west virginia department of environmental protection

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ENGINEERING EVALUATION / FACT SHEET

BACKGROUND INFORMATION

Application No.:	R13-1622I
Plant ID No.:	019-00034
Applicant:	Georgia-Pacific Wood Products, LLC
Facility Name:	Mt. Hope Facility
Location:	Mt. Hope, Fayette County
SIC Code:	2421, 2493
Application Type:	Modification
Received Date:	August 5, 2011
Engineer Assigned:	Steven R. Pursley, PE
Fee Amount:	$1,000.00
Date Received:	August 10, 2011
Complete Date:	September 2, 2011
Due Date:	December 1, 2011
Applicant Ad Date:	August 10, 2011
Newspaper:	*The Register-Herald*
UTM's:	Easting: 483.5 km Northing: 4,194.5 km Zone: 17
Description:	Addition of 3 emission sources that have been present at the facility since original construction.

DESCRIPTION OF PROCESS

Tree length logs are brought to the mill and are unloaded, separated by species and length, and sorted on the logyard. The process begins by loading logs on the deck to be aligned and cut. The logs are cut to appropriate length via the log chop saws. Logs from the chop saws are then sent to the debarkers where the bark is removed. Bark from the debarking operation is conveyed to the bark hog to be hogged prior to being sent to the hog fuel silo where the material is stored prior to being used as fuel in the Wellons Energy System. Logs from debarking are then sent to the flakers where the logs are cut into flakes approximately 1.5 inches wide by 4 inches long. These are termed green flakes since they contain considerable moisture (approximately 50% by weight).

The green flakes are screened to remove unusable material prior to being conveyed and stored in the green flake bins. The screen fines are conveyed to either the hog fuel silo or ground fuel storage. The green flakes are then conveyed to the drying operation.

The Mt. Hope facility has a unique drying operation when compared to conventional OSB plants. It consists of a 240 mmbtu/hr Wellons Energy System, three rotary flake dryers and six ai-to-air heat exchangers all interconnected. Heat for the drying system is provided by the Wellons Energy System. The combustion gases generated in the Wellons Energy System are sent to an air-to-air heat exchanger (Primary Air Heater, one per dryer) to heat ambient air for use in that dryer. The heated ambient air is sent to each dryer where it is used to both convey the flakes through the dryer and to remove the moisture from the flakes. The dry flakes from each dryer are pneumatically conveyed to a cyclone collector where they are removed from the gas stream. The moisture laden dryer exhaust from the cyclone is sent to another air-to-air heat exchanger (Recuperator, one per dryer) where it is re-heated prior to being sent back to the Wellons Energy System for use as combustion air. The dryer exhaust gasses are reheated with the Wellons combustion which exit the Primary Air Heaters. The combustion gasses exiting the recuperators are sent through multicyclones (one per dryer) and an electrostatic precipitator prior to being exhausted to the atmosphere. The Wellons Energy System acts as a control device for pollutants generated in the drying process. The Wellons Energy System is equipped with the Nalco Fuel Tech NO_xOut system in which urea is injected into the furnace at specified locations to control NO_x generation. The Wellons Energy System also serves as the heat source for the thermal oil heat exchanger which indirectly heats the thermal oil for use to maintain press temperature.

The dried flakes are screened to remove finer material and are subsequently stored in the dry flake bins. The dried, screen flakes are then conveyed to the blending operation where a thermosetting resin and wax are mixed with the flakes. The blended product is then conveyed to a forming line where an 8 foot wide mat is produced by depositing the flakes in layers that are oriented at right angles. Once the proper thickness of mat is created, it is cut into 24 foot lengths and conveyed to the pressing operation where under heat and pressure the mat is compressed into a board. Pollutants generated from the pressing operation will be controlled by a Regenerative Thermal Oxidizer/Regenerative Catalytic Oxidizer (RTO/RCO). The unit will be sized such that it can operate a regenerative thermal oxidizer (RTO) but catalytic media will be added to the top of the ceramic media to allow the unit to be operated as a regenerative catalytic oxidizer (RCO) which is operated at reduced temperatures when compared to an RTO. However, unlike a RCO which can only be operated in catalytic mode, this unit will be able to be operated as a thermal unit at the end of the catalyst media life if the economics of replacing the catalytic media exceeds the cost of operating the unit at the increased temperatures required in a RTO. The only difference in the two operating modes of the control device is the combustion chamber temperature. Operating in the RTO mode, the minimum combustion chamber temperature must be maintained at approximately 1500° F. Operating in the RCO mode the combustion chamber temperature must be maintained at approximately 800°F.

Material generated in the mat sawing operation is pneumatically conveyed to a cyclone for material collection. The cyclone exhaust is directed to a fabric filter for particulate removal. The collected material is returned to the process for reuse. Material generated in the forming area is pneumatically conveyed to a cyclone for material collection. The cyclone exhaust is directed to a fabric filter for particulate removal. The

material collected in both the cyclone and fabric filter is pneumatically conveyed to a high efficiency cyclone for deposition into the dry fuel silo. Material from the dry fuel silo is used as a fuel in the Wellons Energy System.

The boards (8' x 24') from the press are then cut and trimmed into 4' x 8' sheets. The board trimmings and material generated during cutting are pneumatically conveyed to a cyclone for material collection. The cyclone exhaust is directed to a fabric filter for particulate removal. The material collected in the cyclone and fabric filter are pneumatically conveyed to the high efficiency cyclone for deposition into the dry fuel silo prior to being used for fuel in the Wellons Energy System.

Once the boards are trimmed to the appropriate dimensions, the edges of the board are sealed with a water based paint in a spray booth. The particulate overspray generated in the booth is controlled with fabric filters.

Some of the boards may be further finished by sanding. The sander dust collected in this operation is pneumatically conveyed to a fabric filter for particulate removal and collection. The collected material is then pneumatically conveyed to the high efficiency cyclone for deposition into the sander dust fuel silo prior to be used for fuel in the Wellons Energy System.

The boards are then packaged for transport and sale.

Modification Description

The applicant is requesting the addition of three emission sources that have been present since the original construction but that were recently identified by WVDAQs Title V program as subject to inclusion in a permit. These sources are: the blenders, the log deicing system, and a 255 horsepower compression ignition reciprocating internal combustion engine on the emergency firewater pump.

SITE INSPECTION

No site inspection was performed since this is an established facility that is well known to DAQ. A full on site inspection was performed by Eric Ray of DAQs enforcement section on March 2, 2011. The facility was not in operation.

ESTIMATE OF EMISSIONS BY REVIEWING ENGINEER

Emissions from the units addressed by this modification are as follows:

Blenders: (Emissions based on AP-42 and NCASI Wood Products Emission Factor Database)

	Lb/hr	TPY
$PM/PM_{10}/PM_{2.5}$	0.12	0.51
VOC	9.23	35.04
Formaldehyde	0.21	0.79
Methanol	3.64	13.80
Total HAPs	3.84	14.59

Log Deicing: (Emissions based on NCASI Plywood Database)

	Lb/hr	TPY
VOC	5.14	22.49
Acetaldehyde	0.32	1.42
Methanol	0.51	2.22
Total HAPs	0.83	3.64

Emergency Firewater Pump Engine: (Emissions based on AP-42)

	Lb/hr	TPY
$PM/PM_{10}/PM_{2.5}$	0.56	0.14
NO_x	7.91	1.98
CO	1.70	0.43
SO_2	0.52	0.13
VOC	0.64	0.16
Total HAPs	0.99	0.25

Therefore, total emissions from this modification will be as follows:

	Lb/hr	TPY
$PM/PM_{10}/PM_{2.5}$	0.68	0.65
NO_x	7.91	1.98
CO	1.70	0.43
SO_2	0.52	0.13
VOC	15.01	57.69
Acetaldehyde	0.32	1.42
Formaldehyde	0.21	0.79
Methanol	4.15	16.02
Total HAPs	4.83	18.48

Since all of this equipment was installed at the plant during initial construction, it should have been accounted for in the original permit application. The total PTE from the original facility (based on the original permit application and excluding the sources addressed in this application) was as follows:

	Lb/hr	TPY
$PM/PM_{10}/PM_{2.5}$	54.56	238.97
NO_x	55.50	243.09
CO	55.00	240.90
SO_2	4.80	21.02
VOC	29.00	127.02
Acetaldehyde	--	--
Formaldehyde	--	--
Methanol	--	--
Total HAPs	--	--

Therefore the original PTE of the facility should have been as follows:

	Lb/hr	TPY
$PM/PM_{10}/PM_{2.5}$	55.24	239.62
NO_x	63.41	245.07
CO	56.70	241.33
SO_2	5.32	21.15
VOC	44.01	184.71
Acetaldehyde	0.32	1.42
Formaldehyde	0.21	0.79
Methanol	4.15	16.02
Total HAPs	4.83	18.48

As can be seen by the above, even if the omitted sources had been included in the original application, PSD status would not have changed.

REGULATORY APPLICABILITY

The portion of the facility covered by this application is subject to the following state and federal rules:

STATE RULES

45CSR7 To Prevent and Control Particulate Matter Air Pollution From Manufacturing Processes and Associated Operations

The Blenders are subject to 45CSR7. The main requirement of 45CSR7 is the process weight rate based PM stack emission rate in section 4 of the rule. Based on a process weight rate of 46.5 Oven Dried Tons per hour (93,000 pounds) and a source type 'a', the rule limits PM emissions to 32.72 pounds per hour. The permit will limit PM emissions to 0.12 pounds per hour. Therefore, the requirements of 45CSR7 will be met.

45CSR13: Permits For Construction, Modification, Relocation and Operation Of Stationary Sources Of Air Pollutants, Notification Requirements, Temporary Permits, General Permits, and Procedures For Evaluation.

The modification is subject to 45CSR13 because the emission increase will exceed 2 pounds per hour and 5 tons per year of total HAPs and 6 pounds per hour and 10 tons per year of VOCs.

45CSR30: Requirements for Operating Permits.

The facility is subject to 45CSR30 because it is a major source of criteria pollutants. The facility currently operates under Title V permit R30-01900034-2011.

FEDERAL RULES

40 CFR 63 Subpart DDDD National Emission Standards for Hazardous Air Pollutants: Plywood and Composite Wood Products.

The facility is subject to 40 CFR 63 Subpart DDDD and "blenders" are listed as an affected source. However, the rule contains no specific requirements for blenders.

40 CFR 63 Subpart ZZZZ National Emission Standards for Hazardous Air Pollutants: Stationary Reciprocating Internal Combustion Engines.

Since RICE-1 is an existing stationary CI RICE with a site rating of less than or equal to 500 brake HP located at a major source of HAP, it must be in compliance with the applicable emission limitations and operating limitations no later than May 3, 2013. The main conditions applicable to RICE-1 are the maintenance requirements of 40 CFR 63 Subpart ZZZZ Table 2c.

Nonapplicability Determinations

This application was not reviewed under 45CSR14 only because all of the equipment identified in this application was installed during initial construction and should have been included in the original application.

TOXICITY OF NON-CRITERIA REGULATED POLLUTANTS

The non-criteria regulated pollutants that are emitted from the portion of the facility reviewed under this application are Acetaldehyde, Formaldehyde, and Methanol. The facility will reduce emissions of these pollutants facility wide by complying with Subpart DDDD of Part 63. However, as indicated above, Subpart DDDD has no specific requirements applicable to the sources reviewed under this application.

AIR QUALITY IMPACT ANALYSIS

As can be seen under the "Estimate of Emissions by Reviewing Engineer" section of this document, even after adding the omitted sources, the original facility was still classified as "minor" under 45CSR14. Therefore no modeling was performed. However, it should be noted that the facility has since (with the issuance of permit R13-1622D in 2008) become a major source of emissions as defined in 45CSR14 and any future modifications should be reviewed with that in mind. This application was not reviewed under 45CSR14 only because all of the equipment identified in this application was installed during initial construction and should have been included in the original application.

MONITORING OF OPERATIONS

In addition to the maintenance already required by permit R13-1622H and that required by 40 CFR 63 Subpart ZZZZ, the permittee shall maintain the following records:

* Monthly OSB production (as measured in both oven dried tons (ODT) and thousand square feet (MSF).

* Monthly hours of operation of RICE 1.

CHANGES TO PERMIT R13-1622H

* New conditions 4.1.15, through 19 were added.

* New conditions 4.3.8 and 4.3.9 were added.

* The permit was put into the most recent boilerplate.

RECOMMENDATION TO DIRECTOR

Information supplied in the application indicates that compliance with all applicable regulations will be achieved. Therefore it is the recommendation of the writer that permit R13-1622I for the modification of an OSB facility be granted to Georgia-Pacific Wood Products LLC.

Steven R. Pursley, PE
Engineer

Date