

## Air Permit Review

**Permit Issue Date:**

**Region:** Winston-Salem Regional Office  
**County:** Wilkes  
**NC Facility ID:** 9700001  
**Inspector's Name:** Eric Hudson  
**Date of Last Inspection:** 02/10/2011  
**Compliance Code:** 3 / Compliance - inspection

<b>Facility Data</b>			<b>Permit Applicability (this application only)</b>
<b>Applicant (Facility's Name):</b> Louisiana-Pacific Corporation - Roaring River  <b>Facility Address:</b> Louisiana-Pacific Corporation - Roaring River 1151 ABTCO Road North Wilkesboro, NC 28659  <b>SIC:</b> 2493 / Reconstituted Wood Products <b>NAICS:</b> 321219 / Reconstituted Wood Product Manufacturing  <b>Facility Classification: Before:</b> Title V <b>After:</b> Title V <b>Fee Classification: Before:</b> Title V <b>After:</b> Title V			<b>SIP:</b> <b>NSPS:</b> <b>NESHAP:</b> 15A NCAC 2D .1109 (Case-by-Case MACT)  <b>PSD:</b> <b>PSD Avoidance:</b> <b>NC Toxics:</b> <b>112(r):</b> <b>Other:</b>
<b>Contact Data</b>			<b>Application Data</b>
<b>Facility Contact</b>	<b>Authorized Contact</b>	<b>Technical Contact</b>	<b>Application Number:</b> 9700001.11A <b>Date Received:</b> 08/30/2011 <b>Application Type:</b> Modification <b>Application Schedule:</b> TV-Significant <b>Existing Permit Data</b> <b>Existing Permit Number:</b> 03909/T47 <b>Existing Permit Issue Date:</b> 12/03/2010 <b>Existing Permit Expiration Date:</b> 10/31/2013
Roy Hart EHS Manager (336) 696-3464 P. O. Box 98 Roaring River, NC 28669+0327	Jim Reavis Plant Manager (336) 696-2751 P.O. Box 98 Roaring River, NC 28669	Roy Hart EHS Manager (336) 696-3464 P. O. Box 98 Roaring River, NC 28669+0327	
<b>Review Engineer:</b> Fern Paterson, P.E.  <b>Review Engineer's Signature:</b> _____ <b>Date:</b> _____		<b>Comments / Recommendations:</b> Issue 03909/T48 <b>Permit Issue Date:</b> _____ <b>Permit Expiration Date:</b> 10/31/2013	

**I. Purpose of Application**

Louisiana-Pacific Corporation (LP) has a facility located in North Wilkesboro, Wilkes County, North Carolina (Roaring River facility). The existing combustions sources are subject to Case-by-Case MACT "Hammer" emissions limitations, which were incorporated into the Title V permit in Revision No. T46 on November 1, 2010. Application No. 9700001.11A, received August 30, 2011, requests a revision to the Case-by-Case carbon monoxide (CO) limits applicable to Boiler Nos. 2 and 3 (**ID Nos. ES-B2 and ES-B3**) to be consistent with the CO limits for "hybrid suspension grate" boilers in U.S. EPA final major source Boiler MACT rule. U.S. EPA's final Boiler MACT rule was promulgated on March 21, 2011, but was subsequently stayed by U.S. EPA for reconsideration.

## II. Permit Modifications/Changes

The following table describes the modifications to the current permit.

Page(s)	Section	Description of Change(s)
1	Permit Cover Page	Amend permit revision numbers and issuance/effective dates.
21	Section 2.1.E, Table	Revise the listed CO emissions limitation for biomass firing at Boiler Nos. 2 and 3 ( <b>ID Nos. ES-B2 and ES-B3</b> ) from 508 ppmv at 7% O <sub>2</sub> to 2,718 ppmv at 7% O <sub>2</sub> .
27	Section 2.1.E.11.c.iv.	Revise the listed CO emissions limitation for biomass firing at Boiler Nos. 2 and 3 ( <b>ID Nos. ES-B2 and ES-B3</b> ) from 508 ppmv at 7% O <sub>2</sub> to 2,718 ppmv at 7% O <sub>2</sub> .
44-52	Section 3	Update General Provisions with the most recent revision (v. 3.5)

## III. Regulatory Review

### Hybrid Suspension Grate Boilers Defined.

In the preamble to the final Boiler MACT promulgated on March 21, 2011, U.S. EPA established a boiler subcategory identified as a “hybrid suspension grate.” This type of boiler design is used to fire high moisture content biomass. From the federal register:

One commenter went on to say that EPA has inappropriately subcategorized suspension burners/dutch ovens designed to burn biomass as a single subcategory. Hybrid suspension/grate-floor burners are designed such that the wet fuel first undergoes drying and then combustion in suspension within the furnace, with any remaining unburned fuel falling onto the grate to complete combustion. Another commenter also provided technical design elements to highlight the differences between dutch ovens, suspension burners, and the above mentioned hybrid suspension grate burners. This commenter indicated that dutch ovens have two chambers. Solid fuel is dropped down into a refractory lined chamber where drying and gasification take place in the fuel pile. Gases pass over a wall into the second chamber where combustion is completed. Dutch ovens are capable of burning high moisture fuels such as bark, but have low thermal efficiency and are unable to respond rapidly to changes in steam demand. On the contrary, suspension burners combust fine, dry fuels such as sawdust and sander dust in suspension. Rapid changes in combustion rate are possible with this firing method. This commenter added that some dutch oven units located at particleboard, hardboard, and medium density fiberboard plants were misclassified and there are less than 30 true dry-fired suspension burners in operation, and only a small handful of true dutch oven boilers.

*Response:* EPA agrees that for combustion-related pollutants (used as a surrogate for organic HAP emissions), the design differences for hybrid suspension grate boilers (also referred to as combination suspension/grate boilers) are significant, and that combustion conditions in these types of units are not similar to those in dutch ovens or true suspension burners that combust fine, dry fuels. Therefore, EPA has added a hybrid suspension grate boiler subcategory for CO and dioxin/furan emissions. However, the differences discussed by the commenters with respect to PM are less indicative of the design of the boiler and more indicative of the types of air pollution controls that are used. In keeping with the subcategorization approach being used for this final rule, these units, and all other solid fuel units, will be included in a subcategory for units combusting solid fuels for PM, Hg, and HCl.

54 FR 15634-15635 (March 21, 2011)

The final rule defined a hybrid suspension grate boiler as, “a boiler designed with air distributors to spread the fuel material over the entire width and depth of the boiler combustion zone. The drying and much of the combustion of the fuel takes place in suspension, and the combustion is completed on the grate or floor of the boiler.” 40 CFR 63.7575. This hybrid suspension grate boiler design is given a substantially higher CO emissions limitation than other solid fuel-fired boiler designs, as shown in the following table:

<b>Subcategory</b>	<b>CO Emissions Limit (ppmv on a dry basis corrected to 3% O<sub>2</sub>)</b>
Pulverized coal units designed to burn pulverized coal/solid fossil fuel	160
Stokers designed to burn coal/solid fossil fuel	270
Fluidized bed units designed to burn coal/solid fossil fuel	82
Stokers designed to burn biomass/bio-based solid	490
Fluidized bed units designed to burn biomass/bio-based solid	430
Suspension burners/Dutch Ovens designed to burn biomass/bio-based solid	470
Fuel cells designed to burn biomass/bio-based solid	690
<b>Hybrid suspension/grate units designed to burn biomass/bio-based solid</b>	<b>3,500</b>

LP Roaring River Biomass Boilers.

Two (2) existing boilers at the LP Roaring River facility (**ID Nos. ES-B2 and ES-B3**) fire milled hardwood bark with a moisture content at approximately 50% by weight. To improve efficiency of heat recovery, these boilers are designed to dry the high moisture content biomass fuel prior to igniting the fuel surface. The boilers are equipped with air-swept suspension feeders to distribute the bark over the width and depth of the boiler. Additional suspension is provided by undergrate air that flows upward through the furnace section of the boiler. The bark is quickly dried by the upflowing and radiant heat from the grate. The particles are ignited in suspension and burn as they fall to the grate.

The existing LP-Roaring River Title V permit includes case-by-case MACT emissions limitations pursuant to 15A NCAC 2D .1109 (CAA §112(j)), including a CO emissions limitation of 508 ppmv on a dry basis corrected to 7% O<sub>2</sub>. In establishing the CO emissions limitation, LP relied on NC DAQ’s application guidance, which established the CO limit for all wet-fuel fired biomass boilers. NC DAQ did not include the hybrid suspension grate boiler subcategory in its application guidance.

In this application, LP has asserted that Boiler Nos. 2. and 3, as described above, meet the definition of a hybrid suspension grate boiler as described above, and thereby should be given the higher CO emissions limit of 3,500 ppmv on a dry basis corrected to 3% O<sub>2</sub>. The NC DAQ agrees that the boilers meet U.S. EPA’s definition of a hybrid suspension grate boiler, and have included the higher CO emissions limitation in the proposed permit. To be consistent with the other CO emissions limitations in the permit, the limit has been adjusted to reflect reference oxygen content of 7%.

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The associated testing, monitoring, recordkeeping, and reporting requirements have not been revised.

**IV. Draft Permit Review Summary**

Eric Hudson and Jalal Adouli of the Winston-Salem Regional Office were provided a draft permit and draft permit review document on September 13, 2011.

Roy Hart of LP - Roaring River was provided a draft permit for review on September 14, 2011.

Public notice of the proposed permit was posted on the NCDAQ website on **ENTER DATE.**

Ms. Katy Forney and Ms. Gracy DeNois (U.S. EPA, Region IV) were provided a draft permit for review on **ENTER DATE.**

**V. Recommendations**

This permit modification application for the Louisiana-Pacific Corporation - Roaring River located in North Wilkesboro, Wilkes County, North Carolina has been reviewed by NC DAQ to determine compliance with all procedures and requirements. NC DAQ has determined that this facility appears to be complying with all applicable requirements.

**Issue Permit No. 03909T48**