PARTICULATE EMISSIONS TEST

BIBLER BROTHERS LUMBER COMPANY

SN-7G – NO. 3 CONTINUOUS DRY KILN AND WOOD BURNER

PERMIT NO. 1628-AOP-R5
AFIN 58-00014

Russellville, Arkansas
February 23, 2010

Bibler Brothers Lumber Company
2401 South Arkansas Avenue
Russellville, Arkansas 72801

Performed by:

ENVIRONMENTAL MONITORING LABORATORIES, INC.

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REPORT OF
PARTICULATE EMISSIONS TEST FOR

BIBLER BROTHERS LUMBER COMPANY

SN-7G – NO. 3 CONTINUOUS DRY KILN AND WOOD BURNER

Russellville, Arkansas
February 23, 2010

Bibler Brothers Lumber Company
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EXECUTIVE SUMMARY OF STACK EMISSIONS TEST

April 28, 2010

Subject: Bibler Brothers Lumber Company – Russellville, Arkansas
Triple Length Continuous Kiln

On February 23, 2010, Environmental Monitoring Laboratories performed air emissions tests for Bibler Brothers Lumber Mill in Russellville, Arkansas. Testing was performed to measure particulate emissions from the SN-7G – No. 3 continuous dry kiln and wood burner. This testing was done in accordance with requirements of Permit No. 1628-AOP-R5 administered by the Arkansas Department of Environmental Quality (ADEQ).

Results of the test:

	#/hr	concentration	#/MBF
Particulate	0.582	0.0024 grains/dscf	0.051

Mr. Keith Zimmerman of Environmental Enterprise Group coordinated the testing project. Mr. Matt Hagenlocker of Bibler Brothers supervised on site efforts. Mr. Brent Day and Ms Shanetta Brown of the ADEQ were present to witness the testing. Otis Rayburn and Shaun Walker of Environmental Monitoring Laboratories were responsible for sample collection.

Following is a report of the test.

REPORT OF PARTICULATE EMISSIONS TEST
FOR BIBLER BROTHERS LUMBER COMPANY
SN-7G -- NO. 3 CONTINUOUS KILN AND WOOD BURNER
RUSSELLVILLE, ARKANSAS
FEBRUARY 23, 2010

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REPORT CERTIFICATION

I certify that I have examined the information submitted herein, and based upon inquires of those responsible for obtaining the data or upon my direct acquisition of data, I believe the submitted information is true, accurate and complete.

Signed: _____

Daniel G. Russell

1.0 TEST RESULTS

The following table is a summary of the measured flow parameters and test results for particulate emissions testing done on February 23, 2010, for the SN-7G No. 3 continuous kiln and wood burner at Bibler Brothers Lumber Company in Russellville, Arkansas.

Run No.		1	2	3	AVG.
Date		02/23/10	02/23/10	02/23/10	-------
Time Start		0914	1033	1151	-----
Time End		1016	1136	1254	-----
PARTICULATE EMISSIONS	#/hr	0.664	0.651	0.431	0.582
PARTICULATE EMISSIONS	grains/dscf	0.0024	0.0028	0.0020	0.0024
PARTICULATE EMISSIONS	#/MBF	0.059	0.058	0.038	0.051
FUEL BURN RATE	#/hr	5549	5420	5375	5448
HEAT INPUT	MM Btu/hr	22.30	21.78	21.60	21.90
THROUGHPUT	BF/hr	11304	11304	11304	11304
VOLUMETRIC FLOW RATE	dscfm	32365	27392	24755	28171
VELOCITY	ft./sec.	14.4	15.3	15.4	15.0
STACK TEMPERATURE	^{o}F	117	120	135	124
MOISTURE	%	9.5	13.6	16.5	13.2
SAMPLE RATE	% Isokinetic	100.6	104.0	102.4	102.3

[1] Total volumetric flow rate was calculated from the measured oxygen content, measured fuel burn rate, and an F-Factor of 9095 for the mixed wood fuel.

2.0 SOURCE DESCRIPTION

Kiln

The kiln is 33' wide and 200' long with a 16'-0" high door opening. The two 8' wide lumber loads are pushed through the kiln on trams at a rate of about 10,000 board feet per hour. Actual throughput is dictated by moisture content of the green wood and the target ending moisture content. The two loads move in opposing directions. There are no vents. Fume and water vapor generated by the drying wood exhausts primarily through the ends of the kiln. Lumber is dried from its initial green lumber moisture content coming from the sawmill to a target of 13-17% average moisture content. Unlike typical batch dry kilns, this one operates continuously. Burner function and heat input vary only to maintain heat demand by the varying wood quality and moisture content.

Burner:

The heat source for the kiln is a 5 grate (245 square feet) wood burner with a sloped-grate design. It is nominally rated at 25 MM Btu/hr heat input. The sawdust is delivered from the sawmill and enters the burner at moisture contents ranging from 45-55% (wet basis). The sawdust is gasified in the burner box at temperatures in the 700 ^{O}F range, and the gas is combusted in firebrick-lined ductwork at temperatures in the 2000 ^{O}F range. The combustion gases are blended with return air from the kiln to produce a final heat supply temperature of approximately 500 ^{O}F; the supply air is then distributed inside the kiln to maintain a controlled dry bulb temperature. Wood fuel usage for the continuous drying process averaged 5448 pounds per hour during the test. Analysis of wood fuel samples were made to determine a source specific F-Factor of 9095 dscf/MM Btu and a heat value of 4051 Btu per pound. Heat input averaged 21.9 MM Btu per hour. A report of the wood fuel analysis done by Standard Laboratories is provided in Appendix E.

Temporary Test Stack

A temporary stack was installed in the kiln roof near one end of the kiln to provide a site with a consistent and laminar air flow for particulate sampling. A vertical rectangular stack was constructed over an existing but non functioning vent door. The vent door was removed and a housing was built to enclose that opening and funnel exhaust gases through the 33 inch tall stack extension that was 15.0 inches by 10.0 inches in cross section.

3.0 TEST PROCEDURES:

Test procedures used are those described in the Code of Federal Regulations, Title 40, Part 60, Appendix A. All test parameters were measured simultaneously. Each test consisted of triplicate 60 minute sample runs.

Because it is impractical to capture the entire exhaust of a lumber kiln, a temporary test stack was constructed in which a measureable laminar flow was produced. The flow rate from the stack was measured for the purpose of making an isokinetic sample, but that measured flow rate could not be related to the total flow lost from the kiln. Rather, total flow rate from the kiln was determined by taking advantage of the predictable oxygen consumption of the direct fire burner supplying heat to the kiln. The oxygen content was continuously monitored as well as the fuel rate. Given those two factors and assuming air quality is relatively homogenous throughout the positive pressure kiln, total air loss can be calculated. It was that calculated total air loss that was used to calculate mass emission rates of the measured pollutants.

Sample and Velocity Traverses – EPA Method 1

Selection of sampling locations was as described in Method 1. Sample ports are installed at locations meeting requirements of the Method. Laminar air flow at sample locations was confirmed using the null Pitot technique.

Determination of Stack Gas Velocity and Volumetric Flow Rate – EPA Method 2

Stack gas velocity was measured using an S-Type Pitot tube and Method 2. Pitot tube design and its orientation with respect to the sample probe and nozzle permitted the use of a correction factor (Cp) of 0.84 as described in Method 2. Stack temperature measurements were be made with a type K thermocouple and NBS calibration traceable digital thermometer.

Gas Analysis for the Determination of Dry Molecular Weight – EPA Method 3A

Oxygen and carbon dioxide content was measured by continuous monitoring with calibrated analyzers as described in Method 3A.

Determination of Moisture Content in Stack Gas – EPA Method 4

Moisture content was determined from volumetric and gravimetric analysis of impinger contents of the Method 5 sample train.

Determination of Particulate Emissions – EPA Method 5

Particulate emissions were measured as described in Method 5 with no significant departures from the prescribed procedures. Method 5 incorporates the use of Methods 1 through 4. The sample train used was identical to that described in Method 5 except that the cyclone was omitted. Glass fiber filters were used. A stainless steel probe liner and nozzle was used. Reagent grade acetone was used for sample recovery. All particulate measured is presumed to be less than 10 microns.

Preparation of Calibration Gases – EPA Method 205

Calibration gas concentrations were prepared using cylinders of EPA Protocol 1 gas mixtures and an Environics gas diluter verified by Method 205.

Data Acquisition

Analyzer data was recorded on a Fluke Hydra data logger at 5 second intervals reduced to 60 second averages. The arithmetic average of each instrument's output was used to calculate emissions.

4.0 DATA REDUCTION

Particulate Emissions Test - February 23, 2010

Collected Test Data:		RUN 1	RUN 3	RUN 3
Date	:	02/23/10	02/23/10	02/23/10
Time start	:	0914	1033	1151
Time end	:	1016	1136	1254
1. As	: sq ft	1.0588	1.0588	1.0588
2. Dn	: in.	0.445	0.445	0.445
3. Cp	: dimensionless	0.84	0.84	0.84
4. Theta	: minutes	62.50	62.50	62.50
5. Y	: dimensionless	1.008	1.008	1.008
6. Pbar	: in. Hg	29.84	29.84	29.84
7. Pg	: in. H2O	-0.04	-0.04	-0.04
8. Vm	: cf (dry gas)	46.395	48.886	45.311
9. sqr(ΔP),avg	: in.H2O^.5	0.2413	0.2547	0.2507
10. ΔH	: in. H2O	1.8432	1.8360	1.7380
11. ts	: degrees F	116.88	119.52	135.48
12. tm	: degrees F	51.28	54.64	53.30
13. Vlc	: ml	108	170	198
14. CO2	: percent	2.32	2.86	3.00
15. O2	: percent	18.71	18.39	18.14
16. M,PM	: milligrams	7.5	9.1	6.2
17. Fuel Rate	: lb/hr	5549	5420	5375
18. Heat Value	: Btu/lb	4019	4019	4019
19. F	: scf/MM Btu	9116	9116	9116
20. Throughput	: BF/hr (board feet/hr)	11304	11304	11304

Particulate Emissions Test - February 23, 2010

Calculations:		RUN 1	RUN 3	RUN 3	AVG.
1. Pm	: in.Hg (ΔH/13.6)+Pbar	29.9755	29.9750	29.9678	
2. Ps	: in. Hg (Pg/13.6)+Pbar	29.8371	29.8371	29.8371	
3. An	: sq ft ((Dn/24)^2)(3.1416)	1.08E-03	1.08E-03	1.08E-03	
4. Vmstd	: dscf Vm Y(Pm/Pstd)(Tstd/Tm)	48.385	50.649	47.057	48.697
5. Vwstd	: scf (.04707cf/ml)(Vlc)	5.084	8.002	9.320	
6. Bws	: dimensionless Vwstd/(Vwstd+Vmstd)	0.0951	0.1364	0.1653	0.1323
7. Md	: mol.wt. dry basis .44 CO2+.32 O2+.28(CO+N2)	29.12	29.19	29.20	
8. Ms	: mol.wt. wet basis Md(1-Bws)+18 Bws	28.06	27.67	27.35	
9. Vs	: ft/sec Kp Cp (sqrΔP)sqr(Ts/(Ps Ms))	14.38	15.33	15.38	15.03
10. HeatInput	: MM Btu/hr (Fuel rate)(heat value)/1000000	22.301	21.783	21.602	21.896
11. $Qstd_T$	: dscfm *(total from kiln)* (Heat Input/60)*(F)*(20.8/(20.9-O2))	32365	27392	24755	28171
12. Q	: cfm *(from temporary stack)* Vs As(60 sec/min)	914	974	977	955
13. Qstw	: scfm *(from temporary stack)* Q(Ps/Pstd)(Tstd/Ts)	834	885	864	861
14. Qstd	: dscfm *(from temporary stack)* Qstw(1-Bws)	755	764	721	747
15. I	: percent [(100 Ts)(.002669 Vlc+(Vm Pm/Tm)]/(60 theta Vs Ps An)	100.57	104.01	102.38	102.32

Particulate Emissions

16. E,PM	: pounds/hr (M,PM/Vmstd)(Qstd)(60)/(453590)	0.664	0.651	0.431	0.582
17. C,PM	: grains/dscf (M,PM/Vmstd)(.0154 grains/mg)	0.0024	0.0028	0.0020	0.0024
18. E'PM	: pounds/MBF E,PM/(Throughput/1000)	0.059	0.058	0.038	0.051

DRIFT AND BIAS CALCULATIONS:

Analyte, units	Level	Cal. Value	Pre-Test				Run No. 1			Run No. 2			Run No. 3		
			Cal. Reading	% Cal. Error	Bias Reading	% Bias	Reading	% Bias	% Drift	Reading	% Bias	% Drift	Reading	% Bias	% Drift
% CO2	Low	0.0	0.0	0.0	0.1	0.9	0.1	0.9	0.0	0.1	0.9	0.0	0.1	0.9	0.0
	Mid	10.6	10.6	0.0	10.6	0.0	10.5	0.9	0.9	10.5	0.9	0.0	10.5	0.9	0.0
	High	5.3	5.4	0.9											
	SPAN =	10.6			Measured Result		2.39			2.91			3.04		
					Corrected Result		2.32			2.86			3.00		
% O2	Low	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Mid	10.5	10.4	0.5	10.4	0.0	10.4	0.0	0.0	10.4	0.0	0.0	10.5	0.5	0.5
	High	20.9	20.9	0.0											
	SPAN =	20.9			Measured Result		18.53			18.21			18.06		
					Corrected Result		18.71			18.39			18.14		

Calibration Error Allowable	< 2% of span	[((Cyl. Value - Reading) / span)* 100%]
System Bias	< 5% span	[(System Cal - Reading)/span*100%]
Drift	< 3% .....(Method 20 = 2 %).....	[(Initial System Cal. - Final System Cal.) / Span * 100%]

Calculation of the site specific F-Factor

	R1	R2	R3	AVG		
Moisture	55.44	55.65	55.7	55.60	%	
Carbon	51.54	51.72	51.61	51.62	%	dry basis
Hydrogen	6.33	6.35	6.27	6.32	%	dry basis
Nitrogen	0.16	0.12	0.08	0.12	%	dry basis
Sulfur	0.01	0.01	0.01	0.01	%	dry basis
Ash	0.6	0.61	0.62	0.61	%	dry basis
Oxygen	41.39	41.22	41.44	41.35	%	dry basis
GCV	9103	9114	9153	9123	Btu/dry lb.	(heat value dry basis)
GCV	4056	4042	4055	4051	Btu/wet lb.	(heat value wet basis)

$F = 10^6*[3.64(\%H)+1.53(\%C)+.57(\%S)+0.14(\%N)-0.46(\%O)]/GCV$

F =	9105	9141	9040	9095

5.0 NOMENCLATURE

SYMBOL	UNITS	DESCRIPTION
An	ft^2	Nozzle cross sectional area
As	ft^2	Stack cross sectional area
Bws	dimensionless	Wet gas fraction
CO_2	percent	Carbon dioxide content by volume
CO	percent	Carbon monoxide content by volume
Cp	dimensionless	Pitot correction factor
C,X	as labeled	Concentration of pollutant X
DGF	dimensionless	Dry gas fraction
Dn	inches	Nozzle diameter
ΔH (delta H)	in. H_2O	Pressure drop across meter orifice
ΔP (delta P)	in. H_2O	Stack gas velocity pressure
E,X	#/hr	Emission rate of pollutant X
E'X	#/MM Btu	Emission rate of pollutant X
F	dscf	Volume of flue gas per MM Btu
I	percent	Nozzle velocity/stack gas velocity
Kp	consistent	Pitot tube constant
M,X	milligrams	Sample weight of pollutant X
Md	#/# mole	Dry molecular weight of stack gas
Ms	#/# mole	Wet molecular weight of stack gas
N2	percent	Nitrogen content by volume, dry basis
O_2	percent	Oxygen content by volume, dry basis
Pbar	in. Hg	Barometric pressure
Pg	in. Hg	Stack static pressure
Pm	in. Hg	Total pressure at meter (Pbar+(ΔH/13.6)
Ps	in. Hg	Total stack pressure (Pbar+(Pg/13.6))
Pstd	in. Hg	Standard barometric pressure = 29.92
Q	acfm	Volumetric flow rate at stack conditions
Qstd	dscfm	Volumetric flow rate at standard conditions, dry basis
Qstdw	scfm	Volumetric flow rate at standard conditions, wet basis
θ (theta)	minutes	Sample duration
tm	^oF	Meter temperature (Tm denotes ^oR)
ts	^oF	Stack temperature (Ts denotes ^oR)
Tstd	^oR	Standard temperature = 528^oR
Vlc	ml	volume of water collected
Vm	ft^3	Volume of dry gas sampled through meter
Vmstd	dscf	Sample volume at standard conditions
Vwstd	scf	Sample volume of water vapor
Y	dimensionless	Meter coefficient
Xsair	percent	Excess air

6.0 CALIBRATIONS:

Measurement devices used by Environmental Monitoring Laboratories and subject to changes in measurement precision are initially calibrated prior to use. Those instruments for which calibration factors are subject to change or for which calibration checks are required are calibrated following each field use or as otherwise directed and noted. Calibration procedures for specific equipment are as follows.

Dry Gas Meter:

Dry gas meters are periodically removed from the sampling consoles and cleaned and repaired (new gaskets etc. as required). Following the overhaul of a meter, the measuring precision is checked by the Bell Prover Method and adjusted when necessary to read to within 2% of 100% accuracy. This service is provided by Big Three Meter Company in Jackson, Mississippi. Overhaul service or any six month period is followed by a five point calibration described in APTD-0576 using either a wet test meter or calibrated dry gas meter (used exclusively for calibrations) as a standard reference. Following field use, gas meter calibration is checked by performing three calibration checks at intermediate orifice settings. If a meter coefficient obtained from pre-test and post-test checks differs by more than 5%, the coefficient (Y) giving the lower sample volume is used in the calculations.

Orifice:

The orifice coefficient is initially determined and is rechecked following a major gas meter repair and calibration. The calibration is included with the Dry Gas Meter Calibration

Nozzles:

Nozzles are checked before each field use with a precision (.001 in.) dial caliper. Three measurements on different axes are made; an average of those three readings is used in calculations. If the tolerance among measurements exceeds 0.004 inches (highest to lowest reading) the nozzle is repaired and recalibrated or discarded.

Pitot Tubes:

Pitot tubes meeting EPA geometry standards are assigned a coefficient of 0.84. Pitot tubes are visually inspected for damage before, during and after use. Those pitot tubes not meeting the geometry standards are assigned a coefficient from the manufacturer's calibration that it retains unless damaged. All pitot tubes used by Environmental Monitoring Laboratories are manufactured by NuTech, Inc.

Temperature Measuring Instruments:

All temperature measurements are made with type K thermocouples and digital thermocouple thermometers, which have an initial calibration traceable to NBS. Thermocouples are checked during a test series against an ASTM mercury in glass thermometer at ambient temperature. Continuity and proper thermocouple contact location are checked by challenging the thermocouple with a temperature change. (EMTIC GD-028 -- June 21, 1994)

Barometer:

Aneroid field barometers are checked against and adjusted to readings from a mercury barometer or readings obtained from local weather authorities.

Differential Pressure Gauges:

Velocity head (delta P) and orifice pressure differential (delta H) measurements are made using water manometers of the appropriate range unless otherwise noted in the test data. Manometers do not require calibration.

Analytical Balance:

The analytical balance used was initially calibrated by the manufacturer. Additionally, the balance is equipped with an automatic zero and calibration feature that is used daily or prior to each use. Prior to each use, or daily, a quality control check is made using Class A weights of 0.5000 grams and 100.0000 grams.

7.0 APPENDICES

A. Field and Laboratory Data

B. Calibration Data

C. Analyzers Data Log

D. Operating Records (Bibler Bros.)

E. Wood Fuel Analysis (Standard Labs)

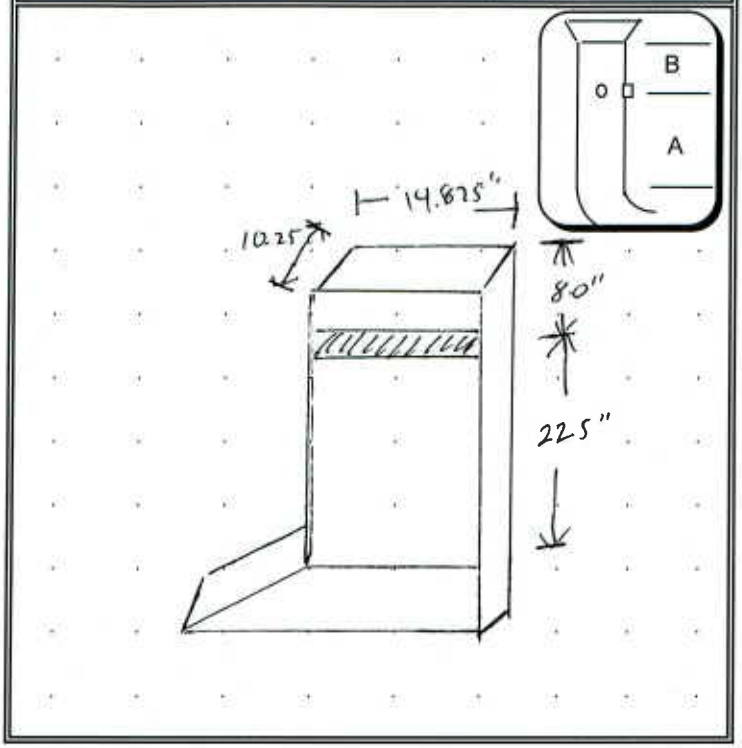
APPENDIX A

FIELD AND LABORATORY DATA

STACK CONFIGURATION AND SAMPLE POINT LAYOUT

PLANT: Bibler Brothers Russellville, AR **Date:** 2-22-10
SOURCE: Kiln SN 76
TEST FOR: PM
TEST OPERATORS: Walker / RAYBURN

SKETCH OF STACK



PERCENT OF DIAMETER (for circular stacks)

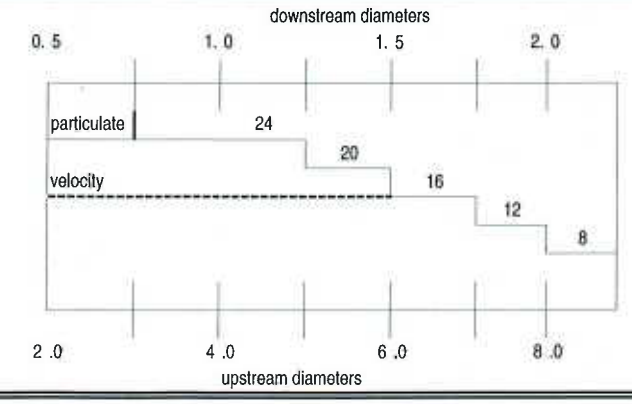
point no.	points on a diameter: 2	4	6	8	10	12	14	16
1	14.6	6.7	4.4	3.2	2.6	2.1	1.8	1.6
2	85.4	25.0	14.6	10.5	8.2	6.7	5.7	4.9
3		75.0	29.6	19.4	14.6	11.8	9.9	8.5
4		93.3	70.4	32.3	22.6	17.7	14.6	12.5
5			85.4	67.7	34.2	25.0	20.1	16.9
6			95.6	80.6	65.8	35.6	26.9	22.0
7				89.5	77.4	64.4	36.6	28.3
8				96.8	85.4	75.0	63.4	37.5
9					91.8	82.3	73.1	62.5
10					97.4	88.2	79.9	71.7
11						93.3	85.4	78.0
12						97.9	90.1	83.1
13							94.3	87.5
14							98.2	91.5
15								95.1
16								98.4

STACK DIAMETER: 14.875 X 10.25

Distance from ports to disturbance:		12, 14
A. to upstream disturbance		22.5
B. to downstream disturbance		8.0
Upstream diameters:		1.81
Downstream diameters:		0.66
Minimum No. sample points required:		24
No. sample points selected:		25 (5x5)
Port Length:	0	
Port Type:	slot	
Port Access:	roof / board	

Point No.	inches from wall	velocity head
1	1.0	Ports
2	3.1	1 2 3 4 5
3	5.1	1.5 4.5 7.4 10.4 13.4
4	7.2	
5	9.2	

MINIMUM NO. OF POINTS ON A DIAMETER



Pitot ID: 2' Pitot Cp: .84 Stack Temp: 110 to 130

Remarks:

Plant: Bibler Brothers Russellville, AR
Source: Dry kiln #3 SN-7G
Test For: PM / O_2
Test Operators: Rayburn / Walker

RUN NO. 1
Date 2-23-10
Time start 0914 end 1016

Meter Box	NT2 y=1.008
Sample Box	No.1
Probe/Pitot	2' 1-18-05-15
Pitot Cp	.84
Nozzle Dia.	.445
Filter No.	4030

No. Sample Pts.	5X5
Minutes/Pt.	2.5

K FACTOR SETUP

ΔH@	1.66
Meter Temp	50
%H_2O	9
Stack Temp.	110
K Factor	30.62

GAS ANALYSIS: CEM

CO_2			
O_2			
CO			
Time			

CONDENSATE: init. 300 final 301
SILICA GEL: init. 777 final 784

Amb. Temp. °F	40
Bar. Press "Hg	29.84
Static Press. "H_2O	-.04

Notes:
NO 2 1P
Ø .445
Ø .445
Ø .445
used micromanometer
TZ EML
check Temp with glass thermometer 120°

Port Point	Elapsed Time Min/sec	DGM Reading Ft.³	Velocity HeadΔP in. H_2O	Orifice ΔH in. H_2O	Stack Temp °F	Meter Temp °F in	Meter Temp °F out	Oven Temp °F	Imp. Temp °F	VAC in Hg
1 1	0/00	506.625	0.040	1.20	108	48	48	218	43	3
2	2/30	508.3	0.035	1.05	107	48	48	218	42	3
3	5/00	509.6	0.045	1.35	107	48	48	212	43	3
4	7/30	511.3	0.030	0.92	105	49	48	202	44	3
5	10/00	513.1	0.035	1.05	105	49	49	210	45	3
6										
7 2 1	12/30	514.2	0.050	1.55	110	49	49	220	45	3
8 2	2/30	515.6	0.020	0.61	110	50	49	225	45	3
9 3	5/00	516.8	0.045	1.35	110	50	49	251	45	3
10 4	7/30	518.3	0.035	1.05	110	50	49	250	47	3
11 5	10/00	519.8	0.043	1.30	110	51	49	251	47	3
12										
13 3 1	25/00	521.6	0.052	1.60	115	51	49	251	47	3
14 2	2/30	523.4	0.065	2.00	120	51	50	250	47	3
15 3	5/00	525.3	0.060	1.85	119	52	50	250	47	3
16 4	7/30	526.8	0.067	2.05	118	52	50	251	48	4
17 5	10/00	529.0	0.067	2.05	118	53	51	247	51	4
18										
19 4 1	37/30	531.2	0.077	2.35	124	53	51	250	52	3
20 2	2/30	533.2	0.066	2.00	124	54	51	248	53	4
21 3	5/00	535.1	0.075	2.30	124	55	52	245	53	5
22 4	7/30	537.3	0.060	1.85	125	55	52	240	54	5
23 5	10/00	539.3	0.085	2.60	126	56	52	250	56	5
24										
25 5 1	0/00	541.5	0.090	2.75	126	56	52	240	57	6
26 2	1/30	543.7	0.11	3.35	127	56	52	241	58	6
27 3	5/00	546.2	0.090	2.75	126	57	53	241	59	7
28 4	7/30	548.7	0.083	2.55	124	57	53	240	60	7
29 5	10/00	551.0	0.085	2.60	124	57	53	240	60	7
30 End	2/30	553.020								
31										
32		46.395	0.7413	1.8432	116.88		51.28			7-10
33										

COMPLETED WCR 3-7-10

Leak Chcks:

Sample Train: .050 --> .055 = .005 efm @ 7 "Hg
Pitot Tubes: High [X] @ 60 "H_2O || Low [X] @ 4.4 "H_2O

Pretest: Sample Train [X] Pitot Tubes [X]

Plant: Bibler Brothers Russellville, AR
Source: Dry kiln #3 SN-7G
Test For: PM / O_2
Test Operators: Rayburn / Walker

RUN NO. 2
Date 2-23-10
Time start 1037 end 1136

Meter Box	NT2 y = 1.008
Sample Box	No 2
Probe/Pitot	2' 1-18-0545
Pitot Cp	.84
Nozzle Dia.	.445
Filter No.	02 4030 4031

No. Sample Pts.	5X5
Minutes/Pt.	2.5

K FACTOR SETUP

ΔH@	1.66
Meter Temp	58
%H_2O	12
Stack Temp.	120
K Factor	28.59

GAS ANALYSIS: CEM

CO_2			
O_2			
CO			
Time			

CONDENSATE: init. 200 final 334
SILICA GEL: init. 823 final 841

Notes:

Amb. Temp. °F	42
Bar. Press "Hg	29.94
Static Press. "H_2O	-.04

Port	Point	Elapsed Time Min/sec	DGM Reading Ft.³	Velocity Head ΔP in. H_2O	Orifice ΔH in. H_2O	Stack Temp °F	Meter Temp °F in	Meter Temp °F out	Oven Temp °F	Imp. Temp °F	VAC in Hg
1	1	0/00	553.682	0.060	1.70	131	53	53	250	50	4
	2	230	555.2	0.055	1.55	129	54	53	250	53	4
	3	500	557.1	0.050	1.45	125	54	53	250	50	4
	4	730	559.0	0.12 0.110	0.12² 0.85	123	54	57	250	52	4
	5	1000	561.3	0.10	1.85	116	55	53	250	57	4
2	1	12/30	563.5	0.11	3.15	118	55	53	256	59	4
	2	230	564.1	0.080	2.30	127	55	54	251	59	4
	3	500	568.3	0.065	1.85	127	56	54	250	67	4
	4	730	570.2	0.060	1.70	126	56	54	250	69	4
	5	1000	572.3	0.055	1.55	125	56	54	251	69	4
3	1	25/00	574.2	0.050	1.45	125	56	54	250	70	4
	2	230	576.0	0.052	1.50	128	56	54	250	70	4
	3	500	577.7	0.050	1.45	102	54	54	251	71	4
	4	730	579.5	0.050	1.45	105	56	54	240	71	4
	5	1000	581.3	0.087	2.50	106	56	54	240	70	4
4	1	37/30	583.5	0.062	1.75	127	56	54	240	72	4
	2	230	585.7	0.057	1.65	124	56	54	241	72	4
	3	560	587.5	0.075	2.15	120	56	54	242	70	4
	4	730	589.4	0.065	1.85	105	56	54	250	70	4
	5	1000	591.5	0.077	2.20	104	56	54	251	69	4
5	1	50/00	593.5	0.067	1.90	126	56	54	245	69	4
	2	230	595.4	0.062	1.75	127	56	54	240	69	4
	3	500	597.2	0.050	1.45	127	56	54	243	69	4
	4	730	599.1	0.050	1.45	110	56	54	240	69	4
	5	1000	600.8	0.050	1.45	105	56	54	246	69	4
END		62/30	602.568								
			48.886	0.0552 0.0547	1.8360	119.52		54.64			

Leak Checks:
Sample Train: .016 --> .014 = .004 efm @ 8 "Hg
Pitot Tubes: High [X] @ 6.0 "H_2O || Low [X] @ 4.5 "H_2O

Pretest: Sample Train [X] Pitot Tubes [X]

COMPLETED mac 3-1-10

Plant: Bibler Brothers Russellville, AR
Source: Dry Kiln #3 SN-7G
Test For: PM, O2
Test Operators: Rayburn / Walker

RUN NO. 3
Date 2-23-10
Time start 1151 end 1254

Meter Box	NT2 y=1.008
Sample Box	No.1
Probe/Pitot	2' 1-18-05.15
Pitot Cp	.84
Nozzle Dia.	.445
Filter No.	4032

No. Sample Pts.	5X5
Minutes/Pt.	2.5

K FACTOR SETUP

ΔH@	1.66
Meter Temp	54
%H2O	13
Stack Temp.	125
K Factor	27.49

GAS ANALYSIS: CEM

CO2			
O2			
CO			
Time			

CONDENSATE: init. 200 final 372
SILICA GEL: init. 811 final 827

Notes:

Amb. Temp. °F	45
Bar. Press "Hg	29.84
Static Press. "H2O	-.04

Port Point	Elapsed Time Min/sec	DGM Reading Ft.³	Velocity HeadΔP in. H2O	Orifice ΔH in. H2O	Stack Temp °F	Meter Temp °F in	Meter Temp °F out	Oven Temp °F	Imp. Temp °F	VAC in Hg
1 1	0/00	602.910	0.050	1.35	135	57	54	200	50	3
2	2/30	604.9	0.054	1.50	135	57	54	240	48	3
3	5/00	606.0	0.065	1.80	135	57	53	250	49	3
4	7/30	608.3	0.050	1.35	134	53	53	254	49	3
5	10/00	609.8	0.065	1.80	134	53	53	245	49	3
6										
7 2 1	12/30	611.6	0.060	1.65	135	53	53	240	51	3
8 2	2/30	613.1	0.060	1.65	137	53	53	248	50	3
9 3	5/00	614.8	0.067	1.85	137	53	53	254	54	3
10 4	7/30	616.7	0.055	1.50	136	53	53	251	50	3
11 5	10/00	618.0	0.062	1.70	136	53	53	251	54	3
12										
13 3 1	25/00	619.9	OR ~~0.057~~	1.55	135	53	53	248	54	3
14 2	2/30	621.7	0.063	1.75	137	57	53	241	55	3
15 3	5/00	623.5	0.055	1.50	138	54	53	247	55	4
16 4	7/30	625.4	0.080	2.20	137	54	53	251	56	4
17 5	10/00	627.1	0.050	1.35	137	54	53	240	57	4
18										
19 4 1	37/30	629.0	0.10	2.75	136	54	53	241	58	4
20 2	2/30	631.5	0.070	1.90	137	54	53	250	57	4
21 3	5/00	633.0	0.060	1.65	137	54	53	249	60	4
22 4	7/30	635.0	0.070	1.90	138	54	53	251	60	4
23 5	10/00	636.9	0.098	2.70	134	54	53	246	61	4
24										
25 5 1	50/00	638.9	0.060	1.65	133	54	53	249	62	5
26 2	2/30	640.7	0.070	1.90	134	54	53	250	62	5
27 3	5/00	642.9	0.055	1.56	134	54	53	247	63	5
28 4	7/30	644.5	0.060	1.65	133	54	53	251	62	5
29 5	10/00	646.4	0.050	1.35	133	54	53	246	64	5
30 END	62/30	648.221								
31										
32		45.311	0.2507	1.7380	135.48		53.30			
33										

COMPLETED

Leak Checks:

Sample Train: .070 --> .080 = .070 efm @ 8 "Hg
Pitot Tubes: High [X] @ 5.4 "H2O || Low [X] @ 1.7 "H2O

Pretest: Sample Train [X]
Pitot Tubes [X]

PARTICULATE CATCH ANALYSIS

SAMPLES: Bibler Brothers Lumber Co. No. 3 Kiln

DATE TAKEN: 2-23-10 DATE ANALYZED: 2-26-10

DELIVERED BY: OR RECEIVED BY: BN

ANALYZED BY: BN/MCR/DGR

(Attach chain of custody if additional exchanges occur)

FILTERS:

RUN NO.	1	2	3	
FILTER NO.	4030	4031	4032	
FILTER TARE, gms.	.4046	.4023	.4029	
	.3995	.4085	.4048	
	.3995	.4090	.4056	
FINAL WEIGHT, gms.	.3995	.4090	.4056	
NET GAIN, gms.	-.0051	.0067	.0027	

PROBE WASH:

RUN NO.	1	2	3	
CONTAINER I.D.	Bib Bro No.3K R1	Bib Bro No.3k R2	Bib Bro No.3k R3	
VOLUME INTACT?	Y	Y	Y	
VOLUME, ml	125	125	100	
	(304)	(307)	(310)	( )
TARE WEIGHT, gms.	103.9244	109.8750	111.9915	
	103.9369	109.8774	111.9950	
FINAL WEIGHT, gms	103.9370	109.8774	111.9950	
NET GAIN, gms.	.0126	.0024	.0035	
LESS BLANK, gms.				

COMPLETED MCR 3-7-10

PARTICULATE SAMPLE WEIGHT:

RUN NO.	1	2	3	
filter + probe, mg.	7.5	9.1	6.2	

APPENDIX B

CALIBRATION DATA

DRY GAS METER CALIBRATION
By Critical Orifice

Meter ID	Nutech 2	**Date**	12/29/09
Orifice ID	1312	**By**	Walker
T, Amb	70	**Pbar**	30.15

Orifice			ΔH	VAC	Time	Meter						Vmstd	Vcrstd	Y	ΔH@
No.	K'	Q'	in.	in.	min.	Vi	Vf	Temp. in		Temp out					
		cfm	H_2O	Hg		ft^3	ft^3	init.	final	init.	final				
12	0.3169	0.42	0.50	23	13.00	73.032	78.352	63	65	64	65	5.399	5.481	1.015	1.597
17	0.4391	0.58	0.98	22	9.00	78.352	83.522	65	66	65	66	5.235	5.240	1.001	1.636
23	0.6091	0.80	1.95	20	7.00	83.522	89.029	66	67	66	66	5.568	5.622	1.010	1.706
26	0.6905	0.92	2.55	18	7.00	89.029	95.359	67	67	66	66	6.397	6.465	1.011	1.684
31	0.8293	1.10	3.65	16	6.00	95.359	101.919	68	68	67	67	6.617	6.626	1.001	1.679
														1.008	1.66

Calculations:

Vm = [Vf-Vi]

Vmstd = [(17.64)(Vm)(Pbar+ΔH/13.6)/Tm]

Vcrstd = K'[(Pbar)(θ)/(T,amb)]

Y = [(Vcrstd/Vmstd)]

Q = [(Vm/θ)(Tm out/Tm)(Y)]

K = [Q(sqrt((Pm Mm)/((Tm out)(ΔH))]

ΔH@ = [$0.921/K^2$]

Where:

Pbar = Barometric pressure; in. Hg

Tm = Average Temp. at meter, ^oR

Pm = Meter pressure, (Pbar +ΔH/13.6); in. Hg

Mm = molecular weight of air (29)

Y = Meter correction factor; dimensionless

DRY GAS METER CALIBRATION

By Critical Orifice

Meter ID	Nutech 2	**Date**	02/26/10
Orifice ID	1312	**By**	Rayburn
T, Amb	50	**Pbar**	29.90

Orifice			ΔH	VAC	Time	Meter						Vmstd	Vcrstd	Y	ΔH@
No.	K'	Q' cfm	in. H_2O	in. Hg	min.	Vi ft^3	Vf ft^3	Temp. in init.	Temp. in final	Temp out init.	Temp out final				
17	0.4391	0.58	0.93	22	10.00	797.855	803.495	62	64	56	60	5.717	6.001	1.050	1.471
23	0.6091	0.80	1.95	19	10.00	803.495	811.284	64	68	60	63	7.847	8.277	1.055	1.606
26	0.6905	0.92	2.50	18	23.00	811.284	831.781	68	69	63	65	20.551	21.892	1.065	1.548
														1.057	**1.54**

Calculations:

Vm = [Vf-Vi]

Vmstd = [(17.64)(Vm)(Pbar+ΔH/13.6)/Tm]

Vcrstd = K'[(Pbar)(θ)/(T,amb)]

Y = [(Vcrstd/Vmstd)]

Q = [(Vm/θ)(Tm out/Tm)(Y)]

K = [Q(sqrt((Pm Mm)/((Tm out)(ΔH))]

ΔH@ = [$0.921/K^2$]

Where:

Pbar = Barometric pressure; in. Hg

Tm = Average Temp. at meter, ^oR

Pm = Meter pressure, (Pbar +ΔH/13.6); in. Hg

Mm = molecular weight of air (29)

Y = Meter correction factor; dimensionless

ANALYZER CALIBRATION RECORD

Plant	Bibler Brothers Russellville, AR	Run No	1	2	3
Source	Kiln No. 3	Date	2-23-10	2.23.10	2.23.10
Test For	O_2 / CO_2	Time Start	0914	1033	1151
Operators	Rayburn	Time End	1016	1136	1254

Analyte, units / Analyzer ID / Span / DAQ Channel	Level	Cal. Value	Cyl. Rel.	Diluted Y/N	Pre-Test Cal. Reading	Pre-Test % Cal Error	Pre-Test Bias Reading	Pre-Test % Bias	Run No. 1 Reading	Run No. 1 % Bias	Run No. 1 % Drift	Run No. 2 Reading	Run No. 2 % Bias	Run No. 2 % Drift	Run No. 3 Reading	Run No. 3 % Bias	Run No. 3 % Drift
% CO_2	Zero	0.0	1	NO	0.0		0.1		0.1			0.1			0.1		
SN 1415D3053	Low																
10.6	Mid	5.3	2	Yes	5.4												
2	High	10.6	2	NO	10.6		10.5		10.5			10.5			10.5		
% O_2	Zero	0.0	1	NO	0.0		0.1		0.1			0.1			0.1		
SN 1420D3052	Low																
20.9	Mid	10.5	1/Air	Yes	~~10.5~~ 10.4		10.4		10.4			10.4			10.5		
3	High	20.9	Air	NO	20.9												
	Zero																
	Low																
	Mid																
	High																
	Zero																
	Low																
	Mid																
	High																
	Zero																
	Low																
	Mid																
	High																
	Zero																
	Low																
	Mid																
	High																

Cylinder Ref.	Cylinder No.	Contents	Expiration Date	Notes:
1	—	Zero Nitrogen	—	
2	CC133951	12.0% O_2 10.6% CO_2	8/4/12	

Analyst's signature:

Method Specifications:

Methods 3A, 6C, 7E	Method 25A
Zero < 20 % of span (can be zero)	Zero < 0.1 % of span
Mid = 40 to 60 % of span	Low = 25 to 35 % of span
High = span	Mid = 45 to 60 % of span
	High = 80 to 90 % of span

Error Specifications:

Calibration Error Allowable	< 2% of span	[((Cyl. Value - Reading) / span)* 100%]
25A Calibration Error Allowable	< 5% Cyl. Value	[(Cyl. Value - Reading) / (Cyl Value) *100%]
System Bias	< 5% span (not for 20 & 25A)	[(System Cal - Reading)/span*100]
Drift	< 3%	[(Initial System Cal. - Final System Cal.) / Span * 100%]
Method 20 Drift	< 2%	[(initial system cal. - final system cal.) / Span * 100%]

METHOD 205 - VERIFICATION OF GAS DILUTION SYSTEMS FOR FIELD INSTRUMENT CALIBRATIONS

DATE	2-22-10

PROJECT: Bibler Brothers Russellville, AR
KILN No. 3

ANALYST: Otis RAYBURN SIGNATURE:

DILUTION SYSTEM

MAKE	Environics
MODEL	4040 SN 4477
NO. OF DIL. DEVICES	4
TYPE OF DIL. DEVICE	MFC

REFERENCE MONITOR

TYPE	% O2
MAKE	~~SERVOMEX~~ Servomex Sequoia
MODEL	1400 SN 14200 1052
SPAN	20.9

HIGH LEVEL SUPPLY GAS CONC.	20.9%		CYLINDER ID	Zero Air
MID LEVEL SUPPLY GAS CONC.	12.0%	12.0	CYLINDER ID	CC133951
DILUTION GAS	0.0%	0.0	CYLINDER ID	Zero Nitrogen

MFC No.					
Target Value	11.0	5.2			

Injections (Triplicate injection of 2 dilutions per MFC to be used)

1st	10.9	5.1			
2nd	11.0	5.1			
3rd	11.0	5.1			
Average	10.96	5.1			

% Difference = ((target conc. - Avg. conc.)/target conc.)*100 Must be within 2% of avg.

1st inject	0.9	1.9			
2nd inject	0.0	1.9			
3rd inject	0.0	1.9			

Triplicate injection of Mid Level Gas to Reference Monitor. Must be within 10% of one dilution

	Response	% Difference
1st	12.0	0.0
2nd	12.0	0.0
3rd	12.0	0.0
Average	12.0	0.0

Average must be within +/- 2%
of the certified gas concentration.

11.0 = 47.37
5.2 = 75.12

AIR LIQUIDE Air Liquide America Specialty Gases LLC

Scott

RATA CLASS

Dual-Analyzed Calibration Standard

9810 BAY AREA BLVD, PASADENA, TX 77507 Phone: 281-474-5800 Fax: 281-474-5857

CERTIFICATE OF ACCURACY: EPA Protocol Gas

Assay Laboratory

AIR LIQUIDE AMERICA SPECIALTY GASES LLC
9810 BAY AREA BLVD
PASADENA, TX 77507

P.O. No.: PT FOR 75817/001
Project No.: 04-75968-001

Customer

SCOTT SPECIALTY GASES
PT SAMPLE 75817/001
TEXAS STOCK
9810 BAY AREA BLVD
PASADENA TX 77507

ANALYTICAL INFORMATION

This certification was performed according to EPA Traceability Protocol For Assay & Certification of Gaseous Calibration Standards; Procedure G-1; September, 1997.

Cylinder Number: CC133951 **Certification Date:** 14Aug2009 **Exp. Date:** 14Aug2012
Cylinder Pressure*:** 1800 PSIG

COMPONENT	CERTIFIED CONCENTRATION (Moles)		ANALYTICAL ACCURACY**	TRACEABILITY
CARBON DIOXIDE	10.6	%	+/- 1%	Direct NIST and NMi
OXYGEN	12.0	%	+/- 1%	Direct NIST and NMi
NITROGEN		BALANCE		

*** Do not use when cylinder pressure is below 150 psig.

** Analytical accuracy is based on the requirements of EPA Protocol Procedure G1, September 1997.

REFERENCE STANDARD

TYPE/SRM NO.	EXPIRATION DATE	CYLINDER NUMBER	CONCENTRATION	COMPONENT
NTRM 2300	02Jan2012	K009663	23.01 %	CARBON DIOXIDE
NTRM 2350	01Apr2012	A6820	23.51 %	OXYGEN

INSTRUMENTATION

INSTRUMENT/MODEL/SERIAL#	DATE LAST CALIBRATED	ANALYTICAL PRINCIPLE
MTIA/M200/171109	14Aug2009	GAS CHROMATOGRAPHY
SERVOMEX/MODEL 244A/701/716	28Jul2009	PARAMAGNETIC

ANALYZER READINGS

(Z = Zero Gas R = Reference Gas T = Test Gas r = Correlation Coefficient)

First Triad Analysis | **Second Triad Analysis** | **Calibration Curve**

CARBON DIOXIDE

First Triad Analysis	Second Triad Analysis	Calibration Curve
Date: 14Aug2009 Response Unit:AREA		Concentration = A + Bx + Cx2 + Dx3 + Ex4
Z1 = 484.0000 R1 = 1750519. T1 = 809840.0		r = 0.9999966
R2 = 1755432. Z2 = 429.0000 T2 = 811002.0		Constants: A = -0.02501938
Z3 = 239.0000 T3 = 811494.0 R3 = 1757377.		B = .0000130928 C =
Avg. Concentration: 10.61 %		D = E =

OXYGEN

First Triad Analysis	Second Triad Analysis	Calibration Curve
Date: 17Aug2009 Response Unit:VOLTS		Concentration = A + Bx + Cx2 + Dx3 + Ex4
Z1 = 0.00000 R1 = 0.99000 T1 = 5065.000		r = 0.9999975
R2 = 0.99030 Z2 = 0.00000 T2 = 0.50600		Constants: A = -0.01016239
Z3 = 0.00000 T3 = 0.50580 R3 = 0.99110		B = 23.72459918 C =
Avg. Concentration: 11.97 %		D = E =

APPROVED BY: D Kelly
DAVID KELLY

APPENDIX C

ANALYZERS DATA LOG

	% CO2	% O2
02/22/10 16:18	0.0	21.2
02/22/10 16:19	0.0	21.2
02/22/10 16:20	0.0	21.2
02/22/10 16:21	0.0	14.5
02/22/10 16:22	-0.1	0.2
02/22/10 16:23	-0.1	0.2
02/22/10 16:24	-0.1	0.2
02/22/10 16:25	0.0	0.1
02/22/10 16:26	0.1	1.3
02/22/10 16:27	8.8	12.1
02/22/10 16:28	10.5	11.9
02/22/10 16:29	9.4	12.8
02/22/10 16:30	0.5	7.1
02/22/10 16:31	0.1	0.0
02/22/10 16:32	0.1	3.1
02/22/10 16:33	0.1	16.7
02/22/10 16:34	0.1	15.8
02/22/10 16:35	0.1	13.0
02/22/10 16:36	0.3	17.8
02/22/10 16:37	0.9	11.8
02/22/10 16:38	0.0	0.0
02/22/10 16:39	0.0	0.0
02/22/10 16:40	0.0	0.1
02/22/10 16:41	0.1	15.8
02/22/10 16:42	0.1	12.1
02/22/10 16:43	0.1	12.3
02/22/10 16:44	0.1	11.1
02/22/10 16:45	0.1	20.4
02/22/10 16:46	0.1	18.7
02/22/10 16:47	0.1	17.4
02/22/10 16:48	0.1	17.8
02/22/10 16:49		
02/22/10 16:50		
02/22/10 16:51		
02/22/10 16:52	0.1	20.3
02/22/10 16:53	0.1	17.2
02/22/10 16:54	0.1	16.3
02/22/10 16:55	0.1	19.6
02/22/10 16:56	0.1	20.5
02/22/10 16:57	0.1	9.7
02/22/10 16:58	0.1	12.1
02/22/10 16:59	0.1	11.1
02/22/10 17:00	0.1	12.1
02/22/10 17:01	1.1	12.8
02/22/10 17:02	10.3	12.4
02/22/10 17:03	3.1	11.6
02/22/10 17:04	0.1	0.5
02/22/10 17:05	0.1	3.4
02/22/10 17:06	0.1	7.2
02/22/10 17:07	0.1	3.3
02/22/10 17:08	0.1	3.1
02/22/10 17:09	0.1	-0.1
02/22/10 17:10	0.1	-0.1
02/22/10 17:11	0.1	-0.1
02/22/10 17:12	0.1	-0.1
02/22/10 17:13	0.1	4.9
02/22/10 17:14	0.2	19.5
02/22/10 17:15	0.2	21.0
02/22/10 17:16	0.2	21.0
02/22/10 17:17	0.1	21.0
02/22/10 17:18	0.1	20.9
02/22/10 17:19	0.1	17.2
02/22/10 17:20	0.1	10.9
02/22/10 17:21	0.1	8.0
02/22/10 17:22	0.1	5.0
02/22/10 17:23	0.1	5.1
02/22/10 17:24	0.1	10.1
02/22/10 17:25	0.1	10.6
02/22/10 17:26	0.1	5.1
02/22/10 17:27	0.1	5.1
02/22/10 17:28	0.1	5.1
02/22/10 17:29	0.1	8.1
02/22/10 17:30	0.1	11.0
02/22/10 17:31	0.1	10.4
02/22/10 17:32	0.1	5.1
02/22/10 17:33	0.1	5.1
02/22/10 17:34	5.9	12.5
02/22/10 17:35	10.7	12.1
02/22/10 17:36	10.5	12.2
02/22/10 17:37	1.1	20.2
02/22/10 17:38	4.1	17.9
02/22/10 17:39	10.7	12.0

02/22/10 17:40	9.6	12.7
02/22/10 17:41	0.5	20.7
02/22/10 17:42	1.6	20.0
02/22/10 17:43	10.3	12.3
02/22/10 17:44	9.9	12.5
02/22/10 17:45		
02/23/10 7:08	0.1	-0.1
02/23/10 7:09	0.1	0.0
02/23/10 7:10	0.1	0.1
02/23/10 7:11	0.1	0.2
02/23/10 7:12	0.1	2.6
02/23/10 7:13	0.1	2.7
02/23/10 7:14	0.1	6.2
02/23/10 7:15	0.1	20.2
02/23/10 7:16	0.1	20.9
02/23/10 7:17	0.1	20.9
02/23/10 7:18	0.1	15.1
02/23/10 7:19	0.7	9.7
02/23/10 7:20	8.0	14.2
02/23/10 7:21	10.6	12.1
02/23/10 7:22	10.6	12.1
02/23/10 7:23	10.6	12.0
02/23/10 7:24	10.6	12.1
02/23/10 7:25	5.4	16.4
02/23/10 7:26	1.5	19.9
02/23/10 7:27	0.4	20.8
02/23/10 7:28	0.3	20.9
02/23/10 7:29	0.3	20.9
02/23/10 7:30	0.3	20.9
02/23/10 7:31	0.3	20.8
02/23/10 7:32	0.2	21.0
02/23/10 7:33	0.2	21.0
02/23/10 7:34	0.1	8.1
02/23/10 7:35	0.1	18.1
02/23/10 7:36	0.2	20.7
02/23/10 7:37	0.2	20.7
02/23/10 7:38	0.1	20.8
02/23/10 7:39	0.1	20.8
02/23/10 7:40	0.1	21.0
02/23/10 7:41	0.1	21.0
02/23/10 7:42	0.1	21.0
02/23/10 7:43	0.1	13.9
02/23/10 7:44	0.1	6.7
02/23/10 7:45	0.1	20.4
02/23/10 7:46	0.2	20.8
02/23/10 7:47	0.2	20.9
02/23/10 7:48	0.2	20.9
02/23/10 7:49	0.2	20.6
02/23/10 7:50	0.1	13.0
02/23/10 7:51	0.1	10.4
02/23/10 7:52	3.0	15.6
02/23/10 7:53	5.4	16.5
02/23/10 7:54	3.0	18.4
02/23/10 7:55	2.5	16.6
02/23/10 7:56	0.1	0.4
02/23/10 7:57	0.1	0.1
02/23/10 7:58	0.2	4.5
02/23/10 7:59	0.1	10.4
02/23/10 8:00	0.9	11.6
02/23/10 8:01	9.6	12.2
02/23/10 8:02	10.5	12.0
02/23/10 8:03	8.5	13.5
02/23/10 8:04	3.7	17.3
02/23/10 8:05	3.7	17.3
02/23/10 8:06	3.7	17.3
02/23/10 8:07	3.7	17.4
02/23/10 8:08	3.6	17.4
02/23/10 8:09	3.4	17.6
02/23/10 8:10	3.4	17.6
02/23/10 8:11	3.3	17.7
02/23/10 8:12	3.4	17.7
02/23/10 8:13	3.3	17.7
02/23/10 8:14	3.4	17.6
02/23/10 8:15	3.3	17.7
02/23/10 8:16	3.3	17.7
02/23/10 8:17	3.3	17.7
02/23/10 8:18	3.3	17.7
02/23/10 8:19	3.2	17.8
02/23/10 8:20	3.0	18.0
02/23/10 8:21	3.0	18.0
02/23/10 8:22	2.9	18.4

02/23/10 8:23	2.9	18.1
02/23/10 8:24	2.8	18.1
02/23/10 8:25	2.8	18.3
02/23/10 8:26	2.8	18.2
02/23/10 8:27	2.7	18.2
02/23/10 8:28	2.8	18.2
02/23/10 8:29	2.8	18.2
02/23/10 8:30	2.7	18.3
02/23/10 8:31	2.7	18.2
02/23/10 8:32	2.6	18.3
02/23/10 8:33	2.6	18.3
02/23/10 8:34	2.6	18.3
02/23/10 8:35	2.8	18.3
02/23/10 8:36	2.8	18.2
02/23/10 8:37	2.7	18.3
02/23/10 8:38	2.3	18.6
02/23/10 8:39	1.9	18.9
02/23/10 8:40	1.8	19.1
02/23/10 8:41	1.7	19.2
02/23/10 8:42	1.7	19.2
02/23/10 8:43	1.7	19.2
02/23/10 8:44	1.7	19.2
02/23/10 8:45	1.8	19.1
02/23/10 8:46	1.8	19.1
02/23/10 8:47	1.8	19.0
02/23/10 8:48	1.8	19.1
02/23/10 8:49	1.7	19.2
02/23/10 8:50	1.7	19.2
02/23/10 8:51	1.7	19.2
02/23/10 8:52	1.8	19.1
02/23/10 8:53	1.8	19.1
02/23/10 8:54	1.8	19.1
02/23/10 8:55	1.8	19.1
02/23/10 8:56	1.8	19.0
02/23/10 8:57	1.8	19.0
02/23/10 8:58	1.8	19.0
02/23/10 8:59	1.8	19.1
02/23/10 9:00	1.7	19.1
02/23/10 9:01	1.7	19.2
02/23/10 9:02	1.7	19.1
02/23/10 9:03	1.8	19.1
02/23/10 9:04	1.8	19.1
02/23/10 9:05	1.8	19.1
02/23/10 9:06	1.8	19.1
02/23/10 9:07	1.9	19.0
02/23/10 9:08	1.9	18.9
02/23/10 9:09	1.9	19.0
02/23/10 9:10	1.9	19.0
02/23/10 9:11	1.8	19.0
02/23/10 9:12	1.8	19.1
02/23/10 9:13	1.8	19.1

START RUN	% CO2	% O2
02/23/10 9:14	1.8	19.0
02/23/10 9:15	1.8	19.1
02/23/10 9:16	1.7	19.2
02/23/10 9:17	1.7	19.2
02/23/10 9:18	1.7	19.2
02/23/10 9:19	1.8	19.1
02/23/10 9:20	1.7	19.2
02/23/10 9:21	1.7	19.2
02/23/10 9:22	1.6	19.3
02/23/10 9:23	1.7	19.2
02/23/10 9:24	1.6	19.3
02/23/10 9:25	1.6	19.3
02/23/10 9:26	1.5	19.4
02/23/10 9:27	1.5	19.4
02/23/10 9:28	1.4	19.5
02/23/10 9:29	1.4	19.6
02/23/10 9:30	1.5	19.5
02/23/10 9:31	1.6	19.4
02/23/10 9:32	1.5	19.4
02/23/10 9:33	1.4	19.5
02/23/10 9:34	1.4	19.6
02/23/10 9:35	1.3	19.7
02/23/10 9:36	1.2	19.8
02/23/10 9:37	1.3	19.7
02/23/10 9:38	1.4	19.6
02/23/10 9:39	2.2	18.7
02/23/10 9:40	2.8	18.1
02/23/10 9:41	2.9	18.1
02/23/10 9:42	3.0	18.0
02/23/10 9:43	3.0	18.0

02/23/10 9:44	3.0	18.0
02/23/10 9:45	2.8	18.1
02/23/10 9:46	2.8	18.2
02/23/10 9:47	2.7	18.2
02/23/10 9:48	2.7	18.2
02/23/10 9:49	2.7	18.2
02/23/10 9:50	2.7	18.2
02/23/10 9:51	2.7	18.2
02/23/10 9:52	2.8	18.2
02/23/10 9:53	2.8	18.1
02/23/10 9:54	2.9	18.0
02/23/10 9:55	2.9	18.0
02/23/10 9:56	2.9	18.0
02/23/10 9:57	2.9	18.0
02/23/10 9:58	3.0	18.0
02/23/10 9:59	3.1	17.9
02/23/10 10:00	3.2	17.8
02/23/10 10:01	3.3	17.7
02/23/10 10:02	3.2	17.8
02/23/10 10:03	3.2	17.8
02/23/10 10:04	3.2	17.7
02/23/10 10:05	3.2	17.8
02/23/10 10:06	3.2	17.8
02/23/10 10:07	3.2	17.8
02/23/10 10:08	3.1	17.8
02/23/10 10:09	3.3	17.7
02/23/10 10:10	3.2	17.7
02/23/10 10:11	3.4	17.6
02/23/10 10:12	3.4	17.5
02/23/10 10:13	3.4	17.5
AVG R 1	2.39	18.53
02/23/10 10:14	3.4	17.6
02/23/10 10:15	3.3	17.6
02/23/10 10:16	3.4	17.6
02/23/10 10:17	2.9	18.0
02/23/10 10:18	0.3	19.7
02/23/10 10:19	0.1	0.8
02/23/10 10:20	0.1	0.1
02/23/10 10:21	0.1	0.1
02/23/10 10:22	0.1	7.1
02/23/10 10:23	0.1	10.3
02/23/10 10:24	0.1	10.4
02/23/10 10:25	0.1	11.1
02/23/10 10:26	0.7	20.2
02/23/10 10:27	0.5	20.6
02/23/10 10:28	0.3	20.9
02/23/10 10:29	0.5	20.7
02/23/10 10:30	4.3	17.0
02/23/10 10:31	10.5	12.1
02/23/10 10:32	10.5	12.1
START RUN 2	% CO2	% O2
02/23/10 10:33	4.5	16.7
02/23/10 10:34	3.1	18.0
02/23/10 10:35	3.1	18.0
02/23/10 10:36	2.8	18.2
02/23/10 10:37	2.6	18.4
02/23/10 10:38	2.4	18.6
02/23/10 10:39	2.6	18.4
02/23/10 10:40	2.8	18.2
02/23/10 10:41	3.0	18.0
02/23/10 10:42	3.2	17.9
02/23/10 10:43	3.2	17.9
02/23/10 10:44	3.2	17.9
02/23/10 10:45	3.1	17.9
02/23/10 10:46	3.1	17.9
02/23/10 10:47	3.2	17.9
02/23/10 10:48	3.2	17.9
02/23/10 10:49	3.1	17.9
02/23/10 10:50	3.2	17.9
02/23/10 10:51	3.2	17.9
02/23/10 10:52	3.2	17.9
02/23/10 10:53	3.2	17.9
02/23/10 10:54	3.3	17.8
02/23/10 10:55	3.2	17.8
02/23/10 10:56	3.2	17.9
02/23/10 10:57	3.0	18.1
02/23/10 10:58	2.8	18.3
02/23/10 10:59	2.9	18.1
02/23/10 11:00	3.3	17.7
02/23/10 11:01	3.3	17.8
02/23/10 11:02	3.3	17.7
02/23/10 11:03	3.4	17.7

02/23/10 11:04	3.2	17.8
02/23/10 11:05	2.7	18.3
02/23/10 11:06	2.7	18.3
02/23/10 11:07	2.8	18.3
02/23/10 11:08	2.8	18.3
02/23/10 11:09	3.0	18.1
02/23/10 11:10	2.2	18.8
02/23/10 11:11	2.8	18.2
02/23/10 11:12	2.9	18.1
02/23/10 11:13	2.9	18.2
02/23/10 11:14	2.8	18.2
02/23/10 11:15	2.8	18.2
02/23/10 11:16	2.8	18.2
02/23/10 11:17	2.3	18.7
02/23/10 11:18	2.4	18.6
02/23/10 11:19	2.5	18.5
02/23/10 11:20	2.2	18.8
02/23/10 11:21	1.7	19.4
02/23/10 11:22	2.1	18.9
02/23/10 11:23	1.8	19.2
02/23/10 11:24	1.8	19.3
02/23/10 11:25	2.9	18.2
02/23/10 11:26	3.0	18.1
02/23/10 11:27	3.1	18.5
02/23/10 11:28	3.1	18.7
02/23/10 11:29	3.2	18.7
02/23/10 11:30	3.2	18.7
02/23/10 11:31	3.1	18.7
02/23/10 11:32	3.1	18.5
AVG R 2	2.91	18.21
02/23/10 11:33	3.1	18.2
02/23/10 11:34	3.1	18.2
02/23/10 11:35	3.0	18.2
02/23/10 11:36	2.9	18.3
02/23/10 11:37	2.0	19.2
02/23/10 11:38	0.2	21.3
02/23/10 11:39	0.5	15.3
02/23/10 11:40	0.1	0.1
02/23/10 11:41	0.1	0.1
02/23/10 11:42	0.1	0.1
02/23/10 11:43	0.1	3.6
02/23/10 11:44	0.1	10.8
02/23/10 11:45	0.1	10.6
02/23/10 11:46	0.1	10.4
02/23/10 11:47	6.2	13.3
02/23/10 11:48	10.5	12.1
02/23/10 11:49	10.5	12.1
02/23/10 11:50	7.4	14.5
START RUN 3	% CO2	% O2
02/23/10 11:51	3.2	17.9
02/23/10 11:52	3.2	17.9
02/23/10 11:53	3.2	17.9
02/23/10 11:54	3.1	17.9
02/23/10 11:55	3.1	17.9
02/23/10 11:56	3.2	17.9
02/23/10 11:57	3.1	18.0
02/23/10 11:58	3.0	18.0
02/23/10 11:59	3.1	18.0
02/23/10 12:00	3.0	18.1
02/23/10 12:01	3.1	18.0
02/23/10 12:02	3.0	18.0
02/23/10 12:03	3.0	18.1
02/23/10 12:04	3.0	18.1
02/23/10 12:05	3.2	17.9
02/23/10 12:06	3.3	17.8
02/23/10 12:07	3.3	17.8
02/23/10 12:08	3.2	17.9
02/23/10 12:09	3.2	17.9
02/23/10 12:10	3.2	17.9
02/23/10 12:11	3.2	17.9
02/23/10 12:12	3.0	18.1
02/23/10 12:13	3.0	18.1
02/23/10 12:14	3.0	18.0
02/23/10 12:15	2.9	18.1
02/23/10 12:16	3.0	18.1
02/23/10 12:17	3.1	18.0
02/23/10 12:18	3.2	17.9
02/23/10 12:19	3.1	18.0
02/23/10 12:20	3.1	18.0
02/23/10 12:21	3.1	18.0
02/23/10 12:22	3.1	18.0
02/23/10 12:23	3.0	18.1

02/23/10 12:24	3.0	18.1
02/23/10 12:25	3.0	18.1
02/23/10 12:26	2.9	18.2
02/23/10 12:27	2.8	18.3
02/23/10 12:28	2.7	18.4
02/23/10 12:29	3.0	18.2
02/23/10 12:30	3.2	18.0
02/23/10 12:31	3.1	18.0
02/23/10 12:32	3.1	18.1
02/23/10 12:33	3.0	18.1
02/23/10 12:34	3.0	18.1
02/23/10 12:35	3.1	18.1
02/23/10 12:36	3.2	18.0
02/23/10 12:37	3.2	18.0
02/23/10 12:38	2.8	18.3
02/23/10 12:39	2.8	18.4
02/23/10 12:40	2.7	18.4
02/23/10 12:41	2.6	18.5
02/23/10 12:42	2.8	18.4
02/23/10 12:43	3.0	18.1
02/23/10 12:44	3.0	18.1
02/23/10 12:45	3.0	18.2
02/23/10 12:46	3.0	18.1
02/23/10 12:47	3.1	18.0
02/23/10 12:48	3.1	18.0
02/23/10 12:49	3.0	18.1
02/23/10 12:50	3.0	18.1
AVG R 3	3.04	18.06
02/23/10 12:51	3.1	18.0
02/23/10 12:52	3.2	17.9
02/23/10 12:53	3.2	18.0
02/23/10 12:54	3.1	18.0
02/23/10 12:55	0.7	11.9
02/23/10 12:56	0.1	0.1
02/23/10 12:57	0.1	0.1
02/23/10 12:58	0.1	0.1
02/23/10 12:59	0.1	0.1
02/23/10 13:00	0.1	0.0
02/23/10 13:01	0.1	6.2
02/23/10 13:02	0.1	10.5
02/23/10 13:03	0.1	10.5
02/23/10 13:04	0.1	10.5
02/23/10 13:05	4.9	13.6
02/23/10 13:06	10.4	12.1
02/23/10 13:07	10.5	12.1
02/23/10 13:08	10.5	12.1
02/23/10 13:09	10.0	12.5
02/23/10 13:10	0.6	20.7
02/23/10 13:11	0.2	21.2
02/23/10 13:12	0.1	21.2

APPENDIX D

OPERATING RECORDS

(BIBLER BROS.)

Date	Tuesday, February 23, 2010

Kiln Three (SN 7G)		
	Lumber Pushed	Sawdust in lbs/hr
Test 1	11,304	5,549
Test 2	11,304	5,420
Test 3	11,304	5,375
	33,912	16,344

Kiln One (SN 13G)		
	Lumber Pushed	Sawdust in lbs/hr
Test 1	11,018	5,294
Test 2	11,018	5,372
Test 3	11,018	5,232
	33,054	15,898

APPENDIX E

WOOD FUEL ANALYSIS

(STANDARD LAB)

STANDARD LABORATORIES, INC.
8451 River King Drive
Freeburg , IL 62243

Lab No. 2010-00502-004

Date Rec'd. 2/26/2010

Date Sampled 2/23/2010 to 2/23/2010

Sampled By Client

Date: 03/05/2010 08:11:29

Sample ID: 20100050204

BIBLER BROS LUMBER CO

P.O.#

PO BOX 490
RUSSELLVILLE, AR 72811
ATTN: MATT HAGENLOCKER

Remark: SOUTHERN YELLOW PINE SAWDUST - KILN #3 STACK 7G 9:15 AM

PROXIMATE ANALYSIS		As Received	Dry Basis
% Moisture	D3302	55.44	*****
% Ash	D3174	0.27	0.60
% Volatile	D3175	*****	*****
% Fixed Carbon	D3172	*****	*****
BTU	D5865	4056	9103
MAF-BTU	D3180	9158	
% Total Sulfur	D4239B	< 0.01	< 0.01

SULFUR FORMS			
% Pyritic	D2492	*****	*****
% Sulfate	D2492	*****	*****
% Organic	D2492	*****	*****
% Total Sulfur	D4239B	< 0.01	< 0.01

WATER SOLUBLE			
% Na2O	ASME1974	*****	*****
% K2O	ASME1974	*****	*****
% Chlorine	ASME1974	*****	*****
Alkalies as Na2O	ASME1974	*****	*****

FUSION TEMP. OF ASH D1857	Reducing	Oxidizing
I.D.	*****	*****
H=W	*****	*****
H=1/2W	*****	*****
Fluid	*****	*****

GRINDABILITY INDEX D409 ***** @ ***** % Moist.
GRIND INDEX UNCONDITIONED ***** @ ***** % Moist.

FREE SWELLING INDEX D720 *****

Apparent Specific Gravity of Coal ModIC7113 *****

% Equilibrium Moisture D1412 *****

ULTIMATE ANALYSIS		Weight % As Received	Dry Basis
% Moisture	D3302	55.44	*****
% Carbon	D5373	22.97	51.54
% Hydrogen	D5373	2.82	6.33
% Nitrogen	D5373	0.07	0.16
% Chlorine	D6721	*****	*****
% Sulfur	D4239B	< 0.01	< 0.01
% Ash	D3174	0.27	0.60
% Oxygen (Diff.)	D3176	18.44	41.39
(Chlorine D6721 Dry Basis ug/g		*****	)

MINERAL ANALYSIS D6349	% Ignited	Basis
Phos. Pentoxide, P2O5		*****
Silica, SiO2		*****
Ferric Oxide, Fe2O3		*****
Alumina, Al2O3		*****
Titania, TiO2		*****
Lime, CaO		*****
Magnesia, MgO		*****
Sulfur Trioxide, SO3		*****
Potassium Oxide, K2O		*****
Sodium Oxide, Na2O		*****
Barium Oxide, BaO		*****
Strontium Oxide, SrO		*****
Manganese Dioxide, MnO2		*****
Undetermined		*****
Type of Ash	ASME1974	*****
Silica Value	ASME1974	*****
T250 Deg	B&W	*****
Base/Acid Ratio	ASME1974	*****
lb Ash/mm BTU		0.66
lb SO2/mm BTU		< 0.01
Fouling Index	ASME1974	*****
Slagging Index	ASME1974	*****
(Mercury D6722 Dry Basis ug/g		*****)

Respectfully Submitted,

STANDARD LABORATORIES, INC.
8451 River King Drive
Freeburg , IL 62243

Lab No. 2010-00502-005

Date Rec'd. 2/26/2010

Date Sampled 2/23/2010 to 2/23/2010

Sampled By Client

Date: 03/05/2010 08:11:30

Sample ID: 20100050205

BIBLER BROS LUMBER CO

P.O.#

PO BOX 490
RUSSELLVILLE, AR 72811
ATTN: MATT HAGENLOCKER

Remark: SOUTHERN YELLOW PINE SAWDUST - KILN #3 STACK 7G 10:40 AM

PROXIMATE ANALYSIS		As Received	Dry Basis
% Moisture	D3302	55.65	*****
% Ash	D3174	0.27	0.61
% Volatile	D3175	*****	*****
% Fixed Carbon	D3172	*****	*****
BTU	D5865	4042	9114
MAF-BTU	D3180	9170	
% Total Sulfur	D4239B	< 0.01	< 0.01

SULFUR FORMS			
% Pyritic	D2492	*****	*****
% Sulfate	D2492	*****	*****
% Organic	D2492	*****	*****
% Total Sulfur	D4239B	< 0.01	< 0.01

WATER SOLUBLE			
% Na2O	ASME1974	*****	*****
% K2O	ASME1974	*****	*****
% Chlorine	ASME1974	*****	*****
Alkalies as Na2O	ASME1974	*****	*****

FUSION TEMP. OF ASH D1857	Reducing	Oxidizing
I.D.	*****	*****
H=W	*****	*****
H=1/2W	*****	*****
Fluid	*****	*****

GRINDABILITY INDEX D409 ***** @ ***** % Moist.
GRIND INDEX UNCONDITIONED ***** @ ***** % Moist.

FREE SWELLING INDEX D720 *****

Apparent Specific Gravity of Coal ModIC7113 *****

% Equilibrium Moisture D1412 *****

ULTIMATE ANALYSIS		Weight % As Received	Dry Basis
% Moisture	D3302	55.65	*****
% Carbon	D5373	22.94	51.72
% Hydrogen	D5373	2.82	6.35
% Nitrogen	D5373	0.05	0.12
% Chlorine	D6721	*****	*****
% Sulfur	D4239B	< 0.01	< 0.01
% Ash	D3174	0.27	0.61
% Oxygen (Diff.)	D3176	18.28	41.22
(Chlorine D6721 Dry Basis ug/g		*****	)

MINERAL ANALYSIS D6349	% Ignited Basis
Phos. Pentoxide, P2O5	*****
Silica, SiO2	*****
Ferric Oxide, Fe2O3	*****
Alumina, Al2O3	*****
Titania, TiO2	*****
Lime, CaO	*****
Magnesia, MgO	*****
Sulfur Trioxide, SO3	*****
Potassium Oxide, K2O	*****
Sodium Oxide, Na2O	*****
Barium Oxide, BaO	*****
Strontium Oxide, SrO	*****
Manganese Dioxide, MnO2	*****
Undetermined	*****
Type of Ash ASME1974	*****
Silica Value ASME1974	*****
T250 Deg B&W	*****
Base/Acid Ratio ASME1974	*****
lb Ash/mm BTU	0.67
lb SO2/mm BTU	< 0.01
Fouling Index ASME1974	*****
Slagging Index ASME1974	*****
(Mercury D6722 Dry Basis ug/g	*****)

Respectfully Submitted,

STANDARD LABORATORIES, INC.
8451 River King Drive
Freeburg , IL 62243

Lab No. 2010-00502-006

Date Rec'd. 2/26/2010

Date Sampled 2/23/2010 to 2/23/2010

Sampled By Client

Date: 03/05/2010 08:11:31

Sample ID: 20100050206

BIBLER BROS LUMBER CO

P.O.#

PO BOX 490
RUSSELLVILLE, AR 72811
ATTN: MATT HAGENLOCKER

Remark: SOUTHERN YELLOW PINE SAWDUST - KILN #3 STACK 7G 11:51 AM

PROXIMATE ANALYSIS		As Received	Dry Basis
% Moisture	D3302	55.70	*****
% Ash	D3174	0.27	0.62
% Volatile	D3175	*****	*****
% Fixed Carbon	D3172	*****	*****
BTU	D5865	4055	9153
MAF-BTU	D3180	9210	
% Total Sulfur	D4239B	< 0.01	< 0.01

SULFUR FORMS			
% Pyritic	D2492	*****	*****
% Sulfate	D2492	*****	*****
% Organic	D2492	*****	*****
% Total Sulfur	D4239B	< 0.01	< 0.01

WATER SOLUBLE			
% Na2O	ASME1974	*****	*****
% K2O	ASME1974	*****	*****
% Chlorine	ASME1974	*****	*****
Alkalies as Na2O	ASME1974	*****	*****

FUSION TEMP. OF ASH D1857	Reducing	Oxidizing
I.D.	*****	*****
H=W	*****	*****
H=1/2W	*****	*****
Fluid	*****	*****

GRINDABILITY INDEX D409 ***** @ ***** % Moist.
GRIND INDEX UNCONDITIONED ***** @ ***** % Moist.

FREE SWELLING INDEX D720 *****

Apparent Specific Gravity of Coal ModIC7113 *****

% Equilibrium Moisture D1412 *****

ULTIMATE ANALYSIS		Weight % As Received	Dry Basis
% Moisture	D3302	55.70	*****
% Carbon	D5373	22.86	51.61
% Hydrogen	D5373	2.78	6.27
% Nitrogen	D5373	0.04	0.08
% Chlorine	D6721	*****	*****
% Sulfur	D4239B	< 0.01	< 0.01
% Ash	D3174	0.27	0.62
% Oxygen (Diff.)	D3176	18.36	41.44
(Chlorine D6721 Dry Basis ug/g		*****	)

MINERAL ANALYSIS D6349	% Ignited Basis
Phos. Pentoxide, P2O5	*****
Silica, SiO2	*****
Ferric Oxide, Fe2O3	*****
Alumina, Al2O3	*****
Titania, TiO2	*****
Lime, CaO	*****
Magnesia, MgO	*****
Sulfur Trioxide, SO3	*****
Potassium Oxide, K2O	*****
Sodium Oxide, Na2O	*****
Barium Oxide, BaO	*****
Strontium Oxide, SrO	*****
Manganese Dioxide, MnO2	*****
Undetermined	*****
Type of Ash ASME1974	*****
Silica Value ASME1974	*****
T250 Deg B&W	*****
Base/Acid Ratio ASME1974	*****
lb Ash/mm BTU	0.68
lb SO2/mm BTU	< 0.01
Fouling Index ASME1974	*****
Slagging Index ASME1974	*****
(Mercury D6722 Dry Basis ug/g	*****)

Respectfully Submitted, L. A. Wilson

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OF THIS REPORT