....	(%)	78.03	78.35	78.26
Water Vapor.....		1.32	0.92	1.02
Dry Molecular Weight.....	(g/gmole)	28.84	28.84	28.84
Wet Molecular Weight.....	(g/gmole)	28.70	28.74	28.73
Specific Gravity.....		0.991	0.993	0.992
Water Mass Flow.....	(lb/hr)	3513	2375	2715

Test Number 4
Press Vent Stack (West)

Results of Gas Composition and Moisture Analyses --- Methods 3A and 4 (% v/v)

Date of Run		Run 1 05-13-15	Run 2 05-13-15	Run 3 05-13-15
Dry basis				
Carbon Dioxide.....	(%)	0.03	0.03	0.03
Oxygen.....	(%)	20.90	20.90	20.90
Nitrogen.....	(%)	79.07	79.07	79.07
Wet basis (Orsat)				
Carbon Dioxide.....	(%)	0.03	0.03	0.03
Oxygen.....	(%)	20.73	20.75	20.77
Nitrogen.....	(%)	78.43	78.51	78.56
Water Vapor.....		0.81	0.71	0.64
Dry Molecular Weight.....	(g/gmole)	28.84	28.84	28.84
Wet Molecular Weight.....	(g/gmole)	28.75	28.76	28.77
Specific Gravity.....		0.993	0.994	0.994
Water Mass Flow.....	(lb/hr)	2238	1925	1708

Test Number 5
 East Press Vent

Results of Gas Composition and Moisture Analyses --- Methods 3A and 4 (% v/v)

Date of Run		Run 1	Run 2	Run 3
		05-12-15	05-12-15	05-12-15
Dry basis				
Carbon Dioxide.....	(%)	0.03	0.03	0.03
Oxygen.....	(%)	20.90	20.90	20.90
Nitrogen.....	(%)	79.07	79.07	79.07
Wet basis				
Carbon Dioxide.....	(%)	0.03	0.03	0.03
Oxygen.....	(%)	20.59	20.59	20.63
Nitrogen.....	(%)	77.88	77.89	78.04
Water Vapor.....		1.50	1.49	1.30
Dry Molecular Weight.....	(g/gmole)	28.84	28.84	28.84
Wet Molecular Weight.....	(g/gmole)	28.68	28.68	28.70
Specific Gravity.....		0.991	0.991	0.991
Water Mass Flow.....	(lb/hr)	4000	3891	3070

Test Number 8
 East Press Vent

Results of Gas Composition and Moisture Analyses --- Methods 3A and 4 (% v/v)

Date of Run		Run 1 05-13-15	Run 2 05-13-15	Run 3 05-13-15
Dry basis				
Carbon Dioxide.....	(%)	0.03	0.03	0.03
Oxygen.....	(%)	20.90	20.90	20.90
Nitrogen.....	(%)	79.07	79.07	79.07
Wet basis (Orsat)				
Carbon Dioxide.....	(%)	0.03	0.03	0.03
Oxygen.....	(%)	20.82	20.48	20.58
Nitrogen.....	(%)	78.76	77.50	77.84
Water Vapor.....		0.40	1.99	1.55
Dry Molecular Weight.....	(g/gmole)	28.84	28.84	28.84
Wet Molecular Weight.....	(g/gmole)	28.80	28.63	28.67
Specific Gravity.....		0.995	0.989	0.990
Water Mass Flow.....	(lb/hr)	924	5179	3813

Test Number 9
 Thermal Oil Heater

Results of Gas Composition and Moisture Analyses --- Methods 3A and 4 (% v/v)

Date of Run		Run 1	Run 2	Run 3
		05-14-15	05-14-15	05-14-15
Dry basis				
Carbon Dioxide.....	(%)	4.57	4.55	5.01
Oxygen.....	(%)	15.68	15.82	15.36
Nitrogen.....	(%)	79.74	79.63	79.63
Wet basis				
Carbon Dioxide.....	(%)	4.18	4.14	4.50
Oxygen.....	(%)	14.33	14.41	13.79
Nitrogen.....	(%)	72.84	72.52	71.49
Water Vapor.....		8.66	8.92	10.22
Dry Molecular Weight.....	(g/gmole)	29.36	29.36	29.42
Wet Molecular Weight.....	(g/gmole)	28.38	28.35	28.25
Specific Gravity.....		0.980	0.979	0.976
Water Mass Flow.....	(lb/hr)	2775	2918	2906
Fo.....		1.140	1.117	1.105

3.2 Results of Particulate Sampling Data

Test Number 1
Press Vent Stack (West)

Results of EPA Method 5/202 Sampling Data

		Run 1	Run 2	Run 3
Date of Test		05-12-15	05-12-15	05-12-15
Time of Runs	(Hrs)	0940 / 1144	1235 / 1438	1535 / 1756
Static Pressure	(In. of WC)	-0.70	-0.70	-0.70
Cross Sectional Area	(Sq. ft)	26.27	26.27	26.27
Pitot Tube Coefficient		0.84	0.84	0.84
Water in Sample Gas				
Impingers	(g)	5.9	-6.1	-16.1
Desiccant	(g)	19.1	23.0	35.5
Total	(g)	25.0	16.9	19.4
Gas Meter Coefficient		0.9950	0.9950	0.9950
Barometric Pressure	(In. of Hg)	28.77	28.77	28.77
Avg. Orifice Pressure Drop	(In. of WC)	2.19	2.11	2.23
Avg. Gas Meter Temperature	(°F)	68.7	68.0	68.3
Volume Through Gas Meter				
Meter Conditions	(CF)	91.65	89.71	92.45
Standard Conditions	(DSCF)	88.02	86.25	88.87
Total Sampling Time	(Min.)	120.00	120.00	120.00
Nozzle Diameter	(In.)	0.195	0.195	0.195
Avg. Stack Gas Temperature	(°F)	93	93	92
Volumetric Flow Rate				
Actual	(ACFM)	103,459	100,923	103,563
Dry Standard	(DSCFM)	93,492	91,679	94,064
Isokinetic Variation	(%)	99.3	99.6	100.0

Test Number 5
East Press Vent

Results of EPA Method 5/202 Sampling Data

		Run 1	Run 2	Run 3
Date of Test		05-12-15	05-12-15	05-12-15
Time of Runs	(Hrs)	0940 / 1144	1235 / 1439	1535 / 1758
Static Pressure	(In. of WC)	-2.40	-2.40	-2.40
Cross Sectional Area	(Sq. ft)	26.27	26.27	26.27
Pitot Tube Coefficient		0.84	0.84	0.84
Water in Sample Gas				
Impingers	(g)	6.3	-2.8	21.2
Desiccant	(g)	20.0	29.0	0.0
Total	(g)	26.3	26.2	21.2
Gas Meter Coefficient		0.9930	0.9930	0.9930
Barometric Pressure	(In. of Hg)	28.79	28.79	28.79
Avg. Orifice Pressure Drop	(In. of WC)	1.76	1.69	1.52
Avg. Gas Meter Temperature	(°F)	80.2	81.1	82.2
Volume Through Gas Meter				
Meter Conditions	(CF)	86.59	87.00	81.15
Standard Conditions	(DSCF)	81.20	81.43	75.78
Total Sampling Time	(Min.)	120.00	120.00	120.00
Nozzle Diameter	(In.)	0.189	0.189	0.189
Avg. Stack Gas Temperature	(°F)	84	85	87
Volumetric Flow Rate				
Actual	(ACFM)	102,123	100,233	91,105
Dry Standard	(DSCFM)	93,344	91,451	82,993
Isokinetic Variation	(%)	97.7	100.0	102.5

Test Number 9
Thermal Oil Heater

Results of EPA Method 5/202 Sampling Data

		Run 1	Run 2	Run 3
Date of Test		05-14-15	05-14-15	05-14-15
Time of Runs	(Hrs)	0905 / 1109	1130 / 1337	1515 / 1717
Static Pressure	(In. of WC)	-0.12	-0.12	-0.12
Cross Sectional Area	(Sq. ft)	19.63	19.63	19.63
Pitot Tube Coefficient		0.84	0.84	0.84
Water in Sample Gas				
Impingers	(g)	155.7	173.6	182.0
Desiccant	(g)	40.0	35.0	28.0
Total	(g)	195.7	208.6	210.0
Gas Meter Coefficient		0.9930	0.9930	0.9930
Barometric Pressure	(In. of Hg)	29.53	29.53	29.53
Avg. Orifice Pressure Drop	(In. of WC)	2.24	2.37	1.79
Avg. Gas Meter Temperature	(°F)	76.7	77.7	80.0
Volume Through Gas Meter				
Meter Conditions	(CF)	100.46	103.72	90.36
Standard Conditions	(DSCF)	97.36	100.37	86.94
Total Sampling Time	(Min.)	120.00	120.00	120.00
Nozzle Diameter	(In.)	0.532	0.532	0.532
Avg. Stack Gas Temperature	(°F)	282	284	272
Volumetric Flow Rate				
Actual	(ACFM)	16,268	16,641	14,233
Dry Standard	(DSCFM)	10,435	10,619	9,099
Isokinetic Variation	(%)	98.8	100.1	101.2

3.3 Results of MDI Sampling Data

Test Number 4
Press Vent Stack (West)

Results of EPA OTM-14 (MDI) Sampling Data

		Run 1	Run 2	Run 3
Date of Test		05-13-15	05-13-15	05-13-15
Time of Runs	(Hrs)	0915 / 1017	1110 / 1212	1305 / 1406
Static Pressure	(In. of WC)	-0.70	-0.70	-0.70
Cross Sectional Area	(Sq. ft)	26.27	26.27	26.27
Pitot Tube Coefficient		0.84	0.84	0.84
Water in Sample Gas				
Impingers	(g)	1.3	1.5	-1.5
Desiccant	(g)	5.9	4.7	7.0
Total	(g)	7.2	6.2	5.5
Gas Meter Coefficient		0.9950	0.9950	0.9950
Barometric Pressure	(In. of Hg)	29.48	29.48	29.48
Avg. Orifice Pressure Drop	(In. of WC)	1.86	1.83	1.86
Avg. Gas Meter Temperature	(°F)	60.0	59.9	65.6
Volume Through Gas Meter				
Meter Conditions	(CF)	41.49	41.02	41.60
Standard Conditions	(DSCF)	41.47	41.01	41.14
Total Sampling Time	(Min.)	60.00	60.00	60.00
Nozzle Diameter	(In.)	0.185	0.185	0.185
Avg. Stack Gas Temperature	(°F)	96	100	104
Volumetric Flow Rate				
Actual	(ACFM)	105,179	104,481	105,547
Dry Standard	(DSCFM)	97,422	96,293	96,607
Isokinetic Variation	(%)	99.8	99.8	99.8

Test Number 8
East Press Vent

Results of EPA OTM-14 (MDI) Sampling Data

		Run 1	Run 2	Run 3
Date of Test		05-13-15	05-13-15	05-13-15
Time of Runs	(Hrs)	0915 / 1019	1110 / 1213	1305 / 1409
Static Pressure	(In. of WC)	-2.40	-2.40	-2.40
Cross Sectional Area	(Sq. ft)	26.27	26.27	26.27
Pitot Tube Coefficient		0.84	0.84	0.84
Water in Sample Gas				
Impingers	(g)	0.0	10.2	9.5
Desiccant	(g)	3.0	7.0	3.0
Total	(g)	3.0	17.2	12.5
Gas Meter Coefficient		0.9930	0.9930	0.9930
Barometric Pressure	(In. of Hg)	29.53	29.53	29.53
Avg. Orifice Pressure Drop	(In. of WC)	1.39	1.66	1.61
Avg. Gas Meter Temperature	(°F)	82.5	86.9	85.6
Volume Through Gas Meter				
Meter Conditions	(CF)	37.09	42.09	40.16
Standard Conditions	(DSCF)	35.49	39.98	38.23
Total Sampling Time	(Min.)	60.00	60.00	60.00
Nozzle Diameter	(In.)	0.187	0.187	0.187
Avg. Stack Gas Temperature	(°F)	99	92	100
Volumetric Flow Rate				
Actual	(ACFM)	89,520	98,963	96,853
Dry Standard	(DSCFM)	82,657	91,021	88,184
Isokinetic Variation	(%)	98.9	101.1	99.8

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3.4 Results of the Visible Emissions Determinations

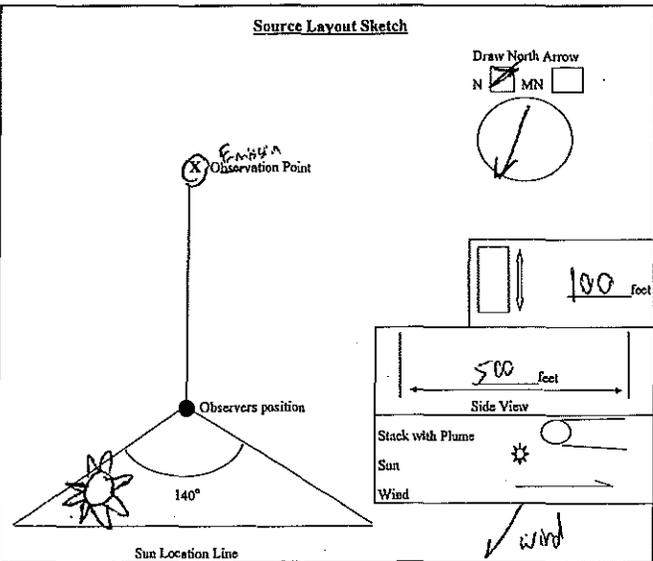
EPA

Visible Emission Observation Form 1

Method Used (circle one) Method 9 203A 203B Other
 Company Name Louisiana Pacific
 Facility Name LP Sagola
 Street Address N 85th M-95
 City Sagola State MI Zip 49461

Process Thermal oil heater Unit # P001 Operating Mode
 Control Equipment ROXUS Stack Operating Mode

Describe Emission Point Single stack ~100ft height
 Height of Emission Point Start 100ft End 100ft Height of Emission Point Relative to Observer Start 100ft End 100ft
 Distance to Emission Point Start 500ft End 500ft Direction to Emission Point (Degrees) Start 55 End 55
 Vertical angle to Observation Point Start 55 End 55 Direction to Observation Point (Degrees) Start 50 End 55
 Distance and Direction to Observation point from Emission Point Start 500ft South End 500ft South North
 Describe Emissions Start Clear End Clear
 Emission Color Start White End " Water Droplet Plume Attached Detached None
 Describe Plume Background Start Clear Sky End Clear Sky
 Background Color Start blue End blue Sky Conditions Start Clear End Clear
 Wind Speed Start 15 mph End 14 mph Wind Direction Start S End S
 Ambient Temp. Start 60° C End 61° F Wet Bulb Temp. 46.5 F RH Percent. 34%



Longitude 85° 29' 41" W Latitude 46° 20' 3" N Declination

Additional Information
 Observers Name (Print) Colin Kelly
 Observers Signature [Signature] Date 5/29/15
 Organization Enter Poll Laboratories
 Certified By Account Engineering Date 6/10/2015

Form Number _____ Page _____ of _____
 Continued on Form Number _____

Observation Date	Time Zone			Start Time	End Time	Comments
<u>5/14</u>	<u>Eastern</u>		<u>12:30</u>	<u>1:30</u>		
Min/Sec	0	15	30	45		
1	0	0	0	0		
2	0	0	0	0		
3	0	0	0	0		
4	0	0	0	0		
5	0	0	0	0		
6	0	0	0	0		
7	0	0	0	0		
8	0	0	0	0		
9	0	0	0	0		
10	0	0	0	0		
11	0	0	0	0		
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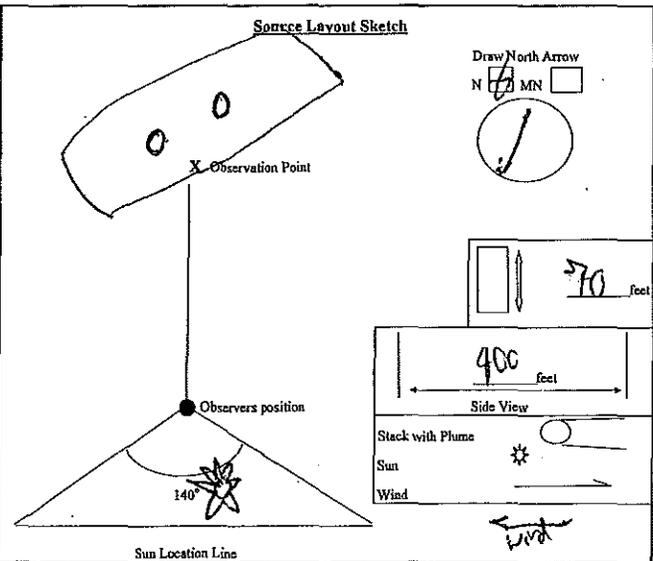
EPA

Visible Emission Observation Form 1

Method Used (circle one) Method 9 203A 203B Other
 Company Name Louisiana Pacific
 Facility Name LP Sogola
 Street Address N 4501
 City Sogola State ME Zip 49601

Process Press Mills Unit # 006 Operating Mode
 Control Equipment East/West stacks Operating Mode

Describe Emission Point Two stacks on top of building about 20 ft apart
 Height of Emission Point Start 70 ft End 70 ft Height of Emission Point Relative to Observer Start 70 ft End 70 ft
 Distance to Emission Point Start 400 ft End 400 ft Direction to Emission Point (Degrees) Start 50° End 50°
 Vertical angle to Observation Point Start 50° End 50° Direction to Observation Point (Degrees) Start 50° End 50°
 Distance and Direction to Observation point from Emission Point Start 400 ft NW End 400 ft NW
 Describe Emissions Start Non detectable End Non detectable
 Emission Color Start Clear End Clear Water Droplet Plume Attached Detached None
 Describe Plume Background Start Overcast sky End over cast
 Background Color Start grey End grey Sky Conditions Start Overcast End "
 Wind Speed Start 13-14 mph End 14 mph Wind Direction Start N End WNW
 Ambient Temp. Start 41° F End 42° F Wet Bulb Temp. 40.2 RH Percent 92%



Longitude 65° 29' 41" W Latitude 46° 20' 3" N Declination

Additional Information
 Observers Name (Print) Colin Kelly
 Observers Signature [Signature] Date 5/12/15
 Organization Interroll
 Certified By Account Engineering Date 4/11/2015

Form Number _____ Page _____ of _____
 Continued on Form Number _____

Observation Date	Time Zone			Start Time	End Time	Comments
<u>5/12/15</u>	<u>Eastern</u>		<u>12:35</u>	<u>1:35</u>		
Min/Sec	0	15	30	45		
1	0	0	0	0		
2	0	0	0	0		
3	0	0	0	0		
4	0	0	0	0		
5	0	0	0	0		
6	0	0	0	0		
7	0	0	0	0		
8	0	0	0	0		
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10	0	0	0	0		
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55	0	0	0	0		
56	0	0	0	0		
57	0	0	0	0		
58	0	0	0	0		
59	0	0	0	0		
60	32	0	0	0		



AeroMet

Engineering, Inc.

Solutions for a Changing Environment

Certification of Visible Opacity Reading

Colin Kelly

qualified to conduct EPA Method 9 Tests for visible opacity in accordance with the methods established for such qualification in 40 CFR Part 60 Appendix A.

Certification Date: April 01, 2015

Expiration Date: October 01, 2015

AeroMet Instructor: Josh Haslag

3.5 Results of NCASI 99.02 Sampling Data

Test Number 3
Press Vent Stack (West)

Results of NCASI 99.02 Sampling

		Run 1	Run 2	Run 3
Date of Test		05-12-15	05-12-15	05-12-15
Static Pressure	(In. WC)	-0.70	-0.70	-0.70
Cross Sectional Area	(Sq. ft)	26.27	26.27	26.27
Pitot Tube Coefficient		0.84	0.84	0.84
Gas Meter Coefficient		1.0491	1.0491	1.0491
Barometric Pressure	(In. Hg)	28.77	28.77	28.77
Avg. Sampling Rate	(cc/min)	389	320	299
Avg. Gas Meter Temperature	(°F)	65	67	68
Volume Through Gas Meter				
Meter Conditions	(M ³)	0.0230	0.0190	0.0178
Meter Conditions	(Ft ³)	0.812	0.671	0.629
Standard Conditions	(DSCF)	0.824	0.678	0.634
Total Sampling Time	(Min.)	60	60	60
Avg. Stack Gas Temperature	(°F)	99	86	94
Volumetric Flow Rate				
Actual	(ACFM)	103,980	100,301	103,723
Dry Standard	(DSCFM)	93,024	92,247	93,919

Test Number 6
East Press Vent

Results of NCASI 99.02 Sampling

		Run 1	Run 2	Run 3
Date of Test		05-12-15	05-12-15	05-12-15
Static Pressure	(In. WC)	-2.40	-2.40	-2.40
Cross Sectional Area	(Sq. ft)	26.27	26.27	26.27
Pitot Tube Coefficient		0.84	0.84	0.84
Gas Meter Coefficient		0.9888	0.9888	0.9888
Barometric Pressure	(In. Hg)	28.79	28.79	28.79
Avg. Sampling Rate	(cc/min)	380	391	391
Avg. Gas Meter Temperatu	(°F)	75	75	79
Volume Through Gas Meter				
Meter Conditions	(M ³)	0.0243	0.0250	0.0252
Meter Conditions	(Ft ³)	0.858	0.883	0.890
Standard Conditions	(DSCF)	0.806	0.829	0.829
Total Sampling Time	(Min.)	60	60	60
Avg. Stack Gas Temperatu	(°F)	80	85	88
Volumetric Flow Rate				
Actual	(ACFM)	102,123	100,233	91,105
Dry Standard	(DSCFM)	93,344	91,451	82,993

4 RESULTS OF FUEL ANALYSIS

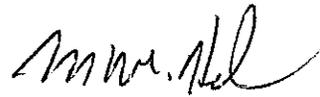
INTERPOLL LABORATORIES, INC.
Fuel Laboratory
(763) 786-6020

Date: 6/2/2015
Client: LP NEWBERRY
Laboratory Log Number: 34236-123
Sample Collected: 5/14/2015
Sample Received: 5/15/2015
Source: THERMAL OIL HEATER
Sample Identification: TEST 9, WOOD BARK

Short Proximate Analysis WT %

Parameter	ASTM Method	Moisture & Ash Free	Moisture Free	As Receive
Moisture, Total	E871			47.2
Ash	D1102		4.37	2.30
Sulfur	E775	< 0.058	< 0.055	< 0.029
Heating Value, BTU/LB.	E711	9178	8777	4632

Respectfully submitted,



Gregg W. Holman, Manager
Chemistry Department

GWH/cg