SECOR

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**FINAL**

**MODIFICATION TO STATIONARY SOURCE PERMIT TO OPERATE FOR**

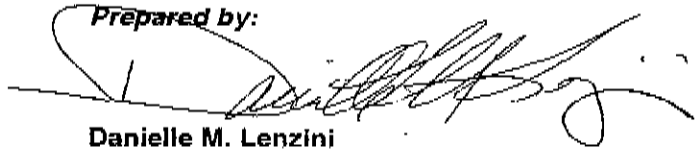
**COLUMBIA FOREST PRODUCTS**

# Chatham Facility

## 100 Paul Road, SW
## Chatham, Virginia 24531
## Registration No. 30120

**May 27, 2005**
**SECOR PN: 820T.CFP01.VA**

***Prepared by:***



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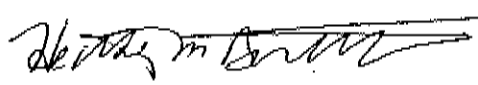

**Heather M. Bartlett**
**Principal Engineer**

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# 1.0 INTRODUCTION

SECOR International Incorporated (SECOR) has been retained by Columbia Forest Products to prepare a permit modification application for the Columbia Forest Products (Columbia), Chatham facility, located at 100 Paul Road SW, Chatham, Virginia, in Pittsylvania County.

Columbia proposes to install a new wood-fired boiler at the Chatham facility. The Chatham facility is currently permitted by the Virginia Department of Environmental Quality (DEQ) as a synthetic minor source under registration number 30120, issued on August 28, 2003. This modification application is being submitted to modify the Stationary Source Permit to Operate to allow construction and operation of this new equipment.

This application describes the planned modifications, the methods used to estimate emissions from the Chatham facility, and the applicable regulatory requirements for the new equipment. The Virginia DEQ Air Permit Form 7 application forms are included in Appendix A, the boiler proposal is supplied in Appendix B, emissions calculations are shown in Appendix C, and toxic modeling information is provided in Appendix D.

# 2.0 PROCESS DESCRIPTION

## 2.1 Current Process Description

The Chatham facility is a hardwood plywood manufacturing (SIC Code No. 2435) business. The main product of the plant is 4-foot-by-8-foot-by-3/4-inch-thick hardwood veneer faced plywood. The hardwood veneer is brought in from other locations in a pre-dried condition. The core components consist of a variety of core materials (composite panels, such as medium density fiberboard, or veneer manufactured by others). The hardwood face veneer is glued to the core material to create hardwood plywood.

Glue is spread on the veneer sheets and/or solid core material, then the hardwood face veneers are placed at the top and bottom of each assembly. Once the veneers are assembled into plywood, the plywood panel is transferred to a cold press for five minutes, then to a hot press, where the panel is heated to approximately 250° Fahrenheit.

Saws trim the plywood panels exiting the hot presses. Voids in the panel faces are filled with putty. Panels are then run through sanders. Wood filler is used on the sides and ends of the laminated panels. Some of the panels are sent to the Ultraviolet light-cured roll coating line to be stained and sealed. A hog-fired boiler is used to supply steam to the presses for the plywood panels. The panels are inspected and packaged for shipment.

Sawdust and sanderdust are pneumatically transported to the fuel storage silo for use in the wood-fired boiler. Particulate emissions from the conveying of the wood waste are controlled by three baghouses. Excess wood waste and residuals are transported to an open trailer for sale off site.

A hog-fueled boiler provides steam for the presses. The fuel for the boiler (hogged wood waste) is generated on site, and there is not an alternative fuel source for the boiler.

### 2.2 Proposed Modification

Columbia is proposing to install a new wood-fired boiler with a rated heat input capacity of 12.6 MMBtu/hr. The proposed new boiler will replace the current 7.0 MMBtu/hr wood-fired boiler. Once the new boiler is operational, the current boiler will be dismantled and removed. The new boiler will have a multiclone to control particulate emissions. The boiler will provide steam heat for the presses, heat for the building, and steam for the new turbine/generator unit. The fuel source for the proposed boiler will continue to be panel production waste, consisting of plywood trim, sawdust and sanderdust.

The Hurst Boiler proposal with the proposed boiler information is provided in Appendix B.

## 3.0 EMISSIONS CALCULATIONS

Emissions from the proposed boiler include both criteria pollutants and hazardous air pollutants (HAPs). The criteria pollutants emitted include sulfur dioxide ($SO_2$), nitrogen oxides ($NO_x$), carbon monoxide (CO), volatile organic compounds (VOCs), and particulate matter (PM), including particulate matter less than 10 microns in diameter ($PM_{10}$). The federal list of 187 HAPs, defined in Section 112(b) of the Clean Air Act, and the Commonwealth of Virginia Regulations For The Control and Abatement of Air Pollution, was used in identifying the HAPs emitted from the facility.

Potential to emit (PTE) emissions from the proposed boiler and resin usage have been estimated.

### 3.1 Proposed Boiler

Criteria and HAP emissions were estimated using emission factors obtained from the fifth edition of the U.S. Environmental Protection Agency's (EPA's) Compilation of Air Pollutant Emission Factors (AP-42), Chapter 1.6 "Wood Residue Combustion in Boilers." The emission factors are in units of lbs/MMBtu. The proposed boiler maximum heat input of 12.6 MMBtu/hr at 8,760 hours/year was used to calculate the PTE emissions.

The emissions are presented in Tables 1 and 2, in Appendix C.

### 3.2 Resin Usage

In Chatham's current Stationary Source Permit to Operate, formaldehyde and methanol emissions from resin usage are limited to 9.8 tons/year each to keep the facility under the Title V Operating Permit thresholds. Since formaldehyde emissions from the proposed new boiler are increased due to the new boilers size, the Chatham facility proposes to limit formaldehyde emissions from resin usage to 9.56 tons/year.

Emissions estimates for resin usage are shown on Table 3, in Appendix C.

### 3.3 Emissions Summary

A criteria pollutant emissions summary is provided in Table 4. This summary accounts for all current permitted sources (minus the current boiler), the proposed boiler emissions, and the proposed resin emission limits. Emissions were obtained from permit limits or from permit application submittals. In this scenario, emissions are calculated using the maximum production rates and are below the 100 ton/year Title V threshold.

Table 5 presents the total facility HAP emission summary. The proposed boiler, the proposed resin emission limits, and other current HAP sources are summarized in this table. The Chatham facility would like to continue to have federally enforceable limits on methanol and formaldehyde emissions from resin usage to stay below Title V Permitting thresholds. With these limits, HAP emissions are below the Title V threshold of 25 tons/year for combined HAPs and 10 tons/year for a single HAP.

## 4.0 PERMIT EXEMPTION LEVELS

The requirements of 9 VAC 5-80-1320 were reviewed to determine if permit exemption levels would apply to the proposed new boiler. SECOR discussed the project and the exemption requirements with the Virginia DEQ. SECOR understands that the installation of the new boiler would be considered a modification to the stationary source; therefore, the exemption levels of 9 VAC 5-80-1320(D) would apply.

The net emissions increase of only the proposed boiler was determined and compared to the exemption levels, as shown in Table 6, Appendix C. Past actual emissions were subtracted from the future potential (uncontrolled PTE) boiler emissions to determine the net emissions increase. Since this is a new source, the past actual emissions are assumed to be zero. Although the current boiler will be removed once the proposed boiler has proved to function reliably, these emissions cannot be considered as a creditable decrease.

Since emissions for PM, $PM_{10}$ and $NO_X$ are above the modified source exemption rate, the proposed boiler cannot be exempted from permitting requirements.

## 5.0 TOXIC POLLUTANTS

The threshold limit value (TLV) exemption calculations for HAP emissions from the proposed boiler are presented in Table 7, Appendix C. The exemption formulas in 9VAC5-60-300, and the TLVs from the 1991-1992 Threshold Limit Values for Chemical Substances and Physical Agents and Biological Exposure Indices by the American Conference of Governmental Industrial Hygienists (ACGIH), were used to determine the exemption emission rates for toxic pollutants.

Emissions of acrolein from the proposed boiler are above the lbs/hour and tons/year exempt emission rate. Additionally, emissions of formaldehyde are above the tons/year exempt emission rate.

Since the proposed new boiler cannot be exempt under 9 VAC 5-60-300 C, D, or E, it must be demonstrated that emissions from this source do not exceed significant ambient air concentrations. SECOR used the U.S. EPA SCREEN3 dispersion model to determine the acrolein and formaldehyde ambient air concentrations that would be contributed by the new boiler under worst-case meteorological conditions.

The main stack exhaust parameters, and the associated building dimensions used to account for downwash effects, are presented in Appendix D. Note that since the SCREEN3 dispersion model will only accept the dimensions of a single rectangular building, both the boiler building and the adjacent building are used in individual model runs to determine which results in the highest concentration. The building dimensions used for the adjacent buildings represent almost the entire footprint of the buildings closest to the proposed new boiler building at the maximum peak roof height, even though the roof elevations are sloped in most areas. This will result in an overestimation of the building downwash effects and, therefore, an overestimation of the ground-level ambient concentrations resulting from emissions from the proposed boiler stack.

The SCREEN3 output files and a site plan with the proposed boiler/building location and building dimensions are presented in Appendix D. The SCREEN3 output files for both acrolein and formaldehyde indicate that the maximum ambient concentrations result from downwash from the boiler building. The modeled ambient concentrations are compared to the significant ambient air concentrations on Table 8, Appendix C. These results demonstrate that the one hour and annual ambient concentrations for acrolein and formaldehyde are below the significant ambient air concentrations.

## 6.0 APPLICABLE REGULATORY REQUIREMENTS

State and federal regulations were reviewed to determine which regulations will become applicable to the proposed new boiler. The following regulations will be applicable to the proposed wood-fired boiler (including the multiclone particulate control device):

1. The visible emission regulations of 9VAC5-50-80 and Condition 17 – "Visible emissions from the boiler shall not exceed 20 percent opacity as determined by EPA Method 9 (reference 40 CFR 60, Appendix A), except during one six-minute period in any one hour in which visible emissions shall not exceed 30 percent opacity. This condition applies at all times except during start-up, shutdown, or malfunction."

2. The operating and training procedures of 9VAC5-50-20E and Condition 21 – "Emissions shall be controlled by proper operation and maintenance of combustion equipment and air pollution control equipment. The permittee shall develop, maintain, and have available to all operators good written operating procedures and a maintenance schedule for the boiler and air pollution control equipment. These procedures shall be based on the manufacturers recommendations, at minimum."

3. The operating and training procedures of Condition 22 and 9VAC5-170-160 – "The permittee shall have available written operating procedures for the related air pollution control equipment. Operators shall be trained in the proper operation of all such equipment and shall be familiar with the written operating procedures. These procedures shall be

based on the manufacturer's recommendations, at a minimum. The permittee shall maintain records of training provided including names of trainees, date of training and nature of training."

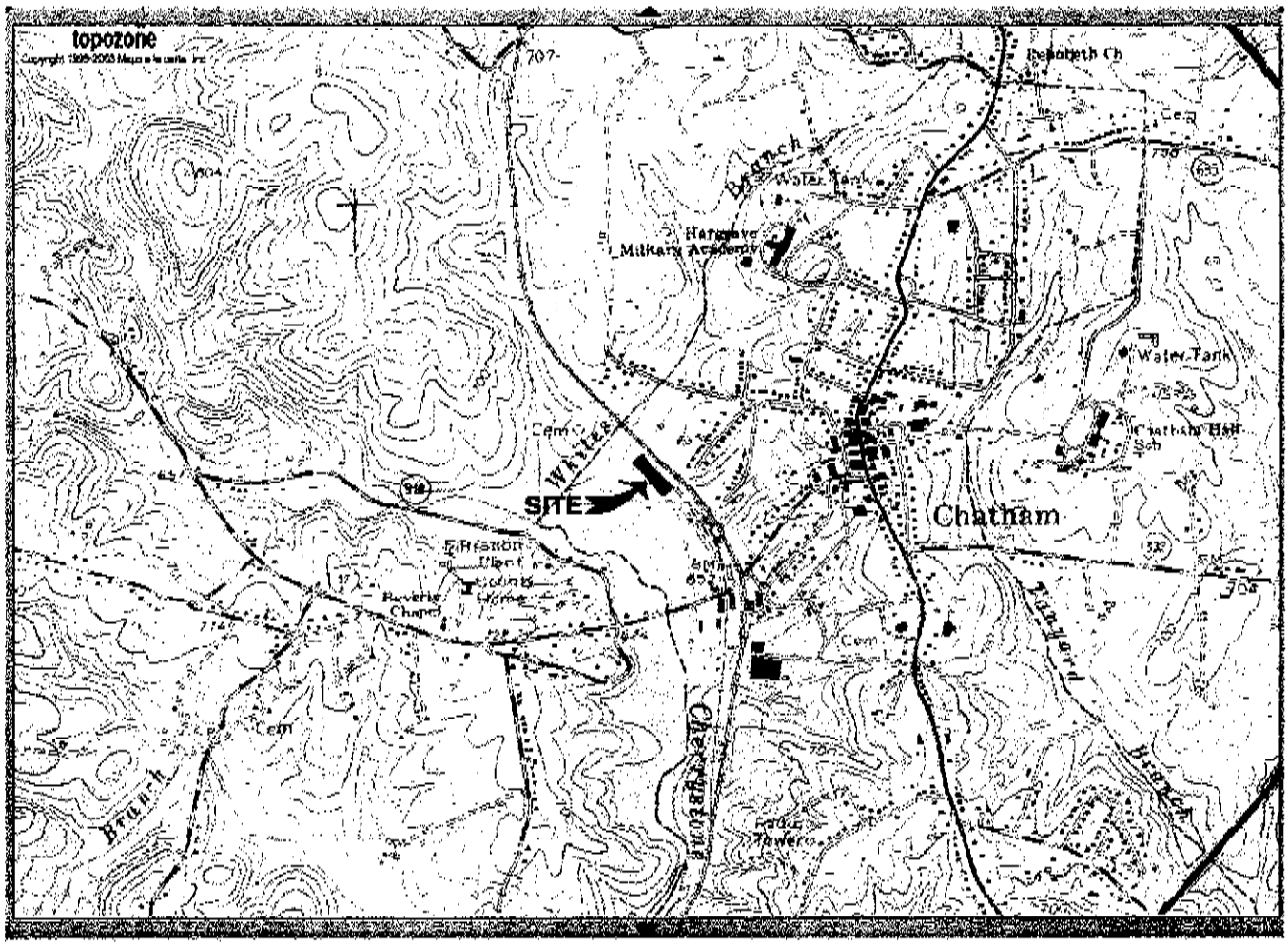
4. Additionally, the New Source Performance Standards (40 CFR Part 60) Subpart Dc will be applicable to the new wood-fired boiler. The Hurst boiler quote indicates that the maximum heat input capacity of the boiler is 12.6 MMBtu/hr. Since this Subpart is applicable to boilers of different fuel types and heat input capacities, each Subpart requirement is addressed below:

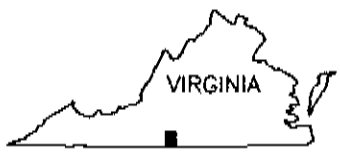
    - 60.40c: The boiler has a maximum heat input capacity less than 100 MMBtu/hr, but greater than 10 MMBtu/hr; therefore, Subpart Dc is applicable.
    - 60.42c: The boiler does not combust coal or oil; therefore, the $SO_2$ emission limits do not apply.
    - 60.43c(b): The boiler has a heat input capacity less than 30 MMBtu/hr; therefore, the PM emission limits do not apply.
    - 60.43c(c): The boiler has a heat input capacity less than 30 MMBtu/hr; therefore, the opacity limits do not apply.
    - 60.44c and 60.45c: Since no $SO_2$, PM, or opacity standards apply, no initial performance test is required under Subpart Dc.
    - 60.46c: There are no monitoring requirements, since no $SO_2$ limits apply.
    - 60.47c: There are no monitoring requirements, since no opacity limits apply.
    - 60.48c(a): The facility must submit notification of the date of construction, anticipated startup, and actual startup as required under 40 CFR 60.7.
    - 60.48c(b)-(f): There are no reporting requirements, since no $SO_2$, PM, or opacity limits apply.
    - 60.48c(g): The facility must maintain records of the amounts of fuel combusted each day.
    - 60.48c(i): Fuel combustion records must be maintained for at least two years.

Therefore, the only active requirements resulting from the applicability of Subpart Dc will be the initial notification under 60.48c(a) and 60.7, and the monitoring of fuel throughput each day under 60.48c(g).

Since emissions of all criteria pollutants are below 100 tons/yr, the Title V Operating permit requirements are not applicable to the Chatham facility. HAP emissions will be limited below 25 tons/year for combined HAPs and 10 tons/year for a single HAP, so the facility is not a major HAP source. Additionally, since the Chatham facility is not a major HAP source, the

requirements of the National Emissions Standards for Hazardous Air Pollutants (40 CFR Part 63) Subpart DDDD for Industrial, Commercial and Institutional Boilers and Process Heaters (Boiler MACT) do not apply.




QUADRANGLE LOCATION

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0 1/2 1

SCALE IN MILE

REFERENCE: USGS 7.5 MINUTE QUADRANGLE; CHATHAM, VIRGINIA; 1978

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| FOR: | | | FIGURE: |
|---|---|---|---|
| COLUMBIA FOREST PRODUCTS<br>100 PAUL ROAD SW<br>CHATHAM, VIRGINIA | **SITE LOCATION MAP** | | **1** |

| JOB NUMBER: | DRAWN BY: | CHECKED BY: | APPROVED BY: | DATE: |
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| B2OT.CFP01.VA.0001 | KAM | RLG | | 05/26/05 |

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