STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
NOTICE OF FINAL PERMIT

In the Matter of an
Application for Permit by:

Mr. Dave Stevens
Manager of Special Products, Forest Products
Champion International Corporation
PO Box 3537
McDavid, Florida 32568

DEP File No. 0330260-001-AC
PSD-FL-271
McDavid Sawmill
Escambia County

Enclosed is Final Permit Number 0330260-001-AC. This permit authorizes the applicant, Champion International Corporation to construct a lumber sawmill with a capacity to produce up to 225 million board feet per year of lumber. This permit is issued pursuant to Chapter 403, Florida Statutes.

Any party to this order has the right to seek judicial review of it under section 120.68 of the Florida Statutes, by filing a notice of appeal under rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within thirty days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida.

C. H. Fancy, P.E., Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Notice of Final Permit (including the Final permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 9-10-99 to the person(s) listed:

Mr. Dave Stevens, Champion *
Mr. Terry Kassabaum, Champion
Mr. Tom Davis, P.E., ECT
Mr. Ed Middleswart, NWD
Mr. Gregg Worley, EPA
Mr. John Bunyak, NPS

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

(Clerk) 9-10-99 (Date)

FINAL DETERMINATION

Champion International Corporation
McDavid Sawmill
DEP File No. 0330260-001-AC, PSD-FL-271

Permit, Section II, Specific Condition 11(a):

The applicant pointed out a typographical error in this condition. It will read in the final permit "No person shall store..."

Permit, Section II, Specific Condition 23:

The applicant pointed out a typographical error in this condition. It will require record keeping for five years in the final permit.

Minor errors in the Technical Evaluation described by the applicant are shown, with text revisions below. The Department generally does not issue a revised Technical Evaluation, but rather uses the Final Determination to record necessary revisions to the Technical Evaluation.

Technical Evaluation and Preliminary Determination, Section 3. Project Description:

The applicant pointed out that the second paragraph of this section is not completely accurate. It should read "... The drying kilns will be used to reduce lumber moisture content from approximately 50% to ~~about~~ 15 to 20% under controlled conditions of temperature and relative humidity. The drying kilns are each approximately ~~65~~ 98 feet long. ..." The Department generally does not issue revised TEPD documents. This Final Determination will serve to document this revision.

Technical Evaluation and Preliminary Determination, Section 6.4 Emissions Unit 005, Fugitive PM Emissions:

The applicant requested that this section be revised to remove the reference to compacting the temporary outdoor storage piles in accordance with the request above. It should read "... Temporary outdoor storage piles shall be ~~compacted and~~ shaped to minimize wind erosion, ..." The Department generally does not issue revised TEPD documents. This Final Determination will serve to document this revision.

CONCLUSION

The final action of the Department is to issue the permit with the changes described above.

FINAL DETERMINATION

Champion International Corporation
McDavid Sawmill
DEP File No. 0330260-001-AC, PSD-FL-271

The Department distributed a public notice package on August 2, 1999 to allow the applicant to construct a lumber sawmill with a capacity to produce up to 225 million board feet per year of lumber at the to be located at US Highway 29, Pine Barren, Escambia County. The Public Notice of Intent to Issue was published in the Pensacola News Journal on August 5, 1999.

COMMENTS/CHANGES

No comments were received by the Department from the public, EPA or FWS.

Comments were received from the applicant by letter dated August 16, 1999.

The applicant commented on the draft permit and the Technical Evaluation and Preliminary Determination. The comments were generally minor in nature. The comments are summarized below and the Department's responses are included following each comment.

The applicant's correspondence listed the new mailing and physical addresses for the sawmill and these will be included in the final permit.

Permit, Section II, Specific Condition 10(c):

> The applicant requested that the requirement to pave yards be deleted because the log storage area and the area where logs are delivered and transferred to the sawing and debarking operations by crane will not be paved. Logs in the log storage area will be periodically sprayed with water to preserve the logs and minimize potential fugitive dust emissions.
>
> The requirement to pave yards is included specifically in the language of Rule 62-296.320(4)(c)3.a., F.A.C., as a reasonable precaution to prevent emissions of unconfined particulate matter. However, Rule 62-296.320(4)(c)4., F.A.C., allows the Department to determine, given the factors of this rule, what constitutes appropriate reasonable precautions for a particular facility. Accordingly, the requirement to pave yards will be deleted in the final permit, and a note will be added to state specifically that the log storage area and the area for log transfer by overhead crane to the sawing and debarking operations are not required to be paved. An additional reasonable precaution will be added that states that logs in storage shall be sprinkled with water periodically as needed to minimize the potential for fugitive dust emissions.

Permit, Section II, Specific Condition 10(c):

> The applicant requested that the requirement to compact open storage piles be deleted because compaction would render the by-products unusable. The applicant also requested that the note stating that the storage piles would be used only about 10 days per year be deleted because the applicant wants the ability to use the piles for longer than that period of time. The applicant submitted additional calculations of PTE for the piles based on year-round operation to show that emissions are not significant under that scenario.
>
> The requirement to compact the piles will be removed from the final permit, and the note about use of the piles will be rewritten to state that the applicant is not limited in the number of hours per year that the by-product open storage piles may be used. The emissions table on page BD-1 of the BACT Determination will be revised to show that quantifiable fugitive emissions will increase from 16.6 to 17.6 TPY for PM and from 3.3 to 3.8 TPY for PM_{10} as a result of the change in utilization of the storage piles.

Z 333 618 139

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail *(See reverse)*

Sent to Dave Stevens	
Street & Number Champion	
Post Office, State, & ZIP Code Mc David Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 9-10-99 0330260-001-AC PSD-FI-271	

PS Form **3800**, April 1995

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Dave Stevens, Mgr.
of Special Products
Champion Int'l Corp.
PO Box 3537
McDavid, Fl 32568

4a. Article Number
Z 333 618 139

4b. Service Type
☐ Registered ☑ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
9/14/99

5. Received By: *(Print Name)*

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X [signature]

PS Form **3811,** December 1994 102595-98-B-0229 Domestic Return Receipt

Thank you for using Return Receipt Service.

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

PERMITTEE

Champion International Corporation
McDavid Sawmill
P.O. Box 3537
McDavid, Florida 32568

Permit No.	0330260-001-AC PSD-FL-271
Project	Lumber Sawmill
Expires:	September 6, 2000

Authorized Representative:

Mr. Dave Stevens, Manager of Special Products
Forest Products

PROJECT AND LOCATION

This permit authorizes the applicant to construct a lumber sawmill with a capacity to produce up to 225 million board feet per year of lumber. The SIC code for this project is 2421.

The facility is to be located at US Highway 29, Pine Barren, Escambia County, approximately 19 miles north of Pensacola. The street address for the facility is 5590 South Century Boulevard, McDavid, Florida 32568. The UTM coordinates are Zone 16; 468.7 km E; 3406.5 km N. This site is not located within 100 km of any Class I PSD Area. The Breton National Wildlife Refuge is approximately 155 km southwest of the facility.

STATEMENT OF BASIS

This construction/PSD permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and the Florida Administrative Code (F.A.C.) Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297. The above named permittee is authorized to construct the emissions units in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

APPENDICES

The attached appendices are a part of this permit:

Appendix A	NSPS General Provisions
Appendix B	BACT Determination
Appendix GC	General Permit Conditions

Howard L. Rhodes, Director
Division of Air Resources
Management

FACILITY DESCRIPTION

The facility will consist of lumber sawmill with a capacity to produce up to 225 million board feet per year (mmBF/yr) of lumber. The mill will have two natural gas fired boilers that will provide steam to three lumber drying kilns, a planermill to plane and trim dried lumber, and fugitive emissions.

PROJECT DETAILS

This project addresses the following emissions unit(s):

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
001	Natural gas fired boiler number 1
002	Natural gas fired boiler number 2
003	Lumber drying kilns 1, 2 and 3
004	Planermill operations
005	Fugitive PM emissions

The applicant proposes to construct this new lumber sawmill consisting of the above emissions units.

[Note: Emissions unit 005 is subject only to the facility-wide specific conditions of this permit specified in Section II.]

REGULATORY CLASSIFICATION

This facility is classified as a Major or Title V Source of air pollution because emissions of volatile organic compounds (VOC) exceed 100 tons per year (TPY).

This facility is not within an industry included in the list of the 28 Major Facility Categories per Table 62-212.400-1, F.A.C. Because emissions are greater than 250 TPY for VOC, the facility is also a Major Facility with respect to Rule 62-212.400, Prevention of Significant Deterioration (PSD).

The applicant stated that this facility is not a major source of hazardous air pollutants (HAPs).

The emissions units and fugitive sources are subject to limits determined as BACT for VOC, particulate matter, and visible emissions. The boilers are subject to regulation under the New Source Performance Standards: 40 CFR 60 Subpart A, General Provisions, and Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. However, this regulation only requires record keeping and reporting for natural gas fired boilers. The boilers are also subject to regulation under Rule 62-296.406, F.A.C., for fossil fuel steam generators less than 250 mmBtu/hr, which requires a determination of BACT for sulfur dioxide and particulate matter emissions. The visible emissions provisions of this rule are less stringent that the limit determined as BACT for the boilers.

REVIEWING AND PROCESS SCHEDULE

June 15, 1999	Received permit application and fee
July 9, 1999	Department's request for additional information
July 16, 1999	Received partial response to request for additional information
July 26, 1999	Received remainder of response to request for additional information
July 26, 1999	Application complete
August 2, 1999	Distributed Notice of Intent to Issue and supporting documents
August 5, 1999	Notice of Intent published in Pensacola News Journal

RELEVANT DOCUMENTS

The documents listed below are the basis of the permit. They are specifically related to this permitting action. These documents are on file with the Department.

- Permit application
- Department's requests for additional information noted above
- Applicant's additional information noted above
- Department's Technical Evaluation and Preliminary Determination dated July 30, 1999
- Department's Intent to Issue

The following specific conditions apply to all emissions units at this facility addressed by this permit.

ADMINISTRATIVE

1. Regulating Agencies: All documents related to applications for permits to construct, operate or modify an emissions unit should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, phone number 850/488-0114. All documents related to reports, tests, minor modifications and notifications shall be submitted to the Department's Northwest District office at 160 Governmental Center, Pensacola, Florida 32501-5794, phone number 850/595-8300.

2. General Conditions: The owner and operator is subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. [Rule 62-4.160, F.A.C.]

3. Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.

4. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of Chapter 403, F.S. and Florida Administrative Code Chapters 62-4, 62-110, 62-204, 62-212, 62-213, 62-296, 62-297 and the Code of Federal Regulations Title 40, Part 60, adopted by reference in the Florida Administrative Code (F.A.C.) regulations. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]

5. New or Additional Conditions: Pursuant to Rule 62-4.080, F.A.C., for good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

6. Expiration: This air construction permit shall expire on September 6, 2000. The permittee, for good cause, may request that this construction/PSD permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rules 62-210.300(1), 62-4.070(4), 62-4.080, and 62-4.210, F.A.C]

   PSD Expiration: Approval to construct shall become invalid if construction is not commenced within 18 months after receipt of such approval, or if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Department may extend the 18-month period upon a satisfactory showing that an extension is justified. [40 CFR 52.21(r)(2)]

   BACT Determination: In conjunction with extension of the 18 month periods to commence or continue construction, or extension of the permit expiration date, the permittee may be required to demonstrate the adequacy of any previous determination of Best Available Control Technology (BACT) for the source. [40 CFR 52.21(j)(4)]

7. Modifications: No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit must be obtained prior to the beginning of construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]

8. Title V Operation Permit Required: This permit authorizes construction and/or installation of the permitted emissions unit and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions unit. The owner or operator shall apply for and receive a Title V operation permit prior to expiration of this permit. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the Department's Northwest District office. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

EMISSION LIMITING STANDARDS

9. General Visible Emissions Standard: Except for emissions units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer, or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density if which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20% opacity). The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C. Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C. [Rule 62-296.320(4)(b)1, F.A.C.]

10. Unconfined Emissions of Particulate Matter: [Rules 62-296.320(4)(c) and 62-212.400, F.A.C., and BACT]

   (a) No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity, including vehicular movement; transportation of materials; construction, alteration, demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling; without taking reasonable precautions to prevent such emissions.

   (b) Any permit issued to a facility with emissions of unconfined particulate matter shall specify the reasonable precautions to be taken by that facility to control the emissions of unconfined particulate matter.

   (c) Reasonable precautions include the following:

   - Paving and maintenance of roads and parking areas.
   - Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.
   - Application of asphalt, water, oil, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar activities.
   - Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent reentrainment, and from buildings or work areas to prevent particulate from becoming airborne.
   - Landscaping or planting of vegetation.
   - Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter.

- Confining abrasive blasting where possible.
- Enclosure or covering of conveyor systems.

[Note: The log storage area and the area for log transfer by overhead crane to the sawing and debarking operations are not required to be paved.]

Additional reasonable precautions applicable to this facility are:

- Wood by-product transfer points shall be enclosed to the extent necessary to minimize the emissions of unconfined particulate matter.
- All by-product (bark, fines (sawdust), chips, shavings) open storage piles shall be shaped and oriented to minimize wind erosion. [Note: The applicant is not limited in the number of hours per year that the by-product open storage piles may be used.]
- The manufacturing area and access roadways for the facility shall be paved with asphalt or concrete.
- The manufacturing area and access roadways for the facility shall be swept or watered as needed to prevent the emissions of unconfined particulate matter.
- Logs in storage shall be sprinkled with water periodically as needed to minimize the potential for fugitive dust emissions.

(d) In determining what constitutes reasonable precautions for a particular source, the Department shall consider the cost of the control technique or work practice, the environmental impacts of the technique or practice, and the degree of reduction of emissions expected from a particular technique or practice.

11. General Pollutant Emission Limiting Standards: [Rule 62-296.320(1)(a)&(2), F.A.C.]

(a) No person shall store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department.

(b) No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor.

[Note: An objectionable odor is defined in Rule 62-210.200(203), F.A.C., as any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance.]

OPERATIONAL REQUIREMENTS

12. Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by hazard of fire, wind or by other cause, the permittee shall immediately notify the Department's Northwest District office. The notification shall include pertinent information as to the cause of the problem, and what steps are being taken to correct the problem and to prevent its recurrence, and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with Department rules. [Rule 62-4.130, F.A.C.]

13. Circumvention: No person shall circumvent any air pollution control device or allow the emission of air pollutants without the applicable air pollution control device operating properly. [Rule 62-210.650, F.A.C.]

14. Excess Emissions:

    For purposes of this permit, all limits established pursuant to the State Implementation Plan, including those limits established as BACT, include emissions during periods of startup and shutdown, and are not subject to the provisions of Rule 62-210.700(1), F.A.C. This provision can not be used to vary any NSPS requirements from any subpart of 40 CFR 60. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during start-up, shutdown or malfunction shall be prohibited pursuant to Rule 62-210.700(4), F.A.C. [Rules 62-4.070(3) and 62-210.700(5), F.A.C.]

    Excess emissions resulting from malfunction of any emissions units shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized, but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

15. Required Number of Test Runs: For mass emission limitations, a compliance test shall consist of three complete and separate determinations of the total air pollutant emission rate through the test section of the stack or duct and three complete and separate determinations of any applicable process variables corresponding to the three distinct time periods during which the stack emission rate was measured; provided, however, that three complete and separate determinations shall not be required if the process variables are not subject to variation during a compliance test, or if three determinations are not necessary in order to calculate the unit's emission rate. The three required test runs shall be completed within one consecutive five-day period. In the event that a sample is lost or one of the three runs must be discontinued because of circumstances beyond the control of the owner or operator, and a valid third run cannot be obtained within the five-day period allowed for the test, the Secretary or his or her designee may accept the results of two complete runs as proof of compliance, provided that the arithmetic mean of the two complete runs is at least 20% below the allowable emission limiting standard. [Rule 62-297.310(1), F.A.C.]

16. Operating Rate During Testing: Unless otherwise stated in the applicable emission limiting standard rule, testing of emissions shall be conducted with the emissions unit operation at permitted capacity. Permitted capacity is defined as 90 to 100 percent of the maximum operation rate allowed by the permit. If it is impractical to test at permitted capacity, an emissions unit may be tested at less than the minimum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test load until a new test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity. [Rule 62-297.310(2), F.A.C.]

17. Calculation of Emission Rate: The indicated emission rate or concentration shall be the arithmetic average of the emission rate or concentration determined by each of the three separate test runs unless otherwise specified in a particular test method or applicable rule. [Rule 62-297.310(3), F.A.C.]

18. Test Procedures shall meet all applicable requirements of Rule 62-297.310(4), F.A.C. [Rule 62-297.310(4), F.A.C.]

19. Determination of Process Variables: [Rule 62-297.310(5), F.A.C.]

    (a) Required Equipment. The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.

    (b) Accuracy of Equipment. Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.

20. Required Stack Sampling Facilities: Sampling facilities include sampling ports, work platforms, access to work platforms, electrical power, and sampling equipment support. All stack sampling facilities must meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E. Sampling facilities shall also conform to the requirements of Rule 62-297.310(6), F.A.C. [Rule 62-297.310(6), F.A.C.]

21. Test Notification: The owner or operator shall notify the Department's Northwest District office and, if applicable, appropriate local program, at least 15 days prior to the date on which each formal compliance test is to begin. Notification shall include the date, time, and place of each such test, and the test contact person who will be responsible for coordinating and having such test conducted for the owner or operator. [Rule 62-297.310(7)(a)9., F.A.C.]

22. Special Compliance Tests: When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it shall require the owner or operator of the facility to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions units and to provide a report on the results of said tests to the Department. [Rule 62-297.310(7)(b), F.A.C.]

REPORTING AND RECORD KEEPING REQUIREMENTS

23. Duration of Record Keeping: Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least five years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule. [Rules 62-4.160(14)(a)&(b)and 62-213.440(1)(b)2.b., F.A.C.]

24. Test Reports: The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Department on the results of each such test. The required test report shall be filed with the Department as soon as practical but no later than 45 days after the last sampling run of each test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Department to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA or DEP Method 9 test, shall provide the applicable information listed in Rule 62-297.310(8)(c), F.A.C. [Rule 62-297.310(8), F.A.C.]

25. Excess Emissions Report: If excess emissions occur, the owner or operator shall notify the Department within one working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident. Pursuant to the New Source Performance Standards, excess emissions shall also be reported in accordance with 40 CFR 60.7, Subpart A. [Rule 62-4.130, F.A.C.]

26. Excess Emissions Report - Malfunctions: In case of excess emissions resulting from malfunctions, each owner or operator shall notify the Department's Northwest District office in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report if requested by the Department. [Rule 62-210.700(6), F.A.C.]

27. Annual Operating Report for Air Pollutant Emitting Facility: The Annual Operating Report for Air Pollutant Emitting Facility shall be completed each year and shall be submitted to the Department's Northwest District office by March 1 of the following year. [Rule 62-210.370(3), F.A.C.]

The following specific conditions apply to the following emissions units after construction:

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
001	Natural gas fired boiler number 1
002	Natural gas fired boiler number 2

[Note: Emissions units 001 and 002 are subject to 40 CFR 60, Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR 60.48c) and 40 CFR 60 Subpart A (effective July 1, 1997); are subject to regulation under Rule 62-296.406, F.A.C., for fossil fuel steam generators less than 250 mmBtu/hr, which requires a determination of BACT for sulfur dioxide and particulate matter emissions; are subject to PSD for particulate matter (the visible emissions limit determined as BACT per Rule 62-212.400, F.A.C., is more stringent than the VE limit of Rule 62-296.406, F.A.C.); and are subject to the requirements of the state rules as indicated in this permit. The conditions of this permit effectively limit combined annual emissions from these emissions units (combined) to: PM, 1.4; PM_{10}, 1.4; NOx, 39.0; CO, 70.2; VOC, 6.5; and SO_2, 0.3.]

OPERATIONAL REQUIREMENTS

1. Hours of Operation: These emissions units may operate continuously, i.e., 8,760 hours/year. [Rule 62-210.200, F.A.C., Definitions-potential to emit (PTE)]
2. Fuel Limited: These emissions units shall burn only pipeline natural gas. [Rule 62-296.406, F.A.C.]
3. Heat Input Limitation: Heat input to both boilers combined shall not exceed 779,640 million Btu in any consecutive 12-month period, based on the lower heating value (LHV) of natural gas. [Rules 62-210.200, F.A.C., Definitions-potential to emit (PTE), and applicant request to avoid PSD for NOx and CO]

EMISSION LIMITATIONS AND PERFORMANCE STANDARDS

4. NOx Emissions Limited: Emissions of nitrogen oxides from each emissions unit shall not exceed 0.10 pounds per million Btu of heat input (LHV). [Rule 62-4.070(3) and applicant request to avoid PSD]
5. CO Emissions Limited: Emissions of carbon monoxide from each emissions unit shall not exceed 0.18 pounds per million Btu of heat input (LHV). [Rule 62-4.070(3) and applicant request to avoid PSD]
6. Visible Emissions Limited: Visible emissions from each emissions unit shall not exceed 5% opacity. [Rule 62-212.400, F.A.C., and BACT]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

7. Emission Tests Required: The owner or operator shall demonstrate compliance with the visible emissions limit for these emissions units annually using EPA Method 9, as described in 40 CFR 60 Appendix A (1997 version). The owner or operator shall demonstrate compliance with the NOx and CO limits for these emissions units initially and upon renewal of each operation permit using EPA Methods 7 or 7E for NOx and Method 10 for CO, as described in 40 CFR 60 Appendix A (1997 version). Results shall be expressed in terms of pounds per million Btu of heat input based on the lower heating value (LHV) of the natural gas fired. Testing shall be conducted on each emissions unit

every time testing is required. [Rules 62-4.070(3) and 62-212.400, F.A.C., BACT, and applicant request to avoid PSD]

REPORTING AND RECORD KEEPING REQUIREMENTS

8. Records of Heat Input Required: The owner or operator shall make and maintain the following records to demonstrate compliance with the heat input limitation of specific condition 3 of this section. Monthly records shall be completed no later than five days after the end of each month.
   - An analysis of the lower heating value (LHV) of the natural gas burned, obtained from the gas supplier at least once each calendar quarter.
   - The amount of natural gas burned in both boilers each month.
   - Monthly heat input for both boilers in units of mmBtu per month, calculated as the product of the amount of natural gas burned during each month times the LHV of the natural gas.
   - Rolling 12-month total heat input for both boilers in units of mmBtu per consecutive 12-month period, calculated as the sum of heat input for the current month and the preceding eleven months.

   [Rule 62-4.070(3), F.A.C.]

APPLICABLE NSPS SUBPART DC CONDITIONS

9. Pursuant to 40 CFR 60.48c Reporting and Recordkeeping Requirements:
   (a) The owner or operator shall submit notification of the date of construction or reconstruction, anticipated startup, and actual startup, as provided by 40 CFR 60.7. This notification shall include:
   (1) The design heat input capacity of the affected facility and identification of fuels to be combusted in the affected facility.
   (3) The annual capacity factor at which the owner or operator anticipated operating the affected facility based on all fuels fired and based on each individual fuel fired.
   (g) The owner or operator shall record and maintain records of the amounts of each fuel combusted during each day.
   (i) All records required under this section shall be maintained by the owner or operator of the affected facility for a period of two years following the date of such record.

   [Note: Longer record keeping is required by condition 23 of section II of this permit.]
   [40 CFR 60.48c]

The following specific conditions apply to the following emissions units after construction:

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
003	Lumber drying kilns 1, 2 and 3

[Note: Emissions unit 003 is subject to regulation under Rule 62-212.400, F.A.C., for Prevention of Significant Deterioration; and is subject to the requirements of the state rules as indicated in this permit. The applicant has estimated the potential to emit of this emissions unit to be 319.5 tons per year of VOC and 4.2 tons per year of PM/PM_{10}.]

OPERATIONAL REQUIREMENTS

10. Hours of Operation: These emissions units may operate continuously, i.e., 8,760 hours/year. [Rule 62-210.200, F.A.C., Definitions-potential to emit (PTE)]

11. Lumber Production Limitation: Lumber processed through this emissions unit (all kilns combined) shall not exceed 225 million board feet in any consecutive 12-month period. [Rules 62-210.200, F.A.C., Definitions-potential to emit (PTE)]

EMISSION LIMITATIONS AND PERFORMANCE STANDARDS

12. Visible Emissions Limited: Visible emissions from each kiln of this emissions unit shall not exceed 5% opacity. [Rule 62-212.400, F.A.C., and BACT]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

13. Emission Tests Required: The owner or operator shall demonstrate compliance with the visible emissions limit for this emissions unit annually using EPA Method 9, as described in 40 CFR 60 Appendix A (1997 version). Testing shall be conducted on at least one set of vents of each kiln of this emissions unit every time testing is required. [Rules 62-4.070(3) and 62-212.400, F.A.C., and BACT]

REPORTING AND RECORD KEEPING REQUIREMENTS

14. Records of Production Required: The owner or operator shall make and maintain the following records to demonstrate compliance with the production limitation of specific condition 11 of this section. Monthly records shall be completed no later than five days after the end of each month.
    - The amount of lumber processed through this emissions unit (all kilns combined) each month, in units of million board feet per month.
    - Rolling 12-month total lumber processed, in units of million board feet per consecutive 12-month period, calculated as the sum of lumber processed for the current month and the preceding eleven months.

    [Rule 62-4.070(3), F.A.C.]

The following specific conditions apply to the following emissions units after construction:

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
004	Planermill operations

[Note: Emissions unit 004 is subject to regulation under Rule 62-212.400, F.A.C., for Prevention of Significant Deterioration; and is subject to the requirements of the state rules as indicated in this permit. The applicant proposed emissions will not exceed 0.004 grains per dry standard cubic foot (dscf) at a nominal flow rate of 60,000 dscfm, which is equivalent to the limit of 2.1 pounds per hour. The conditions of this permit effectively limit combined annual emissions from this emissions unit to 9.0 tons per year of PM/PM_{10}.]

OPERATIONAL REQUIREMENTS

15. Hours of Operation: These emissions units may operate continuously, i.e., 8,760 hours/year. [Rule 62-210.200, F.A.C., Definitions-potential to emit (PTE)]

EMISSION LIMITATIONS AND PERFORMANCE STANDARDS

16. Particulate Matter Emissions Limited: Emissions of particulate matter (PM) shall not exceed 2.1 pounds per hour. This emissions unit shall be equipped with a particulate capture and control system consisting of a local exhaust ventilation system ducted to a cyclone followed by a baghouse.. [Rules 62-4.070(3) and 62-212.400, F.A.C., and BACT]

17. Visible Emissions Limited: Visible emissions from each emissions unit shall not exceed 5% opacity. [Rule 62-212.400, F.A.C., and BACT]

18. Compliance with VE Limit in Lieu of Stack Test: After initial testing that demonstrates compliance with the PM limit of specific condition 16 of this section is completed, subsequent compliance testing for PM emissions from this emissions unit is waived, and an alternative standard of 5% opacity is imposed, pursuant to Rule 62-297.620(4), F.A.C. If the Department has reason to believe that the particulate weight emissions standard is not being met, it shall require that compliance be demonstrated using EPA Method 5, as described in 40 CFR 60 Appendix A (1997 version). [Rule 62-297.620(4), F.A.C., and applicant request]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

19. Emission Tests Required: The owner or operator shall demonstrate compliance with the visible emissions limit for this emissions unit annually using EPA Method 9, as described in 40 CFR 60 Appendix A (1997 version). Particulate matter (PM) testing, when required, shall be conducted using EPA Method 5, as described in 40 CFR 60 Appendix A (1997 version). [Rules 62-4.070(3) and 62-212.400, F.A.C., and BACT]

APPENDIX A. NSPS GENERAL PROVISIONS

[Note: The numbering of the original rules in the following conditions has been preserved for ease of reference to the rules. The term "Administrator" when used in 40 CFR 60 shall mean the Secretary or the Secretary's designee.]

1. Pursuant to 40 CFR 60.1 Applicability:

   (a) Except as provided in 40 CFR 60 subparts B and C, the provisions of this part apply to the owner or operator of any stationary source which contains an affected facility, the construction or modification of which is commenced after the date of publication in this part of any standard (or, if earlier, the date of publication of any proposed standard) applicable to that facility.
   (b) Any new or revised standard of performance promulgated pursuant to section 111(b) of the Act shall apply to the owner or operator of any stationary source which contains an affected facility, the construction or modification of which is commenced after the date of publication in this part of such new or revised standard (or, if earlier, the date of publication of any proposed standard) applicable to that facility.
   (c) In addition to complying with the provisions of this part, the owner or operator of an affected facility may be required to obtain an operating permit issued to stationary sources by an authorized State air pollution control agency or by the Administrator of the U.S. Environmental Protection Agency (EPA) pursuant to Title V of the Clean Air Act (CAA) as amended November 15, 1990 (42 U.S.C. 7661).

   [40 CFR 60.1]

2. Pursuant to 40 CFR 60.7 Notification And Record Keeping:

   (a) Any owner or operator subject to the provisions of 40 CFR 60 shall furnish the Administrator written notification as follows:
   (1) A notification of the date construction (or reconstruction as defined under 40 CFR 60.15) of an affected facility is commenced postmarked no later than 30 days after such date. This requirement shall not apply in the case of mass-produced facilities which are purchased in completed form.
   (2) A notification of the anticipated date of initial startup of an affected facility postmarked not more than 60 days nor less than 30 days prior to such date.
   (3) A notification of the actual date of initial startup of an affected facility postmarked within 15 days after such date.
   (4) A notification of any physical or operational change to an existing facility which may increase the emission rate of any air pollutant to which a standard applies, unless that change is specifically exempted under an applicable subpart or in 40 CFR 60.14(e). This notice shall be postmarked 60 days or as soon as practicable before the change is commenced and shall include information describing the precise nature of the change, present and proposed emission control systems, productive capacity of the facility before and after the change, and the expected completion date of the change. The Administrator may request additional relevant information subsequent to this notice.
   (b) The owner or operator subject to the provisions of 40 CFR 60 shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.

(f) The owner or operator subject to the provisions of 40 CFR 60 shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by 40 CFR 60 recorded in a permanent form suitable for inspection. The file shall be retained for at least three years following the date of such measurements, maintenance, reports, and records.

(g) If notification substantially similar to that in 40 CFR 60.7(a) is required by any other State or local agency, sending the Administrator a copy of that notification will satisfy the requirements of 40 CFR 60.7(a).

(h) Individual subparts of this part may include specific provisions which clarify or make inapplicable the provisions set forth in this section.

[40 CFR 60.7]

3. Pursuant to 40 CFR 60.11 Compliance With Standards And Maintenance Requirements:

(d) At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

(g) For the purpose of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any standard in 40 CFR 60, nothing in 40 CFR 60 shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

[40 CFR 60.11]

4. Pursuant to 40 CFR 60.12 Circumvention:

No owner or operator subject to the provisions of 40 CFR 60.12 shall build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard which is based on the concentration of a pollutant in the gases discharged to the atmosphere.
[40 CFR 60.12]

5. Pursuant to 40 CFR 60.14 Modification:

(a) Except as provided under 40 CFR 60.14(e) and 40 CFR 60.14(f), any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act. Upon modification, an existing facility shall become an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere.

(b) Emission rate shall be expressed as kg/hr (lbs./hour) of any pollutant discharged into the atmosphere for which a standard is applicable. The Administrator shall use the following to determine emission rate:

(1) Emission factors as specified in the latest issue of "Compilation of Air Pollutant Emission Factors", EPA Publication No. AP-42, or other emission factors determined by the Administrator to be superior to AP-42 emission factors, in cases where utilization of emission factors demonstrate that the emission level resulting from the physical or operational change will either clearly increase or clearly not increase.

(2) Material balances, continuous monitor data, or manual emission tests in cases where utilization of emission factors as referenced in 40 CFR 60.14(b)(1) does not demonstrate to the Administrator's satisfaction whether the emission level resulting from the physical or operational change will either clearly increase or clearly not increase, or where an owner or operator demonstrates to the Administrator's satisfaction that there are reasonable grounds to dispute the result obtained by the Administrator utilizing emission factors as referenced in 40 CFR 60.14(b)(1) . When the emission rate is based on results from manual emission tests or continuous monitoring systems, the procedures specified in 40 CFR 60 appendix C of 40 CFR 60 shall be used to determine whether an increase in emission rate has occurred. Tests shall be conducted under such conditions as the Administrator shall specify to the owner or operator based on representative performance of the facility. At least three valid test runs must be conducted before and at least three after the physical or operational change. All operating parameters which may affect emissions must be held constant to the maximum feasible degree for all test runs.

(c) The addition of an affected facility to a stationary source as an expansion to that source or as a replacement for an existing facility shall not by itself bring within the applicability of this part any other facility within that source.

(d) [Reserved]

(e) The following shall not, by themselves, be considered modifications under this part:

(1) Maintenance, repair, and replacement which the Administrator determines to be routine for a source category, subject to the provisions of 40 CFR 60.14(c) and 40 CFR 60.15.

(2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility.

(3) An increase in the hours of operation.

(4) Use of an alternative fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, as provided by 40 CFR 60.1, the existing facility was designed to accommodate that alternative use. A facility shall be considered to be designed to accommodate an alternative fuel or raw material if that use could be accomplished under the facility's construction specifications as amended prior to the change. Conversion to coal required for energy considerations, as specified in section 111(a)(8) of the Act, shall not be considered a modification.

(5) The addition or use of any system or device whose primary function is the reduction of air pollutants, except when an emission control system is removed or is replaced by a system which the Administrator determines to be less environmentally beneficial.

(6) The relocation or change in ownership of an existing facility.

(f) Special provisions set forth under an applicable subpart of this part shall supersede any conflicting provisions of this section.

(g) Within 180 days of the completion of any physical or operational change subject to the control measures specified in 40 CFR 60.14(a), compliance with all applicable standards must be achieved.

(h) No physical change, or change in the method of operation, at an existing electric utility steam generating unit shall be treated as a modification for purposes of this section provided that such change does not increase the maximum hourly emissions of any pollutant regulated under this section above the maximum hourly emissions achievable at that unit during the five years prior to the change.

[40 CFR 60.14]

6. Pursuant to 40 CFR 60.19 General notification and reporting requirements:

(a) For the purposes of 40 CFR 60, time periods specified in days shall be measured in calendar days, even if the word "calendar" is absent, unless otherwise specified in an applicable requirement.

(b) For the purposes of 40 CFR 60, if an explicit postmark deadline is not specified in an applicable requirement for the submittal of a notification, application, report, or other written communication to the Administrator, the owner or operator shall postmark the submittal on or before the number of days specified in the applicable requirement. For example, if a notification must be submitted 15 days before a particular event is scheduled to take place, the notification shall be postmarked on or before 15 days preceding the event; likewise, if a notification must be submitted 15 days after a particular event takes place, the notification shall be delivered or postmarked on or before 15 days following the end of the event. The use of reliable non-Government mail carriers that provide indications of verifiable delivery of information required to be submitted to the Administrator, similar to the postmark provided by the U.S. Postal Service, or alternative means of delivery agreed to by the permitting authority, is acceptable.

(c) Notwithstanding time periods or postmark deadlines specified in 40 CFR 60 for the submittal of information to the Administrator by an owner or operator, or the review of such information by the Administrator, such time periods or deadlines may be changed by mutual agreement between the owner or operator and the Administrator. Procedures governing the implementation of this provision are specified in paragraph (f) of this section.

(d) If an owner or operator of an affected facility in a State with delegated authority is required to submit periodic reports under 40 CFR 60 to the State, and if the State has an established timeline for the submission of periodic reports that is consistent with the reporting frequency(ies) specified for such facility under 40 CFR 60, the owner or operator may change the dates by which periodic reports under 40 CFR 60 shall be submitted (without changing the frequency of reporting) to be consistent with the State's schedule by mutual agreement between the owner or operator and the State. The allowance in the previous sentence applies in each State beginning 1 year after the affected facility is required to be in compliance with the applicable subpart in 40 CFR 60. Procedures governing the implementation of this provision are specified in paragraph (f) of this section.

(f)(1)(i) Until an adjustment of a time period or postmark deadline has been approved by the Administrator under paragraphs (f)(2) and (f)(3) of this section, the owner or operator of an affected facility remains strictly subject to the requirements of 40 CFR 60.

(ii) An owner or operator shall request the adjustment provided for in paragraphs (f)(2) and (f)(3) of this section each time he or she wishes to change an applicable time period or postmark deadline specified in 40 CFR 60.

(2) Notwithstanding time periods or postmark deadlines specified in 40 CFR 60 for the submittal of information to the Administrator by an owner or operator, or the review of such information by the Administrator, such time periods or deadlines may be changed by mutual agreement between the owner or operator and the Administrator. An owner or operator who wishes to request a change in a time period or postmark deadline for a particular requirement shall request the adjustment in writing as soon as practicable before the subject activity is required to take place. The owner or operator shall include in the request whatever information he or she considers useful to convince the Administrator that an adjustment is warranted.

(3) If, in the Administrator's judgment, an owner or operator's request for an adjustment to a particular time period or postmark deadline is warranted, the Administrator will approve the adjustment. The Administrator will notify the owner or operator in writing of approval or disapproval of the request for an adjustment within 15 calendar days of receiving sufficient information to evaluate the request.

(4) If the Administrator is unable to meet a specified deadline, he or she will notify the owner or operator of any significant delay and inform the owner or operator of the amended schedule.

[40 CFR 60.19]

The BACT Determination is attached as part of this permit following this page.

Champion International Corporation
McDavid Sawmill
PSD-FL-271 and 0330260-001-AC
Escambia County

1. BACKGROUND

The applicant proposes to construct a new sawmill at a new site at US Highway 29, Pine Barren, Escambia County, approximately 19 miles north of Pensacola.

The facility will consist of lumber sawmill with a capacity to produce up to 225 million board feet per year (mmBF/yr) of lumber. The mill will have two natural gas fired boilers that will provide steam to three lumber drying kilns, a planermill to plane and trim dried lumber, and fugitive emissions.

This project addresses the following emissions unit(s):

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
001	Natural gas fired boiler number 1
002	Natural gas fired boiler number 2
003	Lumber drying kilns 1, 2 and 3
004	Planermill
005	Fugitive PM emissions

The applicant proposes to construct this new lumber sawmill consisting of the above emissions units.

The emissions units and fugitive sources are subject to limits determined as BACT for VOC, particulate matter, and visible emissions. The boilers are subject to regulation under the New Source Performance Standards: 40 CFR 60 Subpart A, General Provisions, and Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. However, this regulation only requires record keeping and reporting for natural gas fired boilers. The boilers are also subject to regulation under Rule 62-296.406, F.A.C., for fossil fuel steam generators less than 250 mmBtu/hr, which requires a determination of BACT for sulfur dioxide and particulate matter emissions. The visible emissions provisions of this rule are less stringent that the limit determined as BACT for the boilers.

Emissions from the boilers will be controlled by good combustion of natural gas using low NOx burners. Emissions from the kilns are not subject to control, other than proper operation. Emissions from the planermill will be controlled by a local exhaust collection system ducted to a cyclone/baghouse combination. Fugitive PM emissions will be controlled by reasonable precautions to prevent unconfined particulate emissions. Emission control is discussed in more detail in the TEPD.

The emissions associated with this project are summarized below, in units of tons per year. The facility will be PSD major because of VOC and PSD significant for PM and PM_{10}.

Pollutant	Point Source Emissions	Quantifiable Fugitive Emissions	Total	PSD Major Threshold	PSD Significance Levels [1]	Subject to PSD Review?
VOC	326.0		326.0	250	--	Yes
PM	14.6	17.6	32.2	--	25	Yes
PM_{10}	14.6	3.8	18.4	--	15	Yes
SO_2	0.3		0.3	--	40	No
NOx	39.0		39.0	--	40	No
CO	70.2		70.2	--	100	No

[1] Florida Administrative Code 212.400-2.

This facility is classified as a Major or Title V Source of air pollution because emissions of volatile organic compounds (VOC) exceeds 100 tons per year (TPY).

This facility is not within an industry included in the list of the 28 Major Facility Categories per Table 62-212.400-1, F.A.C. Because emissions are greater than 250 TPY for VOC, the facility is also a Major Facility with respect to Rule 62-212.400, Prevention of Significant Deterioration (PSD).

The applicant stated that this facility is not a major source of hazardous air pollutants (HAPs).

The project's process information, air quality effects, and rule applicability are discussed in more detail in the Technical Evaluation and Preliminary Determination (TEPD) dated July 30, 1999.

2. DATE OF RECEIPT OF A BACT APPLICATION

June 15, 1999, and updated by additional information as shown in the TEPD.

3. BACT DETERMINATION REQUESTED BY THE APPLICANT

The applicant proposed BACT for the PSD pollutants particulate matter and VOC. BACT was proposed to be control equipment for PM emissions from the planermill, good combustion and operation for PM emissions from the boilers and lumber drying kilns, and reasonable precautions to prevent unconfined PM emissions from the fugitive sources. The applicant proposed a limit of 5% opacity for visible emissions from the point sources. The applicant demonstrated that no controls are feasible for the VOC emissions from the lumber drying kilns.

4. REVIEWER

Joseph Kahn, P.E., prepared BACT determination

5. BACT DETERMINATION PROCEDURE

In accordance with Chapter 62-212, F.A.C., this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department of Environmental Protection (Department), on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques for control of each such pollutant. In addition, Rule 62-212.400(6)(a), F.A.C., states that in making the BACT determination, the Department shall give consideration to:

1. Any Environmental Protection Agency determination of BACT pursuant to Section 169 of the Clean Air Act, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).
2. All scientific, engineering, and technical material and other information available to the Department.
3. The emission limiting standards or BACT determination of any other state.
4. The social and economic impact of the application of such technology.

The EPA currently directs that BACT should be determined using the "top-down" approach. In this approach, available control technologies are ranked in order of control effectiveness for the emissions unit under review. The most stringent alternative is evaluated first. That alternative is selected as BACT unless the alternative is found to not be achievable based on technical considerations or energy, environmental or economic impacts. If this alternative is eliminated for these reasons, the next most stringent alternative is considered. This top-down approach is continued until BACT is determined. In general EPA has identified five key steps in the top-down BACT process: Identify alternative control technologies; eliminate technically infeasible options; rank remaining control technologies by control effectiveness; evaluate most effective controls; select BACT.

BACT evaluation should be performed for each emissions source and pollutant under consideration. BACT for particulate matter can be treated separately for the boilers, lumber drying kilns, planermill and the fugitive sources. VOC emissions result from the lumber drying kilns and, to a much lesser extent, from the boilers.

The Department will consider the control or reduction of "non-regulated" air pollutants when determining the BACT limit for regulated pollutants, and will weigh control of non-regulated air pollutants favorably when considering control technologies for regulated pollutants. The Department will also favorably consider control technologies that utilize pollution prevention strategies. These approaches are consistent with EPA's consideration of environmental impacts.

The EPA has determined that a BACT determination shall not result in a selection of a control technology which would not meet any applicable emission limitation under 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants). There are no such limits applicable to this project.

In addition to the information submitted by the applicant and that information mentioned above, the Department may rely upon other available information in making its BACT determination. For this project, the Department also relied upon information from recent BACT proposals made for similar facilities in Texas (Champion, Camden, TX)and North Carolina (International Paper, Riegelwood, NC) provided by the applicant to the Department on April 23, 1999. For each emission source, the Department's BACT determination is based on the information provided by the applicant and the informed judgement of the Department.

6. BACT ANALYSIS AND DEPARTMENT'S DETERMINATION

For this project the PSD pollutants of concern are PM, PM_{10} and VOC. The applicant proposed control strategies for these pollutants for the emission sources at this facility. The applicant's proposal and the Department's BACT for each pollutant and source is discussed below.

6.1 BOILERS

In accordance with Rule 62-296.406, F.A.C., a BACT determination is required for boilers with a heat input of less than 250 mmBtu/hour for the pollutants PM and SO_2. Both of the boilers for this project are subject to this requirement. The BACT determination discussed below includes a determination for the boilers for PM and SO_2 per Rule 62-296.406, F.A.C., and PM/PM_{10} and VOC per Rule 62-212.400.

Particulate matter and VOC are pollutants formed in a boiler by the incomplete combustion of fuels fired in the boiler. When insufficient oxygen is provided or poor combustion conditions occur, incomplete combustion occurs and emissions of particulate matter and VOC are increased. Visible emissions will result from incomplete combustion, primarily as a result of particulate emissions. Sulfur dioxide is formed from the oxidation of sulfur present in the fuels fired. Control for PM, VE and VOC is generally good combustion of fuel, with an appropriate level of excess air to ensure complete combustion. Sulfur dioxide emissions in small boilers is generally reduced by reducing the sulfur in the fuel fired, a pollution prevention strategy.

The applicant proposed BACT per Rules 62-296.406 and 62-212.400, F.A.C., to be the use of only pipeline natural gas and good combustion practices. The applicant has also proposed a visible emissions limit of 5% opacity as BACT per Rule 62-212.400,F.A.C. Natural gas is a fuel that is easily burned and is low in sulfur. Good combustion of natural gas results in low emissions of PM/PM_{10}, VOC and SO_2. The use of only natural gas with good combustion will result in estimated maximum emissions of 1.4 tons per year of PM/PM_{10}, 0.3 tons per year of SO_2, and 6.5 tons per year of VOC. The applicant proposed that the use of natural gas is the top control technology for these boilers. A review of the RACT/BACT/LAER Clearinghouse (RBLC) data shows that BACT is the use of natural gas in many cases.

The Department agrees with the applicant's proposed BACT. The Department believes that setting numerical mass emission limits for PM/PM_{10}, SO_2, and VOC is not warranted given the low potential emissions of these pollutants. Instead, the fuel will be limited to pipeline natural gas. This will also meet the BACT requirements of Rule 62-296.406, F.A.C., for PM and SO_2. Thus, BACT shall be the use of pipeline natural gas and a VE limit of 5% opacity applicable at all times including startup and shutdown. This VE limit is more stringent that provided by Rule 62-296.406, F.A.C., but is imposed per Rule 62-212.400, F.A.C.

6.2 LUMBER DRYING KILNS

A BACT determination is required for the three lumber drying kilns for VOC and PM/PM_{10} per Rule 62-212.400.

VOC emissions result from naturally occurring hydrocarbons present in the wood that are evaporated during the lumber drying operation. Particulate matter that is emitted is a combination of condensable hydrocarbons and dust (primarily sawdust) on lumber surfaces. There are presently no control systems in use for VOC and particulate matter for these types of drying kilns.

The applicant proposed that no controls are feasible for VOC emissions from these sources, and that proper operating practices and a visible emissions limit of 5% opacity are BACT for PM/PM_{10} per Rule 62-212.400,F.A.C.

VOC Controls

The applicant evaluated exhaust control technologies – regenerative thermal oxidation, regenerative catalytic oxidation, biofiltration – to control VOC emissions. Pollution prevention and process changes are not technically feasible because the hydrocarbons, which are inherent in the wood, are emitted as a consequence of the lumber drying cycle. The applicant suggested that exhaust controls are not technically feasible because of the difficulty designing and implementing a capture device which will accommodate the cyclical nature of the airflow through the kiln vents. The applicant noted that no such capture system is in use on these type of kilns. Regardless of this technical challenge, the applicant estimated control costs associated with the use of thermal and catalytic oxidation for VOC control. Costs are summarized below, assuming the use of one oxidizer for each kiln. The applicant concluded that the costs are prohibitive and make these controls economically infeasible.

Option	Capital Cost	Annual Operating Cost	Life	Interest	Control Cost
RTO	$5.81 million	$2.15 million	10 yrs	8 %	$8,351/ton
RCO	$5.76 million	$1.82 million	10 yrs	8 %	$7,051/ton

In addition to the technical challenge of capturing emissions, the applicant rejected biofiltration as infeasible because of the challenge of ducting emissions to biofilters and conditioning the exhaust, the difficulty researching and designing a biofiltration system with proper microorganisms and media to degrade the hydrocarbons, and concerns over media plugging from condensable hydrocarbons. The applicant was unable to document the use of biofiltration for these or similar sources in commercial operation.

The Department agrees with the applicant's assessment. The Department's review of the RBLC data shows that similar lumber drying kilns listed have no controls for VOC emissions, and are listed as "no controls feasible". Based on the information provided by the applicant and the informed judgement of the Department, control of VOC emissions is not feasible. BACT for this project for VOC shall be no emission controls. Lumber throughput shall be limited by permit condition to 225 million board feet per year, as proposed by the applicant, to limit potential VOC emissions to approximately 320 tons per year. The estimate of potential emissions is discussed in more detail in the TEPD.

PM Controls

Potential emissions of particulate matter were estimated by the applicant to be 4.2 tons per year. The applicant proposed BACT for PM/PM_{10} to be proper operation and maintenance of the kilns, with no exhaust controls feasible because of the technical difficulties discussed above, The applicant proposed a limit for visible emissions of 5% opacity.

The Department agrees with the applicant's BACT proposal. Verifying PM emissions by source testing would be difficult, if not infeasible, so the Department will not impose a numerical limit for PM/PM_{10} emissions. BACT for the lumber drying kilns shall be a limit for visible emissions of 5% opacity applicable at all times including startup and shutdown.

6.3 PLANERMILL

A BACT determination is required for the planermill for PM/PM_{10} per Rule 62-212.400. The applicant proposed BACT for the planermill to be collection of particulate matter using a local exhaust ventilation system and control with a cyclone that exhausts to a baghouse (fabric filter). The applicant estimated that emissions from this control system will be 0.004 grains per dscf. The applicant suggested that this combination of controls is the top control strategy for particulate matter for this source. The applicant also proposed a VE limit of 5% opacity.

The Department agrees with the applicant's proposed BACT. BACT shall be the use of a local exhaust collection system exhausting to a cyclone followed by a baghouse. The limit for PM/PM_{10} emissions shall be 2.1 pounds per hour. Visible emissions shall be limited to 5% opacity at all times including startup and shutdown.

6.4 FUGITIVE PM SOURCES

A BACT determination is required for the fugitive sources of particulate matter for the pollutants PM/PM_{10} per Rule 62-212.400. The applicant proposed to use reasonable precautions to control unconfined emissions of particulate matter. The Department agrees with the proposed BACT, so BACT shall be the use of reasonable precautions to prevent unconfined emissions of particulate matter. These precautions shall be specified in the facility-wide requirements of the permit.

6.5 SUMMARY OF BACT DETERMINATION

Emissions Unit	Emission Source	Pollutant(s)	BACT
001	Natural gas fired boiler number 1	PM/PM_{10} & VOC VE	Use of only pipeline natural gas 5% opacity at all times
002	Natural gas fired boiler number 2	PM/PM_{10} & VOC VE	Use of only pipeline natural gas 5% opacity at all times
003	Lumber drying kilns 1, 2 and 3	PM/PM_{10} & VOC VE	No controls feasible 5% opacity at all times
004	Planermill	PM/PM_{10} VE	Local exhaust, cyclone, baghouse – 2.1 lb/hr 5% opacity at all times
005	Fugitive PM emissions	PM/PM_{10}	Reasonable precautions to prevent emissions of unconfined particulate matter

7. COMPLIANCE

The compliance methods are briefly summarized here. Compliance with the visible emission limitations for the point sources shall be demonstrated on an annual basis by testing using EPA Method 9. Emission testing shall be required for the boilers for NOx and CO initially and upon renewal of each operation permit. Emission testing for the planermill control device outlet for particulate matter shall not be required because an alternative limitation of 5% opacity will be specified in lieu of PM testing.

8. DETAILS OF THE ANALYSIS MAY BE OBTAINED BY CONTACTING:

Joseph Kahn, P.E.
Department of Environmental Protection
Bureau of Air Regulation
Mail Station #5505
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Prepared July 30, 1999

Recommended By:

C. H. Fancy
C. H. Fancy, P.E., Chief
Bureau of Air Regulation

Date: 9/9/99

Approved By:

Howard L. Rhodes
Howard L. Rhodes, Director
Division of Air Resources Management

Date: 9/9/99

G.1 The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

G.2 This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings or exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

G.3 As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

G.4 This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

G.5 This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

G.6 The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

G.7 The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

(a) Have access to and copy and records that must be kept under the conditions of the permit;
(b) Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
(c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

G.8 If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

(a) A description of and cause of non-compliance; and
(b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

G.9 In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extend it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

G.10 The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

G.11 This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.

G.13 This permit also constitutes:

(a) Determination of Best Available Control Technology (X);
(b) Determination of Prevention of Significant Deterioration (X); and
(c) Compliance with New Source Performance Standards (X).

G.14 The permittee shall comply with the following:

(a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
(b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
(c) Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The person responsible for performing the sampling or measurements;
3. The dates analyses were performed;
4. The person responsible for performing the analyses;
5. The analytical techniques or methods used; and
6. The results of such analyses.

G.15 When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

INTERNATIONAL PAPER

401 CHAMPION DRIVE
McDAVID FL 32568
PHONE 850 587 1000
FAX 850 587 1003

December 11, 2000

Mr. Joseph Kahn, P.E.

New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road, Mail Station #5505
Tallahassee, Florida 32399-2400

RECEIVED
DEC 15 2000
Bureau of Air Monitoring
& Mobile Sources

Dear Mr. Kahn:

Enclosed please find the MACT permit application that we discussed.

We have also included the $250.00 permit revision fee.

I have forwarded a copy to Andy Allen in the Pensacola office.

I can be reached at 850-587-1002 if you have any questions or concerns.

Sincerely,

Dave Stevens

Dave Stevens
Plant Manager

ALSO, NAME CHANGE TO INTERNATIONAL PAPER COMPANY.

McDAVID LUMBER MILL
MAXIMUM ACHIEVABLE
CONTROL TECHNOLOGY
PERMIT APPLICATION

Prepared for:

Champion

Champion International Corporation

McDavid, Florida 0330260

Prepared by:

ECT

Environmental Consulting & Technology, Inc.

3701 Northwest 98th Street
Gainesville, Florida 32606

ECT No. 000361-0100

December 2000

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1.0 INTRODUCTION AND SUMMARY

1.1 INTRODUCTION

Champion International Corporation (Champion), a wholly owned subsidiary of International Paper Company, is presently constructing a new lumber mill in Escambia County, Florida, approximately 30 kilometers (km) (19 miles) north of Pensacola. The McDavid Lumber Mill will process southern yellow pine (SYP) logs and produce up to 225 million board feet per year (MMBF/yr) of lumber.

A permit is required prior to the beginning of facility construction, per Rule 62-212.300(1)(a), Florida Administrative Code (F.A.C.). Champion submitted an air construction permit application to the Florida Department of Environmental Protection (FDEP) in June 1999. In response, FDEP issued Final Permit No. 0330260-001-AC authorizing construction and initial operation of the McDavid Lumber Mill. Final Permit No. 0330260-001-AC initially expired on September 6, 2000. In response to a request by Champion, FDEP recently extended this expiration date to September 6, 2001 (reference FDEP correspondence to Champion dated April 12, 2000).

The results of recent emissions testing of lumber drying kilns was presented at the 1999 International Environmental Conference of the Technical Association of the Pulp and Paper Industry (TAPPI). This conference paper, *Lumber Kiln VOC Testing Using the Water Balance Approach*, provides the results of hazardous air pollutant (HAP) tests conducted at lumber drying kilns by the Temple-Inland Forest Products Corporation; a copy of the TAPPI conference paper is provided in Attachment C. These HAP test results indicate that methanol emissions may be greater than previously estimated. Specifically, the TAPPI conference paper data show a maximum methanol emission factor of 0.28 pound per thousand board feet (lb/Mbf) dried for steam-heated kilns versus the prior estimate of 0.037 lb/Mbf developed by the National Council for Air and Stream Improvement (NCASI). This preliminary estimate in the drying kiln emissions factor for methanol results estimates McDavid Lumber Mill methanol emissions at 31.5 tons per year (tpy) versus the previous estimate of 4.2 tpy. Estimated total HAPs (i.e., methanol and formaldehyde emissions) for the McDavid Lumber Mill lumber kilns would increase to 34.3 tpy versus the previous estimate of 4.5 tpy. Because estimated McDavid Lumber Mill total HAP emissions exceed 25 tpy, a case-by-case maximum achievable control technology (MACT) determination is required pursuant to Section 112(g)(2)(B) of the 1990 Clean Air Act Amendments (CAAA). The implementing regulations for these CAAA requirements are contained in the federal regulations at 40 Code of Federal Regulations (CFR), 63, Subpart B. FDEP has adopted the 40 CFR 63, Subpart B requirements by reference in Rule 62-204.800(10)(d)2., F.A.C. The case-by-case MACT requirements of 40 CFR 63, Subpart B apply to major sources that are constructed after June 29, 1998.

This report, including revised permit application forms and supporting documentation included in the attachments, constitutes Champion's application for a case-by-case MACT determination in accordance with the FDEP permitting rules contained in Chapters 62-4 and 62-212, F.A.C.

This report is organized as follows:

- Section 1.2 provides an overview and a summary of the key regulatory determinations.
- Section 2.0 provides an analysis of MACT.

Attachments A through F provide the specific MACT permit application information required by 40 CFR 63.43, revisions to the previously submitted FDEP Application for Air Permit—Title V Source, the TAPPI conference paper, emission rate calculations, control device vendor information, and information on existing kiln controls, respectively.

1.2 SUMMARY

Principal McDavid Lumber Mill processes will include SYP log storage and processing (debarking and sawing); log chipping and sawing; green lumber drying using indirect, steam-heated kilns; dried lumber finishing (planermill); and sorting, storage, and shipping of the final lumber product. Ancillary operations and equipment will include the storage and handling of wood by-products including bark, sawdust, chips, and planermill shavings and two natural gas-fired package boilers to provide steam for the lumber kilns.

Based on the TAPPI conference paper, methanol and formaldehyde emission factors for steam-heated lumber drying kilns, the McDavid Lumber Mill lumber drying kilns would have the potential to emit 31.5 tpy of methanol and 34.3 tpy of total HAPs. Based on these annual potential emission rates for all three lumber kilns, the facility would be a major source under Title III and would be subject to a case-by-case MACT review. As presented in this report, the analyses required for this permit application resulted in the following conclusion:

- Good operating practice and maintenance are proposed as MACT for the indirect, steam-heated lumber drying kilns. Due to the complexity of the kiln drying cycle, installation of exhaust control systems to reduce HAP emissions presents many technical challenges. There are no lumber kilns in the United States that are equipped with controls for reducing HAP emissions. The U.S. Environmental Protection Agency (EPA) contractor (Midwest Research Institute) tasked with the responsibility of developing background information for the future EPA National Emission Standards for Hazardous Air Pollutants (NESHAPs) rule for the plywood and composite wood products category conducted an extensive survey and concluded that there are no existing lumber kilns with air pollution controls. Best available control technology (BACT) for volatile organic compounds (VOCs) for two recent (1997 and 1998) lumber kiln installations in Texas and North Carolina, as well as the McDavid Lumber Mill in Florida in 1999, was determined to be no add-on controls. Cost effectiveness of regenerative thermal oxidation (RTO) and regenerative catalytic oxidizer (RCO) control systems to control HAP emissions was determined to be \$77,733 and \$65,634 per ton of HAP, respectively. Accordingly, the installation of either an RTO or an RCO control system to control HAP emissions is considered to be economically infeasible.

- In addition to the three lumber drying kilns, planing and sawing operations will generate minor amounts of HAPs; primarily methanol and formaldehyde. Combustion of natural gas in the two package steam boilers will also generate minor quantities of organic and metallic HAPs. Due to the low level of HAP emissions generated by the planing, sawing, and natural gas combustion processes, the installation of HAP controls for these emission sources would be economically prohibitive. Accordingly, good operating practice and maintenance are proposed as MACT for the planing, sawing, and steam boiler natural gas combustion processes.

2.0 MACT ANALYSIS

2.1 REGULATORY REQUIREMENTS

Pursuant to Rule 62-204.800(10)(d)2., F.A.C., an analysis of MACT would be required if HAPs emitted by the proposed McDavid Lumber Mill are equal to or greater than the "major source" or "Title V" source emission rates defined by Rule 62-210.200(178), F.A.C. These major source emission rate thresholds are 10 tpy or more for any individual HAP, 25 tpy or more of any combination of HAPs, or any lesser quantity of a HAP as established through EPA rulemaking. Based on the TAPPI conference paper methanol and formaldehyde emission factors for steam-heated lumber drying kilns, the McDavid Lumber Mill lumber drying kilns would have the potential to emit 31.5 tpy of methanol and 34.3 tpy of total HAPs. Therefore, the McDavid Lumber Mill will be a major source under Title III and is subject to a case-by-case MACT review.

As defined by 40 CFR 63.41, MACT for new sources means:

> "the emission limitation which is not less stringent than the emission limitation achieved in practice by the best controlled similar source, and which reflects the maximum degree of reduction in emissions that the permitting authority, taking into consideration the cost of achieving such emission reduction, and any non-air quality health and environmental impacts and energy requirements, determines if achievable by the constructed or reconstructed major source."

MACT determinations are made on a case-by-case basis as part of the FDEP new source review (NSR) process and apply to each pollutant that exceeds the *major source* emission rate thresholds. The four principals of MACT determinations are specified in 40 CFR 63.43(d):

1. MACT requirements must be no less stringent than the emission control which is achieved in practice by the best controlled similar source.
2. MACT emission limits shall achieve the maximum degree of reduction in HAP emissions, taking into consideration control technology costs and any non-air quality health and environmental impacts and energy requirements.

3. If it is not feasible to prescribe an emission limitation, the MACT requirement may be a specific design, equipment, work practice, or operational standard, or a combination of these standards.
4. MACT requirements shall consider any proposed relevant emission standard pursuant to section 112(d) (categorical NESHAPs) or 112 (h) (work practice standards) of the CAAA or a presumptive MACT determination for the source category.

2.2 METHODOLOGY

The MACT analysis was performed in accordance with the four MACT principals previously described in Section 2.1. The first step in the MACT procedure is the identification of the emission control achieved in practice by the best controlled similar source. The second step is to identify all available control technologies, which could be used to control HAP emissions. Because methanol (common name methyl alcohol with a formula of CH_3OH) and formaldehyde (formula HCHO) are also VOCs, control technologies applicable to the control of VOCs would also be applicable to the abatement of methanol and formaldehyde emissions. Alternatives considered included process designs and operating practices that reduce the formation of emissions, post-process stack controls that reduce emissions after they are formed, and combinations of these two control categories. Sources of information that were used to identify control alternatives include:

- EPA reasonably available control technology (RACT)/BACT/lowest achievable emission rate (LAER) Clearinghouse (RBLC) via the RBLC Information System database.
- EPA NSR web site.
- EPA Control Technology Center (CTC) web site.
- Recent state case-by-case MACT determinations for similar facilities.
- Process equipment and control system vendor information.
- Discussions with NCASI personnel familiar with lumber kiln operations.

Following the identification of available control technologies, the next step in the analysis is to determine which technologies are feasible for the processes under review. Technical feasibility was evaluated using the criteria contained in Chapter B of the draft *EPA NSR Workshop Manual* (EPA, 1990).

An assessment of energy, non-air health and environmental, and economic impacts is then performed. The economic analysis employed the procedures found in the Office of Air Quality Planning and Standards (OAQPS) *Control Cost Manual* (EPA, 1996). Specific factors used in estimating capital and annual operating costs are summarized in Table 2-1.

The final step is the selection of a MACT emission limitation or a design, equipment, work practice, operational standard or combination thereof, corresponding to the maximum degree of HAP reduction with consideration of energy, non-air quality health and environmental, and economic impacts.

As noted previously, projected annual emission rates of total HAPs for the McDavid Lumber Mill would exceed the major source emission threshold of 25 tpy. Operations at the McDavid Lumber Mill, which generate HAPs, would be, therefore, subject to a case-by-case MACT analysis. The principal emission sources at the McDavid Lumber Mill, that will emit HAPs, are the three steam-heated lumber drying kilns. In addition to the three lumber drying kilns, planing and sawing operations will generate minor amounts of HAPs—primarily methanol and formaldehyde. Combustion of natural gas in the two package steam boilers will also generate minor quantities of organic and metallic HAPs. HAP control technology analysis using the four principals of MACT determination is provided in the following sections.

2.3 BEST CONTROLLED SIMILAR SOURCE

The EPA contractor (Midwest Research Institute [MRI]) developing background information for the future EPA plywood and composite woods product category Section

Table 2-1. Capital and Annual Operating Cost Factors

Cost Item	Factor
Direct Capital Costs	
Sales tax	0.06 × purchased equipment cost
Freight	0.05 × purchased equipment cost
Foundations and supports	0.08 × purchased equipment cost
Handling and erection	0.14 × purchased equipment cost
Electrical	0.04 × purchased equipment cost
Piping	0.02 × purchased equipment cost
Insulation	0.01 × purchased equipment cost
Painting	0.01 × purchased equipment cost
Indirect Capital Costs	
Engineering	0.10 × purchased equipment cost
Construction and field expenses	0.05 × purchased equipment cost
Contractor fees	0.10 × purchased equipment cost
Start-up	0.02 × purchased equipment cost
Performance testing	0.01 × purchased equipment cost
Contingencies	0.03 × purchased equipment cost
Direct Annual Operating Costs	
Supervisor labor	0.15 × total operator labor cost
Maintenance labor	1.10 × operator labor direct wage
Maintenance materials	1.00 × total maintenance labor cost
Indirect Annual Operating Costs	
Overhead	0.60 × total of operating, supervisory, and maintenance labor and maintenance materials
Administrative charges	0.02 × total capital investment
Property taxes	0.01 × total capital investment
Insurance	0.01 × total capital investment

Source: EPA, 1996.

112(d) NESHAPs was contacted to ascertain the extent of VOC/HAP controls for existing lumber drying kilns. MRI conducted an extensive survey in 1998 requesting information on existing lumber kilns. Survey forms were sent to approximately 500 wood products plants and information was collected on 330 lumber kilns. Following evaluation of this information, MRI determined that none of the kilns surveyed were equipped with air pollution controls. MRI also searched the RBLC and did not identify any controlled lumber kilns. A copy of the MRI response (i.e., e-mail) on the issue of existing lumber kiln controls is included in Attachment E. NCASI was also contacted and confirmed that there are no known lumber drying kilns that are equipped with air pollution control systems. Accordingly, it is concluded that the best controlled similar source is a lumber drying kiln that is not equipped with any VOC/HAP control systems.

There are also no known sawmill planing, sawing, and package natural gas-fired steam boilers that are equipped with HAP control systems. Accordingly, it is concluded that the best controlled similar sources are sawmill planing, sawing, and package natural gas-fired steam boilers that are not equipped with any VOC/HAP control systems.

2.4 <u>MACT ANALYSIS</u>

2.4.1 POTENTIAL CONTROL TECHNOLOGIES

HAP emissions from the lumber drying kilns and planing and sawing operations are primarily due to losses of naturally occurring organic compounds, primarily terpenes, contained in the SYP logs. The minor amounts of HAP emissions from the natural gas-fired steam boilers are due to incomplete combustion of the natural gas fuel. As noted previously, because methanol and formaldehyde are VOCs, control technologies applicable to the control of VOCs would also be applicable to the abatement of methanol and formaldehyde emissions. Because there are no known control technologies that would *only* apply to HAP emissions, the following discussion of potential VOC control technologies is also applicable to the control of HAP emissions.

VOC control technologies potentially available for the lumber kilns and planing and sawing operations include:

- RTO.
- RCO.
- Biofiltration.

The RTO and RCO thermal oxidation control technologies would also potentially be available for the natural gas-fired steam boilers. Each of these technologies is discussed in the following sections.

Thermal Oxidation Systems

Thermal oxidation control systems are employed to control a wide variety of continuous emission streams containing VOCs. The basic process involved in thermal oxidation is the chemical combustion of the VOC-containing waste gas stream at a sufficient temperature and residence time to oxidize the VOCs to carbon dioxide (CO_2) and water (H_2O). The percent conversion of VOC to CO_2 and H_2O depends on the oxidizer design (i.e., specific design combustion temperature, residence time, and extent of gas stream mixing within the oxidizer).

Thermal oxidation is typically applied to exhaust streams containing dilute mixtures of VOC and air. To satisfy insurance requirements, waste gas stream VOC concentrations are normally no more than 25 percent of the lower explosive limit (LEV). Due to the dilute nature of the waste gas stream, these streams also have a low heat content. Accordingly, thermal oxidizers usually require the addition of supplemental fuel to sustain the combustion process.

The main component of a thermal oxidation system is the combustion chamber in which the VOC-containing waste stream is burned. Within the combustion chamber, a nozzle-stabilized flame is maintained by a combination of waste gas VOC compounds, auxiliary fuel, and supplemental air, if necessary. The waste gas stream is heated from its inlet temperature to its ignition temperature. The ignition temperature varies depending on the VOC species being combusted and normally is determined empirically. Ignition will occur for any concentration of VOCs providing the combustion chamber temperature is sufficiently elevated. The extent of VOC destruction depends on the three "Ts" of combustion: time, temperature, and turbulence. The waste gas stream must be oxidized at a sufficiently high temperature, an adequate residence time, and with proper mixing to achieve acceptable VOC destruction efficiencies. The shorter the residence time, the higher the combustion reactor temperature must be and vice versa. Most thermal oxidation units are designed to provide no more than one second of residence time within a temperature range of 1,200 to 2,000 degrees Fahrenheit (°F).

A number of heat recovery schemes are used to reduce the amount of supplemental fuel required; these heat recovery designs serve to define the various types of thermal oxidation systems. A thermal recuperative oxidizer uses a conventional heat exchanger to preheat the inlet VOC waste gas stream using the hot, outlet oxidizer gas stream as the heat exchange medium. Additional heat recovery and fuel savings can be achieved by using direct contact heat exchangers composed of ceramic material in a regenerative type oxidation system. In a regenerative system, the inlet waste gas stream first passes through a hot ceramic bed, thereby increasing the gas stream temperature and cooling the ceramic bed. The heated gas stream then flows to a combustion chamber where supplemental fuel is added to bring the gas stream to its ignition temperature. Following oxidation in the combustion chamber (with the appropriate residence time), the hot combustion gases flow through a second ceramic bed to raise the second bed to the outlet gas temperature prior to discharging to the atmosphere. The process flows are then switched by means of a damper system such that the inlet waste gas stream first passes through the hot ceramic bed, to the combustion chamber, and then to the cooled ceramic bed before exiting to the atmosphere. Thus, the two ceramic heat exchanger beds switch duty depending on the oxidizer cycle (i.e., first to transfer heat to the incoming gas stream and then to recover heat from the hot, combustion chamber outlet exhaust stream). Ceramic media is used in the oxidizer heat exchangers due to its ability to tolerate high temperatures. Thermal energy efficiencies up to 95 percent can be achieved with RTO systems.

RCOs function in a similar fashion to RTOs (i.e., use ceramic heat exchange media in a cycling mode of operation). To further reduce operating costs, RCOs include a catalyst bed located within the combustion chamber. The catalyst bed serves to increase the reaction rate allowing for combustion to occur at a lower temperature than a conventional RTO. The savings in combustion chamber supplemental fuel costs is somewhat offset by the increased capital cost of an RCO system.

Biofiltration

Biofiltration uses microorganisms to naturally biodegrade VOC exhaust streams to CO_2 and H_2O. The VOC-containing gas stream is passed through one or more beds of bio-media containing microorganisms selected to biodegrade the specific VOC compounds present in the waste gas stream. The VOCs are degraded to lower level compounds and eventually to CO_2 and H_2O as the exhaust stream passes through the biofilter beds. In turn, the microorganisms receive energy and nutrients from the biodegradation process. Accordingly, the biofilter must be designed to have an adequate exhaust gas residence time and be populated with microorganisms, which can be acclimated to effectively biodegrade a specific VOC waste stream. Waste VOC exhaust gas streams typically require conditioning, principally for temperature, prior to being treated by a biofilter.

2.4.2 TECHNICAL FEASIBILITY

The nature of lumber kiln operation presents a number of technical challenges with respect to add-on thermal oxidation control systems. Each kiln employs ten separate vents to supply fresh inlet air and to exhaust moisture-laden air. These vents periodically switch service (approximately every 2 hours) such that the fresh air intake vents become wet-air exhausts and vice versa. The lumber kilns are operated under carefully controlled temperature and humidity conditions to properly dry the green lumber. Any control system design would need to be able to function in conjunction with this complex intake/exhaust kiln ventilation system and, at the same time, not adversely affect proper operation of the kilns.

The lumber kiln drying cycle is also highly variable with respect to exhaust flow rates and exhaust stream HAP content. The quantity of exhaust gas generated at any time during the drying cycle will depend on the various kiln operating parameters including internal kiln temperature and desired moisture removal rates. Advanced instrumentation and automatic controls are employed to operate the kiln vents to achieve the required drying cycle. Accordingly, routine operation of the kilns will result in a variable exhaust stream, both with respect to flow rates as well as HAP concentrations. Variations in exhaust gas temperatures and moisture contents will also occur. Varying flow rates and HAP concentration presents design challenges to RTO and RCO vendors (e.g., specifying the appropriate oxidizer combustion chamber volume to achieve the required temperature and residence time).

As noted previously, the VOCs and HAPs present in the lumber kiln exhaust are primarily due to naturally occurring (i.e., biogenic) organic compounds, principally terpenes, that are contained in the SYP logs. Condensation of these viscous, resinous compounds in any downstream control system will, over time, result in accumulation of "sticky" deposits that will adversely affect control system operations (e.g., ductwork and oxidizer dampers and controls). For this reason, maintenance requirements would be expected to be significantly higher for a lumber kiln control system than for a control system without the potential for such condensation. Exhaust stream condensation and deposition of solids will particularly affect the operation of RCOs and biofilters because these control technologies are susceptible to plugging.

There are no known applications of biolfiltration to reduce HAP emissions from lumber kiln exhaust streams. There would, therefore, need to be a considerable amount of research and "up front" engineering necessary to properly design a biofiltration system to treat a lumber kiln exhaust stream. This effort would include fully characterizing the exhaust stream (i.e., range of flow rates, temperatures, HAP concentrations, etc.), identify potential microorganisms capable of biodegrading HAPs, and determining exhaust stream conditioning requirements (e.g., lowering the exhaust stream temperature). The volume of kiln exhaust requiring treatment, approximately 138,000 actual cubic feet per minute (acfm) for the three kilns, would require a relatively long biofilter contact period for effective biodegradation. This, in turn, would result in a large biofilter volume to obtain a suitable velocity and residence time in the biofilter media bed. As noted previously, condensation of the kiln exhaust stream raises the issue of potential plugging of the bio-filter media and resulting operational problems (i.e., excessive back-pressure would adversely affect proper kiln operation).

Due to these many technical problems, there are no lumber kilns operating with thermal oxidation or biofiltration control systems. For two recent lumber kiln installations subject to prevention of significant deterioration (PSD) permitting review (one in North Carolina in mid 1997 and another in Texas in late 1998), the state regulatory agencies concluded in each case that "no controls" represents BACT for VOC for lumber kilns. This was also the determination made by FDEP for the McDavid Lumber Mill in 1999. Biofiltration is not considered to be a technically feasible control technology due to the many uncertainties regarding the design of such a system for a lumber kiln exhaust stream and the fact that it has not been demonstrated in practice for application to lumber kilns. Although unproven for lumber kilns, the RTO and RCO technologies were further evaluated for energy, non-air quality environmental, and economic impacts.

The previous discussion of the technical feasibility of thermal oxidation controls is also generally applicable to the sawmill planing and sawing operations and the natural gas-fired steam boilers. Due to the low level of HAP emissions from these sawmill processes, there are no known sawmill planing and sawing and natural gas-fired steam boilers that are equipped with HAP control systems.

2.4.3 ENERGY AND NON-AIR QUALITY ENVIRONMENTAL IMPACTS

For the lumber kilns, application of RTO or RCO control technology will result in an energy penalty due to the use of supplemental fuel in the oxidizer combustion chamber. For RTO technology, the energy penalty is 18.0 million British thermal units per hour (MMBtu/hr), equivalent to the use of 150.2 million cubic feet (ft^3) of natural gas annually based on a natural gas heating value of 1,050 British thermal units per cubic foot (Btu/ft^3). For RCO technology, the energy penalty is 3.6 MMBtu/hr, equivalent to the use of 30.0 million ft^3 of natural gas annually based on a natural gas heating value of 1,050 Btu/ft^3. In addition, both control technologies will impose additional electricity demand due to the power needed to run the control system exhaust gas fans. For RTO technology, this electrical energy penalty is 5,479,380 kilowatt-hours per year (kWh/yr). The electrical energy penalty for RCO technology is 2,838,240 kWh/yr. The installation of thermal oxidation controls on the sawmill planing and sawing processes and the natural gas-fired steam boilers would also result in energy penalties due to the use of supplemental fuel and additional electricity.

There are no significant non-air quality environmental impacts associated with the RTO and RCO control technologies

2.4.4 ECONOMIC IMPACTS

An economic evaluation of RTO and RCO control technologies for the lumber kilns were performed using the OAQPS factors previously summarized in Table 2-1 and project-specific economic factors provided in Table 2-2. Specific capital and annual operating costs for RTO control technology are summarized in Tables 2-3 and 2-4. Specific capital and annual operating costs for RCO control technology are summarized in Tables 2-5 and 2-6.

The base case (i.e., uncontrolled rate for all three lumber kilns) annual HAP emission rate would be 34.3 tpy. For both RTO and RCO technologies, the controlled annual HAP emission rate was based on a capture efficiency of 85 percent and a HAP destruction efficiency

Table 2-2. Economic Cost Factors

Factor	Units	Value
Interest rate	%	8.0
Control system life	Years	10
RCO Catalyst life	Years	2
Electricity cost	$/kWh	0.045
Natural Gas Cost	$MMBtu	2.58
Labor costs (base rates)	$/hour	
Operator		10.55
Maintenance		13.12

Sources: Champion, 2000.
ECT, 2000.

Table 2-3. Capital Costs for RTO Control System (Three Oxidizers)

Item	Dollars	OAQPS Factor	Comments
<u>Direct Costs</u>			
Purchased Equipment -			
RTO Control System	2,050,000		
Ductwork	501,000		
Total Control System	2,551,000	A	
Instrumentation	0	0.01 × A	Included in A
Sales Tax	123,000	0.06 × A	
Freight	25,050	0.05 × A	Ductwork only
Total Purchased Equipment	**2,699,050**	B	
Installation			
Foundations and supports	175,844	0.08 × B	Excluding ductwork
Handling and erection	307,727	0.14 × B	Excluding ductwork
Electrical	87,922	0.04 × B	Excluding ductwork
Piping	53,981	0.02 × B	
Insulation for ductwork	26,991	0.01 × B	
Painting	0	0.01 × B	Included in A
Subtotal Installation Cost	**652,465**		
Subtotal Direct Costs	**3,351,515**	TDC	
<u>Indirect Costs</u>			
Engineering	539,810	0.10 × B	× 2, custom built
Construction & Field Expenses	134,953	0.05 × B	
Contractor Fees	269,905	0.10 × B	
Start-up	53,981	0.02 × B	
Performance Test	107,962	0.01 × B	× 4, multiple tests
Contingency	1,349,525	0.03 × B	50%, first application on kilns
Subtotal Indirect Cost	**2,456,136**	TIC	
TOTAL CAPITAL INVESTMENT	**5,807,650**	TCI	

Sources: Eisenmann Corporation, 1999.
ECT, 2000.

Table 2-4. Annual Operating Costs for RTO Control System (Three Oxidizers)

Item	Dollars	OAQPS Factor	Comments
Direct Costs			
Labor and material costs			
Operator	69,314	6.0 hr/shift (A)	Operator labor @ $10.55/hr
Supervisor	10,397	0.15 × A	(3 Oxidizers, complex system)
Maintenance			
Labor	86,198	6.0 hr/shift (B)	Operator labor @ $13.12/hr
Material	86,198	1.0 × B	(3 Oxidizers, complex system)
Subtotal Labor & Material Costs	**252,107**	C	
Utilities			
Natural Gas	406,814	18.0 MMBtu/hr	Natural gas @ $2.58/MMBtu
Electricity	246,572	625.5 kW	Electricity @ $0.045/kWh
Subtotal Utilities	**653,387**		
Subtotal Direct Costs	**905,494**	TDC	
Indirect Costs			
Overhead	151,264	0.60 × C	
Administrative Charges	116,153	0.02 × TCI	
Property Taxes	58,077	0.01 × TCI	
Insurance	58,077	0.01 × TCI	
Capital Recovery	865,511		10 Years @ 8.0 percent
Subtotal Indirect Costs	**1,249,082**		
TOTAL ANNUAL COST	**2,154,575**		

Sources: Champion, 2000.
ECT, 2000.

Table 2-5. Capital Costs for RCO Control System (Three Oxidizers)

Item	Dollars	OAQPS Factor	Comments
Direct Costs			
Purchased equipment			
RCO control system	2,055,000		
Ductwork	501,000		
Total control system	2,556,000	A	
Instrumentation	0	0.01 × A	Included in A
Sales tax	123,300	0.06 × A	
Freight	0	0.05 × A	Included in A
Total Purchased Equipment	**2,679,300**	B	
Installation			
Foundations and supports	174,264	0.08 × B	Excluding ductwork
Handling and erection	304,962	0.14 × B	Excluding ductwork
Electrical	87,132	0.04 × B	Excluding ductwork
Piping	53,586	0.02 × B	
Insulation for ductwork	26,793	0.01 × B	
Painting	0	0.01 × B	Included in A
Subtotal Installation Cost	**646,737**		
Subtotal Direct Costs	**3,326,037**	TDC	
Indirect Costs			
Engineering	535,860	0.10 × B	× 2, custom built
Construction and field expenses	133,965	0.05 × B	
Contractor fees	267,930	0.10 × B	
Start-up	53,586	0.02 × B	
Performance test	107,172	0.01 × B	× 4, multiple tests
Contingency	1,339,650	0.03 × B	50%, first application on kilns
Total Indirect Cost	**2,438,163**	TIC	
TOTAL CAPITAL INVESTMENT	**5,764,200**	TCI	

Sources: Geoenergy, 1999.
ECT, 2000.

Table 2-6. Annual Operating Costs for RCO Control System (Three Oxidizers)

Item	Dollars	OAQPS Factor	Comments
Direct Costs			
Labor and material costs			
Operator	69,314	6.0 hr/shift (A)	Operator labor @ $10.55/hr
Supervisor	10,397	0.15 × A	(3 Oxidizers, complex system)
Maintenance			
Labor	86,198	6.0 hr/shift (B)	Operator labor @ $13.12/hr
Material	86,198	1.0 × B	(3 Oxidizers, complex system)
Subtotal Labor & Material Costs	**252,107**	C	
Catalyst Costs			
Replacement (materials + labor)	285,000		
Annualized Catalyst Cost	159,819		2 Years @ 8.0%
Subtotal Catalyst Costs	**159,819**		
Utilities			
Natural gas	81,363	3.6 MMBtu/hr	Natural gas @ $2.58/MMBtu
Electricity	130,086	330 kW	Electricity @ $0.045/kWh
Subtotal Utilities	**211,449**		
Subtotal Direct Costs	**623,375**	TDC	
Indirect Costs			
Overhead	151,264	0.60 × C	
Administrative Charges	115,284	0.02 × TCI	
Property Taxes	57,642	0.01 × TCI	
Insurance	57,642	0.01 × TCI	
Capital Recovery	814,014		10 Years @ 8.0%
Subtotal Indirect Costs	**1,195,846**		
TOTAL ANNUAL COST	**1,819,222**		

Sources: Champion, 1999.
ECT, 2000.

of 95 percent (for an overall HAP removal of 80.8 percent), resulting in a controlled annual HAP emission rate of 6.6 tpy. Base case and controlled HAP emission rates are summarized in Table 2-7.

The cost effectiveness of RTO and RCO control technologies to control HAP emissions from the lumber kilns was determined to be $77,733 and $65,634 per ton of HAP removed, respectively. Based on these high control costs, use of RTO or RCO control technology to control HAP emissions is not considered to be economically feasible. Results of the RTO and RCO economic analyses are summarized in Table 2-7.

Due to the minor amounts of HAPs generated by the sawmill planing and sawing processes and the natural gas-fired steam boilers, application of thermal oxidation technology to control HAP emissions from these minor sources would also be economically prohibitive.

2.4.5 PROPOSED MACT DESIGN/OPERATIONAL STANDARDS

For the lumber kilns, MACT is considered to be the proper installation, operation, and maintenance of the kilns. As noted previously, there are no known installations of HAP controls on existing lumber kilns. Recent (mid-1997, late-1998, and mid-1999) regulatory agency BACT determinations for new lumber kilns located in Texas, North Carolina, and Florida concluded that "no controls" represents BACT for VOCs. The unique and complex manner in which lumber kilns are operated (e.g., use of a series of vents which periodically switch mode from inlet to outlet service, wide variation in exhaust flow rates and HAP concentrations, and potential for condensation of viscous substances and concomitant fouling and plugging of control system components) presents daunting technical challenges for RTO and RCO control technologies.

The proper installation, operation, and maintenance of the sawmill planing and sawing processes and the natural gas-fired steam boilers is considered to be MACT for these HAP emission sources. There are no known installations of HAP controls for these sawmill processes. Due to the low levels of HAP emissions from these emission units, the

Table 2-7. Summary of Lumber Kiln MACT Analysis

Control Option	HAP Emission Impacts* Emission Rates lb/hr	HAP Emission Impacts* Emission Rates tpy	HAP Emission Impacts* Emission Reduction (tpy)	Economic Impacts Installed Capital Cost ($)	Economic Impacts Total Annualized Cost ($/yr)	Economic Impacts Cost Effectiveness Over Baseline ($/ton)	Energy Impacts Increase Over Baseline (MMBtu/yr)	Environmental Impacts Toxic Impact (Y/N)	Environmental Impacts Adverse Environmental Impact (Y/N)
RTO	1.5	6.6	27.7	5,807,650	2,154,575	77,733	5,528	Y	Y
RCO	1.5	6.6	27.7	5,764,200	1,819,222	65,634	5,528	Y	Y
Baseline	7.8	34.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A

*RTO and RCO emission rates based on 85-percent capture efficiency and 95-percent HAP destruction efficiency.

Source: ECT, 2000.

installation of thermal oxidation control technology is considered to be economically prohibitive.

Table 2-8 summarizes the MACT design/operational standards proposed for the McDavid Lumber Mill.

Table 2-8. Proposed MACT Design/Operational Standards

Emission Source	Proposed MACT Design/Operational Standards
Lumber Kilns	Proper installation, operation, and maintenance
Planing and Sawing	Proper installation, operation, and maintenance
Steam Boilers	Proper installation, operation, and maintenance

Sources: Champion, 2000.
ECT, 2000.

ATTACHMENT A

MACT PERMIT APPLICATION DATA

ATTACHMENT A

MACT PERMIT APPLICATION DATA

(1) Name and address of the major source

McDavid Lumber Mill
Champion International Corporation
401 Champion Drive
McDavid, FL 32568

(2) Brief description of the major source

Principal McDavid Lumber Mill processes will include SYP log storage and processing (debarking and sawing); log chipping and sawing; green lumber drying using indirect, steam heated kilns; dried lumber finishing (planer-mill); and sorting, storage, and shipping of the final lumber product. Ancillary operations and equipment will include the storage and handling of wood by-products including bark, sawdust, chips, and planermill shavings and two natural gas-fired package boilers to provide steam for the lumber kilns.

(3) Expected commencement and completion dates of construction

Construction of the McDavid Lumber Mill commenced in September 1999. The proposed sawmill is scheduled to complete construction in the fourth quarter of 2000.

(4) Anticipated date of start-up

The McDavid Lumber Mill is scheduled to commence operation in the fourth quarter of 2000.

(5) Type and quantities of HAPs emitted

HAPs emitted from the lumber drying kilns include methanol and formaldehyde. Emissions of methanol and formaldehyde from the three McDavid Lumber Mill lumber drying kilns, based on the TAPPI conference paper test data, are estimated to total 31.5 and 2.8 tpy, respectively. There will also be

minor amounts of HAPs emitted due to the combustion of natural gas by the two package steam boilers and the sawmill planing and sawing operations.

(6) Any federally enforceable emission limits applicable to the major source

Federally enforceable emission limits are contained in FDEP Final Permit No. 0330260-001-AC. Specific Condition No. 5 limits CO emissions from each of the natural gas-fired steam boilers to no more than 0.18 lb/MMBtu of heat input (LHV basis). Specific Condition No. 6 limits visible emissions from each of the natural gas-fired steam boilers to no more than 5 percent opacity. Specific Condition No. 10 limits visible emissions from each of the lumber drying kilns to no more than 5 percent opacity. Specific Condition No. 17 limits visible emissions from the planermill operations to no more than 5 percent opacity.

(7) Maximum and expected utilization (i.e., production rates) of the major source and associated uncontrolled HAP emission rates

The McDavid Lumber Mill will process SYP logs and produce up to 225 MMBF/yr of lumber. Uncontrolled emissions of methanol and formaldehyde from the three McDavid Lumber Mill lumber drying kilns, based on the TAPPI conference paper, are estimated to total 31.5 and 2.8 tpy, respectively. There will also be minor amounts of HAPs emitted due to the combustion of natural gas by the two package steam boilers and the sawmill planing and sawing operations.

(8) The controlled HAP emission rates in tpy at the maximum and expected utilization rates

Controlled emissions of methanol and formaldehyde from the three McDavid Lumber Mill lumber drying kilns, based on the TAPPI conference paper test

data, are estimated to total 31.5 and 2.8 tpy, respectively. There will also be minor amounts of HAPs emitted due to the combustion of natural gas by the two package steam boilers and the sawmill planing and sawing operations.

(9) Recommended case-by-case MACT emission limitation

For the lumber kilns, MACT is considered to be the proper installation, operation, and maintenance of the kilns. There are no known installations of HAP controls on existing lumber kilns. Recent (mid 1997, late 1998, and mid 1999) regulatory agency BACT determinations for new lumber kilns located in Texas, North Carolina, and Florida concluded that "no controls" represents BACT for VOCs.

The unique and complex manner in which lumber kilns are operated (e.g., use of a series of vents which periodically switch mode from inlet to outlet service, wide variation in exhaust flow rates and HAP concentrations, and potential for condensation of viscous substances and concomitant fouling and plugging of control system components) presents daunting technical challenges for RTO and RCO control technologies. The cost effectiveness of RTO and RCO control technologies for HAP emissions was determined to be $77,733 and $65,634 per ton of HAP removed, respectively. Based on these high control costs, use of RTO or RCO control technology to control HAP emissions is not considered to be economically feasible.

The proper installation, operation, and maintenance of the sawmill planing and sawing processes and the natural gas-fired steam boilers is considered to be MACT for these HAP emission sources. There are no known installations of HAP controls for these sawmill processes. Due to the low levels of HAP

emissions from these emission units, the installation of thermal oxidation control technology is considered to be economically prohibitive.

(10) Documentation of the control technology currently being used.

Control technology currently being used for the lumber kilns is the proper installation, operation, and maintenance of the kilns.

Control technology currently being used for the sawmill planing and sawing processes and the natural gas-fired steam boilers is the proper installation, operation, and maintenance of these emission units.

ATTACHMENT B

APPLICATION FOR AIR PERMIT—
TITLE V SOURCE

Department of Environmental Protection

Division of Air Resources Management

APPLICATION FOR AIR PERMIT - TITLE V SOURCE

See Instructions for Form No. 62-210.900(1)

I. APPLICATION INFORMATION

Identification of Facility

1. Facility Owner/Company Name: **Champion International Corporation**	
2. Site Name: **McDavid Lumber Mill**	
3. Facility Identification Number: **0330260**	[ ] Unknown
4. Facility Location: Street Address or Other Locator: **401 Champion Drive** City: **McDavid** County: **Escambia** Zip Code: **32568**	
5. Relocatable Facility? [ ] Yes [✔] No	6. Existing Permitted Facility? [✔] Yes [ ] No

Application Contact

1. Name and Title of Application Contact: **Randy Elgin** **Wood Products Regional Environmental, Health and Safety (EHS) Manager**
2. Application Contact Mailing Address: Organization/Firm: **Champion International Corporation** **(a wholly owned subsidiary of International Paper Company)** Street Address: **4231 Mike Padgett Highway** City: **Augusta** State: **GA** Zip Code: **30906**
3. Application Contact Telephone Numbers: Telephone: **(706) 796 – 5707** Fax: **(706) 796 – 5716**

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	12-15-00
2. Permit Number:	0330260-002-AC
3. PSD Number (if applicable):	
4. Siting Number (if applicable):	

Purpose of Application

Air Operation Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

[ ] Initial Title V air operation permit for an existing facility which is classified as a Title V source.

[ ] Initial Title V air operation permit for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number: ____________________

[ ] Title V air operation permit revision to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number: ____________________

Operation permit number to be revised: ____________________

[ ] Title V air operation permit revision or administrative correction to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. (Also check Air Construction Permit Application below.)

Operation permit number to be revised/corrected: ____________________

[ ] Title V air operation permit revision for reasons other than construction or modification of an emissions unit. Give reason for the revision; e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.

Operation permit number to be revised: ____________________

Reason for revision: ____________________

Air Construction Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

[✔] Air construction permit to construct or modify one or more emissions units.

[ ] Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

[ ] Air construction permit for one or more existing, but unpermitted, emissions units.

Owner/Authorized Representative or Responsible Official

1. Name and Title of Owner/Authorized Representative or Responsible Official:
   Dave Stevens – Plant Manager

2. Application Contact Mailing Address:
   Organization/Firm: **Champion International Corporation**
   Street Address: **401 Champion Drive**
   City: **McDavid** State: **FL** Zip Code: **32568**

3. Owner/Authorized Representative or Responsible Official Telephone Numbers:
   Telephone: **(850) 587-1002** Fax: **(850) 968-3027**

4. Owner/Authorized Representative or Responsible Official Statement:

   I, the undersigned, am the owner or authorized representative(check here [ ] if so) or the responsible official (check here [✔], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.*

   David A Stevens — Dec 11, 2000

   Signature — Date

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1. Professional Engineer Name: **Thomas W. Davis**
   Registration Number: **36777**

2. Professional Engineer Mailing Address:
   Organization/Firm: **Environmental Consulting & Technology, Inc.**
   Street Address: **3701 Northwest 98th Street**
   City: **Gainesville** State: **FL** Zip Code: **32606**

3. Professional Engineer Telephone Numbers:
   Telephone: **(352) 332-0444** Fax: **(352) 332-6722**

4. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [✔], if so), I further certify that the engineering features of each such emissions unit described in this application have been ~~designed or~~ examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Thomas W. Davis

Signature

Date 12/6/00

(Seal)

* Attach any exception to certification statement.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
001	Natural Gas-Fired Package Boiler No. 1	ACM1	$250
002	Natural Gas-Fired Package Boiler No. 2	ACM1	N/A
003	Lumber Drying Kilns Nos. 1 – 3	ACM1	N/A
004	Planermill Operations	ACM1	N/A
005	Facility Fugitive Emissions	ACM1	N/A

Application Processing Fee

Check one: [✔] Attached - Amount: $ 250   [ ] Not Applicable

Fee for minor technical changes per Rule 62-4.050(4)(r)5., F.A.C.

Construction/Modification Information

1. Description of Proposed Project or Alterations: **Champion International Corporation (Champion), a wholly owned subsidiary of International Paper Company, is presently constructing a new lumber mill in Escambia County, Florida approximately 30 kilometers (km) [19 miles (mi)] north of Pensacola.** **Recent HAP test results for lumber drying kilns indicate that methanol emissions may be greater than previously estimated. A revision in the drying kiln emission factor for methanol results in estimated McDavid Lumber Mill methanol emissions of 31.5 tons per year (tpy) vs. the previous estimate of 4.2 tpy. Total HAPs (i.e., methanol and formaldehyde emissions) for the McDavid Lumber Mill lumber kilns are estimated to be 34.3 tpy vs. the previous estimate of 4.5 tpy. Because estimated McDavid Lumber Mill total HAP emissions may exceed 25 tpy, a case-by-case Maximum Achievable Control Technology (MACT) determination is required pursuant to Section 112(g)(2)(B) of the 1990 Clean Air Act Amendments (CAAA).** **These revised permit application forms, and supporting documentation included in the attachments, constitutes Champion's application for a case-by-case MACT determination in accordance with the Florida Department of Environmental Protection (FDEP) permitting rules contained in Chapters 62-4 and 62-212, F.A.C.** **Champion also requests approval for the installation of an insignificant emission source. During the drying and steam generation processes, kiln condensate (i.e. water liberated from the lumber), steam condensate, and boiler blowdown streams are generated. To dispose of these streams, Champion proposes to evaporate them in the boiler blowdown pit. Written concurrence from the Department that this is an insignificant emission source and that Champion may proceed with the installation of the boiler blowdown pit steam coils that will be used to evaporate the water streams is requested.**
2. Projected or Actual Date of Commencement of Construction: **September, 1999**
3. Projected Date of Completion of Construction: **4th Quarter 2000**

Application Comment

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates: Zone: **16**	East (km): **468.74**	North (km): **3,406.5**	
2. Facility Latitude/Longitude: Latitude (DD/MM/SS):	Longitude (DD/MM/SS):		
3. Governmental Facility Code: **0**	4. Facility Status Code: **C**	5. Facility Major Group SIC Code: **24**	6. Facility SIC(s): **2421**
7. Facility Comment (limit to 500 characters):			

Facility Contact

1. Name and Title of Facility Contact:
   Dave Stevens – Plant Manager
2. Facility Contact Mailing Address:
   Organization/Firm: **Champion International Corporation**
   Street Address: **401 Champion Drive**
   City: **McDavid** State: **FL** Zip Code: **32568**
3. Facility Contact Telephone Numbers:
   Telephone: **(850) 587-1002** Fax: **(850) 968-3027**

Facility Regulatory Classifications

Check all that apply:

1. [ ] Small Business Stationary Source?	[ ] Unknown
2. [✔] Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?	
3. [ ] Synthetic Minor Source of Pollutants Other than HAPs?	
4. [✔] Major Source of Hazardous Air Pollutants (HAPs)?	
5. [ ] Synthetic Minor Source of HAPs?	
6. [✔] One or More Emissions Units Subject to NSPS?	
7. [ ] One or More Emission Units Subject to NESHAP?	
8. [ ] Title V Source by EPA Designation?	
9. Facility Regulatory Classifications Comment (limit to 200 characters):	

List of Applicable Regulations

N/A – previously submitted	

B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. Requested Emissions Cap lb/hour	 tons/year	4. Basis for Emissions Cap	5. Pollutant Comment
VOC	**A**	**N/A**	**N/A**	**N/A**	
H115 (Methanol)	**A**	**N/A**	**N/A**	**N/A**	
HAPS	**A**	**N/A**	**N/A**	**N/A**	

C. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements

1. Area Map Showing Facility Location: [ ] Attached, Document ID: [ ] Not Applicable [✔] Waiver Requested **Previously submitted; see PSD permit application dated June 1999.**
2. Facility Plot Plan: [ ] Attached, Document ID: [ ] Not Applicable [✔] Waiver Requested **Previously submitted; see PSD permit application dated June 1999.**
3. Process Flow Diagram(s): [ ] Attached, Document ID: [ ] Not Applicable [✔] Waiver Requested **Previously submitted; see PSD permit application dated June 1999.**
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: [ ] Attached, Document ID: [ ] Not Applicable [✔] Waiver Requested **Previously submitted; see PSD permit application dated June 1999.**
5. Fugitive Emissions Identification: [ ] Attached, Document ID: [ ] Not Applicable [✔] Waiver Requested **Previously submitted; see PSD permit application dated June 1999.**
6. Supplemental Information for Construction Permit Application: [✔] Attached, Document ID: **MACT App.** [ ] Not Applicable
7. Supplemental Requirements Comment:

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in This Section: (Check one)

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[✔] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Regulated or Unregulated Emissions Unit? (Check one)

[✔] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Emission unit consists of three indirect, heated steam lumber drying kilns.

4. Emissions Unit Identification Number:
ID: **003 (K-1 through K-3)**
[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
C		**24**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)

Only those sections of the application form which have been revised from the original June 1999 PSD permit application are included for this emission unit.

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 – VOC			**EL**
2 – PM			**EL**
3 – PM10			**EL**
4 – H115			**EL**
5 – HAPS			**EL**

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **H115 (methanol)**	2. Total Percent Efficiency of Control:
3. Potential Emissions: 7.2 lb/hour **31.5** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/year	
6. Emission Factor: **0.28 lb/MBF** Reference: **TAPPI Conference Paper**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **Hourly emission rate = 0.28 lb/MBF x 25.68 MBF = 7.2 lb/hr** **Annual emission rate = 0.28 lb/MBF x 225,000 MBF/yr x (1 ton / 2,000 lb) = 31.5 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
4. Requested Allowable Emissions and Units: **Proper Operating and Maintenance Practices**	4. Equivalent Allowable Emissions: **7.2** lb/hour **31.5** tons/year
5. Method of Compliance (limit to 60 characters): **Implementation of proper operating and maintenance practices.**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **FDEP Rule 62-204.800(10(d)2, F.A.C. (Case-By-Case MACT)**	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units -
Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **HAPS**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **7.8** lb/hour **34.3** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/year	
6. Emission Factor: **0.305 lb/MBF** Reference: **TAPPI Conference Paper**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **Hourly emission rate = 0.305 lb/MBF x 25.68 MBF = 7.8 lb/hr** **Annual emission rate = 0.305 lb/MBF x 225,000 MBF/yr x (1 ton / 2,000 lb) = 34.3 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **HAP emission factor is the sum of methanol (0.28 lb/MBF) and formaldehyde (0.025 lb/MBF) emission factors.**	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
5. Requested Allowable Emissions and Units: **Proper Operating and Maintenance Practices**	4. Equivalent Allowable Emissions: **7.8** lb/hour **34.3** tons/year
5. Method of Compliance (limit to 60 characters): **Implementation of proper operating and maintenance practices.**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **FDEP Rule 62-204.800(10(d)2, F.A.C. (Case-By-Case MACT)**	

J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements

1. Process Flow Diagram [ ] Attached, Document ID: [ ] Not Applicable [✔] Waiver Requested **Previously submitted; see PSD permit application dated June 1999.**
2. Fuel Analysis or Specification [ ] Attached, Document ID:_______ [✔] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:________ [✔] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:________ [✔] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:________ [ ] Previously submitted, Date:______________ [✔] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:________ [✔] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:________ [✔] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application **See MACT application** [ ] Attached, Document ID:________ [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:________ [✔] Not Applicable
10. Supplemental Requirements Comment:

ATTACHMENT C

TAPPI CONFERENCE PAPER

Environmental Consulting & Technology, Inc.

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LUMBER KILN VOC TESTING USING THE WATER MASS BALANCE APPROACH

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ABSTRACT

Two lumber drying kilns (one direct-fired and one steam-heated) were tested for volatile organic compounds using the water mass balance (WMB) approach. The objective of the testing was to measure the emission factor (lb/MMbf) for total hydrocarbons (by flame ionization analyzer), methanol, and formaldehyde from Southern Yellow Pine dimensional lumber during the drying cycle. The WMB approach was selected as the most appropriate method due to the kiln construction and operation.

The WMB approach relates parameter emission rates to the moisture content of the vented gas. The approach theory and calculations are described. Reference test methodology was used for all measurements. The WMB approach provides a viable procedure to measure lumber drying kiln VOC emissions. The greatest variability is in measuring the lumber moisture loss during drying (which directly affects the results).

The testing produced results comparable to those reported in the open literature for similar wood species. Results from the water mass balance approach (~ 2 lb THC/MMbf) compared favorably with the carbon mass balance approach on the direct-fired kiln. The moisture loss measurements were more variable than expected.

INTRODUCTION

During the last few years, significant effort has been expended to measure the volatile organic compound (VOC) emission rates during the lumber drying process. The need to quantify hazardous air pollutants has resulted from the passage of the Clean Air Act Amendments of 1990. In addition, total VOC emission rates are needed for air permitting and emission fee calculation.

Measurement of emissions from lumber drying kilns is an extremely difficult effort due to the following:

- Emissions do not vent through a stack or at specific locations.
- Lumber drying kilns were not designed nor constructed for testing emissions.
- Fugitive emissions (leaks at doors and crevices) cannot be quantified (or estimated) in relation to the overall emissions.
- The lumber drying cycle is a batch operation requiring 24 to 72 hours to complete.
- Volumetric flow rate measurements are difficult to obtain from kilns.
- Measurement of representative VOC concentrations is difficult.

A number of methods have been developed to address the foregoing challenges. Each method has both advantages and disadvantages. No single method has been established as "standard" because kiln configurations and operations vary significantly. The two most common methods involve either ducting all vents together into a single duct (stack) or by testing each vent separately for volumetric flow rate and analyte concentration. Each method has numerous technical disadvantages and each is costly to set up for testing.

The "common duct" method requires construction of multiple ducts from the kiln vents leading to an induced draft fan and a single vent. This construction of a temporary collection system is costly and sometimes not feasible due to the kiln design. Technical concerns include the possibility of changing kiln operational characteristics as a result of the ducting and the possibility of water-soluble VOCs condensing in the ductwork as the vent gas cools. The need to "reheat" the vent gas or insulate the ductwork only increases cost without assuring the problem is solved. This method does not account for fugitive emissions from the kiln which do not go through the vents.

The "octopus" method is so named because each kiln vent is sampled for analyte concentration and volumetric flow rate throughout the drying cycle. A typical kiln may have 8 to 12 vents with dampers that open and close independently based on the humidity and air temperature inside the kiln. The vents are ambient draft, and because the vent gas velocity at each vent is variable (and low), a calibrated flow measuring device must be used at each vent. Therefore, this method requires sampling all vents continuously for concentration and flow throughout the lumber drying cycle. The sampling can turn into a logistical nightmare; and the method has only been applied to measuring total VOC.

The Corporation wanted to measure the mass of total hydrocarbons and hazardous air pollutants (HAPs)—specifically formaldehyde and methanol—emitted from lumber kilns drying Southern Yellow Pine during typical operations. Two East Texas facilities were identified as representative. The kilns are located less than 100 miles apart, and the operations of both were similar. Both mills process only Southern Yellow Pine into dimensional lumber. The wood source is similar because it all comes from the southeastern Texas geographical area.

Fresh-cut Southern Yellow Pine typically has 60 to 65 percent moisture depending on the season, cut, where cut, and a number of other factors. The logs are rough-sawed then dried to a moisture content of 12 to 15 percent during a 18- to 24-hour drying cycle. The moisture driven from the lumber is released untreated into the atmosphere.

Two types of kilns were to be tested - one indirectly heated by steam and the other directly heated by combustion air from wood shavings. As a result of a preliminary visit to each mill to understand each kiln's operation and configuration, the water mass balance (WMB) approach was selected as the basis for measuring the emissions from both types of kiln. The WMB approach relates the VOC emissions to the total mass of water emitted from a kiln during a complete drying cycle. The WMB approach is based on the concept that the mass of water introduced into the kiln during the drying cycle (lumber and ambient) must equal the water mass exiting the kiln. This paper describes the theory of the WMB approach, discusses the methodology, and presents the results obtained.

THEORY

The WMB approach is based on the concept that the mass of water introduced into the kiln during the drying cycle must equal the water mass exiting the kiln. Figure 1 schematically represents this concept for a lumber drying kiln. The figure represents both the direct-fired and the indirect-heated kilns. The shaded portion of the sketch is associated with the direct-fired kiln.

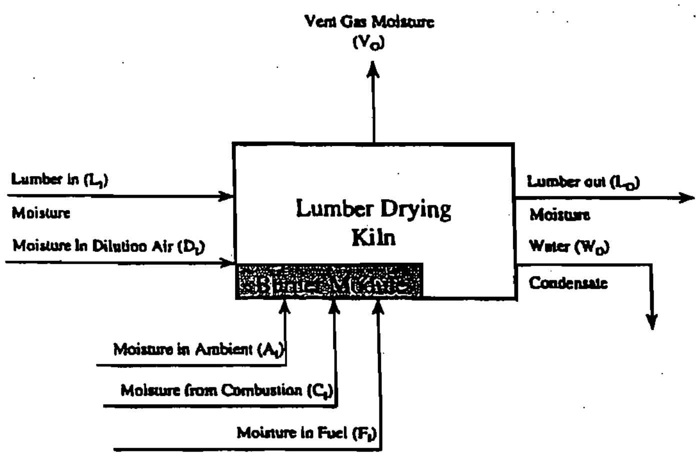

Figure 1. Schematic of Kiln Water Mass Balance Approach

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The WMB approach is based on the concept that "water in equals water out". Using the terminology of Figure 1, $L_I + D_I + A_I + C_I + F_I = L_O + V_O + W_O$. The following paragraphs outline the measurement concept, and calculations and equations are presented in Appendix A.

The moisture released from the lumber ($L_I - L_O$) is calculated from the moisture content of the wet lumber before drying and the dry lumber after drying. Appendix B describes the procedure used to make that measurement. This value by far represents the largest amount of water introduced into the kiln.

The moisture introduced with ambient air (A_I) into the burner is calculated from the temperature and relative humidity of the ambient air throughout the drying cycle. The mean moisture content throughout the drying cycle was used, with the total volume of ambient air introduced, to calculate the mass of water introduced from the ambient air (A_I). The volume ambient (combustion) air was measured or calculated form combustion stoichiometry.

The amount of moisture in ambient air introduced into the kiln as dilution (D_I) is extremely small when compared to moisture introduced from other sources (primarily L_I). Therefore, this small amount (D_I) was ignored for the purposes of these tests.

The amount of water generated from combustion (C_I) was only relevant to the direct-fired kiln. This value was calculated from the combustion products of the wood shavings being used to heat the kiln. The mass of wood burned, the carbon content of the fuel and the heat content of the fuel was used to calculate the amount of water introduced into the kiln from combustion (C_I). A natural gas-fired pilot also burns in the firing chamber. The volume of natural gas burned was used to calculate the water generated from combustion of the natural gas.

The amount of water introduced with the fuel (F_I) was calculated from the mass of fuel (wood shavings) burned during the drying cycle and the moisture content of the wood shavings. One sample of shavings was composited throughout each drying cycle and analyzed for moisture content. This water input value fuel (F_I) was relevant only for the direct-fired kiln.

The water which condensed during kiln heat-up (W_O) was collected and measured. This amount was insignificant when compared to the water vapor emitted into the atmosphere.

The mass of water (V_O) emitted from the kiln through the vents and fugitive sources was calculated from the difference of the water introduced and lost during the drying cycle. That is

$$V_O = [L_I - L_O] + A_I + D_I + F_I + C_I - W_O$$

By knowing the concentration of VOCs with respect to moisture content of gas emitted from the kiln, the mass of VOC emitted from the kiln was calculated. A key assumption of the WMB approach is that the moisture and VOC concentration of the vent gas and the fugitive gas are the same.

All results were normalized to the volume of lumber dried. The number of board feet (bf) was used as the basis of all measurements. The volume of lumber in thousands of board feet (Mbf) dried in each cycle is known. The mass of VOC emissions was divided by the lumber volume dried to produce results in units of lb pollutant per million board feet of lumber (lb/MMbf).

The results from the WMB approach were compared to those obtained from a carbon mass balance (CMB) on the direct-fired kiln. This concept is based on the fact that the carbon in the combustion wood is converted to carbon dioxide (CO_2) by combustion. The amount of carbon in the fuel (wood shavings) was measured for each drying cycle. The CO_2 generated will also be measured throughout the drying cycle. The VOC concentrations were related to the measured CO_2 concentrations.

METHODOLOGY

Standard (Reference) Methods were used to obtain all test results. Table I summarizes the methodology used to conduct the emission testing. Appendix B provides a summary of the lumber moisture loss procedure used, and Appendices C and D describe the application of the methodology on each kiln type.

Table I. Sampling and Analysis Methodology

Parameter	Test Method[a]	Remarks
Lumber Moisture Loss	USDA	Gravimetric determination
Total Hydrocarbon	25A	Continuous sample with dilution
Methanol	308	No silica gel tube analysis
Formaldehyde	NCASI	Acetyl-acetone method
Carbon dioxide/oxygen	3A	Continuous sample
Moisture	4	From methanol/formaldehyde sample

[a]EPA Reference Method unless otherwise noted.

RESULTS AND DISCUSSION

VOC Measurements

Tables II and III summarize the results from each mill. Emission factors for all compounds were based on nominal lumber dimensions, i.e., assuming full thickness and width of the lumber. The mean total VOC emission rates (1.9 and 2.5 lb/MMbf) compare favorably with each other and with other data reported in the open literature. The moisture loss data (0.95 and 0.76 kg/bf) do not compare as well. The following subsection discusses the moisture loss data.

Table II. Emission Testing Results - Steam-Heated Kiln

Kiln No. 4	Cycle Tested[a]			
	2	3	4	Mean
Date Began, January 1998	20	21	22	----
Volume of Lumber Dried, Mbf (Nominal)	143	146	143	----
Lumber Dimension Mix				
2x6, % of total	18	46	59	----
2x8, % of total	36	30	24	----
2x10, % of total	25	17	17	----
2x12, % of total	22	9	0	----
Lumber Moisture Loss, kg/bf	1.16	0.88	0.80	0.95
Total Hydrocarbon Emission Factor, lb as C/Mbf	1.88	1.64	2.11	1.88
Formaldehyde Emission Factor, lb/Mbf	0.029	0.024	0.022	0.025
Methanol Emission Factor, lb/Mbf	0.28	0.23	0.26	0.26

[a]Cycle 1 testing was aborted due to analytical instrumental malfunction.

Table III. Emission Testing Results - Direct-Fired Kiln

Kiln No. 4	Cycle Tested			
	1	2	3	Mean
Date Began, January 1998	26	27	28	----
Volume of Lumber Dried, Mbf (Nominal)	126	127	122	----
Lumber Dimension Mix				
2x6, % of total	78	72	59	----
2x8, % of total	22	28	41	----
Lumber Moisture Loss, kg/bf	0.75	0.84	0.70	0.76
Total Hydrocarbon Emission Factor, lb as C/Mbf	2.59	2.82	2.07	2.49

Moisture Loss Measurements

The moisture lost by the lumber varied significantly from cycle-to-cycle and mill-to-mill. Figure 2 summarizes the results. For each cycle, 16 to 24 samples of lumber (two per kiln car) were cut and weighed before and after drying in the kiln. The lumber moisture loss measurements are seemingly one of the greatest variables of measurement process.

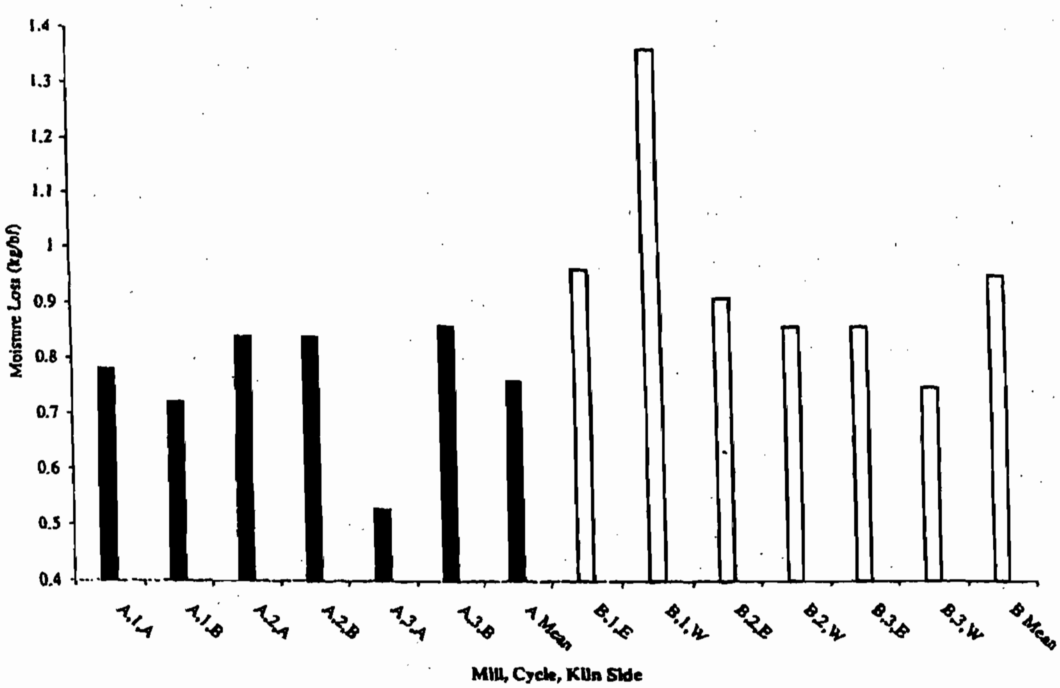

Figure 2. Summary of Lumber Moisture Loss during Drying

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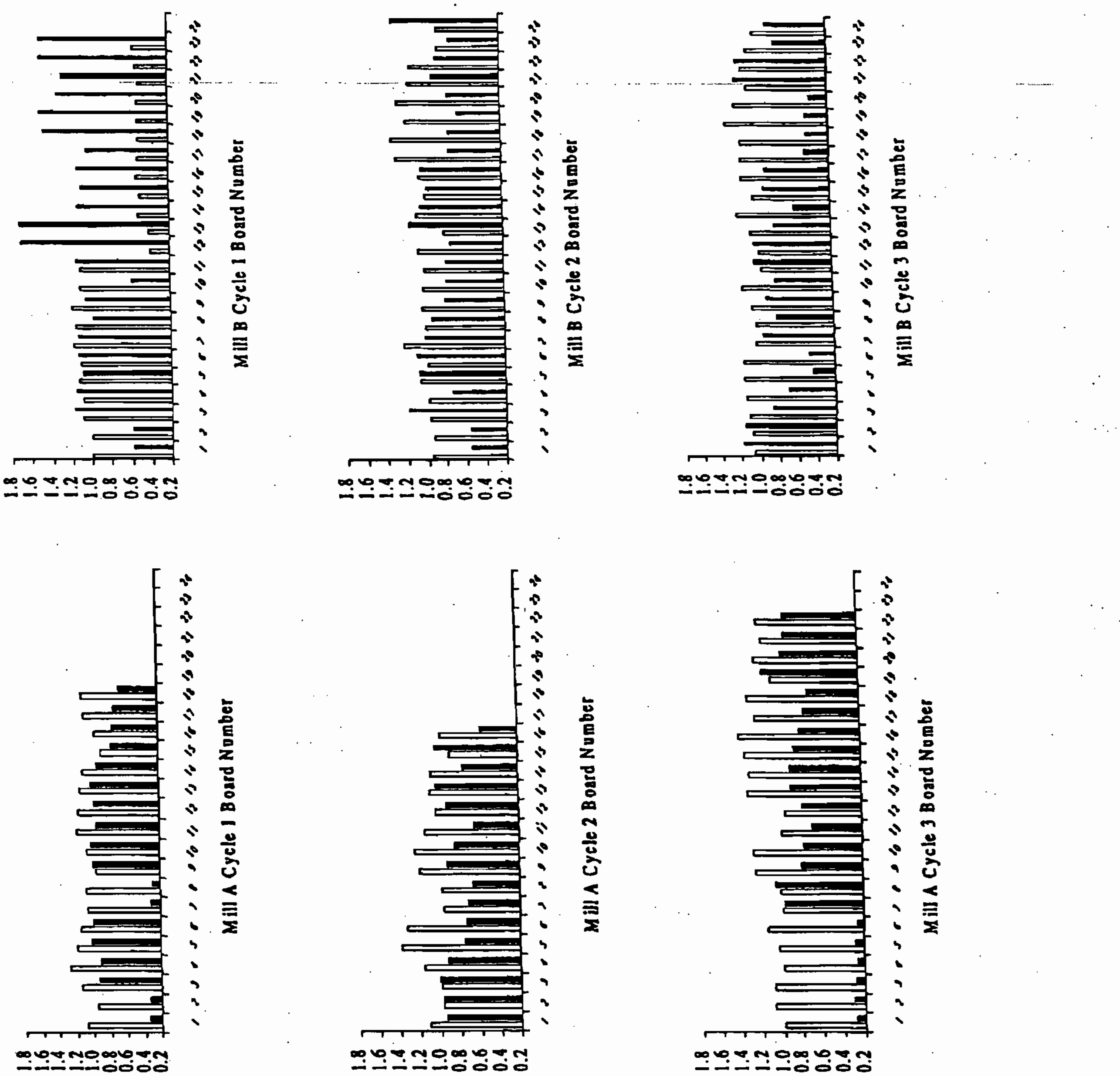
The Relative Standard Deviation (RSD) of the measurements was calculated from all samples at each mill. The RSD of the data from Mills A and B was 34 and 31 percent, respectively. The magnitude of the RSD indicates that the mean value for each cycle at each mill is within one standard deviation of the mill mean.

Significant variation was noted in the lumber moisture loss measurements. Considerable variability in results was noted from board-to-board. The initial weights varied depending on the board density and the number of knots in each sample. The final moisture loss values also probably varied with the number of knots in the sample. Figure 3 highlights the variability of the individual measurements.



Black bar represents moisture (in kg/bf) lost during drying and open bar represents board density (in kg/bf) after drying.

Figure 3. Variability in Individual Moisture Loss Measurements

Carbon Mass Balance Correlation

A carbon mass balance (CMB) calculation for the direct-fired kiln was compared to the results obtained by the WMB approach. This was done by calculating the volume of CO_2 generated from combustion of the wood shavings and propane and then relating the THC concentration to the measured CO_2 concentration. Table IV summarizes the results of this approach.

Table IV. Carbon Mass Balance Comparison for Direct-Fired Kiln

	Cycle 1	Cycle 2	Cycle 3	Mean
Mean O_2 Conc, %	12.8	12.0	12.7	12.5
Mean CO_2 Conc, %	8.1	7.9	8.7	8.2
Mean THC Conc, ppm dry	590	630	542	587
Heat Input, MMBtu/Cycle	383	387	352	374
THC Emission Factor, lb/Mbf				
- CMB Approach	1.49	1.51	1.11	1.37
- F_c-factor Approach	1.27	1.39	1.03	1.23
- F_d-factor Approach	1.34	1.30	1.15	1.26

The THC emission factor calculated from the CMB approach, the carbon F-factor (F_c), and the oxygen F-factor (F_d) show good agreement cycle-to-cycle. The heat input value used to calculate the two F-factor emission factors do not include the heat from propane (which was insignificant).

The THC emission factor calculated using the CMB approach (1.37 lb/Mbf) is lower than that calculated using the WMB approach (2.49 lb/Mbf). The variation may be due to the variation in lumber moisture loss measurements and the gas moisture content measurements.

CONCLUSIONS AND RECOMMENDATIONS

The water mass balance approach to measuring lumber kiln emissions is a cost-effective method to apply. The results are comparable to those obtained by other methods as reported in the literature and by direct comparison.

The greatest variable in the method is in the measurement of moisture lost from the lumber during the drying process. The best way to determine the moisture loss would be to directly weigh a representative number of kiln cars. Cutting samples from the representative and weighing those samples before and after drying produce variability due to the density of the particular sample.

ACKNOWLEDGEMENTS

The authors wish to thank the following individuals for their contribution to the success of the project.

- Mr. David Elam of Roy F. Weston, Inc. for his development of the water mass balance concept for measuring lumber drying kiln emissions.
- Dr. David Word of NCASI for his critique of the WMB approach and his review of the test plan.
- Mr. Scott Slocum of Roy F. Weston, Inc. for his management of the field testing project.
- Mr. Rodney Padgett of Roy F. Weston, Inc. for his on-site leadership and coordination of the field test team.
- Mr. Charles Woodley of Roy F. Weston, Inc. for his assistance with calculations and presentation of the data.

APPENDICES

A Calculation Procedures

B Lumber Water Loss Measurements

C Steam-Heated Lumber Kiln Test Program

D Direct-Fired Lumber Kiln Test Program

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APPENDIX A - CALCULATION PROCEDURES

WATER MASS BALANCE (WMB)

The basic WMB equation below was used as the basis for all calculations. (Refer to Figure 1 in the paper text for a schematic drawing of a lumber drying kiln.)

$$L_I + A_I + D_I + C_I + F_I = L_O + W_O + V_O \qquad (1)$$

Where:
- L_I = mass of water introduced with the lumber
- A_I = mass of water introduced with ambient air into the kiln (for combustion air and in-leakage)
- D_I = mass of water introduced with dilution air (negligible)
- C_I = mass of water generated from combustion of fuel (natural gas plus wood)
- F_I = mass of water introduced with the fuel (wood chips)
- L_O = mass of water exiting the kiln in the lumber (after drying)
- W_O = mass of water that condenses during initial heating that runs out of the kiln
- V_O = mass of water leaving the kiln as vapor through the roof vents and as fugitive emissions

Rearranging equation (1),

$$V_O = (L_I - L_O) + A_I + D_I + C_I + F_I - W_O \qquad (2)$$

By calculating all terms in the right hand side of the equation, we know the total mass of water being vented from the kiln (V_O). The following paragraphs outline the calculations.

The water loss from the lumber during drying ($L_I - L_O$) was measured as described in Appendix B. Six to twelve representative boards were cut to provide kiln samples for each drying. The moisture loss of the kiln samples represented the entire kiln charge.

The water introduced with ambient air (A_I and D_I) was calculated from the amount of ambient air introduced into the kiln, the ambient temperature, and the relative humidity. For the steam-fired kiln, this value was assumed to be zero. For the direct-fired kiln, the water mass (A_I) was calculated from the fraction of dry air calculated in the reheat gas. This air volume was drawn through the burner as combustion air. The amount of dilution air (D_I) was assumed to be zero.

The mass of water generated from combustion (C_I) was calculated from the stoichiometry of combustion. This value was equal to zero for the steam-heated kiln. For the direct-fired kiln, the carbon, hydrogen, and oxygen contents of the wood shavings were measured. The amount of water generated from the combustion was calculated based on the carbon and hydrogen content and the mass of shavings burned during the drying cycle. The volume of natural gas burned was used to calculate the moisture generated using the stoichiometric relationship.

$$CH_4 + 2\,O_2 \longrightarrow CO_2 + 2\,H_2O$$

The mass of water introduced with the fuel (F_I) was calculated from the measured moisture content of the shavings and the mass of wood shavings burned during the cycle. This mass of water was small when compared to other water inputs.

The water which condensed during the cycle (W_O) was collected and weighed. This amount was insignificant when compared to the total volume of water lost from the kiln to the atmosphere.

By measuring or calculating all terms on the right hand side of equation (2), we now know the total mass of water vented from the kiln during the drying cycle (V_O). The moisture content (BWS) of this gas was measured hourly to calculate the total volume of gas (V_I) and the volume of dry air (V_O) during the kiln cycle. The mass of water emitted from the kiln during the drying cycle (V_O) was converted to a volume of water at standard temperature and pressure (20 °C and 760 mm Hg) by using the molar volume of water at the temperature (18 kg of water = 24.0 m^3). Therefore, the volume of water (V_W) can be calculated by equation (3).

$$V_W = V_O \times 1.33 \text{ m}^3 \tag{3}$$

The moisture content of the vent gas (BWS) was measured hourly during each drying cycle. Therefore, the total gas volume (V_T) was calculated from the definition of moisture content in equation (4)

$$\text{BWS} = \frac{V_W}{V_T} \tag{4}$$

where V_T is the sum of the volume of dry air (V_A) and the volume of water vapor (V_W).

The mass of any parameter measured on a total volume or a dry gas volume can be calculated. If all concentrations are measured on a "wet" or total volume basis, one can calculate the total mass of pollutant emitted. That is

$$\text{C fraction} \times V_T \text{ in m}^3 \times \frac{\text{new in kg}}{\text{mole volume in m}^3} = \text{mass pollutant in kg} \tag{5}$$

CARBON MASS BALANCE (CMB)

A carbon mass balance (CMB) was performed on the direct-fired kiln as a cross check the water mass balance calculations. The total amount of CO_2 generated from the combustion of wood chips and natural gas was calculated from combustion stoichiometry. The total amount of carbon burned (to produce CO_2) was measured from the carbon content of the shavings and the total mass of shavings burned. The volume of natural gas burned was used to calculate the CO_2 generated from combustion.

The CO_2 vented from the kiln was monitored instrumentally throughout the kiln drying cycle. The mean CO_2 concentration measured in the re-circulation duct was used to calculate the amount of dilution air. (The CO_2 concentration in the recycle duct is assumed to be the same as that vented from the kiln). Results were reported hourly.

The total volume of CO_2 generated during the cycle was calculated from the stoichiometric relationship

$$C + O_2 \longrightarrow CO_2 \qquad \text{(for wood)}$$

and

$$CH_4 + 2\,O_2 \longrightarrow CO_2 + 2\,H_2O \qquad \text{(for natural gas)}$$

such that 3.67 kg of CO_2 was produced from each kg of carbon burned. The volume of CO_2 was then calculated using the ideal gas laws (44 kg of CO_2 equals 24.0 m^3 of CO_2).

The mean measured CO_2 concentration was used to calculate the total amount of dilution air added to the kiln. The measured pollutant concentrations was then correlated to the CO_2 concentration to back-calculate the total amount of each compound emitted.

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APPENDIX B - LUMBER WATER LOSS MEASUREMENTS

Accurate measurement of the amount of moisture lost from the lumber is critical to the WMB calculation. Ideally, one would like to measure the weight lost from an entire charge (or at least weigh a representative number of kiln cars before and after drying). For this test program, adequate scale facilities were not available to weigh a kiln car, and it was logistically impossible to access the kiln cars after loading to weigh them.

Therefore, an alternate procedure was used to weigh representative lumber samples before and after drying. Water lost from the lumber during drying was measured and calculated as described in the "The Dry Kiln Operator's Manual", Edited by William T. Simpson, U.S. Department of Agriculture, Forest Service, Madison, WS, Revised 1991. Chapter 6 of the reference above describes kiln samples used to determine moisture content (and loss) during drying. The following paragraphs summarize the procedure to be used during the kiln test program.

Kiln samples are representative samples used to monitor the drying cycle. Selection of representative samples and representative placements of the kiln samples are necessary to the validity of the results and the representativeness of moisture lost for the entire kiln charge. Samples must be chosen that represent the lumber and its variability. Samples must be spread throughout the kiln at various heights and locations such that the samples are subject to the same airflow as the lumber. Because only Southern Yellow Pine was dried, species variation was not significant. Moisture content and board width varied. All material was nominally 2" thick. Two boards (of representative width) were selected from each kiln car before loading into the kiln. Two kiln samples each of 24" length were cut from each board using a carbide tip blade.

The ends of the board were coated with an asphalt-based coating product to minimize moisture loss through the sample ends. The boards were weighed on a scale accurate to 1% at the weight of the board. The weight per volume (kg/board foot) was calculated for each of the samples.

Each kiln charge normally holds seven kiln cars. A total of 6 to 12 boards were selected (one from each kiln car). Therefore, a total of 18 to 24 samples per drying cycle were used to measure the moisture loss. Each sample was uniquely marked to track its location (and identity) during the drying cycle.

The kiln samples were dispersed throughout the kiln cars. The gaps at the ends of the lumber bundles served as holding slots for the samples. The kiln samples were subjected to the same drying conditions as the lumber in the kiln.

Initially, at the end of the drying cycle, each board was removed and a 6" section was cut from each end to leave a 12" section to be weighed after drying. The purpose for these extra cuts was to ensure that the ends of the kiln samples were not being dried more than the center. After weighing several whole samples (24") and comparing the results to the cut sample (12"), it became evident that the results were the same. The cutting practice was discontinued in favor of weighing the whole sample.

The weight per volume was recalculated to determine the weight loss of each kiln sample using the equation:

$$\text{initial mass/bf} - \text{final mass/bf} = \text{water loss/bf}$$

The mean weight loss for all kiln samples was used to determine the total mass of water lost during drying. The mean weight loss per volume was multiplied by the total volume of the kiln charge (in board foot). Each kiln charge volume (in Mbf) was provided by kiln operations personnel.

APPENDIX C - STEAM-HEATED LUMBER KILN PROGRAM

SAMPLING PROCEDURES

Sampling was conducted inside the kiln only after the kiln reached operating temperature and conditions such that emissions are exhausting the vents. Three representative locations were sampled simultaneously using the sampling scheme shown in Figure C-1. The sample was split for analysis as shown. Heated (120 °C), Teflon sample lines were used to transport the sample gas. Sample gas was extracted by the No. 1 heated-head pump at the rate of 6 to 8 liters per minute.

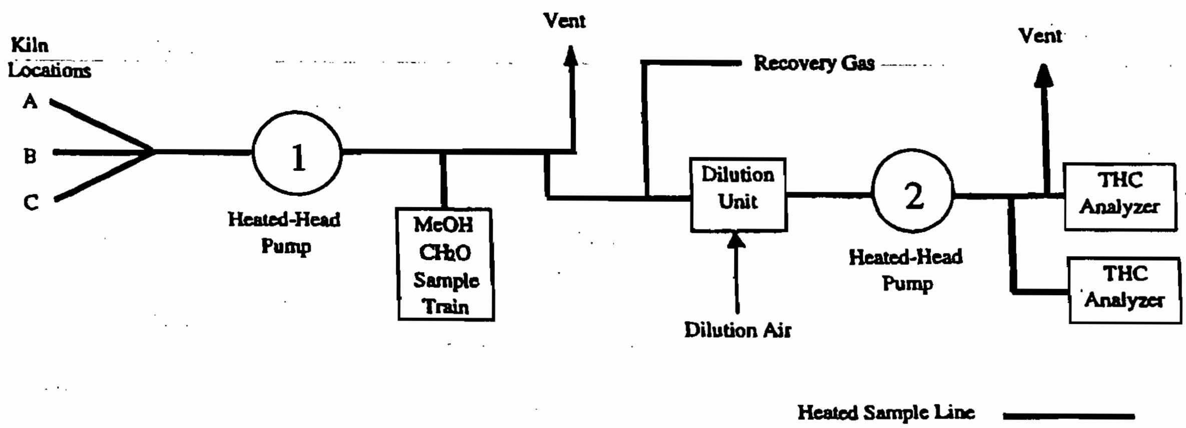

Figure C-1 Sampling Schematic

Total Hydrocarbons

Total hydrocarbon (THC) emission testing was conducted continuously over the entire drying cycle in accordance with the EPA Reference Method 25A. Two THC analyzers was used in parallel. The sample was diluted with zero-grade air to reduce the moisture content to less than 20% prior to introduction into the THC analyzer.

Certified mixtures of propane in air were used to calibrate the flame ionization analyzers. A pre-test calibration was performed prior to beginning the drying cycle. The instrument was off line for 30 minutes every four hours of the drying cycle for calibration and dilution checks. A post-test calibration was conducted at the conclusion of each drying cycle.

A constant dilution (approximately 1:3) was used to reduce the moisture content to less than 20 percent. Every three to four hours, a known concentration of propane in air (the recovery gas) was introduced upstream of the dilution unit to verify the dilution and calibration of the THC analyzer. The mean dilution ratio measured before and after a sampling period was used to calculate the measured results.

Before and after each cycle, a Tedlar bag with methanol in air was introduced at the probe tip (A, B, or C) to verify the integrity of the sampling system. The contents of the same bag were introduced at the inlet to THC analyzers. The most recent calculated dilution was used to correlate the results. The recovery of methanol through the sampling system was calculated to demonstrate sampling system integrity.

The concentration results (as ppmw carbon) were reported as one-hour averages. The mean result of all hourly averages (exclusive of the kiln heat-up period) was used to calculate the mass emission rate for total hydrocarbons.

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Methanol, Formaldehyde, and Moisture Content

A portion of the kiln gas was slip-steamed off the sampling system prior to the heated dilution system and passed through two midget impingers containing DI water and a silica gel sorbent tube (or impinger with silica gel) for methanol, formaldehyde, and moisture determination. One sample was collected every hour during the drying cycle as described by EPA Reference Method 308. (EPA Method 308 was modified to accommodate the use of a critical orifice in place of a dry gas meter). The moisture content of the sample was determined by weighing the impingers and silica gel tube before and after sampling. An aliquot of the impinger solution was analyzed for methanol and formaldehyde. The silica gel tube was not analyzed for methanol because NCASI has demonstrated effective capture by the two impingers.

MEASUREMENT PARAMETERS

Table C-1 summarizes the parameters monitored throughout each test cycle. Results from the measurement parameters were used to calculate emission rates for the compounds of concern.

Table C-1 Measurement Parameters for Steam-Heated Kiln

Measurement Parameter	Measurement Frequency	Report Frequency	Report Units	Notes
Kiln Charge (volume of lumber)	begin cycle	1/cycle	Mbf	– use kiln data
Kiln Temperatures (wet bulb/dry bulb)	2/hr	2/hr	°F	– use process instrumentation
Lumber Moisture Loss	begin/end cycle	1/cycle	kg/bf	– 2 bds/kiln car – 2 samples/bd
THC by M25A	1/min	hourly average	ppmC (wet)	– correct for mean dilution every 4 hrs – calibrate analyzer before and after cycle – begin when kiln vents
MeOH Moisture Formaldehyde	1/hr	1/hr	ppm (dry)	– use same train for all parameters – sample 40-45 min – begin when kiln vents

CALCULATIONS

Mass emissions of VOCs were calculated using the assumption that the volume of gas exiting the kiln corresponds to the amount of moisture generated as steam during the drying process. The amount of moisture released during the drying process was determined by weighting selected samples from the kiln charge before and after drying. The procedure for moisture determination of the lumber is provided in Appendix B. The difference in weights was assumed to correspond to water loss. The mass of water loss during drying was converted to gas volume at standard temperature and pressure. Multiplying the average measured concentrations of VOCs (on a wet basis) by the total volume of gas released during the drying yields a value that corresponds to the bass of VOCs released during the drying process. The mass of water that drains from the kiln during start-up was quantified for the entire drying cycle.

The kiln operator recorded relevant production data such that emission test results can be expressed in terms of lb VOC/MMbf. Production data included board feet per kiln charge, kiln operating temperatures, and relative humidity.

APPENDIX D - DIRECT-FIRED LUMBER KILN TEST PROGRAM

SAMPLING PROCEDURES

Samples were collected as described for the steam-fired kiln except that a single sample line was used to remove sample from the return air (reheat) duct. The assumption was that the reheat air is of the same concentration and moisture content as that exiting the kiln through the roof vents and as fugitive emissions.

Total Hydrocarbons

Sampling and analysis for total hydrocarbons (THC) were conducted as described for the steam-fired kiln. The THC concentration was measured during the entire kiln drying cycle because emissions take place throughout the entire cycle.

Methanol, Formaldehyde, and Moisture Content

Sampling and analysis for methanol, formaldehyde, and moisture content was performed as described for the steam-fired kiln. Samples were collected throughout the entire drying cycle.

Carbon Dioxide and Oxygen

Carbon dioxide and oxygen were measured continuously by EPA Reference Method 3A. A paramagnetic analyzer was used and calibrated at the same time as the THC analyzer. Results were summarized as hourly averages in tabular form. The CO_2 and O_2 data were used to perform a carbon balance on the kiln.

MEASUREMENTS PARAMETERS

Table D-1 summarizes the parameters to be monitored throughout the test. Results from the measurement parameters will be used to calculate emission rates for the compounds of concern.

CALCULATIONS

The same WMB approach was used as for the steam-fired kiln. Additional water was introduced into the kiln from combustion (C_l, A_l, and F_l). These values were added to the water vapor generated from drying. The VOC results as calculated by the WMB approach were used to compare to the carbon balance that was performed simultaneously.

The kiln operator recorded relevant production data such that emission test results can be expressed in terms of meaningful emission factors. Production data included board feet per kiln charge, kiln operating temperatures, and relative humidity.

The carbon balance was performed hourly throughout each of the three drying cycles. A single (composite) fuel analysis for the entire drying cycle was performed to determine the carbon content of the fuel (wood shavings). The amount of fuel (natural gas and wood shavings) added was monitored on an hourly basis to calculate the carbon input. Carbon dioxide was measured hourly to calculate hourly averages throughout the cycle. All VOC measurements were also performed hourly.

Table D-1 Measurement Parameters for Direct-Fired Kiln

Measurement Parameter	Measurement Frequency	Report Frequency	Report Units	Notes
Kiln Charge (volume of lumber)	begin cycle	1/cycle	Mbf	– use kiln data
Kiln Temperatures (wet bulb/dry bulb)	2/hr	2/hr	°F	– use process instrumentation
Natural Gas Consumption	1/hr	1/hr	cfh	– use process instrumentation
Wood Shavings Burned	1/hr	1/hr	kg/hr	– use calibrated screw feed rate
Lumber Moisture Loss	begin/end cycle	1/cycle	kg/bf	– 2 bds/kiln car – 2 samples/bd
CO_2 and O_2	1/min	hourly average	xx.x%	– report dry basis – begin sampling when kiln heat begins
THC by M25A	1/min	hourly average	ppmC (wet)	– correct for dilution every 4 hrs – calibrate analyzer before and after cycle – begin sampling when kiln heat begins
MeOH Moisture Formaldehyde	1/hr	1/hr	ppm (dry)	– use same train for all – sample 40-45 min – begin sampling when kiln heat begins
Wood Shavings Sample – heat – hydrogen – carbon – moisture	1/hr	1/cycle	Btu/lb xx.x%	– heat in Btu/lb – all other to 0.1% – composite all samples for one analysis

ATTACHMENT D

EMISSION RATE CALCULATIONS

EMISSION INVENTORY WORKSHEET

Champion International - McDavid Sawmill — **K1 - K3**

EMISSION SOURCE TYPE

INDIRECT-FIRED KILNS	Figure: 2-2

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Kilns 1 - 3
Emission Control Method(s)/ID No.(s):	None
Emission Point ID:	K1 - K3

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Production Rate (MBF/hr) x Pollutant Emission Factor (lb/MBF)

Emission (ton/yr) = Production Rate (MBF/hr) x Pollutant Emission Factor (lb/MBF) x Operating Period (hrs/yr) x (1 ton/ 2,000 lb)

Source: ECT, 2000.

INPUT DATA AND EMISSIONS CALCULATIONS

Operating Hours:	24 Hrs/Day	7 Days/Wk	8,760 Hrs/Yr
Production Rates:	25.68 MBF/hr	225,000 MBF/yr	

Criteria Pollutant	Pollutant Emission Factor (lb/MBF)	Potential Emission Rates (lb/hr)	(tpy)
PM/PM_{10}	0.037	0.95	4.2
VOC (Hourly)	3.32	85.3	N/A
VOC (Annual)	2.84	72.9	319.5
Methanol	0.28	7.19	31.5
Formaldehyde	0.025	0.642	2.81

SOURCES OF INPUT DATA

Parameter	Data Source
Operating Hours	Champion, 1999.
Production Rates	Champion, 1999.
Emission Factor; VOC, PM/PM_{10}	NCASI, 1999.
Emission Factor; Methanol	TAPPI International Environmental Conference, 1999.
Emission Factor; Formaldehyde	TAPPI International Environmental Conference, 1999.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	4/00
Evaluated by:	T. Davis	**Date:**	4/00
Data Entered by:	T. Davis	**Date:**	4/00

ATTACHMENT E

CONTROL DEVICE VENDOR INFORMATION

PHONE NO. : 6306819605 May. 11 1999 03:02PM P1

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ay 11, 1999

SENT VIA FAX

Ar. Terry Kassabaum
hampion
.O. Box 200
Camden, TX 75934

E: Budget Price Proposal A80-796, R1 for Lumber kiln exhaust

Dear Mr. Kassabaum:

Thank you for the opportunity to provide a budgetary quote for your lumber kiln exhausts. The following proposal provides a complete equipment proposal for an Eisenmann Valveless Regenerative Thermal Oxidizer system. Key advantages of the VRTO include:

1. Only one moving part and a system with two failure points,
2. Very low maintenance requirements leading to high uptime reliability,
3. High destruction efficiency with constant purge,
4. Small footprint with treatment provided in a single vessel.

Mr. Kassabaum if you have any questions before your meeting tomorrow you can reach Charles Reich at 281.852.7206. If you have any questions or comments that Charles is unable to answer please do not hesitate to contact me at 630.681.9604 or call Eisenmann direct for information.

Thank you for the opportunity to be of service to Champion-Camden.

Sincerely,

Howard Hohl
Sales Manager
Eisenmann Corporation

Cc: Mark West EN, Charles Reich, The Reich Co.

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BUDGET PROPOSAL NO. A80-796, REVISION 1

FOR

VALVELESS
REGENERATIVE THERMAL OXIDATION SYSTEM

CHAMPION
CAMDEN, TX

MAY 11, 1999

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RTO SYSTEM TECHNICAL DATA

haust Flow Rate	:	3 vessels at 46,000 acfm each
olvent Loading	:	85.3 lb./hr average each
haust Inlet Temperature	:	150 to 180°F range
ombustion Temperature	:	1500°F min.
ean Air Outlet Temperature	:	120°F above inlet
ystem Thermal Efficiency	:	93%
urner Installed	:	3 at 9.0 mmbtu/hr each
urner Operating	:	3 at 6.0 mmbtu/hr
an Motor Operating (at max. flow nd includes -2.0" duct drop)	:	3 at 254 bhp
an Motor Installed	:	3 at 300 hp
oundation Size	:	100 X 28 ft. (L X W)
Equipment Weight	:	100 tons each
Vessel Diameter	:	Approx. 25 ft.

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:SIGN DESCRIPTION

exhaust flow from the process is directed to a central duct header that is located at the inlet of the ıatement system fan. After exiting the abatement system fan, the exhaust air is propelled to the veless Regenerative Thermal Oxidizer (VRTO).

nce within the VRTO unit, the exhaust is directed by the rotating distributor to the appropriate sections of ıt ceramic heat exchanger media. The exhaust will then pass vertically upward through this media taking the heat and raising the air temperature close to the combustion temperature.

ı the combustion area, the burner will provide additional energy to reach the combustion temperature of proximately 1500°F. At this temperature, the solvents are oxidized and purified. Then the clean hot air sses down through separate sections of the exchanger media returning its heat back to the system. This ir exits the VRTO at approximately 120°F above the inlet exhaust temperature depending on the pplication.

third section of the VRTO between the effluent and clean sides is utilized for purging. This is ccomplished by taking clean air from the VRTO combustion area it through the purge zone and circulating it into the fan inlet. The EISENMANN rotating distributor continuously turns shifting which ection of the media is in the upward, downward or purge cycles. In this manner, a constant thermal fficiency and pressure drop is maintained.

mpion
amden, TX

Budget Proposal A80-796, R1
May 11, 1999

COPE OF DELIVERY

EISENMANN:

hree (3) Valveless Regenerative Thermal Oxidizers - complete with burner, gas train, mbustion air blower, purge system, system finish paint, ceramic media, rotary xhaust distributor, platform & ladder, insulation as described in technical data.

hree (3) 300 H.P. Process Blower with TEFC Motor, Direct Drive and OSHA Guards.

Three (3) Blower Motor with VFD (Variable Frequency Drive).

nterconnecting ductwork between Eisenmann supplied components

lexible connectors to allow for thermal expansion as required

Insulation and cladding to maintain OSHA standards

One Turnkey control panel with Allen Bradley PLC and graphic interface

Optional on-line, clean bake out for each vessel

Field services, start-up and operator training

Freight from the Factory to Camden, TX

By Others:

Concrete pad

Utility drops to system tie-in points

Duct from the process equipment to the system inlet

All permits as required to meet local requirements

Mechanical and electrical installation

Clean Air stack

Inlet air filter, if necessary

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ADVANTAGES OVER OTHER RTO SYSTEMS

- EISENMANN's design is the only damperless, single vessel unit proven in the market. A rotating distributor shifts the exhaust through the heat exchanger eliminating the pressure shocks associated with dampers.
- The high maintenance associated with damper type RTOs is eliminated. The Eisenmann system replaces the pneumatics, actuators, dampers, linkage and lubricants with a simple rotating distributor that is driven by one exterior mounted 0.75 hp motor and gearbox.
- A simpler design with fewer moving parts results in higher uptime reliability.
- The damperless design enables the fan to be located at the inlet to the oxidizer which reduces the cost of the fan and lowers the motor sizing by 15%.

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UDGETARY PRICING

udgetary pricing is for the Regenerative Thermal Oxidation System as described in this document.

Regenerative Thermal Oxidizer
Freight to site is included
Full package of start up services and operator training classes is included

ase Price

umber Kiln Exhaust
udget for equipment, freight, plus field services ....$ 1,900,000.00

ptional on-line, clean bake-out feature ....$ 150,000.00

chedule

ime to delivery	:	22 weeks
nstallation	:	6 weeks
tart up and Testing	:	2 weeks
otal Duration	:	30 weeks

EISENMANN CORPORATION

Howard Hohl
Sales Manager
Clean Air Technology

GEOENERGY
International Corporation

101 North Virginia Street
Suite 210
Crystal Lake, IL 60014 USA
(815) 477-9173
FAX (815) 477-9174

June 7,1999

Champion
PO Box 200
Camden, TX 75941

Attn: Mr. Terry Kassabaum

Subject: VOC Emission Control Equipment

Reference: Geoenergy Proposal Number 9999-05-259-RCO

Dear Mr. Kassabaum:

Geoenergy International Corporation is pleased to provide you with our revised budgetary proposal as referenced above. This revision is for a GeoTherm® Regenerative Catalytic Oxidizer (RCO) system to control VOC emissions from your wood drying kilns in Camden, TX.

The RCO system is the same design as the RTO with the addition of catalyst as the top layer of heat exchange media. The design will allow the unit to operate under a full range of combustion chamber temperature (800-1500°F). This is important for the long-term operation of the RCO. As the catalyst degrades the combustion chamber temperature can be increased to maintain destruction efficiency, and should the removal and/or replacement become necessary the system can then operate as an RTO with a combustion chamber temperature of 1500°F.

Based on your process requirements we have designed the RCO with 95% thermal efficiency to minimized fuel consumption during normal operation.

The following is a brief summary of our recommendations for a GeoTherm RCO system to treat the gas stream that you have described. Included are a description of the recommended scope-of-supply, the estimated operating costs, a suggested project schedule and a budget price estimate.

DESIGN CONDITIONS

Our proposal and design is based on preliminary information supplied for this project as follows:

GeoTherm Design Volume (ACFM)	138,000
Oxidizer Thermal Efficiency (%)	95
Oxidation Temperature (°F)	800
Process Exhaust Temperature (°F)	205
Moisture content (% by volume)	56
VOC Loading (#/hr)	85
VOC Gross Heating Value (BTU/#)	12,500
VOC Destruction Requirements (%)	95

Note: The process exhaust air stream is assumed not to contain acids, caustic or halogenated hydrocarbons.

SYSTEM OPERATING COST

RCO SYSTEM

	THREE SYSTEMS @ 46,000 ACFM ea.
Process Exhaust Volume (ACFM)	46,000/unit
Oxidizer Inlet Temperature (°F)	205°F
Oxidation Temperature (°F)	800°F
Oxidizer Outlet Temperature (°F)	235°F
Heat Load Requirement @ 28.4 #/hr VOC	1,203,000 BTU/hr
Heat Load Requirement @ 0 #/hr VOC	1,611,000 BTU/hr
Oxidizer Force Draft Fan (Bhp)	134
Power Requirement (kW)	110
Fuel Cost @ $3.50/MMBTU (@ 28.4#/hr)	$4.21/hr
Fuel Cost @ $3.50/MMBTU (@ 0 #/hr)	$5.64/hr
Power Cost @ $0.037/kW-hr	$4.07/hr

SCOPE OF SUPPLY

	Included	Excluded	N/A	Option
• RCO housing including transition, recovery and combustion chambers	X			
• Oxidizer ceramic blanket internal insulation	X			
• Heat recovery media for 95% T.E.	X			
• Catalyst	X			
• Burner system with fuel train	X			
• Two-way fast action poppet valves with pneumatic actuators	X			
• Forced draft supply fan and motor	X			
• Variable frequency drive	X			
• Inlet and outlet manifold	X			
• External manifold insulation		X		
• Main exhaust stack 50'-0" high	X			
• Burner access platform and ladder	X			
• Main control panel pre-wired and shop tested (A-B PLC supplied)	X			
• All motor starters	X			
• Local disconnects		X		
• Process exhaust ductwork to RCO		X		
• Foundations		X		
• Mechanical and electrical installation	X			
• Start-up and operator training	X			
• Freight to job site	X			
• O&M manuals (3)	X			
• Compliance testing		X		

BUDGETARY PRICING

Geoenergy will supply one (1) 46,000 ACFM GeoTherm Regenerative Catalytic Oxidizer System per the attached scope of supply for the budgetary price of..............**$685,000.00/system**

Cost for replacement catalyst for the RCO systems..............................**$90,000.00/system**

PROPOSAL SCHEDULE

The following is Geoenergy's standard schedule and may be modified to meet specific project requirements.

TASK	# OF WEEKS	WEEK(s) AFTER P.O.
Contract Review	1	1
Design Engineering	3	4
Engineering Approval	1	5
Fabrication and Equipment Procurement	12-16	14-18
Deliver	1	15-19
Installation	3	18-22
Start-Up	1	19-23

We hope you find our offering to be of interest and look forward to supplying you with a more detailed proposal once your specific design criteria has been established. In the meantime, if you should have any questions regarding this proposal or require additional information please call me at (815) 477-9173.

Best regards,

Ray Elsman

Ray Elsman
Manager of Applications Engineering

CC: Ronald Lansing, Geoenergy International Corporation

ATTACHMENT F

RESPONSE FROM MIDWEST RESEARCH INSTITUTE

ATTACHMENT F

RESPONSE FROM MIDWEST RESEARCH INSTITUTE

khanks@mriresearch.org on 04/17/2000 10:00:37 AM
Please respond to <khanks@mriresearch.org>

To: <fergup@champint.com>
cc:
Subject: Lumber kiln controls

Phil,

You asked if we have learned of any lumber kilns that are operating with air pollution controls through our information gathering efforts to support the plywood and composite wood products NESHAP. We have looked at lumber kilns from the standpoint that lumber kilns co-located with plywood or composite wood products facilities could contribute to the facility-wide emissions, and therefore affect whether a facility is considered as a major or area source for HAPs. We conducted an extensive survey of the plywood and composite wood products industry in 1998 in which we asked for details about co-located lumber kilns. We sent surveys to nearly 500 wood products plants and collected information on at least 330 lumber kilns. None of the kilns had air pollution controls. In addition to the survey, we searched the RACT/BACT/LAER Clearinghouse and did not find any controlled lumber kilns listed. Thus, we do not know of lumber kilns that operate with air pollution controls.

Katie Hanks
Midwest Research Institute
5520 Dillard Road, Suite 100
Cary, NC 27511
(919) 851-8181, Ext. 5175
(919) 851-3232 (fax)

Z 031 391 942

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to Dave Stevens	
Street & Number Champion	
Post Office, State, & ZIP Code McDavid Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 033060-001-AC PSO-F1-271	4-13-00

PS Form **3800**, April 1995

SENDER: *COMPLETE THIS SECTION*

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:
Dave Stevens, Mgr
Champion Int'l Corp
PO Box 3537
McDavid, Fl
32568

COMPLETE THIS SECTION ON DELIVERY

A. Received by *(Please Print Clearly)*

B. Date of Delivery

C. Signature
X [signature] ☐ Agent ☐ Addressee

D. Is delivery address different from item 1? ☐ Yes
If YES, enter delivery address below: ☐ No

3. Service Type
☒ Certified Mail ☐ Express Mail
☐ Registered ☐ Return Receipt for Merchandise
☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Copy from service label)* Z 031 391 942

PS Form 3811, July 1999 Domestic Return Receipt 102595-99-M-1789

Z 333 618 139

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail *(See reverse)*

Sent to Dave Stevens	
Street & Number Champion	
Post Office, State, & ZIP Code McDavid Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 9-10-99	

0330260-001-AC
PSD-F1-271

PS Form **3800**, April 1995

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Dave Stevens, Mgr. of Special Products
Champion Int'l Corp.
PO Box 3537
McDavid, Fl 32568

4a. Article Number
Z 333 618 139

4b. Service Type
☐ Registered ☑ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
9/14/99

5. Received By: *(Print Name)*

8. Addressee's Address *(Only if requested and fee is paid)*

6. Signature: *(Addressee or Agent)*
X J. Melinda Johnson

PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Thank you for using Return Receipt Service.

Pensacola News Journal

RECEIVED
AUG 16 1999
BUREAU OF AIR REGULATION

PUBLISHED DAILY

Pensacola, Escambia County, Florida

STATE OF FLORIDA
County of Escambia

Before the undersigned authority personally appeared Kay Godwin who is personally known to me and who on oath says that he/she is a representative of The Pensacola News Journal, a daily newspaper published at Pensacola in Escambia County, Florida; that the attached copy of advertisement, being a legal in the matter of Public Notice Of Intent ______ in the ______ Court, was published in said newspaper in the issues of August 5, 1999

Affiant further says that the said Pensacola News Journal is a newspaper published at Pensacola, in said Escambia County, Florida, and that the said newspaper has heretofore been continuously published in said Escambia County, Florida each day and has been entered as second class mail matter at the post office in Pensacola, in said Escambia County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he/she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Sworn to and subscribed before me this 5th day of Aug A.D., 19 99

Bereth Ferguson
Notary Public

CC: J. Kahn
NWD
NPS
EPA

BERETH FERGUSON
"Notary Public-State of FL"
My comm. expires: Oct. 10,2001
Comm. No. CC667980

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT
STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEP File No. 0330260-001-AC, PSD-FL-271
Champion International Corporation
McDavid Sawmill
Escambia County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to Champion International Corporation, for its proposed McDavid Sawmill to be located at US Highway 29, Pine Barren, Escambia County. The permit is to allow construction of a lumber sawmill with a capacity to produce up to 225 million board feet per year of lumber. The applicant's mailing address is: Champion International Corporation, 117 Pace Parkway, Cantonment, Florida 32533. A Best Available Control Technology (BACT) determination was required for particulate matter and VOC pursuant to Rule 62-212.400, F.A.C. and 40 CFR 52.21, Prevention of Significant Deterioration (PSD).

The lumber mill will have two natural gas fired boilers that will provide steam to three lumber drying kilns, a planermill to plane and trim dried lumber, and fugitive emissions.

Total emissions of pollutants, including quantifiable fugitive PM emissions shall not exceed the annual emission rates in tons per year: PM, 31.2; PM_{10}, 17.9: SO_2, 0.3; NOx, 39.0; VOC, 326; and CO, 70.2.

An air quality impact analysis was conducted for PM_{10}. Emissions from the facility will not significantly contribute to or cause a violation of any state or federal ambient air quality standards or PSD increments. The maximum predicted PSD Class II PM_{10} increment consumed by all sources in the area, including this project, will be as follows:

Increment Consumed ($\mu g/m^3$)	Allowable Increment ($\mu g/m^3$)	% Increment Consumed
24-hour: 3	17	18
Annual: 19	30	63

The Department will issue the Final permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments and requests for public meetings concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments and requests for public meetings should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Satutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone phone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by rule 28-106.301.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Protection
Bureau of Air Regulation
Suite 4, 111 S. Magnolia Drive
Tallahassee, Florida 32301
Telephone: 850/488-0114
Fax: 850/922-6979

Dept. of Environmental Protection
Northwest District
160 Government Center
Pensacola, Florida 32501-5794
Telephone: 904/444-8300

The complete project file includes the application, technical evaluations, Draft permit, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, New Source Review Section, or the Department's reviewing engineer for this project, Joseph Kahn, P.E., at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 850/488-0114, for additional information.

Legal No. 57759 IT

August 5, 1999

P 263 585 237

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail *(See reverse)*

Sent to Mr. Dave Stevens	
Street & Number 117 Pace Parkway	
Post Office, State, & ZIP Code Cantonment, Florida 32533	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 8/2/99	

DEP File No.0330260-001-AC, PSD-FL-271

McDavid Sawmill

PS Form **3800**, April 1995

Is your RETURN ADDRESS completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. Dave Stevens
Manager of Special Products,
Forest Products
Champion International Corporation
117 Pace Parkway
Cantonment, Florida 32533

4a. Article Number
P 263 585 237

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
8/3/99

5. Received By: *(Print Name)*
PAT DIXON

6. Signature: *(Addressee*
X

8. Addressee's Address *(Only if requested and fee is paid)*

PS Form **3811**, De

...eceipt

Thank you for using Return Receipt Service.

Table 5-12. RBLC PM/PM_{10} Summary - Natural Gas-Fired Boilers

RBLCID	Facility Name	City	Permit Dates Issue	Permit Dates Last Update	Process Description	Throughput Rates	Emission Limits	Control Description	BASIS
AL-0065	BOISE CASCADE CORPORATION	JACKSON	4/1/92	3/24/95	BOILER, POWER, NAT GAS FIRED, #3	343.4 MMBTU/HR	1.640 LB/HR	NOT DESIGNED	BACT-PSD
AL-0093	COURTAULDS FIBERS, INC.	AXIS	11/2/94	5/31/97	TWO 148.0 MMBTU/HR BOILERS	148.0 MMBTU/HR	0.740 LBS/HR	FUEL SPEC: NATURAL GAS	OTHER
AL-0125	ALABAMA POWER PLANT BARRY	BUCKS	8/7/98	4/15/99	BOILERS, NATURAL GAS COMBUSTION	510.0 MW(TOTAL)	0.011 LB/MMBTU	NATURAL GAS ONLY, EFFICIENT COMBUSTION	BACT-PSD
AR-0017	STAFFORD RAILSTEEL CORPORATION	WEST MEMPHIS	8/17/93	3/24/95	BOILER, VTD	46.5 MMBTU/H	0.200 TPY	FUEL SPEC: NATURAL GAS USAGE	BACT-PSD
CA-0736	O.H. KRUSE GRAIN AND MILLING	PIXLEY	9/19/96	3/26/98	300 HP BOILER USED AS A BACKUP	10.0 MMBTU/HR	0.012 LB/MMBTU	NO CONTROL	LAER
CA-0790	DARLING INTERNATIONAL	FRESNO	12/30/96	3/16/98	NEBRASKA BOILER, MODEL NS-B-40	31.2 MMBTU/HR	0.014 LB/MMBTU	NO CONTROL	LAER
GA-0063	MID-GEORGIA COGEN.	KATHLEEN	4/3/96	8/19/96	BOILER, NATURAL GAS	60.0 MMBTU/HR	0.005 LB/MMBTU	COMPLETE COMBUSTION	BACT-PSD
IA-0048	CARGILL INC - SIOUX CITY	SIOUX CITY	6/1/98	4/19/99	BOILER, BACKUP, 77MMBTU/H	4,500.0 T/D	0.700 LB/H	500 HRS/YR RESTRICTION - THE ONLY REVISION MADE TO THE EXISTING PERMIT.	BACT-PSD
IA-0048	CARGILL INC - SIOUX CITY	SIOUX CITY	6/1/98	4/19/99	BOILER, BACKUP, 77MMBTU/H	4,500.0 T/D	0.700 LB/H	500 HRS/YR RESTRICTION - THE ONLY REVISION MADE TO THE EXISTING PERMIT.	BACT-PSD
IN-0043	GENERAL ELECTRIC CO.	MOUNT VERNON	9/17/89	8/12/94	BOILER, NATURAL GAS	250.0 MMBTU/HR	0.152 LB/MMBTU	LOW NOX BURNERS	OTHER
IN-0043	GENERAL ELECTRIC CO.	MOUNT VERNON	9/17/B9	8/12/94	BOILER, NATURAL GAS	93.0 MMBTU/HR	0.157 LB/MMBTU	LOW NOX BURNERS	OTHER
IN-0068	WAUPACA FOUNDRY - PLANT 5	TELL CITY	1/19/96	5/31/96	BOILERS, NATURAL GAS	93.9 MMBTU/HR	1.290 LBS/HR		BACT-PSD
IN-0069	TOYOTA MOTOR CORPORATION SVCS OF N.A.	PRINCETON	8/9/96	10/21/96	BOILERS, NATURAL GAS FIRED (6)	58.0 MMBTU/HR	0.200 LB/MMBTU	LOW NOX BURNERS & FUEL SPEC: USE OF NATURAL GAS AS FUEL.	BACT-PSD
IN-0071	PORTSIDE ENERGY CORP.	PORTAGE	5/13/96	5/31/97	BOILERS, NATURAL GAS-FIRED (2)	260.0 MMBTU/HR	0.005 LB/MMBTU PROPANE	NATURAL GAS, GOOD COMBUSTION PRACTICES, PROPANE LIMIT TO EMERGENCY USE.	BACT-PSD
IN-0075	GRAIN PROCESSING CORP.	WASHINGTON	6/10/97	4/7/98	BOILERS NO. 1 & 2	244.0 MMBTU/HR	5.000 LB/MM CF NG		BACT-PSD
KY-0052	TOYOTA MOTOR MANUFACTURING U.S.A. INC.	GEORGETOWN	7/17/B6	12/22/92	COMBUSTION, NATURAL GAS		2.860 E-3 LB/MMBTU		BACT-PSD
LA-0085	TRANSAMERICAN REFINING CORPORATION (TARC)	NEW SARPY	1/15/93	3/24/95	BOILER	1.2 MMBTU/HR	0.008 LB/HR	GOOD COMBUSTION PRACTICES	BACT-PSD
LA-0090	TRANSAMERICAN REFINING CORPORATION	NORCO	2/10/95	4/17/95	BOILER, NATURAL GAS/RFG FIRED	244.0 MM BTU/HR	1.200 LB/HR	FUEL SPECIFICATION	BACT-PSD
MN-0026	MINNESOTA CORN PROCESSORS	MARSHALL	B/9/95	5/31/96	BOILER, NATURAL GAS		1.160 LB/HR	FUEL SPEC: FUEL LIMITED TO NATURAL GAS	BACT-PSD
MN-0026	MINNESOTA CORN PROCESSORS	MARSHALL	8/9/95	5/31/96	BOILER, NATURAL GAS		0.720 LB/HR	FUEL SPEC: FUEL LIMITED TO NATURAL GAS	BACT-PSD
MS-0029	WEYERHAEUSER COMPANY	COLUMBUS	9/10/96	12/30/96	BOILER, NATURAL GAS	400.0 MMBTU/HR	0.005 LB/MMBTU	USE OF NATURAL GAS AS FUEL	BACT-PSD
NJ-0013	LAKEWOOD COGENERATION, L.P.	LAKEWOOD TOWNSHIP	4/1/91	5/29/95	BOILER (NATURAL GAS)	131.0 MMBTU/HR	0.005 LB/MMBTU	BOILER DESIGN	BACT-OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEWARK	6/9/93	5/29/95	BOILER, AUXILIARY, NATURAL GAS-FIRED	200.0 MMBTU/HR	0.005 LB/MMBTU	BOILER DESIGN/FGR	BACT-PSD
NM-0024	MILAGRO, WILLIAMS FIELD SERVICE	BLOOMFIELD		5/29/95	BOILER		5.000 MMSCF	COMBUSTION AIR FILTERS, GOOD COMBUSTION PRACTICE AND MAINTENANCE	BACT-PSD
NY-0046	SARANAC ENERGY COMPANY	PLATTSBURGH	7/31/92	9/13/94	BOILER, AUXILIARY (GAS OR LPG)	249.0 MMBTU/HR	0.005 LB/MMBTU	COMBUSTION CONTROLS	BACT-OTHER
NY-0048	KAMINE/BESICORP CORNING L.P.	SOUTH CORNING	11/5/92	9/13/94	BOILERS, AUXILIARY (3)	33.5 MMBTU/HR	0.005 LB/MMBTU	COMBUSTION CONTROL	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	SOLVAY	12/10/94	4/27/95	(3) UTILITY BOILER (EP #S 00002-4)	33.0 MMBTU/HR	0.010 LB/MMBTU, 0.34 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.15% BY WEIGHT	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	SOLVAY	12/10/94	4/27/95	HEAT & STEAM BOILER (EP #00006)	2.5 MMBTU/HR	0.010 LB/MMBTU, 0.03 LB/HR	FUEL SPEC: SULFUR CONTENT NOT TO EXCEED 0.15% BY WEIGHT	BACT-OTHER
WY-0034	SOLVAY SODA ASH JOINT VENTURE TRONA MINE/SODA ASH	GREEN RIVER	2/6/98	2/17/99	BOILER, NATURAL GAS	100.0 MMBTU/H	5.000 LB/MMBTU	MINIMAL PARTICULATE EMISSIONS AND LOW EMITTING FUEL	BACT-PSD
WY-0035	TEXASGULF SODA ASH PLANT	GRANGER	10/13/97	2/10/99	BOILER, NATURAL GAS	431.6 MMBTU/H	NEGLIGIBLE	NATURAL GAS FUEL	BACT-PSD

Source: RBLC, 1999.

Z 333 618 193

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to Dave Stevens	
Street & Number Champion	
Post Office, State, & ZIP Code Cantonment Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 7-9-99 0330260-001-AC PSD-F1-271	

PS Form **3800**, April 1995

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Dave Stevens Mgr. of
Special Products
Champion Int'l Corp
117 Pace Pkwy
Cantonment, Fl
32533

4a. Article Number
Z 333 618 193

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
7/12/99

5. Received By: *(Print Name)*
Donna S. Gross

6. Signature: *(Addressee or Agent)*
X Donna Gross

8. Addressee's Address *(Only if requested and fee is paid)*

Thank you for using Return Receipt Service.

PS Form **3811**, December 1994 102595-98-B-0229 Domestic Return Receipt

Table 5-10. RBLC VOC Summary - Natural Gas-Fired Boilers

RBLCID	Facility Name	City	Permit Dates Issue	Permit Dates Last Update	Process Description	Throughput Rates	Emission Limits	Control Description	BASIS
AL-0125	ALABAMA POWER PLANT BARRY	BUCKS	8/7/98	4/15/99	BOILERS, NATURAL GAS COMBUSTION	510 MW(TOTAL)	0.015 LB/MMBTU	EFFICIENT COMBUSTION	BACT-PSD
AR-0017	STAFFORD RAILSTEEL CORPORATION	WEST MEMPHIS	8/17/93	3/24/95	BOILER, VTD	46.5 MMBTU/H	0.8 TPY	FUEL SPEC: USE OF NATURAL GAS	OTHER
GA-0063	MID-GEORGIA COGEN.	KATHLEEN	4/3/96	8/19/96	BOILER, NATURAL GAS	60 MMBTU/HR	0.005 LB/MMBTU	COMPLETE COMBUSTION	BACT-PSD
IN-0068	WAUPACA FOUNDRY - PLANT 5	TELL CITY	1/19/96	5/31/96	BOILERS, NATURAL GAS	93.9 MMBTU/HR	0.55 LBS/HR		BACT-PSD
KY-0052	TOYOTA MOTOR MANUFACTURING U.S.A. INC.	GEORGETOWN	7/17/86	12/22/92	COMBUSTION, NATURAL GAS		0.0026 LB/MMBTU		BACT-PSD
LA-0085	TRANSAMERICAN REFINING CORPORATION (TARC)	NEW SARPY	1/15/93	3/24/95	BOILER	1.2 MMBTU/HR	0.01 LB/HR	GOOD COMBUSTION PRACTICES	LAER
LA-0090	TRANSAMERICAN REFINING CORPORATION	NORCO	2/10/95	4/17/95	BOILER, NATURAL GAS/RFG FIRED	244 MM BTU/HR	0.34 LB/HR	COMBUSTION CONTROL	BACT-PSD
MI-0202	JAMES RIVER CORP	KALAMAZOO	9/17/91	10/30/91	BOILER	226.7 MMBTU/H NAT GAS	0.025 LB/MMBTU		BACT-PSD
MS-0029	WEYERHAEUSER COMPANY	COLUMBUS	9/10/96	12/30/96	BOILER, NATURAL GAS	400 MMBTU/HR	0.0013 LB/MMBTU	EFFICIENT OPERATION	BACT-PSD
NJ-0013	LAKEWOOD COGENERATION, L.P.	LAKEWOOD TOWNSHIP	4/1/91	5/29/95	BOILER (NATURAL GAS)	131 MMBTU/HR	0.0017 LB/MMBTU	BOILER DESIGN	OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEWARK	6/9/93	5/29/95	BOILER, AUXILIARY, NATURAL GAS-FIRED	200 MMBTU/HR	0.005 LB/MMBTU	BOILER DESIGN	OTHER
NY-0046	SARANAC ENERGY COMPANY	PLATTSBURGH	7/31/92	9/13/94	BOILER, AUXILIARY (GAS OR LPG)	249 MMBTU/HR	0.0045 LB/MMBTU	COMBUSTION CONTROLS	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	SOLVAY	12/10/94	4/27/95	(3) UTILITY BOILER (EP #S 00002-4)	33 MMBTU/HR	0.003 LB/MMBTU, 0.11 LB/HR	NO CONTROLS	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	SOLVAY	12/10/94	4/27/95	HEAT & STEAM BOILER (EP #00006)	2.5 MMBTU/HR	0.004 LB/MMBTU, 0.01 LB/HR	NO CONTROLS	BACT-OTHER
WA-0279	BOISE CASCADE CORPORATION - YAKIMA COMPLEX	YAKIMA	11/16/96	8/22/97	NATURAL GAS FIRED BOILERS	800 HP	50.7 LBS/DAY	FUEL SPEC: NATURAL GAS	BACT-PSD
WV-0011	CNG TRANSMISSION CORPORATION		5/3/93	3/2/94	BOILER, WATER	10 MMBTU/HR	2.8 LB/MIL. CU. FT		BACT-OTHER
WY-0043	SF PHOSPHATE LIMITED COMPANY	4.5 MILES E-SE OF ROCK SPRINGS	7/2/93	4/15/99	BOILER, NATURAL GAS FIRED	350 MMBTU/H	0.45 LB/H		BACT-PSD

Source: RBLC, 1999.

RECEIVED
JUL 08 1999
BUREAU OF AIR REGULATION

Check Sheet

Company Name: Champion Int'l Corp.
Permit Number: 0330260-001AC
PSD Number: 271
Permit Engineer: Joe Kahn

Application:

- [ ] Initial Application
  - [x] Incompleteness Letters
  - [ ] Responses
  - [ ] Waiver of Department Action
  - [ ] Department Response
  - [ ] Other

Cross References:

- [ ]
- [ ]
- [ ]

Intent:

- [ ] Intent to Issue
- [x] Notice of Intent to Issue
- [x] Technical Evaluation
- [x] BACT Determination
- [x] Unsigned Permit

Correspondence with:

- [ ] EPA
- [x] Park Services
- [ ] Other

- [x] Proof of Publication
  - [ ] Petitions - (Related to extensions, hearings, etc.)
  - [ ] Waiver of Department Action
  - [ ] Other

Final Determination:

- [x] Final Determination
- [x] Signed Permit
- [x] BACT Determination
- [ ] Other

Post Permit Correspondence:

- [ ] Extensions/Amendments/Modifications
- [ ] Other

INTERNATIONAL PAPER

401 CHAMPION DRIVE
McDAVID FL 32568
PHONE 850 587 1000
FAX 850 587 1003

RECEIVED

DEC 21 2000

BUREAU OF AIR REGULATION

December 18, 2000

Mr. Joseph Kahn, P.E.
New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road, Mail Station #5505
Tallahassee, Florida 32399-2400

Re: McDavid Lumber Mill
DEP File No. 0330260-001-AC (PSD-FL-271)

Dear Mr. Kahn:

This letter is to advise the Department that the company name for the McDavid Lumber Mill has been changed from Champion International Corporation to International Paper Company.

Please feel free to contact me at (850) 587-1002 if there are any further questions regarding this name change.

Sincerely,

Dave Stevens

Dave Stevens
Plant Manager

cc: Mr. Ed Middleswart, FDEP – NWD
Mr. Andrew Allen, FDEP - NWD
C. Phillips

INTERNATIONAL PAPER

401 CHAMPION DRIVE
McDAVID FL 32568
PHONE 850 587 1000
FAX 850 587 1003

RECEIVED
DEC 05 2000
BUREAU OF AIR REGULATION

Andrew Allen
Permitting Supervisor
Department of Environmental Protection
160 Government Center
Pensacola, Florida 32501-5794

November 30, 2000

Dear Andy:

This letter is to notify you and your agency that we did initial startup of our two gas fired boilers at the McDavid plant.

More specifically, we lit a fire in the east boiler on November 22, 2000. While we maintained a flame we did not get it where it created any steam util Nov. 27, 2000. We would consider initial startup to be the 27th – but provide the initial flame date in case that is the date you are looking for. The west boiler was lit and held started up on November 29th, 2000.

We are providing this notification NSPS subsection 60.7.

If you have questions, you can contact me at 587-1002 or Don Johnson at 587-1010.

Thanks

Dave Stevens

Dave Stevens
Plant Manager

cc: Joseph Kahn (DEP - Tallahassee)
Randy Elgin
Don Johnson

INTERNATIONAL PAPER

RECEIVED

NOV 15 2000

BUREAU OF AIR REGULATION

401 CHAMPION DRIVE
McDAVID FL 32568
PHONE 850 587 1000
FAX 850 587 1003

Andrew Allen
Permitting Supervisor
Department of Environmental Protection
160 Government Center
Pensacola, Florida 32501-5794

November 13, 2000

Dear Andy:

As I stated on the phone with you this morning, it looks like we will be further delayed in the start up of our two gas fired boiler and 3 wood drying steam kilns. Hurst boiler folks and the water chemical were in this morning and they plan to do the chemical treatment of the boiler and start the first fire later this week. If all goes well they will be back in to fire up the boilers and tune them the week of the 27^{th}. We expect to be drying lumber sometime soon after that (within a week or two).

We really appreciate you patience and understanding in this matter.

I will obviously notify you within 15 days of initial startup.

We are providing this notification NSPS subsection 60.7.

If you have questions, you can contact me at 587-1002 or Don Johnson at 587-1010.

Thanks

Dave Stevens

Dave Stevens
Plant Manager

cc: Joseph Kahn (DEP - Tallahassee)
Don Johnson

McDavid Sawmill
Forest Products Manufacturing
5590 South Century Boulevard
P.O. Box 3537
McDavid, Florida 32568

Champion
Champion International Corporation

OCT 24 2000

BUREAU OF AIR REGULATION

Mr. Joseph Kahn, P.E.
New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road, Mail Station #5505
Tallahassee, Florida 32399-2400

October 19, 2000

Dear Joe:

This letter is to advise you that on June 16, 2000, Champion International Corporation ("Champion") was acquired by a wholly-owned subsidiary of International Paper Company ("IP"), whereupon Champion became a wholly-owned subsidiary of IP. Champion will continue to exist as a separate corporate entity for several months, thus, it will remain the owner of the McDavid softwood converting facility mill/plant and the permittee/licensee of the permits/licenses issued by the State of Florida to the plant. Following that interim period, it is expected that Champion will be merged into IP and will cease to exist. It will be in connection with the merger of Champion into IP that we will file the necessary applications to change the name of the permittee/licensee to IP. Your assistance in that process will be appreciated. If you have any questions or would like further information, please call me at 850-587-1002.

Thanks

Dave Stevens

Dave Stevens
Plant Manager

McDavid Sawmill
Forest Products Manufacturing
5590 South Century Boulevard
P.O. Box 3537
McDavid, Florida 32568

RECEIVED
OCT 24 2000
BUREAU OF AIR REGULATION

Champion
Champion International Corporation

Andrew Allen
Permitting Supervisor
Department of Environmental Protection
160 Government Center
Pensacola, Florida 32501-5794

October 19, 2000

Dear Andy:

This letter is to notify you and your agency that we are delayed in the startup of our two gas package boilers here at the Pine Barren (McDavid) facility. We had sent you a notification in August stating our projected date for Hurst (manufacturer) to test and commission the systems as sometime between September 12 and the 22nd. It now looks like it will be somewhere between the 26th of October and the 10th of November.

Both of these gas boilers were mass-produced at the Hurst boiler manufacturing plant in Coolridge, Georgia.

This notification is provided to fulfill NSPS subsection 60.7 requirements.

If you have questions, you can contact me at 587-1002 or Don Johnson at 587-1010.

Thanks

Dave Stevens

Dave Stevens
Plant Manager

cc: Joseph Kahn (DEP - Tallahassee)
Randy Elgin
Don Johnson

INTERNATIONAL PAPER

COPY

401 CHAMPION DRIVE
McDAVID FL 32568
PHONE 850 587 1000
FAX 850 587 1003

RECEIVED
AUG 09 2000
BUREAU OF AIR REGULATION

Andrew Allen
Permitting Supervisor
Department of Environmental Protection
160 Government Center
Pensacola, Florida 32501-5794

August 8, 2000

Dear Andy:

This letter is to notify you and your agency that we anticipate the startup of our two gas package boilers sometime in the next 30 to 60 days. Our projected date for Hurst (manufacturer) to test and commission the systems is sometime between September 12 and the 22nd.

Both of these gas boilers were mass-produced at the Hurst boiler manufacturing plant in Coolridge, Georgia.

We are providing this notification NSPS subsection 60.7.

If you have questions, you can contact me at 587-1002 or Don Johnson at 587-1010.

Thanks

Dave Stevens

Dave Stevens
Project Director

cc: Joseph Kahn (DEP - Tallahassee)
Randy Elgin
Don Johnson

McDavid Sawmill
Forest Products Manufacturing
5590 South Century Boulevard
P.O. Box 3537
McDavid, Florida 32568

RECEIVED
JUN 28 2000
BUREAU OF AIR REGULATION

Champion
Champion International Corporation

Andrew Allen
Permitting Supervisor
Department of Environmental Protection
160 Government Center
Pensacola, Florida 32501-5794

June 26, 2000

Dear Andy:

This letter is to notify you that our two gas package boilers arrived on site last week and the contractor is busy piping them and installing the peripheral attachments.

Both of these gas boilers were mass-produced at the Hurst boiler manufacturing plant in Coolridge, Georgia. NSPS subsection 60.7 exempts notification of mass-produced boilers, but we thought you might want to know they were on site and being hooked together.

If you have questions, you can contact me at 587-1002 or Don Johnson at 587-1010.

Thanks

Dave Stevens

Dave Stevens
Project Director

cc: Joseph Kahn (DEP)
Terry Kassabaum
Don Johnson

INTEROFFICE MEMORANDUM

Date: 26-Jun-2000 08:39am
From: stevedb
stevedb@champint.com
Dept:
Tel No:

To: Ed.middleswart (Ed.middleswart@dep.state.fl.us)
To: andy.allen (andy.allen@dep.state.fl.us)
To: Joseph.Kahn (Joseph.Kahn@dep.state.fl.us)
CC: kassat (kassat@champint.com)
CC: johnsdn (johnsdn@champint.com)

Subject: Boilers at McDavid plant

News from the Champion project site in Pine Barren, Florida.

We have recently been purchased by International Paper. Officially operating as a subsidiary until they can get all
the paperwork complete. Don't be surprised if you hear us called IP.
Wanted to notify you that our two package boilers arrived on site last week and the contractor is busy hooking them
up. These were mass-produced boilers from Hurst Corporation and the only thing they are doing on site is all the
associated plumbing external to the boilers (DA tank, catwalks, etc.).

A hard copy of the official notification will follow - but wanted to give you earliest notice.

I can be reached at 587-1002 if you have questions.
Still looking at a September initial startup.
Thanks
Dave

4/13/00 McDavid Sawmill Mtg.

John Barlow, Dave Stevens, Terry Cole

Hanson, Joe, Cindy, Clair, Pat C.

NCASI Testing – HAP emissions, other published study, TAPI 5/99

Methanol emissions – kilns. GP's study – NCASI publishing

Data – emissions 7-8x higher ~~prelim. data~~

.037 lb/MBF methanol → 0.2 lb/MBF "ballpark"

emissions of methanol would be > 10 TPY ~22 TPY

Kilns – MACT floor no additional controls – proposal from EPA this year – proposed rule.

– Need to submit amended applic. – Champion:

sees no additional controls reqd.

Need case-by-case MACT + permit modif.

Formaldehyde < 10 TPY. 0.003 lb/MBF → 0.02 lb/MBF

Methanol delisting – publish decision before Aug 2000.

– Submit applic. for mod of permit

4 copies + 1 for District, $250 fee

MACT info, cost anal, revised pages, fee.

FLORIDA DEPARTMENT OF ENVIRONMENTAL PROTECTION

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

April 12, 2000

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Dave Stevens
Manager of Special Products, Forest Products
Champion International Corporation
PO Box 3537
McDavid, Florida 32568

Re: Extension of Expiration Date of Permit No. 0330260-001-AC, PSD-FL-271
McDavid Sawmill

The applicant, Champion International Corporation, applied on April 3, 2000, to the Department for an extension of the expiration date of air construction permit number 0330260-001-AC for its McDavid Sawmill located at US Highway 29, Pine Barren, Escambia County. The applicant also requested correction of a typographical error in Section II, specific condition 8. The Department has reviewed the request. The expiration date is hereby extended from September 6, 2000 to September 6, 2001 to allow completion of physical construction.

To correct the typographical error, specific condition 8 shall be deleted entirely and replaced with the following:

8. Title V Operation Permit Required: This permit authorizes construction and/or installation of the permitted emissions units and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions units. The owner or operator shall apply for a Title V operation permit at least ninety days prior to expiration of this permit, but no later than 180 days after commencing operation. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the Department's Northwest District office. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

A copy of this letter shall be filed with the referenced permit and shall become part of the permit. This permitting decision is issued pursuant to Chapter 403, Florida Statutes.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation is not available in this proceeding.

In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542 F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2) F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

This permitting decision is final and effective on the date filed with the clerk of the Department unless a petition is filed in accordance with the above paragraphs or unless a request for extension of time in which to file a petition is filed within the time specified for filing a petition pursuant to Rule 62-110.106, F.A.C., and the petition conforms to the content requirements of Rules 28-106.201 and 28-106.301, F.A.C. Upon timely filing of a petition or a request for extension of time, this order will not be effective until further order of the Department.

Any party to this permitting decision (order) has the right to seek judicial review of it under section 120.68 of the Florida Statutes, by filing a notice of appeal under Rule 9.110 of the Florida Rules of Appellate Procedure with the clerk of the Department of Environmental Protection in the Office of General Counsel, Mail Station #35, 3900 Commonwealth Boulevard, Tallahassee, Florida, 32399-3000, and by filing a copy of the notice of appeal accompanied by the applicable filing fees with the appropriate District Court of Appeal. The notice must be filed within thirty days after this order is filed with the clerk of the Department.

Executed in Tallahassee, Florida.

Howard L. Rhodes

Howard L. Rhodes, Director
Division of Air Resources
Management

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this order was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 4-13-00 to the person(s) listed:

Mr. Dave Stevens, Champion *
Mr. Terry Kassabaum, Champion
Mr. Tom Davis, P.E., ECT
Mr. Ed Middleswart, NWD
Mr. Gregg Worley, EPA
Mr. John Bunyak, NPS

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Kim Tober 4-13-00
(Clerk) (Date)

Z 031 391 942

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail *(See reverse)*

Sent to Dave Stevens	
Street & Number Champion	
Post Office, State, & ZIP Code McDavid Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 4-13-00 033020-001-AC PSO-Fl-271	

PS Form **3800**, April 1995

[redacted]

SENDER: ***COMPLETE THIS SECTION***

- Complete items 1, 2, and 3. Also complete item 4 if Restricted Delivery is desired.
- Print your name and address on the reverse so that we can return the card to you.
- Attach this card to the back of the mailpiece, or on the front if space permits.

1. Article Addressed to:

Dave Stevens, Mgr
Champion Int'l Corp
PO Box 3537
McDavid, Fl
32568

COMPLETE THIS SECTION ON DELIVERY

A. Received by *(Please Print Clearly)*

B. Date of Delivery

C. Signature

X [signature] ☐ Agent ☐ Addressee

D. Is delivery address different from item 1? ☐ Yes

If YES, enter delivery address below: ☐ No

3. Service Type

☒ Certified Mail ☐ Express Mail

☐ Registered ☐ Return Receipt for Merchandise

☐ Insured Mail ☐ C.O.D.

4. Restricted Delivery? *(Extra Fee)* ☐ Yes

2. Article Number *(Copy from service label)* Z 031 391 942

PS Form 3811, July 1999 Domestic Return Receipt 102595-99-M-1789

McDavid Sawmill
Forest Products Manufacturing
5590 South Century Boulevard
P.O. Box 3537
McDavid, Florida 32568

RECEIVED

APR 03 2000

BUREAU OF AIR REGULATION

Champion
Champion International Corporation

March 27, 2000

Joseph Kahn, P.E.
Dept. of Environmental Protection
Bureau of Air Regulation
Mail Station #5505
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: DEP File No. 0330260-001-AC, PSD-FL-271
McDavid Sawmill

Dear Joseph Kahn, P.E.,

We are requesting a 12-month extension to the referenced permit due to construction delays. Attached is the $50 extension fee.

Regarding Specific Condition No. 8, it is our understanding the words "and receive" will be deleted and a revision issued with the extension.

Look forward to hearing from you soon, and if you have any questions please don't hesitate to call (850) 587-1002.

Regards,

Dave Stevens

Dave Stevens
Project Director

THIS MULTI-TONE AREA OF THE DOCUMENT CHANGES COLOR GRADUALLY AND EVENLY FROM DARK TO LIGHT WITH DARKER AREAS BOTH TOP AND BOTTOM.

Champion

Champion International Corporation

Knightsbridge Hamilton, Ohio 45020

Chase Manhattan Bank of Delaware
1201 Market Street
Wilmington DE 19801

62-26
311

4390-09

CHECK DATE 03-28-00

NO. 367873

367873

PAY

$FIFTY.00/100

PAY THE AMOUNT OF $*******50.00

PAY TO THE ORDER OF

DEPT OF ENVIRONMENTAL PROTECTION
2600 BLAIR STONE RD
TALLAHASSEE FL 32399

CHAMPION INTERNATIONAL CORPORATION

T L Hart

AUTHORIZED SIGNATURE(S)

U.S. PATENT NOS. 4,210,346 4,227,720 4,310,180 AND PATENTS PENDING

[redacted]

THE ORIGINAL DOCUMENT HAS A REFLECTIVE WATERMARK ON THE BACK. HOLD AT AN ANGLE TO VIEW WHEN CHECKING THE ENDORSEMENT.

Memorandum

Florida Department of
Environmental Protection

TO: Howard L. Rhodes

THRU: Clair Fancy
Al Linero

FROM: Joe Kahn

DATE: September 7, 1999

SUBJECT: Champion International Corporation
McDavid Sawmill

Attached for approval and signature is the final permit package for the proposed McDavid Sawmill for Champion International Corporation to be located in Escambia County. This project includes two natural gas fired boilers that will provide steam to three lumber drying kilns, a planermill to plane and trim dried lumber, and fugitive emissions. The sawmill will have a capacity to produce up to 225 million board feet per year of lumber.

Total potential emissions from the project in tons per year, including quantifiable fugitive PM emissions, are estimated to be 326 of VOC, 32.2 of PM, 18.4 of PM_{10}, 0.3 of SO_2, 39.0 of NOx, and 70.2 of CO.

The Public Notice requirements have been met on August 5, 1999 by publishing in the Pensacola News Journal.

I recommend your approval and signature.

Day 90 is November 19, 1999.

Attachments

/jk

RECEIVED
AUG 16 1999
BUREAU OF AIR REGULATION

PENSACOLA News Journal

PUBLISHED DAILY

Pensacola, Escambia County, Florida

STATE OF FLORIDA
County of Escambia

Before the undersigned authority personally appeared Kay Godwin who is personally known to me and who on oath says that he/she is a representative of The Pensacola News Journal, a daily newspaper published at Pensacola in Escambia County, Florida; that the attached copy of advertisement, being a Legal in the matter of Public Notice Of Intent in the ______ Court, was published in said newspaper in the issues of August 5, 1999

Affiant further says that the said Pensacola News Journal is a newspaper published at Pensacola, in said Escambia County, Florida, and that the said newspaper has heretofore been continuously published in said Escambia County, Florida each day and has been entered as second class mail matter at the post office in Pensacola, in said Escambia County, Florida, for a period of one year next preceding the first publication of the attached copy of advertisement; and affiant further says that he/she has neither paid nor promised any person, firm or corporation any discount, rebate, commission or refund for the purpose of securing this advertisement for publication in the said newspaper.

Sworn to and subscribed before me this 5th day of Aug A.D., 19 99

Bereth Ferguson
Notary Public

BERETH FERGUSON
"Notary Public-State of FL"
My comm. expires: Oct. 10,2001
Comm. No. CC667980

CC: J. Kahn
NWD
NPS
EPA

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT
STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEP File No. 0330260-001-AC, PSD-FL-271
Champion International Corporation
McDavid Sawmill
Escambia County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to Champion International Corporation, for its proposed McDavid Sawmill to be located at US Highway 29, Pine Barren, Escambia County. The permit is to allow construction of a lumber sawmill with a capacity to produce up to 225 million board feet per year of lumber. The applicant's mailing address is: Champion International Corporation, 117 Pace Parkway, Cantonment, Florida 32533. A Best Available Control Technology (BACT) determination was required for particulate matter and VOC pursuant to Rule 62-212.400, F.A.C. and 40 CFR 52.21, Prevention of Significant Deterioration (PSD).

The lumber mill will have two natural gas fired boilers that will provide steam to three lumber drying kilns, a planermill to plane and trim dried lumber, and fugitive emissions.

Total emissions of pollutants, including quantifiable fugitive PM emissions shall not exceed the annual emission rates in tons per year: PM, 31.2; PM_{10}, 17.9; SO_2, 0.3; NOx, 39.0; VOC, 326; and CO, 70.2.

An air quality impact analysis was conducted for PM_{10}. Emissions from the facility will not significantly contribute to or cause a violation of any state or federal ambient air quality standards or PSD increments. The maximum predicted PSD Class II PM_{10} increment consumed by all sources in the area, including this project, will be as follows:

Increment Consumed (ug/m³)	Allowable Increment (ug/m³)	% Increment Consumed
24-hour: 3	17	18
Annual: 19	30	63

The Department will issue the Final permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments and requests for public meetings concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments and requests for public meetings should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Satutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone phone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by rule 28-106.301.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Protection
Bureau of Air Regulation
Suite 4, 111 S. Magnolia Drive
Tallahassee, Florida 32301
Telephone: 850/488-0114
Fax: 850/922-6979

Dept. of Environmental Protection
Northwest District
160 Government Center
Pensacola, Florida 32501-5794
Telephone: 904/444-8300

The complete project file includes the application, technical evaluations, Draft permit, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, New Source Review Section, or the Department's reviewing engineer for this project, Joseph Kahn, P.E., at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 850/488-0114, for additional information.

Legal No. 57759 IT

August 5, 1999

Champion
Champion International Corporation

Fax Transmittal Cover Sheet

McDavid Sawmill
McDavid, Florida

Temporary Address:
117 Pace Parkway
P.O. Box 875
Cantonment, Florida 32533

Fax #: 850 968-3027

Date: 8/13/99

To: Joseph Kahn P.E.

Company / Department: DEP - Air Bureau

Fax Number: (850) 922-6979

From: Dave Stevens

Number of Pages (including cover): 1 + 2

Message:

Joe: Originals sent to Al by Fed EX (arrives Monday)
Thought you might need fax to ensure we
met time lines.

Thanks
Dave

The material contained in this communication is intended only for the use of the addressee. It may contain information that is confidential, proprietary, attorney privileged, and exempt from disclosure under applicable law. If the reader of this communication is not the intended recipient, you are hereby notified that any dissemination, distribution or duplication of this communication is prohibited. If you have received this communication in error, please notify us immediately by telephone and return, by mail, the original message to us. Thank you.

McDavid Sawmill
Forest Products Manufacturing
5590 South Century Boulevard
P.O. Box 3537
McDavid, Florida 32568

RECEIVED
AUG 18 1999
BUREAU OF AIR REGULATION

Champion
Champion International Corporation

August 16, 1999

Mr. Joseph Kahn, P.E.
New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road, Mail Station #5505
Tallahassee, Florida 32399-2400

Dear Mr. Kahn:

Champion International Corporation (CHAMPION) has reviewed the Florida DEP air construction permit for our McDavid saw mill. Based on that review CHAMPION requests that clarifications, corrections and modifications be made to the permit and Technical Evaluation and Preliminary Determination as outlined below.

Air Construction Permit Section II

Page 5 10(c) Paving and maintenance of roads, parking areas and yards. Champion plans to pave roads and parking areas. Some areas of the yard will not be paved. For example, the log storage area will not be paved, however, logs in storage will be periodically sprayed with water to preserve the logs and minimize the potential for fugitive dust to be generated. In addition, the area where logs are delivered and transferred to the sawing and debarking operations by the overhead crane will not be paved. However all roadways leading to and from this area will be paved. Therefore, Champion requests that this description be changed to delete the reference to paving yards.

Page 6 10(c) All by-product (bark, fines (sawdust), chips, shavings) open storage piles shall be shaped, compacted and oriented to minimize wind erosion (Note: the applicant estimated that by-product open storage piles are estimated to be used for about 10 days each year.) . Compacting the by-products piles would render them unusable. Champion will shape and orient piles to reduce the potential for fugitive emissions. Champion conducted a modeling analysis to evaluate the impact of potential emissions from these piles as well as other particulate emissions. The study included the maximum projected hourly emissions from the by-product storage piles assuming that the piles are in place year round. The study indicated that these piles have an insignificant impact on air quality. Champion has included a revised estimate of the annual emissions from the piles that is consistent with the modeling study conducted and assumes use of the piles 365 days per year. The revised estimate is included as attachment 1. Therefore, Champion requests that the requirement to compact these materials be deleted and that the reference to storage for 10 days per year be modified to reflect that storage can occur year round.

Page 6 11(a) No person shall <u>not</u> store… This should read: **No person shall store…**

Page 9 23 <u>Duration of recordkeeping</u> The sentence that describes the recordkeeping timeframe includes a typo. Please clarify if materials must be retained for three or five years.

<u>**Technical Evaluation and Preliminary Determination**</u>

Page TE-3 3. Project Description. The discussion of the drying kilns in paragraph 3 should be modified to more accurately reflect the mill operating configuration. The paragraph should read as follows: **The drying kilns will be used to reduce lumber moisture content from approximately 50% to *<u>15-20</u>*% under controlled conditions of temperature and relative humidity. The drying kilns are each approximately *<u>98</u>* feet long.**

Page TE-6 6.4 Emissions Unit 005, Fugitive PM emissions. The sentence discussing temporary storage piles should be modified to remove the reference to compacting storage piles, as noted above in the requested corrections to the permit.

We appreciate your assistance on this important project. Please call me if you have questions or require further information.

Sincerely,

Dave Stevens

Dave Stevens
Project Director

CC: File
NWD
EPA
NPS

Table 2-3. Maximum PM/PM_{10} Pollutant Emission Rates - Fugitive Sources (Revised 8/16/99)

Emission Source Description	Emission Source ID	Emission Rates			
		PM		PM_{10}	
		(lb/hr)	(tpy)	(lb/hr)	(tpy)
Bark Processing/Handling					
Conveyor Transfer; Main Conveyor to Disc Screen/Hog Conveyor	F-9	0.0004	0.0011	0.0002	0.0005
Conveyor Transfer; Disc Screen/Hog Conveyor to Disc Screen/Hog	F-10	0.0004	0.0011	0.0002	0.0005
Conveyor Transfer; Disc Screen/Hog to Bark Bin Conveyor	F-13	0.0004	0.0011	0.0002	0.0005
Conveyor Transfer; Bark Bin Conveyor to Bark Bin	F-14	0.0004	0.0011	0.0002	0.0005
Bark Bin Truck Loading	F-15	0.0014	0.0036	0.0007	0.0017
Fines (Sawdust) Processing/Handling					
Conveyor Transfer; Fines Chip Screen Conveyor to Fines Bin Conveyor	F-16	0.0002	0.0006	0.0001	0.0003
Conveyor Transfer; Fines Bin Conveyor to Fines Bin	F-17	0.0002	0.0006	0.0001	0.0003
Fines Bin Truck Loading	F-18	0.0007	0.0018	0.0003	0.0009
Baghouse Fines Truck Loading	F-35	0.0001	0.0003	0.0001	0.0001
Chips Processing/Handling					
Conveyor Transfer; Oversize Chips Conveyor to Rechipper Conveyor	F-19	0.0002	0.0004	0.0001	0.0002
Conveyor Transfer; Chips Screen to Chips Bin Conveyor	F-22	0.0018	0.0046	0.0008	0.0022
Conveyor Transfer; Chips Bin Conveyor to Chips Bin	F-23	0.0018	0.0046	0.0008	0.0022
Chips Bin Truck Loading	F-24	0.0058	0.0153	0.0028	0.0072
Planermill Shavings					
Cyclone Bin Truck Loading	F-27	0.0006	0.0016	0.0003	0.0007
Truck Traffic on Paved Roadways					
Raw Material Wood Trucks	F-28	3.9208	5.8109	0.7650	1.1338
Product Lumber Trucks	F-29	2.4539	2.8155	0.4788	0.5494
Wood By-Product Trucks	F-30	3.2099	7.9208	0.6263	1.5455
Outdoor Storage Piles					
Chip Storage	F-31	0.1271	0.5567	0.0607	0.2657
Bark Storage	F-32	0.0370	0.1619	0.0176	0.0773
Sawdust Storage	F-33	0.0330	0.1447	0.0158	0.0691
Shavings Storage	F-34	0.0259	0.1133	0.0123	0.0541
Totals		**9.8221**	**17.5616**	**1.9834**	**3.7127**

Sources: Champion, 1999.
ECT, 1999.

EMISSION INVENTORY WORKSHEET

FUG-PM

Champion International - McDavid Sawmill

EMISSION SOURCE TYPE

FUGITIVE PM - ACTIVE OUTDOOR STORAGE **Figure: 2-3**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM - Active Outdoor Storage Piles
Emission Control Method(s)/ID No.(s):	Moist Material
Emission Point ID:	FUG-PM

EMISSION ESTIMATION EQUATIONS

PM Emission (lb/hr) = Emission Factor (lb PM/acre/day) x Storage Pile Area (acres) x (1 day/24 hrs)

PM Emission (ton/yr) = Emission Factor (lb PM/acre/day) x Storage Pile Area (acres) x Storage Period (dys/yr) x (1 ton/2,000 lb)

Source: ECT, 1999.

INPUT DATA AND EMISSIONS CALCULATIONS

Storage Pile Material Type	Source ID	Period of Storage (dys/yr)	Pile Area (acre)	Uncontrolled Emission Factor (lb PM/acre/dy)	Control Efficiency (%)	Controlled Emission Factor (lb PM/acre/dy)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
Chip Storage	F-31	365	0.770	13.2	70.0	3.96	0.127	0.557
Bark Storage	F-32	365	0.224	13.2	70.0	3.96	0.037	0.162
Sawdust Storage	F-33	365	0.200	13.2	70.0	3.96	0.033	0.145
Shavings Storage	F-34	365	0.157	13.2	70.0	3.96	0.026	0.113

SOURCES OF INPUT DATA

Parameter	Data Source
Storage Pile Identification	Champion, 1999.
Uncontrolled Emission Factors	Section 8.19.1-1, AP-42, September 1991.
Control Efficiency	Based on high moisture content, Texas Natural Resources Conservation Commission, 1999.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	5/99
Evaluated by:	T. Davis	**Date:**	8/99
Data Entered by:	T. Davis	**Date:**	8/99

EMISSION INVENTORY WORKSHEET

FUG-PM

Champion International - McDavid Sawmill

EMISSION SOURCE TYPE

FUGITIVE PM_{10} - ACTIVE OUTDOOR STORAGE **Figure: 2-3**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM_{10} - Active Outdoor Storage Piles
Emission Control Method(s)/ID No.(s):	Moist Material
Emission Point ID:	FUG-PM

EMISSION ESTIMATION EQUATIONS

PM_{10} Emission (lb/hr) = Emission Factor (lb PM/acre/day) x Storage Pile Area (acres) x (1 day/24 hrs)

PM_{10} Emission (ton/yr) = Emission Factor (lb PM/acre/day) x Storage Pile Area (acres) x Storage Period (dys/yr) x (1 ton/2,000 lb)

Source: ECT, 1999.

INPUT DATA AND EMISSIONS CALCULATIONS

Storage Pile Material Type	Source ID	Period of Storage (dys/yr)	Pile Area (acre)	Uncontrolled Emission Factor (lb PM/acre/dy)	Control Efficiency (%)	Controlled Emission Factor (lb PM/acre/dy)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
Chip Storage	F-31	365	0.770	6.3	70.0	1.89	0.061	0.266
Bark Storage	F-32	365	0.224	6.3	70.0	1.89	0.018	0.077
Sawdust Storage	F-33	365	0.200	6.3	70.0	1.89	0.016	0.069
Shavings Storage	F-34	365	0.157	6.3	70.0	1.89	0.012	0.054

SOURCES OF INPUT DATA

Parameter	Data Source
Storage Pile Identification	Champion, 1999.
Uncontrolled Emission Factors	Section 8.19.1-1, AP-42, September 1991.
Control Efficiency	Based on high moisture content, Texas Natural Resources Conservation Commission, 1999.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	5/99
Evaluated by:	T. Davis	**Date:**	8/99
Data Entered by:	T. Davis	**Date:**	8/99

4. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [✔], if so), I further certify that the engineering features of each such emissions unit described in this application have been ~~designed or~~ examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Thomas W. Davis   8/16/99

Signature   Date

(seal)

* Attach any exception to certification statement.

This certification is applicable to the revised estimates of storage pile fugitive PM/PM_{10} emission rates pertaining to Champion International Corporation's McDavid Sawmill project.

Pensacola News Journal

PUBLISHED DAILY

Pensacola, Escambia County, Florida

OF FLORIDA
of Escambia

he undersigned authority personally appeared
Kay Godwin
personally known to me and who on oath
at he/she is a representative of The
ola News Journal, a daily newspaper
ed at Pensacola in Escambia County,
that the attached copy of advertisement,
Legal in the matter of
ic Notice Of Intent
in the Court, was
ed in said newspaper in the issues of
ust 5, 1999

further says that the said Pensacola News
l is a newspaper published at Pensacola, in said
bia County, Florida, and that the said newspaper
etofore been continuously published in said
bia County, Florida each day and has been entered
nd class mail matter at the post office in
ola, in said Escambia County, Florida, for a period
year next preceding the first publication of the
ed copy of advertisement; and affiant further says
e/she has neither paid nor promised any person,
corporation any discount, rebate, commission or
for the purpose of securing this advertisement for
ation in the said newspaper.

to and subscribed before me this 5th
Aug A.D., 19 99
Bereth Ferguson
Notary Public

BERETH FERGUSON
"Notary Public-State of FL"
My comm. expires Oct. 10,2001
Comm. No. CC667980

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERI
STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION
DEP File No. 0330260-001-AC, PSD-FL-271
Champion International Corporation
McDavid Sawmill
Escambia County

The Department of Environmental Protection (Department) gives notice of its intent an air construction permit to Champion International Corporation, for its proposed Mc Sawmill to be located at US Highway 29, Pine Barren, Escambia County. The permit i construction of a lumber sawmill with a capacity to produce up to 225 million board fee of lumber. The applicant's mailing address is: Champion International Corporation, 11 Parkway, Cantonment, Florida 32533. A Best Available Control Technology (BACT) determination was required for particulate matter and VOC pursuant to Rule 62-212.4(and 40 CFR 62.21, Prevention of Significant Deterioration (PSD).

The lumber mill will have two natural gas fired boilers that will provide steam to thre drying kilns, a planermill to plane and trim dried lumber, and fugitive emissions.

Total emissions of pollutants, including quantifiable fugitive PM emissions shall not the annual emission rates in tons per year: PM, 31.2; PM_{10}, 17.9; SO_2, 0.3; NOx, 39.0; and CO, 70.2.

An air quality impact analysis was conducted for PM_{10}. Emissions from the facility w significantly contribute to or cause a violation of any state or federal ambient air qualit standards or PSD increments. The maximum predicted PSD Class II PM_{10} increment by all sources in the area, including this project, will be as follows:

Increment Consumed ($\mu g/m^3$)	Allowable Increment ($\mu g/m^3$)	% Increment Cons
24-hour: 3	17	18
Annual: 19	30	63

The Department will issue the Final permit with the attached conditions unless a re received in accordance with the following procedures results in a different decision or change of terms or conditions.

The Department will accept written comments and requests for public meetings co the proposed permit issuance action for a period of 30 (thirty) days from the date of p of this Public Notice of Intent to Issue Air Construction Permit. Written comments and for public meetings should be provided to the Department's Bureau of Air Regulation Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comm shall be made available for public inspection. If written comments received result in a change in the proposed agency action, the Department shall revise the proposed per require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely p an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., befor deadline for filing a petition. The procedures for petitioning for a hearing are set forth

Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decis petition for an administrative proceeding (hearing) under sections 120.569 and 120.5 Florida Statutes. The petition must contain the information set forth below and must b (received) in the Office of General Counsel of the Department at 3900 Commonweal Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. Petitions filed by the p applicant or any of the parties listed below must be filed within fourteen days of recei notice of intent. Petitions filed by any persons other than those entitled to written noti section 120.60(3) of the Florida Statutes must be filed within fourteen days of publica public notice or within fourteen days of receipt of this notice of intent, whichever occu Under section 120.60(3), however, any person who asked the Department for notice action may file a petition within fourteen days of receipt of that notice, regardless of t publication. A petitioner shall mail a copy of the petition to the applicant at the addre indicated above at the time of filing. The failure of any person to file a petition within t appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to in this proceeding and participate as a party to it. Any subsequent intervention will b the approval of the presiding officer upon the filing of a motion in compliance with Ru 106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is bas contain the following information: (a) The name and address of each agency affecte agency's file or identification number, if known; (b) The name, address, and telephor of the petitioner, the name, address, and telephone phone number of the petitioner's representative, if any, which shall be the address for service purposes during the co proceeding; and an explanation of how the petitioner's substantial interests will be aff the agency determination; (c) A statement of how and when petitioner received notic agency action or proposed action; (d) A statement of all disputed issues of material there are none, the petition must so indicate; (e) A concise statement of the ultimate alleged, including the specific facts the petitioner contends warrant reversal or modifi the agency's proposed action; (f) A statement of the specific rules or statutes the pe contends require reversal or modification of the agency's proposed action; and (g) A of the relief sought by the petitioner, stating precisely the action petitioner wishes the take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's ac based shall state that no such facts are in dispute and otherwise shall contain the sa information as set forth above, as required by rule 28-106.301.

Because the administrative hearing process is designed to formulate final agency filing of a petition means that the Department's final action may be different from the taken by it in this notice. Persons whose substantial interests will be affected by any decision of the Department on the application have the right to petition to become a proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business ho 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Protection Bureau of Air Regulation Suite 4, 111 S. Magnolia Drive Tallahassee, Florida 32301 Telephone: 850/488-0114 Fax: 850/922-6979	Dept. of Environmental Prote Northwest District 160 Government Center Pensacola, Florida 32501-57 Telephone: 904/444-8300

The complete project file includes the application, technical evaluations, Draft per information submitted by the responsible official, exclusive of confidential records un 403.111, F.S. Interested persons may contact the Administrator, New Source Revie or the Department's reviewing engineer for this project, Joseph Kahn, P.E., at 111 S Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 850/488-0114, for additi information.

Legal No. 57759 IT Au

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

August 2, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Dave Stevens
Manager of Special Products, Forest Products
Champion International Corporation
117 Pace Parkway
Cantonment, Florida 32533

Re: DEP File No. 0330260-001-AC, PSD-FL-271
McDavid Sawmill

Dear Mr. Stevens:

Enclosed is one copy of the Draft air construction permit for the proposed McDavid Sawmill to be located at US Highway 29, Pine Barren, Escambia County. The Technical Evaluation and Preliminary Determination, the Department's Intent to Issue Air Construction Permit and the Public Notice of Intent to Issue Air Construction Permit are also included.

The Public Notice of Intent to Issue Air Construction Permit must be published one time only, as soon as possible, in the legal advertisement section of a newspaper of general circulation in the area affected, pursuant to the requirements Chapter 50, Florida Statutes. Proof of publication, i.e., newspaper affidavit, must be provided to the Department's Bureau of Air Regulation office within seven days of publication. Failure to publish the notice and provide proof of publication may result in the denial of the permit.

Please submit any written comments you wish to have considered concerning the Department's proposed action to A. A. Linero, P.E., Administrator, New Source Review Section at the above letterhead address. If you have any other questions, please contact Joseph Kahn, P.E. at 850/921-9519 or Mr. Linero at 850/488-0114.

Sincerely,

A. A. Linero, P.E.
for C. H. Fancy, P.E., Chief,
Bureau of Air Regulation

CHF/jk

Enclosures

P 263 585 237

US Postal Service
Receipt for Certified Mail
No Insurance Coverage Provided.
Do not use for International Mail *(See reverse)*

Sent to Mr. Dave Stevens	
Street & Number 117 Pace Parkway	
Post Office, State, & ZIP Code Cantonment, Florida 32533	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 8/2/99 DEP File No.0330260-001-AC, PSD-FL-271 McDavid Sawmill	

PS Form **3800**, April 1995

Is your RETURN ADDRESS completed on the reverse side?

SENDER:
- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):
1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Mr. Dave Stevens
Manager of Special Products,
Forest Products
Champion International Corporation
117 Pace Parkway
Cantonment, Florida 32533

4a. Article Number
P 263 585 237

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
8/3/99

5. Received By: *(Print Name)*
PAT DIXON

6. Signature: *(Addressee*
X

8. Addressee's Address *(Only if requested and fee is paid)*

PS Form **3811**, De

...ceipt

Thank you for using Return Receipt Service.

In the Matter of an
Application for Permit by:

Mr. Dave Stevens
Manager of Special Products, Forest Products
Champion International Corporation
117 Pace Parkway
Cantonment, Florida 32533

DEP File No. 0330260-001-AC
PSD-FL-271
McDavid Sawmill
Escambia County

INTENT TO ISSUE AIR CONSTRUCTION PERMIT

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit (copy of Draft permit attached) for the proposed project, detailed in the application specified above and the enclosed Technical Evaluation and Preliminary Determination, for the reasons stated below.

The applicant, Champion International Corporation, applied on June 15, 1999 to the Department for an air construction permit for its proposed McDavid Sawmill to be located at US Highway 29, Pine Barren, Escambia County. The permit is to allow construction of a lumber sawmill with a capacity to produce up to 225 million board feet per year of lumber.

The Department has permitting jurisdiction under the provisions of Chapter 403, Florida Statutes (F.S.), and Florida Administrative Code (F.A.C.) Chapters 62-4, 62-210, and 62-212. The above actions are not exempt from permitting procedures. The Department has determined that an air construction permit is required to construct the facility.

The Department intends to issue this air construction permit based on the belief that reasonable assurances have been provided to indicate that operation of these emission units will not adversely impact air quality, and the emission units will comply with all appropriate provisions of Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297, F.A.C.

Pursuant to Section 403.815, F.S., and Rule 62-110.106(7)(a)1., F.A.C., you (the applicant) are required to publish at your own expense the enclosed Public Notice of Intent to Issue Air Construction Permit. The notice shall be published one time only in the legal advertisement section of a newspaper of general circulation in the area affected. Rule 62-110.106(7)(b), F.A.C., requires that the applicant cause the notice to be published as soon as possible after notification by the Department of its intended action. For the purpose of these rules, "publication in a newspaper of general circulation in the area affected" means publication in a newspaper meeting the requirements of Sections 50.011 and 50.031, F.S., in the county where the activity is to take place. If you are uncertain that a newspaper meets these requirements, please contact the Department at the address or telephone number listed below. The applicant shall provide proof of publication to the Department's Bureau of Air Regulation, at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, Florida 32399-2400 (Telephone: 850/488-0114; Fax 850/ 922-6979). You must provide proof of publication within seven days of publication, pursuant to Rule 62-110.106(5), F.A.C. No permitting action for which published notice is required shall be granted until proof of publication of notice is made by furnishing a uniform affidavit in substantially the form prescribed in section 50.051, F.S. to the office of the Department issuing the permit. Failure to publish the notice and provide proof of publication may result in the denial of the permit pursuant to Rules 62-110.106(9) & (11), F.A.C.

The Department will issue the final permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments and requests for public meetings concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of Public Notice of Intent to Issue Air Permit. Written comments and requests for public meetings should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by Rule 28-106.301.

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

Mediation is not available in this proceeding.

In addition to the above, a person subject to regulation has a right to apply for a variance from or waiver of the requirements of particular rules, on certain conditions, under Section 120.542 F.S. The relief provided by this state statute applies only to state rules, not statutes, and not to any federal regulatory requirements. Applying for a variance or waiver does not substitute or extend the time for filing a petition for an administrative hearing or exercising any other right that a person may have in relation to the action proposed in this notice of intent.

The application for a variance or waiver is made by filing a petition with the Office of General Counsel of the Department, 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida 32399-3000. The petition must specify the following information: (a) The name, address, and telephone number of the petitioner; (b) The name, address, and telephone number of the attorney or qualified representative of the petitioner, if any; (c) Each rule or portion of a rule from which a variance or waiver is requested; (d) The citation to the statute underlying (implemented by) the rule identified in (c) above; (e) The type of action requested; (f) The specific facts that would justify a variance or waiver for the petitioner; (g) The reason why the variance or waiver would serve the purposes of the underlying statute (implemented by the rule); and (h) A statement whether the variance or waiver is permanent or temporary and, if temporary, a statement of the dates showing the duration of the variance or waiver requested.

The Department will grant a variance or waiver when the petition demonstrates both that the application of the rule would create a substantial hardship or violate principles of fairness, as each of those terms is defined in Section 120.542(2) F.S., and that the purpose of the underlying statute will be or has been achieved by other means by the petitioner.

Persons subject to regulation pursuant to any federally delegated or approved air program should be aware that Florida is specifically not authorized to issue variances or waivers from any requirements of any such federally delegated or approved program. The requirements of the program remain fully enforceable by the Administrator of the EPA and by any person under the Clean Air Act unless and until the Administrator separately approves any variance or waiver in accordance with the procedures of the federal program.

Executed in Tallahassee, Florida.

A. A. Linero, P.E.
for C. H. Fancy, P.E., Chief
Bureau of Air Regulation

CERTIFICATE OF SERVICE

The undersigned duly designated deputy agency clerk hereby certifies that this Intent to Issue Air Construction Permit (including the Public Notice of Intent to Issue Air Construction Permit, Technical Evaluation and Preliminary Determination, and the Draft permit) was sent by certified mail (*) and copies were mailed by U.S. Mail before the close of business on 8/2/99 to the person(s) listed:

Mr. Dave Stevens, Champion *
Mr. Terry Kassabaum, Champion
Mr. Tom Davis, P.E., ECT
Mr. Ed Middleswart, NWD
Mr. Gregg Worley, EPA
Mr. John Bunyak, NPS

Clerk Stamp

FILING AND ACKNOWLEDGMENT FILED, on this date, pursuant to §120.52, Florida Statutes, with the designated Department Clerk, receipt of which is hereby acknowledged.

Barbara J. Boutwell 8/2/99
(Clerk) (Date)

PUBLIC NOTICE OF INTENT TO ISSUE AIR CONSTRUCTION PERMIT

STATE OF FLORIDA
DEPARTMENT OF ENVIRONMENTAL PROTECTION

DEP File No. 0330260-001-AC, PSD-FL-271

Champion International Corporation
McDavid Sawmill
Escambia County

The Department of Environmental Protection (Department) gives notice of its intent to issue an air construction permit to Champion International Corporation, for its proposed McDavid Sawmill to be located at US Highway 29, Pine Barren, Escambia County. The permit is to allow construction of a lumber sawmill with a capacity to produce up to 225 million board feet per year of lumber. The applicant's mailing address is: Champion International Corporation, 117 Pace Parkway, Cantonment, Florida 32533. A Best Available Control Technology (BACT) determination was required for particulate matter and VOC pursuant to Rule 62-212.400, F.A.C. and 40 CFR 52.21, Prevention of Significant Deterioration (PSD).

The lumber mill will have two natural gas fired boilers that will provide steam to three lumber drying kilns, a planermill to plane and trim dried lumber, and fugitive emissions.

Total emissions of pollutants, including quantifiable fugitive PM emissions shall not exceed the annual emission rates in tons per year: PM, 31.2; PM_{10}, 17.9; SO_2, 0.3; NOx, 39.0; VOC, 326; and CO, 70.2.

An air quality impact analysis was conducted for PM_{10}. Emissions from the facility will not significantly contribute to or cause a violation of any state or federal ambient air quality standards or PSD increments. The maximum predicted PSD Class II PM_{10} increment consumed by all sources in the area, including this project, will be as follows:

Increment Consumed ($\mu g/m^3$)	Allowable Increment ($\mu g/m^3$)	% Increment Consumed
24-hour: 3	17	18
Annual: 19	30	63

The Department will issue the Final permit with the attached conditions unless a response received in accordance with the following procedures results in a different decision or significant change of terms or conditions.

The Department will accept written comments and requests for public meetings concerning the proposed permit issuance action for a period of 30 (thirty) days from the date of publication of this Public Notice of Intent to Issue Air Construction Permit. Written comments and requests for public meetings should be provided to the Department's Bureau of Air Regulation at 2600 Blair Stone Road, Mail Station #5505, Tallahassee, FL 32399-2400. Any written comments filed shall be made available for public inspection. If written comments received result in a significant change in the proposed agency action, the Department shall revise the proposed permit and require, if applicable, another Public Notice.

The Department will issue the permit with the attached conditions unless a timely petition for an administrative hearing is filed pursuant to sections 120.569 and 120.57 F.S., before the deadline for filing a petition. The procedures for petitioning for a hearing are set forth below.

Mediation is not available in this proceeding.

A person whose substantial interests are affected by the proposed permitting decision may petition for an administrative proceeding (hearing) under sections 120.569 and 120.57 of the Florida Statutes. The petition must contain the information set forth below and must be filed (received) in the Office of General Counsel of the Department at 3900 Commonwealth Boulevard, Mail Station #35, Tallahassee, Florida, 32399-3000. Petitions filed by the permit applicant or any of the parties listed below must be filed within fourteen days of receipt of this notice of intent. Petitions filed by any persons other than those entitled to written notice under section 120.60(3) of the Florida Statutes must be filed within fourteen days of publication of the public notice or within fourteen days of receipt of this notice of intent, whichever occurs first. Under section 120.60(3), however, any person who asked the Department for notice of agency action may file a petition within fourteen days of receipt of that notice, regardless of the date of publication. A petitioner shall mail a copy of the petition to the applicant at the address indicated above at the time of filing. The failure of any person to file a petition within the appropriate time period shall constitute a waiver of that person's right to request an administrative determination (hearing) under sections 120.569 and 120.57 F.S., or to intervene in this proceeding and participate as a party to it. Any subsequent intervention will be only at the approval of the presiding officer upon the filing of a motion in compliance with Rule 28-106.205 of the Florida Administrative Code.

A petition that disputes the material facts on which the Department's action is based must contain the following information: (a) The name and address of each agency affected and each agency's file or identification number, if known; (b) The name, address, and telephone number of the petitioner, the name, address, and telephone number of the petitioner's representative, if any, which shall be the address for service purposes during the course of the proceeding; and an explanation of how the petitioner's substantial interests will be affected by the agency determination; (c) A statement of how and when petitioner received notice of the agency action or proposed action; (d) A statement of all disputed issues of material fact. If there are none, the petition must so indicate; (e) A concise statement of the ultimate facts alleged, including the specific facts the petitioner contends warrant reversal or modification of the agency's proposed action; (f) A statement of the specific rules or statutes the petitioner contends require reversal or modification of the agency's proposed action; and (g) A statement of the relief sought by the petitioner, stating precisely the action petitioner wishes the agency to take with respect to the agency's proposed action.

A petition that does not dispute the material facts upon which the Department's action is based shall state that no such facts are in dispute and otherwise shall contain the same information as set forth above, as required by rule 28-106.301

Because the administrative hearing process is designed to formulate final agency action, the filing of a petition means that the Department's final action may be different from the position taken by it in this notice. Persons whose substantial interests will be affected by any such final decision of the Department on the application have the right to petition to become a party to the proceeding, in accordance with the requirements set forth above.

A complete project file is available for public inspection during normal business hours, 8:00 a.m. to 5:00 p.m., Monday through Friday, except legal holidays, at:

Dept. of Environmental Protection Bureau of Air Regulation Suite 4, 111 S. Magnolia Drive Tallahassee, Florida, 32301 Telephone: 850/488-0114 Fax: 850/922-6979	Dept. of Environmental Protection Northwest District 160 Government Center Pensacola, Florida 32501-5794 Telephone: 904/444-8300

The complete project file includes the application, technical evaluations, Draft permit, and the information submitted by the responsible official, exclusive of confidential records under Section 403.111, F.S. Interested persons may contact the Administrator, New Source Review Section, or the Department's reviewing engineer for this project, Joseph Kahn, P.E., at 111 South Magnolia Drive, Suite 4, Tallahassee, Florida 32301, or call 850/488-0114, for additional information.

NOTICE TO BE PUBLISHED IN THE NEWSPAPER

TECHNICAL EVALUATION

AND

PRELIMINARY DETERMINATION

Champion International Corporation
McDavid Sawmill
Escambia County

DEP File No. 0330260-001-AC
PSD-FL-271

Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation

July 30, 1999

1. GENERAL INFORMATION

1.1 APPLICANT NAME AND ADDRESS

Champion International Corporation
McDavid Sawmill
117 Pace Parkway
Cantonment, Florida 32533

Authorized Representative: Mr. Dave Stevens, Manager of Special Products, Forest Products

1.2 REVIEWING AND PROCESS SCHEDULE

June 15, 1999	Received permit application and fee
July 9, 1999	Department's request for additional information
July 16, 1999	Received partial response to request for additional information
July 26, 1999	Received remainder of response to request for additional information
July 26, 1999	Application complete

2. FACILITY INFORMATION

2.1 FACILITY LOCATION

The facility is to be located at US Highway 29, Pine Barren, Escambia County, approximately 19 miles north of Pensacola. The UTM coordinates are Zone 16; 468.7 km E; 3406.5 km N. This site is not located within 100 km of any Class I PSD Area. Breton National Wildlife Refuge is approximately 155 km southwest of the facility.

2.2 STANDARD INDUSTRIAL CLASSIFICATION CODES (SIC)

Industry Group No.	24	Lumber and Wood Products, Except Furniture
Industry No.	2421	Sawmills and Planing Mills

2.3 FACILITY CATEGORY

The facility will consist of lumber sawmill with a capacity to produce up to 225 million board feet per year (mmBF/yr) of lumber. The mill will have two natural gas fired boilers that will provide steam to three lumber drying kilns, a planermill to plane and trim dried lumber, and fugitive emissions.

This facility is classified as a Major or Title V Source of air pollution because emissions of volatile organic compounds (VOC) exceeds 100 tons per year (TPY).

This facility is not within an industry included in the list of the 28 Major Facility Categories per Table 62-212.400-1, F.A.C. Because emissions are greater than 250 TPY for VOC, the facility is also a Major Facility with respect to Rule 62-212.400, Prevention of Significant Deterioration (PSD).

The applicant stated that this facility is not a major source of hazardous air pollutants (HAPs).

3. PROJECT DESCRIPTION

This project addresses the following emissions unit(s):

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
001	Natural gas fired boiler number 1
002	Natural gas fired boiler number 2
003	Lumber drying kilns 1, 2 and 3
004	Planermill
005	Fugitive PM emissions

The applicant proposes to construct this new lumber sawmill consisting of the above emissions units.

The proposed McDavid Sawmill will process southern yellow pine (SYP) logs to produce up to 225 mmBF/yr of lumber.[1] Two parallel process lines will be used to process and size the SYP logs. Logs will be transported to the site by truck, unloaded by one of two log cranes, and stored in two semi-circular piles for processing. The log cranes also transfer stored logs to the production lines. Excessively crooked logs are initially cut with chain saws. In the production process, bark is first removed from the logs with ring debarkers. (Bark and the other byproducts of fines (sawdust) and chips from the sawing and chipping operations, and the planermill trimmings and shavings, are further processed—conveyed and ground in hog mills to a consistent size for the larger material—and stored for shipment offsite.) Following debarking the SYP logs will be cut into optimal lengths by high-speed cut-up rotary saws (two saws per processing line). The cut logs are then processed into lumber: they are squared by chipping and trimmed to the desired dimensions. The sawmill operations will be performed in a semi-enclosed structure.

The green, sized lumber will then be sorted, stacked and stored in the green lumber storage shed prior to being loaded into the steam-heated kilns for drying. The drying kilns will be used to reduce lumber moisture content from approximately 50% to about 20% under controlled conditions of temperature and relative humidity. The drying kilns are each approximately 65 feet long. Drying is accomplished by circulating air (that has been indirectly heated from steam coils) over the stacked lumber using bi-directional fans located near the ceiling of the kilns. Steam for the kilns will be supplied by two natural gas fired boilers. A series of five evenly spaced, rectangular vents will be located on each side of each kiln roof that will operate in a manner that one set of five vents will act as fresh air intakes, with the other five vents acting to exhaust the moist air. The bi-directional fans will reverse the air flow approximately every two hours; consequently, using dampers, the vents will reverse function. This cycling of air flow will occur throughout the drying cycle, which may last approximately 18 hours.

The dried lumber will be removed from the kilns, allowed to cool, and be stored in the dried lumber shed. The lumber will then be unstacked and planed and trimmed in the planermill. The final lumber products will be graded, sorted, packaged and stored in the finish lumber storage area. The finish lumber will be shipped offsite by truck and rail.

4. PROJECT EMISSIONS

The emissions associated with this project are summarized below, in units of tons per year. The facility will be PSD major because of VOC and PSD significant for PM and PM_{10}.

Pollutant	Point Source Emissions	Quantifiable Fugitive Emissions	Total	PSD Major Threshold	PSD Significance Levels [1]	Subject to PSD Review?
VOC	326.0		326.0	250	--	Yes
PM	14.6	16.6	31.2	--	25	Yes
PM_{10}	14.6	3.3	17.9	--	15	Yes
SO_2	0.3		0.3	--	40	No
NOx	39.0		39.0	--	40	No
CO	70.2		70.2	--	100	No

[1] Florida Administrative Code 212.400-2.

The point sources in the previous table will have the following emissions:

Pollutant	Boilers 1 and 2 Combined	Drying Kilns	Planermill	Total Point Source Emissions
VOC	6.5	319.5	--	326.0
PM	1.4	4.2	9.0	14.6
PM_{10}	1.4	4.2	9.0	14.6
SO_2	0.3	--	--	0.3
NOx	39.0	--	--	39.0
CO	70.2	--	--	70.2

Fugitive particulate matter emissions are quantifiable from the following operations and activities: bark processing and handling, fines (sawdust) processing and handling, chips processing and handling, planermill shavings loading, truck traffic on paved facility roadways, and temporary outdoor storage piles.

The proposed facility will be a PSD major facility because potential emissions of VOC will exceed 250 tons per year. The facility will also have "significant" potential emissions of particulate matter (PM and PM_{10}). The facility will not have significant potential emissions of carbon monoxide (CO), sulfur dioxide (SO_2) and nitrogen oxides (NOx). The project is therefore subject to review for the Prevention of Significant Deterioration (PSD) and a determination of Best Available Control Technology (BACT) in accordance with Rules 62-212.400, F.A.C., for VOC and PM/PM_{10}.

5. RULE APPLICABILITY

The proposed project is subject to preconstruction review requirements under the provisions of Chapter 403, Florida Statutes, and Chapters 62-4, 62-204, 62-210, 62-212, 62-214, 62-296, and 62-297 of the Florida Administrative Code (F.A.C.).

This facility is located in an area designated, in accordance with Rule 62-204.340, F.A.C., as attainment for the criteria pollutants ozone, carbon monoxide, and nitrogen dioxide; and designated as unclassifiable for PM_{10}, lead and sulfur dioxide.

The proposed project was reviewed under Rule 62-212.400, F.A.C., for Prevention of Significant Deterioration (PSD) for the pollutants VOC and PM/PM_{10}. This review consisted of a determination of

Best Available Control Technology (BACT) and an analysis of the air quality impact of the increased emissions. (The BACT determination is documented separately.) The review also includes an analysis of the project's impacts on soils, vegetation and visibility, along with air quality impacts resulting from associated commercial, residential and industrial growth.

The emissions units and fugitive sources are subject to limits determined as BACT for VOC, particulate matter, and visible emissions. The boilers are subject to regulation under the New Source Performance Standards: 40 CFR 60 Subpart A, General Provisions, and Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. However, this regulation only requires record keeping and reporting for natural gas fired boilers. The boilers are also subject to regulation under Rule 62-296.406, F.A.C., for fossil fuel steam generators less than 250 mmBtu/hr, which requires a determination of BACT for sulfur dioxide and particulate matter emissions. The visible emissions provisions of this rule are less stringent that the limit determined as BACT for the boilers.

The emission units affected by this permit shall comply with all applicable provisions of the Florida Administrative Code, including applicable portions of the Code of Federal Regulations incorporated therein.

6. AIR POLLUTION CONTROL TECHNIQUES

The applicant proposed to control air pollutant emissions through various methods. The control techniques and emission limits determined to be BACT are discussed in more detail in the BACT determination. Following is a discussion of the control techniques for this project by source.

6.1 EMISSIONS UNITS 001 & 002, NATURAL GAS FIRED BOILERS 1 & 2

The primary control techniques for these emissions units will be proper combustion of only natural gas. The emissions units will emit combustion products: PM, PM_{10}, VOC, CO, SO_2, and NOx. The boilers will be equipped with low NOx burners. Emissions of NOx and CO will be reduced by proper operation of the low NOx burners, and shall be limited by permit. Emissions were estimated by the applicant using emission factors provided by the boiler vendor, and from AP-42 factors. The applicant requested a federally enforceable limitation on heat input on a rolling 12-month basis (779,640 mmBtu/12-months, both boilers combined) to limit potential emissions of NOx and CO to levels less than the PSD significance criteria. BACT for these emissions units will be the firing of only pipeline natural gas, and visible emissions will be limited to 5% opacity at all times. The use of only natural gas is also BACT for purposes of Rule 62-296.406, F.A.C.

6.2 EMISSIONS UNIT 003, LUMBER DRYING KILNS 1, 2 & 3

The primary control techniques for the sources of this emissions unit will be proper operation and maintenance. The sources of this emissions unit will emit primarily VOC, but also PM and PM_{10}, which are primarily composed of condensable hydrocarbons and dust on lumber surfaces. VOC and PM emissions were estimated by the applicant using emission factors from NCASI. As shown by NCASI data[2], VOC emissions vary with time over the drying cycle. VOC emissions were estimated to be 85 pounds per hour, as the maximum short term rate (3.32 lb/mBF times 25.86 mBF/hr), and 320 tons per year, as the average long term rate (2.84 lb/mBF times 225,000 mBF/yr). As detailed in the BACT determination, no controls are feasible for these emissions units. However, visible emissions will be limited to 5% opacity at all times. Emissions unit 003 will be subject to a rolling 12-month total limit on board feet of lumber processed through the kilns.

6.3 EMISSIONS UNIT 004, PLANERMILL

The primary control technique for this emissions unit will be use of particulate capture and control devices. The planermill operations will be enclosed within the planermill building and be subject to a local exhaust ventilation system to capture particulate matter emissions from the planing and trimming operations. The captured particulate matter will be removed from the exhaust stream through a combination cyclone/baghouse control system prior to exiting to the atmosphere. The applicant proposed emissions will not exceed 0.004 grains per dry standard cubic foot (dscf) at a nominal flow rate of 60,000 dscfm, which is equivalent to the limit of 2.1 pounds per hour. The permit will limit emissions to 2.1 pounds per hour. Visible emissions will also be limited to 5% opacity at all times, and, after passing an initial test for particulate matter, this source will be allowed to comply with an alternate standard of 5% opacity in lieu of conducting regular stack tests for particulate matter, pursuant to Rule 62-297.620, F.A.C. The Department shall require testing if it has reason to believe that the particulate weight emission limit is not being met.

6.4 EMISSIONS UNIT 005, FUGITIVE PM EMISSIONS

The fugitive sources emit particulate matter, primarily wood particles. Quantifiable fugitive sources are associated with processing and handling of bark, fines (sawdust), and chips byproducts; handling of planermill shavings; temporary outdoor storage piles for bark, fines, chips and shavings (expected to be used about ten days per year); and truck traffic on paved roadways on the site. Other sources of fugitive emissions are not quantifiable, including log debarking and sawing, and screening and chipping operations. Particulate emissions will be controlled through the application of reasonable precautions to prevent emissions of unconfined particulate matter. For example, wood by-product transfer points will be enclosed, and the manufacturing area and roadways will be paved and periodically swept or watered as needed. Temporary outdoor storage piles shall be compacted and shaped to minimize wind erosion, but the application of water to these piles is not required because of the potential to induce decomposition which could lead to a fire, and because the application of water may make the materials unusable.

6.5 COMPLIANCE PROCEDURES

The permit requires annual compliance testing for visible emissions for emissions units 001 – 004. Emissions units 001 and 002 will each be required to be tested for NOx and CO initially and upon renewal of each operation permit. Record keeping of natural gas consumption in both boilers combined, along with quarterly records of heat value, will be used to demonstrate compliance with the rolling 12-month total heat input limit for the boilers. Record keeping of the board feet of lumber processed through the kilns each month will be used to demonstrate compliance with the rolling 12-month total limit on board feet of lumber for emissions unit 003. Emissions unit 004 will be required to demonstrate compliance for particulate matter initially, but no subsequent PM test is required unless the Department has reason to believe that the particulate standard is not being met.

6.6 EXCESS EMISSIONS

Allowable Excess Emissions: Pursuant to Rules 62-4.070(3) and 62-210.700(5), F.A.C., for purposes of this permit, all limits established pursuant to the State Implementation Plan, including those limits established as BACT, include emissions during periods of startup and shutdown, and are not subject to the provisions of Rule 62-210.700(1), F.A.C. Excess emission which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during start-up, shutdown or malfunction shall be prohibited pursuant to Rule 62-210.700(4), F.A.C.

7. SOURCE IMPACT ANALYSIS

The proposed project will emit the following PSD pollutants (Table 212.400-2): particulate matter (PM/PM_{10}), and volatile organic compounds (VOC). The applicant's proposed annual emissions are summarized in section 4 and form the basis of the source impact review.

7. AIR QUALITY ANALYSIS

7.1 INTRODUCTION

According to the application, the proposed project will increase emissions of two pollutants in excess of PSD significant amounts: PM/PM_{10} and VOC. The nearest PSD Class I area is the Breton National Wilderness Area located 155 km to the southwest. Because of the considerable distance of the project from this Class I area and the types and amounts of emissions projected, no PSD Class I analyses were required.

For PM no analyses by the applicant are required since there are no longer any AAQS nor PSD significant impact levels or increments for this pollutant. The analysis for particulate matter is covered under the pollutant PM_{10}.

For PM_{10} the significant impact analyses performed by the applicant predicted maximum off-site impacts of greater than the significance levels of 5 $\mu g/m^3$, 24-hour average, and 1 $\mu g/m^3$, annual average in the vicinity of the facility.

For VOC potential emissions are above the 40 TPY significance threshold for the pollutant ozone. The applicant presented the potential increases to the Department and the U.S. EPA, and discussed options available to predict potential impacts associated with the emissions and formation of ozone. Based on the available information, the Department has determined that the use of regional models which incorporate the complex chemical mechanisms for predicting ozone formation is not feasible for this project.

Based on the above information, the air quality impact analyses required by the PSD regulations for these pollutants include:

- A significant impact analysis for PM_{10};
- An analysis of existing air quality for PM_{10};
- A PSD Class II increment analysis for PM_{10};
- An Ambient Air Quality Standards (AAQS) analysis for PM_{10};
- Analysis of impacts on soils, vegetation, wildlife, visibility and growth-related air quality impacts.

Based on the required analyses, the Department has reasonable assurance that the proposed project, as described in this report and subject to the conditions of approval proposed herein, will not cause or significantly contribute to a violation of any AAQS or PSD increment. However, the following EPA-directed stack height language is included: "In approving this permit, the Department has determined that the application complies with the applicable provisions of the stack height regulations as revised by EPA on July 8, 1985 (50 FR 27892). Portions of the regulations have been remanded by a panel of the U.S. Court of Appeals for the D.C. Circuit in NRDC v. Thomas, 838 F. 2d 1224 (D.C. Cir. 1988). Consequently, this permit may be subject to modification if and when EPA revises the regulation in response to the court decision. This may result in revised emission limitations or may affect other actions taken by the source owners or operators." A discussion of the required analyses follows.

7.2 ANALYSIS OF EXISTING AIR QUALITY AND DETERMINATION OF BACKGROUND CONCENTRATIONS

Preconstruction ambient air quality monitoring is required for all pollutants subject to PSD review unless otherwise exempted or satisfied. The monitoring requirement may be satisfied by using existing representative monitoring data, if available. An exemption to the monitoring requirement shall be granted by rule if the maximum air quality impact resulting from the projected emissions increase, as determined by air quality modeling, is less than a pollutant-specific de minimus concentration. In addition, if EPA has not established an acceptable monitoring method for the specific pollutant, monitoring may not be required.

If preconstruction ambient monitoring is exempted, determination of background concentrations for PSD significant pollutants with established AAQS may still be necessary for use in any required AAQS analysis. These concentrations may be established from the required preconstruction ambient air quality monitoring analysis or from existing representative monitoring data. These background ambient air quality concentrations are added to pollutant impacts predicted by modeling and represent the air quality impacts of sources not included in the modeling.

The table below shows that predicted PM_{10} impacts from the project are predicted to be above the de minimus level. Therefore, the applicant is not exempted from preconstruction ambient air quality monitoring is required for this pollutant. The applicant may instead satisfy this requirement using previously existing representative data. Since there are previously existing monitoring data in the vicinity of the project (Cantonment), the monitoring requirement can be satisfied by using these data. A PM_{10} background concentration of 67 and 24 ug/m^3 for the 24-hour and annual averaging times, respectively, was established from these previously existing air quality data for use in the AAQS analysis required for PM_{10}.

Maximum Project Air Quality Impacts for Comparison to De Minimus Ambient Levels

Avg. Time	Max Predicted Impact (ug/m^3)	De Minimus Level (ug/m^3)	Impact Above/ Below De Minimus
24-hour	19	10	Above

7.3 MODELS AND METEOROLOGICAL DATA USED IN THE AIR QUALITY IMPACT ANALYSIS

The applicant and the Department used the EPA-approved Industrial Source Complex Short-Term (ISCST3) dispersion model to evaluate the pollutant emissions from the proposed project. The model determines ground-level concentrations of inert gases or small particles emitted into the atmosphere by point, area, and volume sources. The model incorporates elements for plume rise, transport by the mean wind, Gaussian dispersion, and pollutant removal mechanisms such as deposition. The ISCST3 model allows for the separation of sources, building wake downwash, and various other input and output features. A series of specific model features, recommended by the EPA, are referred to as the regulatory options. The applicant used the EPA recommended regulatory options. Direction-specific downwash parameters were used for all sources for which downwash was considered. The stacks associated with this project all satisfy the good engineering practice (GEP) stack height criteria.

Meteorological data used in the ISCST3 model consisted of a consecutive 5-year period of hourly surface weather observations and twice-daily upper air soundings from the National Weather Service (NWS) stations at Pensacola, Florida (surface data) and Apalachicola, Florida (upper air data). The 5-year period of meteorological data was from 1986 through 1990. These NWS stations were selected for use in the study because they are the closest primary weather stations to the study area and are most representative of the project site. The surface observations included wind direction, wind speed, temperature, cloud cover, and cloud ceiling.

Since five years of data were used in ISCST3, the highest-second-high (HSH) short-term predicted concentrations were compared with the appropriate AAQS or PSD increments. For the annual averages, the highest predicted yearly average was compared with the standards. For determining the project's significant impact area in the vicinity of the facility, and for determining if significant impacts occur from the project on any PSD Class I area, both the highest short-term predicted concentrations and the highest predicted yearly averages were compared to their respective significant impact levels.

7.4 SIGNIFICANT IMPACT ANALYSIS

Initially, the applicant conducts modeling using only the proposed project's emissions changes. If this modeling shows significant impacts, further modeling is required to determine the project's impacts on the AAQS or PSD increments. Sources addressed in this analysis were the two package boilers, three lumber kilns, Planermill dust collector, and fugitive PM_{10} emissions sources (i.e., material handling and storage, outdoor storage piles, and truck traffic on paved roads). Impacts were predicted at receptors located along the fenceline and out to 10 km from the proposed project. For each pollutant subject to PSD and also subject to PSD increment and/or AAQS analyses, this modeling compares maximum predicted impacts due to the project with PSD significant impact levels to determine whether significant impacts due to the project are predicted in the vicinity of the facility. The table below show the results of this modeling. A significant impact was predicted in the Class II area in the vicinity of the project for both PM_{10} averaging times. Therefore, further PM_{10} AAQS and PSD increment analyses in the vicinity of the project were required for this project.

Maximum Project Air Quality Impacts for Comparison to PSD Class II Significant Impact Levels in the Vicinity of the Facility

Averaging Time	Maximum Predicted Impact (ug/m^3)	Significant Impact Level (ug/m^3)	Significant Impact
Annual	2	1	Yes
24-hour	19	5	Yes

7.5 PSD CLASS II INCREMENT ANALYSIS

The PSD increment represents the amount that new sources in an area may increase ambient ground level concentrations of a pollutant from a baseline concentration which was established in 1977 for PM_{10} (the baseline year was 1975 for existing major sources of PM_{10}). The emissions values that are input into the model for predicting increment consumption are based on actual emissions from increment-consuming facility sources and all other increment-consuming sources in the vicinity of the facility. The maximum predicted PSD Class II area PM_{10} increments consumed by this project and all other increment-consuming sources in the vicinity of the facility are shown below.

PSD Class II Increment Analysis

Averaging Time	Maximum Predicted Impact (ug/m^3)	Impact Greater Than Allowable Increment	Allowable Increment (ug/m^3)
Annual	3	No	17
24-hour	19	No	30

7.6 AAQS ANALYSIS

For pollutants subject to an AAQS review, the total impact on ambient air quality is obtained by adding "background" concentrations to the maximum modeled concentrations for each pollutant and averaging time. The maximum modeled concentrations are based on the maximum allowable emissions from facility sources and all other sources in the vicinity of the facility. These "background" concentrations take into account all sources of a particular pollutant that are not explicitly modeled. The results of the AAQS analysis for PM_{10} are summarized in the table below. As shown in this table, emissions from the proposed facility are not expected to cause or contribute to a violation of any AAQS.

Ambient Air Quality Impacts

Averaging Time	Major Sources Impact (ug/m^3)	Background Conc. (ug/m^3)	Total Impact (ug/m^3)	Florida AAQS (ug/m^3)	Total Impact Greater Than AAQS
Annual	3	24	27	50	No
24-hour	19	67	86	150	No

7.7 ADDITIONAL IMPACTS ANALYSIS

7.7.1 IMPACTS ON SOILS, VEGETATION, WILDLIFE AND VISIBILITY

The maximum ground-level concentrations predicted to occur from PM_{10} emissions as a result of the proposed project, including background concentrations and all other nearby sources, will be below the associated AAQS. The AAQS are designed to protect both the public health and welfare. As such, this project is not expected to have a harmful impact on soils and vegetation in the PSD Class II area.

7.7.2 GROWTH-RELATED AIR QUALITY IMPACTS

The proposed modification will not significantly change employment, population, housing or commercial/industrial development in the area to the extent that a significant air quality impact will result.

8. CONCLUSION

Based on the foregoing technical evaluation of the application and additional information submitted by the applicant and other available information, the Department has made a preliminary determination that the proposed project will comply with all applicable state and federal air pollution regulations. The Department will issue a draft permit to the applicant that allow the applicant to construct its proposed sawmill subject to the conditions of that permit.

Joseph Kahn, P.E. and Cleve Holladay (impact analysis)
Mail Station #5505
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
850/921-9519

REFERENCES

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[1] The process description in this document quotes extensively from the applicant's facility description prepared by Environmental Consulting & Technology, Inc.

[2] See Technical Bulletin No. 718, *A Small-scale Kiln Study on Method 25A Measurements of Volatile Organic Compound Emissions From Lumber Drying*, National Council of the Paper Industry for Air and Stream Improvement, Inc., Research Triangle Park, NC, July 1, 1996.

PERMITTEE

Champion International Corporation
McDavid Sawmill
117 Pace Parkway
Cantonment, Florida 32533

Permit No.	0330260-001-AC PSD-FL-271
Project	Lumber Sawmill
Expires:	^DRAFT

Authorized Representative:

Mr. Dave Stevens, Manager of Special Products
Forest Products

PROJECT AND LOCATION

This permit authorizes the applicant to construct a lumber sawmill with a capacity to produce up to 225 million board feet per year of lumber. The SIC code for this project is 2421.

The facility is to be located at US Highway 29, Pine Barren, Escambia County, approximately 19 miles north of Pensacola. The UTM coordinates are Zone 16; 468.7 km E; 3406.5 km N. This site is not located within 100 km of any Class I PSD Area. The Breton National Wildlife Refuge is approximately 155 km southwest of the facility.

STATEMENT OF BASIS

This construction/PSD permit is issued under the provisions of Chapter 403 of the Florida Statutes (F.S.), and the Florida Administrative Code (F.A.C.) Chapters 62-4, 62-204, 62-210, 62-212, 62-296, and 62-297. The above named permittee is authorized to construct the emissions units in accordance with the conditions of this permit and as described in the application, approved drawings, plans, and other documents on file with the Department of Environmental Protection (Department).

APPENDICES

The attached appendices are a part of this permit:

Appendix A	NSPS General Provisions
Appendix B	BACT Determination
Appendix GC	General Permit Conditions

DRAFT

Howard L. Rhodes, Director
Division of Air Resources
Management

DRAFT

FACILITY DESCRIPTION

The facility will consist of lumber sawmill with a capacity to produce up to 225 million board feet per year (mmBF/yr) of lumber. The mill will have two natural gas fired boilers that will provide steam to three lumber drying kilns, a planermill to plane and trim dried lumber, and fugitive emissions.

PROJECT DETAILS

This project addresses the following emissions unit(s):

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
001	Natural gas fired boiler number 1
002	Natural gas fired boiler number 2
003	Lumber drying kilns 1, 2 and 3
004	Planermill operations
005	Fugitive PM emissions

The applicant proposes to construct this new lumber sawmill consisting of the above emissions units.

[Note: Emissions unit 005 is subject only to the facility-wide specific conditions of this permit specified in Section II.]

REGULATORY CLASSIFICATION

This facility is classified as a Major or Title V Source of air pollution because emissions of volatile organic compounds (VOC) exceed 100 tons per year (TPY).

This facility is not within an industry included in the list of the 28 Major Facility Categories per Table 62-212.400-1, F.A.C. Because emissions are greater than 250 TPY for VOC, the facility is also a Major Facility with respect to Rule 62-212.400, Prevention of Significant Deterioration (PSD).

The applicant stated that this facility is not a major source of hazardous air pollutants (HAPs).

The emissions units and fugitive sources are subject to limits determined as BACT for VOC, particulate matter, and visible emissions. The boilers are subject to regulation under the New Source Performance Standards: 40 CFR 60 Subpart A, General Provisions, and Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. However, this regulation only requires record keeping and reporting for natural gas fired boilers. The boilers are also subject to regulation under Rule 62-296.406, F.A.C., for fossil fuel steam generators less than 250 mmBtu/hr, which requires a determination of BACT for sulfur dioxide and particulate matter emissions. The visible emissions provisions of this rule are less stringent that the limit determined as BACT for the boilers.

Reviewing and Process Schedule

June 15, 1999	Received permit application and fee
July 9, 1999	Department's request for additional information
July 16, 1999	Received partial response to request for additional information
July 26, 1999	Received remainder of response to request for additional information
July 26, 1999	Application complete
^DRAFT	Distributed Notice of Intent to Issue and supporting documents
^DRAFT	Notice of Intent published in ^DRAFT

Relevant Documents

The documents listed below are the basis of the permit. They are specifically related to this permitting action. These documents are on file with the Department.

- Permit application
- Department's requests for additional information noted above
- Applicant's additional information noted above
- Department's Technical Evaluation and Preliminary Determination dated July 30, 1999
- Department's Intent to Issue

The following specific conditions apply to all emissions units at this facility addressed by this permit.

ADMINISTRATIVE

1. Regulating Agencies: All documents related to applications for permits to construct, operate or modify an emissions unit should be submitted to the Bureau of Air Regulation (BAR), Florida Department of Environmental Protection at Mail Station #5505, 2600 Blair Stone Road, Tallahassee, Florida 32399-2400, phone number 850/488-0114. All documents related to reports, tests, minor modifications and notifications shall be submitted to the Department's Northwest District office at 160 Governmental Center, Pensacola, Florida 32501-5794, phone number 850/595-8300.

2. General Conditions: The owner and operator is subject to and shall operate under the attached General Permit Conditions G.1 through G.15 listed in Appendix GC of this permit. General Permit Conditions are binding and enforceable pursuant to Chapter 403 of the Florida Statutes. [Rule 62-4.160, F.A.C.]

3. Terminology: The terms used in this permit have specific meanings as defined in the corresponding chapters of the Florida Administrative Code.

4. Applicable Regulations, Forms and Application Procedures: Unless otherwise indicated in this permit, the construction and operation of the subject emissions unit shall be in accordance with the capacities and specifications stated in the application. The facility is subject to all applicable provisions of Chapter 403, F.S. and Florida Administrative Code Chapters 62-4, 62-110, 62-204, 62-212, 62-213, 62-296, 62-297 and the Code of Federal Regulations Title 40, Part 60, adopted by reference in the Florida Administrative Code (F.A.C.) regulations. The permittee shall use the applicable forms listed in Rule 62-210.900, F.A.C. and follow the application procedures in Chapter 62-4, F.A.C. Issuance of this permit does not relieve the facility owner or operator from compliance with any applicable federal, state, or local permitting or regulations. [Rules 62-204.800, 62-210.300 and 62-210.900, F.A.C.]

5. New or Additional Conditions: Pursuant to Rule 62-4.080, F.A.C., for good cause shown and after notice and an administrative hearing, if requested, the Department may require the permittee to conform to new or additional conditions. The Department shall allow the permittee a reasonable time to conform to the new or additional conditions, and on application of the permittee, the Department may grant additional time. [Rule 62-4.080, F.A.C.]

6. Expiration: This air construction permit shall expire on ^DRAFT. The permittee, for good cause, may request that this construction/PSD permit be extended. Such a request shall be submitted to the Department's Bureau of Air Regulation prior to 60 days before the expiration of the permit. [Rules 62-210.300(1), 62-4.070(4), 62-4.080, and 62-4.210, F.A.C]

   PSD Expiration: Approval to construct shall become invalid if construction is not commenced within 18 months after receipt of such approval, or if construction is discontinued for a period of 18 months or more, or if construction is not completed within a reasonable time. The Department may extend the 18-month period upon a satisfactory showing that an extension is justified. [40 CFR 52.21(r)(2)]

   BACT Determination: In conjunction with extension of the 18 month periods to commence or continue construction, or extension of the permit expiration date, the permittee may be required to demonstrate the adequacy of any previous determination of Best Available Control Technology (BACT) for the source. [40 CFR 52.21(j)(4)]

7. Modifications: No emissions unit or facility subject to this permit shall be constructed or modified without obtaining an air construction permit from the Department. Such permit must be obtained prior to the beginning of construction or modification. [Rules 62-210.300(1) and 62-212.300(1)(a), F.A.C.]

8. Title V Operation Permit Required: This permit authorizes construction and/or installation of the permitted emissions unit and initial operation to determine compliance with Department rules. A Title V operation permit is required for regular operation of the permitted emissions unit. The owner or operator shall apply for and receive a Title V operation permit prior to expiration of this permit. To apply for a Title V operation permit, the applicant shall submit the appropriate application form, compliance test results, and such additional information as the Department may by law require. The application shall be submitted to the Department's Northwest District office. [Rules 62-4.030, 62-4.050, 62-4.220, and Chapter 62-213, F.A.C.]

EMISSION LIMITING STANDARDS

9. General Visible Emissions Standard: Except for emissions units that are subject to a particulate matter or opacity limit set forth or established by rule and reflected by conditions in this permit, no person shall cause, let, permit, suffer, or allow to be discharged into the atmosphere the emissions of air pollutants from any activity, the density if which is equal to or greater than that designated as Number 1 on the Ringelmann Chart (20% opacity). The test method for visible emissions shall be EPA Method 9, incorporated and adopted by reference in Chapter 62-297, F.A.C. Test procedures shall meet all applicable requirements of Chapter 62-297, F.A.C. [Rule 62-296.320(4)(b)1, F.A.C.]

10. Unconfined Emissions of Particulate Matter: [Rules 62-296.320(4)(c) and 62-212.400, F.A.C., and BACT]

    (a) No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity, including vehicular movement; transportation of materials; construction, alteration, demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling; without taking reasonable precautions to prevent such emissions.

    (b) Any permit issued to a facility with emissions of unconfined particulate matter shall specify the reasonable precautions to be taken by that facility to control the emissions of unconfined particulate matter.

    (c) Reasonable precautions include the following:

    - Paving and maintenance of roads, parking areas and yards.
    - Application of water or chemicals to control emissions from such activities as demolition of buildings, grading roads, construction, and land clearing.
    - Application of asphalt, water, oil, chemicals or other dust suppressants to unpaved roads, yards, open stock piles and similar activities.
    - Removal of particulate matter from roads and other paved areas under the control of the owner or operator of the facility to prevent reentrainment, and from buildings or work areas to prevent particulate from becoming airborne.
    - Landscaping or planting of vegetation.
    - Use of hoods, fans, filters, and similar equipment to contain, capture and/or vent particulate matter.

- Confining abrasive blasting where possible.
- Enclosure or covering of conveyor systems.

Additional reasonable precautions applicable to this facility are:

- Wood by-product transfer points shall be enclosed to the extent necessary to minimize the emissions of unconfined particulate matter.
- All by-product (bark, fines (sawdust), chips, shavings) open storage piles shall be shaped, compacted and oriented to minimize wind erosion. [Note: The applicant estimated that by-product open storage piles are estimated to be used for about 10 days each year.]
- The manufacturing area and access roadways for the facility shall be paved with asphalt or concrete.
- The manufacturing area and access roadways for the facility shall be swept or watered as needed to prevent the emissions of unconfined particulate matter.

(d) In determining what constitutes reasonable precautions for a particular source, the Department shall consider the cost of the control technique or work practice, the environmental impacts of the technique or practice, and the degree of reduction of emissions expected from a particular technique or practice.

11. General Pollutant Emission Limiting Standards: [Rule 62-296.320(1)(a)&(2), F.A.C.]

(a) No person shall not store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department.

(b) No person shall cause, suffer, allow or permit the discharge of air pollutants which cause or contribute to an objectionable odor.

[Note: An objectionable odor is defined in Rule 62-210.200(203), F.A.C., as any odor present in the outdoor atmosphere which by itself or in combination with other odors, is or may be harmful or injurious to human health or welfare, which unreasonably interferes with the comfortable use and enjoyment of life or property, or which creates a nuisance.]

OPERATIONAL REQUIREMENTS

12. Plant Operation - Problems: If temporarily unable to comply with any of the conditions of the permit due to breakdown of equipment or destruction by hazard of fire, wind or by other cause, the permittee shall immediately notify the Department's Northwest District office. The notification shall include pertinent information as to the cause of the problem, and what steps are being taken to correct the problem and to prevent its recurrence, and where applicable, the owner's intent toward reconstruction of destroyed facilities. Such notification does not release the permittee from any liability for failure to comply with Department rules. [Rule 62-4.130, F.A.C.]

13. Circumvention: No person shall circumvent any air pollution control device or allow the emission of air pollutants without the applicable air pollution control device operating properly. [Rule 62-210.650, F.A.C.]

14. Excess Emissions:

For purposes of this permit, all limits established pursuant to the State Implementation Plan, including those limits established as BACT, include emissions during periods of startup and shutdown, and are not subject to the provisions of Rule 62-210.700(1), F.A.C. This provision can not be used to vary any NSPS requirements from any subpart of 40 CFR 60. Excess emissions which are caused entirely or in part by poor maintenance, poor operation, or any other equipment or process failure which may reasonably be prevented during start-up, shutdown or malfunction shall be prohibited pursuant to Rule 62-210.700(4), F.A.C. [Rules 62-4.070(3) and 62-210.700(5), F.A.C.]

Excess emissions resulting from malfunction of any emissions units shall be permitted providing (1) best operational practices to minimize emissions are adhered to and (2) the duration of excess emissions shall be minimized, but in no case exceed two hours in any 24 hour period unless specifically authorized by the Department for longer duration. [Rule 62-210.700(1), F.A.C.]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

15. Required Number of Test Runs: For mass emission limitations, a compliance test shall consist of three complete and separate determinations of the total air pollutant emission rate through the test section of the stack or duct and three complete and separate determinations of any applicable process variables corresponding to the three distinct time periods during which the stack emission rate was measured; provided, however, that three complete and separate determinations shall not be required if the process variables are not subject to variation during a compliance test, or if three determinations are not necessary in order to calculate the unit's emission rate. The three required test runs shall be completed within one consecutive five-day period. In the event that a sample is lost or one of the three runs must be discontinued because of circumstances beyond the control of the owner or operator, and a valid third run cannot be obtained within the five-day period allowed for the test, the Secretary or his or her designee may accept the results of two complete runs as proof of compliance, provided that the arithmetic mean of the two complete runs is at least 20% below the allowable emission limiting standard. [Rule 62-297.310(1), F.A.C.]

16. Operating Rate During Testing: Unless otherwise stated in the applicable emission limiting standard rule, testing of emissions shall be conducted with the emissions unit operation at permitted capacity. Permitted capacity is defined as 90 to 100 percent of the maximum operation rate allowed by the permit. If it is impractical to test at permitted capacity, an emissions unit may be tested at less than the minimum permitted capacity; in this case, subsequent emissions unit operation is limited to 110 percent of the test load until a new test is conducted. Once the unit is so limited, operation at higher capacities is allowed for no more than 15 consecutive days for the purpose of additional compliance testing to regain the authority to operate at the permitted capacity. [Rule 62-297.310(2), F.A.C.]

17. Calculation of Emission Rate: The indicated emission rate or concentration shall be the arithmetic average of the emission rate or concentration determined by each of the three separate test runs unless otherwise specified in a particular test method or applicable rule. [Rule 62-297.310(3), F.A.C.]

18. Test Procedures shall meet all applicable requirements of Rule 62-297.310(4), F.A.C. [Rule 62-297.310(4), F.A.C.]

19. Determination of Process Variables: [Rule 62-297.310(5), F.A.C.]

    (a) Required Equipment. The owner or operator of an emissions unit for which compliance tests are required shall install, operate, and maintain equipment or instruments necessary to determine process variables, such as process weight input or heat input, when such data are needed in conjunction with emissions data to determine the compliance of the emissions unit with applicable emission limiting standards.

    (b) Accuracy of Equipment. Equipment or instruments used to directly or indirectly determine process variables, including devices such as belt scales, weight hoppers, flow meters, and tank scales, shall be calibrated and adjusted to indicate the true value of the parameter being measured with sufficient accuracy to allow the applicable process variable to be determined within 10% of its true value.

20. Required Stack Sampling Facilities: Sampling facilities include sampling ports, work platforms, access to work platforms, electrical power, and sampling equipment support. All stack sampling facilities must meet any Occupational Safety and Health Administration (OSHA) Safety and Health Standards described in 29 CFR Part 1910, Subparts D and E. Sampling facilities shall also conform to the requirements of Rule 62-297.310(6), F.A.C. [Rule 62-297.310(6), F.A.C.]

21. Test Notification: The owner or operator shall notify the Department's Northwest District office and, if applicable, appropriate local program, at least 15 days prior to the date on which each formal compliance test is to begin. Notification shall include the date, time, and place of each such test, and the test contact person who will be responsible for coordinating and having such test conducted for the owner or operator. [Rule 62-297.310(7)(a)9., F.A.C.]

22. Special Compliance Tests: When the Department, after investigation, has good reason (such as complaints, increased visible emissions or questionable maintenance of control equipment) to believe that any applicable emission standard contained in a Department rule or in a permit issued pursuant to those rules is being violated, it shall require the owner or operator of the facility to conduct compliance tests which identify the nature and quantity of pollutant emissions from the emissions units and to provide a report on the results of said tests to the Department. [Rule 62-297.310(7)(b), F.A.C.]

REPORTING AND RECORD KEEPING REQUIREMENTS

23. Duration of Record Keeping: Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department. The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application for this permit. These materials shall be retained at least five three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule. [Rules 62-4.160(14)(a)&(b)and 62-213.440(1)(b)2.b., F.A.C.]

24. Test Reports: The owner or operator of an emissions unit for which a compliance test is required shall file a report with the Department on the results of each such test. The required test report shall be filed with the Department as soon as practical but no later than 45 days after the last sampling run of each

test is completed. The test report shall provide sufficient detail on the emissions unit tested and the test procedures used to allow the Department to determine if the test was properly conducted and the test results properly computed. As a minimum, the test report, other than for an EPA or DEP Method 9 test, shall provide the applicable information listed in Rule 62-297.310(8)(c), F.A.C. [Rule 62-297.310(8), F.A.C.]

25. Excess Emissions Report: If excess emissions occur, the owner or operator shall notify the Department within one working day of: the nature, extent, and duration of the excess emissions; the cause of the excess emissions; and the actions taken to correct the problem. In addition, the Department may request a written summary report of the incident. Pursuant to the New Source Performance Standards, excess emissions shall also be reported in accordance with 40 CFR 60.7, Subpart A. [Rule 62-4.130, F.A.C.]

26. Excess Emissions Report - Malfunctions: In case of excess emissions resulting from malfunctions, each owner or operator shall notify the Department's Northwest District office in accordance with Rule 62-4.130, F.A.C. A full written report on the malfunctions shall be submitted in a quarterly report if requested by the Department. [Rule 62-210.700(6), F.A.C.]

27. Annual Operating Report for Air Pollutant Emitting Facility: The Annual Operating Report for Air Pollutant Emitting Facility shall be completed each year and shall be submitted to the Department's Northwest District office by March 1 of the following year. [Rule 62-210.370(3), F.A.C.]

The following specific conditions apply to the following emissions units after construction:

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
001	Natural gas fired boiler number 1
002	Natural gas fired boiler number 2

[Note: Emissions units 001 and 002 are subject to 40 CFR 60, Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (40 CFR 60.48c) and 40 CFR 60 Subpart A (effective July 1, 1997); are subject to regulation under Rule 62-296.406, F.A.C., for fossil fuel steam generators less than 250 mmBtu/hr, which requires a determination of BACT for sulfur dioxide and particulate matter emissions; are subject to PSD for particulate matter (the visible emissions limit determined as BACT per Rule 62-212.400, F.A.C., is more stringent than the VE limit of Rule 62-296.406, F.A.C.); and are subject to the requirements of the state rules as indicated in this permit. The conditions of this permit effectively limit combined annual emissions from these emissions units (combined) to: PM, 1.4; PM_{10}, 1.4; NOx, 39.0; CO, 70.2; VOC, 6.5; and SO_2, 0.3.]

OPERATIONAL REQUIREMENTS

1. Hours of Operation: These emissions units may operate continuously, i.e., 8,760 hours/year. [Rule 62-210.200, F.A.C., Definitions-potential to emit (PTE)]
2. Fuel Limited: These emissions units shall burn only pipeline natural gas. [Rule 62-296.406, F.A.C.]
3. Heat Input Limitation: Heat input to both boilers combined shall not exceed 779,640 million Btu in any consecutive 12-month period, based on the lower heating value (LHV) of natural gas. [Rules 62-210.200, F.A.C., Definitions-potential to emit (PTE), and applicant request to avoid PSD for NOx and CO]

EMISSION LIMITATIONS AND PERFORMANCE STANDARDS

4. NOx Emissions Limited: Emissions of nitrogen oxides from each emissions unit shall not exceed 0.10 pounds per million Btu of heat input (LHV). [Rule 62-4.070(3) and applicant request to avoid PSD]
5. CO Emissions Limited: Emissions of carbon monoxide from each emissions unit shall not exceed 0.18 pounds per million Btu of heat input (LHV). [Rule 62-4.070(3) and applicant request to avoid PSD]
6. Visible Emissions Limited: Visible emissions from each emissions unit shall not exceed 5% opacity. [Rule 62-212.400, F.A.C., and BACT]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

7. Emission Tests Required: The owner or operator shall demonstrate compliance with the visible emissions limit for these emissions units annually using EPA Method 9, as described in 40 CFR 60 Appendix A (1997 version). The owner or operator shall demonstrate compliance with the NOx and CO limits for these emissions units initially and upon renewal of each operation permit using EPA Methods 7 or 7E for NOx and Method 10 for CO, as described in 40 CFR 60 Appendix A (1997 version). Results shall be expressed in terms of pounds per million Btu of heat input based on the lower heating value (LHV) of the natural gas fired. Testing shall be conducted on each emissions unit

every time testing is required. [Rules 62-4.070(3) and 62-212.400, F.A.C., BACT, and applicant request to avoid PSD]

REPORTING AND RECORD KEEPING REQUIREMENTS

8. Records of Heat Input Required: The owner or operator shall make and maintain the following records to demonstrate compliance with the heat input limitation of specific condition 3 of this section. Monthly records shall be completed no later than five days after the end of each month.
   - An analysis of the lower heating value (LHV) of the natural gas burned, obtained from the gas supplier at least once each calendar quarter.
   - The amount of natural gas burned in both boilers each month.
   - Monthly heat input for both boilers in units of mmBtu per month, calculated as the product of the amount of natural gas burned during each month times the LHV of the natural gas.
   - Rolling 12-month total heat input for both boilers in units of mmBtu per consecutive 12-month period, calculated as the sum of heat input for the current month and the preceding eleven months.

   [Rule 62-4.070(3), F.A.C.]

APPLICABLE NSPS SUBPART DC CONDITIONS

9. Pursuant to 40 CFR 60.48c Reporting and Recordkeeping Requirements:
   (a) The owner or operator shall submit notification of the date of construction or reconstruction, anticipated startup, and actual startup, as provided by 40 CFR 60.7. This notification shall include:
   (1) The design heat input capacity of the affected facility and identification of fuels to be combusted in the affected facility.
   (3) The annual capacity factor at which the owner or operator anticipated operating the affected facility based on all fuels fired and based on each individual fuel fired.
   (g) The owner or operator shall record and maintain records of the amounts of each fuel combusted during each day.
   (i) All records required under this section shall be maintained by the owner or operator of the affected facility for a period of two years following the date of such record.

   [Note: Longer record keeping is required by condition 23 of section II of this permit.]
   [40 CFR 60.48c]

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The following specific conditions apply to the following emissions units after construction:

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
003	Lumber drying kilns 1, 2 and 3

[Note: Emissions unit 003 is subject to regulation under Rule 62-212.400, F.A.C., for Prevention of Significant Deterioration; and is subject to the requirements of the state rules as indicated in this permit. The applicant has estimated the potential to emit of this emissions unit to be 319.5 tons per year of VOC and 4.2 tons per year of PM/PM_{10}.]

OPERATIONAL REQUIREMENTS

10. Hours of Operation: These emissions units may operate continuously, i.e., 8,760 hours/year. [Rule 62-210.200, F.A.C., Definitions-potential to emit (PTE)]

11. Lumber Production Limitation: Lumber processed through this emissions unit (all kilns combined) shall not exceed 225 million board feet in any consecutive 12-month period. [Rules 62-210.200, F.A.C., Definitions-potential to emit (PTE)]

EMISSION LIMITATIONS AND PERFORMANCE STANDARDS

12. Visible Emissions Limited: Visible emissions from each kiln of this emissions unit shall not exceed 5% opacity. [Rule 62-212.400, F.A.C., and BACT]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

13. Emission Tests Required: The owner or operator shall demonstrate compliance with the visible emissions limit for this emissions unit annually using EPA Method 9, as described in 40 CFR 60 Appendix A (1997 version). Testing shall be conducted on at least one set of vents of each kiln of this emissions unit every time testing is required. [Rules 62-4.070(3) and 62-212.400, F.A.C., and BACT]

REPORTING AND RECORD KEEPING REQUIREMENTS

14. Records of Production Required: The owner or operator shall make and maintain the following records to demonstrate compliance with the production limitation of specific condition 11 of this section. Monthly records shall be completed no later than five days after the end of each month.
    - The amount of lumber processed through this emissions unit (all kilns combined) each month, in units of million board feet per month.
    - Rolling 12-month total lumber processed, in units of million board feet per consecutive 12-month period, calculated as the sum of lumber processed for the current month and the preceding eleven months.

    [Rule 62-4.070(3), F.A.C.]

The following specific conditions apply to the following emissions units after construction:

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
004	Planermill operations

[Note: Emissions unit 004 is subject to regulation under Rule 62-212.400, F.A.C., for Prevention of Significant Deterioration; and is subject to the requirements of the state rules as indicated in this permit. The applicant proposed emissions will not exceed 0.004 grains per dry standard cubic foot (dscf) at a nominal flow rate of 60,000 dscfm, which is equivalent to the limit of 2.1 pounds per hour. The conditions of this permit effectively limit combined annual emissions from this emissions unit to 9.0 tons per year of PM/PM_{10}.]

OPERATIONAL REQUIREMENTS

15. Hours of Operation: These emissions units may operate continuously, i.e., 8,760 hours/year. [Rule 62-210.200, F.A.C., Definitions-potential to emit (PTE)]

EMISSION LIMITATIONS AND PERFORMANCE STANDARDS

16. Particulate Matter Emissions Limited: Emissions of particulate matter (PM) shall not exceed 2.1 pounds per hour. This emissions unit shall be equipped with a particulate capture and control system consisting of a local exhaust ventilation system ducted to a cyclone followed by a baghouse.. [Rules 62-4.070(3) and 62-212.400, F.A.C., and BACT]
17. Visible Emissions Limited: Visible emissions from each emissions unit shall not exceed 5% opacity. [Rule 62-212.400, F.A.C., and BACT]
18. Compliance with VE Limit in Lieu of Stack Test: After initial testing that demonstrates compliance with the PM limit of specific condition 16 of this section is completed, subsequent compliance testing for PM emissions from this emissions unit is waived, and an alternative standard of 5% opacity is imposed, pursuant to Rule 62-297.620(4), F.A.C. If the Department has reason to believe that the particulate weight emissions standard is not being met, it shall require that compliance be demonstrated using EPA Method 5, as described in 40 CFR 60 Appendix A (1997 version). [Rule 62-297.620(4), F.A.C., and applicant request]

COMPLIANCE MONITORING AND TESTING REQUIREMENTS

19. Emission Tests Required: The owner or operator shall demonstrate compliance with the visible emissions limit for this emissions unit annually using EPA Method 9, as described in 40 CFR 60 Appendix A (1997 version). Particulate matter (PM) testing, when required, shall be conducted using EPA Method 5, as described in 40 CFR 60 Appendix A (1997 version). [Rules 62-4.070(3) and 62-212.400, F.A.C., and BACT]

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[Note: The numbering of the original rules in the following conditions has been preserved for ease of reference to the rules. The term "Administrator" when used in 40 CFR 60 shall mean the Secretary or the Secretary's designee.]

1. Pursuant to 40 CFR 60.1 Applicability:

   (a) Except as provided in 40 CFR 60 subparts B and C, the provisions of this part apply to the owner or operator of any stationary source which contains an affected facility, the construction or modification of which is commenced after the date of publication in this part of any standard (or, if earlier, the date of publication of any proposed standard) applicable to that facility.

   (b) Any new or revised standard of performance promulgated pursuant to section 111(b) of the Act shall apply to the owner or operator of any stationary source which contains an affected facility, the construction or modification of which is commenced after the date of publication in this part of such new or revised standard (or, if earlier, the date of publication of any proposed standard) applicable to that facility.

   (c) In addition to complying with the provisions of this part, the owner or operator of an affected facility may be required to obtain an operating permit issued to stationary sources by an authorized State air pollution control agency or by the Administrator of the U.S. Environmental Protection Agency (EPA) pursuant to Title V of the Clean Air Act (CAA) as amended November 15, 1990 (42 U.S.C. 7661).

   [40 CFR 60.1]

2. Pursuant to 40 CFR 60.7 Notification And Record Keeping:

   (a) Any owner or operator subject to the provisions of 40 CFR 60 shall furnish the Administrator written notification as follows:

   (1) A notification of the date construction (or reconstruction as defined under 40 CFR 60.15) of an affected facility is commenced postmarked no later than 30 days after such date. This requirement shall not apply in the case of mass-produced facilities which are purchased in completed form.

   (2) A notification of the anticipated date of initial startup of an affected facility postmarked not more than 60 days nor less than 30 days prior to such date.

   (3) A notification of the actual date of initial startup of an affected facility postmarked within 15 days after such date.

   (4) A notification of any physical or operational change to an existing facility which may increase the emission rate of any air pollutant to which a standard applies, unless that change is specifically exempted under an applicable subpart or in 40 CFR 60.14(e). This notice shall be postmarked 60 days or as soon as practicable before the change is commenced and shall include information describing the precise nature of the change, present and proposed emission control systems, productive capacity of the facility before and after the change, and the expected completion date of the change. The Administrator may request additional relevant information subsequent to this notice.

   (b) The owner or operator subject to the provisions of 40 CFR 60 shall maintain records of the occurrence and duration of any startup, shutdown, or malfunction in the operation of an affected facility; any malfunction of the air pollution control equipment; or any periods during which a continuous monitoring system or monitoring device is inoperative.

(f) The owner or operator subject to the provisions of 40 CFR 60 shall maintain a file of all measurements, including continuous monitoring system, monitoring device, and performance testing measurements; all continuous monitoring system performance evaluations; all continuous monitoring system or monitoring device calibration checks; adjustments and maintenance performed on these systems or devices; and all other information required by 40 CFR 60 recorded in a permanent form suitable for inspection. The file shall be retained for at least three years following the date of such measurements, maintenance, reports, and records.

(g) If notification substantially similar to that in 40 CFR 60.7(a) is required by any other State or local agency, sending the Administrator a copy of that notification will satisfy the requirements of 40 CFR 60.7(a).

(h) Individual subparts of this part may include specific provisions which clarify or make inapplicable the provisions set forth in this section.

[40 CFR 60.7]

3. <u>Pursuant to 40 CFR 60.11 Compliance With Standards And Maintenance Requirements</u>:

(d) At all times, including periods of startup, shutdown, and malfunction, owners and operators shall, to the extent practicable, maintain and operate any affected facility including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the Administrator which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance procedures, and inspection of the source.

(g) For the purpose of submitting compliance certifications or establishing whether or not a person has violated or is in violation of any standard in 40 CFR 60, nothing in 40 CFR 60 shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether a source would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.

[40 CFR 60.11]

4. <u>Pursuant to 40 CFR 60.12 Circumvention</u>:

No owner or operator subject to the provisions of 40 CFR 60.12 shall build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of an applicable standard. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard which is based on the concentration of a pollutant in the gases discharged to the atmosphere.

[40 CFR 60.12]

5. <u>Pursuant to 40 CFR 60.14 Modification</u>:

(a) Except as provided under 40 CFR 60.14(e) and 40 CFR 60.14(f), any physical or operational change to an existing facility which results in an increase in the emission rate to the atmosphere of any pollutant to which a standard applies shall be considered a modification within the meaning of section 111 of the Act. Upon modification, an existing facility shall become an affected facility for each pollutant to which a standard applies and for which there is an increase in the emission rate to the atmosphere.

(b) Emission rate shall be expressed as kg/hr (lbs./hour) of any pollutant discharged into the atmosphere for which a standard is applicable. The Administrator shall use the following to determine emission rate:
(1) Emission factors as specified in the latest issue of "Compilation of Air Pollutant Emission Factors", EPA Publication No. AP-42, or other emission factors determined by the Administrator to be superior to AP-42 emission factors, in cases where utilization of emission factors demonstrate that the emission level resulting from the physical or operational change will either clearly increase or clearly not increase.
(2) Material balances, continuous monitor data, or manual emission tests in cases where utilization of emission factors as referenced in 40 CFR 60.14(b)(1) does not demonstrate to the Administrator's satisfaction whether the emission level resulting from the physical or operational change will either clearly increase or clearly not increase, or where an owner or operator demonstrates to the Administrator's satisfaction that there are reasonable grounds to dispute the result obtained by the Administrator utilizing emission factors as referenced in 40 CFR 60.14(b)(1) . When the emission rate is based on results from manual emission tests or continuous monitoring systems, the procedures specified in 40 CFR 60 appendix C of 40 CFR 60 shall be used to determine whether an increase in emission rate has occurred. Tests shall be conducted under such conditions as the Administrator shall specify to the owner or operator based on representative performance of the facility. At least three valid test runs must be conducted before and at least three after the physical or operational change. All operating parameters which may affect emissions must be held constant to the maximum feasible degree for all test runs.
(c) The addition of an affected facility to a stationary source as an expansion to that source or as a replacement for an existing facility shall not by itself bring within the applicability of this part any other facility within that source.
(d) [Reserved]
(e) The following shall not, by themselves, be considered modifications under this part:
(1) Maintenance, repair, and replacement which the Administrator determines to be routine for a source category, subject to the provisions of 40 CFR 60.14(c) and 40 CFR 60.15.
(2) An increase in production rate of an existing facility, if that increase can be accomplished without a capital expenditure on that facility.
(3) An increase in the hours of operation.
(4) Use of an alternative fuel or raw material if, prior to the date any standard under this part becomes applicable to that source type, as provided by 40 CFR 60.1, the existing facility was designed to accommodate that alternative use. A facility shall be considered to be designed to accommodate an alternative fuel or raw material if that use could be accomplished under the facility's construction specifications as amended prior to the change. Conversion to coal required for energy considerations, as specified in section 111(a)(8) of the Act, shall not be considered a modification.
(5) The addition or use of any system or device whose primary function is the reduction of air pollutants, except when an emission control system is removed or is replaced by a system which the Administrator determines to be less environmentally beneficial.
(6) The relocation or change in ownership of an existing facility.
(f) Special provisions set forth under an applicable subpart of this part shall supersede any conflicting provisions of this section.

(g) Within 180 days of the completion of any physical or operational change subject to the control measures specified in 40 CFR 60.14(a), compliance with all applicable standards must be achieved.

(h) No physical change, or change in the method of operation, at an existing electric utility steam generating unit shall be treated as a modification for purposes of this section provided that such change does not increase the maximum hourly emissions of any pollutant regulated under this section above the maximum hourly emissions achievable at that unit during the five years prior to the change.

[40 CFR 60.14]

6. Pursuant to 40 CFR 60.19 General notification and reporting requirements:

(a) For the purposes of 40 CFR 60, time periods specified in days shall be measured in calendar days, even if the word "calendar" is absent, unless otherwise specified in an applicable requirement.

(b) For the purposes of 40 CFR 60, if an explicit postmark deadline is not specified in an applicable requirement for the submittal of a notification, application, report, or other written communication to the Administrator, the owner or operator shall postmark the submittal on or before the number of days specified in the applicable requirement. For example, if a notification must be submitted 15 days before a particular event is scheduled to take place, the notification shall be postmarked on or before 15 days preceding the event; likewise, if a notification must be submitted 15 days after a particular event takes place, the notification shall be delivered or postmarked on or before 15 days following the end of the event. The use of reliable non-Government mail carriers that provide indications of verifiable delivery of information required to be submitted to the Administrator, similar to the postmark provided by the U.S. Postal Service, or alternative means of delivery agreed to by the permitting authority, is acceptable.

(c) Notwithstanding time periods or postmark deadlines specified in 40 CFR 60 for the submittal of information to the Administrator by an owner or operator, or the review of such information by the Administrator, such time periods or deadlines may be changed by mutual agreement between the owner or operator and the Administrator. Procedures governing the implementation of this provision are specified in paragraph (f) of this section.

(d) If an owner or operator of an affected facility in a State with delegated authority is required to submit periodic reports under 40 CFR 60 to the State, and if the State has an established timeline for the submission of periodic reports that is consistent with the reporting frequency(ies) specified for such facility under 40 CFR 60, the owner or operator may change the dates by which periodic reports under 40 CFR 60 shall be submitted (without changing the frequency of reporting) to be consistent with the State's schedule by mutual agreement between the owner or operator and the State. The allowance in the previous sentence applies in each State beginning 1 year after the affected facility is required to be in compliance with the applicable subpart in 40 CFR 60. Procedures governing the implementation of this provision are specified in paragraph (f) of this section.

(f)(1)(i) Until an adjustment of a time period or postmark deadline has been approved by the Administrator under paragraphs (f)(2) and (f)(3) of this section, the owner or operator of an affected facility remains strictly subject to the requirements of 40 CFR 60.

(ii) An owner or operator shall request the adjustment provided for in paragraphs (f)(2) and (f)(3) of this section each time he or she wishes to change an applicable time period or postmark deadline specified in 40 CFR 60.

(2) Notwithstanding time periods or postmark deadlines specified in 40 CFR 60 for the submittal of information to the Administrator by an owner or operator, or the review of such information by the Administrator, such time periods or deadlines may be changed by mutual agreement between the owner or operator and the Administrator. An owner or operator who wishes to request a change in a time period or postmark deadline for a particular requirement shall request the adjustment in writing as soon as practicable before the subject activity is required to take place. The owner or operator shall include in the request whatever information he or she considers useful to convince the Administrator that an adjustment is warranted.

(3) If, in the Administrator's judgment, an owner or operator's request for an adjustment to a particular time period or postmark deadline is warranted, the Administrator will approve the adjustment. The Administrator will notify the owner or operator in writing of approval or disapproval of the request for an adjustment within 15 calendar days of receiving sufficient information to evaluate the request.

(4) If the Administrator is unable to meet a specified deadline, he or she will notify the owner or operator of any significant delay and inform the owner or operator of the amended schedule.

[40 CFR 60.19]

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The BACT Determination is attached as part of this permit following this page.

Champion International Corporation
McDavid Sawmill
PSD-FL-271 and 0330260-001-AC
Escambia County

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1. BACKGROUND

The applicant proposes to construct a new sawmill at a new site at US Highway 29, Pine Barren, Escambia County, approximately 19 miles north of Pensacola.

The facility will consist of lumber sawmill with a capacity to produce up to 225 million board feet per year (mmBF/yr) of lumber. The mill will have two natural gas fired boilers that will provide steam to three lumber drying kilns, a planermill to plane and trim dried lumber, and fugitive emissions.

This project addresses the following emissions unit(s):

EMISSIONS UNIT NO.	EMISSIONS UNIT DESCRIPTION
001	Natural gas fired boiler number 1
002	Natural gas fired boiler number 2
003	Lumber drying kilns 1, 2 and 3
004	Planermill
005	Fugitive PM emissions

The applicant proposes to construct this new lumber sawmill consisting of the above emissions units.

The emissions units and fugitive sources are subject to limits determined as BACT for VOC, particulate matter, and visible emissions. The boilers are subject to regulation under the New Source Performance Standards: 40 CFR 60 Subpart A, General Provisions, and Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units. However, this regulation only requires record keeping and reporting for natural gas fired boilers. The boilers are also subject to regulation under Rule 62-296.406, F.A.C., for fossil fuel steam generators less than 250 mmBtu/hr, which requires a determination of BACT for sulfur dioxide and particulate matter emissions. The visible emissions provisions of this rule are less stringent that the limit determined as BACT for the boilers.

Emissions from the boilers will be controlled by good combustion of natural gas using low NOx burners. Emissions from the kilns are not subject to control, other than proper operation. Emissions from the planermill will be controlled by a local exhaust collection system ducted to a cyclone/baghouse combination. Fugitive PM emissions will be controlled by reasonable precautions to prevent unconfined particulate emissions. Emission control is discussed in more detail in the TEPD.

The emissions associated with this project are summarized below, in units of tons per year. The facility will be PSD major because of VOC and PSD significant for PM and PM_{10}.

Pollutant	Point Source Emissions	Quantifiable Fugitive Emissions	Total	PSD Major Threshold	PSD Significance Levels [1]	Subject to PSD Review?
VOC	326.0		326.0	250	--	Yes
PM	14.6	16.6	31.2	--	25	Yes
PM_{10}	14.6	3.3	17.9	--	15	Yes
SO_2	0.3		0.3	--	40	No
NOx	39.0		39.0	--	40	No
CO	70.2		70.2	--	100	No

[1] Florida Administrative Code 212.400-2.

This facility is classified as a Major or Title V Source of air pollution because emissions of volatile organic compounds (VOC) exceeds 100 tons per year (TPY).

This facility is not within an industry included in the list of the 28 Major Facility Categories per Table 62-212.400-1, F.A.C. Because emissions are greater than 250 TPY for VOC, the facility is also a Major Facility with respect to Rule 62-212.400, Prevention of Significant Deterioration (PSD).

The applicant stated that this facility is not a major source of hazardous air pollutants (HAPs).

The project's process information, air quality effects, and rule applicability are discussed in more detail in the Technical Evaluation and Preliminary Determination (TEPD) dated July 30, 1999.

2. DATE OF RECEIPT OF A BACT APPLICATION

June 15, 1999, and updated by additional information as shown in the TEPD.

3. BACT DETERMINATION REQUESTED BY THE APPLICANT

The applicant proposed BACT for the PSD pollutants particulate matter and VOC. BACT was proposed to be control equipment for PM emissions from the planermill, good combustion and operation for PM emissions from the boilers and lumber drying kilns, and reasonable precautions to prevent unconfined PM emissions from the fugitive sources. The applicant proposed a limit of 5% opacity for visible emissions from the point sources. The applicant demonstrated that no controls are feasible for the VOC emissions from the lumber drying kilns.

4. REVIEWER

Joseph Kahn, P.E., prepared BACT determination

5. BACT DETERMINATION PROCEDURE

In accordance with Chapter 62-212, F.A.C., this BACT determination is based on the maximum degree of reduction of each pollutant emitted which the Department of Environmental Protection (Department), on a case by case basis, taking into account energy, environmental and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems, and techniques for control of each such pollutant. In addition, Rule 62-212.400(6)(a), F.A.C., states that in making the BACT determination, the Department shall give consideration to:

1. Any Environmental Protection Agency determination of BACT pursuant to Section 169 of the Clean Air Act, and any emission limitation contained in 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants).
2. All scientific, engineering, and technical material and other information available to the Department.
3. The emission limiting standards or BACT determination of any other state.
4. The social and economic impact of the application of such technology.

The EPA currently directs that BACT should be determined using the "top-down" approach. In this approach, available control technologies are ranked in order of control effectiveness for the emissions unit under review. The most stringent alternative is evaluated first. That alternative is selected as BACT unless the alternative is found to not be achievable based on technical considerations or energy, environmental or economic impacts. If this alternative is eliminated for these reasons, the next most stringent alternative is considered. This top-down approach is continued until BACT is determined. In general EPA has identified five key steps in the top-down BACT process: Identify alternative control technologies; eliminate technically infeasible options; rank remaining control technologies by control effectiveness; evaluate most effective controls; select BACT.

BACT evaluation should be performed for each emissions source and pollutant under consideration. BACT for particulate matter can be treated separately for the boilers, lumber drying kilns, planermill and the fugitive sources. VOC emissions result from the lumber drying kilns and, to a much lesser extent, from the boilers.

The Department will consider the control or reduction of "non-regulated" air pollutants when determining the BACT limit for regulated pollutants, and will weigh control of non-regulated air pollutants favorably when considering control technologies for regulated pollutants. The Department will also favorably consider control technologies that utilize pollution prevention strategies. These approaches are consistent with EPA's consideration of environmental impacts.

The EPA has determined that a BACT determination shall not result in a selection of a control technology which would not meet any applicable emission limitation under 40 CFR Part 60 (Standards of Performance for New Stationary Sources) or 40 CFR Part 61 (National Emission Standards for Hazardous Air Pollutants). There are no such limits applicable to this project.

In addition to the information submitted by the applicant and that information mentioned above, the Department may rely upon other available information in making its BACT determination. For this project, the Department also relied upon information from recent BACT proposals made for similar facilities in Texas (Champion, Camden, TX)and North Carolina (International Paper, Riegelwood, NC) provided by the applicant to the Department on April 23, 1999. For each emission source, the Department's BACT determination is based on the information provided by the applicant and the informed judgement of the Department.

6. BACT ANALYSIS AND DEPARTMENT'S DETERMINATION

For this project the PSD pollutants of concern are PM, PM_{10} and VOC. The applicant proposed control strategies for these pollutants for the emission sources at this facility. The applicant's proposal and the Department's BACT for each pollutant and source is discussed below.

6.1 BOILERS

In accordance with Rule 62-296.406, F.A.C., a BACT determination is required for boilers with a heat input of less than 250 mmBtu/hour for the pollutants PM and SO_2. Both of the boilers for this project are subject to this requirement. The BACT determination discussed below includes a determination for the boilers for PM and SO_2 per Rule 62-296.406, F.A.C., and PM/PM_{10} and VOC per Rule 62-212.400.

Particulate matter and VOC are pollutants formed in a boiler by the incomplete combustion of fuels fired in the boiler. When insufficient oxygen is provided or poor combustion conditions occur, incomplete combustion occurs and emissions of particulate matter and VOC are increased. Visible emissions will result from incomplete combustion, primarily as a result of particulate emissions. Sulfur dioxide is formed from the oxidation of sulfur present in the fuels fired. Control for PM, VE and VOC is generally good combustion of fuel, with an appropriate level of excess air to ensure complete combustion. Sulfur dioxide emissions in small boilers is generally reduced by reducing the sulfur in the fuel fired, a pollution prevention strategy.

The applicant proposed BACT per Rules 62-296.406 and 62-212.400, F.A.C., to be the use of only pipeline natural gas and good combustion practices. The applicant has also proposed a visible emissions limit of 5% opacity as BACT per Rule 62-212.400,F.A.C. Natural gas is a fuel that is easily burned and is low in sulfur. Good combustion of natural gas results in low emissions of PM/PM_{10}, VOC and SO_2. The use of only natural gas with good combustion will result in estimated maximum emissions of 1.4 tons per year of PM/PM_{10}, 0.3 tons per year of SO_2, and 6.5 tons per year of VOC. The applicant proposed that the use of natural gas is the top control technology for these boilers. A review of the RACT/BACT/LAER Clearinghouse (RBLC) data shows that BACT is the use of natural gas in many cases.

The Department agrees with the applicant's proposed BACT. The Department believes that setting numerical mass emission limits for PM/PM_{10}, SO_2, and VOC is not warranted given the low potential emissions of these pollutants. Instead, the fuel will be limited to pipeline natural gas. This will also meet the BACT requirements of Rule 62-296.406, F.A.C., for PM and SO_2. Thus, BACT shall be the use of pipeline natural gas and a VE limit of 5% opacity applicable at all times including startup and shutdown. This VE limit is more stringent that provided by Rule 62-296.406, F.A.C., but is imposed per Rule 62-212.400, F.A.C.

6.2 LUMBER DRYING KILNS

A BACT determination is required for the three lumber drying kilns for VOC and PM/PM_{10} per Rule 62-212.400.

VOC emissions result from naturally occurring hydrocarbons present in the wood that are evaporated during the lumber drying operation. Particulate matter that is emitted is a combination of condensable hydrocarbons and dust (primarily sawdust) on lumber surfaces. There are presently no control systems in use for VOC and particulate matter for these types of drying kilns.

The applicant proposed that no controls are feasible for VOC emissions from these sources, and that proper operating practices and a visible emissions limit of 5% opacity are BACT for PM/PM_{10} per Rule 62-212.400,F.A.C.

VOC Controls

The applicant evaluated exhaust control technologies – regenerative thermal oxidation, regenerative catalytic oxidation, biofiltration – to control VOC emissions. Pollution prevention and process changes are not technically feasible because the hydrocarbons, which are inherent in the wood, are emitted as a consequence of the lumber drying cycle. The applicant suggested that exhaust controls are not technically feasible because of the difficulty designing and implementing a capture device which will accommodate the cyclical nature of the airflow through the kiln vents. The applicant noted that no such capture system is in use on these type of kilns. Regardless of this technical challenge, the applicant estimated control costs associated with the use of thermal and catalytic oxidation for VOC control. Costs are summarized below, assuming the use of one oxidizer for each kiln. The applicant concluded that the costs are prohibitive and make these controls economically infeasible.

Option	Capital Cost	Annual Operating Cost	Life	Interest	Control Cost
RTO	$5.81 million	$2.15 million	10 yrs	8 %	$8,351/ton
RCO	$5.76 million	$1.82 million	10 yrs	8 %	$7,051/ton

In addition to the technical challenge of capturing emissions, the applicant rejected biofiltration as infeasible because of the challenge of ducting emissions to biofilters and conditioning the exhaust, the difficulty researching and designing a biofiltration system with proper microorganisms and media to degrade the hydrocarbons, and concerns over media plugging from condensable hydrocarbons. The applicant was unable to document the use of biofiltration for these or similar sources in commercial operation.

The Department agrees with the applicant's assessment. The Department's review of the RBLC data shows that similar lumber drying kilns listed have no controls for VOC emissions, and are listed as "no controls feasible". Based on the information provided by the applicant and the informed judgement of the Department, control of VOC emissions is not feasible. BACT for this project for VOC shall be no emission controls. Lumber throughput shall be limited by permit condition to 225 million board feet per year, as proposed by the applicant, to limit potential VOC emissions to approximately 320 tons per year. The estimate of potential emissions is discussed in more detail in the TEPD.

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PM Controls

Potential emissions of particulate matter were estimated by the applicant to be 4.2 tons per year. The applicant proposed BACT for PM/PM_{10} to be proper operation and maintenance of the kilns, with no exhaust controls feasible because of the technical difficulties discussed above, The applicant proposed a limit for visible emissions of 5% opacity.

The Department agrees with the applicant's BACT proposal. Verifying PM emissions by source testing would be difficult, if not infeasible, so the Department will not impose a numerical limit for PM/PM_{10} emissions. BACT for the lumber drying kilns shall be a limit for visible emissions of 5% opacity applicable at all times including startup and shutdown.

6.3 PLANERMILL

A BACT determination is required for the planermill for PM/PM_{10} per Rule 62-212.400. The applicant proposed BACT for the planermill to be collection of particulate matter using a local exhaust ventilation system and control with a cyclone that exhausts to a baghouse (fabric filter). The applicant estimated that emissions from this control system will be 0.004 grains per dscf. The applicant suggested that this combination of controls is the top control strategy for particulate matter for this source. The applicant also proposed a VE limit of 5% opacity.

The Department agrees with the applicant's proposed BACT. BACT shall be the use of a local exhaust collection system exhausting to a cyclone followed by a baghouse. The limit for PM/PM_{10} emissions shall be 2.1 pounds per hour. Visible emissions shall be limited to 5% opacity at all times including startup and shutdown.

6.4 FUGITIVE PM SOURCES

A BACT determination is required for the fugitive sources of particulate matter for the pollutants PM/PM_{10} per Rule 62-212.400. The applicant proposed to use reasonable precautions to control unconfined emissions of particulate matter. The Department agrees with the proposed BACT, so BACT shall be the use of reasonable precautions to prevent unconfined emissions of particulate matter. These precautions shall be specified in the facility-wide requirements of the permit.

6.5 SUMMARY OF BACT DETERMINATION

Emissions Unit	Emission Source	Pollutant(s)	BACT
001	Natural gas fired boiler number 1	PM/PM_{10} & VOC VE	Use of only pipeline natural gas 5% opacity at all times
002	Natural gas fired boiler number 2	PM/PM_{10} & VOC VE	Use of only pipeline natural gas 5% opacity at all times
003	Lumber drying kilns 1, 2 and 3	PM/PM_{10} & VOC VE	No controls feasible 5% opacity at all times
004	Planermill	PM/PM_{10} VE	Local exhaust, cyclone, baghouse – 2.1 lb/hr 5% opacity at all times
005	Fugitive PM emissions	PM/PM_{10}	Reasonable precautions to prevent emissions of unconfined particulate matter

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7. COMPLIANCE

The compliance methods are briefly summarized here. Compliance with the visible emission limitations for the point sources shall be demonstrated on an annual basis by testing using EPA Method 9. Emission testing shall be required for the boilers for NOx and CO initially and upon renewal of each operation permit. Emission testing for the planermill control device outlet for particulate matter shall not be required because an alternative limitation of 5% opacity will be specified in lieu of PM testing.

8. DETAILS OF THE ANALYSIS MAY BE OBTAINED BY CONTACTING:

Joseph Kahn, P.E.
Department of Environmental Protection
Bureau of Air Regulation
Mail Station #5505
2600 Blair Stone Road
Tallahassee, Florida 32399-2400
Prepared July 30, 1999

Recommended By:	Approved By:
C. H. Fancy, P.E., Chief Bureau of Air Regulation	Howard L. Rhodes, Director Division of Air Resources Management
Date:	Date:

G.1 The terms, conditions, requirements, limitations, and restrictions set forth in this permit are "Permit Conditions" and are binding and enforceable pursuant to Sections 403.161, 403.727, or 403.859 through 403.861, Florida Statutes. The permittee is placed on notice that the Department will review this permit periodically and may initiate enforcement action for any violation of these conditions.

G.2 This permit is valid only for the specific processes and operations applied for and indicated in the approved drawings or exhibits. Any unauthorized deviation from the approved drawings or exhibits, specifications, or conditions of this permit may constitute grounds for revocation and enforcement action by the Department.

G.3 As provided in Subsections 403.087(6) and 403.722(5), Florida Statutes, the issuance of this permit does not convey and vested rights or any exclusive privileges. Neither does it authorize any injury to public or private property or any invasion of personal rights, nor any infringement of federal, state or local laws or regulations. This permit is not a waiver or approval of any other Department permit that may be required for other aspects of the total project which are not addressed in the permit.

G.4 This permit conveys no title to land or water, does not constitute State recognition or acknowledgment of title, and does not constitute authority for the use of submerged lands unless herein provided and the necessary title or leasehold interests have been obtained from the State. Only the Trustees of the Internal Improvement Trust Fund may express State opinion as to title.

G.5 This permit does not relieve the permittee from liability for harm or injury to human health or welfare, animal, or plant life, or property caused by the construction or operation of this permitted source, or from penalties therefore; nor does it allow the permittee to cause pollution in contravention of Florida Statutes and Department rules, unless specifically authorized by an order from the Department.

G.6 The permittee shall properly operate and maintain the facility and systems of treatment and control (and related appurtenances) that are installed or used by the permittee to achieve compliance with the conditions of this permit, as required by Department rules. This provision includes the operation of backup or auxiliary facilities or similar systems when necessary to achieve compliance with the conditions of the permit and when required by Department rules.

G.7 The permittee, by accepting this permit, specifically agrees to allow authorized Department personnel, upon presentation of credentials or other documents as may be required by law and at a reasonable time, access to the premises, where the permitted activity is located or conducted to:

(a) Have access to and copy and records that must be kept under the conditions of the permit;
(b) Inspect the facility, equipment, practices, or operations regulated or required under this permit, and,
(c) Sample or monitor any substances or parameters at any location reasonably necessary to assure compliance with this permit or Department rules.

Reasonable time may depend on the nature of the concern being investigated.

G.8 If, for any reason, the permittee does not comply with or will be unable to comply with any condition or limitation specified in this permit, the permittee shall immediately provide the Department with the following information:

(a) A description of and cause of non-compliance; and
(b) The period of noncompliance, including dates and times; or, if not corrected, the anticipated time the non-compliance is expected to continue, and steps being taken to reduce, eliminate, and prevent recurrence of the non-compliance.

The permittee shall be responsible for any and all damages which may result and may be subject to enforcement action by the Department for penalties or for revocation of this permit.

G.9 In accepting this permit, the permittee understands and agrees that all records, notes, monitoring data and other information relating to the construction or operation of this permitted source which are submitted to the Department may be used by the Department as evidence in any enforcement case involving the permitted source arising under the Florida Statutes or Department rules, except where such use is prescribed by Sections 403.73 and 403.111, Florida Statutes. Such evidence shall only be used to the extend it is consistent with the Florida Rules of Civil Procedure and appropriate evidentiary rules.

G.10 The permittee agrees to comply with changes in Department rules and Florida Statutes after a reasonable time for compliance, provided, however, the permittee does not waive any other rights granted by Florida Statutes or Department rules.

G.11 This permit is transferable only upon Department approval in accordance with Florida Administrative Code Rules 62-4.120 and 62-730.300, F.A.C., as applicable. The permittee shall be liable for any non-compliance of the permitted activity until the transfer is approved by the Department.

G.12 This permit or a copy thereof shall be kept at the work site of the permitted activity.

G.13 This permit also constitutes:

(a) Determination of Best Available Control Technology (X);
(b) Determination of Prevention of Significant Deterioration (X); and
(c) Compliance with New Source Performance Standards (X).

G.14 The permittee shall comply with the following:

(a) Upon request, the permittee shall furnish all records and plans required under Department rules. During enforcement actions, the retention period for all records will be extended automatically unless otherwise stipulated by the Department.
(b) The permittee shall hold at the facility or other location designated by this permit records of all monitoring information (including all calibration and maintenance records and all original strip chart recordings for continuous monitoring instrumentation) required by the permit, copies of all reports required by this permit, and records of all data used to complete the application or this permit. These materials shall be retained at least three years from the date of the sample, measurement, report, or application unless otherwise specified by Department rule.
(c) Records of monitoring information shall include:

1. The date, exact place, and time of sampling or measurements;
2. The person responsible for performing the sampling or measurements;
3. The dates analyses were performed;
4. The person responsible for performing the analyses;
5. The analytical techniques or methods used; and
6. The results of such analyses.

G.15 When requested by the Department, the permittee shall within a reasonable time furnish any information required by law which is needed to determine compliance with the permit. If the permittee becomes aware that relevant facts were not submitted or were incorrect in the permit application or in any report to the Department, such facts or information shall be corrected promptly.

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

P.E. Certification Statement

Champion International Corporation
McDavid Sawmill

DEP File No.: 0330260-001-AC, PSD-FL-271
Facility ID No.: 0330260

Project: Air Construction/PSD Permit

I HEREBY CERTIFY that the engineering features described in the above referenced application and related additional information submittals, if any, and subject to the proposed permit conditions, provide reasonable assurance of compliance with applicable provisions of Chapter 403, Florida Statutes, and Florida Administrative Code Chapters 62-4 and 62-204 through 62-297. However, I have not evaluated and I do not certify aspects of the proposal outside of my area of expertise (including but not limited to the electrical, mechanical, structural, hydrological, and geological features).

This review was conducted by myself and Cleve Holladay (modeling) under my responsible supervision.

(Seal)

Joseph Kahn, P.E.

8/2/99
Date

Permitting Authority:
Florida Department of Environmental Protection
Division of Air Resources Management
Bureau of Air Regulation
New Source Review Section
Mail Station #5505
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Telephone: 850/488-0114
Fax: 850/922-6979

Memorandum

Florida Department of Environmental Protection

TO: Clair Fancy

THRU: Al Linero

FROM: Joe Kahn

DATE: July 30, 1999

SUBJECT: Champion International Corporation
McDavid Sawmill

Attached for approval and signature is the draft permit package for the proposed McDavid Sawmill for Champion International Corporation to be located in Escambia County. This project includes two natural gas fired boilers that will provide steam to three lumber drying kilns, a planermill to plane and trim dried lumber, and fugitive emissions. The sawmill will have a capacity to produce up to 225 million board feet per year of lumber.

Total potential emissions from the project in tons per year, including quantifiable fugitive PM emissions, are estimated to be 326 of VOC, 31.2 of PM, 17.9 of PM_{10}, 0.3 of SO_2, 39.0 of NOx, and 70.2 of CO.

I recommend your approval and signature.

July 30, 1999 is day 5 of the 90 day timeclock.

Attachments

/jk

ECT

Environmental Consulting & Technology, Inc.

RECEIVED
JUL 29 1999
BUREAU OF AIR REGULATION

July 28, 1999

SENT BY OVERNIGHT MAIL ON 7/28/99

Mr. Cleve Halliday
New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Champion International Corporation
McDavid Sawmill – Air Construction Permit Application
DEP File No. 0330260-001-AC (PSD-FL-271)

Dear Mr. Halliday:

In response to your telephone request, please find enclosed: (a) a graphic showing the fence line receptors and emission points (Attachment I), (b) graphics and data concerning receptor terrain elevations (Attachment II), and (c) explanation of volume source model input data (Attachment III).

Please feel free to contact me at (352) 332-6230, Ext. 351 if there are any further questions.

Sincerely,

ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.

Thomas W. Davis

Thomas W. Davis, P.E.
Principal Engineer

Attachments

cc: Mr. Dave Stevens, Champion
Mr. John Barone, Champion
Mr. Terry Kassabaum, Champion
Mr. Ed Middleswart, FDEP – NWD

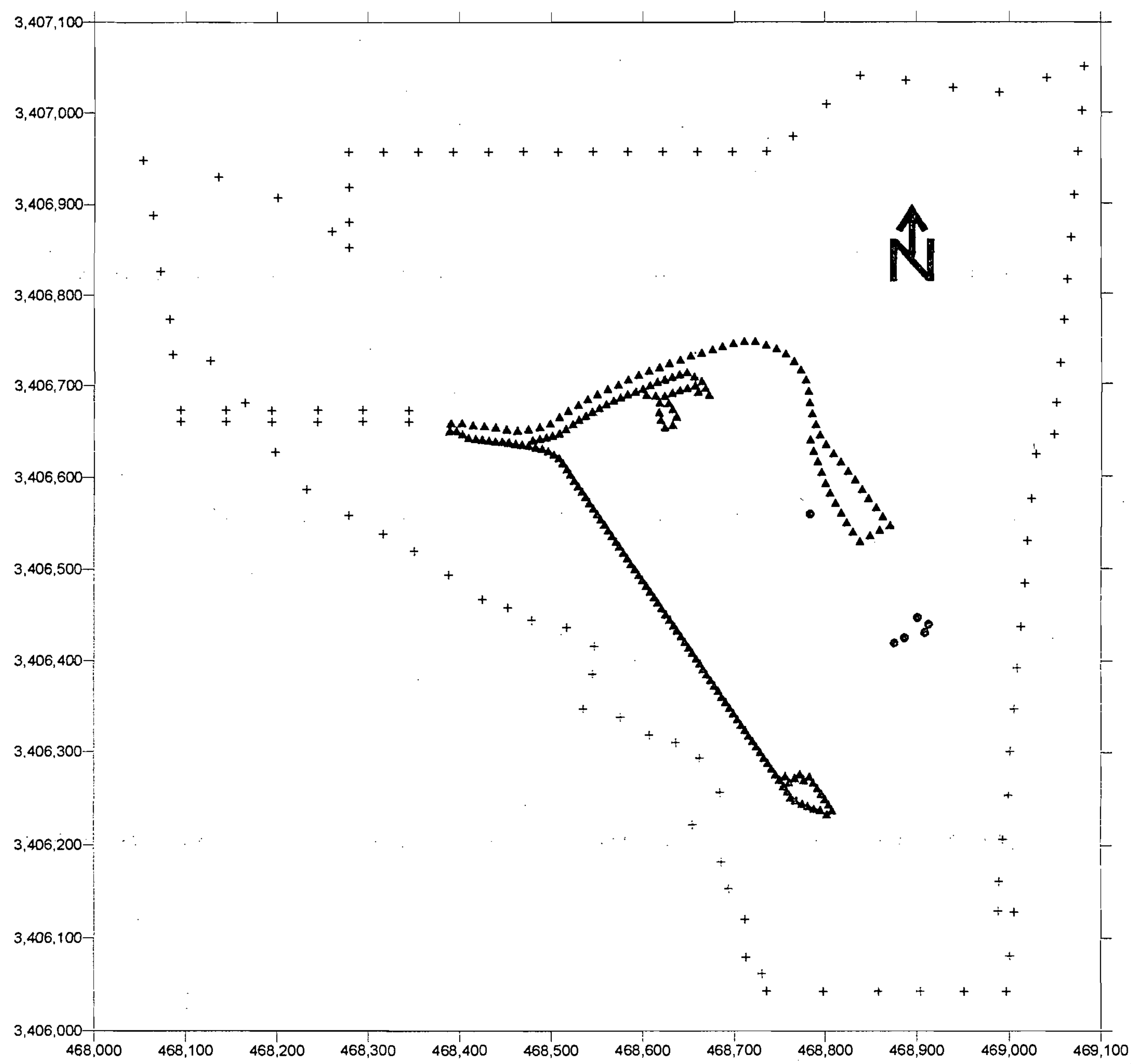
3701 Northwest
98TH Street
Gainesville, FL
32606

(352)
332-0444

FAX (352)
332-6722

An Equal Opportunity/Affirmative Action Employer

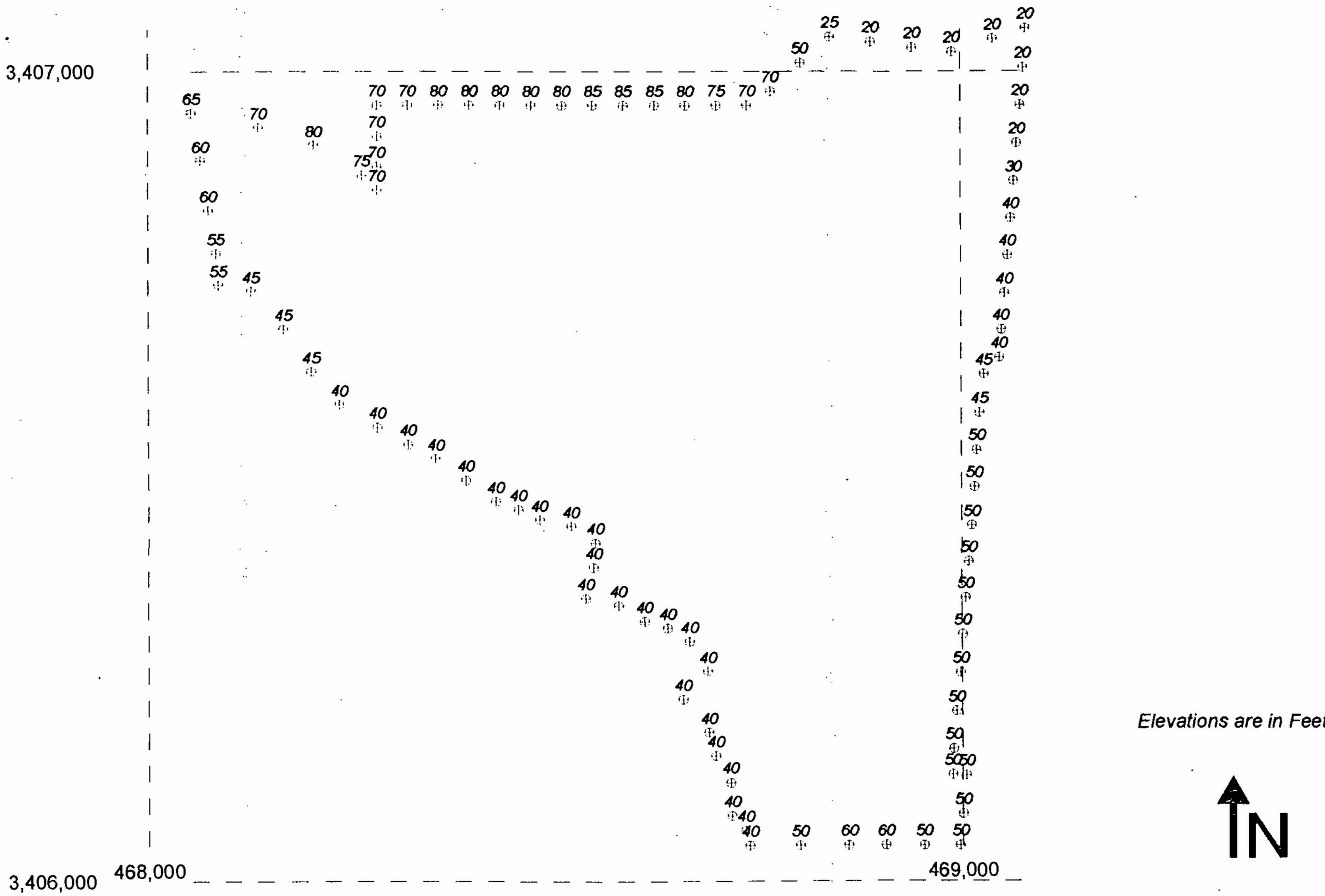
McDavid Sawmill
Fence Line Receptors and Emission Points



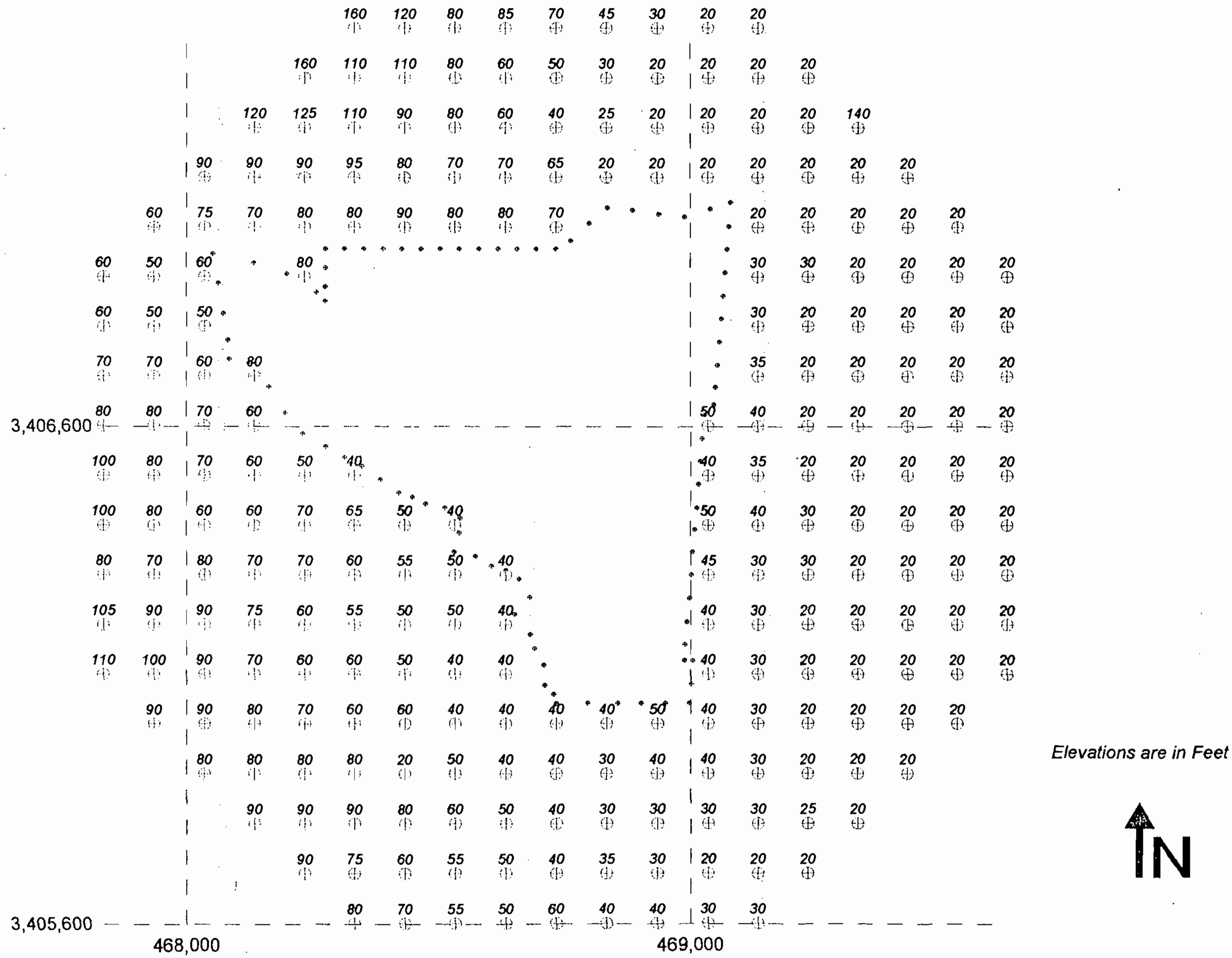
ATTACHMENT II

RECEPTOR ELEVATIONS

Champion International, McDavid Sawmill
Property Boundary Receptor Locations with Elevation



Champion International, McDavid Sawmill
Discrete Receptor Locations with Elevation



Champion 10° Grid Elevations

7/28/99

Direction (°)	Elevations (feet) at These Distances (meters) from Grid Center :- 1,250	1,750	2,250	2,750	3,250	3,750	4,250	4,750	5,500	6,500	7,500	8,500	9,500
10	60	30	30	30	30	30	30	30	25	35	30	30	30
20	25	25	30	30	30	30	30	30	30	30	30	30	30
30	20	20	25	25	25	30	30	30	30	30	40	40	60
40	20	20	20	20	20	30	30	30	30	40	40	70	70
50	20	20	20	20	20	30	30	30	60	60	70	80	110
60	20	20	20	20	20	30	30	60	60	60	70	120	170
70	20	20	20	20	20	30	30	40	60	60	70	120	150
80	20	20	20	20	20	25	30	50	50	60	80	130	210
90	20	20	20	20	20	30	50	50	55	70	95	140	130
100	20	20	20	20	20	30	30	50	55	60	140	210	210
110	20	20	20	20	20	20	25	50	50	50	60	175	210
120	20	20	20	20	20	20	20	20	20	50	100	170	60
130	20	20	20	20	20	20	20	20	20	20	20	80	50
140	20	20	20	20	20	20	20	20	10	10	10	10	20
150	25	20	20	20	20	20	20	15	10	10	10	10	10
160	25	20	20	20	20	20	20	20	20	10	10	10	10
170	50	20	20	20	20	20	20	20	10	10	30	30	45
180	90	20	30	40	50	70	95	80	55	30	90	110	110
190	70	30	20	80	140	80	140	60	100	110	180	170	170
200	80	40	20	106	120	175	185	200	170	200	200	180	190
210	60	40	30	50	110	120	130	180	190	210	200	200	175
220	60	50	30	50	60	50	120	180	190	200	210	200	180
230	70	60	30	70	155	120	110	100	150	190	190	130	160
240	105	90	30	60	80	110	160	215	190	210	150	170	130
250	130	40	50	30	80	110	190	190	150	210	185	140	200
260	100	60	60	45	35	120	180	90	200	190	185	180	210
270	120	80	80	55	40	50	120	50	70	100	190	210	190
280	120	90	100	60	65	50	50	70	140	80	130	180	220
290	80	120	70	70	110	75	90	60	150	210	160	140	210
300	70	150	100	90	150	85	80	106	50	100	160	210	170
310	70	95	150	160	150	115	100	170	110	100	70	100	130
320	140	80	160	150	120	140	210	215	130	160	120	120	85
330	160	160	100	140	130	170	210	210	230	250	250	210	210
340	90	90	130	200	120	110	190	200	220	160	220	130	190
350	70	60	60	80	80	80	120	90	110	80	70	200	140
360	7055	30	40	30	35	90	50	80	70	80	70	70	80

Champion 5° Grid Elevations

7/28/99

ection (°)	Elevations (feet) at These Distances (meters) from Grid Center :- 1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	6,000	7,000	8,000
5	55	30	40	30	30	40	40	50	35	50	50	30
15	30	30	30	30	30	30	30	30	30	30	30	30
25	20	25	30	30	30	30	25	30	30	30	30	30
35	20	20	25	25	25	30	20	30	30	30	60	60
45	20	20	20	20	20	25	20	30	40	35	50	70
55	20	20	20	20	20	20	20	30	60	60	60	100
65	20	20	20	20	20	20	30	40	50	60	50	90
75	20	20	20	20	20	20	30	30	40	60	60	115
85	20	20	20	20	20	20	30	50	50	60	80	100
95	20	20	20	20	20	20	50	50	55	60	90	200
105	20	20	20	20	20	20	30	30	50	50	75	140
115	20	20	20	20	20	20	20	30	40	50	70	90
125	20	20	20	20	20	20	20	20	20	20	40	60
135	20	20	20	20	20	20	20	20	20	20	15	20
145	20	20	20	20	20	20	20	20	20	20	10	10
155	20	20	20	20	20	20	20	20	20	20	20	10
165	40	20	20	20	20	20	20	20	20	20	20	20
175	50	35	20	30	20	30	40	40	40	30	40	95
185	60	85	20	50	20	110	100	80	50	90	100	190
195	60	45	20	50	130	130	130	135	140	190	200	190
205	80	65	30	40	70	100	160	210	210	210	200	200
215	80	60	30	30	130	90	100	135	190	210	210	200
225	70	80	40	30	40	110	70	110	160	205	210	180
235	90	105	40	40	70	130	190	175	170	180	195	140
245	110	80	30	30	70	100	150	195	170	190	200	180
255	120	90	85	40	50	70	160	175	100	190	190	200
265	120	80	75	50	30	50	170	110	140	100	210	190
275	80	100	80	70	50	40	40	70	95	70	120	200
285	60	100	120	50	60	70	50	60	70	190	130	180
295	60	120	100	90	90	115	70	70	50	90	190	170
305	75	110	140	155	115	160	140	100	110	80	60	110
315	110	70	130	185	115	160	165	180	210	170	105	110
325	160	140	90	170	160	190	160	210	200	240	210	180
335	160	160	160	150	170	175	200	170	210	230	220	200
345	100	80	100	90	140	80	110	160	130	210	160	80
355	80	50	50	50	50	60	110	70	120	80	55	150

Direction (°)	9,000	10,000
5	40	60
15	30	30
25	40	40
35	50	70
45	80	110
55	125	150
65	140	220
75	180	160
85	160	190
95	200	195
105	100	210
115	100	180
125	65	110
135	40	30
145	10	10
155	10	10
165	10	10
175	120	80
185	160	155
195	160	170
205	185	190
215	190	140
225	180	170
235	160	150
245	120	140
255	210	190
265	160	150
275	210	160
285	210	240
295	130	230
305	190	215
315	70	100
325	180	210
335	220	230
345	150	230
355	155	60

ATTACHMENT III

VOLUME SOURCE
MODEL INPUT DATA

Attachment III
Volume Source Model Input Data

PM_{10} emissions due to truck traffic on paved roadways for the McDavid Sawmill were modeled as volume sources using guidance provided in the ISC3 User's Guide.

There are three types of truck traffic and roadways planned for the McDavid Sawmill: (1) by-product trucks [V1-V64], (2) log trucks [V95-V137], and (3) product lumber trucks [V138-V234].

Emission rates for volume for each of the three roadways was calculated by dividing the PM_{10} emissions associated with the roadway. These rates are shown on the revised Table 2-3 included in the 7/16/99 response package submitted to the Department. As an example, hourly PM_{10} emissions for the by-product truck roadway segment is 0.6263 lb/hr. For 64 volumes (V1-V64), each volume has a PM_{10} emission rate of 0.0098 lb/hr or 1.2×10^{-3} g/s. Similar calculations were made for the other roadway segments.

Additional volume source model input parameters include release height, initial lateral dimension (sigma-y), and initial vertical dimension (sigma – z). Guidance for estimating sigma-y and sigma-z are provided in Table 3-1 of the ISC3 User's Guide. The release height for all truck roadway segments was assumed to be 50% of the estimated turbulence-induced truck vertical dimension height of 20 feet or 10 feet (3.05 m). For all truck roadway segments, sigma-z, per the EPA guidance, was set equal to the vertical dimension divided by 2.15 or 9.3 feet (2.84 m). Sigma-y, per the EPA guidance, was set equal to the roadway width divided by 2.15. Roadway widths are 40 feet for the by-product trucks (V1-V64), 24 ft (V95-V98) and 28 ft (V99-V137) for the log trucks, and 24 ft for the product lumber trucks (V138-V234).

All material handling fugitives (F9, F10, F13-F19, F22-F24, F27, and F31-F35) were modeled as one volume source V235. Release height was estimated at 15 ft [4.57 m] (50% of the vertical dimension of 30 ft), sigma-z at 30 ft divided by 2.15 or 13.9 ft (4.25 m), and sigma-y at the volume width of 151 ft divided by 4.3 or 35 ft (10.7 m). The PM_{10} emissions from these fugitive sources are small (totaling only 0.007 lb/hr or 0.0009 g/s) and had little contribution to maximum impacts.

ECT

Environmental Consulting & Technology, Inc.

RECEIVED
JUL 26 1999
BUREAU OF AIR REGULATION

July 24, 1999

SENT BY OVERNIGHT MAIL ON 7/24/99

Mr. Joseph Kahn, P.E.
New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road, Mail Station #5505
Tallahassee, Florida 32399-2400

Re: Champion International Corporation
McDavid Sawmill – Air Construction Permit Application
DEP File No. 0330260-001-AC (PSD-FL-271)

Dear Mr. Kahn:

On behalf of Champion International Corporation (Champion), four copies of additional responses to the items raised in your July 8th correspondence to Champion regarding the proposed McDavid Sawmill are provided as follows:

Item 1:

An air quality analysis for PM_{10} is attached; referenced revised Section 6.0 (Ambient Impact Analysis Methodology) and a new Section 9.0 (Ambient Impact Analysis Results). The model results demonstrate that the proposed McDavid Sawmill will not cause nor contribute to an exceedance of any National Ambient Air Quality Standard or PSD increment. Diskettes containing the dispersion modeling input and output files is included with one set of submittals.

Item 4.

Copies of vendor emissions data for the package boilers and planermill dust collector were previously provided to you on July 16th. As requested, a revised emissions statement from the package boiler vendor indicating that the emission rate specifications are on a lower heating value (LHV) basis is attached.

3701 Northwest 98TH Street
Gainesville, FL 32606

(352) 332-0444

FAX (352) 332-6722

A Professional Engineer Certification for the July 16th submittal and this submittal is also attached as requested. Your continued expeditious review of the proposed McDavid Sawmill air construction permit will be appreciated. Please feel free to contact me at (352) 332-6230, Ext. 351 or Mr. Dave Stevens at (850) 937-4849 if there are any further questions.

Sincerely,

ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.

Thomas W. Davis

Thomas W. Davis, P.E.
Principal Engineer

Attachments

cc: Mr. Dave Stevens, Champion
Mr. John Barone, Champion
Mr. Terry Kassabaum, Champion
Mr. Ed Middleswart, FDEP – NWD

cc: C. Holladay, BAR
EPA
NPS

6.0 AMBIENT IMPACT ANALYSIS METHODOLOGY

6.1 GENERAL APPROACH

The approach used to analyze the potential impacts of the proposed facility, as described in detail in the following sections, was developed in accordance with accepted regulatory agency practice. Guidance contained in EPA manuals and users' guides was sought and followed. The modeling procedures used were discussed and approved by the FDEP.

6.2 POLLUTANTS EVALUATED

Based on an evaluation of anticipated worst-case annual operating scenarios, the McDavid Sawmill will have the potential to emit 39 tpy NO_x; 70.1 tpy of CO; 31.1 tpy of PM (including fugitives), 17.8 tpy of PM_{10} (including fugitives); 0.3 tpy of SO_2, and 325.7 tpy of VOCs. Based on these potential emission rates, PM, PM_{10}, and VOCs are subject to the PSD NSR air quality impact analysis requirements of Rule 62-212. 400(5)(d), F.A.C.

The ambient impact analysis addresses PM and $PM_{10.}$ Because VOCs contribute to the formation of ground-level ozone and because ozone modeling is conducted on a regional scale, modeling of VOC emissions resulting from operation of the McDavid Sawmill is not required. The biogenic VOC emissions projected for the McDavid Sawmill are small relative to area VOC emissions and will not affect the ozone attainment status for the area.

6.3 MODEL SELECTION AND USE

The most recent regulatory version of the Industrial Source Complex (ISC) models (EPA, 1998) is recommended and was used in this analysis for refined modeling. The ISC3 models are steady-state Gaussian plume models that can be used to assess air quality impacts over simple terrain from a wide variety of sources. The ISC3 models are capable of calculating concentrations for averaging times ranging from 1 hour to annual. For this study, the ISC3 short-term (ISCST3, Version 99155) model was used to calculate short-term ambient impacts with averaging times between 1 and 24 hours as well as long-term annual averages.

Procedures applicable to the ISCST3 dispersion model specified in EPA's *Guideline for Air Quality Models* (GAQM) were followed in conducting the refined dispersion modeling. The GAQM is codified in Appendix W of 40 CFR Part 51. In particular, the ISCST3 model control pathway MODELOPT keyword parameters DFAULT, CONC, RURAL, and TERRHGTS were selected. Selection of the parameter DFAULT, which specifies use of the regulatory default options, is recommended by the GAQM. The CONC, RURAL, and TERRHGTS parameters specify calculation of concentrations, use of rural dispersion, and elevated terrain receptors, respectively. As previously mentioned, the ISCST3 model was also used to determine annual average impact predictions, in addition to short-term averages, by using the PERIOD parameter for the AVERTIME keyword. Conservatively, no consideration was given to pollutant exponential decay.

6.4 DISPERSION OPTION SELECTION

Area characteristics in the vicinity of proposed emission sources are important in determining model selection and use. One important consideration is whether the area is rural or urban, since dispersion rates differ between these two classifications. In general, urban areas cause greater rates of dispersion because of increased turbulent mixing and buoyancy-induced mixing. This is due to the combination of greater surface roughness caused by more buildings and structures and greater amount of heat released from concrete and similar surfaces. EPA guidance provides two procedures to determine whether the character of an area is predominantly urban or rural. One procedure is based on land use typing and the other is based on population density. The land use typing method utilizes the work of Auer (Auer, 1978) and is preferred by EPA and FDEP because it is meteorologically oriented. In other words, the land use factors employed in making a rural/urban designation are also factors that have a direct effect on atmospheric dispersion. These factors include building types, extent of vegetated surface area and water surface area, types of industry and commerce, etc. Auer recommends that these land use factors be considered within 3 km of the source to be modeled to determine urban or rural classifications. The Auer land use typing method was used for the ambient impact analysis.

The Auer technique recognizes four primary land use types: industrial (I), commercial (C), residential (R), and agricultural (A). Practically all industrial and commercial areas come under the heading of urban while the agricultural areas are considered rural. However, those portions of generally industrial and commercial areas that are heavily vegetated can be considered rural in character. In the case of residential areas, the delineation between urban and rural is not as clear. For residential areas, Auer subdivides this land use type into four groupings based on building structures and associated vegetation. Accurate classification of the residential areas into proper groupings is important to determine the most appropriate land use classification for the study area.

USGS 7.5-minute series topographic maps for the area were used to identify the land use types within a 3-km radius area of the proposed site. Based on this analysis, well over 50 percent of the land use surrounding the plant (i.e., primarily forests) was determined to be rural under the Auer land use classification technique. Therefore, rural dispersion coefficients and mixing heights were used for the Ambient Impact Analysis.

6.5 TERRAIN CONSIDERATION

The GAQM defines *flat terrain* as terrain equal to the elevation of the stack base, *simple terrain* as terrain lower than the height of the stack top, and *complex terrain* as terrain above the height of the plume center line (for screening modeling, *complex terrain* is terrain above the height of the stack top). Terrain above the height of the stack top but below the height of the plume center line is defined as *intermediate terrain.*

USGS 7.5-minute series topographic maps were examined for terrain features in the vicinity of the proposed McDavid Sawmill (i.e., within an approximate 10-km radius). Base elevation of the site is approximately 70 feet above mean sea level (ft-msl). Highest elevations in the vicinity of the site are approximately 250 ft-msl. Site base elevation plus the shortest project stack height (i.e., Planermill dust collector stack height of 23 + 70) is 93 ft-msl. Accordingly, terrain in the vicinity of the site would be classified as ranging from *flat* to *complex terrain*. Due to the significant amount of terrain elevation differences in the vicinity, assignment of receptor terrain elevations was conducted; i.e., elevations obtained from the USGS 7.5-minute series topographic maps were assigned to each receptor.

6.6 GOOD ENGINEERING PRACTICE STACK HEIGHT/BUILDING WAKE EFFECTS

The CAA Amendments of 1990 require the degree of emission limitation required for control of any pollutant not be affected by a stack height that exceeds good engineering practice (GEP) or any other dispersion technique. On July 8, 1985, EPA promulgated final stack height regulations (40 CFR 51). GEP stack height is defined as the highest of 65 meters, or a height established by applying the formula:

$$Hg = H + 1.5\,L$$

where: Hg = GEP stack height.

H = height of the structure or nearby structure.

L = lesser dimension (height or projected width) of the nearby structure.

Nearby is defined as a distance up to five times the lesser of the height or width dimension of a structure or terrain feature, but not greater than 800 meters. While GEP stack height regulations require that stack height used in modeling for determining compliance with NAAQS and PSD increments not exceed the GEP stack height, the actual stack height may be greater. Guidelines for determining GEP stack height have been issued by EPA (1985).

The stack heights proposed for the McDavid Sawmill (e.g., package boilers, lumber kilns, and Planermill dust collector) are all less than the *de minimis* GEP height of 65 meters (213 ft) and, therefore, comply with the EPA promulgated final stack height regulations (40 CFR 51).

While the GEP stack height rules address the maximum stack height which can be employed in a dispersion model analysis, stacks having heights lower than GEP stack height can potentially result in higher downwind concentrations due to building downwash effects. The ISC dispersion models contain two algorithms that assess the effect of building downwash; these algorithms are referred to as the Huber-Snyder and Schulman-Scire methods. The following steps are employed in determining the effects of building downwash:

- A determination is made as to whether a particular stack is located in the area of influence of a building (i.e., within five times the lesser of the building's height or projected width). If the stack is not within this area, it will not be subject to downwash from that building.
- If a stack is within a building's area of influence, a determination is made as to whether it will be subject to downwash based on the heights of the stack and building. If the stack height to building height ratio is equal to or greater than 2.5, the stack will not be subject to downwash from that building.
- If both conditions in Items 1 and 2 are satisfied (a stack is within the area of influence of a building and has a stack height to building height ratio of less than 2.5), the stack will be subject to building downwash. The determination is then made as to whether the Huber-Snyder or Schulman-Scire downwash method applies. If the stack height is less than or equal to the building height plus one-half the lesser of the building height or width, the Schulman-Scire method is used. Conversely, if the stack height is greater than this criterion, the Huber-Snyder method is employed.
- The ISCST3 downwash input data consists of an array of 36 wind direction-specific building heights and projected widths for each stack. LB is defined as the lesser of the height and projected width of the building. For directionally dependent building downwash, wake effects are assumed to occur if a stack is situated within a rectangle composed of two lines perpendicular to the wind direction, one line at 5 LB downwind of the building and the other at 2 LB upwind of the building, and by two lines parallel to the wind, each at 0.5 LB away from the side of the building.

For the ambient impact analysis, the complex downwash analysis described above was performed using the current version of EPA's Building Profile Input Program (BPIP—Version 95086). The EPA BPIP program was used to determine the area of influence for each building, whether a particular stack is subject to building downwash, the area of influence for directionally dependent building downwash, and finally to generate the specific building dimension data required by the model. Dimensions of the build-

Table 6-1. Building/Structure Dimensions

Building/Structure	Dimensions Width (meter)	Length (meter)	Height (meter)
Bark Bin	4.3	12.6	14.8
Sawdust (Fines) Bin	4.3	6.4	14.8
Chips Bin	4.3	12.6	14.8
Planermill Cyclone	4.9	6.1	23.2
Planermill Baghouse	5.0	5.0	15.5
Lumber Kilns (each)	10.4	30.5	8.0
Trimmer Building	46.6	55.8	11.2
Sawmill Building	48.2	99.1	13.2
Planermill Building	61.0	213.4	12.3
Rough Green Storage Area	14.6	56.4	9.1
Rough Dry Storage Shed	30.5	53.3	9.1

Sources: ECT, 1999.
Champion, 1999.

-ing/structures evaluated for wake effects are shown in Table 6-1; the locations of these buildings/structures were previously provided on Figure 2-2. BPIP output consists of an array of 36 direction-specific (10 to 360°) building heights and projected building widths for each stack suitable for use as input to the ISCST3 model.

6.7 RECEPTOR GRIDS

Receptors were placed at locations considered to be *ambient air*, which is defined as "that portion of the atmosphere, external to buildings, to which the general public has access." The entire perimeter of the plant site, excluding natural barriers, will be fenced; therefore, the nearest locations of general public access are at the facility property lines.

Consistent with GAQM recommendations, the ambient impact analysis utilized the following receptor grids:

- Fence Line Receptors: Receptors placed on the site boundary spaced 50 meters apart.
- Near-Field Discrete Receptors: Cartesian receptors placed at 100-meter spacings from the site fence line to the first mid-field polar receptor ring located 1 km from the center of the project site.
- Mid-Field Polar Receptors: Receptor rings (with 36 receptors per ring at 10° intervals) starting 1 km from the center of the project site and extending to 5 km at 250-meter spacings.
- Far-Field Polar Receptors: Receptor rings (with 36 receptors per ring at 10° intervals) starting 5.5 km from the site and extending to 10 km at 500-meter spacings.

Each polar receptor ring was offset 5° from the previous ring to improve the spatial distribution.

A depiction of the receptor grids out to distances of 2 and 10 km are shown in Figures 6-1 and 6-2, respectively.

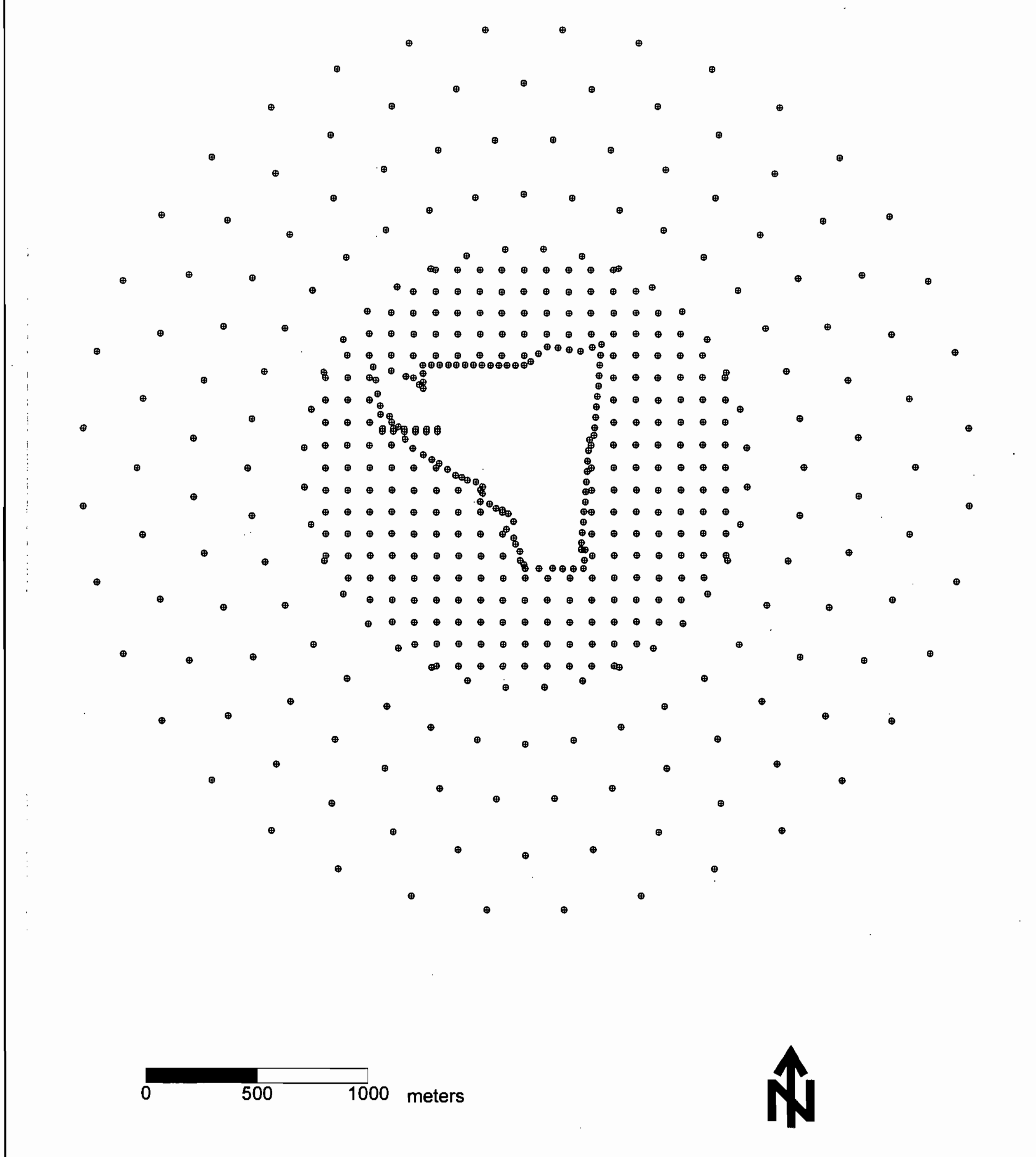


FIGURE 6-1.

RECEPTOR LOCATIONS (WITHIN 2 KM)

Source: ECT, 1999.

Environmental Consulting & Technology, Inc.

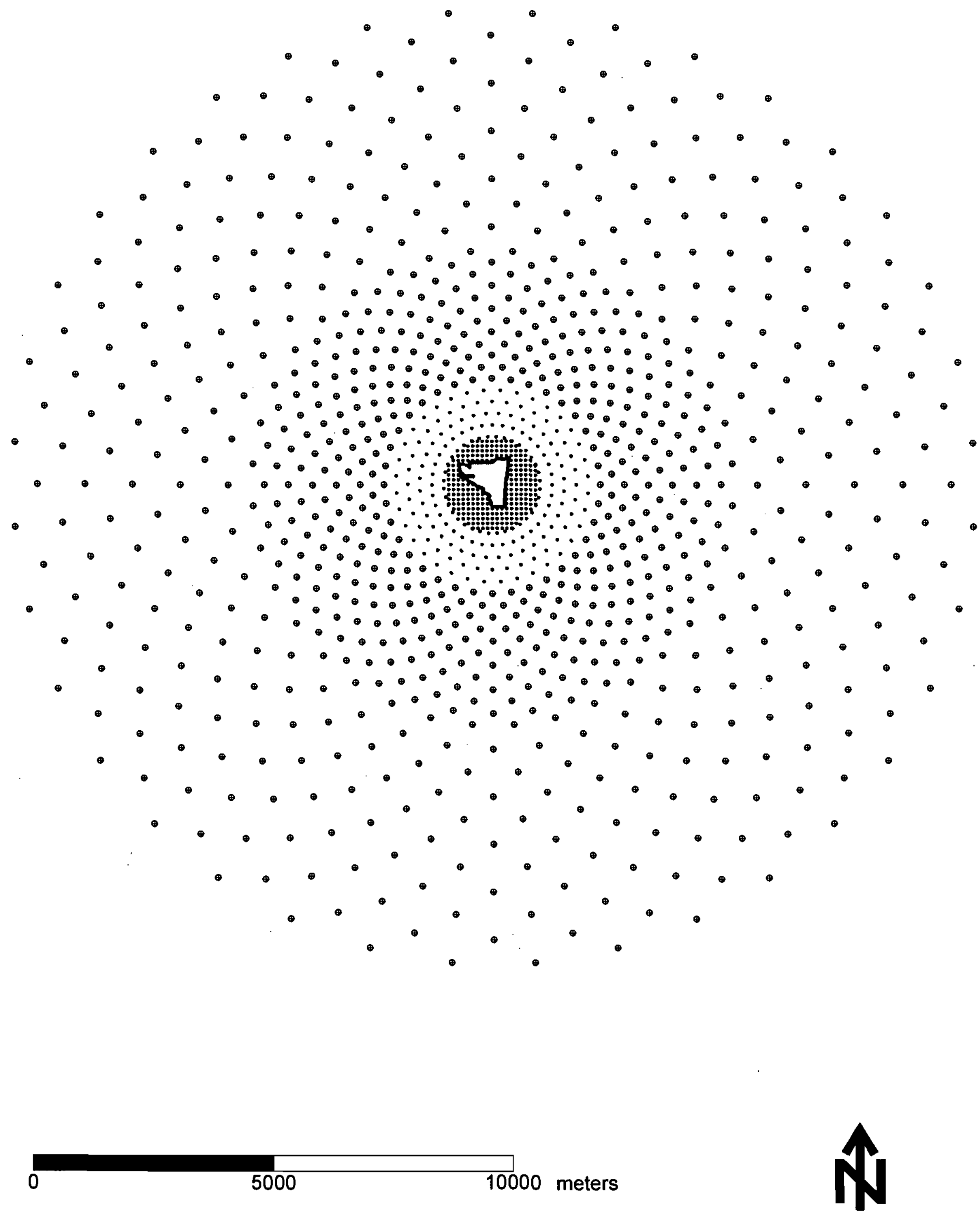


FIGURE 6-2.

RECEPTOR LOCATIONS (FROM 2 TO 10 KM)

Source: ECT, 1999.

ECT
Environmental Consulting & Technology, Inc.

6.8 METEOROLOGICAL DATA

Detailed meteorological data are needed for modeling with the ISC dispersion models. The ISCST3 model requires a preprocessed data file compiled from hourly surface observations and concurrent twice-daily rawinsonde soundings (i.e., mixing height data).

There are no onsite surface or upper meteorological stations. The nearest offsite surface meteorological station is located at the Pensacola Regional Airport approximately 37 km (23 miles) south, southeast of the McDavid Sawmill site. The nearest offsite upper air meteorological station is located at the Apalachicola Municipal Airport approximately 241 km (150 miles) southeast of the McDavid Sawmill site.

Short-Term Meteorological Data

Consistent with the GAQM and FDEP guidance, 5 consecutive years of the most recent, readily available, representative meteorological data were processed for the ambient impact analysis. For Escambia County, FDEP recommends use of Pensacola surface and Apalachicola upper air meteorological data in conducting the air quality analyses. As recommended by FDEP, 1986 through 1990 Pensacola surface (Pensacola Regional Airport—Station No. 13899) and Apalachicola upper air meteorological data were used in the Ambient Impact Analysis.

The surface and mixing height data for each of the 5 years were processed using the current version of EPA's PCRAMMET (Version 95300) meteorological preprocessing program to generate the meteorological data files in the format required by the ISCST3 dispersion model. PCRAMMET input files consist of the surface and mixing height files as obtained from the EPA SCRAM website. The mixing height file for each year must include mixing height records for December 31 of the year preceding the year of record and for January 1 of the year following the year of record. If records for these 2 days are unavailable, duplicate mixing height records are used with the year, month, and day changed appropriately.

In addition to the surface and mixing height meteorological data files, PCRAMMET requires input with respect to: (a) the use of dry or wet deposition calculations; (b) output filename; (c) output file type (UNFORM or ASCII); (d) surface data format (CD144, SAMSON, or SCRAM); and (e) latitude, longitude, and time zone of the surface meteorological station. In processing the Apalachicola and Pensacola meteorological data, the NONE deposition option was selected, ASCII output file chosen, and the SCRAM surface data format utilized. As obtained from the EPA SCRAM web site, Apalachicola surface station latitude and longitude coordinates (in decimal degrees) are 29.733 and 85.033, respectively. The Pensacola surface station latitude and longitude coordinates (in decimal degrees) are 30.467 and 87.200, respectively. The Pensacola surface station is located in time zone 6.

Actual anemometer height for the Pensacola surface station, obtained from the National Climatic Data Center (NCDC), is 22 ft (6.7 meters) for the time period of interest (i.e., 1986 through 1990).

Processing of the Apalachicola and Pensacola station meteorological data did not require any data replacement or substitution.

6.9 MODELED EMISSION INVENTORY

6.9.1 ON-PROPERTY SOURCES

On-property emission sources addressed in the ambient impact analysis consisted of the two package boilers, three lumber kilns, Planermill dust collector, and fugitive PM/PM_{10} emissions sources (i.e., material handling and storage, outdoor storage piles, and truck traffic on paved roadways.

Emission rates and stack parameters for the McDavid Sawmill point were provided in Table 2-4 of the June 1999 permit application. Facility fugitive emission sources were modeled as volume sources in accordance with recommendations contained in the ISC3 User's Guide. Specifically, the facility paved roadways were modeled as multiple, square volume sources. The facility material handling and storage fugitive emission sources were grouped into one volume source situated at the approximate center of these activities.

6.9.2 OFF-PROPERTY SOURCES

As will be discussed in Section 9.0, maximum air quality impacts are projected to be above the PSD significant impact level for PM/PM_{10}. Accordingly, a full, multi-source interactive assessment of PM_{10} NAAQS attainment and PSD Class II increment consumption was required for the proposed sawmill.

An inventory of PM/PM_{10} emission sources within approximately 75 km of the proposed sawmill was obtained from FDEP. A summary of the FDEP off-property PM_{10} emission sources is provided on Table 6-2. A request for modeling data for PM/PM_{10} sources located in Escambia and Baldwin Counties, Alabama was also requested from the Alabama Department of Environmental Management (ADEM). However, ADEM indicated that it may take several weeks to provide the requested inventory. Due to time constraints, the modeling analysis was conducted using only Florida off-site emissions data. As will be further discussed in Section 9.0, Ambient Impact Analysis Results, contributions to maximum McDavid Sawmill impacts from emission sources located in Alabama are expected to be insignificant.

Off-property PM/PM_{10} emission sources included in the dispersion modeling analysis for the McDavid Sawmill consisted of all emission sources listed on Table 6-2 located within approximately 52 km of the project site; i.e., within the 1.3-km area of impact (AOI) distance plus 50 km, having potential/allowable emissions satisfying the "20D" rule. The "20D" rule allows for the screening of small, distant emission sources by means of the following algorithm:

$$E = 20 \times D$$

where,

E = Potential/allowable emission rate in tons per year
D = distance from the proposed sawmill in km

Off-site emission sources having emissions greater than E were included in the dispersion modeling inventory. Modeled off-property PM/PM_{10} emission sources are highlighted on Table 6-2.

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	UTM Coordinates NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	3	12	2.7	78	26,004	75	PM	17.8	77.92	17.8	77.92
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	3	12	2.7	78	26,004	75	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	6	35	0.4	70	352	48	PM	6.15	5.6		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	6	35	0.4	70	352	48	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	9	30	6.8	70	28,200	12	PM	4	16.2		16.1
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	9	30	6.8	70	28,200	12	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	10	32	5.5	70	4,007	2	PM	4.9			21.5
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	10	32	5.5	70	4,007	2	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	11	12	3.3	70	49,813	97	PM	11.2			49.1
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	11	12	3.3	70	49,813	97	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	12	31	5.5	70	49,300	34	PM	5.9			25.9
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	12	31	5.5	70	49,300	34	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	14	30	6.8	70	30,000	13	PM	3.5			14.1
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	14	30	6.8	70	30,000	13	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	15	32	1.7	117	2,903	21	PM	0.2958	1.29		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	15	32	1.7	117	2,903	21	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	21	35	5.7	150	43,021	28	PM		7.19		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	21	35	5.7	150	43,021	28	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	25	28	7.3	135	71,015	28	PM		4.84		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	25	28	7.3	135	71,015	28	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	28	28	1.5	70	2,737	25	PM				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	28	28	1.5	70	2,737	25	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	29	35	3.4	177	10,568	19	PM	0.63	2.7594		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	29	35	3.4	177	10,568	19	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	31	35	6.4	242	57,900	29	PM		1.13		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	31	35	6.4	242	57,900	29	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	42	40	2	77			PM	9.33	40.86		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	42	40	2	77			PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	48	40	0.5	86	900	76	PM	8.97	39.29	8.97	
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	48	40	0.5	86	900	76	PM10	7.5	33		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	50	57	6.3	437	123,242	65	PM	18.1			79.3
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	50	57	6.3	437	123,242	65	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	54	32	5.5	82	35,911	25	PM	13.9			60.9
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	54	32	5.5	82	35,911	25	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	55	50	3.5	144	20,175	34	PM	9		9	39.4
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	55	50	3.5	144	20,175	34	PM10	7.46	32.7		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	56	32	5.5	70	30,000	21	PM	7.3			32
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	56	32	5.5	70	30,000	21	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	60	10	0.5		950	80	PM	0.037	0.0062		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	60	10	0.5		950	80	PM10	0.0019	0.0085		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	65	19	3.4	96	37,500	68	PM	2.4			10.5
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	65	19	3.4	96	37,500	68	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	66	19	3.4	96	37,500	68	PM				10.5
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	66	19	3.4	96	37,500	68	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	68	35	0.5	179	8,000	679	PM				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	68	35	0.5	179	8,000	679	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	70	35	2.3	70	15,000	60	PM				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	70	35	2.3	70	15,000	60	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	71	35	2.3	70	15,000	60	PM				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	71	35	2.3	70	15,000	60	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	72	35	1.5	500	4,000	37	PM		0.007		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	72	35	1.5	500	4,000	37	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	73	35	1.5	500	4,000	37	PM		0.007		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	73	35	1.5	500	4,000	37	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	74	18	1.2	77			PM	0	0		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	74	18	1.2	77			PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	76						PM				

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	UTM Coordinates NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	76						PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	76						PM				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	76						PM10				
0330024	APAC-FLORIDA INC., E.M. CHADBOURN	454.5	3,414.6	16.4	1	31	5	250	45,000	38	PM		21.25		
0330024	APAC-FLORIDA INC., E.M. CHADBOURN	454.5	3,414.6	16.4	1	31	5	250	45,000	38	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	1	20	0.8	1400	169	5	PM	0.145	0.64		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	1	20	0.8	1400	169	5	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	2	60	4	435	71,000	94	PM	2.6	12.28		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	2	60	4	435	71,000	94	PM10				
0330040	SOLUTIA, INC.	478.0	3,385.0	22.7	3	125	12	230	236,943	34	PM	0.63	2.75		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	3	125	12	230	238,943	34	PM10	0.63	2.75		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	4	125	12	230	236,943	34	PM	0.63	2.75		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	4	125	12	230	236,943	34	PM10	0.63	2.75		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	5	125	2.7	311	6,318	18	PM				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	5	125	2.7	311	6,318	18	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	7	125	2.7	311	7,198	20	PM	0.17	0.745		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	7	125	2.7	311	7,198	20	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	8	125	2.7	311	7,198	20	PM				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	6	125	2.7	311	7,198	20	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	9	125	2.7	311	7,198	20	PM	0.17	0.745		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	9	125	2.7	311	7,198	20	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	10	125	2.7	311	7,198	20	PM	0.17	0.745		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	10	125	2.7	311	7,198	20	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	11	125	2.7	311	7,198	20	PM	0.17	0.745		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	11	125	2.7	311	7,198	20	PM10				
0330040	SOLUTIA, INC.	476.0	3,365.0	22.7	12	70	0.6	1400	169	5	PM	0.005	0.01		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	12	70	0.8	1400	169	5	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	13	125	2.7	311	9,798	26	PM	0.4	1.752		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	13	125	2.7	311	9,798	28	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	14	150	10	360	168,664	35	PM	9.2	40.3		
0330040	SOLUTIA, INC.	478.0	3,385.0	22.7	14	150	10	360	168,664	35	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	15	150	10	360	168,664	35	PM	0.37			
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	15	150	10	360	168,664	35	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	16	150	10	360	168,664	35	PM	0.3			
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	16	150	10	360	168,664	35	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	28	60	1	70	3,530	74	PM	0.91	3.9	0.91	3.9
0330040	SOLUTIA, INC.	478.0	3,385.0	22.7	28	60	1	70	3,530	74	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	30	70	0.6	1400	169	5	PM	0.005	0.01		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	30	70	0.8	1400	169	5	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	31	70	0.8	1400	169	5	PM	0.005	2.1	0.005	2.1
0330040	SOLUTIA, INC.	478.0	3,385.0	22.7	31	70	0.6	1400	169	5	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	32	100	15	300	799	75	PM	3.9	17.1		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	32	100	15	300	799	75	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	38	33	0.3	200	100	23	PM				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	38	33	0.3	200	100	23	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	44	35	0.3	435	20	4	PM	2.4	10.512		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	44	35	0.3	435	20	4	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	45	115	0.9	77	2,100	55	PM	6.48		6.48	37
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	45	115	0.9	77	2,100	55	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	47	64	1	120	2,500	53	PM	4.73	20.72	4.73	
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	47	64	1	120	2,500	53	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	49	90	4.6	393	50,257	46	PM				7.9
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	49	90	4.8	393	50,257	46	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	50	60	1	86	12,000	254	PM	14.97			
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	50	60	1	86	12,000	254	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	51	60	1	77	2,000	42	PM	19.24	84.2712		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	51	60	1	77	2,000	42	PM10				

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	52	120	0.3		330	77	PM	0.06	0.35		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	52	120	0.3		330	77	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	53	60	3.3	1600	2,289	4	PM				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	53	60	3.3	1600	2,289	4	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	54	60	3	1500	9,100	21	PM				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	54	60	3	1500	9,100	21	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	59	20	0.8	1400	350	11	PM	0.61	0.22		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	59	20	0.8	1400	350	11	PM10	0.0325	0.154		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	60	54	1	138	7,000	148	PM	1.34	5.87		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	60	54	1	136	7,000	148	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	61	25	1.4	80	9,000	97	PM	9.5		9.5	42
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	61	25	1.4	80	9,000	97	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	62	25	1.4	80	9,000	97	PM	9.5		9.5	42
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	62	25	1.4	60	9,000	97	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	63	25	1.4	80	9,000	97	PM	9.5		9.5	
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	63	25	1.4	80	9,000	97	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	64	25	1.4	80	9,000	97	PM	9.5		9.5	41
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	64	25	1.4	80	9,000	97	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	65	115	1.5	110	9,000	64	PM	9.5	41.61	9.5	
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	85	115	1.5	110	9,000	84	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	66	25	1.4	60	9,000	97	PM	10.9	47.742	10.9	47.742
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	66	25	1.4	80	9,000	97	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	67	30	1	1500	630	13	PM	0.01			
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	67	30	1	1500	630	13	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	68	50	0.5	2930	380	32	PM				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	68	50	0.5	2930	380	32	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	69	70	0.8	1400	169	5	PM	0.005	0.01		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	69	70	0.6	1400	169	5	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	70						PM				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	70						PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	71						PM	4.73	20.72	4.73	
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	71						PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	72						PM	4.73	20.72	4.73	
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	72						PM10				
0330040	SOLUTIA, INC.	478.0	3,385.0	22.7	73	25	3	72	19,060	44	PM	27	118	4.9	21.5
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	73	25	3	72	19,080	44	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	75	125	2.7	311	9,798	26	PM				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	75	125	2.7	311	9,798	28	PM10				
0330040	SOLUTIA, INC.	478.0	3,385.0	22.7	76	125	3.5	158			PM	1.19	5.21		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	76	125	3.5	158			PM10				
0330040	SOLUTIA, INC.	476.0	3,365.0	22.7	79	54	1	136			PM	1.35	5.91	1.35	5.91
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	79	54	1	136			PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	60	50	0.3	80			PM	0.21	0.92	0.21	0.92
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	80	50	0.3	60			PM10				
0330041	SACRED HEART HEALTH SYSTEM	480.0	3,372.0	36.3	3	73	3	300	3,260	7	PM	0.28	1.23		
0330041	SACRED HEART HEALTH SYSTEM	460.0	3,372.0	36.3	3	73	3	300	3,280	7	PM10				
0330041	SACRED HEART HEALTH SYSTEM	480.0	3,372.0	36.3	4	38	3	1800	16,041	37	PM	0.592	2.59		
0330041	SACRED HEART HEALTH SYSTEM	480.0	3,372.0	36.3	4	36	3	1800	16,041	37	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	2	47	4	500	85,000	86	PM				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	2	47	4	500	65,000	86	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.6	3	125	8.5	350	161,000	47	PM	2.67	11.7	2.67	11.7
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	3	125	8.5	350	161,000	47	PM10	2.67	11.7	2.67	11.7
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.6	20.8	28	138	6.5	157	57,208	28	PM	10.9	47.7	10.9	47.7
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	28	136	6.5	157	57,208	28	PM10	10.9	47.7		
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	29	182	9	418	274,172	71	PM	111	486.16	111	486.18
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	29	182	9	418	274,172	71	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	30	182	9	430	252,870	66	PM	111	486.16	111	

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
0330042	CHAMPION INTERNATIONAL CORPORA	489.0	3,385.8	20.8	30	182	9	430	252,870	66	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	32	172	4	160	17,200	22	PM	26.4	104	26.4	
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	32	172	4	160	17,200	22	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	489.0	3,385.8	20.8	33	148	8	146	110,300	36	PM	26.8	118.3		118.3
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	33	148	8	146	110,300	38	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	36	88	4	153	23,600	31	PM	7.61			
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	36	88	4	153	23,600	31	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	37	221	11	144	229,000	40	PM	766	3355.1		240.9
0330042	CHAMPION INTERNATIONAL CORPORA	489.0	3,385.8	20.8	37	221	11	144	229,000	40	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	38	172	4	160	17,200	22	PM	26.4	115.63	26.4	115.83
0330042	CHAMPION INTERNATIONAL CORPORA	489.0	3,385.8	20.8	38	172	4	160	17,200	22	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	39	75	2	77	9,500	50	PM				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	39	75	2	77	9,500	50	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	489.0	3,385.8	20.8	40						PM				
0330042	CHAMPION INTERNATIONAL CORPORA	489.0	3,385.8	20.8	40						PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	44	80	0.7	77	794	34	PM				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	44	80	0.7	77	794	34	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	45	35	1	1000	2,700	57	PM				
0330042	CHAMPION INTERNATIONAL CORPORA	489.0	3,385.8	20.8	45	35	1	1000	2,700	57	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	46	90	2.3	190	12,500	50	PM	1.59	6.96	1.59	6.96
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	46	90	2.3	190	12,500	50	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	489.0	3,385.8	20.8	47	60	0.3	50	148	34	PM				
0330042	CHAMPION INTERNATIONAL CORPORA	489.0	3,385.8	20.8	47	60	0.3	50	146	34	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	489.0	3,385.8	20.8	48	60	0.3	50	148	34	PM				
0330042	CHAMPION INTERNATIONAL CORPORA	489.0	3,385.8	20.8	48	60	0.3	50	146	34	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	49	60	0.3	50	146	34	PM				
0330042	CHAMPION INTERNATIONAL CORPORA	489.0	3,385.8	20.8	49	60	0.3	50	146	34	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	51	67	1.5	158	8,227	77	PM				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	51	67	1.5	158	8,227	77	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	489.0	3,385.8	20.8	52			77			PM	44.846	196.4		
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	52			77			PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	489.0	3,385.8	20.8	58	38	1.5	77	5,500	51	PM	0.846	2.21		
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	58	38	1.5	77	5,500	51	PM10	0.312	0.786		
0330043	REICHHOLD, INC.	478.8	3,364.8	42.9	16	25	2.1	285	7,546	36	PM	0.1	0.438		
0330043	REICHHOLD, INC.	478.6	3,364.8	42.9	16	25	2.1	285	7,546	36	PM10				
0330043	REICHHOLD, INC.	478.8	3,364.8	42.9	17	25	2.1	285	10,733	51	PM	0.13	0.57		
0330043	REICHHOLD, INC.	478.6	3,364.8	42.9	17	25	2.1	285	10,733	51	PM10				
0330045	GULF POWER CO	478.3	3,381.4	28.9	1	450	18	290	802,500	52	PM	0.32	1.4		
0330045	GULF POWER CO	478.3	3,381.4	28.9	1	450	18	290	802,500	52	PM10				
0330045	GULF POWER CO	478.3	3,381.4	28.9	2	450	18	290	802,500	52	PM	32.009	140.2		
0330045	GULF POWER CO	478.3	3,381.4	28.9	2	450	18	290	802,500	52	PM10				
0330045	GULF POWER CO	478.3	3,381.4	26.9	3	450	18	290	802,500	52	PM	55	240.9		
0330045	GULF POWER CO	478.3	3,381.4	28.9	3	450	18	290	802,500	52	PM10	55	240.9		
0330045	GULF POWER CO	478.3	3,381.4	26.9	4	450	18	290	802,500	52	PM	1.02	4.49		
0330045	GULF POWER CO	478.3	3,381.4	28.9	4	450	18	290	802,500	52	PM	1.02	4.49		
0330045	GULF POWER CO	478.3	3,381.4	28.9	4	450	18	290	802,500	52	PM10				
0330045	GULF POWER CO	478.3	3,381.4	28.9	5	450	18	290	802,500	52	PM	47.64	208.7		
0330045	GULF POWER CO	478.3	3,381.4	26.9	5	450	18	290	802,500	52	PM	47.84	208.7		
0330045	GULF POWER CO	478.3	3,381.4	28.9	5	450	18	290	802,500	52	PM10	2.2	9.64		
0330045	GULF POWER CO	478.3	3,381.4	28.9	6	450	23.2	320	2,462,700	97	PM	313.64	1152		
0330045	GULF POWER CO	478.3	3,381.4	26.9	6	450	23.2	320	2,462,700	97	PM	313.84	1152		
0330045	GULF POWER CO	478.3	3,381.4	26.9	6	450	23.2	320	2,462,700	97	PM10				
0330045	GULF POWER CO	478.3	3,381.4	26.9	7	450	23.2	270	2,462,700	97	PM	450.8	1975		
0330045	GULF POWER CO	478.3	3,381.4	26.9	7	450	23.2	270	2,462,700	97	PM	450.6	1975		
0330045	GULF POWER CO	478.3	3,381.4	28.9	7	450	23.2	270	2,462,700	97	PM10				
0330045	GULF POWER CO	478.3	3,381.4	28.9	8	125	2.6	100	5,452	14	PM				
0330045	GULF POWER CO	478.3	3,381.4	26.9	8	125	2.6	100	5,452	14	PM10				

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
0330054	FUNERAL SERVICES ACQUISITION GRC	478.7	3,368.0	39.8	1	16	1.7	700	5,220	38	PM				
0330054	FUNERAL SERVICES ACQUISITION GRC	478.7	3,368.0	39.8	1	16	1.7	700	5,220	38	PM10				
0330055	SOUTHERN PRESTRESSED, INC.	478.4	3,372.7	35.2	1	30	3.9	70	500		PM				
0330055	SOUTHERN PRESTRESSED, INC.	478.4	3,372.7	35.2	1	30	3.9	70	500		PM10				
0330060	COASTAL FUELS MARKETING, INC.	479.8	3,363.4	44.5	4	30	2.5	665	4,640	15	PM	0.151	0.663		
0330060	COASTAL FUELS MARKETING, INC.	479.8	3,363.4	44.5	4	30	2.5	665	4,640	15	PM10				
0330060	COASTAL FUELS MARKETING, INC.	479.6	3,363.4	44.5	5	30	2.5	665	4,640	15	PM	0.151	0.663		
0330060	COASTAL FUELS MARKETING, INC.	479.6	3,363.4	44.5	5	30	2.5	665	4,640	15	PM10				
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	3	60	0.8	90			PM				
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	3	60	0.8	90			PM10				
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	4	60	0.8	90			PM				
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	4	60	0.8	90			PM10				
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	5	60	0.7	75	800	34	PM	0.0025	0.0033		
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	5	60	0.7	75	800	34	PM10				
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	6	60	0.7	75	800	34	PM	0.0007	0.0009		
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	8	60	0.7	75	800	34	PM10				
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	7	50	0.4	70			PM	0.0025	0.0033		
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	7	50	0.4	70			PM10				
0330064	UNIVERSITY OF WEST FLORIDA	479.8	3,379.5	29.2	1	50	6	320	2,800	1	PM				
0330064	UNIVERSITY OF WEST FLORIDA	479.8	3,379.5	29.2	1	50	6	320	2,600	1	PM10				
0330064	UNIVERSITY OF WEST FLORIDA	479.8	3,379.5	29.2	2	50	8	320	2,600	1	PM				
0330064	UNIVERSITY OF WEST FLORIDA	479.8	3,379.5	29.2	2	50	8	320	2,600	1	PM10				
0330064	UNIVERSITY OF WEST FLORIDA	479.8	3,379.5	29.2	3						PM				
0330064	UNIVERSITY OF WEST FLORIDA	479.8	3,379.5	29.2	3						PM10				
0330067	ESCAMBIA COUNTY UTILITIES AUTHOR	478.9	3,363.7	44.0	1	86	4.5	110	95,000	99	PM	2.28	9.96	2.28	9.96
0330067	ESCAMBIA COUNTY UTILITIES AUTHOR	478.9	3,363.7	44.0	1	86	4.5	110	95,000	99	PM10				
0330067	ESCAMBIA COUNTY UTILITIES AUTHOR	478.9	3,363.7	44.0	2	86	4.5	110	95,000	99	PM	2.28	9.96	2.28	9.96
0330067	ESCAMBIA COUNTY UTILITIES AUTHOR	478.9	3,363.7	44.0	2	86	4.5	110	95,000	99	PM10				
0330070	FLORIDA MINING & MATERIALS (W FL C	478.0	3,375.3	32.1	1	20	0.5	70	100	8	PM				
0330070	FLORIDA MINING & MATERIALS (W FL C	478.0	3,375.3	32.1	1	20	0.5	70	100	8	PM10				
0330070	FLORIDA MINING & MATERIALS (W FL C	478.0	3,375.3	32.1	2	20	0.5	86	100	8	PM				
0330070	FLORIDA MINING & MATERIALS (W FL C	478.0	3,375.3	32.1	2	20	0.5	86	100	8	PM10				
0330071	BUILDERS READY MIX CONCRETE COM	473.9	3,380.4	28.7	1	40	0.5	70	100	8	PM				
0330071	BUILDERS READY MIX CONCRETE COM	473.9	3,380.4	28.7	1	40	0.5	70	100	8	PM10				
0330071	BUILDERS READY MIX CONCRETE COM	473.9	3,380.4	28.7	2	40	0.5	86	750	63	PM				
0330071	BUILDERS READY MIX CONCRETE COM	473.9	3,380.4	28.7	2	40	0.5	86	750	63	PM10				
0330071	BUILDERS READY MIX CONCRETE COM	473.9	3,380.4	28.7	3	40	0.5	86	750	63	PM				
0330071	BUILDERS READY MIX CONCRETE COM	473.9	3,380.4	28.7	3	40	0.5	86	750	63	PM10				
0330071	BUILDERS READY MIX CONCRETE COM	473.9	3,380.4	28.7	4	60	0.5	86	750	63	PM				
0330071	BUILDERS READY MIX CONCRETE COM	473.9	3,380.4	28.7	4	60	0.5	86	750	63	PM10				
0330080	G.S.I. RECYCLING, INC.	475.0	3,366.5	40.5	1	32	2	2200	5,445	28	PM	2.878	2.94		
0330080	G.S.I. RECYCLING, INC.	475.0	3,366.5	40.5	1	32	2	2200	5,445	28	PM10				
0330081	SOUTHERN SCRAP COMPANY, INC.	478.2	3,367.7	40.0	1	32	2	1335	5,445	28	PM				
0330081	SOUTHERN SCRAP COMPANY, INC.	478.2	3,367.7	40.0	1	32	2	1335	5,445	28	PM10				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	15	27	2	500	8,073	32	PM	0.14	0.48		
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	15	27	2	500	8,073	32	PM10				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	16	27	2	500	8,073	32.2	PM				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	16	27	2	500	8,073	32.2	PM10				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	24	24	1.5	340	655	8	PM	0.029	0.126		
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	24	24	1.5	340	655	8	PM10	0.0288	0.126		
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	27	62	3	500	11,928	28	PM	0.231	1.0118		
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	27	62	3	500	11,928	28	PM10	0.231	1.0118		
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	39						PM				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	39						PM10				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	40						PM				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	40						PM10				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	42						PM				

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	42						PM10				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	44						PM				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	44						PM10				
0330086	NAVAL HOSPITAL	471.2	3,382.3	44.3	2	27	1	1800	895	18	PM	0.13	0.56		
0330086	NAVAL HOSPITAL	471.2	3,362.3	44.3	2	27	1	1800	895	18	PM10	0.13	0.56		
0330086	NAVAL HOSPITAL	471.2	3,362.3	44.3	3	12	1.2	360	8,268	121	PM	0.37	1.6		
0330086	NAVAL HOSPITAL	471.2	3,362.3	44.3	3	12	1.2	360	8,268	121	PM10	0.6	2.63		
0330086	NAVAL HOSPITAL	471.2	3,362.3	44.3	4	12	1.6	360	8,268	68	PM	0.37	1.6		
0330086	NAVAL HOSPITAL	471.2	3,362.3	44.3	4	12	1.8	360	8,268	68	PM10	0.6	2.63		
0330086	NAVAL HOSPITAL	471.2	3,362.3	44.3	5	12	1.6	360	8,268	68	PM	0.36	1.6		
0330086	NAVAL HOSPITAL	471.2	3,362.3	44.3	5	12	1.6	360	8,268	68	PM10	0.6	2.63		
0330091	SCI OF FL/GUARDIAN CHAPELS/D.B.A.	473.5	3,364.2	42.6	1	18	2.6	588	2,092	6	PM				
0330091	SCI OF FL/GUARDIAN CHAPELS/D.B.A.	473.5	3,364.2	42.8	1	18	2.6	588	2,092	6	PM10				
0330091	SCI OF FL/GUARDIAN CHAPELS/D.B.A.	473.5	3,364.2	42.6	2	18	1.7	1200	2,200	16.2	PM	0.43	1.9		
0330091	SCI OF FL/GUARDIAN CHAPELS/D.B.A.	473.5	3,364.2	42.6	2	16	1.7	1200	2,200	18.2	PM10				
0330093	SOUTHDOWN INCORPORATED	475.5	3,374.9	32.4	1	40	1.7	88	2,300	16	PM	0.887	0.059		
0330093	SOUTHDOWN INCORPORATED	475.5	3,374.9	32.4	1	40	1.7	88	2,300	16	PM10				
0330096	NAVY PUBLIC WORKS CENTER	467.0	3,370.0	36.6	2	60	2	400			PM	0.04	0.12		
0330096	NAVY PUBLIC WORKS CENTER	467.0	3,370.0	36.6	2	60	2	400			PM10				
0330096	NAVY PUBLIC WORKS CENTER	467.0	3,370.0	36.6	3	60	2	400			PM	0.92	2.76		
0330096	NAVY PUBLIC WORKS CENTER	467.0	3,370.0	36.8	3	60	2	400			PM10				
0330096	NAVY PUBLIC WORKS CENTER	467.0	3,370.0	36.6	4	60	2	400			PM	0.92	2.76		
0330096	NAVY PUBLIC WORKS CENTER	467.0	3,370.0	36.6	4	60	2	400			PM10				
0330097	NAVY PUBLIC WORKS CENTER	472.2	3,363.6	42.9	3	30	2	500	5,000	26	PM	0.05	0.1		
0330097	NAVY PUBLIC WORKS CENTER	472.2	3,363.8	42.9	3	30	2	500	5,000	26	PM10				
0330097	NAVY PUBLIC WORKS CENTER	472.2	3,363.8	42.9	4	30	2	500	5,000	26	PM	0.99	1.98		
0330097	NAVY PUBLIC WORKS CENTER	472.2	3,363.8	42.9	4	30	2	500	5,000	26	PM10				
0330097	NAVY PUBLIC WORKS CENTER	472.2	3,363.8	42.9	5	30	2	500	5,000	28	PM				
0330097	NAVY PUBLIC WORKS CENTER	472.2	3,363.8	42.9	5	30	2	500	5,000	28	PM10				
0330097	NAVY PUBLIC WORKS CENTER	472.2	3,363.6	42.9	6	38	2.3	582	9,151	36	PM		1.37		
0330097	NAVY PUBLIC WORKS CENTER	472.2	3,363.8	42.9	6	38	2.3	582	9,151	36	PM10		1.37		
0330098	SHEAR CONCRETE PRODUCTS COMPA	462.0	3,361.2	45.9	1	40	0.5	88	1,000	84	PM				
0330098	SHEAR CONCRETE PRODUCTS COMPA	462.0	3,361.2	45.9	1	40	0.5	88	1,000	84	PM10				
0330100	SIKES CONCRETE PIPE COMPANY	475.1	3,374.8	32.8	1	40	0.5	86	750	63	PM				
0330100	SIKES CONCRETE PIPE COMPANY	475.1	3,374.6	32.6	1	40	0.5	86	750	63	PM10				
0330105	ABB SERVICES COMPANY	472.8	3,377.0	29.8	1	26	1.7	1400	2,383	17	PM	0.141	0.618		
0330105	ABB SERVICES COMPANY	472.6	3,377.0	29.8	1	26	1.7	1400	2,383	17	PM10				
0330110	COUCH, INC.	476.6	3,367.5	40.3	1	65	0.5	86	400	33	PM				
0330110	COUCH, INC.	476.6	3,367.5	40.3	1	65	0.5	86	400	33	PM10				
0330112	APAC-FLORIDA INC., E.M. CHADBOURN	472.7	3,361.1	45.8	1	29	2.5	325	38,500	130	PM	8.19	27.11		
0330112	APAC-FLORIDA INC., E.M. CHADBOURN	472.7	3,361.1	45.6	1	29	2.5	325	38,500	130	PM10				
0330114	PENSACOLA CHRISTIAN COLLEGE, INC	477.8	3,371.0	36.7	3	37	1.3	1000	7,500	94.2	PM	0.0033	0.015		
0330114	PENSACOLA CHRISTIAN COLLEGE, INC	477.8	3,371.0	38.7	3	37	1.3	1000	7,500	94.2	PM10		0.57		
0330114	PENSACOLA CHRISTIAN COLLEGE, INC	477.8	3,371.0	36.7	5	37	1.1	1000	7,500	131.5	PM	0.0066	0.029		
0330114	PENSACOLA CHRISTIAN COLLEGE, INC	477.8	3,371.0	36.7	5	37	1.1	1000	7,500	131.5	PM10	0.26	1.13		
0330114	PENSACOLA CHRISTIAN COLLEGE, INC	477.8	3,371.0	36.7	6						PM				
0330114	PENSACOLA CHRISTIAN COLLEGE, INC	477.8	3,371.0	36.7	6						PM10				
0330114	PENSACOLA CHRISTIAN COLLEGE, INC	477.8	3,371.0	38.7	7						PM10				
0330118	HARRIS CONCRETE AND PATIO CENTE	470.7	3,362.5	44.1	1	35	0.9	90	468	12	PM	0.3	0.54		
0330118	HARRIS CONCRETE AND PATIO CENTE	470.7	3,362.5	44.1	1	35	0.9	90	488	12	PM10	3	5.4		
0330119	WESTINGHOUSE ELECTRIC COMPANY	463.9	3,375.6	34.5	1	34	2.6	86			PM	2.25	9.86	2.25	9.86
0330119	WESTINGHOUSE ELECTRIC COMPANY	483.9	3,375.8	34.5	1	34	2.6	86			PM10	2.25	9.86		
0330119	WESTINGHOUSE ELECTRIC COMPANY	483.9	3,375.8	34.5	3						PM10		8.69		6.69
0330121	AUTOSHRED RECYCLING, L.L.C.	475.8	3,363.4	43.7	1	65	5	90	1,500	1	PM	4.1	6.61		
0330121	AUTOSHRED RECYCLING, L.L.C.	475.6	3,363.4	43.7	1	65	5	90	1,500	1	PM10				
0330122	HUDSCO, INC.	460.8	3,375.8	33.0	1	26	2	400	18,000	95	PM	3.8	3.6		
0330122	HUDSCO, INC.	480.8	3,375.8	33.0	1	26	2	400	18,000	95	PM10				

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
0330123	MAACO AUTO PAINTING & BODYWORK:	475.2	3,373.2	34.0	1	20	2.6	90	1,500	4	PM	1	1		
0330123	MAACO AUTO PAINTING & BODYWORK:	475.2	3,373.2	34.0	1	20	2.6	90	1,500	4	PM10				
0330126	ARIZONA CHEMICAL - DIV OF IPCO	476.6	3,363.9	43.4	1	60	0.5	90			PM				
0330126	ARIZONA CHEMICAL - DIV OF IPCO	476.6	3,363.9	43.4	1	60	0.5	90			PM10				
0330126	ARIZONA CHEMICAL - DIV OF IPCO	476.6	3,363.9	43.4	12	11	1.1	70	4,500	76	PM	4.2			
0330126	ARIZONA CHEMICAL - DIV OF IPCO	476.6	3,363.9	43.4	12	11	1.1	70	4,500	76	PM10		1.63		
0330126	ARIZONA CHEMICAL - DIV OF IPCO	476.6	3,363.9	43.4	24			77			PM				
0330126	ARIZONA CHEMICAL - DIV OF IPCO	476.6	3,363.9	43.4	24			77			PM10				
0330126	ARIZONA CHEMICAL - DIV OF IPCO	476.6	3,363.9	43.4	25	16	0.5	120	500	42	PM	4.6			
0330126	ARIZONA CHEMICAL - DIV OF IPCO	476.6	3,363.9	43.4	25	16	0.5	120	500	42	PM10		2		
0330127	PALL MEMBRANE TECHNOLOGY CENTI	480.3	3,376.4	32.3	9	17	1	77	2,800	59.4	PM		0.14		
0330127	PALL MEMBRANE TECHNOLOGY CENTI	480.3	3,376.4	32.3	9	17	1	77	2,800	59.4	PM10				
0330129	ENVIRO-MATES, INCORPORATED	474.8	3,363.0	44.0	1						PM	14.97	65.57	14.97	65.57
0330132	FREEPORT-MCMORAN SULPHUR LLC	480.0	3,363.2	44.6	1	30	2.5	76	1,455	4	PM	3.92	16.97		
0330132	FREEPORT-MCMORAN SULPHUR LLC	480.0	3,363.2	44.6	1	30	2.5	76	1,455	4	PM10	3.46	14.98		
0330132	FREEPORT-MCMORAN SULPHUR LLC	480.0	3,363.2	44.6	2	15	2.5	76	1,455	4	PM	0.68	0.85		
0330132	FREEPORT-MCMORAN SULPHUR LLC	480.0	3,363.2	44.6	2	15	2.5	76	1,455	4	PM10	0.6	0.75		
0330132	FREEPORT-MCMORAN SULPHUR LLC	480.0	3,363.2	44.6	3	15	2.5	76	1,455	4	PM	0.68	2.98		
0330132	FREEPORT-MCMORAN SULPHUR LLC	480.0	3,363.2	44.6	3	15	2.5	76	1,455	4	PM10	0.6	0.3942		
0330133	ADVANCED ELASTOMER SYSTEMS, L.P	476.5	3,384.6	23.3	6						PM	7.3	4.8	7.3	4.8
0330133	ADVANCED ELASTOMER SYSTEMS, L.P	476.5	3,384.6	23.3	6						PM10				
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	1	30	3	90	6,000	14	PM	7.68	9.6		
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	1	30	3	90	6,000	14	PM10				
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	2	30	1.5	90	12,000	113	PM	4.32	5.4		
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	2	30	1.5	90	12,000	113	PM10				
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	3	30	2	90	8,000	42	PM	2.4	3		
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	3	30	2	90	8,000	42	PM10				
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	4	30	3.6	90	12,000	17	PM	14.4	18		
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	4	30	3.8	90	12,000	17	PM10				
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	5	40	3	90	2,000	4	PM	1.92	2.4		
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	5	40	3	90	2,000	4	PM10				
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	6	35	3.6	90	2,000	2	PM	19.44	24.3		
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	6	35	3.6	90	2,000	2	PM10				
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	7	25	1.7	90	2,000	14	PM	12.24	15.3		
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	7	25	1.7	90	2,000	14	PM10				
0330141	ECONO AUTOPAINTING OF PENSACOL/	477.6	3,369.4	38.2	1	30	2	70	9,100	46	PM	0.43	0.67		
0330141	ECONO AUTOPAINTING OF PENSACOL/	477.6	3,369.4	38.2	1	30	2	70	9,100	46	PM10				
0330144	FACT-O-BAKE OF PENSACOLA, INC.	476.5	3,371.0	36.4	1	18	2.7	70	16,755	48	PM	0.23	0.44		
0330144	FACT-O-BAKE OF PENSACOLA, INC.	476.5	3,371.0	36.4	1	18	2.7	70	16,755	48	PM10				
0330246	SPECIALTY MINERALS, INC.	469.6	3,374.6	31.9	1	9	0.67				PM	0.43	1.9		
0330246	SPECIALTY MINERALS, INC.	469.6	3,374.6	31.9	1	9	0.67				PM10	0.43	1.9		
0330246	SPECIALTY MINERALS, INC.	469.6	3,374.6	31.9	2	65	2	125	6,600	45.6	PM	1.53	6.4		
0330246	SPECIALTY MINERALS, INC.	469.6	3,374.6	31.9	2	65	2	125	6,600	45.6	PM10	1.53	6.4		
0330250	BORAL MATERIAL TECHNOLOGIES INC.	478.4	3,381.6	28.7	1						PM		0.011		
0330258	HENRY CHAMBERLAIN	480.3	3,363.5	44.6	1	25	3.5	220			PM				
0330258	HENRY CHAMBERLAIN	480.3	3,363.5	44.6	1	25	3.5	220			PM10				
0910016	CRESTVIEW READY MIX	541.9	3,407.5	73.1	2	50	0.5	86	1,000	84	PM				
0910016	CRESTVIEW READY MIX	541.9	3,407.5	73.1	2	50	0.5	86	1,000	84	PM10				
0910016	CRESTVIEW READY MIX	541.9	3,407.5	73.1	3	50	0.5	68	1,000	84	PM				
0910016	CRESTVIEW READY MIX	541.9	3,407.5	73.1	3	50	0.5	86	1,000	84	PM10				
0910025	FLORIDA MINING & MATERIALS	546.5	3,364.3	90.2	1	50	0.2	77	100	53	PM		3.47		
0910025	FLORIDA MINING & MATERIALS	546.5	3,364.3	90.2	1	50	0.2	77	100	53	PM10		3.47		
0910027	FLORIDA MINING & MATERIALS	536.0	3,368.5	77.2	2	5	0.2	77	100	53	PM	0.5	0.65		
0910027	FLORIDA MINING & MATERIALS	536.0	3,368.5	77.2	2	5	0.2	77	100	53	PM10				
0910027	FLORIDA MINING & MATERIALS	536.0	3,368.5	77.2	3	5	0.2	77	100	53	PM	0.5	0.65		
0910027	FLORIDA MINING & MATERIALS	536.0	3,368.5	77.2	3	5	0.2	77	100	53	PM10				
0910031	UNITED STATES AIR FORCE	542.6	3,369.6	82.6	2	25	3.5	147	14,370	24	PM	31.23	15.61	31.23	15.61

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	UTM Coordinates NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
0910031	UNITED STATES AIR FORCE	542.6	3,369.6	82.6	2	25	3.5	147	14,370	24	PM10				
0910031	UNITED STATES AIR FORCE	542.6	3,369.6	82.6	8	59	2	77			PM	0.4	1.76		
0910031	UNITED STATES AIR FORCE	542.6	3,369.6	82.6	6	59	2	77			PM10	0.4	1.76		
0910033	FLEMING LUMBER CO	534.7	3,402.5	66.0	1	36	1.6	425	7,478	48	PM		2		
0910033	FLEMING LUMBER CO	534.7	3,402.5	66.0	1	36	1.8	425	7,478	48	PM10		1.5		
0910042	FUNERAL SERVICES ACQUISITION GRC	541.7	3,403.8	73.0	1	18	1.7	588	2,092	15	PM		5		
0910042	FUNERAL SERVICES ACQUISITION GRC	541.7	3,403.6	73.0	1	18	1.7	588	2,092	15	PM10				
0910050	PANHANDLE ANIMAL WELFARE SOCIET	530.4	3,365.5	74.0	1						PM	0.81	0.84		
0910050	PANHANDLE ANIMAL WELFARE SOCIET	530.4	3,365.5	74.0	1						PM10				
0910061	COX BUILDING CORPORATION	532.8	3,365.4	76.1	1	30		70	680	720	PM	26.4	33	28.4	33
0910061	COX BUILDING CORPORATION	532.6	3,365.4	76.1	1	30		70	680	720	PM10				
0910063	MARBLE WORKS	532.0	3,364.3	76.0	1	40	2	70	700	3.7	PM	0.0003	0.0004		
0910063	MARBLE WORKS	532.0	3,364.3	76.0	1	40	2	70	700	3.7	PM10				
0910063	MARBLE WORKS	532.0	3,364.3	78.0	2	20	2	70	5,000	28.5	PM	1.58	2.22		
0910063	MARBLE WORKS	532.0	3,364.3	76.0	2	20	2	70	5,000	26.5	PM10				
0910063	MARBLE WORKS	532.0	3,364.3	76.0	3			77			PM	0.13	0.18		
0910063	MARBLE WORKS	532.0	3,364.3	76.0	3			77			PM10				
0910064	HURLBURT FIELD, USAF	529.7	3,364.7	73.9	3						PM				
0910064	HURLBURT FIELD, USAF	529.7	3,364.7	73.9	3						PM10				
0910064	HURLBURT FIELD, USAF	529.7	3,364.7	73.9	4			400			PM				
0910064	HURLBURT FIELD, USAF	529.7	3,364.7	73.9	4			400			PM10				
0910064	HURLBURT FIELD, USAF	529.7	3,364.7	73.9	6			900			PM				
0910064	HURLBURT FIELD, USAF	529.7	3,364.7	73.9	8			900			PM10				
0910064	HURLBURT FIELD, USAF	529.7	3,364.7	73.9	7			400			PM	4.14	2.78		
0910064	HURLBURT FIELD, USAF	529.7	3,364.7	73.9	7			400			PM10				
0910065	CHROMALLOY-FLORIDA	553.4	3,366.4	93.6	1						PM	0.056	0.24		
0910065	CHROMALLOY-FLORIDA	553.4	3,366.4	93.6	1						PM10	0.056	0.24		
0910065	CHROMALLOY-FLORIDA	553.4	3,366.4	93.6	5						PM	0.2	0.7		
0910065	CHROMALLOY-FLORIDA	553.4	3,366.4	93.6	5						PM10				
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	4	50	4.8	325	52,100	47	PM	28.66	81.7308		
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	4	50	4.8	325	52,100	47	PM10				
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	5	50	4.8	325	52,100	47	PM	16.66	81.7308		
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	5	50	4.8	325	52,100	47	PM10				
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	6	30	6	76	2,200	1	PM				
1130003	STERLING FIBERS; INC.	489.2	3,380.2	33.3	6	30	8	76	2,200	1	PM10				
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	9	50	6.3	350	63,200	33	PM	24.11	105.6		
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	9	50	6.3	350	63,200	33	PM10				
1130003	STERLING FIBERS, INC.	469.2	3,380.2	33.3	65			77			PM				
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	65			77			PM10				
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	1	41	6.2	250	48,100	26	PM	0.884	3.827		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	1	41	8.2	250	48,100	26	PM10	0.6517	2.854		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	3	40	5	750	42,000	35	PM	1.592	6.974		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	3	40	5	750	42,000	35	PM10	1.59	6.97		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	5	36	0.6	700	1,963	65.1	PM		0.159		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	5	36	0.8	700	1,963	65.1	PM10	0.35	1.55		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	6	25	0.8	557	90	2	PM		0.27		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,363.4	29.5	6	25	0.8	557	90	2	PM10		0.27		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	7	25	2.8	1300	745	2	PM	0.09	0.394		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	7	25	2.8	1300	745	2	PM10				
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	8	82	3.7	450	82,750	97	PM	1.649315	8.1		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	8	82	3.7	450	62,750	97	PM10		8.1		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	10	90	7.5	325	344,003	129	PM	2.553	11.182		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	10	90	7.5	325	344,003	129	PM10				
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	11	25	2.5	350	16,400	82	PM	0.5644	2.472		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	11	25	2.5	350	18,400	62	PM10				
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	14	52	2.5	224	7,800	26	PM	0.4539	1.988	137.4	601.812
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	14	52	2.5	224	7,800	26	PM10	0.4539	1.988		

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	UTM Coordinates NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	15	55	5	102	43,000	38	PM	3.04	13.3152		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	15	55	5	102	43,000	38	PM10	3.04	13.3152		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	16	55	5	102	46,000	40	PM	31	135.76	31	135.76
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	16	55	5	102	48,000	40	PM10	25.73	112.6974		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	22	71	3	350	41,612	98	PM	0.28	1.13		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	22	71	3	350	41,612	98	PM10				
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	23	94	2.5	340	29,797	101	PM	0.22	0.97		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	23	94	2.5	340	29,797	101	PM10		0.97		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	26	20	1.7	900	16,400	135	PM		1.732		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	26	20	1.7	900	18,400	135	PM10		1.732		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	27	15	0.25	100	50	17	PM		0.047		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	27	15	0.25	100	50	17	PM10		0.016		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	41			90			PM10	2.8	12.5		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	42						PM				
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	42						PM10				
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	43	60	4	325	41,058	54.5	PM				
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	43	60	4	325	41,058	54.5	PM10	1.21	5.29		
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	36	35	2.5	800	6,465	22	PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.8	36	35	2.5	800	8,465	22	PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	37	35	2.5	800	17,333	58.9	PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.8	23.6	37	35	2.5	800	17,333	58.9	PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	38	30	1	800	3,728	79.1	PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.6	3,425.6	23.6	38	30	1	800	3,726	79.1	PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	40						PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.8	40						PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.8	23.8	41						PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	41						PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	42						PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.8	23.6	42						PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.8	43						PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.8	43						PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.8	23.8	44						PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.8	23.8	44						PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.8	23.8	45						PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.8	23.8	45						PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.8	23.8	46						PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.8	23.8	46						PM10				
1130014	PETRO OPERATING COMPANY	488.8	3,412.7	20.9	1	160	1.5	500	1,912	18	PM				
1130014	PETRO OPERATING COMPANY	488.8	3,412.7	20.9	1	160	1.5	500	1,912	18	PM10				
1130014	PETRO OPERATING COMPANY	488.8	3,412.7	20.9	11	20	2.5	500			PM				
1130014	PETRO OPERATING COMPANY	488.8	3,412.7	20.9	11	20	2.5	500			PM10				
1130015	GULF COAST PAVING & GRADING	493.8	3,384.0	33.7	2	31	3	200	42,592	100	PM	1.2	1.5		
1130015	GULF COAST PAVING & GRADING	493.8	3,384.0	33.7	2	31	3	200	42,592	100	PM10				
1130017	SANTA ROSA CONCRETE CO	496.8	3,386.5	34.5	2	60	0.5	77	900	76	PM	0.808	1.26		
1130017	SANTA ROSA CONCRETE CO	496.8	3,386.5	34.5	2	60	0.5	77	900	76	PM10				
1130017	SANTA ROSA CONCRETE CO	496.8	3,386.5	34.5	3	50	14	100	11		PM	0.16	0.25		
1130017	SANTA ROSA CONCRETE CO	496.8	3,386.5	34.5	3	50	14	100	11		PM10				
1130022	U.S. NAVY	497.8	3,398.2	30.2	1	44	4	430	82,190	109	PM	0.24	1.05		
1130022	U.S. NAVY	497.8	3,398.2	30.2	1	44	4	430	82,190	109	PM10				
1130022	U.S. NAVY	497.6	3,398.2	30.2	2	44	4	430	82,190	109	PM	0.24	1.05		
1130022	U.S. NAVY	497.8	3,398.2	30.2	2	44	4	430	82,190	109	PM10				
1130026	GOLDEN GIN & WAREHOUSE	484.8	3,428.1	25.3	1	20	2.8	86	1,000	2	PM	13.075	14.71		
1130026	GOLDEN GIN & WAREHOUSE	484.8	3,428.1	25.3	1	20	2.8	88	1,000	2	PM10				
1130026	GOLDEN GIN & WAREHOUSE	484.8	3,426.1	25.3	2	35	3	76			PM	13.075	14.71		
1130026	GOLDEN GIN & WAREHOUSE	484.8	3,428.1	25.3	2	35	3	78			PM10				
1130026	GOLDEN GIN & WAREHOUSE	484.6	3,426.1	25.3	3	35	3	76			PM	13.075	14.71		
1130026	GOLDEN GIN & WAREHOUSE	484.6	3,426.1	25.3	3	35	3	76			PM10				

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	UTM Coordinates NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
1130026	GOLDEN GIN & WAREHOUSE	484.8	3,426.1	25.3	4	35	3	76			PM	13.075	14.71		
1130026	GOLDEN GIN & WAREHOUSE	484.8	3,426.1	25.3	4	35	3	76			PM10				
1130027	BURKHEAD GIN	485.3	3,425.8	25.4	1	20	1	86	1,000	21	PM	12.032	12.13		
1130027	BURKHEAD GIN	485.3	3,425.8	25.4	1	20	1	86	1,000	21	PM10				
1130027	BURKHEAD GIN	485.3	3,425.8	25.4	2	20	1	86	1,000	21	PM	10.53	10.61		
1130027	BURKHEAD GIN	485.3	3,425.8	25.4	2	20	1	86	1,000	21	PM10				
1130027	BURKHEAD GIN	485.3	3,425.8	25.4	3	20	1	86	1,000	21	PM	43.24	43.581		
1130027	BURKHEAD GIN	485.3	3,425.8	25.4	3	20	1	86	1,000	21	PM10				
1130027	BURKHEAD GIN	485.3	3,425.8	25.4	4	20	1	86	1,000	21	PM	6.392	6.443		
1130027	BURKHEAD GIN	485.3	3,425.8	25.4	4	20	1	86	1,000	21	PM10				
1130028	SHEAR CONCRETE PRODUCTS COMPA	496.4	3,362.4	52.1	1	40	9.5	86	999		PM				
1130028	SHEAR CONCRETE PRODUCTS COMPA	496.4	3,362.4	52.1	1	40	9.5	86	999		PM10				
1130028	SHEAR CONCRETE PRODUCTS COMPA	496.4	3,362.4	52.1	2	40	9.5	86	999		PM				
1130028	SHEAR CONCRETE PRODUCTS COMPA	496.4	3,362.4	52.1	2	40	9.5	86	999		PM10				
1130030	SOUTHDOWN, INC.			3,438.7	2	30	2	100	800	4	PM		6.98		
1130030	SOUTHDOWN, INC.			3,438.7	2	30	2	100	800	4	PM10		6.98		
1130030	SOUTHDOWN, INC.			3,438.7	3						PM		0.9		
1130030	SOUTHDOWN, INC.			3,438.7	3						PM10		0.9		
1130031	THE QUIKRETE COMPANIES	497.1	3,383.5	36.5	1				9		PM	26.7333	40.1	32.87	49.3
1130031	THE QUIKRETE COMPANIES	497.1	3,383.5	36.5	1				9		PM10	4.93	21.6		
1130031	THE QUIKRETE COMPANIES	497.1	3,383.5	36.5	2				9		PM	0	8.8		
1130031	THE QUIKRETE COMPANIES	497.1	3,383.5	36.5	2				9		PM10		8.8		
1130032	PETRO OPERATING COMPANY	515.2	3,427.8	51.0	1	10	0.3	1010	460	113	PM				
1130032	PETRO OPERATING COMPANY	515.2	3,427.8	51.0	1	10	0.3	1010	480	113	PM10				
1130032	PETRO OPERATING COMPANY	515.2	3,427.8	51.0	2	10	0.3	1010	460	113	PM				
1130032	PETRO OPERATING COMPANY	515.2	3,427.8	51.0	2	10	0.3	1010	480	113	PM10				
1130032	PETRO OPERATING COMPANY	515.2	3,427.8	51.0	7	25	0.7	1200	300	12	PM	0.002	0.0069		
1130032	PETRO OPERATING COMPANY	515.2	3,427.8	51.0	7	25	0.7	1200	300	12	PM10				
1130032	PETRO OPERATING COMPANY	515.2	3,427.8	51.0	8		0.2	1300	559	296	PM				
1130032	PETRO OPERATING COMPANY	515.2	3,427.8	51.0	8		0.2	1300	559	296	PM10				
1130033	SANTA ROSA CO. B. OF COMMISSIONEI	493.1	3,384.7	32.7	1	4	9	800			PM	39	60.84		
1130033	SANTA ROSA CO. B. OF COMMISSIONEI	493.1	3,384.7	32.7	1	4	9	800			PM10				
1130037	FLORIDA GAS TRANSMISSION COMPAN	510.8	3,419.6	44.0	6	35	2.1	495	35,820	172	PM	0.14	0.61	0.14	0.61
1130037	FLORIDA GAS TRANSMISSION COMPAN	510.8	3,419.6	44.0	6	35	2.1	495	35,820	172	PM10	0.14	0.61	0.14	0.61
1130037	FLORIDA GAS TRANSMISSION COMPAN	510.8	3,419.6	44.0	7						PM				
1130037	FLORIDA GAS TRANSMISSION COMPAN	510.8	3,419.6	44.0	7						PM10				
1130038	MOLD-EX RUBBER CO.,INC.	501.2	3,389.7	36.5	1						PM				
1130038	MOLD-EX RUBBER CO.,INC.	501.2	3,389.7	36.5	1						PM10				
1130038	MOLD-EX RUBBER CO.,INC.	501.2	3,389.7	36.5	7						PM				
1130038	MOLD-EX RUBBER CO.,INC.	501.2	3,389.7	36.5	7						PM10				
1130038	MOLD-EX RUBBER CO.,INC.	501.2	3,389.7	36.5	8	4	0.5	77	1,560	132	PM	0.0008	0.0037		
1130038	MOLD-EX RUBBER CO.,INC.	501.2	3,389.7	36.5	8	4	0.5	77	1,560	132	PM10				
1130039	COUCH, INC.	492.2	3,382.2	33.8	1	65	0.5	86	300	25	PM	0.065	0.2838		
1130039	COUCH, INC.	492.2	3,382.2	33.8	1	65	0.5	86	300	25	PM10	3.24	14.19		
1130040	ODOM FIBERGLASS, INCORPORATED	472.7	3,378.8	28.1	1	18	3	70	15,000	35	PM		0.2		
1130040	ODOM FIBERGLASS, INCORPORATED	472.7	3,378.8	28.1	1	18	3	70	15,000	35	PM10				
1130168	SANTA ROSA ENERGY LLC	489.1	3,381.3	32.4	1						PM				
1130169	LONE STAR INDUSTRIES, INC.	494.2	3,383.5	34.3	1						PM		0.77		
1130172	SANTA ROSA CO BOARD OF CO COMMI	494.3	3,382.7	34.9	1						PM		5		
1130172	SANTA ROSA CO BOARD OF CO COMMI	494.3	3,382.7	34.9	1						PM10				
1130173	GULF POWER COMPANY	485.8	3,381.6	30.1	1	60	4	325	41,058	54.5	PM				
1130173	GULF POWER COMPANY	485.6	3,381.6	30.1	1	60	4	325	41,058	54.5	PM10		4.64		
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	1	50	0.2	86	100	53	PM				
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	1	50	0.2	86	100	53	PM10				
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	2	60		70	750	0	PM	0.0006	0.0009		
7770024	JOSEPH CONCRETE COMPANY	496.1	3,367.9	33.1	2	60		70	750	0	PM10				
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	3	60		70	750	0	PM	0.0001	0.0002		

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	UTM Coordinates NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	3	60		70	750	0	PM10				
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	4	30		70	108	432	PM	4.28	6.45		
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	4	30		70	108	432	PM10				
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	5						PM				
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	5						PM10				
7770032	FORT WALTON CONCRETE COMPANY	538.3	3,364.4	81.3	1	25	0.5	86	999	84	PM				
7770032	FORT WALTON CONCRETE COMPANY	538.3	3,364.4	81.3	1	25	0.5	86	999	84	PM10				
7770032	FORT WALTON CONCRETE COMPANY	538.3	3,364.4	81.3	3	60	0.5	86	700	59	PM				
7770032	FORT WALTON CONCRETE COMPANY	538.3	3,364.4	81.3	3	60	0.5	86	700	59	PM10				
7770043	EWELL INDUSTRIES, INC.	533.4	3,370.5	74.0	1	30	1	76			PM				
7770043	EWELL INDUSTRIES, INC.	533.4	3,370.5	74.0	1	30	1	76			PM10				
7770058	NWF CONTRACTORS, INC.	482.6	3,370.3	38.8	1	64	0.4	90	900	119	PM	27.06	1.407	27.06	1.407
7770058	NWF CONTRACTORS, INC.	482.6	3,370.3	38.8	1	64	0.4	90	900	119	PM10				
7770058	NWF CONTRACTORS, INC.	482.6	3,370.3	38.8	2	64	0.4	90	900	119	PM	27.06	0.704	27.06	0.704
7770056	NWF CONTRACTORS, INC.	482.6	3,370.3	38.8	2	64	0.4	90	900	119	PM10				
7770058	NWF CONTRACTORS, INC.	482.6	3,370.3	38.8	3	22	0.2	90	140	74	PM	41.88	16.33	41.88	16.33
7770058	NWF CONTRACTORS, INC.	482.6	3,370.3	38.8	3	22	0.2	90	140	74	PM10				
7770147	ANDERSON COLUMBIA COMPANY, INC.	502.0	3,388.9	37.6	1	19	1.7	241	42,212	309	PM	5.33	8		
7770147	ANDERSON COLUMBIA COMPANY, INC.	502.0	3,388.9	37.6	1	19	1.7	241	42,212	309	PM10				
7774802	COUCH CONSTRUCTION, L.P.	540.6	3,370.6	80.3	1	42	10	130	76,400	16	PM	33.7	52.572	33.7	52.572
7774802	COUCH CONSTRUCTION, L.P.	540.6	3,370.6	80.3	1	42	10	130	76,400	16	PM10				
7774803	FT WALTON CONCRETE	546.2	3,375.6	83.4	1	40	1	86	900	19	PM				
7774803	FT WALTON CONCRETE	546.2	3,375.6	83.4	1	40	1	86	900	19	PM10				
7774803	FT WALTON CONCRETE	546.2	3,375.6	83.4	2						PM				
7774803	FT WALTON CONCRETE	546.2	3,375.6	83.4	2						PM10				
7774806	COUCH CONSTRUCTION, L.P.	493.7	3,385.1	32.9	1	20	2	130	27,000	143	PM	7.88	8.2		
7774806	COUCH CONSTRUCTION, L.P.	493.7	3,385.1	32.9	1	20	2	130	27,000	143	PM10	7.88	8.2		
7774806	COUCH CONSTRUCTION, L.P.	493.7	3,385.1	32.9	2						PM				
7774806	COUCH CONSTRUCTION, L.P.	493.7	3,385.1	32.9	2						PM10				
7774809	FLORIDA MINING & MATERIALS	476.9	3,427.1	22.1	1						PM				
7774809	FLORIDA MINING & MATERIALS	476.9	3,427.1	22.1	1						PM10				
7774809	FLORIDA MINING & MATERIALS	476.9	3,427.1	22.1	2						PM				
7774809	FLORIDA MINING & MATERIALS	476.9	3,427.1	22.1	2						PM10				
7774810	GROUP III ASPHALT, INC.	469.6	3,375.9	30.7	1	30	7	77			PM	3.2	2		
7774610	GROUP III ASPHALT, INC.	469.6	3,375.9	30.7	1	30	7	77			PM10	3.2	2		
7775008	GROUP III ASPHALT,INC.	469.9	3,375.9	30.7	1	41	4	300	50,025	66.4	PM	10.724	46.971	10.724	16.086
7775008	GROUP III ASPHALT,INC.	469.9	3,375.9	30.7	1	41	4	300	50,025	66.4	PM10				
7775030	*COMPRESSION COAT, INC.*	476.1	3,363.4	43.8	1	1	0.5		400	34	PM		5		
7775030	COMPRESSION COAT, INC.	476.1	3,363.4	43.8	1	1	0.5		400	34	PM10		5		
7775043	SHEAR CONCRETE PRODUCTS, INC.	494.3	3,383.7	34.3	1	60	0.5	77	550	46.7	PM		5		
7775073	COUCH CONSTRUCTION L.P.	469.8	3,390.9	15.7	1						PM	13.72	20.56		
7775073	COUCH CONSTRUCTION L.P.	469.8	3,390.9	15.7	1						PM10				
7775074	PANHANDLE LAND & TIMBER	470.4	3,366.4	20.2	1						PM	14.57	8.09		
7775074	PANHANDLE LAND & TIMBER	470.4	3,366.4	20.2	1						PM10				

Source: FDEP, 1999.

9.0 AMBIENT IMPACT ANALYSIS RESULTS

MAXIMUM FACILITY IMPACTS AND SIGNIFICANT IMPACT AREAS

The refined ISCST3 model was used to model the proposed McDavid point and fugitive PM_{10} emission sources. ISCST3 model results for each year of meteorology evaluated (1986—1990) are summarized on Table 9-1 (annual PM_{10} impacts) and Table 9-2 (24-hour PM_{10} impacts).

Tables 9-1 and 9-2 indicate that McDavid Sawmill PM_{10} impacts will exceed the PSD significant impact levels previously shown in Table 4-2. A summary of maximum McDavid Sawmill impacts and PSD significant impact levels is provided on Table 9-3.

NAAQS ANALYSIS

An assessment of McDavid Sawmill emission source impacts, together with other major sources within approximately 52 km, was performed for comparison to the annual and 24-hour average PM_{10} NAAQS. The modeled emission inventory included the McDavid Sawmill point and fugitive PM_{10} emission sources, and all other sources contained in the FDEP PM emission inventory retrieval that are located within 52 km of the McDavid Sawmill site and that satisfied the "20D" rule. Conservatively, the PM emission rates provided by FDEP were assumed to be equal to PM_{10} emission rates.

The receptor grids for the refined NAAQS analysis consisted of the fence line, near-field discrete, and mid-field polar receptors extending to 1.5 km consistent with the approximate 1.3 km AOI; i.e., the grid extended from the sawmill site out to 1.5 km.

The results of the annual and 24-hour average PM_{10} NAAQS modeling are provided on Tables 9-4 and 9-5, respectively. These tables demonstrates that McDavid Sawmill emission source impacts, together with all other off-property PM emission sources and including background, are well below the annual and 24-hour average PM_{10} NAAQS.

Table 9-1. ISCST3 Model Results - Maximum Annual Average PM/PM_{10} Impacts

Maximum Annual Impacts	1986	1987	1988	1989	1990
ISCST3 Impact ($\mu g/m^3$)	1.89	1.87	2.12	1.85	2.48
PSD Significant Impact ($\mu g/m^3$)	1.0	1.0	1.0	1.0	1.0
Exceed PSD Significant Impact (Y/N)	Y	Y	Y	Y	Y
Percent of PSD Significant Impact (%)	189.3	187.3	211.7	185.3	247.7
Receptor UTM Easting (m)	468,545.8	468,343.1	468,343.4	468,545.8	468,343.4
Receptor UTM Northing (m)	3,406,416.0	3,406,672.5	3,406,672.5	3,406,416.0	3,406,672.5
Receptor Elevation (m)	12.2	15.2	15.2	12.2	15.2
Distance From DC1 (m)	277	453	453	277	453
Direction From DC1 (Vector °)	239	284	284	239	284

Source: ECT, 1999.

Table 9-2. ISCST3 Model Results - Maximum 24-Hour Average PM/PM_{10} Impacts

Maximum 24-Hour Impacts	1986	1987	1988	1989	1990
ISCST3 Impact ($\mu g/m^3$)	12.85	15.52	15.50	11.86	18.64
PSD Significant Impact ($\mu g/m^3$)	5.0	5.0	5.0	5.0	5.0
Exceed PSD Significant Impact (Y/N)	Y	Y	Y	Y	Y
Percent of PSD Significant Impact (%)	257.0	310.4	310.0	237.2	372.8
PSD *de minimis* Ambient Impact Threshold ($\mu g/m^3$)	10.0	10.0	10.0	10.0	10.0
Exceed PSD *de minimis* Ambient Impact (Y/N)	Y	Y	Y	Y	Y
Percent of PSD *de minimis* Ambient Impact (%)	128.5	155.2	155.0	118.6	186.4
Receptor UTM Easting (m)	468,343.4	468,343.4	468,343.4	469,004.3	468,343.4
Receptor UTM Northing (m)	3,406,660.3	3,406,660.3	3,406,660.3	3,406,347.5	3,406,672.5
Receptor Elevation (m)	15.2	15.2	15.2	15.2	15.2
Distance From DC1 (m)	450	450	450	308	453
Direction From DC1 (Vector °)	283	283	283	134	284
Date of Maximum Impact	2/1/86	11/25/87	12/15/88	12/9/89	1/5/90
Julian Date of Maximum Impact	32	329	350	343	5

Source: ECT, 1999.

Table 9-3. McDavid Sawmill Emission Sources—Maximum PM_{10} Impacts

Pollutant	Averaging Time	Maximum Impact ($\mu g/m^3$)	Significant Impact ($\mu g/m^3$)
PM/PM_{10}	Annual	2.5	1.0
	24-hour	18.6	5.0

Source: ECT, 1999.

Table 9-4. ISCST3 Model Results - Maximum Annual Average PM_{10} Impacts; NAAQS Analysis

Maximum Annual Impacts	1986	1987	1988	1989	1990
ISCST3 Impact ($\mu g/m^3$)	2.60	2.46	2.93	2.61	3.17
Background ($\mu g/m^3$)	24.0	24.0	24.0	24.0	24.0
Total Impact ($\mu g/m^3$)	26.6	26.46	26.93	26.61	27.17
NAAQS ($\mu g/m^3$)	50.0	50.0	50.0	50.0	50.0
Exceed NAAQS (Y/N)	N	N	N	N	N
Percent of NAAQS (%)	53.2	52.9	53.9	53.2	54.3
Receptor UTM Easting (m)	468,545.8	468,343.4	468,343.4	468,545.8	468,343.4
Receptor UTM Northing (m)	3,406,416.0	3,406,672.5	3,406,672.5	3,406,416.0	3,406,672.5
Distance From Grid Origin (m)	277	453	453	277	453
Direction From Grid Origin (Vector °)	239	284	284	239	284

Source: ECT, 1999.

Table 9-5. ISCST3 Model Results - High, Second Highest 24-Hour Average PM_{10} Impacts; NAAQS Analysis

High, Second Highest 24-Hour Impacts	1986	1987	**1988**	1989	1990
ISCST3 Impact ($\mu g/m^3$)	17.2	14.3	**18.9**	15.4	16.5
Background ($\mu g/m^3$)	67.0	67.0	**67.0**	67.0	67.0
Total Impact ($\mu g/m^3$)	84.2	81.26	**85.86**	82.37	83.54
NAAQS ($\mu g/m^3$)	150.0	150.0	**150.0**	150.0	150.0
Exceed NAAQS (Y/N)	N	N	**N**	N	N
Percent of NAAQS (%)	56.1	54.2	**57.2**	54.9	55.7
Receptor UTM Easting (m)	468,763.9	468,506.4	**468,582.6**	468,763.9	468,343.4
Receptor UTM Northing (m)	3,406,974.3	3,406,957.3	**3,406,957.3**	3,406,974.3	3,406,672.5
Distance From DC1 (m)	415	483	**444**	415	453
Direction From DC1 (Vector °)	357	325	**333**	357	284
Date of Maximum Impact	10/1/86	12/26/87	**2/2/88**	6/4/89	1/16/90
Julian Date of Maximum Impact	274	360	**33**	155	16

Source: ECT, 1999.

The dispersion model results show that impacts from Florida off-site PM/PM_{10} sources at receptors located within the McDavid Sawmill area of influence are insignificant. For example, the maximum 24-hour impact of the Gulf Power PM/PM_{10} emission sources (totaling 3,524 tons per year) was less than 1.0 $\mu g/m^3$. Because the Alabama PM/PM_{10} emission sources are located at greater distances than the Florida off-site sources (and are expected to have lower emission rates), impacts from Alabama PM/PM_{10} emission sources would also be expected to be insignificant in the vicinity of the McDavid Sawmill.

The NAAQS impact analyses was conducted using conservative premises for background PM_{10} levels and off-property source PM_{10} emission rates. The *highest* 24-hour and annual average PM_{10} value obtained from the FDEP PM_{10} monitoring site located in Cantonment, Escambia for 1997 and 1998 was used as background. This approach results in an over-estimation of total impacts due to "double-counting"; i.e., a portion of the FDEP monitored ambient PM_{10} data would be expected to have been caused by the same PM_{10} emission sources which are also included in the modeled emission inventory. As noted above, all PM emission rates provided by FDEP for the off-property sources were conservatively assumed to be equal to PM_{10} emission rates.

Because of the conservative approach used in conducting the air quality analysis for PM_{10} NAAQS impacts, there is reasonable assurance that the proposed McDavid Sawmill will not cause nor contribute to an exceedance of the PM_{10} NAAQS.

PSD CLASS II INCREMENT ANALYSIS

An assessment of McDavid Sawmill impacts, together with other sources within 52 km, was performed for comparison to the annual and 24-hour average PSD Class II PM_{10} increments. The modeled emission inventory included the McDavid Sawmill point and fugitive PM_{10} emission sources, and all other sources contained in the FDEP PM emission inventory retrieval that are located within 52 km of McDavid Sawmill site and that satisfied the "20D" rule. The FDEP PM_{10} emission inventory did not identify the specific emission sources which consume PSD PM_{10} increment. Conservatively, *all* off-property PM_{10} emission sources located within 52 km of McDavid Sawmill site were assumed to consume PSD increment. In addition, the PM emission rates provided by FDEP were conservatively assumed to be equal to PM_{10} emission rates.

The receptor grids for the refined PSD Class II PM_{10} increment analysis consisted of the same receptors used for the NAAQS analysis; i.e., the grid extended from the McDavid Sawmill site out to 1.5 km. The results of the 24-hour and annual average PSD Class II PM_{10} increment modeling are provided in Table 9-6 and 9-7, respectively. These tables demonstrate that maximum McDavid Sawmill impacts, together with all other PSD PM_{10} increment consuming emission sources, are below the 24-hour and annual average PSD Class II PM_{10} increments.

Similar to the NAAQS air quality analysis, the assessment of PSD Class II PM_{10} increment consumption was conducted using conservative premises. As noted above, *all* off-property PM emission sources were assumed to consume PSD PM_{10} increment. In addition, the PM emission rates provided by FDEP for the off-property sources were assumed to be equal to PM_{10} emission rates.

Because of the conservative approach used in conducting the air quality analysis for PM_{10} PSD Class II increment consumption, there is reasonable assurance that McDavid Sawmill will not cause nor contribute to an exceedance of the PSD Class II PM_{10} increments.

CONCLUSIONS

Comprehensive dispersion modeling, using the refined ISCST3 model, demonstrates that McDavid Sawmill emission sources, together with all off-property PM/PM_{10} emission sources located within 52 km of sawmill site and including background concentrations, will result in ambient air quality impacts that are:

- Below the NAAQS for PM_{10}; and
- Below the PSD Class II increment for PM_{10}.

Table 9-6. ISCST3 Model Results - Maximum Annual PM_{10} Impacts; PSD Class II Increment Analysis

Maximum Annual Impacts	1986	1987	1988	1989	1990
ISCST3 Impact ($\mu g/m^3$)	2.60	2.46	2.93	2.61	3.17
PSD Class II Increment ($\mu g/m^3$)	17.0	17.0	17.0	17.0	17.0
Exceed PSD Class II Increment (Y/N)	N	N	N	N	N
Percent of PSD Class II Increment (%)	15.3	14.5	17.2	15.4	18.6
Receptor UTM Easting (m)	468,545.8	468,343.4	468,343.4	468,545.8	468,343.4
Receptor UTM Northing (m)	3,406,416.0	3,406,672.5	3,406,672.5	3,406,416.0	3,406,672.5
Distance From Grid Origin (m)	277	453	453	277	453
Direction From Grid Origin (Vector °)	239	284	284	239	284

Source: ECT, 1999.

Table 9-7. ISCST3 Model Results - High, Second Highest 24-Hour Average PM_{10} Impacts; PSD Class II Increment Analysis

High, Second Highest 24-Hour Impacts	1986	1987	**1988**	1989	1990
ISCST3 Impact ($\mu g/m^3$)	17.2	14.3	**18.9**	15.4	16.5
PSD Class II Increment ($\mu g/m^3$)	30.0	30.0	**30.0**	30.0	30.0
Exceed PSD Class II Increment (Y/N)	N	N	**N**	N	N
Percent of PSD Class II Increment (%)	57.2	47.5	**62.9**	51.2	55.1
Receptor UTM Easting (m)	468,763.9	468,506.4	**468,582.6**	468,763.9	468,343.4
Receptor UTM Northing (m)	3,406,974.3	3,406,957.3	**3,406,957.3**	3,406,974.3	3,406,672.5
Distance From DC1 (m)	415	483	**444**	415	453
Direction From DC1 (Vector °)	357	325	**333**	357	284
Date of Maximum Impact	10/1/86	12/26/87	**2/2/88**	6/4/89	1/16/90
Julian Date of Maximum Impact	274	360	**33**	155	16

Source: ECT, 1999.

Based on the conservative nature of the air quality analysis, there is reasonable assurance that McDavid Sawmill will:

- Not cause nor contribute to an exceedance of any NAAQS or Florida AAQS.
- Not cause nor contribute to an exceedance of any PSD Class I or Class II increment.

A summary of the NAAQS and PSD Class II Increment model results is provided in Table 9-8.

Table 9-8. McDavid Sawmill—NAAQS and PSD Class II Increment PM_{10} Impacts

Pollutant	Averaging Time	Maximum Impact ($\mu g/m^3$)	Standard ($\mu g/m^3$)
NAAQS			
PM/PM_{10}	Annual	27.7	50.0
	24-hour (HSH)	85.9	150.0
PSD Class II			
PM/PM_{10}	Annual	3.2	17.0
	24-hour (HSH)	18.9	30.0

Source: ECT, 1999.

BOILER VENDOR
EMISSIONS DATA

McBurney 4274 Shackleford Rd., Norcross, GA 30093 USA
P.O. Box 1827, Norcross, GA 30091-1827 USA
TEL: (770) 925-7100 / FAX: (770) 925-7400

FAX / MEMO

DATE: 7/21/99 **Page:** 1 of 2

TO: Mark Culpepper
Mid-South Engineering

PHONE: **FAX:** 501-624-4214

FROM: Dave Heinzmann

REFERENCE: Champion New Mill

This will confirm emission data given to you over the phone earlier. For a 55,000 PPH natural gas fired boiler, the following emission levels are achievable.

NOx – 0.1 #/MMBtu
CO – 0.1 #/MMBtu
VOC – 0.05 #/MMBtu
Particulate – 0.0035 #/MMBtu
SOx – 0.0006 #/MMBtu

Notes:

1) Particulate Matter is based on:
   A. TSP level is based on conducting the first portion of EPA test method #5, which measures "filterable" or "non-condensable" particulate.
   B. TSP level is based on the Natural Gas analysis outlined in Item B-05 of the project specifications.
   C. TSP level is to exclude PM/PM10 contributions from the ambient combustion air.
2) SOx is based on maximum sulfur content in natural gas of 0.20 grains per 100 SCF of fuel gas.
3) Emissions based on 15% excess air and no flue gas recirculation (FGR).
4) Based on use of a Nebraska Model NS-E-58 or similarly sized boiler equipped with a feedwater economizer.
5) The above emission rates are applicable on the LHV basis of natural gas.

Hope this helps. We look forward to working with you on this project.

Dave Heinzmann

~~Attachment — Coen~~ letter of July 10, 1999
cc: Tom Davis
~~ECT~~ – Fax 352-332-6722
Ed Mockridge
Mike Cantrell

PROFESSIONAL ENGINEER
CERTIFICATION

4. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [✔], if so), I further certify that the engineering features of each such emissions unit described in this application have been ~~designed or~~ examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Thomas W. Davis — 7/24/99

Signature — Date

(seal)

* Attach any exception to certification statement.

This certification is applicable to the July 16th and July 24th submittals to the Department regarding Champion International Corporation's McDavid Sawmill project.

ECT

Environmental Consulting & Technology, Inc.

RECEIVED

JUL 16 1999

BUREAU OF AIR REGULATION

July 16, 1999

HAND DELIVERED ON JULY 16, 1999

Mr. Joseph Kahn, P.E.
New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road, Mail Station #5505
Tallahassee, Florida 32399-2400

Re: Champion International Corporation
McDavid Sawmill – Air Construction Permit Application
DEP File No. 0330260-001-AC (PSD-FL-271)

Dear Mr. Kahn:

On behalf of Champion International Corporation (Champion), responses to the items raised in your July 8th correspondence to Champion regarding the proposed McDavid Sawmill are provided as follows:

Item 1:

A BACT analysis for PM/PM_{10} is attached, reference Supplemental Best Available Control Technology Analysis. The supplemental analysis confirms that the stringent PM/PM_{10} emission limits proposed in Champion's permit application represent BACT for the proposed sawmill point and fugitive PM/PM_{10} emission sources. An air quality analysis for PM_{10} is being prepared. This analysis is expected to be completed and provided to the Department for review during the week of July 19th.

Item 2.

In order to submit a complete permit application, efforts were made to identify and quantity all fugitive PM/PM_{10} emission sources associated with the proposed McDavid Sawmill project. The fugitive PM/PM_{10} emission sources and estimated emission rates were summarized on Page 17, Table 2-3, of the permit application. Supporting calculations for the emission estimates were provided in Appendix C.

As discussed at the July 8th meeting in Tallahassee, the fugitive emission estimates were based on the best available information. While fugitive emissions from any activity can be quantified using assumed emission factors and control efficiencies, the accuracy of such estimates depends on the quality of the factors and efficiencies utilized. For the McDavid Sawmill project, many estimates were developed based on out-dated emission factors and factors from other industries.

3701 Northwest
98TH Street
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32606

(352)
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FAX (352)
332-6722

Based on this information Champion is revising its application to reflect the fact that emissions from the following fugitive sources are not quantifiable and should not be included in any additional analysis:

- Log sawing operations
- Log debarking operations
- Chipping and screening operations.

Details of the origin of the emission factors for these operations and the rationale for excluding them from the application are contained below.

1. Log Debarking and Sawing (F1 – F8)

Estimates for log debarking and sawing were developed using a 19-year old section of EPA's *AP-42 Compilation of Air Pollutant Emission Factors* document. Specifically, factors were obtained from Table 10.3.1 of Section 10.3, Plywood Veneer and Layout Operations dated February 1980. Factors from Table 10.3.1 had a rating of E or poor. E ratings are the lowest quality rating found in AP-42. A copy of the February 1980 Section 10.3 has been provided to the Department.

In order to more thoroughly evaluate the emissions estimates for log debarking and sawing, Champion has reviewed the background information document (BID) that was used to develop the emissions factors contained in the previous version of AP-42. The BID used to develop the AP-42 Section 10.3 emission factors for fugitive PM is EPA's *Technical Guidance for Control of Industrial Process Fugitive Particulate Emissions* dated March 1977. Pertinent sections of this document have been included as an attachment to this letter. The BID noted that most particles are expected to be greater than 991um and few are expected to be less than 30um. The document concludes that it is doubtful that much particulate would remain airborne. The BID further indicates that the data presented on log sawing and debarking are all based on visual observations and engineering judgement. The document further notes that "...emission factors are at best an order of magnitude estimate."

The current edition of AP-42, the 5th Edition, has moved information regarding plywood operations to Section 10.5, Plywood Manufacturing; this section is dated September 1997. Table 10.5-6. of Section 10.5 lists no data available for log debarking and bucking (sawing) operations. Accordingly, the current edition of AP-42 no longer contains the old Section 10.3 emission factors for log debarking and sawing. Based on this information Champion believes that emission estimates for these activities would not be considered to be accurately quantifiable.

2. Screening and Chipping (F11, F12, F20, F21, F25, and F26)

Estimates of wood by-product screening and chipping operations were developed using emission factors from Table 11.19.2-2 of AP-42, Section 11.19.2, Crushed Stone Processing dated January 1995. The factors from Table 11.19.2-2 for screening and primary crushing (used for chipping sources) have emission factor ratings of C and E (average and poor), respectively. Because crushed stone would be expected to have significantly different particle characteristics compared to wood by-products, the crushed stone processing factors are considered to be of low quality when applied to wood by-product screening and chipping. Hence Champion believes these operations are also not accurately quantifiable.

Item 2. Summary

As noted in Section 2.3 on Page 11 of the permit application, potential emissions of fugitive PM/PM_{10} emissions upstream of the planermill are considered to be low due to the high moisture content of the wood materials being processed. The debarking and sawing machine centers direct wood by-product material downward to conveyors located below these operations. Observations of log debarking and sawing and wood by-product screening and chipping operations at a similar lumber mill indicate that these processes generate little, if any, visible emissions. Based on this information and the fact that such emissions are not considered to be accurately quantifiable, Champion has revised Table 2-3 and Appendix C, Fugitive Emission Sources; a revised Table 2-3 and Appendix C are attached.

Item 3.

Truck traffic PM emissions due to travel on paved facility roadways were estimated using the procedures in AP-42, Section 13.2.1. A conservative silt loading factor of 8 g/m^2 (silt loading factor for quarries) was employed to estimate uncontrolled truck traffic emission rates. A control efficiency of 90 percent was then applied to account for emission reductions resulting from as-needed roadway sweeping and watering. Use of an overall 90 percent control efficiency is equivalent to a controlled silt loading factor of 0.23 g/m^2.

Section 13.2.1 of AP-42 contains a wide range of silt loading factors. Silt loading factors range as high as 292 g/m^2 for roadways located at copper smelters to as low as 0.02 g/m^2 for limited access roadways. Section 13.2.1 recommends a silt loading factor of 0.1 g/m^2 for short periods of time on limited access roadways following application of snow/ice controls.

Because there is little potential for PM/PM_{10} silt accumulation on the proposed sawmill plant roadways and because as-needed roadway sweeping and watering will be conducted, the controlled silt loading rate of 0.23 g/m^2 is considered to be a conservative estimate for the proposed McDavid Sawmill plant paved roads. Based on observations at an existing sawmill, fugitive dust generated by on-site truck traffic is minimal.

Item 4.

Copies of vendor emissions data for the package boilers and planermill dust collector are attached. The emission rates shown for the package boiler represent use of a low NO_x burner. Boiler vendors have confirmed that a NO_x emission rate of 0.10 lb/MMBtu is achievable with the installation of a low-NO_x burner in lieu of a standard burner. Similarly, the boiler vendors have indicated that a PM/PM_{10} emission rate of 0.035 lb/MMBtu is achievable based on natural gas combustion and measurement using EPA Reference Method 5B. The 0.035 lb/MMBtu level for natural gas combustion is also considered reasonable with respect to AP-42, Table 1.4-2 estimates; i.e., AP-42 provides a PM (filterable) emission factor of 1.9 lb/MMscf or 0.002 lb/MMBtu assuming 1,020 Btu/scf.

The planermill dust collector vendor emissions estimate (i.e., 0.002 gr/dscf) was not based on a specific particle size distribution for particulate generated at the McDavid mill. To account for uncertainties in dust loading particle size and the resulting controlled emission rate , an emission level of 0.004 gr/scf was specified in the permit application. The Air Pollution Engineering Manual (1992 Edition) states that "Well-designed and operated baghouses have been shown to be capable

(1992 Edition) states that "Well-designed and operated baghouses have been shown to be capable of reducing overall particulate emissions to less than 0.010 gr/dscf, and in a number of cases, to as low as 0.001 – 0.005 gr/dscf". Accordingly, the requested PM/PM_{10} exhaust concentration of 0.004 gr/dscf is 60 percent *lower* than the well-designed fabric filter technology performance level of 0.010 gr/dscf. Therefore as noted in our BACT analysis (attached to this response) Champion believes that the proposed emission rate of 0.004 gr/dscf is a conservative and achievable emission rate limit consistent with the vendor estimate.

Item 5.

In addition to the two vendor quotes provided in Appendix C of the permit application, a quote for a regenerative thermal oxidizer (RTO) was received from Geoenergy; a copy of this vendor quote is attached. The Geoenergy RTO capital cost quote is comparable to that provided in Appendix C by Eisenmann Corporation; i.e., $1,785,000 for Geoenergy vs. $1,900,000 for the Eisenmann system or a difference of only 6 percent. This difference is well within the "study" cost estimate range of ±30 percent.

EPA BACT guidance (reference New Source Review Workshop Manual dated October 1990) does not suggest that multiple vendor quotes need to be obtained for the control technology being evaluated. Obtaining vendor quotes in a timely manner is typically difficult to accomplish and as noted above not generally necessary since quotes of this type are generally similar. The VOC control technology vendor quotes provided are considered to reasonably represent control technology costs; i.e., with an accuracy of ± 30 percent. For the RTO VOC control technology, two vendor quotes agreed within 6 percent. Accordingly, Champion does not believe that additional quotes from VOC control technology vendors are necessary for the McDavid sawmill BACT analysis.

Item 6.

As noted in the permit application, there are no existing lumber drying kilns which are equipped with VOC control systems. Because VOC control technology has not been demonstrated on lumber drying kilns and because of the many technical problems associated with applying VOC control technology to lumber drying kilns (reference Section 5.3.2.2, Pages 44 through 46, of the application for a discussion of VOC control technology feasibility), a contingency of 50 percent was employed in the BACT cost analysis. This contingency is considered reasonable for the first-time installation of a VOC control technology to a lumber kiln. Potential significant increases in VOC control system costs include pre-control device exhaust stream conditioning (e.g., PM removal and/or temperature control to prevent condensation), re-design of inlet ducting due to the cyclical nature of lumber kiln operations, etc.

The contingency used in the lumber kiln VOC BACT analysis is consistent with experience for the first time control of similar sources. For example, RTO's have been applied to plywood and veneer dryers in the wood products industry. When first installed, many problems were encountered due to the sticky nature of the condensable particulates that are generated in such processes. As a result, systems were required to be taken off line and cleaned as often as every 4-12 weeks. In order to remedy this problem, some facilities were required to install electrostatic precipitators (ESP) to pre-treat the gas stream and remove the particulates that were causing the problem. The emissions associated with the lumber drying kilns proposed for the McDavid Mill are similar to those generated in the plywood or veneer drying process. Hence, similar problems could be encountered if a veneer dryer with an exhaust gas flow rate similar to the exhaust flow rate from one of the proposed McDavid Sawmill lumber drying kilns exceeded $1,000,000. This cost is consistent with the contingency factor identified in the proposed McDavid Sawmill VOC BACT analysis.

Item 7.

The estimate of 6.0 hrs/shift for maintenance labor was based on the complexity, number of individual VOC control devices (three), and the unproven application of VOC control technology to lumber drying kilns. As noted above potential problems with PM condensation could result in significant maintenance activity; e.g., repairing damaged/inoperative valves and cleaning the system due to pluggage.

Maintenance materials were estimated using the recommended EPA factor of 100 percent of maintenance labor; reference Section 2.4.5.3, Page 2-24 of the EPA OAQPS Control Cost Manual, Fifth Edition dated February 1996.

Note that labor and maintenance costs constitute approximately 12 percent of total annual control system costs. Reducing the estimate of maintenance labor hours would not alter the conclusion that VOC control technology is not economically feasible. For example, assuming only 3.0 hr/shift for maintenance would decrease the regenerative thermal oxidizer (RTO) cost-effectiveness from $8,351 to $7,817 per ton of VOC controlled.

Your continued expeditious review of the proposed McDavid Sawmill air construction permit will be appreciated. Please feel free to contact me at (352) 332-6230, Ext. 351 or Mr. Dave Stevens at (850) 937-4849 if there are any further questions.

Sincerely,

ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.

Thomas M. Davis

Thomas W. Davis, P.E.
Principal Engineer

Attachments

cc: Mr. Dave Stevens, Champion
Mr. John Barone, Champion
Mr. Terry Kassabaum, Champion
Mr. Ed Middleswart, FDEP – NWD

SUPPLEMENTAL PM/PM_{10} BACT ANALYSIS

SUPPLEMENTAL PM/PM_{10} BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

INTRODUCTION

Both point and fugitive emission sources at the mill will generate PM/PM_{10} emissions. Point sources of PM/PM_{10} will include the two package boilers, the three lumber drying kilns, and the planer mill building cyclone/baghouse control system. The combustion of natural gas in the two package boilers will generate PM/PM_{10} emissions due to oxidation of ash and sulfur contained in the fuel. Due to its low ash and sulfur content, natural gas combustion generates inherently low PM/PM_{10} emissions. Emissions generated due to the lumber drying process are inherently low due to the nature of the drying process. The emissions generated by planning and trimming operations in the planner mill building will be collected and vented to a cyclone/baghouse control system for treatment prior to discharge to the atmosphere.

Various sawmill activities will also have the potential to generate fugitive PM/PM_{10} emissions. Plant operations that will potentially generate fugitive PM/PM_{10} emissions include log processing (debarking and sawing), wood by-product (bark, sawdust, chips, and shavings) screening, handling and storage, truck traffic (log, wood by-products, and finished lumber trucks) on paved plant roads, and windblown dust from temporary outdoor wood by-product storage piles. Each of the point and fugitive sources of PM/PM_{10} emissions are addressed below.

POTENTIAL CONTROL TECHNOLOGIES

Available technologies used for controlling PM/PM_{10} include the following:

- Centrifugal collectors.
- Electrostatic precipitators (ESPs).
- Fabric filters or baghouses.
- Wet scrubbers.

Centrifugal (cyclone) separators are primarily used to recover material from an exhaust stream before the stream is ducted to the principal control device since cyclones are effective in removing only large (greater than 10 microns) size particles. Particles generated from natural gas combustion are typically less than 1.0 micron in size. ESPs remove particles from a gas stream through the use of electrical forces. Discharge electrodes apply a negative charge to particles passing through a strong electrical field. These charged particles then migrate to a collecting electrode having an opposite, or positive, charge. Collected particles are removed from the collecting electrodes by periodic mechanical rapping of the electrodes. Collection efficiencies are typically 95 percent for particles smaller than 2.5 microns in size.

A fabric filter system consists of a number of filtering elements, bag cleaning system, main shell structure, dust removal system, and fan. PM is filtered from the gas stream by various mechanisms (inertial impaction, impingement, accumulated dust cake sieving, etc.) as the gas passes through the fabric filter. Accumulated dust on the bags is periodically removed using mechanical or pneumatic means. In pulse jet pneumatic cleaning, a sudden pulse of compressed air is injected into the top of the bag. This pulse creates a traveling wave in the fabric that separates the cake from the surface of the fabric. The cleaning normally proceeds by row, all bags in the row being cleaned simultaneously. Typical air-to-cloth ratios range from 2 to 8 cubic feet per minute-square foot (cfm-ft^2). Collection efficiencies are on the order of 99 percent for particles smaller than 2.5 microns in size.

Wet scrubbers remove PM from gas streams principally by inertial impaction of the particulate onto a water droplet. Impingement, diffusion, or condensation mechanisms can be used to wet particles. To be wetted, PM must either make contact with a spray droplet or impinge upon a wet surface. In a venturi scrubber, the gas stream is constricted in a throat section. The large volume of gas passing through a small constriction gives a high gas velocity and a high pressure drop across the system. As water is introduced into the throat, the gas is forced to move at a higher velocity causing the water to shear into droplets. Particles in the gas stream then impact onto the water droplets produced. The entrained water droplets are subsequently removed from the gas stream by a cyclone separator. Venturi scrubber collection efficiency increases with increasing pressure drops for a given particle size. Collection efficiency will also increase with increasing liquid-to-gas ratios up to the point where flooding of the system occurs. Packed-bed and venturi scrubber collection efficiencies are typically 90 percent for particles smaller than 2.5 microns in size.

Planermill Control Options

All of the post-process technologies identified above are technically feasible for controlling PM/PM_{10} emissions from the planermill planing and trimming operations because these processes are amenable to the installation of local exhaust ventilation (LEV) to capture what would otherwise be fugitive PM/PM_{10} emissions. The McDavid Sawmill planermill operations will be enclosed within the planermill building and include LEV to capture PM/PM_{10} from the planing and trimming machine centers. The captured PM/PM_{10} shavings will be transferred pneumatically to a cyclone/baghouse control system prior to exhausting the air conveying stream to the atmosphere. The baghouse outlet exhaust will contain no more than 0.004 grains of PM/PM_{10} per dry standard cubic foot (gr/dscf). Use of LEV and a cyclone/baghouse control system is considered to represent the "top" case with respect to PM/PM_{10} BACT for the planermill planing and trimming operations.

Lumber Kiln Control Options

The indirect, steam heated lumber drying kilns will generate PM/PM_{10} emissions due to dust present on the surface of the drying lumber or potential condensation of the exhaust stream that may occur prior to release to the atmosphere. Based on NCASI test data, each kiln is estimated to generate 0.32 lb/hr of PM/PM_{10} with an average exhaust flow rate of 34,502 actual cubic feet per minute (acfm) and average exhaust temperature of 209 °F. This data translates to an exhaust PM/PM_{10} concentration of 0.0014 gr/scf. Exhaust stream PM/PM_{10} concentrations of such low magnitude (i.e., well below the *outlet* concentration of a high efficiency PM/PM_{10} control system) are not amenable to control using available technologies because removal efficiencies would be unreasonably low and costs excessive. There are no existing lumber kilns which are equipped with PM/PM_{10} stack control systems. Accordingly, PM/PM_{10} BACT for the indirect, steam, heated lumber drying kilns is considered to be the proper installation, operation, and maintenance of the kilns.

Package Boiler Control Options

The two package boilers will be fired exclusively with pipeline-quality natural gas and therefore will generate low PM/PM_{10} emissions. Based on boiler vendor emissions data, each boiler is estimated to generate 0.19 lb/hr of PM/PM_{10} with an average exhaust flow rate of 75,984 acfm and average exhaust temperature of 320 °F. This data translates to an exhaust PM/PM_{10} concentration of 0.0004 gr/scf. As was the case with the lumber kilns, exhaust stream PM/PM_{10} concentrations of such low magnitude are not amenable to control using available technologies because removal efficiencies would be unreasonably low and costs excessive. Champion is not aware of any existing natural gas-fired package boiler which is equipped with a post-combustion PM/PM_{10} control system.

Fugitive Emissions Control Options

As noted previously, potential emissions of fugitive PM/PM_{10} emissions upstream of the planermill are considered to be low due to the high moisture content of the wood materials being processed. Observations of log debarking and sawing, wood by-product screening, handling, and storage, sawmill operations, and truck traffic on paved facility roadways at a similar lumber mill indicate that these processes generate little, if any, visible emissions. To further reduce the potential for fugitive PM/PM_{10} emissions, reasonable precautions to abate such emissions will be implemented. These precautions include enclosing wood by-product transfer points and periodic sweeping and/or watering of paved facility roadways, as necessary. Implementation of these reasonable precautions is considered to represent PM/PM_{10} BACT for the various McDavid Sawmill fugitive emission sources.

PROPOSED BACT EMISSION LIMITATIONS

BACT PM/PM_{10} limits obtained from the RBLC database for natural gas-fired boilers are provided in Table 5-12. All determinations are based on the use of good combustion practice.

Because post-process stack controls for PM/PM_{10} are not feasible for the two package boilers and lumber drying kilns, use of good combustion practices and clean, natural gas fuel (for the package boilers) and proper installation, operation, and maintenance (for the indirect, steam heated lumber kilns) is considered to be BACT for PM/PM_{10} for these emission sources. Consistent with recent FDEP BACT determinations for low concentration PM/PM_{10} exhaust streams, a visible emissions limit of 5 percent opacity for the two package boilers and indirect, steam heated kilns is proposed as a surrogate BACT limit for PM/PM_{10}.

Installation of LEV and a cyclone/baghouse control system achieving an outlet PM/PM_{10} exhaust concentration of no more than 0.004 gr/dscf was determined to be BACT for the planermill planing and trimming operations. Implementation of reasonable precautions to abate fugitive PM/PM_{10} is considered to represent BACT for the various McDavid Sawmill fugitive emission sources. PM/PM_{10} BACT emission limits proposed for the McDavid Sawmill are summarized in Table 5-13.

Table 5-12. RBLC PM/PM_{10} Summary - Natural Gas-Fired Boilers

RBLCIO	Facility Name	City	Permit Dates Issue	Permit Dates Last Update	Process Oescription	Throughput Rates	Emission Limits		Control Oescription	BASIS
AL-0065	BOISE CASCAOE CORPORATION	JACKSON	4/1/92	3/24/95	BOILER, POWER, NAT GAS FIREO, #3	343.4 MMBTU/HR	1.640	LB/HR	NOT DESIGNED	BACT-PSD
AL-0093	COURTAULDS FIBERS, INC.	AXIS	11/2/94	5/31/97	TWO 148.0 MMBTU/HR BOILERS	148.0 MMBTU/HR	0.740	LBS/HR	FUEL SPEC: NATURAL GAS	OTHER
AL-0125	ALABAMA POWER PLANT BARRY	BUCKS	8/7/98	4/15/99	BOILERS, NATURAL GAS COMBUSTION	510.0 MW(TOTAL)	0.011	LB/MMBTU	NATURAL GAS ONLY, EFFICIENT COMBUSTION	BACT-PSD
AR-0017	STAFFORD RAILSTEEL CORPORATION	WEST MEMPHIS	8/17/93	3/24/95	BOILER, VTD	46.5 MMBTU/H	0.200	TPY	FUEL SPEC: NATURAL GAS USAGE	BACT-PSD
CA-0736	O.H. KRUSE GRAIN ANO MILLING	PIXLEY	9/19/96	3/26/98	300 HP BOILER USED AS A BACKUP	10.0 MMBTU/HR	0.012	LB/MMBTU	NO CONTROL	LAER
CA-0790	OARLING INTERNATIONAL	FRESNO	12/30/96	3/16/98	NEBRASKA BOILER, MODEL NS-B-40	31.2 MMBTU/HR	0.014	LB/MMBTU	NO CONTROL	LAER
GA-0063	MID-GEORGIA COGEN.	KATHLEEN	4/3/96	8/19/96	BOILER, NATURAL GAS	60.0 MMBTU/HR	0.005	LB/MMBTU	COMPLETE COMBUSTION	BACT-PSD
IA-0048	CARGILL INC - SIOUX CITY	SIOUX CITY	6/1/98	4/19/99	BOILER, BACKUP, 77MMBTU/H	4,500.0 T/O	0.700	LB/H	500 HRS/YR RESTRICTION - THE ONLY REVISION MAOE TO THE EXISTING PERMIT.	BACT-PSD
IA-0048	CARGILL INC - SIOUX CITY	SIOUX CITY	6/1/98	4/19/99	BOILER, BACKUP, 77MMBTU/H	4,500.0 T/D	0.700	LB/H	500 HRS/YR RESTRICTION - THE ONLY REVISION MADE TO THE EXISTING PERMIT.	BACT-PSD
IN-0043	GENERAL ELECTRIC CO.	MOUNT VERNON	9/17/89	8/12/94	BOILER, NATURAL GAS	250.0 MMBTU/HR	0.152	LB/MMBTU	LOW NOX BURNERS	OTHER
IN-0043	GENERAL ELECTRIC CO.	MOUNT VERNON	9/17/89	8/12/94	BOILER, NATURAL GAS	93.0 MMBTU/HR	0.157	LB/MMBTU	LOW NOX BURNERS	OTHER
IN-0068	WAUPACA FOUNDRY - PLANT 5	TELL CITY	1/19/96	5/31/96	BOILERS, NATURAL GAS	93.9 MMBTU/HR	1.290	LBS/HR		BACT-PSD
IN-0069	TOYOTA MOTOR CORPORATION SVCS OF N.A.	PRINCETON	8/9/98	10/21/96	BOILERS, NATURAL GAS FIRED (6)	58.0 MMBTU/HR	0.200	LB/MMBTU	LOW NOX BURNERS & FUEL SPEC: USE OF NATURAL GAS AS FUEL.	BACT-PSD
IN-0071	PORTSIDE ENERGY CORP.	PORTAGE	5/13/96	5/31/97	BOILERS, NATURAL GAS-FIREO (2)	260.0 MMBTU/HR	0.005	LB/MMBTU PRDPANE	NATURAL GAS, GOOD CDMBUSTION PRACTICES, PROPANE LIMIT TO EMERGENCY USE.	BACT-PSD
IN-0075	GRAIN PROCESSING CORP.	WASHINGTON	6/10/97	4/7/98	BOILERS NO. 1 & 2	244.0 MMBTU/HR	5.000	LB/MM CF NG		BACT-PSD
KY-0052	TOYOTA MOTOR MANUFACTURING U.S.A. INC.	GEORGETOWN	7/17/86	12/22/92	COMBUSTION, NATURAL GAS		2.860	E-3 LB/MMBTU		BACT-PSD
LA-0085	TRANSAMERICAN REFINING CORPORATION (TARC)	NEW SARPY	1/15/93	3/24/95	BOILER	1.2 MMBTU/HR	0.008	LB/HR	GOOD COMBUSTION PRACTICES	BACT-PSO
LA-0090	TRANSAMERICAN REFINING CORPORATION	NORCO	2/10/95	4/17/95	BOILER, NATURAL GAS/RFG FIRED	244.0 MM BTU/HR	1.200	LB/HR	FUEL SPECIFICATION	BACT-PSD
MN-0026	MINNESOTA CORN PROCESSORS	MARSHALL	8/9/95	5/31/96	BOILER, NATURAL GAS		1.160	LB/HR	FUEL SPEC: FUEL LIMITED TD NATURAL GAS	BACT-PSD
MN-0026	MINNESOTA CORN PROCESSORS	MARSHALL	8/9/95	5/31/96	BDILER, NATURAL GAS		0.720	LB/HR	FUEL SPEC: FUEL LIMITEO TO NATURAL GAS	BACT-PSD
MS-0029	WEYERHAEUSER COMPANY	COLUMBUS	9/10/96	12/30/96	BOILER, NATURAL GAS	400.0 MMBTU/HR	0.005	LB/MMBTU	USE OF NATURAL GAS AS FUEL	BACT-PSO
NJ-0013	LAKEWOOD COGENERATION, L.P.	LAKEWOOO TOWNSHIP	4/1/91	5/29/95	BOILER (NATURAL GAS)	131.0 MMBTU/HR	0.005	LB/MMBTU	BOILER DESIGN	BACT-OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEWARK	6/9/93	5/29/95	BOILER, AUXILIARY, NATURAL GAS-FIRED	200.0 MMBTU/HR	0.005	LB/MMBTU	BOILER DESIGN/FGR	BACT-PSD
NM-0024	MILAGRO, WILLIAMS FIELD SERVICE	8LOOMFIELD		5/29/95	BOILER		5.000	MMSCF	COMBUSTION AIR FILTERS, GOOD COMBUSTION PRACTICE AND MAINTENANCE	BACT-PSD
NY-0046	SARANAC ENERGY COMPANY	PLATTSBURGH	7/31/92	9/13/94	BOILER, AUXILIARY (GAS OR LPG)	249.0 MMBTU/HR	0.005	LB/MMBTU	COMBUSTION CONTROLS	BACT-OTHER
NY-0048	KAMINE/BESICORP CORNING L.P.	SOUTH CORNING	11/5/92	9/13/94	BOILERS, AUXILIARY (3)	33.5 MMBTU/HR	0.005	LB/MMBTU	COMBUSTION CONTRDL	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	SOLVAY	12/10/94	4/27/95	(3) UTILITY BOILER (EP #S 00002-4)	33.0 MMBTU/HR	0.010	LB/MMBTU, 0.34 LB/HR	FUEL SPEC: SULFUR CONTENT NDT TO EXCEED 0.15% BY WEIGHT	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	SOLVAY	12/10/94	4/27/95	HEAT & STEAM BOILER (EP #00006)	2.5 MMBTU/HR	0.010	LB/MMBTU, 0.03 LB/HR	FUEL SPEC: SULFUR CONTENT NDT TO EXCEED 0.15% BY WEIGHT	BACT-OTHER
WY-0034	SOLVAY SODA ASH JOINT VENTURE TRONA MINE/SODA ASH	GREEN RIVER	2/6/98	2/17/99	BOILER, NATURAL GAS	100.0 MMBTU/H	5.000	LB/MMBTU	MINIMAL PARTICULATE EMISSIONS AND LOW EMITTING FUEL	BACT-PSD
WY-0035	TEXASGULF SODA ASH PLANT	GRANGER	10/13/97	2/10/99	BOILER, NATURAL GAS	431.6 MMBTU/H		NEGLIGIBLE	NATURAL GAS FUEL	BACT-PSD

Source: RBLC, 1999.

Table 5-13. Proposed PM/PM_{10} BACT Emission Limits

Emission Source	Proposed PM/PM_{10} BACT Emission Limits	
	% Opacity	gr/dscf
Planermill Cyclone/Baghouse	5	0.004
Package Boilers (per boiler)	5	N/A
Lumber Drying Kilns (per kiln)	5	N/A
Fugitive Sources	Implementation of Reasonable Precautions to Abate Unconfined PM/PM_{10}	

Sources: Champion, 1999.
ECT, 1999.

EXCERPTS FROM *TECHNICAL GUIDANCE FOR CONTROL OF INDUSTRIAL PROCESS FUGITIVE PARTICULATE EMISSIONS*

EPA-450/3-77-010
March 1977

PLEASE RETURN TO
PAUL C. SIEBERT

Exhibit 22

TECHNICAL GUIDANCE FOR CONTROL OF INDUSTRIAL PROCESS FUGITIVE PARTICULATE EMISSIONS

U.S. ENVIRONMENTAL PROTECTION AGENCY
Office of Air and Waste Management
Office of Air Quality Planning and Standards
Research Triangle Park, North Carolina 27711

2.12 LUMBER AND FURNITURE INDUSTRY

2.12.1 Process Description

The raw materials for a furniture plant may be either logs or cut lumber, depending on the volume and type of final product.

At the sawmill, the cut logs are either stored in a log pond or stacked on the ground. If logs are too long to easily handle, they are cut to smaller lengths. This process is called bucking. The next process is debarking. There are five types of machines used for this: drum barkers, ring barkers, bag barkers, hydraulic barkers, and cutterhead barkers. The ring and cutterhead barkers are dry processes; the other three use water. After debarking the logs are cut to required lengths and then cut lengthwise into standard sizes. After cutting, the lumber is dried either by air or in a kiln. After drying, the lumber is transferred to the furniture plant.

At plants receiving cut lumber, the lumber may be stacked and air dryed or loaded onto carts and fed into a kiln. The natural moisture is about 60-70 percent and kiln drying reduces it to 5-8 percent. This is necessary in order to prevent warping or shrinking of furniture.

The manufacture of furniture can be divided into five main areas: rough milling, finish milling, planing, sanding, assembly, and finishing.

The purpose of rough milling is to cut the lumber to the approximate length and width and to remove the natural defects in the wood. Operations involved may include sawing, planing and molding. Finish molding may include sawing, shaping, lathe work, mortising, and routing. Sanding is usually done by a machine rather than by hand. Assembly involves gluing and stapling the pieces together.

At this point, all of the assembled pieces are put together and minor sanding (by hand) may be necessary. Finishing operations usually involve a series of surface coatings and drying. After the finished pieces are completed and inspected, they are packaged and shipped to the customer.

A process flow diagram for lumber and furniture production is shown in Figure 2-22. Each potential process fugitive emission source is identified and explained in Table 2-59. A dust source which may be found at lumber and furniture plants, but not specifically included in the Figure or Table is plant roads. Proper evaluation of this emission category is explained in Section 2.1.

2.12.2 IPFPE Emission Rates

Table 2-59 presents a summary of uncontrolled emission factors for sawmill and furniture manufacturing IPFPE sources. Since these are potential uncontrolled emission rates, the site-specific level of control must be considered for application to a specific sawmill or furniture manufacturing plant.

The fugitive emission factors are based solely on best engineering judgement and material balance information obtained during plant visits. Thus, listed emission factors are at best order of magnitude estimates.

Sources of fugitive emissions at the sawmill are generally debarking, sawing, and sawdust handling operations. Log handling and bucking are negligible sources of fugitive emissions.

Most processes such as planing, sanding, and sawing within furniture manufacturing plants are normally controlled by hoods and various other vacuum pick-up devices which are ducted to cyclones and/or fabric filters. Emissions which escape these hoods and pick-up devices are minimal. Insignificant amounts are emitted through the

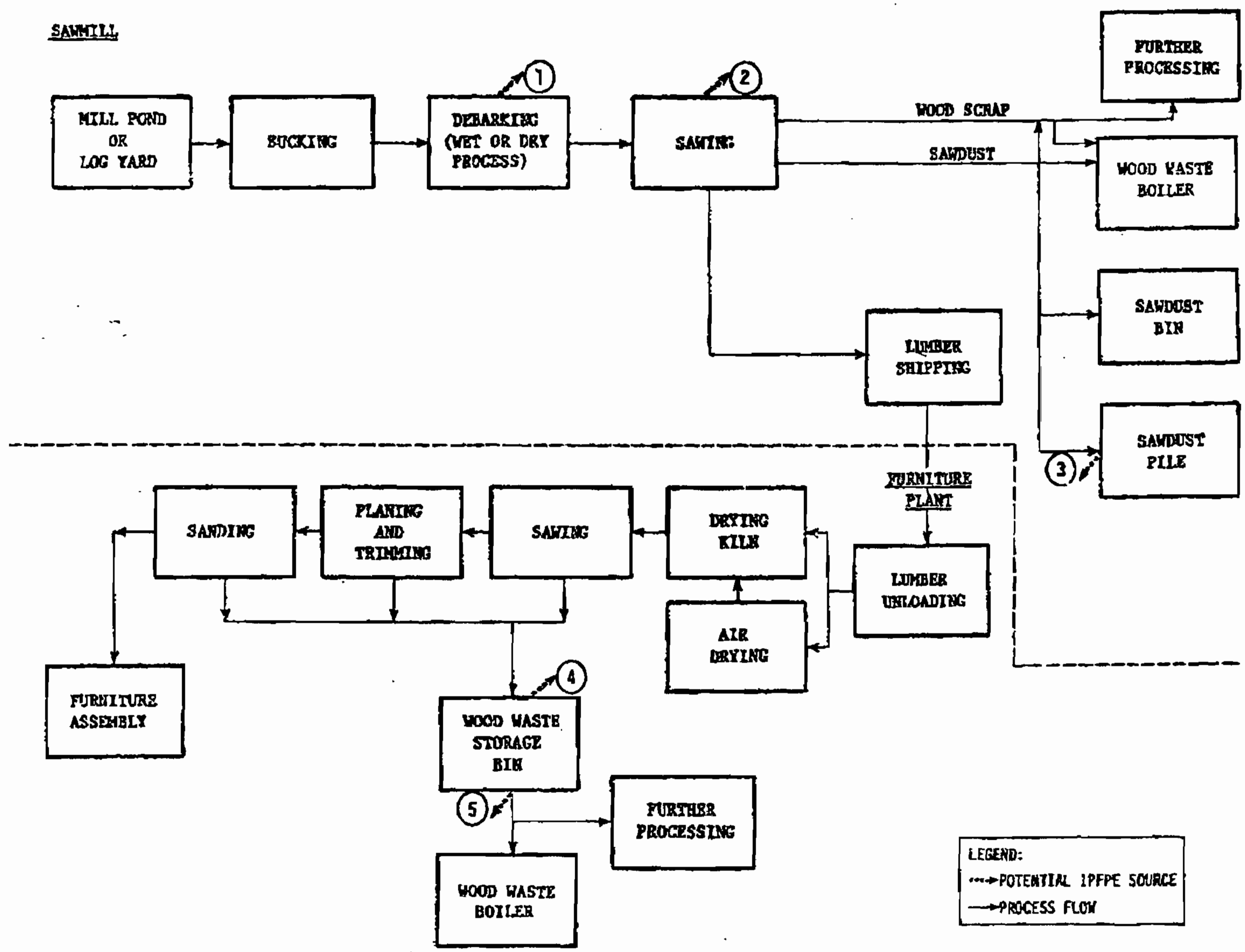

Figure 2-22. Process flow diagram for lumber and furniture production showing potential industrial process fugitive particulate emission points.

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Table 2-59. IDENTIFICATION AND QUANTIFICATION OF POTENTIAL FUGITIVE PARTICULATE EMISSION POINTS FOR THE LUMBER AND FURNITURE INDUSTRY

Source of IPFPE	Uncontrolled fugitive emission factor	Emission factor reliability rating	Model plant fugitive emission inventory: Operating parameter, Mg/yr (tons/year)	Model plant fugitive emission inventory: Uncontrolled emissions Mg/yr (tons/yr)
Sawmill				
1. Log debarking	0.012 kg/Mg of logs debarked[a] (0.024 lb/ton of logs debarked)	E	Logs debarked 740,000 (820,000)	9 (10)
2. Sawing	0.18 kg/Mg of logs sawed[a] (0.35 lb/ton of logs sawed)	E	Logs sawed 650,000 (720,000)	117 (126)
3. Sawdust pile loading, unloading, and storage	0.5 kg/Mg sawdust handled[b] (1.0 lb/ton sawdust handled)	E	Sawdust handled 100,000 (110,000)	50 (55)
Furniture Manufacturing				
4. Wood waste storage bin vent	0.5 kg/Mg wood waste stored[b] (1.0 lb/ton wood waste stored)	E	Wood waste stored 1,360 (1,500)	1 (1)
5. Wood waste storage bin loadout	1.0 kg/Mg wood waste loaded out[b] (2.0 lb/ton wood waste loaded out)	E	Wood waste loaded out 1,360 (1,500)	1 (2)

[a] Estimate based on material balance of the waste produced by the specific operation and engineering judgement of the amount which becomes airborne.

[b] Engineering judgement based on observations on plant visits. It is recognized that in some plants this may be more of a severe problem.

furniture plant windows and ventilation system. As a result, fugitive emissions from individual processes are essentially negligible. Management's willingness to provide and maintain good working conditions and Occupational Safety and Health Administration (OSHA) regulations are most likely the two basic reasons for such good control of emissions.

2.12.3 Example Plant Inventory

The example plant inventory for the lumber and furniture industry is presented in Table 2-59. The Table presents potential fugitive emission quantities from both the lumbering and furniture manufacturing processes. The plant inventory is not meant to present a typical plant situation, but merely a potential set of circumstances.

The emission inventory is based on a log yard which receives 740,000 Mg or 350,000 m^3 (820,000 tons or 150,000,000 bd. ft.) per year and a furniture manufacturer which requires 4100 Mg or 7100 m^3 (4,500 tons or 3,000,000 bd. ft.) of lumber per year. Total fugitive emissions from the sawmill and furniture plant were 176 Mg (191 tons) and 2 Mg (3 tons) respectively.

Not included in the inventory are fugitive particulate emissions from plant haul roads. These sources may be calculated using procedures outlined in Section 2.1.

Major sources of emissions from the lumber and furniture industry appear to be sawing, wood waste storage, and wood waste loadout.

2.12.4 Characterization of Fugitive Emissions

Fugitive particulate emissions from sawmills consists primarily of broken bark particulates and sawdust from sawing. Dirt and dust that are embedded in the bark also become airborne when the bark is broken and also during unloading, dragging, debarking, and storage operations. Very limited data are available concerning the characterization of fugitive emissions generated during these operations.

Approximately 91 percent of particulates from sawing operations at lumber yards are greater than 991 μm.[1] Few of these sawdust particles may be expected to be less than 30 μm. Therefore, is is doubtful that much of the particulates remain airborne.

Data collected in a western red cedar furniture factory equipped with exhaust ventilation on most wood working equipment showed most suspended particulates in the working environment to be less than 2 μm in diameter.[2]

2.12.5 Control Technology

Control technology options for lumber and furniture production IPFPE sources (except plant roads covered in Section 2.1) are presented in Table 2-60. Specific dust control systems for the various handling operations are discussed in the following paragraphs.

Since drum debarkers, bag barkers, and hydraulic barkers are all wet process, they are in themselves a good method for reducing fugitive emissions during the debarking process. If logs can be kept in wet storage prior to debarking, fugitive emissions will be miminal during this process. If wet storage is not possible, enclosure of the debarking operation or fixed hoods with ventilation to baghouses or cyclones is an alternative.

Fugitive emissions from sawing can be controlled in several ways. Thinner saw blades will reduce the amount of fugitive emissions generated. This also has an economical benefit since it results in a more efficient use of lumber.[3] Fixed hoods or building evacuation to fabric filters will also help control fugitive emissions.

Table 2-60. CONTROL TECHNIQUES FOR LUMBER AND FURNITURE INDUSTRY IPFPE SOURCES

Industry: Lumber and Furniture	Negligible emissions	IPFPE source typically uncontrolled	FUGITIVE EMISSIONS CAPTURE AND CONTROL METHODS: Control technologies identified in Section 2.1	Preventative procedures and operating changes: Wet suppression (water and/or chemical)	Confinement by enclosure	Better control of raw material quality	Better control of operating parameters and procedures	Improved maintenance and/or construction program	Increase exhaust rate of primary control system	Process change (thin saw blades/wet debarking)	Capture methods: Fixed hoods, curtains, partitions, covers, etc.	Movable hoods with flexible ducts	Closed buildings with evacuation		Removal equipment: Fabric filter	Scrubber	Cyclone
<u>Sawmill</u>																	
1. Log debarking				o						o	+		+		+		+
2. Sawing										+	+		+		+		
3. Sawdust pile loading, unloading and storage			✓	o			+										
<u>Furniture Plant</u>																	
4. Wood waste storage bin vent															+		
5. Wood waste storage bin loadout					x		o						+		+		+

x Typical control technique.

o In use (but not typical) control technique.

\+ Technically feasible control technique.

Fugitive emissions from sawdust storage piles can be controlled by wet suppression. However, when it is possible, trucking the waste away as soon as possible can substantially reduce the fugitive emissions generated at these storage piles. Additional fugitive control can be attained by directly blowing sawdust into a boiler or to a particle board facility.

For reasons stated earlier in this chapter, sawing, planing, and sanding operations are normally controlled in furniture manufacturing plants. Thus, the need for fugitive control technology at these operations is unnecessary.

The wood waste storage bin vent is usually partially controlled by a screen. If this screen is replaced by a fabric filter sock, the amount of fugitive emissions released can be significantly reduced. The use of telescopic tubes during loadout from the storage bin to trucks will reduce freefall distance and thus the amount of fugitive emissions generated. This coupled with a canvas covered truck and use of side curtains will give additional control efficiency.[4] Other means of control would be enclosure of the loadout area with the possibility of also venting to a baghouse or cyclone.

REFERENCES FOR SECTION 2.12

1. Simmons, F.A., Charlotte H. Miller. Characterization of Sawdust and Shavings for Pulp. U.S. Department of Agriculture, Forest Products Laboratory, Forest Service. Report No. 2212. March 1961.

2. Industrial Environmental Health, The Worker and the Community. Academic Press. New York and London. 1972.

3. Bulgrin, E. H. Wood. McGraw-Hill Yearbook of Science and Technology. McGraw-Hill, New York. 1974.

4. Observation made from plant tour of Broyhill Furniture manufacturing plant. September 3, 1976.

REVISED TABLE 2-3

Table 2-3. Maximum PM/PM_{10} Pollutant Emission Rates - Fugitive Sources

Emission Source Description	Emission Source ID	Emission Rates			
		PM		PM_{10}	
		(lb/hr)	(tpy)	(lb/hr)	(tpy)
Bark Processing/Handling					
Conveyor Transfer; Main Conveyor to Disc Screen/Hog Conveyor	F-9	0.0004	0.0011	0.0002	0.0005
Conveyor Transfer; Disc Screen/Hog Conveyor to Disc Screen/Hog	F-10	0.0004	0.0011	0.0002	0.0005
Conveyor Transfer; Disc Screen/Hog to Bark Bin Conveyor	F-13	0.0004	0.0011	0.0002	0.0005
Conveyor Transfer; Bark Bin Conveyor to Bark Bin	F-14	0.0004	0.0011	0.0002	0.0005
Bark Bin Truck Loading	F-15	0.0014	0.0036	0.0007	0.0017
Fines (Sawdust) Processing/Handling					
Conveyor Transfer; Fines Chip Screen Conveyor to Fines Bin Conveyor	F-16	0.0002	0.0006	0.0001	0.0003
Conveyor Transfer; Fines Bin Conveyor to Fines Bin	F-17	0.0002	0.0006	0.0001	0.0003
Fines Bin Truck Loading	F-18	0.0007	0.0018	0.0003	0.0009
Baghouse Fines Truck Loading	F-35	0.0001	0.0003	0.0001	0.0001
Chips Processing/Handling					
Conveyor Transfer; Oversize Chips Conveyor to Rechipper Conveyor	F-19	0.0002	0.0004	0.0001	0.0002
Conveyor Transfer; Chips Screen to Chips Bin Conveyor	F-22	0.0018	0.0046	0.0008	0.0022
Conveyor Transfer; Chips Bin Conveyor to Chips Bin	F-23	0.0018	0.0046	0.0008	0.0022
Chips Bin Truck Loading	F-24	0.0058	0.0153	0.0028	0.0072
Planermill Shavings					
Cyclone Bin Truck Loading	F-27	0.0006	0.0016	0.0003	0.0007
Truck Traffic on Paved Roadways					
Raw Material Wood Trucks	F-28	3.9208	5.8109	0.7650	1.1338
Product Lumber Trucks	F-29	2.4539	2.8155	0.4788	0.5494
Wood By-Product Trucks	F-30	3.2099	7.9208	0.6263	1.5455
Outdoor Storage Piles					
Chip Storage	F-31	0.1271	0.0153	0.0607	0.0073
Bark Storage	F-32	0.0370	0.0044	0.0176	0.0021
Sawdust Storage	F-33	0.0330	0.0040	0.0158	0.0019
Shavings Storage	F-34	0.0259	0.0016	0.0123	0.0007
Totals		**9.8221**	**16.6103**	**1.9834**	**3.2586**

Sources: Champion, 1999.
ECT, 1999.

REVISED APPENDIX C
FUGITIVE SOURCES

EMISSION INVENTORY WORKSHEET

FUG-PM

Champion International - McDavid Sawmill

EMISSION SOURCE TYPE

FUGITIVE PM - MATERIAL TRANSFER (DROPS) **Figure: 2-3**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM - Material Transfer (Drops)
Emission Control Method(s)/ID No.(s):	Enclosures
Emission Point ID:	FUG-PM

EMISSION ESTIMATION EQUATIONS

PM Emission (lb/hr) = 0.74 x 0.0032 x $[(\text{Wind Speed}/5)^{1.3} / (\text{Material Moisture Content}/2)^{1.4}]$ x Material Handled (ton/hr)

PM Emission (ton/yr) = 0.74 x 0.0032 x $[(\text{Wind Speed}/5)^{1.3} / (\text{Material Moisture Content}/2)^{1.4}]$ x Material Handled (ton/yr) x (1 ton/2,000 lb)

Source: Section 13.2-4, AP-42, January 1995.

INPUT DATA AND EMISSIONS CALCULATIONS

Mean Wind Speed: 8.3 mph — Material Moisture Content: 50.0 weight %

Material Transfer Point	Source ID	Material Transfer Rates (lb/hr)	Material Transfer Rates (tpy)	Uncontrolled Emission Factor (lb PM/ton)	Control Efficiency (%)	Controlled Emission Factor (lb PM/ton)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
Bark Transfers								
Main Conveyor to Screen/Hog Conveyor	F-9	55,048	144,502	0.000051	70.0	0.000015	0.00042	0.0011
Screen/Hog Conveyor to Screen/Hog	F-10	55,048	144,502	0.000051	70.0	0.000015	0.00042	0.0011
Screen/Hog to Bark Bin Conveyor	F-13	55,048	144,502	0.000051	70.0	0.000015	0.00042	0.0011
Bark Bin Conveyor to Bark Bin	F-14	55,048	144,502	0.000051	70.0	0.000015	0.00042	0.0011
Bark Bin Truck Loading	F-15	55,048	144,502	0.000051	0.0	0.000051	0.0014	0.0036
Fines (Sawdust) Transfers								
Fines Chip Screen Conveyor to Fines Bin Conveyor	F-16	27,827	73,046	0.000051	70.0	0.000015	0.00021	0.0006
Fines Bin Conveyor to Fines Bin	F-17	27,827	73,046	0.000051	70.0	0.000015	0.00021	0.0006
Fines Bin Truck Loading	F-18	27,827	73,046	0.000051	0.0	0.000051	0.00070	0.0018
Baghouse Fines Truck Loading	F-35	4,719	12,387	0.000051	0.0	0.000051	0.00012	0.0003
Chips Transfers								
Oversize Chips Conveyor to Rechipper Conveyor	F-19	20,997	55,116	0.000051	70.0	0.000015	0.00016	0.00042
Chips Screen to Chips Bin Conveyor	F-22	230,963	606,279	0.000051	70.0	0.000015	0.0018	0.0046
Chips Bin Conveyor to Chips Bin	F-23	230,963	606,279	0.000051	70.0	0.000015	0.0018	0.0046
Chips Bin Truck Loading	F-24	230,963	606,279	0.000051	0.0	0.000051	0.0058	0.015
Planermill Shavings Transfers								
Cyclone Bin Truck Loading	F-27	23,595	61,937	0.000051	0.0	0.000051	0.0006	0.002

SOURCES OF INPUT DATA

Parameter	Data Source
Mean Wind Speed, mph	Gale Research, Pensacola, FL.
Material Moisture Content	Champion, 1999.
Material Transfer Point Identification	Champion, 1999.
Material Transfer Rates	Champion, 1999.
Control Efficiency	Table 3.2.3-2, Workbook on Estimation and Dispersion Modeling
	For Fugitive Particulate Sources, Utility Air Regulatory Group, September 1981.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	Date:	5/99
Evaluated by:	T. Davis	Date:	5/99
Data Entered by:	T. Davis	Date:	5/99

EMISSION INVENTORY WORKSHEET

FUG-PM

Champion International - McDavid Sawmill

EMISSION SOURCE TYPE

FUGITIVE PM_{10} - MATERIAL TRANSFER (DROPS) **Figure: 2-3**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM_{10} - Material Transfer (Drops)
Emission Control Method(s)/ID No.(s):	Enclosures
Emission Point ID:	FUG-PM

EMISSION ESTIMATION EQUATIONS

PM Emission (lb/hr) = 0.35 x 0.0032 x [(Wind Speed/5)$^{1.3}$ / (Material Moisture Content/2)$^{1.4}$] x Material Handled (ton/hr)

PM Emission (ton/yr) = 0.35 x 0.0032 x [(Wind Speed/5)$^{1.3}$ / (Material Moisture Content/2)$^{1.4}$] x Material Handled (ton/yr) x (1 ton/2,000 lb)

Source: Section 13.2-4, AP-42, January 1995.

INPUT DATA AND EMISSIONS CALCULATIONS

Mean Wind Speed: 8.3 mph — Material Moisture Content: 50.0 weight %

Material Transfer Point	Source ID	Material Transfer Rates (lb/hr)	Material Transfer Rates (tpy)	Uncontrolled Emission Factor (lb PM/ton)	Control Efficiency (%)	Controlled Emission Factor (lb PM/ton)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
Bark Transfers								
Main Conveyor to Screen/Hog Conveyor	F-9	55,048	144,502	0.000024	70.0	0.000007	0.00020	0.0005
Screen/Hog Conveyor to Screen/Hog	F-10	55,048	144,502	0.000024	70.0	0.000007	0.00020	0.0005
Screen/Hog to Bark Bin Conveyor	F-13	55,048	144,502	0.000024	70.0	0.000007	0.00020	0.0005
Bark Bin Conveyor to Bark Bin	F-14	55,048	144,502	0.000024	70.0	0.000007	0.00020	0.0005
Bark Bin Truck Loading	F-15	55,048	144,502	0.000024	0.0	0.000024	0.0007	0.0017
Fines (Sawdust) Transfers								
Fines Chip Screen Conveyor to Fines Bin Conveyor	F-16	27,827	73,046	0.000024	70.0	0.000007	0.00010	0.0003
Fines Bin Conveyor to Fines Bin	F-17	27,827	73,046	0.000024	70.0	0.000007	0.00010	0.0003
Fines Bin Truck Loading	F-18	27,827	73,046	0.000024	0.0	0.000024	0.00033	0.0009
Baghouse Fines Truck Loading	F-35	4,719	12,387	0.000024	0.0	0.000024	0.00006	0.0001
Chips Transfers								
Oversize Chips Conveyor to Rechipper Conveyor	F-19	20,997	55,116	0.000024	70.0	0.000007	0.00008	0.00020
Chips Screen to Chips Bin Conveyor	F-22	230,963	606,279	0.000024	70.0	0.000007	0.0008	0.0022
Chips Bin Conveyor to Chips Bin	F-23	230,963	606,279	0.000024	70.0	0.000007	0.0008	0.0022
Chips Bin Truck Loading	F-24	230,963	606,279	0.000024	0.0	0.000024	0.0028	0.007
Planermill Shavings Transfers								
Cyclone Bin Truck Loading	F-27	23,595	61,937	0.000024	0.0	0.000024	0.0003	0.001

SOURCES OF INPUT DATA

Parameter	Data Source
Mean Wind Speed, mph	Gale Research, Pensacola, FL.
Material Moisture Content	Champion, 1999.
Material Transfer Point Identification	Champion, 1999.
Control Efficiency	Table 3.2.3-2, Workbook on Estimation and Dispersion Modeling
	For Fugitive Particulate Sources, Utility Air Regulatory Group, September 1981.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	Date:	5/99
Evaluated by:	T. Davis	Date:	5/99
Data Entered by:	T. Davis	Date:	5/99

EMISSION INVENTORY WORKSHEET

FUG-PM

Champion International - McDavid Sawmill

EMISSION SOURCE TYPE

FUGITIVE PM - ACTIVE OUTDOOR STORAGE **Figure: 2-3**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM - Active Outdoor Storage Piles
Emission Control Method(s)/ID No.(s):	Moist Material
Emission Point ID:	FUG-PM

EMISSION ESTIMATION EQUATIONS

PM Emission (lb/hr) = Emission Factor (lb PM/acre/day) x Storage Pile Area (acres) x (1 day/24 hrs)

PM Emission (ton/yr) = Emission Factor (lb PM/acre/day) x Storage Pile Area (acres) x Storage Period (dys/yr) x (1 ton/2,000 lb)

Source: ECT, 1999.

INPUT DATA AND EMISSIONS CALCULATIONS

Storage Pile Material Type	Source ID	Period of Storage (dys/yr)	Pile Area (acre)	Uncontrolled Emission Factor (lb PM/acre/dy)	Control Efficiency (%)	Controlled Emission Factor (lb PM/acre/dy)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
Chip Storage	F-31	10	0.770	13.2	70.0	3.96	0.127	0.015
Bark Storage	F-32	10	0.224	13.2	70.0	3.96	0.037	0.004
Sawdust Storage	F-33	10	0.200	13.2	70.0	3.96	0.033	0.004
Shavings Storage	F-34	5	0.157	13.2	70.0	3.96	0.026	0.002

SOURCES OF INPUT DATA

Parameter	Data Source
Storage Pile Identification	Champion, 1999.
Uncontrolled Emission Factors	Section 8.19.1-1, AP-42, September 1991.
Control Efficiency	Based on high moisture content, Texas Natural Resources Conservation Commission, 1999.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	5/99
Evaluated by:	T. Davis	**Date:**	5/99
Data Entered by:	T. Davis	**Date:**	5/99

EMISSION INVENTORY WORKSHEET

FUG-PM

Champion International - McDavid Sawmill

EMISSION SOURCE TYPE

FUGITIVE PM_{10} - ACTIVE OUTDOOR STORAGE **Figure: 2-3**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM_{10} - Active Outdoor Storage Piles
Emission Control Method(s)/ID No.(s):	Moist Material
Emission Point ID:	FUG-PM

EMISSION ESTIMATION EQUATIONS

PM_{10} Emission (lb/hr) = Emission Factor (lb PM/acre/day) x Storage Pile Area (acres) x (1 day/24 hrs)

PM_{10} Emission (ton/yr) = Emission Factor (lb PM/acre/day) x Storage Pile Area (acres) x Storage Period (dys/yr) x (1 ton/2,000 lb)

Source: ECT, 1999.

INPUT DATA AND EMISSIONS CALCULATIONS

Storage Pile Material Type	Source ID	Period of Storage (dys/yr)	Pile Area (acre)	Uncontrolled Emission Factor (lb PM/acre/dy)	Control Efficiency (%)	Controlled Emission Factor (lb PM/acre/dy)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
Chip Storage	F-31	10	0.770	6.3	70.0	1.89	0.061	0.007
Bark Storage	F-32	10	0.224	6.3	70.0	1.89	0.018	0.002
Sawdust Storage	F-33	10	0.200	6.3	70.0	1.89	0.016	0.002
Shavings Storage	F-34	5	0.157	6.3	70.0	1.89	0.012	0.001

SOURCES OF INPUT DATA

Parameter	Data Source
Storage Pile Identification	Champion, 1999.
Uncontrolled Emission Factors	Section 8.19.1-1, AP-42, September 1991.
Control Efficiency	Based on high moisture content, Texas Natural Resources Conservation Commission, 1999.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	5/99
Evaluated by:	T. Davis	**Date:**	5/99
Data Entered by:	T. Davis	**Date:**	5/99

EMISSION INVENTORY WORKSHEET

FUG-PM

Champion International - McDavid Sawmill

EMISSION SOURCE TYPE

FUGITIVE PM - TRUCK TRAFFIC ON PAVED ROADS — **Figure: 2-3**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM - Truck Traffic on Paved Roads
Emission Control Method(s)/ID No.(s):	Sweeping and Watering, As Necessary
Emission Point ID:	FUG-PM

EMISSION ESTIMATION EQUATIONS

PM Emission (lb/hr) = 0.082 x [(Silt Loading Factor/2)$^{0.65}$] x (Truck Weight/3)$^{1.5}$ x Vehicle Miles Traveled (VMT)/hr

PM Emission (ton/yr) = 0.082 x [(Silt Loading Factor/2)$^{0.65}$] x (Truck Weight/3)$^{1.5}$ x Vehicle Miles Traveled (VMT)/yr x (1 ton/2,000 lb)

Source: Section 13.2-1, AP-42, January 1996.

INPUT DATA AND EMISSIONS CALCULATIONS

Controlled Silt Loading Factor: 0.23

Truck Traffic Type	Source ID	Vehicle Miles Traveled		Vehicle Weight	Control Efficiency	Potential Emission Rates	
		(VMT/hr)	(VMT/yr)	(ton)	(%)	(lb/hr)	(tpy)
Raw Material Wood Trucks (Empty)	F-28	3.213	9,524	15.5	90.0	0.76	1.13
Raw Material Wood Trucks (Full)	F-28	3.213	9,524	40.0	90.0	3.16	4.68
Product Lumber Trucks (Empty)	F-29	2.011	4,614	15.5	90.0	0.48	0.55
Product Lumber Trucks (Full)	F-29	2.011	4,614	40.0	90.0	1.98	2.27
Wood By-Product Trucks (Empty)	F-30	2.630	12,981	15.5	90.0	0.62	1.54
Wood By-Product Trucks (Full)	F-30	2.630	12,981	40.0	90.0	2.59	6.38

SOURCES OF INPUT DATA

Parameter	Data Source
Controlled Silt Loading Factor	Based on factor for quarries and overall 90% control efficiency, Champion, 1999.
Vehicle Miles Traveled, VMT	Champion, 1999.
Truck Weights, ton	Champion, 1999.
Control Efficiency	Estimated, ECT 1999.

NOTES AND OBSERVATIONS

Truck travel distances (one-way) are 950 ft (log), 2,055 ft (lumber), and 1,970 ft (bark, chips, sawdust, and shavings).

Maximum daily truck counts are 250 (log), 62 (lumber), and 141 (wood by-products).

Maximum hourly VMT based on 14 hrs/dy (log), 12 hrs/dy (lumber), and 20 hrs/dy (wood by-products).

Average annual truck counts are 52,931 (log), 11,856 (lumber), and 34,793 (wood by-products).

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	5/99
Evaluated by:	T. Davis	**Date:**	5/99
Data Entered by:	T. Davis	**Date:**	5/99

EMISSION INVENTORY WORKSHEET

FUG-PM

Champion International - McDavid Sawmill

EMISSION SOURCE TYPE

FUGITIVE PM_{10} - TRUCK TRAFFIC ON PAVED ROADS **Figure: 2-3**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM_{10} - Truck Traffic on Paved Roads
Emission Control Method(s)/ID No.(s):	Sweeping and Watering, As Necessary
Emission Point ID:	FUG-PM

EMISSION ESTIMATION EQUATIONS

PM_{10} Emission (lb/hr) = 0.016 x [(Silt Loading Factor/2)$^{0.65}$] x (Truck Weight/3)$^{1.5}$ x Vehicle Miles Traveled (VMT)/hr

PM_{10} Emission (ton/yr) = 0.016 x [(Silt Loading Factor/2)$^{0.65}$] x (Truck Weight/3)$^{1.5}$ x Vehicle Miles Traveled (VMT)/yr x (1 ton/2,000 lb)

Source: Section 13.2-1, AP-42, January 1996.

INPUT DATA AND EMISSIONS CALCULATIONS

Controlled Silt Loading Factor: 0.23

Truck Traffic Type	Source ID	Vehicle Miles Traveled		Vehicle Weight	Control Efficiency	Potential Emission Rates	
		(VMT/hr)	(VMT/yr)	(ton)	(%)	(lb/hr)	(tpy)
Raw Material Wood Trucks (Empty)	F-28	3.213	9,524	15.5	90.0	0.15	0.22
Raw Material Wood Trucks (Full)	F-28	3.213	9,524	40.0	90.0	0.62	0.91
Product Lumber Trucks (Empty)	F-29	2.011	4,614	15.5	90.0	0.09	0.11
Product Lumber Trucks (Full)	F-29	2.011	4,614	40.0	90.0	0.39	0.44
Wood By-Product Trucks (Empty)	F-30	2.630	12,981	15.5	90.0	0.12	0.30
Wood By-Product Trucks (Full)	F-30	2.630	12,981	40.0	90.0	0.50	1.25

SOURCES OF INPUT DATA

Parameter	Data Source
Controlled Silt Loading Factor	Based on factor for quarries and overall 90% control efficiency, Champion, 1999.
Vehicle Miles Traveled, VMT	Champion, 1999.
Truck Weights, ton	Champion, 1999.
Control Efficiency	Estimated, ECT 1999.

NOTES AND OBSERVATIONS

Truck travel distances (one-way) are 950 ft (log), 2,055 ft (lumber), and 1,970 ft (bark, chips, sawdust, and shavings).

Maximum daily truck counts are 250 (log), 62 (lumber), and 141 (wood by-products).

Maximum hourly VMT based on 14 hrs/dy (log), 12 hrs/dy (lumber), and 20 hrs/dy (wood by-products).

Average annual truck counts are 52,931 (log), 11,856 (lumber), and 34,793 (wood by-products).

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	5/99
Evaluated by:	T. Davis	**Date:**	5/99
Data Entered by:	T. Davis	**Date:**	5/99

Champion International
McDavid Sawmill
Storage Pile Dimensions

For 30^{o} angle of repose, pile height/pile diameter ratio = 0.289

Pile Dimension Calculations:

Pile	Pile Dia. (ft)	Pile Height (ft)	Pile Radius (ft)	Pile Base Area (ft^2)	Pile Base Area (acre)	Pile Volume (ft^3)	Pile Surface Area (ft^2)	Pile Slope Length (ft)	Angle of Repose (o)
Chips	206.7	59.7	103.3	33,553	0.770	661,396	38,754	119.4	30.028
Bark	111.5	32.2	55.7	9,759	0.224	103,745	11,272	64.4	30.028
Sawdust	105.4	30.5	52.7	8,722	0.200	87,655	10,074	60.9	30.028
Shavings	93.2	26.9	46.6	6,827	0.157	60,699	7,885	53.8	30.028

Sources: Champion, 1999.
ECT, 1999.

Maximum PM/PM_{10} Pollutant Emission Rates - Fugitive Sources

Emission Source Description	Emission Source ID	Emission Rates PM (lb/hr)	PM (tpy)	PM_{10} (lb/hr)	PM_{10} (tpy)
Bark Processing/Handling					
Conveyor Transfer; Main Conveyor to Disc Screen/Hog Conveyor	F-9	0.0004	0.0011	0.0002	0.0005
Conveyor Transfer; Disc Screen/Hog Conveyor to Disc Screen/Hog	F-10	0.0004	0.0011	0.0002	0.0005
Conveyor Transfer; Disc Screen/Hog to Bark Bin Conveyor	F-13	0.0004	0.0011	0.0002	0.0005
Conveyor Transfer; Bark Bin Conveyor to Bark Bin	F-14	0.0004	0.0011	0.0002	0.0005
Bark Bin Truck Loading	F-15	0.0014	0.0036	0.0007	0.0017
Fines (Sawdust) Processing/Handling					
Conveyor Transfer; Fines Chip Screen Conveyor to Fines Bin Conveyor	F-16	0.0002	0.0006	0.0001	0.0003
Conveyor Transfer; Fines Bin Conveyor to Fines Bin	F-17	0.0002	0.0006	0.0001	0.0003
Fines Bin Truck Loading	F-18	0.0007	0.0018	0.0003	0.0009
Baghouse Fines Truck Loading	F-35	0.0001	0.0003	0.0001	0.0001
Chips Processing/Handling					
Conveyor Transfer; Oversize Chips Conveyor to Rechipper Conveyor	F-19	0.0002	0.0004	0.0001	0.0002
Conveyor Transfer; Chips Screen to Chips Bin Conveyor	F-22	0.0018	0.0046	0.0008	0.0022
Conveyor Transfer; Chips Bin Conveyor to Chips Bin	F-23	0.0018	0.0046	0.0008	0.0022
Chips Bin Truck Loading	F-24	0.0058	0.0153	0.0028	0.0072
Planermill Shavings					
Cyclone Bin Truck Loading	F-27	0.0006	0.0016	0.0003	0.0007
Truck Traffic on Paved Roadways					
Raw Material Wood Trucks	F-28	3.9208	5.8109	0.7650	1.1338
Product Lumber Trucks	F-29	2.4539	2.8155	0.4788	0.5494
Wood By-Product Trucks	F-30	3.2099	7.9208	0.6263	1.5455
Outdoor Storage Piles					
Chip Storage	F-31	0.1271	0.0153	0.0607	0.0073
Bark Storage	F-32	0.0370	0.0044	0.0176	0.0021
Sawdust Storage	F-33	0.0330	0.0040	0.0158	0.0019
Shavings Storage	F-34	0.0259	0.0016	0.0123	0.0007
Totals		**9.8221**	**16.6103**	**1.9834**	**3.2586**

Sources: Champion, 1999.
ECT, 1999.

VENDOR DATA

PACKAGE BOILER AND PLANERMILL DUST COLLECTOR

McBurney
4274 Shackleford Rd., Norcross, GA 30093 USA
P.O. Box 1827, Norcross, GA 30091-1827 USA
TEL: (770) 925-7100 / FAX: (770) 925-7400

FAX / MEMO

DATE: 7/12/99 **Page:** 1 of 2

TO: Mark Culpepper
Mid-South Engineering

PHONE: **FAX:** 501-624-4214

FROM: Dave Heinzmann

REFERENCE: Champion New Mill

This will confirm emission data given to you over the phone earlier. For a 50,000 PPH natural gas fired boiler, the following emission levels are achievable.

NOx – 0.1 #/MMBtu
CO – 0.1 #/MMBtu
VOC – 0.05 #/MMBtu
Particulate – 0.0035 #/MMBtu
SOx – 0.0006 #/MMBtu

Notes:

1) Particulate Matter is based on:
   A. TSP level is based on conducting the first portion of EPA test method #5, which measures "filterable" or "non-condensable" particulate.
   B. TSP level is based on the Natural Gas analysis outlined in Item B-05 of the project specifications.
   C. TSP level is to exclude PM/PM10 contributions from the ambient combustion air.
2) SOx is based on maximum sulfur content in natural gas of 0.20 grains per 100 SCF of fuel gas.
3) Emissions based on 15% excess air and no flue gas recirculation (FGR).
4) Based on use of a Nebraska Model NS-E-58 or similarly sized boiler equipped with a feedwater economizer.

Hope this helps. We look forward to working with you on this project.

Dave Heinzmann

Attachment – Coen letter of July 10, 1999
cc: Tom Davis
ECT – Fax 352-332-6722
Ed Mockridge
Mike Cantrell
McBurney

FILTER EMISSIONS STATEMENT FOR MID-SOUTH ENGINEERING

Reference:	Quote No.______________
Application:	Wood dust
Moisture:	18% RH
Temperature:	Ambient
Hydrocarbons:	None
Air Volumes:	Total = 60,000 cfm
	Planer Machine = 34,000 cfm
	Trimmer = 7,000 cfm
	Trim Block Hog = 15,000 cfm
	Planer Infeed Pineapple Rolls = 3,000 cfm

MAC Equipment, Inc. warrants its filters to be free of mechanical defects for a period of one year in accordance with the "Warranty and Limitation" statement included with the proposal.

MAC Equipment, Inc. also warrants the emissions of its MCF filters with its polyester filter bags with an expanded PTFE membrane, when properly installed, applied and maintained, and when operated per the design parameters referenced in the original proposal and in accordance with the manufacturers operations manuals, to emit no more than approximately 0.002 gr / dscf based on dry dust particles only. MAC believes that standard 16 oz. singed polyester filter bags have a reasonable probability to attain the stated emissions rate. However, the lack of an actual process dust sample to analyze for particle size distribution enables MAC to only warranty the emissions rate for the polyester/ membrane composite filter bags.

The Buyer will be responsible for any emissions testing expense and MAC Equipment Inc. reserves the right to be present during any emission tests and shall be notified at least 2 weeks prior to the testing. Emissions testing must be conducted within 60 days of start-up, or 60 days from equipment shipment. Upon attainment of the stated emissions rate, Seller shall have no further liability to Buyer under this emissions statement.

Misuse, abuse, operating outside the stated parameters, and / or water, oil, or hydrocarbons on the media will void the emissions warranty. MAC Equipment, Inc. will not be held responsible for any failures or excess emissions due to upset operating conditions. Under no circumstances will MAC Equipment, Inc. be liable or responsible for incidental or consequential damages.

Steve Sargent
Application Engineering Manager
6-9-99 (This document replaces the previous 5-4-99 document which is hereby voided).

MAC Equipment Inc.
7901 NW 107th Terrace
Kansas City, MO 64153-1910
816-891-9300 800-821-2476
Fax 816-891-8978
www.macequipment.com

RTO VENDOR QUOTE

GEOENERGY
International Corporation

101 North Virginia Street
Suite 210
Crystal Lake, IL 60014 USA
(815) 477-9173
FAX (815) 477-9174

June 7,1999

Champion
PO Box 200
Camden, TX 75941

Attn: Mr. Terry Kassabaum

Subject: VOC Emission Control Equipment

Reference: Geoenergy Proposal Number 9999-05-259-RTO

Dear Mr. Kassabaum:

Geoenergy International Corporation is pleased to provide you with our revised budgetary proposal as referenced above. This revision is for a GeoTherm® Regenerative Thermal Oxidizer (RTO) system to control VOC emissions from your wood drying kilns in Camden, TX.

The GeoTherm RTO is a versatile, reliable and economic system with the capability to treat a variety of flow rates and VOC loadings to a very high degree of destruction. The system operates by alternately passing the gas stream through heat recovery chambers prior to treatment in the 1,500°F combustion chamber where the VOCs are completely oxidized. Thus, high VOC destruction is achieved with minimum fuel consumption.

With only two moving parts this design is extremely simple so that operation is highly reliable and maintenance requirements are minimal. These features add up to a system that costs less to purchase and operate, but provides the highest possible VOC destruction performance.

Based on your process requirements we have designed the RTO with 95% thermal efficiency to minimized fuel consumption during normal operation.

The following is a brief summary of our recommendations for a GeoTherm RTO system to treat the gas stream that you have described. Included are a description of the recommended scope-of-supply, the estimated operating costs, a suggested project schedule and a budget price estimate.

DESIGN CONDITIONS

Our proposal and design is based on preliminary information supplied for this project as follows:

GeoTherm Design Volume (ACFM)	138,000
Oxidizer Thermal Efficiency (%)	95
Oxidation Temperature (°F)	1,500
Process Exhaust Temperature (°F)	205
Moisture content (% by volume)	56
VOC Loading (#/hr)	85
VOC Gross Heating Value (BTU/#)	12,500
VOC Destruction Requirements (%)	95

Note: The process exhaust air stream is assumed not to contain acids, caustic or halogenated hydrocarbons.

SYSTEM OPERATING COST

RTO SYSTEM

	THREE SYSTEMS @ 46,000 ACFM ea.
Process Exhaust Volume (ACFM)	46,000/unit
Oxidizer Inlet Temperature (°F)	205°F
Oxidation Temperature (°F)	1,500°F
Oxidizer Outlet Temperature (°F)	270°F
Heat Load Requirement @ 28.4 #/hr VOC	3,061,000 BTU/hr
Heat Load Requirement @ 0 #/hr VOC	3,473,000 BTU/hr
Oxidizer Force Draft Fan (Bhp)	160
Power Requirement (kW)	131
Fuel Cost @ \$3.50/MMBTU (@ 28.4#/hr)	\$10.71/hr
Fuel Cost @ \$3.50/MMBTU (@ 0#/hr)	\$12.16/hr
Power Cost @ \$0.037/kW-hr	\$4.85/hr

SCOPE OF SUPPLY

	Included	Excluded	N/A	Option
• RTO housing including transition, recovery and combustion chambers	X			
• Oxidizer ceramic blanket internal insulation	X			
• Heat recovery media for 95% T.E.	X			
• Burner system with fuel train	X			
• Two-way fast action poppet valves with pneumatic actuators	X			
• Forced draft supply fan and motor	X			
• Variable frequency drive	X			
• Inlet and outlet manifold	X			
• External manifold insulation		X		
• Main exhaust stack 50'-0" high	X			
• Burner access platform and ladder	X			
• Main control panel pre-wired and shop tested (A-B PLC supplied)	X			
• All motor starters	X			
• Local disconnects		X		
• Process exhaust ductwork to RTO		X		
• Foundations		X		
• Mechanical and electrical installation	X			
• Start-up and operator training	X			
• Freight to job site	X			
• O&M manuals (3)	X			
• Compliance testing		X		

BUDGETARY PRICING

Geoenergy will supply one (1) 46,000 ACFM GeoTherm Regenerative Thermal Oxidizer System per the attached scope of supply for the budgetary price of.....................**$595,000.00/system**

PROPOSAL SCHEDULE

The following is Geoenergy's standard schedule and may be modified to meet specific project requirements.

TASK	# OF WEEKS	WEEK(s) AFTER P.O.
Contract Review	1	1
Design Engineering	3	4
Engineering Approval	1	5
Fabrication and Equipment Procurement	12-16	14-18
Deliver	1	15-19
Installation	3	18-22
Start-Up	1	19-23

We hope you find our offering to be of interest and look forward to supplying you with a more detailed proposal once your specific design criteria has been established. In the meantime, if you should have any questions regarding this proposal or require additional information please call me at (815) 477-9173.

Best regards,

Ray Essman
Manager of Applications Engineering

CC: Ronald Lansing, Geoenergy International Corporation

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

July 9, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Dave Stevens
Manager of Special Products, Forest Products
Champion International Corporation
117 Pace Parkway
Cantonment, Florida 32533

Re: Request for Additional Information
DEP File No. 0330260-001-AC (PSD-FL-271)
Proposed McDavid Sawmill

Dear Mr. Stevens:

On June 15, 1999 the Department received your application and complete fee for an air construction/PSD permit for a proposed new lumber sawmill near McDavid, Florida. We are processing your application. In order to complete our review the Department will need the additional information requested below. Should your response to any of the below items require new calculations, please submit the new calculations, assumptions, reference material and appropriate revised pages of the application form.

1. Rule 62-212.400(2)(b), F.A.C., provides for exemption of fugitive emissions from the determination of whether this facility is major for PSD, but Rule 62-212.400(2)(f), F.A.C., requires fugitive emissions be included in determining which pollutants equal or exceed the significant emission rate. The facility is major because of VOC potential emissions, and is significant for PM and PM_{10}. Please address the PSD requirements of Rule 62-212.400, F.A.C., for PM and PM_{10}. Include an analysis of BACT for PM and PM_{10} and VE, and ambient modeling for PM_{10}. Include the fugitive sources in your assessment and modeling.
2. Please review the emissions estimate for the fugitive sources and describe which sources you are confident are accurately quantifiable. Include emissions estimates for only those sources, and include only these sources in your BACT evaluation and modeling. Provide justification for those sources you determine are not accurately quantifiable.
3. Regarding the truck traffic emissions estimate, Section 13.2.1.4 of AP-42 states that preventive controls should be accounted for by substituting the controlled silt loading values into the estimation equation. What will the controlled silt value be and how will that compare to other silt values included in AP-42?
4. Please provide supporting information from the equipment vendors to support the emission factors used for the boilers for NOx, CO, VOC and PM/PM_{10} emissions, and PM emissions from the planermill cyclone/baghouse.
5. The control cost estimates for the kilns appear to be based on only one estimate each for the RTO and RCO systems. Were any other vendors contacted to obtain quotes for other thermal or catalytic

oxidizers? If, so, please provide the resulting quotes. If not, please explain why additional quotes were not requested.

6. Please justify the use of a 50% contingency in the control cost estimations.
7. Please explain why 6.0 hours per shift for maintenance labor, and 100% of this value for maintenance materials, were used in the control cost estimates.

The Department will complete its review after receipt of the requested information. Rule 62-4.050(3), F.A.C. requires that all applications for a Department permit must be certified by a professional engineer registered in the State of Florida. This requirement also applies to responses to Department requests for additional information of an engineering nature. Material changes to the application should also be accompanied by a new certification statement by the authorized representative or responsible official. Permit applicants are advised that Rule 62-4.055(1), F.A.C. now requires applicants to respond to requests for information within 90 days. If there are any questions, please call me at 850/921-9519. Matters regarding modeling issues should be directed to Cleve Holladay (meteorologist) at 850/921-8986.

Sincerely,

Joseph Kahn, P.E.
New Source Review Section

/jk

cc: Mr. Gregg Worley, EPA
Mr. John Bunyak, NPS
Mr. Ed Middleswart, NWD
Mr. Terry Kassabaum, Champion
Mr. Tom Davis, P.E., ECT

Z 333 618 193

US Postal Service

Receipt for Certified Mail

No Insurance Coverage Provided.

Do not use for International Mail *(See reverse)*

Sent to Dave Stevens	
Street & Number Champion	
Post Office, State, & ZIP Code Cantonment Fl	
Postage	$
Certified Fee	
Special Delivery Fee	
Restricted Delivery Fee	
Return Receipt Showing to Whom & Date Delivered	
Return Receipt Showing to Whom, Date, & Addressee's Address	
TOTAL Postage & Fees	$
Postmark or Date 7-9-99 0330260-001-AC PSD-F1-271	

PS Form **3800**, April 1995

Is your **RETURN ADDRESS** completed on the reverse side?

SENDER:

- Complete items 1 and/or 2 for additional services.
- Complete items 3, 4a, and 4b.
- Print your name and address on the reverse of this form so that we can return this card to you.
- Attach this form to the front of the mailpiece, or on the back if space does not permit.
- Write *"Return Receipt Requested"* on the mailpiece below the article number.
- The Return Receipt will show to whom the article was delivered and the date delivered.

I also wish to receive the following services (for an extra fee):

1. ☐ Addressee's Address
2. ☐ Restricted Delivery

Consult postmaster for fee.

3. Article Addressed to:
Dave Stevens Mgr. of Special Products
Champion Int'l Corp
117 Pace PKWY
Cantonment, Fl
32533

4a. Article Number
Z 333 618 193

4b. Service Type
☐ Registered ☒ Certified
☐ Express Mail ☐ Insured
☐ Return Receipt for Merchandise ☐ COD

7. Date of Delivery
7/12/99

5. Received By: *(Print Name)*
Donna S. Gross

6. Signature: *(Addressee or Agent)*
X Donna Gross

8. Addressee's Address *(Only if requested and fee is paid)*

PS Form **3811,** December 1994 102595-98-B-0229 Domestic Return Receipt

Thank you for using Return Receipt Service.

INTEROFFICE MEMORANDUM

Sensitivity: COMPANY CONFIDENTIAL

Date: 09-Jul-1999 09:58pm
From: Alvaro Linero TAL
LINERO_A
Dept: Air Resources Management
Tel No: 850/921-9532

To: Dave Stevens (stevedb@CHAMPINT.COM)
CC: acornelius (acornelius@enterprise.state.fl.us)
CC: Joseph Kahn TAL (KAHN_J)
CC: Clair Fancy TAL (FANCY_C)

Subject: Re: Thanks and FYI

Dave. Thank you for your message. We are never too busy to meet with applicants. It's one of our most important functions and we like to do it.

We put the best engineer on it. He has the full support and confidence of his supervisor(s) and is a P.E., so I won't need to take up much time on the clock in reviewing his work.

I know Tom Davis well as we have reviewed quite a number of projects for which he is the applicant's P.E. We won't hesitate to call him on anything that comes up.

Thanks again. Al Linero.

INTEROFFICE MEMORANDUM

Date: 09-Jul-1999 05:04pm
From: Dave Stevens
stevedb@CHAMPINT.COM
Dept:
Tel No:

To: Kahn_J (Kahn_J@dep.state.fl.us)
CC: tdavis (tdavis@ectinc.com)
CC: John Barone (baronj@CHAMPINT.COM)
CC: Terry G Kassabaum (kassat@CHAMPINT.COM)
CC: acornelius (acornelius@enterprise.state.fl.us)

Subject: Follow-up

Thanks for meeting with the Champion crew yesterday to review the McDavid air construction permit. Also appreciate your letter of the 8th, cuz now we have a list that we can work to and address the additional issues. We will be doing this work over the weekend and early next week and should be ready with most (if not all) responses by next Friday.

I wanted to follow up and see how the meeting went from your perspective, and if there was anything else that I need to provide leadership on to keep this project on the "fast track" (i.e.: expedited permitting). We recognize that the August 15 request date is impractical now (even with all our best efforts). It is appreciated greatly that you have offered to continue the review and draft permit writing process; thanks. Wanted to get your opinion of what would be reasonable timeframes for the following, given that we can address all outstanding issues by the end of next week (~~23rd~~): 16TH

finalize review, draft permit ready and wording for public comment notice sent to us?
amount of time after public comment period (provided no negative public comment) to finalize and issue the permit?

I can be reached at 850- 937-4849, or return e-mail.
Thanks
Dave
Project Director

Environmental Consulting & Technology, Inc. - **ECT**

3701 Northwest 98th Street
Gainesville, Florida 32606
352/332-0444

TELECOPY COVERSHEET

TO: Joe Kahn

TELECOPY NUMBER: (850) 922-6979

FROM: Tom Davis

DATE: 07/09/99 CHARGE NO.: 990294-0100

WE ARE TRANSMITTING 6 PAGES, INCLUDING COVERSHEET. IF THE TRANSMISSION WAS NOT COMPLETE OR IF THE MESSAGE WAS NOT LEGIBLE, PLEASE CALL US IMMEDIATELY.

352/332-0444--SWITCHBOARD

352/332-6722--FACSIMILE MACHINE

352/332-6733--FACSIMILE MACHINE (Accounting)

COMMENTS:

Joe, copy of AP-42 Section 10.3 (2/80) as requested at yesterday's meeting.

The original of the transmitted document will be sent by:

( ) Regular mail (X) Overnight Mail ( ) E-Mail

(X) This fax is the *ONLY* form of delivery

10.3 PLYWOOD VENEER AND LAYOUT OPERATIONS

10.3.1 General[1-3]

Plywood is a building material consisting of veneers (thin wood layers or plies) bonded with an adhesive. The outer layers (faces) surround a core which is usually lumber, veneer or particle board. Plywood uses are many, including wall siding, sheathing, roof decking, concrete formboards, floors, and containers. Most plywood is made from Douglas Fir or other softwoods, and the majority of plants are in the Pacific Northwest. Hardwood veneers make up only a very small portion of total production.

In the manufacture of plywood, logs are sawed to the desired length, debarked and peeled into veneers of uniform thickness. Veneer thicknesses of less than one half inch or one centimeter are common. These veneers are then transported to veneer dryers with one or more decks, to reduce their moisture content. Dryer temperatures are held between about 300 and 400°F (150 - 200°C). After drying, the plies go through the veneer layout operation, where the veneers are sorted, patched and assembled in perpendicular layers, and a thermosetting resin adhesive applied. The veneer assembly is then transferred to a hot press where, under pressure and steam heat, the product is formed. Subsequently, all that remains is trimming, face sanding, and possibly some finishing treatment to enhance the usefulness of the product. Plywood veneer and layout operations are shown in Figure 10.3-1.

10.3.2 Emissions and Controls[2-8]

Emissions from the manufacture of plywood include particulate matter and organic compounds. The main source of emissions is the veneer dryer, with other sources producing negligible amounts of organic compound emissions or fugitive emissions. The log steaming and veneer drying operations produce combustion products, and these emissions depend entirely on the type of fuel and equipment used.

Uncontrolled fugitive particulate matter, in the form of sawdust and other small wood particles, comes primarily from the plywood cutting and sanding operations. To be considered additional sources of fugitive particulate emissions are log debarking, log sawing and sawdust handling. The dust that escapes into the air from sanding, sawing and other woodworking operations may be controlled by collection in an exhaust system and transport through duct work to a sized cyclone. Section 10.4 discusses emissions from such woodworking waste collection operations. Estimates of uncontrolled particulate emission factors for log debarking and sawing, sawdust pile handling, and plywood sanding and cutting are given in Table 10.3-1. From the veneer dryer, and at stack temperatures, the only particulate emissions are small amounts of wood fiber particles in concentrations of less than 0.002 grams per dry standard cubic foot.

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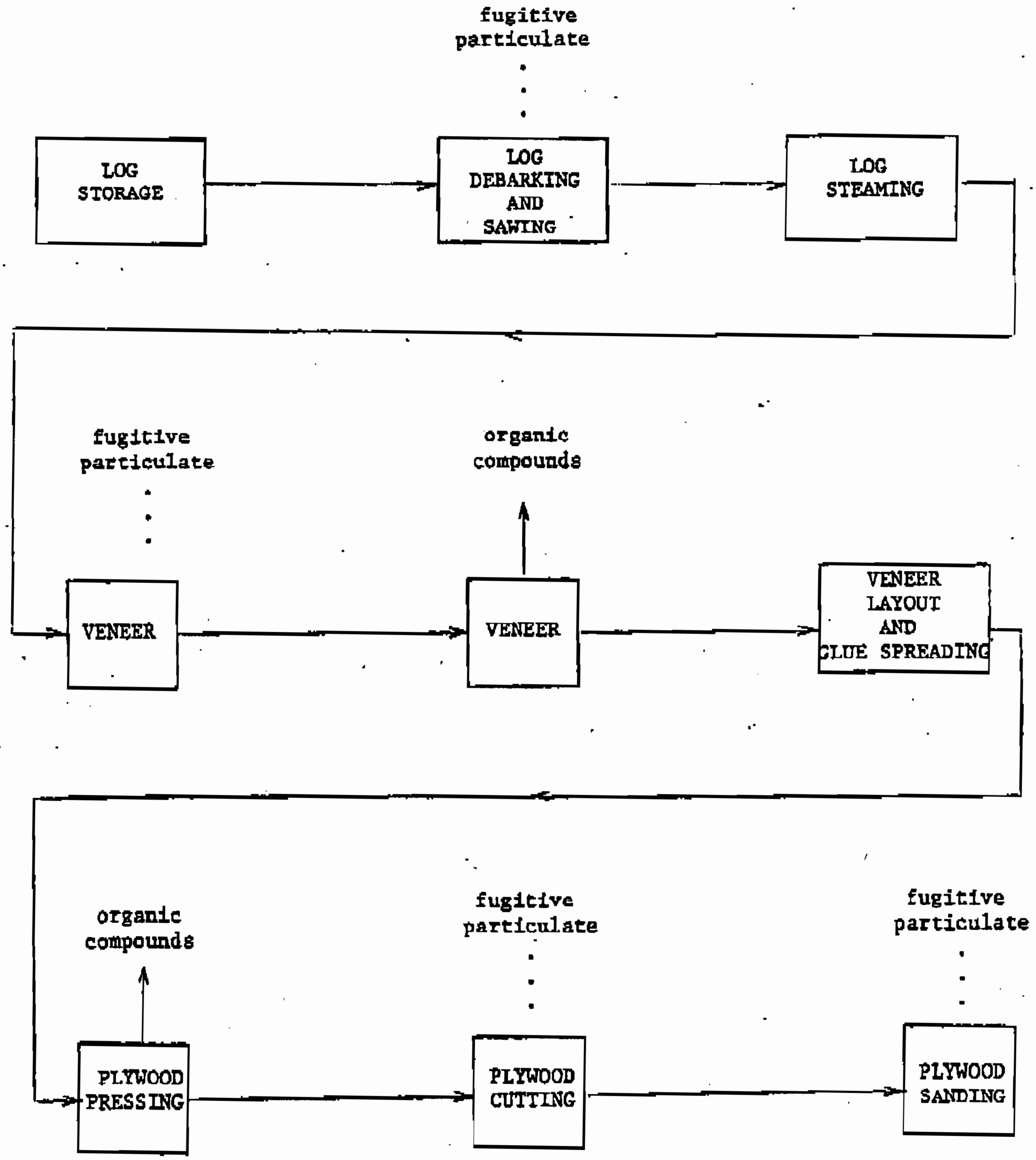

Figure 10.3-1. Plywood veneer and layout operations.[4,5]

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Table 10.3-1. UNCONTROLLED FUGITIVE PARTICULATE EMISSION FACTORS FOR PLYWOOD VENEER AND LAYOUT OPERATONS

EMISSION FACTOR RATING: E

Source	Particulates	
Log debarking[a]	0.024 lb/ton	0.012 kg/MT
Log sawing[a]	0.350 lb/ton	0.175 kg/MT
Sawdust handling[b]	1.0 lb/ton	0.5 kg/MT
Veneer lathing[c]	NA	NA
Plywood cutting and sanding[d]	0.1 lb/ft^2	0.05 kg/m^2

[a]Reference 7. Emission factors are expressed as units per unit weight of logs processed.
[b]Reference 7. Emission factors are expressed as units per unit weight of sawdust handled, including sawdust pile loading, unloading and storage.
[c]Estimates not available.
[d]Reference 5. Emission factors are expressed as units per surface area of plywood produced. These factors are expressed as representative values for estimated values ranging from 0.066 to 0.132 lb/ft^2 (0.322 to 0.644 kg/m^2).

The major pollutants emitted from veneer dryers are organic compounds. The quantity and type of organics emitted vary, depending on the wood species and on the dryer type and its method of operation. There are two discernable fractions which are released, condensibles and volatiles. The condensible organic compounds consist largely of wood resins, resin acids and wood sugars, which cool outside the stack to temperatures below 70°F (21°C) and combine with water vapor to form a blue haze, a water plume or both. This blue haze may be eliminated by condensing the organic vapors in a finned tube matrix heat exhanger condenser. The other fraction, volatile organic compounds, is comprised of terpenes and natural gas components (such as unburned methane), the latter occurring only when gas fired dryers are used. The amounts of organic compounds released because of adhesive use during the plywood pressing operation are negligible. Uncontrolled organic process emission factors are given in Table 10.3-2.

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Table 10.3-2. UNCONTROLLED ORGANIC COMPOUND PROCESS EMISSION FACTORS FOR PLYWOOD VENEER DRYERS[a]

EMISSION FACTOR RATING: B

Species	Volatile Organic Compounds		Condensible Organic Compounds	
	$lb/10^4\ ft^2$	$kg/10^4\ m^2$	$lb/10^4\ ft^2$	$kg/10^4\ m^2$
Douglas Fir				
sapwood				
steam fired	0.45	2.3	4.64	23.8
gas fired	7.53	38.6	2.37	12.1
heartwood	1.30	6.7	3.18	16.3
Larch	0.19	1.0	4.14	21.2
Southern pine	2.94	15.1	3.70	18.9
Other[b]	0.03-3.00	0.15-15.4	0.5-8.00	2.56-41.0

[a]Reference 2. Emission factors are expressed in pounds of pollutant per 10,000 square feet of 3/8 inch thick veneer dried, and kilograms of pollutant per 10,000 square meters of 1 centimeter thick veneer dried. All dryers are steam fired unless otherwise specified.

[b]These ranges of factors represent results from one source test for each of the following species (in order from least to greatest emissions): Western Fir, Hemlock, Spruce, Western Pine and Ponderosa Pine.

References for Section 10.3

1. C.B. Hemming, "Plywood", Kirk-Othmer Encyclopedia of Chemical Technology, Second Edition, Volume 15, John Wiley & Sons, Inc., New York, NY, 1968, pp. 896-907.

2. F. L. Monroe, et al., Investigation of Emissions from Plywood Veneer Dryers, Washington State University, Pullman, WA, February 1972.

3. Theodore Baumeister, ed., "Plywood", Standard Handbook for Mechanical Engineers, Seventh Edition, McGraw-Hill, New York, NY, 1967, pp. 6-162 - 6-169.

4. Allen Mick and Dean McCargar, Air Pollution Problems in Plywood, Particleboard, and Hardboard Mills in the Mid-Willamette Valley, Mid-Willamette Valley Air Pollution Authority, Salem, OR, March 24, 1969.

5. Controlled and Uncontrolled Emission Rates and Applicable Limitations for Eighty Processes, Second Printing, EPA-340/1-78-004, U.S. Environmental Protection Agency, Research Triangle Park, NC, April 1978, pp. X-1 - X-6.

6. John A. Danielson, ed., Air Pollution Engineering Manual, AP-40, Second Edition, U.S. Environmental Protection Agency, Research Triangle Park, NC, May 1973, pp. 372-374.

7. Assessment of Fugitive Particulate Emission Factors for Industrial Processes, EPA-450/3-78-107, U.S. Environmental Protection Agency, Research Triangle Park, NC, September 1978.

8. C. Ted Van Decar, "Plywood Veneer Dryer Control Device", Journal of the Air Pollution Control Association, 22:968, December 1972.

803

Table 5-10. RBLC VOC Summary - Natural Gas-Fired Boilers

RBLCID	Facility Name	City	Permit Dates Issue	Permit Dates Last Update	Process Description	Throughput Rates	Emission Limits	Control Description	BASIS
AL-0125	ALABAMA POWER PLANT BARRY	BUCKS	8/7/98	4/15/99	BOILERS, NATURAL GAS COMBUSTION	510 MW(TOTAL)	0.015 LB/MMBTU	EFFICIENT COMBUSTION	BACT-PSD
AR-0017	STAFFORD RAILSTEEL CORPORATION	WEST MEMPHIS	8/17/93	3/24/95	BOILER, VTO	46.5 MMBTU/H	0.8 TPY	FUEL SPEC: USE OF NATURAL GAS	OTHER
GA-0063	MID-GEORGIA COGEN.	KATHLEEN	4/3/96	8/19/96	BOILER, NATURAL GAS	60 MMBTU/HR	0.005 LB/MMBTU	COMPLETE COMBUSTION	BACT-PSD
IN-0068	WAUPACA FOUNDRY - PLANT 5	TELL CITY	1/19/96	5/31/96	BOILERS, NATURAL GAS	93.9 MMBTU/HR	0.55 LBS/HR		BACT-PSD
KY-0052	TOYOTA MOTOR MANUFACTURING U.S.A. INC.	GEORGETOWN	7/17/86	12/22/92	COMBUSTION, NATURAL GAS		0.0026 LB/MMBTU		BACT-PSD
LA-0085	TRANSAMERICAN REFINING CORPORATION (TARC)	NEW SARPY	1/15/93	3/24/95	BOILER	1.2 MMBTU/HR	0.01 LB/HR	GOOD COMBUSTION PRACTICES	LAER
LA-0090	TRANSAMERICAN REFINING CORPORATION	NORCO	2/10/95	4/17/95	BOILER, NATURAL GAS/RFG FIREO	244 MM BTU/HR	0.34 LB/HR	COMBUSTION CONTROL	BACT-PSD
MI-0202	JAMES RIVER CORP	KALAMAZOO	9/17/91	10/30/91	BOILER	226.7 MMBTU/H NAT GAS	0.025 LB/MMBTU		BACT-PSD
MS-0029	WEYERHAEUSER COMPANY	COLUMBUS	9/10/96	12/30/96	BOILER, NATURAL GAS	400 MMBTU/HR	0.0013 LB/MMBTU	EFFICIENT OPERATION	BACT-PSD
NJ-0013	LAKEWOOD COGENERATION, L.P.	LAKEWOOD TOWNSHIP	4/1/91	5/29/95	BOILER (NATURAL GAS)	131 MMBTU/HR	0.0017 LB/MMBTU	BOILER DESIGN	OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEWARK	6/9/93	5/29/95	BOILER, AUXILIARY, NATURAL GAS-FIRED	200 MMBTU/HR	0.005 LB/MMBTU	BOILER DESIGN	OTHER
NY-0046	SARANAC ENERGY COMPANY	PLATTSBURGH	7/31/92	9/13/94	BOILER, AUXILIARY (GAS OR LPG)	249 MMBTU/HR	0.0045 LB/MMBTU	COMBUSTION CONTROLS	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	SOLVAY	12/10/94	4/27/95	(3) UTILITY BOILER (EP #S 00002-4)	33 MMBTU/HR	0.003 LB/MMBTU, 0.11 LB/HR	NO CONTROLS	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	SOLVAY	12/10/94	4/27/95	HEAT & STEAM BOILER (EP #00006)	2.5 MMBTU/HR	0.004 LB/MMBTU, 0.01 LB/HR	NO CONTROLS	BACT-OTHER
WA-0279	BOISE CASCAOE CORPORATION - YAKIMA COMPLEX	YAKIMA	11/16/96	8/22/97	NATURAL GAS FIRED BOILERS	800 HP	50.7 LBS/DAY	FUEL SPEC: NATURAL GAS	BACT-PSD
WV-0011	CNG TRANSMISSION CORPORATION		5/3/93	3/2/94	BOILER, WATER	10 MMBTU/HR	2.8 LB/MIL. CU. FT		BACT-OTHER
WY-0043	SF PHOSPHATE LIMITED COMPANY	4.5 MILES E-SE OF ROCK SPRINGS	7/2/93	4/15/99	BOILER, NATURAL GAS FIREO	350 MMBTU/H	0.45 LB/H		BACT-PSD

Source: RBLC, 1999.

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JUL 08 1999
BUREAU OF AIR REGULATION

FOR 7/8/99 MEETING,
CHAMPION McDAVID SAWMILL

62-212.400 Prevention of Significant Deterioration (PSD).

(2) Applicability.

(b) Fugitive Emissions Exemption. A proposed new facility or modification shall not be subject to the preconstruction review requirements of this rule if:

1. The affected facility would not belong to any of the facility categories listed in Table 212.400-1, Major Facility Categories, or any other facility category which, as of August 7, 1980, is being regulated under 40 CFR 60 or 40 CFR 61; and

2. The facility or modification would be subject to the preconstruction review requirements of this rule **only if fugitive emissions, to the extent quantifiable, are considered in determining whether the affected facility would be subject to preconstruction review requirements** pursuant to Rule 62-212.400(2)(d)2., F.A.C., if it is or were itself a proposed new facility.

(d) New and Modified Facilities.

2. New Major Facilities. Unless exempted under Rule 62-212.400(2)(a) or (b), F.A.C., a proposed new major facility shall be subject to the preconstruction review requirements of this rule if:

a. For any pollutant regulated under the Act, except for lead, the sum of the quantifiable fugitive emissions and the potential emissions of all emissions units at the facility which have the same "Major Group" Standard Industrial Classification (SIC) Code (as described in the Standard Industrial Classification Manual, 1972, as amended by the 1977 Supplement; U. S. Government Printing Office, stock numbers 4101-006 and 003-005-00176-01, respectively) would be **equal to or greater than 250 tons per year**;

(f) Pollutants Subject to PSD Preconstruction Review.

1. Except as provided under Rule 62-212.400(2)(f)3., F.A.C., below, for a proposed new facility or modification subject to the preconstruction review requirements of this rule pursuant to Rule 62-212.400(2)(d)2. or 3., F.A.C., the preconstruction review requirements of this rule shall apply to all pollutants regulated under the Act **for which the sum of the potential emissions and the quantifiable fugitive emissions of the facility** or modification would be equal to or greater than the significant emission rates listed in Table 212.400-2 , Regulated Air Pollutants - Significant Emission Rates

3. For a proposed new facility or modification subject to the preconstruction review requirements of this rule which would construct in an area designated as nonattainment for any pollutant other than ozone under Rule 62-204.340, F.A.C., the preconstruction review requirements of this rule shall not apply to emissions of the affected pollutant.

MEETING 7/8/99 WITH
TERRY COLE, JOHN BARROWE - CHAMPION, TOM DAVIS - ECT
JOE KAHN, PAT COMER, CLAIR, AL LINERO, CLEVE.

DEP WILL SEND REQUEST FOR ADDL. INFO.

INTEROFFICE MEMORANDUM

Date: 22-Jun-1999 04:31pm
From: Joseph Kahn TAL
KAHN_J
Dept: Air Resources Management
Tel No: 850/921-9519

To: Ellen_Porter (Ellen_Porter@nps.gov)

Subject: Re: Champion International McDavid Sawmill

Thanks for your quick response. I haven't thoroughly reviewed the application but so far I'm not comfortable with the emissions estimation for PM10 at 14.5 tons, because the applicant has requested a synthetic limit for this pollutant for more than one emissions unit, and has not included fugitive emissions in that estimate. The applicant also has not included fugitive sources of PM, which seem to be PSD significant. It looks like the correct PTE for PM10 and PM exceed the PSD significance criteria and full analysis is required. Also, we will look closer at NOx, which the applicant estimated at just below 40 TPY. I don't expect the potential impacts would change much, but I'll continue to copy you on our correspondence to keep you up to date.

INTEROFFICE MEMORANDUM

Date: 22-Jun-1999 02:20pm
From: Ellen_Porter
Ellen_Porter@nps.gov
Dept:
Tel No:

To: KAHN_J (KAHN_J@A1)

Subject: Champion International McDavid Sawmill

Because of the distance of the project to our Class I area and the types and amounts of emissions, we believe that there is little or no potential for impacts to Class I area resources. We have no comment.

Department of
Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

June 16, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. John Bunyak, Chief
Policy, Planning & Permit Review Branch
NPS - Air Quality Division
Post Office Box 25287
Denver, Colorado 80225

Re: Champion International Corporation, McDavid Sawmill
PSD-FL-~~270~~ 271

Dear Mr. Bunyak:

Enclosed is a copy of a PSD permit application for a lumber sawmill to be operated by Champion International Corporation near McDavid, Escambia County. The application includes a report that has the applicant's PSD analyses including a BACT analysis. This is a new facility. The primary emissions units are the lumber drying kilns. Two natural gas fired boilers will provide steam for the drying operation. The applicant has identified that the only pollutant subject to PSD review is VOC.

Please provide your comments as soon as possible. Our rules require us to determine whether an application is complete within 30 days of receipt and to make a Preliminary Determination within 60 days (given that the application is complete). This project is not subject to the Florida Power Plant Siting Act and review by the Governor and Cabinet. If you have any questions regarding this matter, please call Joseph Kahn, P.E., at 850/921-9519.

Sincerely,

A. A. Linero 6/16

A. A. Linero, P.E., Administrator
New Source Review Section

AAL/jk

Enclosure

Department of Environmental Protection

Jeb Bush
Governor

Twin Towers Office Building
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

David B. Struhs
Secretary

June 16, 1999

CERTIFIED MAIL - RETURN RECEIPT REQUESTED

Mr. Gregg Worley, Section Chief
Air, Radiation Technology Branch
Preconstruction/HAP Section
US EPA Region IV
61 Forsyth Street
Atlanta, Georgia 30303

Re: Champion International Corporation, McDavid Sawmill
PSD-FL-~~270~~ 271

Dear Mr. Worley:

Enclosed is a copy of a PSD permit application for a lumber sawmill to be operated by Champion International Corporation near McDavid, Escambia County. The application includes a report that has the applicant's PSD analyses including a BACT analysis. This is a new facility. The primary emissions units are the lumber drying kilns. Two natural gas fired boilers will provide steam for the drying operation. The applicant has identified that the only pollutant subject to PSD review is VOC.

Please provide your comments as soon as possible. Our rules require us to determine whether an application is complete within 30 days of receipt and to make a Preliminary Determination within 60 days (given that the application is complete). This project is not subject to the Florida Power Plant Siting Act and review by the Governor and Cabinet. If you have any questions regarding this matter, please call Joseph Kahn, P.E., at 850/921-9519.

Sincerely,

6/16

A. A. Linero, P.E., Administrator
New Source Review Section

AAL/jk

Enclosure

ECT
Environmental Consulting & Technology, Inc.

Environmental Consulting & Technology, Inc. - **ECT**

3701 Northwest 98th Street
Gainesville, Florida 32606
352/332-0444

TELECOPY COVERSHEET

TO: Joe Kahn

TELECOPY NUMBER: (850) 922-6979

FROM: Tom Davis

DATE: 06/08/99 CHARGE NO.: 990294-0100

WE ARE TRANSMITTING 5 PAGES, INCLUDING COVERSHEET. IF THE TRANSMISSION WAS NOT COMPLETE OR IF THE MESSAGE WAS NOT LEGIBLE, PLEASE CALL US IMMEDIATELY.

352/332-0444--SWITCHBOARD

352/332-6722--FACSIMILE MACHINE

352/332-6733--FACSIMILE MACHINE (Accounting)

COMMENTS:

Joe, copy of AP-42 Section 8.19.1 per my e-mail message regarding estimation of fugitive PM from Champion Sawmill storage piles.

The original of the transmitted document will be sent by:

( ) Regular mail (X) Overnight Mail ( ) E-Mail

(X) This fax is the *ONLY* form of delivery

8.19.1 SAND AND GRAVEL PROCESSING

8.19.1.1 Process Description[1-3]

Deposits of sand and gravel, the consolidated granular materials resulting from the natural disintegration of rock or stone, are generally found in near-surface alluvial deposits and in subterranean and subaqueous beds. Sand and gravel are products of the weathering of rocks and unconsolidated or poorly consolidated materials and consist of siliceous and calcareous components. Such deposits are common throughout the country.

Depending upon the location of the deposit, the materials are excavated with power shovels, draglines, front end loaders, suction dredge pumps or other apparatus. In rare situations, light charge blasting is done to loosen the deposit. The materials are transported to the processing plant by suction pump, earth mover, barge, truck or other means. The processing of sand and gravel for a specific market involves the use of different combinations of washers, screens and classifiers to segregate particle sizes; crushers to reduce oversize material; and storage and loading facilities. Crushing operations, when used, are designed to reduce production of fines, which often must be removed by washing. Therefore, crusher characteristics, size reduction ratios and throughput, among other factors, are selected to obtain the desired product size distribution.

In many sand and gravel plants, a substantial portion of the initial feed bypasses any crushing operations. Some plants do no crushing at all. After initial screening, material is conveyed to a portion of the plant called the wet processing section, where wet screening and silt removal are conducted to produce washed sand and gravel. Negligible air emissions are expected from the wet portions of a sand and gravel plant.

Industrial sand processing is similar to that of construction sand, insofar as the initial stages of crushing and screening are concerned. Industrial sand has a high (90 to 99 percent) quartz or silica content and is frequently obtained from quartz rich deposits of sand or sandstone. At some plants, after initial crushing and screening, a portion of the sand may be diverted to construction sand use. Industrial sand processes not associated with construction sand include wet milling, scrubbing, desliming, flotation, drying, air classification and cracking of sand grains to form very fine sand products.

8.19.1.2 Emissions and Controls[1]

Dust emissions can occur from many operations at sand and gravel processing plants, such as conveying, screening, crushing, and storing operations. Generally, these materials are wet or moist when handled, and process emissions are often negligible. A substantial portion of these emissions may consist of heavy particles that settle out within the plant. Emission factors (for process or fugitive dust sources) from sand and gravel processing plants are shown in Table 8.19.1-1. (If processing is dry, expected emissions could be similar to those given in Section 8.19.2, Crushed Stone Processing).

Emission factors for crushing wet materials can be applied directly or on a dry basis, with a control efficiency credit being given for use of wet materials (defined as 1.5 to 4.0 percent moisture content or greater) or wet suppression. The latter approach is more consistent with current practice.

The single valued fugitive dust emission factors given in Table 8.19.1-1 may be used for an approximation when no other information exists. Empirically derived emission factor equations presented in Section 11.2 of this document are preferred and should be used when possible. Each of those equations has been developed for a single source operation or dust generating mechanism which crosses industry lines, such as vehicle traffic on unpaved roads. The predictive equation explains much of the observed variance in measured emission factors by relating emissions to the differing source variables. These variables may be grouped as (1) measures of source activity or expended energy (e. g., feed rate, or speed and weight of a vehicle traveling on an unpaved road), (2) properties of the material being disturbed (e. g., moisture content, or content of suspendable fines in the material) and (3) climate (e. g., number of precipitation free days per year, when emissions tend to a maximum).

Because predictive equations allow for emission factor adjustment to specific conditions, they should be used instead of the factors given in Table 8.19.1-1 whenever emission estimates are needed for sources in a specific sand and gravel processing facility. However, the generally higher quality ratings assigned to these equations are applicable only if (1) reliable values of correction parameters have been determined for the specific sources of interest, and (2) the correction parameter values lie within the ranges found in developing the equations. Section 11.2 lists measured properties of aggregate materials used in operations similar to the sand and gravel industry, and these properties can be used to approximate correction parameter values for use in the predictive emission factor equations, in the event that site specific values are not available. Use of mean correction parameter values from Chapter 11 reduces the quality ratings of the emission factor equations by at least one level.

Since emissions from sand and gravel operations usually are in the form of fugitive dust, control techniques applicable to fugitive dust sources are appropriate. Some successful control techniques used for haul roads are application of dust suppressants, paving, route modifications, soil stabilization, etc.; for conveyors, covering and wet suppression; for storage piles, wet dust suppression, windbreaks, enclosure and soil stablizers; and for conveyor and batch transfer points (loading and unloading, etc.), wet suppression and various methods to reduce freefall distances (e. g., telescopic chutes, stone ladders, and hinged boom stacker conveyors); for screening and other size classification, covering and wet suppression.

Wet suppression techniques include application of water, chemicals and/or foam, usually at crusher or conveyor feed and/or discharge points. Such spray systems at transfer points and on material handling operations have been estimated to reduce emissions 70 to 95 percent.[7] Spray systems can also reduce loading and wind erosion emissions from storage piles of various materials 80 to 90 percent.[8] Control efficiencies depend upon local climatic conditions, source properties and duration of control effectiveness. Wet suppression has a carryover effect downstream of the point of application of water or other wetting agents, as long as the surface moisture content is high enough to cause the fines to adhere to the larger rock particles.

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TABLE 8.19.1-1. UNCONTROLLED PARTICULATE EMISSION FACTORS FOR SAND AND GRAVEL PROCESSING PLANTS[a]

Uncontrolled Operation	Emissions by Particle Size Range (aerodynamic diameter)[b] Total Particulate	TSP (≤ 30 μm)	PM_{10} (≤ 10 μm)	Units	Emission Factor Rating
Process Sources[c]					
Primary or secondary crushing (wet)	NA	0.009 (0.018)	NA	kg/Mg (lb/ton)	D
Open Dust Sources[c]					
Screening[d]					
Flat screens (dry product)	NA	0.08 (0.16)	0.06 (0.12)	kg/Mg (lb/ton)	C
Continous drop[c]					
Transfer station	0.014 (0.029)	NA	NA	kg/Mg (lb/ton)	E
Pile formation - stacker	NA	0.065 (0.13)	0.03 (0.06)[e]	kg/Mg (lb/ton)	E
Batch drop[c]					
Bulk loading	0.12 (0.24)	0.028 (0.056)[f]	0.0012 (0.0024)[f]	kg/Mg (lb/ton)	E
Active storage piles[g]					
Active day	NA	14.8 (13.2)	7.1 (6.3)[e]	kg/hectare/day[h] (lb/acre/day)	D
Inactive day (wind erosion only)	NA	3.9 (3.5)	1.9 (1.7)[e]	kg/hectare/day[h] (lb/acre/day)	D
Unpaved haul roads					
Wet materials	i	i	i		D

[a]NA = not available. TSP = total suspended particulate. Predictive emission factor equations, which generally provide more accurate estimates of emissions under specific conditions, are presented in Chapter 11. Factors for open dust sources are not necessarily representative of the entire industry or of a "typical" situtation.
[b]Total particulate is airborne particles of all sizes in the source plume. TSP is what is measured by a standard high volume sampler (see Section 11.2).
[c]References 5-9.
[d]References 4-5. For completely wet operations, emissions are likely to be negligible.
[e]Extrapolation of data, using k factors for appropriate operation from Chapter 11.
[f]For physical, not aerodynamic, diameter.
[g]Reference 6. Includes the following distinct source operations in the storage cycle: (1) loading of aggregate onto storage piles (batch or continuous drop operations), (2) equipment traffic in storage areas, (3) wind erosion of pile (batch or continuous drop operations). Assumes 8 to 12 hours of activity/24 hours.
[h]Kg/hectare (lb/acre) of storage/day (includes areas among piles).
[i]See Section 11.2 for empirical equations.

References for Section 8.19.1

1. Air Pollution Control Techniques For Nonmetallic Minerals Industry, EPA-450/3-82-014, U. S. Environmental Protection Agency, Research Triangle Park, NC, August 1982.

2. S. Walker, "Production of Sand and Gravel", Circular Number 57, National Sand and Gravel Association, Washington, DC, 1954.

3. Development Document For Effluent Limitations Guidelines And Standards - Mineral Mining And Processing Industry, EPA-440/1-76-059b, U. S. Environmental Protection Agency, Washington, DC, July 1979.

TSP FACTORS
IN BACKGROUND REPORT
FOR
AP 42 SECTION 11.19.1

APRIL 1995

8.19 IS NOW 11.19 IN AP-42
BUT STORAGE FACTORS
ARE OMITTED FROM
SECTION 11.19.1

4. Review Emissions Data Base And Develop Emission Factors For The Construction Aggregate Industry, Engineering-Science, Inc., Arcadia, CA, September 1984.

5. "Crushed Rock Screening Source Test Reports on Tests Performed at Conrock Corp., Irwindale and Sun Valley, CA Plants", Engineering-Science, Inc., Arcadia, CA, August 1984.

6. C. Cowherd, Jr., et al., Development Of Emission Factors For Fugitive Dust Sources, EPA-450/3-74-037, U. S. Environmental Protection Agency, Research Triangle Park, NC, June 1974.

7. R. Bohn, et al., Fugitive Emissions From Integrated Iron And Steel Plants, EPA-600/2-78-050, U. S. Environmental Protection Agency, Washington, DC, March 1978.

8. G. A. Jutze and K. Axetell, Investigation Of Fugitive Dust, Volume I: Sources, Emissions and Control, EPA-450/3-74-036a, U. S. Environmental Protection Agency, Research Triangle Park, NC, June 1974.

9. Fugitive Dust Assessment At Rock And Sand Facilities In The South Coast Air Basin, Southern California Rock Products Association and Southern California Ready Mix Concrete Association, P.E.S., Santa Monica, CA, November 1979.

P.O. Drawer 200
Farm Road 62
Camden, Texas 75934
409 398-2511

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MAY 17 1999
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AIR REGULATION

Champion
Champion International Corporation

May 11, 1999

State of Florida
Department of Environmental Protection
Division of Air Resources Management
Mail Station #5505
2600 Blair Stone Road
Tallahassee, FL 32399-2400

Attn: Joseph Kahn

Dear Joe:

Per your request, attached is a copy of the NCASI TB. No 718.

If you need additional information or have questions, please call me at (409) 398-7252 or Tom Davis (ECT) at (352) 332-0444.

Thanks,

Terry/EB

Terry Kassabaum
Environmental Health and Safety Manager
Champion International Corporation

TK/eb
attachment

cc: Tom Davis - ECT - w/o attachment
Dave Stevens - w/o attachment
John Barone - w/o attachment

ncasi

NATIONAL COUNCIL OF THE PAPER INDUSTRY FOR AIR AND STREAM IMPROVEMENT, INC.
P.O. Box 13318, Research Triangle Park, NC 27709-3318
Phone (919) 558-1999 Fax (919) 558-1998

Ronald A. Yeske, Ph.D.
President
(919) 558-1995

July 1, 1996

Technical Bulletin No. 718

A SMALL-SCALE KILN STUDY ON METHOD 25A MEASUREMENTS OF VOLATILE ORGANIC COMPOUND EMISSIONS FROM LUMBER DRYING

Atmospheric emissions from all types of wood drying operations are currently the focus of considerable regulatory agency attention, particularly with respect to the permitting of panel plants and, more recently, lumber drying kilns. Many existing wood products facilities are subject to state Title V operating permit programs, and thus must prepare permit applications. In many cases, modification of existing plants or construction of new greenfield facilities requires owners to obtain pre-construction air quality permits. Estimates of emissions are necessary for all of these permitting activities.

Estimating emissions of volatile organic compounds (VOCs) from wood drying operations has proven to be one of the most important and difficult elements of permit application preparation. Emissions depend on numerous factors, such as wood species, drying conditions, time elapsed from tree harvest to processing, and seasonal variability. In addition to these factors, there has been considerable uncertainty about the methods used to measure VOC emissions from wood drying. These uncertainties have raised questions about the reliability of some published VOC measurements.

NCASI has undertaken several studies to address questions about VOC measurement methods related to wood drying sources. The first studies were carried out on veneer dryers, using EPA Method 25. A subsequent study examined the performance of EPA Methods 25 and 25A on rotary dryers located at oriented strandboard (OSB) plants. A recently completed laboratory investigation involved examination of moisture effects on the response of a Method 25A VOC analyzer. Presently, NCASI staff are conducting a more comprehensive laboratory evaluation of factors which may affect the overall accuracy of Method 25A VOC measurements on wood dryer exhaust gases.

The study described in this report deals with VOC emissions from lumber drying. A small-scale lumber kiln was used for the drying. The study represents both a continuation of Method 25A evaluations on various wood drying sources and a much-needed effort to determine VOC emissions from the drying of lumber made from several different softwood species. The effects of sample line length and sample moisture removal on the total VOC measured by the Method 25A analyzer were investigated. Simultaneous measurements with two Method 25A sampling systems, which were identical except that one system had a 25-foot heated sampling line while the other had a 100-foot line, showed that sample line length made little difference in the amount of VOCs measured over the

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kiln drying cycle for three different wood species. Simultaneous measurements with two Method 25A systems, which were identical except that one system cooled the gas to 65°F to condense and remove moisture prior to introduction of the gas sample into the analyzer, showed that VOC emission measurements can be lower when the sample is cooled and moisture is removed. The moisture removal effect was dependent on the wood species being dried.

The small-scale drying kiln was used to dry ten different species of softwood lumber according to drying schedules commonly used for these species in full-scale kilns. Total VOC emissions for the entire drying cycle, after accounting for fugitive losses from the kiln, ranged from 0.12 to 3.3 lb carbon per thousand board feet dried. These emission rates are within the range of those reported at full-scale kilns, although accounting for fugitive losses from full-scale kilns is very problematic. Emissions were highest for pine species, but no relationship between lumber turpentine loss and VOC emissions was found.

NCASI would like to acknowledge the support of Boise Cascade, Georgia-Pacific, Idaho Forest Industries, Louisiana-Pacific, Plum Creek Timber, Potlatch, Simpson Timber, Stone Container, and Union Camp for this study. These companies provided financial support for kiln operations and instrumentation, and provided the lumber used in the study. The small-scale kiln was located at the University of Idaho, and was operated during the study by Dr. Richard Folk of the University of Idaho and T. Orlin Galloway of Louisiana-Pacific.

The study was directed by Mr. Andre Caron, NCASI West Coast Regional Manager (now retired). Mr. Caron was assisted by Dr. Qiusheng Pu, former Research Engineer, Leonard Smith, and Ronald Messmer of the West Coast Regional Center. The report was prepared by Dr. Pu and Mr. Caron. Questions on the report may be directed to Mr. Paul Wiegand, West Coast Regional Manager, phone (541) 752-8801; or to Dr. John Pinkerton at this office, phone (919) 558-1992.

Very truly yours,

Ronald A. Yeske

Attachment

TABLE OF CONTENTS

A SMALL-SCALE KILN STUDY ON METHOD 25A MEASUREMENTS
OF VOLATILE ORGANIC COMPOUND EMISSIONS FROM LUMBER DRYING

TECHNICAL BULLETIN NO. 718
JULY 1996

ABSTRACT: EPA Method 25A measurements of VOC emissions from lumber drying were studied using a small-scale kiln. Fresh-cut commercial softwood lumbers of ten southern and western species were tested using drying conditions similar to those practiced at full-scale kilns. VOC emissions were continuously monitored over the entire drying cycle. Fugitive VOC losses due to gas leakage from the kiln were estimated using moisture recovery rates. Two Method 25A VOC measurement systems, in different configurations, were operated in parallel. Three comparisons of results, obtained using heated sample lines of 25 feet and 100 feet, showed differences in total VOC emissions over the drying cycle of 11 percent or less. Thirteen comparisons of results were made using a sample gas condensation system in one of the parallel trains. Removing moisture from the sample gas by condensation reduced the VOC measurement. The relative reduction in VOC measurement was less than 35 percent for most of the species tested, but higher (58 to 78 percent) for three species that have low VOC emission potentials.

The VOC emissions measured were between 0.12 and 0.81 lb C/MBF (pound carbon per thousand board feet) for non-pine wood species, and ranged from 1.86 to 3.32 lb C/MBF for pine species. For most species tested, VOCs emitted during the drying cycle followed a similar pattern, increasing with drying time at a nearly constant rate until the end of the drying cycle. Lumber drying schedules repeated in duplicate for six wood charges showed a relative percent difference in Method 25A VOC emissions of less than 20 percent. Emission factors presented are specific to the methods used in this study. Turpentine measurements of the lumber before and after drying indicated turpentine losses of less than 30 percent for all species tested. A comparison of the VOC emissions and turpentine losses did not show a correlation between these two measurements.

KEYWORDS: emissions, drying, lumber kiln, Method 25A, softwoods, VOC measurement, volatile organic compounds

RELATED NCASI PUBLICATIONS:

(1) "A Laboratory Study of Moisture Effects on EPA Method 25A VOC Measurements," NCASI Special Report 95-10, (August, 1995).

(2) "A Study of Organic Compound Emissions from Veneer Dryers and Means for Their Control," NCASI Technical Bulletin No. 405, (August, 1983).

A SMALL-SCALE KILN STUDY ON METHOD 25A MEASUREMENTS OF VOLATILE ORGANIC COMPOUND EMISSIONS FROM LUMBER DRYING

I INTRODUCTION

The measurement of VOC emissions from wood drying operations has proven to be a challenging task. Although EPA has two reference methods for VOC measurements, Method 25 and Method 25A, neither was developed for wood drying emission sources, nor has EPA ever evaluated the performance of either method on wood drying sources. Early measurements of VOC emissions from veneer dryers and some rotary furnish dryers were made with EPA Method 25. More recently, EPA Method 25A has come into widespread use for VOC measurements at wood products plants. In many situations, the two methods do not appear to give comparable results. Because most state regulatory agencies now require the use of Method 25A to determine VOC emissions for permit compliance purposes, industry attention is focused on the performance of this method for various types of wood drying sources.

Method 25A allows a number of variations in the sampling procedures, some of which may have a considerable impact on the ultimate VOC measurement. Stack conditions may also affect the Method 25A measurements, and these effects may be confounded by different sampling procedures. For wood drying sources, important considerations include sample moisture level, temperature, use of a filter, filter temperature, sample line temperature, presence of droplets, etc.

Within the last five years, questions about VOC emissions from softwood lumber drying kilns have arisen in connection with air quality permitting concerns. In addition to uncertainty about the applicability of EPA Method 25A to these exhausts, lumber kiln emissions are extremely difficult to sample. Lumber kilns have multiple roof vents which open and close during the drying process. Flow may be either in or out of an open vent at any given time. Not all gases leave the kiln through the roof vents; kilns are not air tight and losses occur at many locations, including door seals and wall joints. Since lumber drying is a batch process, and exhaust gas flows and VOC concentrations vary over the course of a drying cycle (which may range from fifteen to several hundred hours), sampling must be conducted over a complete drying cycle to determine the total amount of VOC emitted for a batch of lumber. Several companies have tried various approaches to measuring VOC emissions from full-scale lumber drying kilns. Sampling has proven to be time consuming and expensive, and confidence in many of the sampling results is not high. Alternative approaches to full-scale sampling are thus being sought to develop appropriate emission factors for lumber drying kilns.

The work described in this report addresses, in a limited manner, two questions related to the use of Method 25A for measuring VOCs in lumber kiln exhausts. These two questions relate to the effect of sample line length and sample cooling and moisture removal on VOC concentrations measured with a Method 25A analyzer. A previous NCASI study investigated the moisture interference to flame ionization detector (FID) responses to propane gas and α-pinene vapor (1). Exhaust gases from a small-scale lumber kiln were sampled with two Method 25A sampling systems.

The small-scale kiln also offered the opportunity to dry lumber manufactured from many different softwood species and determine the amount of VOCs released over the course of complete drying cycles. Emission factors calculated from the small-scale kiln work could then be compared to the limited data for full-scale kilns. The work included an investigation of lumber turpentine loss over the drying cycles to see if this loss was related to observed VOC emissions over the drying cycles.

II APPROACH

This study was carried out in cooperation with the University of Idaho and was sponsored by nine lumber manufacturing companies. A committee representing these companies was assembled to guide the study. The committee members were individuals experienced with lumber drying processes, operation of full-scale lumber kilns, and VOC measurement procedures. Under the guidance of this committee, an experimental design was developed. This design would:

1. employ the small-scale kiln at the Department of Forest Products, University of Idaho, for the study;

2. modify the kiln by installing a manifold system for taking fresh air from outside the building and routing the kiln exhaust to a stack;

3. install a computerized system to accurately monitor and control the drying process and instrument the kiln to track lumber moisture content during drying;

4. replicate the drying schedules of full-scale kilns;

5. conduct tests with lumbers from a variety of softwood species;

6. continuously monitor the VOC concentration in the kiln exhaust and the temperatures, flows, and relative humidities of intake air and kiln exhaust over the entire drying cycle;

7. conduct mass balances for both air and moisture entering and exiting the kiln during the drying cycle to estimate fugitive VOC losses due to gas leakage from the kiln;

8. use two Method 25A sampling trains with identical VOC analyzers to evaluate the effect of different sampling train configurations on the VOC emission measurement; and

9. measure turpentine losses of the lumber by taking composite shaving samples from a representative number of boards to assess the relationship between VOC emissions and turpentine losses.

III METHODS

A. Lumbers Tested

Lumbers of ten southern and western softwood species were tested. The wood species and corresponding acronyms are listed in Table 1. Information related to the history of the lumbers is summarized in Appendix A.

TABLE 1 LUMBERS TESTED

WOOD SPECIES	ACRONYM
Douglas fir heartwood	DFH
Douglas fir sapwood	DFS
Ponderosa pine	PP
Southern yellow (loblolly) pine from Texas	SYP-TX
Southern yellow (loblolly) pine from Arkansas	SYP-AR
Redwood	Redwood
Western Red Cedar	Cedar
Coastal Douglas fir	CDF
White fir	WF
Grand fir	GF
Hemlock	Hemlock
White pine	WP
Sugar pine	SP

B. Drying Tests

Experiments on VOC emissions from lumber drying were conducted using the small-scale kiln at the University of Idaho. This section describes the kiln and the operating conditions used for the drying tests.

(1) Description of the Kiln - The small-scale kiln at the University of Idaho is a 1978 Irvington Moore Cabinet Dryer with two vents. This kiln can accommodate 140 eight-foot 2x4 inch boards or an equivalent amount of lumber in other dimensions. It was built for commercial purposes and was not designed to be leak-free. Fugitive VOC losses due to gas leakage were expected. An effort was made to seal the interior surfaces where leakage was suspected. Silicon rubber and weather strips were used to seal joints and the door edge, respectively. A leak-proof floor was added to the kiln.

The kiln was indirectly heated by steam coils located in the kiln. The kiln was equipped with two pairs of 18-inch fans to circulate air. Each pair of fans was driven by a 1.5 horsepower, adjustable-speed motor. The speed and blow direction of all fans were synchronously adjusted by a central control panel.

Kiln operation was controlled by a computerized system to maintain the drying schedule, which was based on dry and wet bulb temperature profiles. Adjustments included steam supply to the heating coil and opening or closing of the vents. Two dry bulb and one wet bulb temperature sensors were located in the kiln. Fan speed was set at the rate specified in the drying schedule. Fan direction was controlled automatically and changed at six-hour intervals.

The moisture content of the lumber in the kiln was monitored continuously using a Delmhorst RDM-ISE&ES-8 system with eight probes placed on the surface and in the core of boards at evenly distributed locations in the kiln charge. Board temperature was used to compensate the Delmhorst system and was determined by four thermocouple probes located in the lumber charge.

A shop-built manifold connected the kiln to the outside of the building for fresh air supply and routed the kiln exhaust to a stack. A schematic of the manifold is shown in Figures 1A and 1B. The dampers of the manifold were switched automatically every six hours, matching the fan direction. Fresh air was drawn through a circular galvanized iron pipe (10 inches in diameter). The kiln exhaust was vented through a circular stainless steel stack (10 inches in diameter). The remainder of the manifold system was constructed of square galvanized iron ducts (10 inches in side length). The entire manifold system was wrapped with insulation to minimize potential for gas condensation.

As shown in Figure 1A, when the fan direction was forward, dampers D1 and D3 were opened while D2 and D4 were closed. Once the two vents (V1 and V2) of the kiln were opened, fresh air from outside the building was drawn into the kiln through vent V1 and exhaust vented through vent V2 to the stack. Conversely, when the fan direction was reversed, as shown in Figure 1B, dampers D2 and D4 were opened while D1 and D3 were closed. Fresh air was then drawn into the kiln through vent V2 and exhaust released through vent V1 to the stack.

(2) Operating Conditions - Twenty drying runs were conducted. Drying schedules used to control the wet and dry bulb temperature in the kiln throughout the drying cycle were typical of full-scale kiln operating conditions for the same types of lumber. The actual dry and wet bulb temperature profiles recorded during the drying tests are summarized in Appendix B. These profiles matched the desired drying schedules. Target moisture content of the dried lumber was set at 15 percent on a dry basis or 13 percent on a wet basis. Dimension, volume, weight, initial moisture content of the lumbers, total drying time and maximum dry bulb temperature in the drying cycle are presented in Table 2.

As shown in Table 2, dimensions of the lumbers were 1x4, 2x4, and 1.25x6 inches, with a length of 8 feet. The volume of lumber charged to the kiln for individual runs varied from 0.587 to 0.875 thousand board feet (MBF). The dry weight of lumber ranged from 976 to 1646 pounds. Lumber moisture contents were between 25 and 60 percent on a wet basis. The total drying time ranged from 18 to 329 hours. The maximum dry bulb temperature ranged from 160 to 220°F. Drying schedules were determined by wood species. Each wood species required a specific drying schedule to remove moisture without damaging the wood structure.

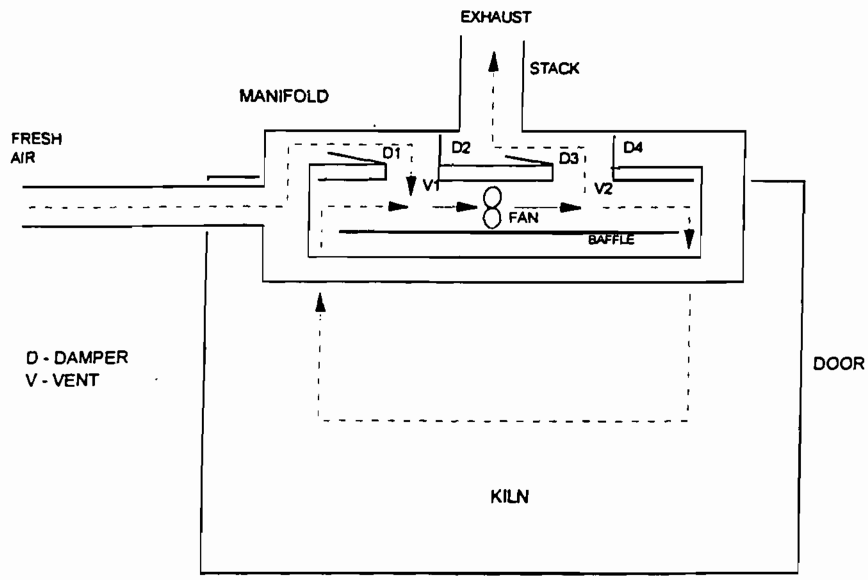

FIGURE 1A SCHEMATIC OF KILN MANIFOLD AND GAS STREAMS (FAN DIRECTION - FORWARD)

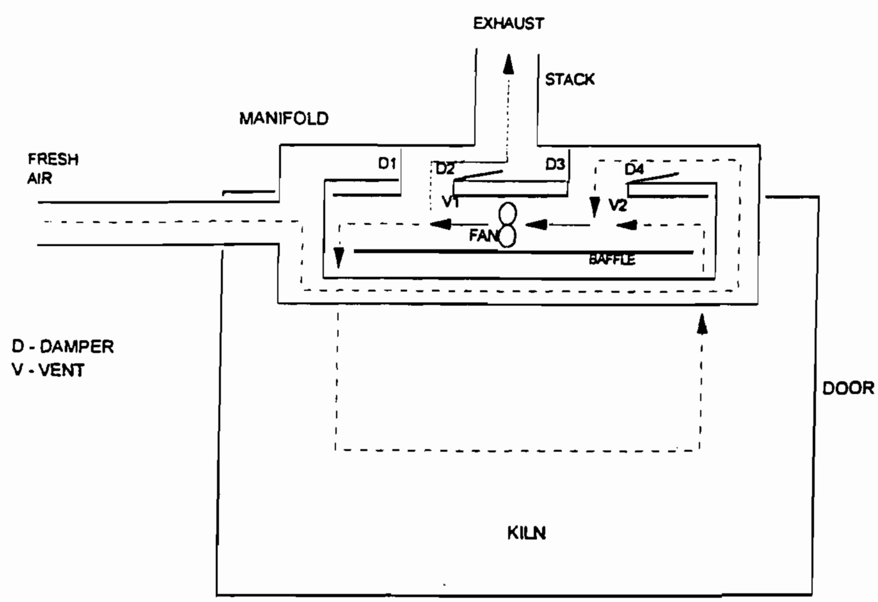

FIGURE 1B SCHEMATIC OF KILN MANIFOLD AND GAS STREAMS (FAN DIRECTION - REVERSE)

TABLE 2 INFORMATION RELATED TO DRYING TESTS

RUN NO.	WOOD SPECIES	LUMBER DIM.[a] a x b x 8'	BOARD VOLUME MDF[b]	BOARD WEIGHT lb (dry)	INITIAL MOISTURE % (wet)	DRYING TIME, hr	DRYING TEMP. °F DB[c]
1	DFH	2x4	0.747	1439	28	63	180
2	DFH	"	0.747	1387	30	53	175
3	DFH	"	0.747	1397	31	42	180
4	DFS	"	0.747	1096	36	27	180
5	PP	1x4	0.587	1083	53	29	170
6	PP	"	0.587	1110	47	28	170
7	SYP-TX	2x4	0.747	1607	35	33	200
8	SYP-TX	"	0.747	1646	38	29	220
9	Redwood	"	0.875	1285	45	329	170
10	Cedar	1x4	0.587	976	25	21	160
11	Cedar	"	0.627	1036	31	18	160
12	SYP-AR	2x4	0.672	1507	51	41	205
13	SYP-AR	"	0.640	1567	45	40	205
14	CDF	"	0.800	1245	38	21	180
15	WF	"	0.747	1127	58	70	190
16	WF	"	0.747	1091	58	75	190
17	GF	"	0.800	1356	49	47	200
18	Hemlock	"	0.768	1232	53	40	200
19	WP	1x4	0.643	1142	54	44	170
20	SP	1.25x6	0.675	1412	60	99	180
MIN			0.587	976	25	18	160
MAX			0.875	1646	60	329	220

[a] Lumber Dimension is the nominal, not actual, dimension. Variables a and b are in inches.
[b] MBF - thousand board feet = (number of boards)*a*(b/12)*8/1000
[c] DB - maximum dry bulb temperature in the drying cycle

C. VOC Emission Measurements

Measurements of VOC emissions from the small-scale kiln were conducted by continuously monitoring the VOC concentration, flow, temperature, and relative humidity of the exhaust gas. Fugitive VOC losses due to gas leakage from the kiln were estimated by conducting moisture and air mass balances. This section describes the construction of the sampling system, configurations of the Method 25A sampling train, procedures for QA/QC (quality assurance and quality control) checks on the sampling system performance, and calculations used to process the data recorded.

(1) Sampling System Construction - A schematic of the sampling system is shown in Figure 2. Eight parameters were continuously measured and recorded including intake air velocity, temperature, and relative humidity; kiln exhaust velocity, temperature, and relative humidity; and VOC concentration of kiln exhaust measured by two Method 25A systems operated in parallel.

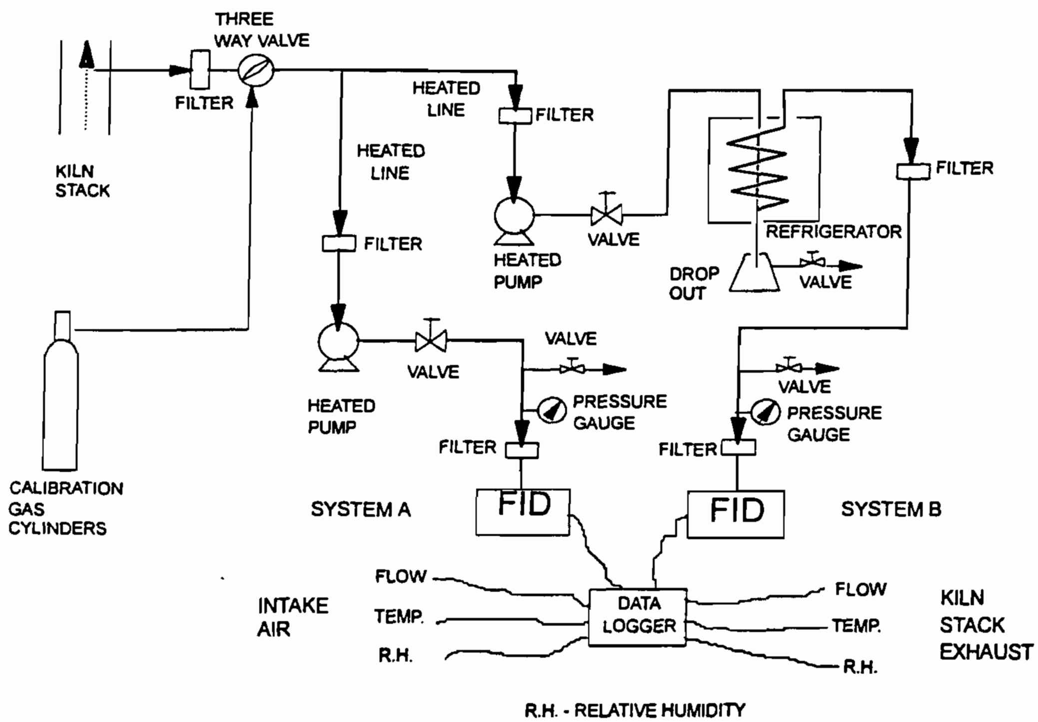

FIGURE 2 SCHEMATIC OF VOC EMISSION MEASUREMENT SYSTEMS

The velocities of the intake air and kiln exhaust were measured by EPA Method 14 (2), using propeller anemometers with a propeller diameter of 8 inches (model 27106T, R.M. Young Company). The anemometer transmitter housing was continuously flushed with fresh air to avoid contamination with moisture and VOC. The relative humidity and temperature of the intake air was monitored with an Omega HX12 system. The relative humidity of the kiln exhaust was monitored with a Hydrotest 602 (Airflow Inc.) system that was designated for use under high temperature and high moisture conditions. Kiln exhaust temperature was monitored with an Omega thermocouple probe (TJ6-ICIN-14U-18).

Two Method 25A systems (designated A and B) were used for VOC measurements. As shown in Figure 2, these two systems shared a common heated stainless steel probe (0.5 inch in diameter) and a heated stainless steel filter (5 inches in diameter). The filter was filled with glass wool to remove particulate matter. The gas sample was routed to the two gas sampling systems, each consisting of a heated Teflon line, an inert gas pump with a heated head, and a Method 25A VOC analyzer. To protect the pump and the flame ionization detector (FID) analyzer, two

2-micron mesh stainless steel filters were placed ahead of each pump and FID, respectively. The two VOC analyzers were identical FIDs, J.U.M. model VE-7.

System A conveyed a gas sample to the instrument via a 25-foot heated line that was controlled at about 250°F. System B was operated in three configurations:

1. duplication of system A,
2. modification of system A, including a condenser ahead of the FID to remove moisture, and
3. modification of system A, replacing the 25-foot line with a 100-foot line.

The heated sample line for these configurations was maintained at a temperature of about 250°F. The condenser used in system B was a 30-foot coil of Teflon line (0.25 inch in diameter) which was kept in a refrigerator. The cooled sample gas temperature was controlled at about 65°F. The condensate removed was collected in a dropout bottle. A Teflon filter holder filled with glass wool followed the condenser to capture carried-over particulate.

All the parameters monitored were recorded as 2-minute averages by a computer data logger.

(2) VOC Sampling System Configurations - VOC sampling system A was operated in configuration 1 for all the runs and was used as a control. Configurations for VOC sampling system B are shown in Table 3. Configuration 1 was used in three drying tests of fir and pine species that represented low and high VOC emission potentials. These three runs were used to verify the equivalency of system A and system B when operated in the same configuration. Configuration 3 was used in four drying runs of fir and pine lumbers to evaluate the effect of sample line length on the VOC measurement. The effect was observed to be relatively small and, therefore, configuration 3 was not used further. Configuration 2 was used in thirteen drying tests to evaluate the impact on VOC measurement of condensing the sample gas.

(3) Sampling System QA/QC Checks - All the instruments used to measure gas velocity, temperature, and relative humidity were manufacturer-calibrated. Calibrations were checked before installation. Stack temperature was occasionally measured with a thermometer and compared with readings of the continuous monitor.

Following the specifications of Method 25A (3), the VOC sampling systems were initially calibrated using zero air and cylinder gases prepared in accordance with EPA protocol No. 1 (3). Propane concentrations equivalent to 80 to 90 percent of the instrument span value were used for the high-level calibration. Calibration error tests were conducted using propane gases at low-level (25 to 35 percent of span) and mid-level (45 to 55 percent of span) concentrations. Zero and calibration drifts were checked with EPA-certified propane gases at several concentration levels and a manufacturer-certified α-pinene vapor at 55 ppm. QA/QC checks were conducted daily and at the end of each drying test.

TABLE 3 CONFIGURATIONS OF VOC SAMPLING SYSTEM B

RUN NO.	WOOD SPECIES	SYSTEM B CONFIGURATION[a] 1	2	3
1	Douglas fir heartwood	x		
2	Douglas fir heartwood		x	
3	Douglas fir heartwood			x
4	Douglas fir sapwood			x
5	Ponderosa pine			x
6	Ponderosa pine		x	
7	Southern yellow pine - TX		x	
8	Southern yellow pine - TX		x	
9	Redwood		x	
10	Cedar		x	
11	Cedar		x	
12	Southern yellow pine -AR		x	
13	Southern yellow pine -AR	x		
14	Coastal Douglas fir		x	
15	White fir		x	
16	White fir	x		
17	Grand fir			x
18	Hemlock		x	
19	White pine		x	
20	Sugar pine		x	

[a] configuration 1 - 25 ft heated line
configuration 2 - 25 ft heated line and a condenser
configuration 3 - 100 ft heated line

(4) Calculations - The VOC emission rate was calculated using the measured VOC concentration, flow, and temperature of the kiln exhaust gas. Air flow and moisture balances for the kiln were calculated to estimate fugitive VOC losses. Air flow balances were calculated using temperatures, relative humidities, and velocities of the intake air and kiln exhaust. Moisture balances were calculated using the measured moisture contents of the intake air and exhaust gas and the moisture removal from the lumber. Calculated VOC emission rates were adjusted, using the moisture balance data, to account for fugitive VOC losses. Calculations are presented in Appendix C.

D. Measurement of Lumber Turpentine and Moisture Losses

Turpentine content of the lumber before and after drying was measured to determine turpentine losses. Shaving samples were taken for turpentine tests by drilling four 1-inch bores in about 10 percent of the boards in the kiln charge prior to drying. After drying, another four bores adjacent to the initial ones were made in the same boards to collect shaving samples. The shaving samples were collected into Ziplock™ plastic bags and kept in a refrigerator at about 38°F. Turpentine measurements were conducted using an alkaline steam distillation procedure (4). Moisture of the shavings was determined by oven-drying a sample of 200-300 grams at 105°C for 24 hours. The sample was considered 'dry' when successive weighings differed by less than 1 percent.

Moisture loss of the lumber during drying was determined by weighing each board of the kiln charge before and after drying. A laboratory scale was used to weigh the boards to the nearest gram.

IV RESULTS AND DISCUSSION

A. Sampling System QA/QC Performance

EPA Method 25A specifications for zero drift and span drift are ±3 percent of the span value (3). During this study, zero and calibration drift checks were completed 338 times. Of these, nineteen (5.6 percent) of the drift checks exceeded ±3 percent. Because of the limited frequency at which drift checks were greater than ±3 percent and the length of most drying cycles (greater than 24 hours), all data were considered valid with respect to zero and span calibration. VOC data for sampling system B during Run 3 were invalidated because of a leak in the sample line. The QA/QC data for the two VOC sampling systems are summarized in Appendix D.

B. Estimation of Fugitive VOC Losses

Fugitive VOC losses can result from gas leakage through the door edge and cracks in the kiln walls. Mass balances of moisture and air entering and exiting the kiln were calculated to quantify these losses.

The air and moisture balances calculated are presented in Table 4. Air recovery rates varied from 68 to 103 percent, while moisture recovery ranged from 39 to 105 percent. The average air and moisture recovery rates for all the tests were 83 and 84 percent, respectively. Statistical analyses of the data indicated that the difference between the two averages is not significant. However, the average air and moisture recovery rates are significantly less than 100 percent. Therefore, it was necessary to account for these losses in calculating total VOC emissions for each lumber drying cycle. Statistical analyses are presented in Appendix E.

The variability of air and moisture recovery rates between drying runs, as shown in Table 4, may have been related to the drying schedules used. Gas leakage rate could vary with the operating temperature and gas moisture content in the kiln, as well as fan speed. Possible impacts of drying schedules on air and moisture balances are discussed in Appendix F.

VOC emissions discussed in this report were corrected for fugitive VOC losses using the moisture recovery rates listed in Table 4. This approach was based on the assumption that VOCs and moisture are removed from the wood proportionally and mix well in the gas stream during the drying process and, therefore, the moisture recovery rate may be used as a surrogate for estimating the total fugitive VOC losses due to gas leakage. The fugitive VOC loss during each run was corrected using the calculated moisture recovery rate for that run.

TABLE 4 AIR AND MOISTURE BALANCES

RUN NO.	WOOD SPECIES	DRYING TIME, hr.	AIR RECOVERY, %	MOISTURE RECOVERY, %
1	Douglas fir heartwood	63	84	60
2	Douglas fir heartwood	53	95	39
3	Douglas fir heartwood	42	68	83
4	Douglas fir sapwood	27	75	99
5	Ponderosa pine	29	81	88
6	Ponderosa pine	28	89	80
7	Southern yellow pine - TX	33	103	60
8	Southern yellow pine - TX	29	86	62
9	Redwood	329	87	86
10	Cedar	21	89	92
11	Cedar	18	85	93
12	Southern yellow pine - AR	41	80	84
13	Southern yellow pine - AR	40	70	95
14	Coastal Douglas fir	21	98	80
15	White fir	70	96	102
16	White fir	75	83	105
17	Grand fir	47	71	94
18	Hemlock	40	73	90
19	White pine	44	75	84
20	Sugar pine	99	77	102
AVG[a]			83	84
MIN		18	68	39
MAX		329	103	105
STD			10	16

[a] AVG - average, STD - standard deviation

Air recovery rate was not used to estimate fugitive VOC losses because the kiln exhaust air flow did not necessarily reflect the profile of VOC emission rate during the drying cycle. Both moisture and air leakage rates may vary with time during drying. More detailed discussions of moisture and air leakage during the drying are included in Appendix F.

C. Evaluation of VOC Measurement System Configurations

The VOC emissions measured by the two parallel sampling systems during individual drying runs were compared and the differences are summarized in Table 5.

The VOC emissions measured with identical sampling systems during Runs 1, 13, and 16 differed within ±4 percent and were within the allowable calibration error (±5 percent of the standard gas concentration) specified in Method 25A (3). This indicated that the two VOC measurement systems could yield similar results when operated in the same configuration.

TABLE 5 COMPARISON OF VOC EMISSIONS DETECTED BY DIFFERENT SAMPLING SYSTEM CONFIGURATIONS

		CONFIGURATIONS[a]		VOC, lb C/ODT		
RUN NO.	WOOD SPECIES	SYSTEM A	SYSTEM B	A	B	DIFFERENCE
13	SYP-AR	1	1	1.68	1.75	4
16	WF	1	1	0.68	0.69	1
1	DFH	1	1	1.00	0.97	-3
7	SYP-TX	1	2	3.16	3.40	8
2	DFH	1	2	0.31	0.31	0
8	SYP-TX	1	2	2.94	2.88	-2
6	PP	1	2	2.06	1.94	-6
12	SYP-AR	1	2	2.37	1.96	-17
9	Redwood	1	2	0.17	0.14	-18
14	CDF	1	2	0.44	0.35	-20
20	SP	1	2	1.98	1.38	-30
19	WP	1	2	2.54	1.67	-34
10	Cedar	1	2	0.12	0.05	-58
18	Hemlock	1	2	0.30	0.12	-60
11	Cedar	1	2	0.17	0.06	-65
15	WF	1	2	0.85	0.19	-78
3	DFH	1	3	0.71	lost	-
4	DFS	1	3	0.28	0.31	11
17	GF	1	3	0.63	0.64	2
5	PP	1	3	1.92	1.90	-1

[a] configuration 1 - 25 ft heated line
configuration 2 - 25 ft heated line and a condenser
configuration 3 - 100 ft heated line

The change in VOC measurement due to moisture removal from the sample gas varied from 8 to -78 percent during thirteen runs. For Douglas fir, redwood, and pines, the reduction was less than 35 percent. However, for hemlock, cedar, and white fir, the reduction was 58 percent and higher. This result suggests that the effect of sample gas cooling and moisture removal on Method 25A VOC measurement is related to the wood species being dried.

The condensate from the sample gas of cedar drying was analyzed with a GC/MS to identify the VOC compounds removed by condensation. The major compound found was acetic acid, which is condensable and water-soluble. Turpentine contents of hemlock, cedar, and white fir are low, as reported in the literature (4) and measured in this study (to be discussed later). Therefore, the VOC emissions from the drying of these species, which were relatively low, might have been mainly attributed to acetic acid. The large reduction of VOC measurements due to sample gas cooling may have resulted from the removal of acetic acid.

For woods of high turpentine content (e.g. pines), VOC emissions are primarily due to terpene compounds (5). Terpenes are condensable but not water-soluble. When the sample gas was cooled, the condensed turpentine could be stripped from the condensate back to the gas phase. Therefore, cooling the sample gas may not have removed a significant amount of terpene compounds. The contribution of acetic acid to the VOC emission from the drying of Douglas fir, pines, and redwood may have been relatively small. Therefore, the removal of acetic acid with condensate would not have had a large impact on the VOC measurement.

VOC emissions during the drying of Douglas fir, ponderosa pine, and grand fir (Runs 3, 4, 5, and 17) were measured with two sampling systems having different sample line lengths. The data for Run 3 were invalid, because system B failed due to leakage in the sampling system. The differences between the VOC emissions measured by the two systems were within ±11 percent. Additional experiments may need to be conducted with other wood species to confirm the effect of sample line length on measured VOC emissions.

D. <u>VOC Emission Potentials</u>

(1) <u>Experimental Reproducibility in VOC Emissions</u> - Two runs using similar drying schedules were conducted on six occasions using five wood species. The purpose of these runs was to examine the experimental reproducibility of VOC emissions measured from small-scale kiln operations. The VOC emissions measured by sampling system A were used to assess reproducibility. For Douglas fir heartwood, the data of Run 1 and Run 3 were used for the calculation because an unusual drying schedule was used in Run 2.

<u>Table 6</u> shows that the relative difference in VOC emissions in duplicate tests was less than 20 percent for the six runs. Differences in measured VOC emissions between the two runs for each wood were probably influenced by variations in lumber VOC content between charges. Slight differences in the drying schedules used also may have contributed to the differences in measured VOC emissions.

TABLE 6 EXPERIMENTAL REPRODUCIBILITY IN VOC EMISSIONS

WOOD SPECIES	RUN NO.	VOC MEASURED BY SYSTEM A, lb C/ODT	MEAN	RELATIVE DIFFERENCE, %
DFH	1	1.00	0.85	±17
	3	0.71		
PP	5	1.92	1.99	±3.5
	6	2.06		
SYP-TX	7	3.16	3.05	±3.6
	8	2.94		
Cedar	10	0.12	0.15	±17
	11	0.17		
SYP-AR	12	2.37	2.02	±17
	13	1.68		
WF	15	0.85	0.76	±11
	16	0.68		

[a] Relative Difference = (MEAN - Measured VOC)/MEAN * 100.

(2) VOC Emission Factors - VOC emission factors were calculated from the VOC measurements made with sampling system A. Data for the ten wood species dried are summarized in Table 7. The VOC emissions are expressed as lb C/ODT (pounds carbon per oven-dry ton of wood) and lb C/MBF (pounds carbon per thousand board feet). The VOC emission factors for some of the species represent the averages of duplicate runs.

As shown in Table 7, the VOC emissions ranged from 0.12 to 3.32 lb C/MBF, with redwood and cedar being the lowest and southern yellow pine from Texas the highest. The southern yellow pine lumber from Texas was made using peeler cores from a veneer mill. Wood from this (center) portion of the tree would be expected to have a higher VOC content than wood from the outer portion of the tree. The VOC emission potentials for non-pine softwood species were within the range of 0.12 to 0.81 lb C/MBF. The pine wood species had higher VOC emission potentials, ranging from 1.86 to 3.32 lb C/MBF.

VOC emissions measured for two full-scale lumber kilns drying southern pine lumber have been reported in the literature (6). Numerous company-provided VOC measurements for kilns drying southern pine lumber have been compiled by NCASI (7). The literature data show a range of VOC emissions between 0.6 and 5.4 lb C/MBF for indirectly-heated kilns. The VOC emission factors for pine species measured in this study are within that range.

Factors that may affect the VOC emission potentials from lumber drying are discussed in Appendix G.

TABLE 6 EXPERIMENTAL REPRODUCIBILITY IN VOC EMISSIONS

WOOD SPECIES	RUN NO.	VOC MEASURED BY SYSTEM A, lb C/ODT	MEAN	RELATIVE DIFFERENCE, %
DFH	1	1.00	0.85	±17
	3	0.71		
PP	5	1.92	1.99	±3.5
	6	2.06		
SYP-TX	7	3.16	3.05	±3.6
	8	2.94		
Cedar	10	0.12	0.15	±17
	11	0.17		
SYP-AR	12	2.37	2.02	±17
	13	1.68		
WF	15	0.85	0.76	±11
	16	0.68		

[a] Relative Difference = (MEAN - Measured VOC)/MEAN * 100.

(2) VOC Emission Factors - VOC emission factors were calculated from the VOC measurements made with sampling system A. Data for the ten wood species dried are summarized in Table 7. The VOC emissions are expressed as lb C/ODT (pounds carbon per oven-dry ton of wood) and lb C/MBF (pounds carbon per thousand board feet). The VOC emission factors for some of the species represent the averages of duplicate runs.

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Factors that may affect the VOC emission potentials from lumber drying are discussed in Appendix G.

TABLE 7 VOC EMISSION POTENTIALS FROM LUMBER DRYING

WOOD SPECIES	VOC EMISSIONS MEASURED BY SYSTEM A lb C/ODT	lb C/MBF
NON-PINE WOOD:		
Redwood	0.17	0.12
Cedar	0.15	0.12[a]
Douglas fir sapwood	0.28	0.21
Hemlock	0.30	0.24
Coastal Douglas fir	0.44	0.34
Grand fir	0.63	0.53
White fir	0.77	0.57
Douglas fir heartwood	0.86	0.81[a]
PINE WOOD:		
Ponderosa pine	1.99	1.86[a]
Sugar pine	1.98	2.07
White pine	2.54	2.26[a]
Southern yellow pine-AR	2.03	2.36[a]
Southern yellow pine-TX	3.05	3.32[a]

[a] Average values from duplicate runs

E. Comparison of VOC Emissions and Turpentine Losses

VOC emissions from the drying of southern pine wood have been attributed mainly to terpene compounds originally contained in the wood (5). This suggests that there might be a correlation between VOC emissions and turpentine losses occurring during lumber drying. To evaluate this possibility, turpentine content of the lumber before and after drying was measured for all the drying tests conducted. The turpentine losses measured are presented in Table 8.

Table 8 shows that the initial turpentine content of the lumbers tested ranged from 0.67 to 32.01 lb C/ODT, with white fir having the lowest and southern yellow pine from Texas the highest. The initial turpentine contents measured for lumbers of duplicate drying runs were close, except for a large difference in southern yellow pine from Texas. The turpentine analyses were conducted with shaving samples taken from about 10 percent of the boards charged to the kiln. The measured variability in turpentine content for southern yellow pine from Texas may be due to a non-uniform turpentine content in this lumber. It was observed that some boards of this lumber consisted of sapwood and heartwood in different proportions. Heartwood normally contains more turpentine than sapwood (8).

Turpentine losses ranged from 0.10 to 4.16 lb C/ODT. The ratio of the turpentine loss to initial turpentine content varied from 6 to 30 percent, indicating relatively low turpentine losses. Further discussion of turpentine losses during wood drying is included in Appendix G.

TABLE 8 TURPENTINE LOSSES OF LUMBERS IN DRYING

RUN NO.	WOOD SPECIES	TURP. - IN (lb C/ODT)	TURP. - OUT (lb C/ODT)	TURP. LOSS b C/ODT	TURP. LOSS %
NON-PINE WOOD					
15	WF	0.67	0.54	0.13	19
16	WF	0.77	0.61	0.16	21
4	DFS	0.99	0.87	0.12	12
10	CEDAR	1.06	0.94	0.12	12
11	CEDAR	1.30	1.20	0.10	7
14	CDF	1.19	1.04	0.15	13
18	HEMLOCK	1.16	1.03	0.13	11
9	REDWOOD	1.22	1.06	0.16	13
17	GF	1.34	1.05	0.29	22
1	DFH	1.91	1.54	0.37	19
2	DFH	1.89	1.46	0.43	23
3	DFH	1.78	1.39	0.39	22
PINE WOOD					
12	SYP-AR	1.83	1.28	0.55	30
13	SYP-AR	1.86	1.76	0.11	6
19	WP	2.77	2.42	0.35	13
5	PP	2.90	2.52	0.38	13
6	PP	3.46	2.59	0.87	25
20	SP	4.93	4.12	0.81	16
7	SYP-TX	32.01	27.85	4.16	13
8	SYP-TX	14.47	13.65	0.82	6
MIN		0.67	0.54	0.10	6
MAX		32.01	27.85	4.16	30

The VOC emissions measured with sampling system A and lumber turpentine losses were compared. As displayed in Figure 3, the data points are scattered and fall into two groups, pine and non-pine species. This would be expected because the VOC emissions from the drying of pine species are generally higher than those from non-pine species. Except one point for pine, the data for both groups are somewhat clustered. A correlation between the VOC emissions and turpentine losses is not apparent for either pine or non-pine species. Additional data are needed to determine if such a correlation may exist.

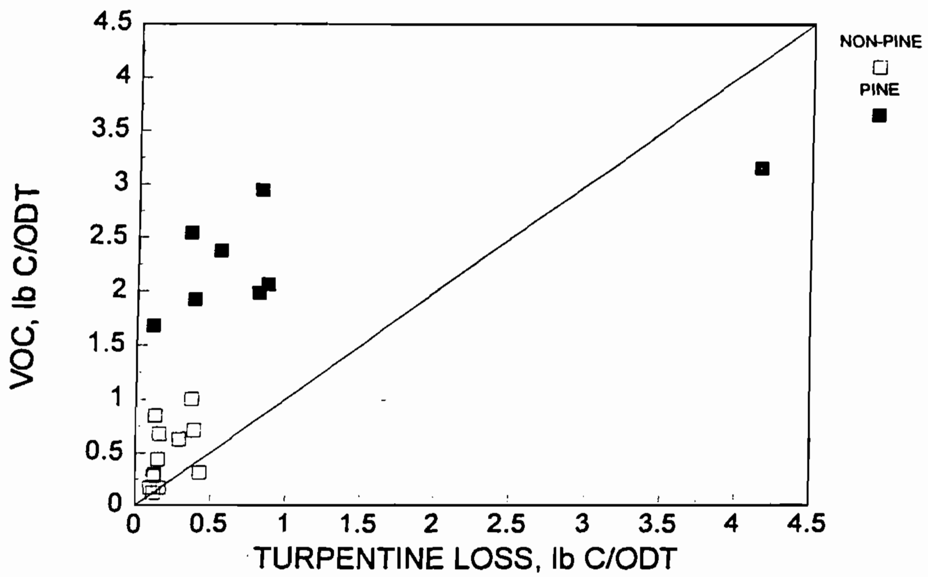

FIGURE 3 COMPARISON BETWEEN VOC EMISSIONS AND TURPENTINE LOSSES

Figure 3 shows that most data points are substantially above the diagonal line. This may indicate a relatively large contribution of non-terpene organic compounds to the VOC emissions. The significant contribution of non-terpene compounds to the VOC emissions from the drying of several non-pine species has been discussed in Section C. However, a similar observation for pine species was not expected. Ingram *et al.* reported that the VOC emissions from the drying of southern pine particles (passing 6-mm screen) and small blocks (1.9x1.9x7.6 cm) at 230°F were mostly due to terpene compounds (5). The total recoveries of terpene compounds from the emissions were low, 43 and 21 percent of the total losses from the wood particles and blocks, respectively. The low recoveries of terpene compounds were explained as possibly due to hydrolysis, oxygenation, or polymerization of monoterpenes such as α-pinene and ß-pinene. Hydrolysis and oxygenation may break down monoterpenes to carbon dioxide and water, while polymerization may form less volatile compounds that do not contribute to VOCs. Further research is required to verify the result of this study and that reported in the literature.

F. Characteristics of VOC Emissions

Cumulative VOC emission rates over the entire drying cycle were plotted to characterize the VOC emissions from lumber drying. The data measured by sampling system A were used because system A represented a typical Method 25A sampling train. Cumulative VOC emission rates are plotted in Figures 4 to 15. Hourly emission rates are plotted for the runs of Douglas fir, ponderosa pine, and southern yellow pine from Texas. Two-minute cumulative VOC emission rates are plotted for other species. The zigzag appearance of the VOC emission rate curves in these figures reflect the kiln vent-operating cycles, in which the vents opened intermittently during the drying cycle.

Figure 4 shows the cumulative VOC emission rate for redwood drying. The VOC emission profile for this species was in two stages. The VOC emissions increased at a decreasing rate until about 250 hours and then elevated constantly at a relatively high rate. This may be due to the increase of dry bulb temperature from 140 to 170°F after 250 hours.

Figure 5 shows the cumulative VOC emission rates for the duplicate tests of cedar. The VOC emissions increased roughly linearly within the initial ten hours and at a lower rate thereafter.

Figure 6 presents the cumulative VOC emission rates for the drying of Douglas fir heartwood and sapwood. The VOC emissions in Run 1 and Run 3 had a similar "first-order" pattern, increasing rapidly in the initial thirty hours and then proceeding at a lower rate. In Run 1, the VOC emissions leveled off after about thirty-five hours. Due to a different drying schedule used in Run 2, the VOC emissions did not start until about thirteen hours. Kiln vents were closed during this period. The VOC emissions increased nearly linearly during the period of thirteen to twenty-seven hours and proceeded at a low rate thereafter. The accumulation of VOC emissions during the drying of Douglas fir sapwood (Run 4) was roughly linear after the first three hours.

Figure 7 displays the cumulative VOC emission profile during the drying of hemlock lumber. The VOC emissions did not start until about eleven hours. The relationship between the VOC emissions and drying time appears to be linear.

Figure 8 shows the cumulative VOC emission rate measured during the drying of coastal Douglas fir. Except for the initial several hours, the VOC emissions increased at a roughly constant rate.

As shown in Figures 9 and 10, the cumulative VOC emission rates during the drying of grand fir and white fir had a similar trend. The emissions started after about eleven hours and increased at a decreasing rate until the end of the test.

The cumulative VOC emission rates for the drying of ponderosa pine, sugar pine, white pine, and southern yellow pines are presented in Figures 11 to 15. The VOC emission rate increased nearly linearly with time.

Generally, the cumulative VOC emission rates for the drying of all wood species tested, except redwood, increased monotonically with drying time. This result differed from that reported by Banerjee *et al.* (9) for the drying of wood chips. In their laboratory experiments, freshly chipped wood was dried in a 27-inch ceramic tube furnace with a constant air flow through the chips. The VOC concentration detected in the exhaust gas from the tube followed a "double-peak" profile. The first peak was significantly lower than the second. The investigators hypothesized that the VOC profile was expected, and suggested that a "cooling effect" resulted from water evaporation on the chip surface. The "cooling effect" inhibited temperature rise inside the chip and, in turn, retarded the VOC diffusion to the chip surface. As the surface turpentine was depleted, the VOC concentration in the emission decreased. After most of the water was removed, the chip interior temperature started to increase, promoting VOC diffusion. Consequently, a sharp increase in VOC concentration was observed. The total drying period of the experiment was about sixty minutes.

The VOC emission patterns for the small-scale kiln lumber drying and the laboratory chip drying may be explained as follows. Lumber boards have a lower surface to volume ratio than wood chips. The surface turpentine may be a small portion of the total turpentine. Therefore, VOC emission during lumber drying may be largely diffusion-controlled. The low turpentine losses measured (see Table 8) support this hypothesis. This single control mechanism may have induced the monotonic VOC emission pattern for lumber drying. In addition, the "cooling effect" observed in chip drying may be insignificant in lumber drying. In lumber drying, a drying schedule is followed to control the moisture removal rate from the wood to prevent wood structure damage. A relatively high moisture content in the kiln was normally maintained during the initial drying period to heat up the inside of the lumber board. By the time the kiln started to release gases, the temperature difference between board interior and surface was reduced greatly.

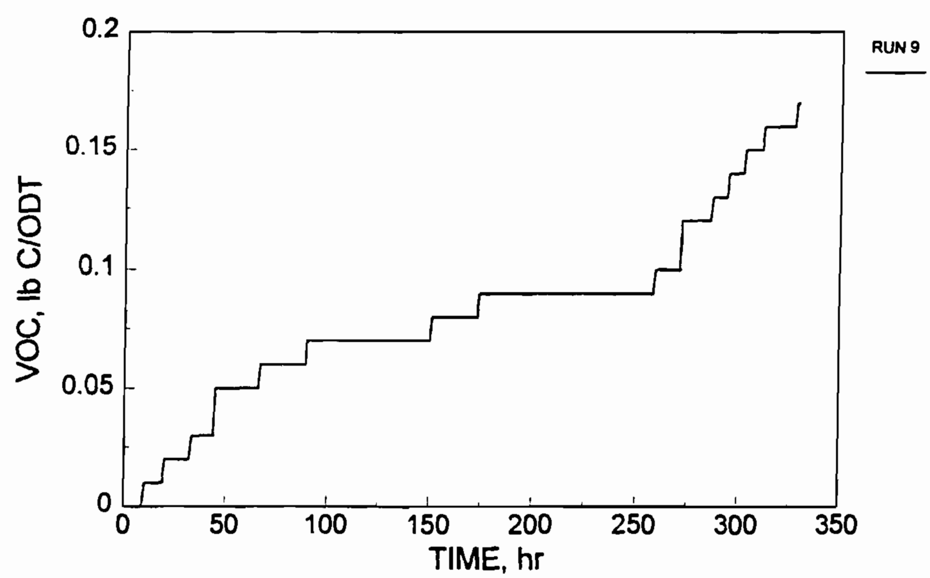

FIGURE 4 CUMULATIVE VOC EMISSION RATE DURING DRYING OF REDWOOD

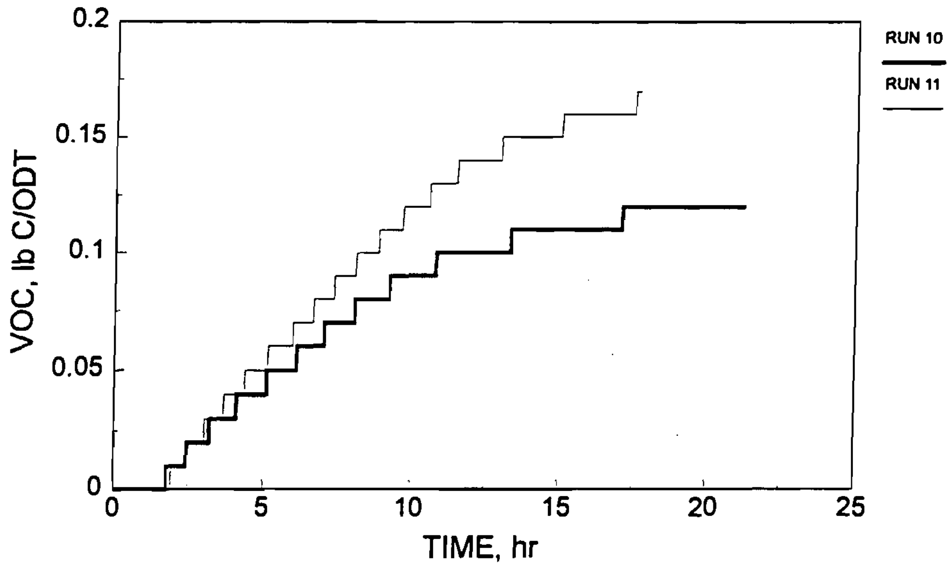

FIGURE 5 CUMULATIVE VOC EMISSION RATE DURING DRYING OF CEDAR

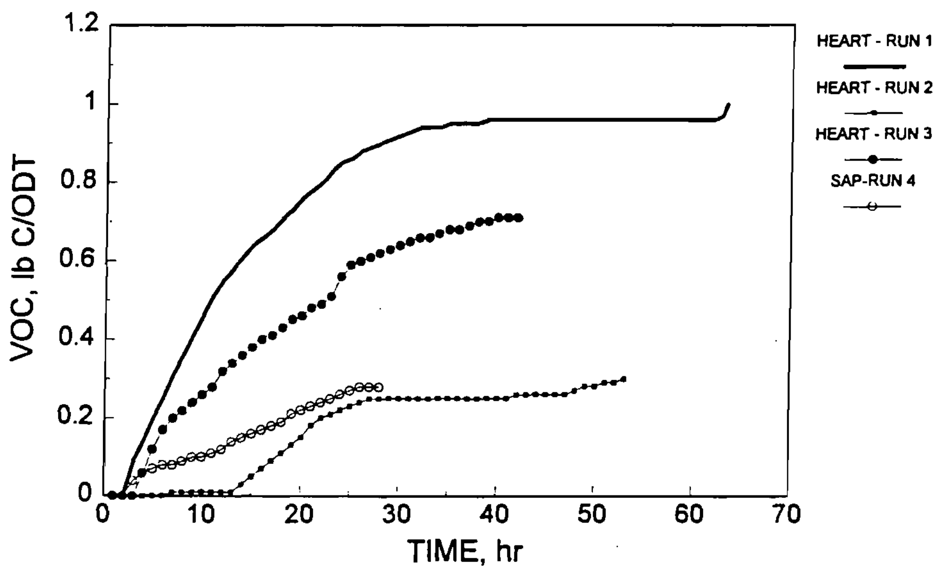

FIGURE 6 CUMULATIVE VOC EMISSION RATE DURING DRYING OF DOUGLAS FIR HEART AND SAP WOOD

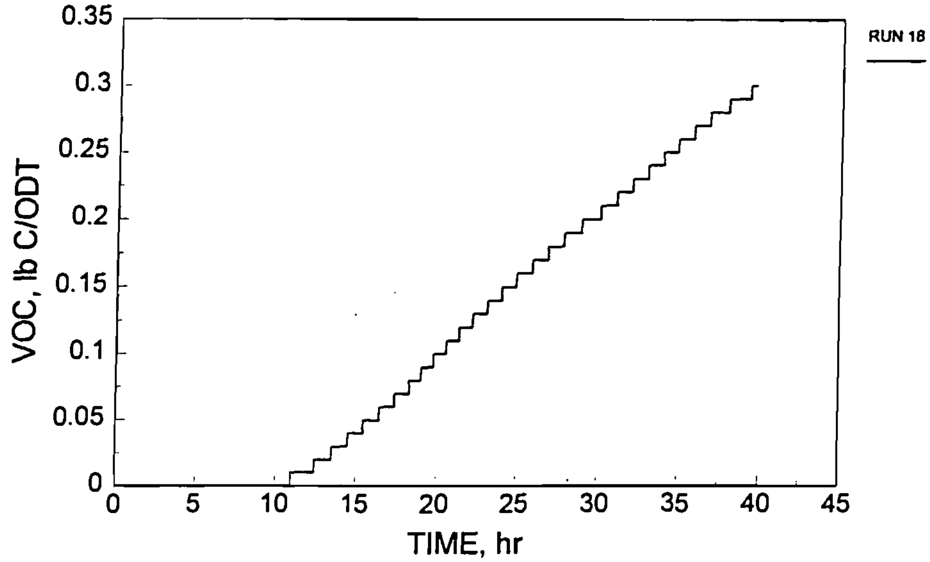

FIGURE 7 CUMULATIVE VOC EMISSION RATE DURING DRYING OF HEMLOCK

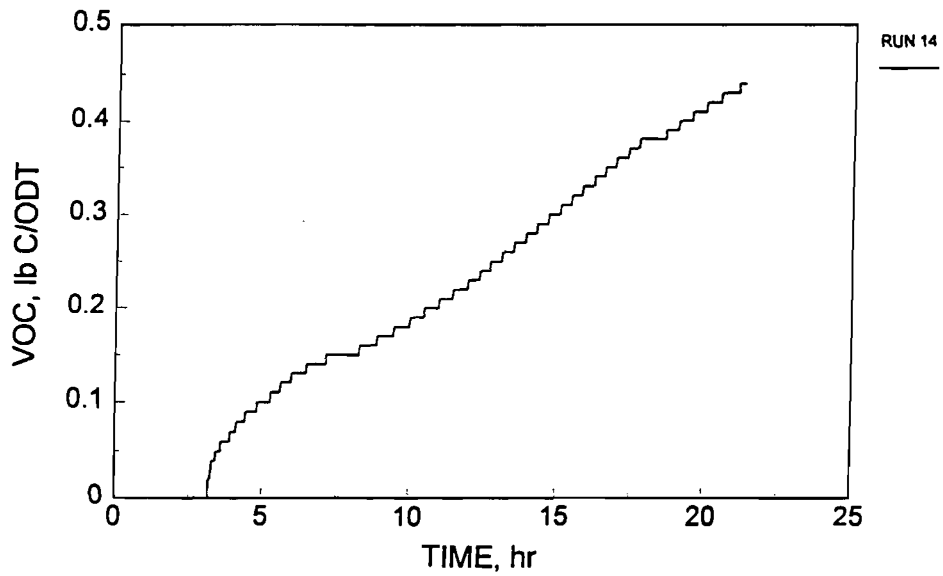

FIGURE 8 CUMULATIVE VOC EMISSION RATE DURING DRYING OF COASTAL DOUGLAS FIR

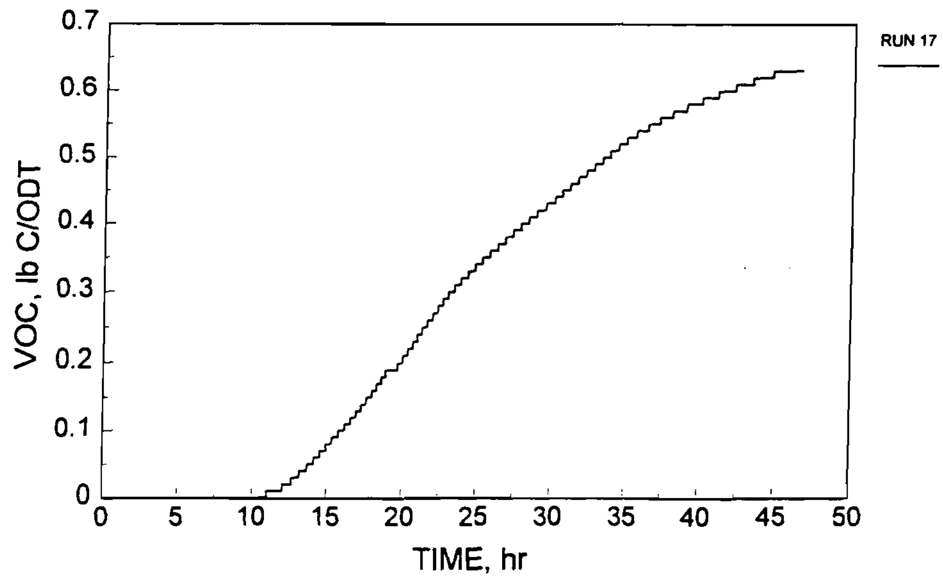

FIGURE 9 CUMULATIVE VOC EMISSION RATE DURING DRYING OF GRAND FIR

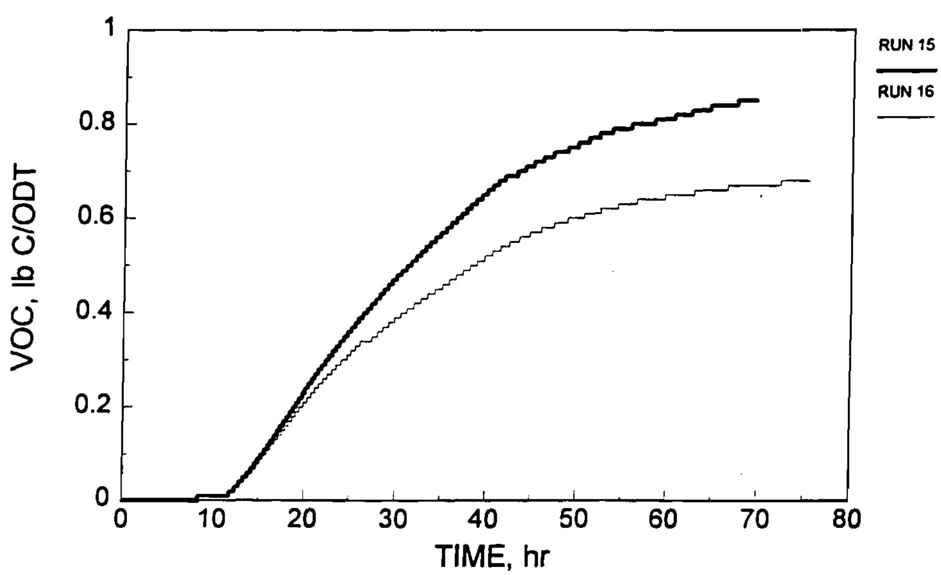

FIGURE 10 CUMULATIVE VOC EMISSION RATE DURING DRYING OF WHITE FIR

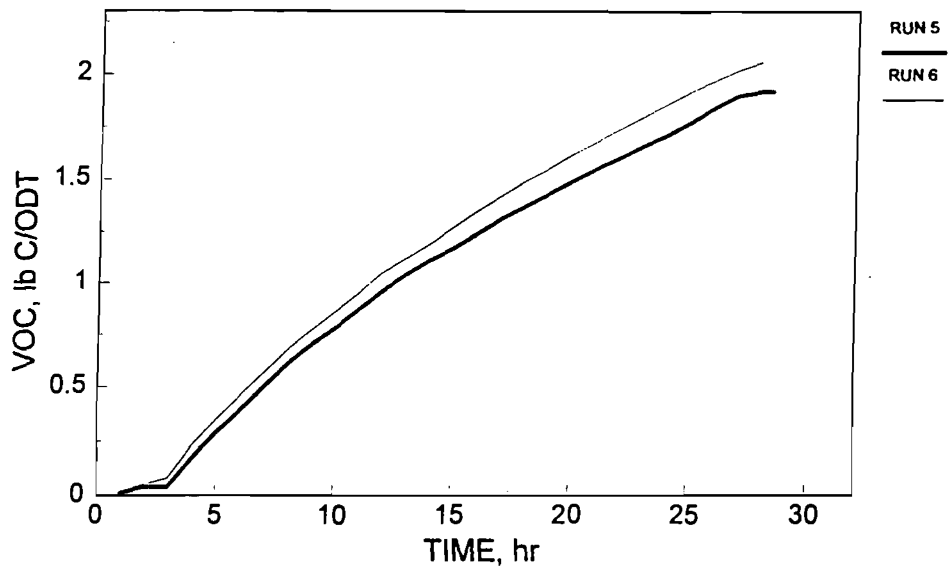

FIGURE 11 CUMULATIVE VOC EMISSION RATE DURING DRYING OF PONDEROSA PINE

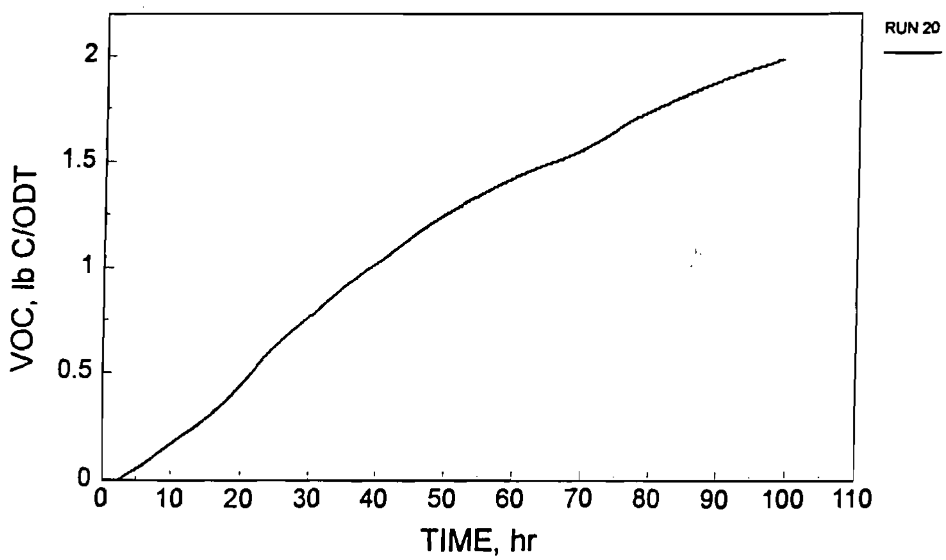

FIGURE 12 CUMULATIVE VOC EMISSION RATE DURING DRYING OF SUGAR PINE

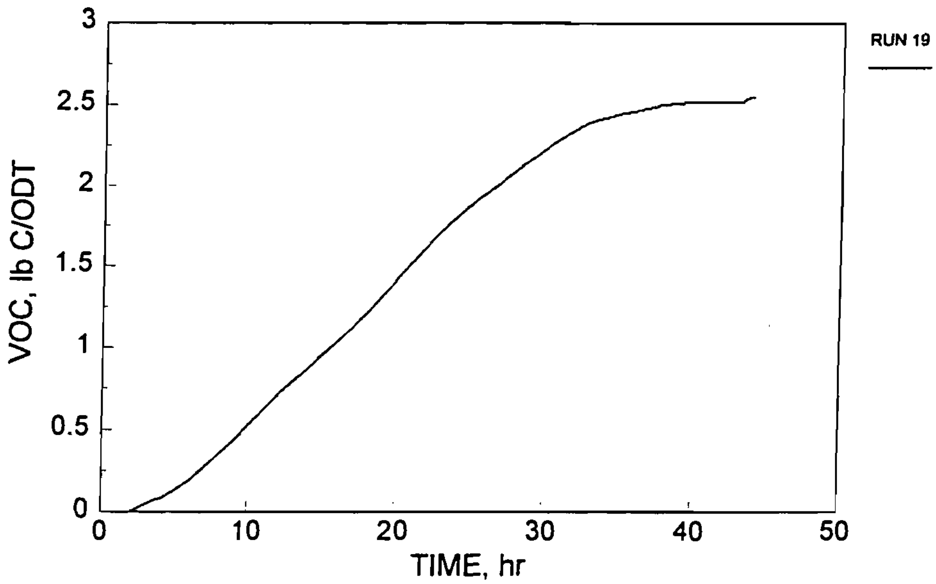

FIGURE 13 CUMULATIVE VOC EMISSION RATE DURING DRYING OF WHITE PINE

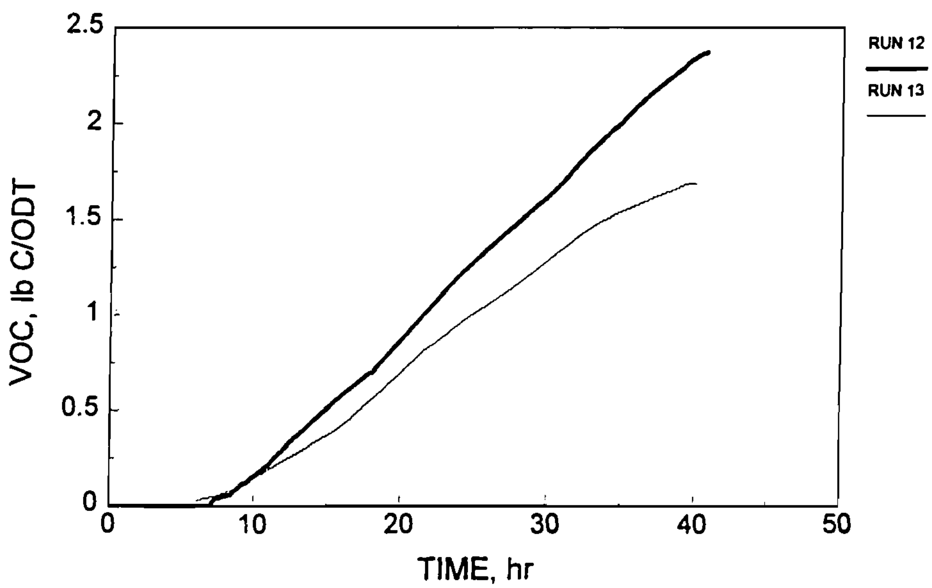

FIGURE 14 CUMULATIVE VOC EMISSION RATE DURING DRYING OF SOUTHERN YELLOW PINE FROM ARKANSAS

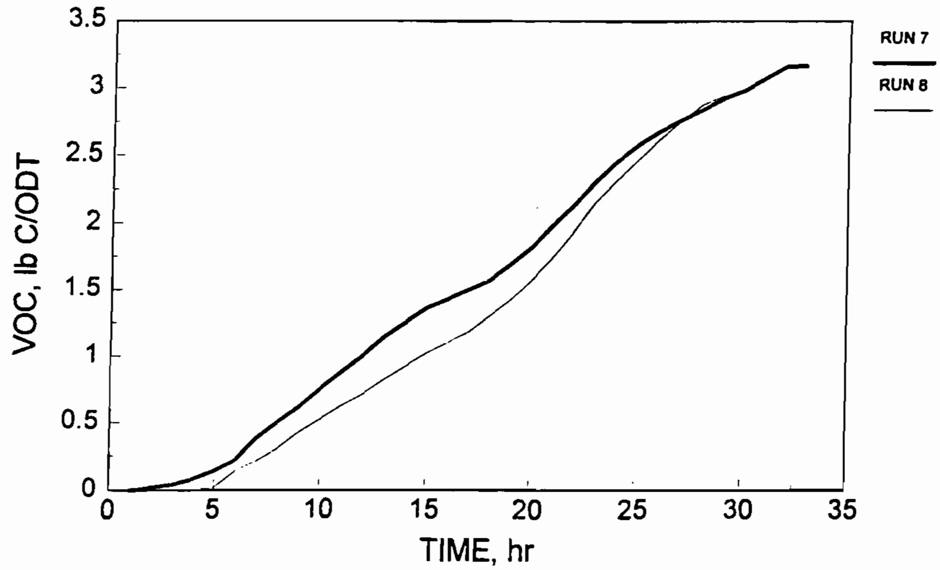

FIGURE 15 CUMULATIVE VOC EMISSION RATE DURING DRYING OF SOUTHERN YELLOW PINE FROM TEXAS

V SUMMARY AND CONCLUSIONS

A small-scale kiln was employed to study EPA Method 25A measurements of VOC emissions from lumber drying. Fresh-cut green lumbers of southern and western softwood species were tested using drying schedules similar to those for full-scale kilns. VOC concentrations in the kiln exhaust gas, and temperatures, flows, and relative humidities of the intake air and kiln exhaust were continuously monitored over the entire drying cycle. Fugitive VOC losses due to leakage from the kiln were quantified based on moisture mass balances. Parallel Method 25A VOC trains were used to evaluate the effect of sample line length and sample condensation on measured VOC emissions. Lumber turpentine losses during drying were measured.

The findings of this study were:

(1) The average air and moisture recovery rates measured during lumber drying tests were 83 and 84 percent, respectively, and indicated significant fugitive losses of air, moisture, and entrained VOC.

(2) The effect of cooling the sample gas to 65°F and removing the condensate on Method 25A VOC measurement varied with wood species. The reduction in VOC measurement was less than 35 percent for the drying of Douglas fir, redwood, and pine species.

However, the reduction ranged from 58 to 78 percent for hemlock, cedar, and white fir. The large reduction may have been due to the removal of acetic acid by condensation.

(3) The difference in the VOC measurement resulting from increasing the heated sampling line length from 25 to 100 feet was within ±11 percent for Douglas fir, grand fir, and ponderosa pine. Additional experiments may need to be conducted with other wood species to confirm the effect of sample line length.

(4) Drying schedules were duplicated for six species. Measured VOC emissions for the duplicate runs differed from the average value by less than 20 percent for each of the six species tested.

(5) VOC emission potentials measured in this study were from 0.12 to 0.81 lb C/MBF for non-pine species and from 1.86 to 3.32 lb C/MBF for pines. These values are consistent with available VOC emission measurements from full-scale lumber drying kilns.

(6) Turpentine losses from the lumber during drying were less than 30 percent for all the species tested. Comparison of the VOC emissions and turpentine losses measured in this study did not indicate a correlation between the two measurements. Further research is required to determine if such a correlation may exist.

VI LITERATURE REFERENCES

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Dr. Richard Folk (University of Idaho) and Mr. T. Orlin Galloway (Louisiana-Pacific Co.) operated the small-scale kiln during this study. Dr. John Emery (Potlatch Co.) and Dr. Richard Folk prepared the discussion in Appendix G. Their contribution to this study is greatly appreciated.

APPENDIX A

HISTORY OF LUMBER

HISTORY OF LUMBER

Information on the history of the lumbers tested in this study was collected from the lumber suppliers and is shown in Table A1. The size of the log small end was reported as the log diameter. Wet storage of logs corresponded to a wood yard storage with sprinkling of water. The lumbers were produced between July and September. The harvest season of each species can then be estimated from the log storage time. The lumber was wrapped with water-proof paper right after production to prevent VOC losses and was delivered to the experimental site at the University of Idaho within three days. The ambient temperature under which the lumber was stored was between 65 and 75°F.

TABLE A1 HISTORY OF LUMBER

WOOD SPECIES[a]	HARVEST LOCATION	TREE AGE, yr.	LOG DIAMETER, in.	LOG STORAGE METHOD	LOG STORAGE TIME mo.	LUMBER STORAGE, day
DFH	Idaho	50-60	10-12	dry	3	4
DFS	Idaho	50-60	10-12	dry	3	4
PP	Washington	25-60	8-12	dry	0.5	10
SYP-TX	Texas	20-30	16-26	dry	0.25	4
Redwood	California	25-50	6-16	dry	5	25
Cedar	Idaho	90-200	6-44	wet	2	5
SYP-AR	Arkansas	30-40	11	dry	0.75	15
CDF	Washington	40-50	20-24	dry	1	15
WF	California	60	30	wet	2	10
GF	Idaho	60-100	<10	wet	1	20
Hemlock	Oregon	30-40	8-10	dry	1.5	10
WP	Idaho	N/A[b]	N/A	pond	12	5
SP	California	50	34	wet	10	10

[a] DFH - Douglas fir heartwood
DFS - Douglas fir sapwood
PP - Ponderosa pine
SYP-TX - Southern yellow (loblolly) pine from Texas(chipped from peeler cores)
Cedar - Western Red Cedar
SYP-AR - Southern yellow (loblolly) pine from Arkansas
CDF - Coastal Douglas fir
WF - White fir
GF - Grand fir
WP - White pine
SP - Sugar pine

[b] not available.

APPENDIX B

DRYING SCHEDULES

DRYING SCHEDULES

Drying schedules (dry and wet bulb temperature profiles, fan speed and direction) used for operating the small-scale kiln were provided by the lumber suppliers and were typical of those used for full-scale kilns. The recorded dry and wet bulb temperature profiles are listed in Table B1. These profiles matched the set-up schedules. In Table B1, the dry and wet bulb temperatures are expressed as time at temperature or as linearized changes to temperature during the time interval. The fan direction was reversed every six hour during all drying runs. The fan speed was adjusted to maintain an air velocity of 550 to 630 ft/min. across the stack.

TABLE B1 DRYING SCHEDULES

RUN NO.	WOOD SPECIES	TIME (t), hr.	DRY BULB TEMP. °F	TIME (t), hr.	WET BULB TEMP. °F
1	DFH	0-63	180	0-63	140
2	DFH	0-1	160	0-6	170
		1-5	162	6-18	170-(25/12)(t-6)
		5-9	164	18-53	145
		9-13	166		
		13-16	168		
		16-19	170		
		19-22	172		
		22-53	175		
3	DFH	0-42	180	0-6	160
				6-18	160-(35/12)(t-6)
				18-42	125
4	DFS	0-3	70+(110/3)t	0-3	70+(90/3)t
		3-8	180	3-8	160
		8-19	180	8-19	150-(25/11)(t-8)
		19-28	180	19-28	125
5	PP	0-1	70+100t	0-1	70+85t
		1-6	170	1-6	155
		6-24	170	6-24	155-(25/18)(t-6)
		24-28	170	24-28	130-(10/4)(t-24)
6	PP	0-1	70+100t	0-1	70+85t
		1-6	170	1-6	155
		6-24	170	6-24	155-(25/18)(t-6)
		24-27	170	24-27	130-(10/4)(t-24)
7	SYP-TX	0-1	70	0-1	70
		1-6	70+(130/5)(t-1)	1-6	70+(110/5)(t-1)
		6-12	200	6-9	180
		12-18	200-(10/6)(t-12)	9-21	180-(30/12)(t-9)

RUN NO.	WOOD SPECIES	TIME (t), hr.	DRY BULB TEMP. °F	TIME (t), hr.	WET BULB TEMP. °F
		18-24	190+(10/6)(t-18)	21-31	150
		24-31	200		
8	SYP-TX	0-1	70+130t	0-1	70+110t
		1-8	200	1-8	180
		8-20	200	8-18	170-(30/10)(t-8)
		20-24	200+(20/4)(t-20)	18-28	150
		24-28	220		
9	Redwood	0-48	110	0-48	100
		48-96	115	48-96	105
		96-144	115+(25/96)(t-96	96-144	110
		144-192	115+(25/96)(t-96)	144-192	115
		192-228	140	192-228	115
		228-252	140	228-252	100
		252-262	140+(20/10)(t-252)	252-262	100+(10/10)(t-252)
		262-277	160	262-277	115
		277-283	160+(10/6)(t-277)	277-283	115+(10/24)(t-277)
		283-301	170	283-301	115+(10/24)(t-277)
10	Cedar	0-3	70+(90/3)t	0-3	70+(65/3)t
		3-20.6	160	3-20.6	135-(15/17.6)(t-3)
11	Cedar	0-3	70+(90/3)t	0-3	70+(65/3)t
		3-17.2	160	3-17.2	135-(10/14.2)(t-3)
12	SYP-AR	0-6	70+(130/6)t	0-6	70+(110/6)t
		6-18	200-(20/12)(t-6)	6-18	180-(30/12)(t-6)
		18-32	180+(25/14)(t-18)	18-32	150
		32-40	205	32-40	150
13	SYP-AR	0-6	70+(130/6)t	0-6	70+(110/6)t
		6-18	200-(20/12)(t-6)	6-18	180-(30/12)(t-6)
		18-32	180+(25/14)(t-18)	18-32	150
		32-41	205	32-41	150
14	CDF	0-3	70+(110/3)t	0-3	70+(90/3)t
		3-8	180	3-8	160
		8-16	180	8-16	160-(30/8)(t-8)
		16-21	180	16-21	130
15	WF	0-6	70+(120/6)t	0-6	70+(105/6)t
		6-12	190	6-12	175
		12-18	190-(10/6)(t-12)	12-22	175-(35/10)(t-12)
		18-24	180	22-30	140
		24-30	180+(10/6)(t-24)	30-32	140-(10/2)(t-32)
		30-69	190	32-69	130
16	WF	0-6	70+(120/6)t	0-6	70+(105/6)t
		6-12	190	6-12	175
		12-18	190-(10/6)(t-12)	12-22	175-(35/10)(t-12)

RUN NO.	WOOD SPECIES	TIME (t), hr.	DRY BULB TEMP. °F	TIME (t), hr.	WET BULB TEMP. °F
		18-24	180	22-30	140
		24-30	180+(10/6)(t-24)	30-32	140-(10/2)(t-32)
		30-76	190	32-76	130
17	GF	0-6	70+(120/6)t	0-6	70+(105/6)t
		6-14	190	6-11	175
		14-18	190-(5/4)(t-14)	11-24	175-(45/13)(t-11)
		18-30	185	24-45	130
		30-36	185+(15/12)(t-30)		
		36-45	200		
18	Hemlock	0-5	70+(120/5)t	0-5	70+(105/5)t
		5-13	190	5-11	175
		13-18	190-(10/5)(t-13)	11-27	175-(45/16)(t-11)
		18-29	180	27-30	130
		29-33	180+(20/4)(t-29)	30-37	135
		33-39	200	37-39	130
19	WP	0-4	70+(80/4)t	0-4	70+(60/4)t
		4-12	150+(10/8)(t-4)	4-12	130+(5/8)(t-4)
		12-24	160	12-24	135-(5/12)(t-12)
		24-28	160+(10/4)(t-24)	24-28	130
		28-43	170	28-43	130
20	SP	0-2	70+(45/2)t	0-2	70+(35/2)t
		2-22	115+(55/20)(t-2)	2-22	105+(35/20)(t-2)
		22-28	170	22-28	140
		28-48	170	28-48	140-(20/20)(t-28)
		48-66	170	48-66	120
		66-72	170+(10/6)(t-66)	66-72	120-(5/6)(t-66)
		72-98	180	72-98	115

APPENDIX C

CALCULATIONS

CALCULATIONS

The following describes the equations used to calculate the air and moisture balances and the cumulative VOC emission rates from the recorded 2-minute average data.

A. Calculations of Air and Moisture Recovery Rates

Data on temperature, moisture content, and velocity measured for the intake fresh air and the stack exhaust were used to calculate moisture and air balances. Moisture loss of the lumber was used in moisture balance calculations.

$$Air\ recovery(\%) = \frac{Air_{o,d}}{Air_{i,d}} \bullet 100 \qquad (c1)$$

$$Air_{o,d} = Air_{o,a} \bullet (1 - M_o / 100) \qquad (c2)$$

$$Air_{o,a} = \sum_{j=1}^{n} \frac{\Delta t \bullet (F_{o,j} + F_{o,j-1}) / 2 \bullet (\pi \bullet (0.5 \bullet D / 12)^2) \bullet 293}{[(T_{o,j} + T_{o,j-1}) / 2 - 32] \bullet 5 / 9 + 273} \qquad (c3)$$

$$Air_{i,d} = Air_{i,a} \bullet (1 - M_i / 100) \qquad (c4)$$

$$Air_{i,a} = \sum_{j=1}^{n} \frac{\Delta t \bullet (F_{i,j} + F_{i,j-1}) / 2 \bullet (\pi \bullet (0.5 \bullet D / 12)^2) \bullet 293}{[(T_{i,j} + T_{i,j-1}) / 2 - 32] \bullet 5 / 9 + 273} \qquad (c5)$$

$Air_{o,d}$, $Air_{i,d}$ = total dry volumes of kiln exhaust and intake air, dscf (dry standard cubic feet at 1 atm and 20°C).
$Air_{o,a}$, $Air_{i,a}$ = total actual volumes of kiln exhaust and intake air, ascf (actual standard cubic feet at 1 atm and 20°C).
j = jth data recording period.
n = total data points recorded over the entire drying cycle.
Δt = interval of data recording, 2 minutes.
F_i,F_o = gas velocities at the intake duct and kiln exhaust stack, fpm (feet per minute).
T_i,T_o = temperatures of intake air and kiln exhaust, °F.
M_i,M_o = average moisture contents of intake air and kiln exhaust, % by volume. The average moisture content was determined using the average temperature and average relative humidity measured in the drying cycle from a humidity chart (10).
D = diameters of intake air duct and kiln stack, 10 inches.

$$Moisture\ recovery(\%) = \frac{Moisture_o}{Moisture_i} \bullet 100 \qquad (c6)$$

$$Moisture_o = \frac{Air_{o,a} \bullet (M_o / 100) \bullet 18}{385} \qquad (c7)$$

$$Moisture_i = \frac{Air_{i,a} \bullet (M_i / 100) \bullet 18}{385} + W_L \qquad (c8)$$

$Moisture_o$ = total moisture content of the kiln exhaust, lb.
$Moisture_i$ = total moisture content of the intake air, lb.
W_L = moisture released from the lumber (lumber weight loss), lb.

B. Calculations of Cumulative VOC Emission Rates

The cumulative VOC emission rates were calculated using 2-minute averages of VOC concentration, gas flow and temperature, as well as the average moisture content measured over the entire drying cycle. The emissions were corrected for fugitive losses based on moisture recovery.

$$VOC_l = \sum_{j=1}^{n} \frac{\Delta t \bullet (F_{o,j} + F_{o,j-1}) / 2 \bullet (\pi \bullet [0.5 \bullet D / 12)^2] \bullet (C_j + C_{j-1}) / 2 \bullet 10^{-6} \bullet 293 \bullet 12}{385 \bullet [((T_{o,j} + T_{o,j-1}) / 2 - 32) \bullet 5/9 + 273] \bullet W_d} \qquad (c9)$$

For the sampling system with a condenser, the VOC emission rate calculated in Equation c9 needs to be corrected because the VOC concentration measured was on a dry basis in that case.

$$VOC_2 = (1 - M_o / 100) \bullet VOC_l \qquad (c10)$$

Correction for fugitive VOC losses:

$$VOC_W = \frac{VOC_l}{Moisture\ recovery(\%) / 100} \qquad (c11)$$

$$VOC_W = \frac{VOC_2}{Moisture\ recovery(\%) / 100} \qquad (c12)$$

Conversion of VOC emission rate from (lb C/ODT) to (lb C/MBF):

$$VOC_V = \frac{VOC_W \bullet W_d \bullet 1000}{N \bullet h \bullet (w/12) \bullet l} \qquad (c13)$$

VOC_1 = cumulative VOC emission rate, lb C/ODT (pound carbon per ton of dry wood).
VOC_2 = cumulative VOC emission rate corrected for moisture removal when a condenser is used in the sampling system, lb C/ODT.

VOC_W = cumulative VOC emission rate corrected for fugitive losses using moisture recovery rates, based on lumber dry weight, lb C/ODT.

VOC_V = cumulative VOC emission rate corrected for fugitive losses using moisture recovery rates, based on lumber volume, lb C/MBF (pound carbon per thousand board feet). One board foot of lumber is defined to be the volume of one square foot by one inch.

C = VOC concentration, ppm C.

W_d = dry weight of lumber, ODT.

N = board number of the load to the kiln.

h = board thickness, inch.

w = board width, inch.

l = board length, ft.

RUN NO.	MONTH/ DAY	FID SPAN	STAND. GAS, ppm propane	SYSTEM A RESPONSE ppm propane	SYSTEM A DRIFT % span	SYSTEM B RESPONSE ppm propane	SYSTEM B DRIFT % span
		1000	183.0	184.0	-0.1	182.0	-0.1
		1000	856.0	858.0	0.2	858.0	0.2
3	7/19	1000	0.0	0.0	0.0	0.0	0.0
		1000	93.8	90.0	-0.4	91.8	-0.2
		1000	856.0	830.7	-2.5	814.9	-4.1
	7/20	1000	0.0	-0.5	-0.1	0.0	0.0
		1000	93.8	89.6	-0.4	76.4	-1.7
		1000	183.0	181.2	-0.2	196.6	-1.4
3	7/20	1000	856.0	841.1	-1.5	902.8	4.7
		10000	0.0	18.4	0.2	-44.2	-0.4
		10000	93.8	107.2	0.1	34.5	-0.6
		10000	183.0	205.0	0.2	146.6	-0.3
		10000	856.0	898.5	0.4	855.8	-0.0
		10000	1430.0	1489.1	0.6	1430.1	0.0
		100	0.0	-2.6	-2.6	3.9	3.9
		100	93.8	95.0	1.2	89.1	-4.7
4	8/08	1000	0.0	0.5	0.1	-0.5	-0.1
		1000	93.8	94.4	0.1	94.6	0.1
		1000	856.0	860.3	0.4	864.6	0.9
		1000	300.7	300.3	-0.0	300.3	-0.0
		1000	501.7	505.7	0.4	506.4	0.5
		1000	901.9	900.5	-0.1	900.2	-0.2
		10000	1430.0	1440.5	0.1	1390.0	-0.4
	8/09	1000	0.0	0.4	0.0	0.4	0.0
		1000	93.8	89.9	-0.4	88.3	-0.6
		1000	856.0	826.0	-3.0	852.7	-0.3
		1000	300.7	287.5	-1.3	294.8	-0.6
		1000	501.7	485.6	-1.6	509.2	0.8
		1000	901.9	858.5	-4.3	876.4	-2.6
		10000	1430.0	1387.1	-0.4	1375.9	-0.5
		100	0.0	-1.4	-1.4	0.4	0.4
		100	93.8	89.6	-4.2	92.2	-1.6
5	8/10	1000	0.0	-	-	-	-
		1000	93.8	94.6	0.1	95.2	0.1
		1000	856.0	867.7	1.2	866.3	1.0
		1000	300.7	300.8	0.0	299.6	-0.1
		10000	501.7	524.5	0.2	519.5	0.2
		1000	901.9	901.9	0.0	900.9	-0.1
		10000	1430.0	1456.0	0.3	1458.5	0.3
	8/11	1000	901.9	933.0	3.1	919.3	1.7

RUN NO.	MONTH/ DAY	FID SPAN	STAND. GAS, ppm propane	SYSTEM A RESPONSE ppm propane	SYSTEM A DRIFT % span	SYSTEM B RESPONSE ppm propane	SYSTEM B DRIFT % span
		1000	901.9	903.0	0.1	912.0	1.0
6	8/12	1000	0.0	0.2	0.0	1.4	0.1
		1000	901.9	897.6	-0.4	917.2	1.5
7	8/13	1000	0.0	0.2	0.0	1.4	0.1
		1000	901.9	897.6	-0.4	917.0	1.5
	8/14	1000	0.0	0.1	0.0	0.3	0.0
		1000	901.9	887.1	-1.5	926.7	2.5
8	8/14	1000	0.0	0.1	0.0	0.3	0.0
		1000	901.9	900.8	-0.1	900.3	-0.2
	8/15	1000	0.0	-0.3	-0.0	0.1	0.0
		1000	901.9	898.1	-0.4	898.3	-0.4
9	8/15	100	0.0	0.1	0.1	0.2	0.2
		100	93.8	93.7	-0.1	93.6	-0.2
	8/15	1000	93.8	94.2	0.0	95.6	0.2
		1000	901.9	885.5	-1.6	911.4	1.0
	8/16	100	0.0	0.0	0.0	-0.8	-0.8
		100	93.8	94.2	0.4	93.6	-0.2
	8/17	100	0.0	0.1	0.1	-0.1	-0.1
		100	93.8	96.0	2.2	94.8	1.0
	8/18	100	0.0	0.0	0.0	0.1	0.1
		100	93.8	95.8	2.0	93.6	-0.2
	8/19	100	0.0	0.1	0.1	-0.1	-0.1
		100	93.8	95.9	2.1	95.3	1.5
	8/20	100	0.0	0.3	0.3	0.0	0.0
		100	93.8	93.6	-0.2	93.3	-0.5
	8/21	100	0.0	0.1	0.1	0.1	0.1
		100	93.8	92.5	-1.3	93.7	-0.1
	8/22	100	0.0	-0.1	-0.1	0.1	0.1
		100	93.8	95.8	2.0	93.6	-0.2
	8/23	100	0.0	-0.2	-0.2	0.4	0.4
		100	93.8	92.4	-1.4	93.5	-0.3
	8/24	100	0.0	-0.3	-0.3	-0.6	-0.6
		100	93.8	94.6	0.8	94.0	0.2
	8/25	100	0.0	-0.3	-0.3	-0.1	-0.1
		100	93.8	94.1	0.3	93.0	-0.8
	8/28	100	0.0	0.5	0.5	0.6	0.6
		100	93.8	87.8	-6.0	91.7	-2.1
10	8/28	100	0.0	0.6	0.6	0.6	0.6
		100	93.8	98.1	4.3	94.6	0.8
	8/29	100	0.0	0.6	0.6	0.6	0.6

RUN NO.	MONTH/ DAY	FID SPAN	STAND. GAS, ppm propane	SYSTEM A RESPONSE ppm propane	SYSTEM A DRIFT % span	SYSTEM B RESPONSE ppm propane	SYSTEM B DRIFT % span
		100	93.8	98.1	4.3	94.6	0.8
11	8/30	100	0.0	0.5	0.5	0.3	0.3
		100	93.8	93.6	-0.2	93.4	-0.4
12	8/30	1000	0.0	2.7	0.3	-3.8	-0.4
		1000	93.8	96.0	0.2	90.4	-0.3
		1000	901.9	899.2	-0.3	899.2	-0.3
	9/01	1000	0.0	2.3	0.2	-3.5	-0.4
		1000	93.8	97.1	0.3	88.8	-0.5
		1000	901.9	916.0	1.4	891.5	-1.0
13	9/06	1000	0.0	0.8	0.1	0.5	0.1
		1000	93.8	95.2	0.1	94.3	0.1
		1000	901.9	900.7	-0.1	902.8	0.1
14	9/08	1000	0.0	0.7	0.1	0.8	0.1
		1000	93.8	92.6	-0.1	94.5	0.1
		1000	901.9	881.8	-2.0	897.6	-0.4
15	9/09	1000	0.0	1.2	0.1	0.5	0.1
		1000	93.8	94.0	0.0	93.5	-0.0
		1000	901.9	899.2	-0.3	892.9	-0.9
	9/11	100	0.0	-1.1	-1.1	0.8	0.8
		100	93.8	93.6	-0.2	94.6	0.8
		1000	0.0	0.9	0.1	2.7	0.3
		1000	93.8	94.5	0.1	96.0	0.2
		1000	901.9	893.1	-0.9	894.5	-0.7
	9/12	100	0.0	-1.2	-1.2	0.1	0.1
		100	93.8	94.7	0.9	92.9	-0.9
16	9/12	1000	93.8	93.8	0.0	93.8	0.0
		1000	901.9	895.1	-0.7	904.1	0.2
	9/13	100	0.0	0.2	0.2	0.1	0.1
		100	93.8	95.0	1.2	95.0	1.2
	9/14	100	0.0	0.2	0.2	0.1	0.1
		100	93.8	94.0	0.2	94.3	0.5
	9/15	100	0.0	0.5	0.5	0.2	0.2
		100	93.8	90.3	-3.5	90.0	-3.8
17	9/16	100	0.0	-0.1	-0.1	0.1	0.1
		100	93.8	93.8	0.0	93.8	0.0
		1000	0.0	1.9	0.2	1.3	0.1
		1000	93.8	96.8	0.3	96.0	0.2
18	9/17	100	0.0	0.0	0.0	-0.1	-0.1
		100	93.8	97.8	4.0	95.6	1.8
	9/18	100	0.0	0.0	0.0	2.1	2.1

RUN NO.	MONTH/ DAY	FID SPAN	STAND. GAS, ppm propane	SYSTEM A RESPONSE ppm propane	SYSTEM A DRIFT % span	SYSTEM B RESPONSE ppm propane	SYSTEM B DRIFT % span
		100	93.8	97.8	4.0	94.1	0.3
	9/19	100	0.0	0.2	0.2	-0.2	-0.2
		100	93.8	94.1	0.3	87.5	-6.3
19	9/19	1000	93.8	94.7	0.1	83.5	-1.0
		1000	901.9	894.3	-0.8	830.9	-7.1
	9/20	1000	0.0	0.0	0.0	8.9	0.9
		1000	93.8	97.8	0.4	101.9	0.8
		1000	901.9	929.0	2.7	883.0	-1.9
20	9/21	1000	0.0	0.5	0.1	0.0	0.0
		1000	93.8	94.2	0.0	93.8	0.0
		1000	901.9	901.0	-0.1	901.6	-0.0
	9/22	1000	0.0	0.5	0.1	-2.4	-0.2
		1000	93.8	92.1	-0.2	90.3	-0.4
		1000	901.9	882.5	-1.9	896.0	-0.6
	9/23	1000	0.0	1.0	0.1	3.4	0.3
		1000	93.8	91.8	-0.2	92.4	-0.1
		1000	901.9	878.9	-2.3	886.0	-1.6
	9/24	1000	0.0	0.6	0.1	-0.3	-0.0
		1000	93.8	91.5	-0.2	91.6	-0.2
		1000	901.9	874.5	-2.7	880.6	-2.1
	9/25	1000	0.0	0.0	0.0	-2.4	-0.2
		1000	93.8	90.1	-0.4	88.5	-0.5
		1000	901.9	860.7	-4.1	870.7	-3.1

APPENDIX E

STATISTICAL ANALYSES OF AIR AND MOISTURE BALANCE DATA

STATISTICAL ANALYSES OF AIR AND MOISTURE BALANCE DATA

Statistical analyses based on t-distribution were conducted to test the significance of the difference between the average air and moisture recovery rates and the gas leakage during the drying tests. The procedures suggested by Wapole and Myers (11) were used for the analyses.

The averages and standard deviations of the air and moisture recovery data shown in Table 4 are presented in Table E1.

TABLE E1 STATISTICAL ANALYSES OF AIR AND MOISTURE RECOVERY DATA

	SAMPLE SIZE	AVERAGE	STD[a]
Air	$n_1 = 20$	$x_1 = 83$	$s_1 = 10$
Moisture	$n_2 = 20$	$x_2 = 84$	$s_2 = 16$

[a] STD - standard deviation.

A. Difference between Average Air Recovery and Average Moisture Recovery

Let m_1 and m_2 represent the population means of the air and moisture recoveries, respectively. The test on the significance of the difference between the average air and moisture recovery rates is shown in the following steps.

1. H_0: $m_1 - m_2 = 0$.
2. H_1: $m_1 - m_2 > 0$ or < 0.
3. Choose 95% confidence level, a=0.05.
4. Critical region (v = 40-2 =38): t > 1.960 or t < -1.960, where,

$$s_p = \left[\frac{s_1^2 \bullet (n_1-1) + s_2^2 \bullet (n_2-1)}{n_1+n_2-2}\right]^{0.5} \qquad t = \frac{x_1 - x_2}{s_p \bullet (1/n_1 + 1/n_2)^{0.5}}$$

5. Calculations:

$s_p = 13.494$, $t = -0.152$

6. Decision: do not reject H_0 because the calculated t is not in the critical regions.

The statistical test suggested that the difference between the average air and moisture recovery rates for the twenty drying runs was not significant.

B. Significance of Air and Moisture Leakage

The significance of gas leakage from the kiln was determined by testing to determine if the average air and moisture recovery rates were equal to 100 percent. The procedures are presented as follows.

For air recovery:

1. H_0: $m_1 = 100$.
2. H_1: $m_1 < 100$.
3. Choose 95% confidence level, a=0.05.
4. Critical region (v = 20-1 =19): t < -1.729, where,

$$t = \frac{x_1 - 100}{s_1 / n_1^{0.5}}$$

5. Calculation:

$$t = (83-100)/(10/20^{0.5}) = -7.781$$

6. Decision: reject H_0.

For moisture recovery:

1. H_0: $m_2 = 100$.
2. H_1: $m_2 < 100$.
3. Choose 95% confidence level, a=0.05.
4. Critical region (v = 20-1 =19): t < -1.729, where,

$$t = \frac{x_2 - 100}{s_2 / n_2^{0.5}}$$

5. Calculation:

$$t = (84-100)/(16/20^{0.5}) = -4.370$$

6. Decision: reject H_0.

The statistical tests suggest that air and moisture leakage from the kiln were significant.

APPENDIX D

QA/QC PERFORMANCE CHECK OF VOC SAMPLING SYSTEMS

QA/QC PERFORMANCE CHECK OF VOC SAMPLING SYSTEMS

For QA/QC (quality assurance and quality control) purposes, the two VOC sampling systems used were checked for zero and calibration drift at the beginning of a run, during the run on a daily basis, and at the end of the run. The data are summarized in Table D1. Zero air, EPA-certified propane gases at several concentrations, and a manufacturer-certified α-pinene vapor (expressed as 183 ppm propane in the table) were used for the QA/QC checks. The concentrations of standard gases and FID responses in Table D1 are expressed as ppm propane.

TABLE D1 QA/QC PERFORMANCE DATA OF VOC SAMPLING SYSTEMS

				SYSTEM A		SYSTEM B	
RUN NO.	MONTH/ DAY	FID SPAN	STAND. GAS, ppm propane	RESPONSE ppm propane	DRIFT % span	RESPONSE ppm propane	DRIFT % span
1	7/13	100	0.0	0.1	0.1	0.0	0.0
		100	93.8	93.9	0.1	93.7	-0.1
		1000	856.0	884.0	2.8	843.0	-1.3
	7/14	100	0.0	0.0	0.0	0.0	0.0
		100	93.8	93.8	0.0	93.8	0.0
		1000	183.0	172.0	-1.1	173.0	-1.0
	7/15	1000	0.0	-0.9	-0.1	0.0	0.0
		1000	93.8	83.6	-1.0	77.6	-1.6
		1000	183.0	179.3	-0.4	175.0	-0.8
	7/16	1000	0.0	0.6	0.1	0.0	0.0
		1000	93.8	85.3	-0.9	78.8	-1.5
		1000	183.0	179.3	-0.4	167.1	-1.6
		1000	856.0	804.0	-5.2	820.0	-3.6
2	7/16	1000	0.0	0.5	0.1	0.0	0.0
		1000	93.8	93.8	0.0	93.8	0.0
		1000	183.0	178.7	-0.5	178.7	-0.5
		1000	856.0	857.0	0.1	857.0	0.1
	7/18	1000	0.0	-1.1	-0.1	0.7	0.1
		1000	93.8	83.5	-1.0	89.6	-0.4
		1000	183.0	180.2	-0.3	182.0	-0.1
		1000	856.0	836.4	-2.0	855.5	-0.1
		10000	0.0	-19.6	-0.2	-10.6	-0.1
		10000	93.8	84.5	-0.1	89.6	-0.0
		10000	856.0	849.8	-0.1	871.4	0.2
		10000	1430.0	1407.6	-0.2	1458.0	0.3
		1000	0.0	0.0	0.0	0.0	0.0
		1000	93.8	92.6	-0.1	91.2	-0.3

APPENDIX F

IMPACTS OF DRYING SCHEDULE ON MOISTURE AND AIR LEAKAGE

IMPACTS OF DRYING SCHEDULE ON MOISTURE AND AIR LEAKAGE

Fugitive VOC losses can result from gas leakage through the door edge and wall cracks of the small-scale kiln. Mass balances of moisture and air entering and exiting the kiln were calculated to quantify these losses. The possible impacts of the drying schedule on moisture and air leakage are described in this appendix.

The total recovery rates of moisture and air can be expressed using the gas leak rates during vent operating cycles. One vent operating cycle is defined as a close-period and the following open-period. The expressions of air and moisture recovery rates over the entire drying cycle are shown in Equations f1 and f2. To simplify the discussion of moisture balance, moisture recovery is expressed considering only the moisture release from the lumber because the amount of moisture carried by the intake fresh air is relatively small.

$$r_{H_2O} = 100 - \frac{\sum_{i=1}^{n} [M_{c,i} \bullet t_{c,i} \bullet R_{c,i} + ((1 - R_{c,i}) \bullet M_{c,i} \bullet t_{c,i} + M_{o,i} \bullet t_{o,i}) \bullet R_{o,i}]}{\sum_{i=1}^{n} (M_{c,i} \bullet t_{c,i} + M_{o,i} \bullet t_{o,i})} \bullet 100 \qquad (f1)$$

r_{H2O} = total moisture recovery rate, % by weight.
i = ith vent operating cycle.
n = number of vent operating cycles.
$M_{c,i}$,$M_{o,i}$ = moisture release rates from the lumber during the close-period and open-period in the ith cycle, lb H_2O/hr.
$R_{c,i}$,$R_{o,i}$ = gas leak rates during the close-period and open-period in the ith cycle, %/100 (volume fraction).
$t_{c,i}$,$t_{o,i}$ = duration of the close-period and open-period during the ith cycle, hour.

$$r_{air} = 100 - \frac{\sum_{i=1}^{n} [V_i \bullet R_{c,i} + ((1 - R_{c,i}) \bullet V_i + F_i \bullet t_{o,i}) \bullet R_{o,i}]}{V + \sum_{i=1}^{n} (F_i \bullet t_{o,i})} \bullet 100 \qquad (f2)$$

r_{air} = total air recovery rate, % by volume.
V = air volume in the kiln at the start of the drying cycle, corrected to standard conditions, dscf (dry standard cubic feet at 20°C and 1 atm).

V_i = air volume in the kiln at the beginning of the ith vent operating cycle, dscf.
F_i = intake fresh air flow into the kiln during the open-period of the ith cycle, dscf/hr.

In Equations f1 and f2, the total moisture recovery rate in a drying run is expressed on a weight basis, and the air recovery rate on a volume basis. The gas leak rate is defined as a fraction of the total volume of the gas stream (moisture + air) in each vent operating cycle. By assuming a good mixing of moisture and air, the leakage of moisture and air in volume fraction is equal to the gas leak rate for the same vent operating cycle. Moisture leakage in weight fraction is equal to that in volume fraction.

Equations f1 and f2 show that the total moisture and air recovery rates during a drying run are dependent on the operating conditions during individual vent operating cycles. The operating conditions include temperature, gas moisture content, and fan speed. In each vent operating cycle, the gas leak rate is expected to be higher in the close-period than in the open-period, due to higher kiln pressure. The gas leak rate may also be affected by moisture content in the gas stream. Gas pressure serves as the driving force for gas leak, and moisture content may affect the pore size of the leak pathways. A high gas moisture content may promote swelling of the kiln wall material and the door edge seals to increase the resistance to gas leak and reduce the leakage.

Two simple drying schedules are used to describe the possible effects of the drying schedule on moisture and air balances. It is assumed that the dry bulb temperature is set constant throughout the drying cycle, while the wet bulb temperature is reduced gradually. Dry bulb temperature is set at the same level for both schedules, but initial wet bulb temperatures are different. The possible effects of the drying schedule on the total moisture and air recovery rates during a drying run are illustrated in Table F1.

TABLE F1 EFFECTS OF DRYING SCHEDULE ON MOISTURE AND AIR BALANCES

DS[a]	DB	WB	MOISTURE BALANCE					AIR BALANCE				
			$t_{c,i}$	$t_{o,i}$	$R_{c,i}$	$R_{o,i}$	r_{H2O}	$t_{c,i}$	$t_{o,i}$	$R_{c,i}$	$R_{o,i}$	r_{air}
1	T_d	high	x		high		low		x		low	high
2	T_d	low		x		low	high		x		high	low

[a] DS - drying schedule.
DB - dry bulb temperature, set at T_d °F.
WB - wet bulb temperature, decrease gradually with time.
x - indication of the period that dominates the total moisture or air recovery rate.

The higher wet bulb temperature in Schedule 1 would result in a higher moisture content in the kiln gas. To maintain the high moisture level, the close-period would be longer than the open-period during each vent operating cycle. This is due to the reduced moisture release rate from the lumber because of the higher moisture level in the kiln gas. From Equation f1, the total moisture recovery rate in the drying run would be more dependent on the gas leak rates in the close-periods. Therefore, a higher moisture leakage or a lower recovery rate is expected because the gas leak rates during the close-periods are higher than during the open-periods.

Air leakage during the open-period may be dominant during each vent operating cycle, due to the relatively small kiln volume compared to the total intake air flow through the kiln in each vent operating cycle. From Equation f2, the total air recovery rate over the entire drying cycle is more related to the gas leak rate during the open-period. Therefore, a lower leakage or a higher recovery rate of air, compared to moisture, would be expected, due to the lower gas leak rate during the open-period.

During the drying under Schedule 2, the lower set-up wet bulb temperature limits the moisture content in the air in the kiln. The close-period would be shorter than the open-period during each vent operating cycle. From Equation f1, the total moisture recovery rate in the entire drying cycle would be more related to gas leak during the open-periods. Therefore, a lower moisture leakage or a higher recovery rate would be observed, due to the lower gas leak rate during the open-period.

Similar to that for Schedule 1, the total air recovery rate for Schedule 2 may be mainly related to the leakage during the open-periods. However, due to the low moisture content of the kiln gas in Schedule 2, the gas leak rate during the open-period may increase with decreasing moisture content in the gas stream. The moisture content profile of the gas stream over the entire drying cycle is determined by the moisture removal rate of the lumber. A high moisture removal rate could result from a low moisture content controlled in the kiln. Most of the moisture in the wood may be removed within the initial period of the drying cycle. The moisture content in the gas stream during the rest of the drying cycle may be low, which may result in an increased gas-leak rate. Therefore, a higher air leakage or a lower recovery rate over the entire drying cycle could be observed.

The above discussion suggests that the total moisture and air recovery rates are related to the drying schedule used. There could be a significant difference between the total moisture and air recovery rates for a specific drying run. Also, these two measurements can vary for different drying runs.

APPENDIX G

FACTORS AFFECTING VOC EMISSIONS FROM WOOD DRYING

FACTORS AFFECTING VOC EMISSIONS FROM WOOD DRYING

The small-scale kiln tests conducted in this study indicated that VOC emission potentials from lumber drying varied with wood species and drying conditions. To better interpret the VOC emissions data gathered from either field surveys or pilot studies, it is imperative to understand the factors that may affect the VOC emissions from lumber drying. The following discussions are based on information presented in several references (8,12,13), and also represent industrial experience.

A. Basics on Wood Drying and Sources of VOCs

The moisture content of wood in living trees can range from about 30 to over 100 percent on a dry basis. To assure proper performance and facilitate further processing, lumber is normally dried before it is sold. The drying of lumber serves both to reduce shipping weight and to prevent shrinkage and warpage after it is put into service. Most lumber is either kiln-dried or air-dried to 15 to 19 percent moisture on a dry basis.

Drying schedules (dry and wet bulb temperature profiles, fan speed) for various species and dimensions of lumber have been developed to accommodate the porosity of the wood and the rate of moisture diffusion through the cell walls. To avoid splitting and warping caused by stresses produced when the surfaces dry too fast, it is important not to dry the wood too quickly. If the surface layers dry significantly faster than the inner core, the surface tries to shrink, but is restrained by the core; and this produces splits and other defects in the wood. Lumber from some species, such as redwood and white oak, requires very long drying schedules to accommodate their dense cellular structure.

When wood is dried, it emits both water and naturally-occurring volatile organic compounds (VOCs). At low drying temperatures, virtually all of the VOCs originate from extractives in the wood. Extractives are chemicals that are not structural components of wood and can be removed by extraction with cold water and organic solvents that do not break down the structure of the wood. Extractives are mostly present in the cell lumen or in specialized ducts and canals (e.g. resin canals, gum ducts). If drying temperatures are sufficiently high, some of the structural components of the wood can be degraded, causing the release of additional VOCs such as acetic acid, formaldehyde, and methanol. Little information is available concerning the temperatures at which this degradation begins, but it is known that the degree of degradation depends on the wood species being dried and on the drying time.

B. Basic Wood Structures

In order to understand wood drying and VOC emissions, it is necessary to appreciate the basic structure of wood. All woods are comprised of long, narrow cells, which are joined together by a natural cement called lignin. The structure can be likened to straws cemented together. The walls of these cells consist of layers of cellulose and hemicellulose molecules, arranged in helices and also cemented together by lignin. Numerous tiny openings, called pits, interconnect the cells; but many of these openings become clogged with organic materials as the tree ages. Most of the cells in wood are arranged axially (along the "grain"), but some are aligned radially (along the "rays") from the center of the tree to the outside (across the "grain").

The materials comprising the cell wall, especially the cellulosics, have a very strong affinity for water. A considerable amount of energy is needed to remove water from wood when the moisture content is below the "fiber saturation point" (the moisture content at which all water is held in the cell walls by hydrogen bonds). This point ranges from 25 to 30 percent moisture content on a dry basis for most woods. Water in excess of the fiber saturation point is termed "free-water," and the energy needed to remove it is simply the amount of energy needed to evaporate water. The "bound" water requires additional energy to break the hydrogen bonds.

C. Wood Species and Characteristics in Structure

VOC emissions from wood drying are related to species. Tree species are classified as softwoods (gymnosperms) and hardwoods (angiosperms). All softwood tree species, except gingko, have either needle-shaped leaves (e.g. pines) or scale-shaped leaves (e.g. cedars), and most are evergreen (a notable exception is larch, which loses its needles in the winter). Softwoods are normally divided into two main groups, resinous and non-resinous. Resinous species include pines, spruces, larches, and Douglas fir, while non-resinous species include "whitewoods" (true firs and hemlocks), redwood, and cedars.

Resinous species characteristically contain specialized structures called resin canals, which are, literally, small tubes that extend both axially and radially in the tree. These canals are filled with "oleoresin," which is produced by specialized parenchyma cells that line the canals. This oleoresin is comprised of a mixture of organic chemicals, primarily terpenoid compounds (molecules built from 5-carbon isoprene units). Significant amounts of fats and fatty acids are also present in resinous softwoods. The terpenoid compounds, especially mono-terpenes such as α-pinene, are the primary VOCs that are emitted from resinous softwoods. The fatty substances can contribute to the VOC emission, depending on the drying temperature. Smaller quantities of other potential VOCs, many peculiar to individual tree species, are also present (waxes, phenolics, gums, proteins, sterols, etc.). Hundreds of such compounds have been identified, but they are present in very small amounts. There is a great deal of variability, both within and between species, relative to the quantities of potential VOCs.

Non-resinous softwoods do not normally have resin canals, and most do not contain appreciable quantities of terpene compounds. However, like all woods, they contain fatty substances. As with the resinous softwoods, other substances are also present. Typically, the potential VOC content of non-resinous woods is much lower than that of resinous woods.

Hardwoods are broad-leaf trees, most of which are deciduous in temperate climates (a noticeable exception is live oak). They do not have resin canals, but some have "gum" canals, which are filled with polysaccharides and other organic compounds. Hardwoods also contain fatty substances and other organic compounds, many unique to the individual wood species. A much lower VOC emission potential from hardwood drying would be expected, compared to that from softwood drying.

D. VOC Emissions

During wood drying, some of the potential VOC chemicals are "evaporated" along with the water. However, unlike water, the VOCs are extremely hard, if not impossible, to remove entirely. This is because they have lower vapor pressures (or higher boiling points) than water and because they literally become "trapped" in the cellular structure of the wood due to their relatively larger molecular size. Because of their small size and polar nature, water molecules can penetrate the cell walls of wood and can diffuse directly through the cell walls to the surface of the lumber. VOCs, on the other hand, can not penetrate the cell wall, and must migrate through the labyrinth of "openings" in the resin canals, severed cells, or pits between the cells. These physical limitations greatly retard the diffusion of VOCs from the interior to the surface of the lumber. Therefore, only a faction of VOCs are normally removed during drying, and they emanate from wood long after it is put into service, and sometimes, as in the case of cedars, for hundreds of years.

Another important factor influencing VOC emissions from wood drying is the wood's internal structure. As trees get older, heartwood is formed. Heartwood forms after a certain period of time, the length of which depends upon genetics and environmental factors. Heartwood formation involves the death of ray cells and the deposition or formation of additional extractive chemicals. In most species, plugging of many of the pits between cells also occurs. With most species the wood darkens in color as these changes take place (true firs and hemlocks are notable exceptions). Typically, heartwood is harder to dry due to the plugging of pits, and it often contains more VOCs.

VOC emissions from wood drying are also dependent on dimensions of the wood. Small pieces of wood dry faster and lose more VOCs under the same drying conditions than large pieces. This is due both to increased surface area and to the exposure of more natural openings, such as resin canals and severed cells. The openings facilitate more rapid migration of the water and VOCs from the wood. To demonstrate the impact of wood dimension on VOC emissions from wood drying, the results on turpentine losses during wood drying, reported in the literature (5) and generated in this study, were compared and are presented in Table G1. The reported results, generated with laboratory-scale experiments, indicated that the turpentine losses during drying of wood particles and small wood blocks were more than 90 percent. However, the turpentine losses during drying of lumbers, as found in this study, were less than 30 percent. The higher turpentine losses observed in the reported studies may be also due to the higher drying temperatures used.

The quantities of potential VOCs produced by trees, as well as the porosity of the wood, are affected by genetics and environmental factors. Therefore, there is a great variability in VOC content between trees of the same species. It is important to realize that VOCs are continually emitted from trees and wood, so the amount of VOCs emitted from wood drying is affected by the time the wood is stored prior to processing and by the temperature and humidity during storage.

TABLE G1 IMPACT OF WOOD DIMENSION ON VOC EMISSIONS

WOOD SPECIES	DRYING TEMP.,°F	WOOD DIMENSION	TURPENTINE LOSS, %
SYP[a]	230	0.24"[b]	97
SYP[a]	230	0.75"x0.75"x3"	93
SOFTWOODS[c]	<220	2"x4"x8' and 1"x4"x8'	<30

[a] SYP -southern yellow pine, results generated with laboratory-scale experiments (5).
[b] wood ground to pass through a 0.24 inch screen.
[c] results generated with a small-scale kiln in this study.

In summary, factors that may affect the VOC emissions from lumber drying include (1) wood species, (2) tree age, log harvest season and location, log size, log storage method and time, (3) lumber storage time, (4) ambient conditions (temperature, humidity , and wind speed) under which logs and lumber are stored, (5) heartwood content of lumber, and (6) drying schedule.

FLORIDA'S EXPEDITED PERMITTING PROCESS

CHAMPION INTERNATIONAL CORPORATION
MCDAVID SAWMILL FACILITY
ESCAMBIA COUNTY
PRE-APPLICATION MEETING
May 6, 1999, 8:30 a.m.

AGENDA

I. Welcome - Mary Helen Blakeslee, OTTED

II. Self-Introductions

III. Discussion of Process

IV. Company Presentation

V. Discussion of Impacts/Permits/Approval

- Transportation
- Environmental
- Comp. Plan
- Local Approvals
- Others

VI. Breakout Sessions (if needed)

VII. Summary and Checklist of Pre-Application Meeting Outcomes

INDIV. CONTACT FOR AIR: JOE KAHN

- Designation of Lead Agency for Project Coordination
- Designation of Primary Contact within each Agency — DEP: DICK FANCHER DIST. PENSACOLA
- List of Agencies with Jurisdiction
- Comprehensive List of Permits Required
- Special Studies or Reviews
- Areas of Significant Concern
- Review of Time Schedules
- Review of Information Requests
- Other

VIII. Schedule of next meeting(s) (if needed)

IX. Wrap-up and Adjournment

Champion International Corporation
McDavid Sawmill Facility
Expedited Permitting Pre-application Meeting
Champion International Mill
Cantonment, Escambia County
May 6, 1999
8:30 a.m.

SIGN IN SHEET

NAME / ORGANIZATION	ADDRESS	PHONE / FAX	E-MAIL
Andrea S. Cornelius Enterprise FL	325 John Knox Rd. STE 201 Atrium Bldg.	850/487-2157 850/922-9595	acornelius@enterprise.state.fl.us
Richard Morgan NWFWMD	RT 1 BOX 3100 Havana, FL 32333	850-539-5999 850-539-4380	
Roger Miller	325 John Knox Rd	850/922-8751	RMILLER@ENTERPRISE STATE.FL.US.
CLIFF STREET	FDEP 160 GOV TCR	850 595 8300	
Phil FERGUSON	ONE CHAMPION PLAZA STAMFORD, CT	203-358-7232	FERGUP@CHAMPINT.COM
Andy Allen	FDEP 160 Governmental Center	595-8364	
TERRY KASSABAUM	Champion P.O.Box 200 Camden, TX 75941	409-398-7252 P 409-398-7226	Kassat@champint.com
ROBERT MERRITT ESC. CO. HEALTH DEPT.	1190 W. LEONARD ST. SUITE 2, PENS., FL 32506	850-595-6722 850-595-6707	ROBERT_MERRITT@DOH.STATE.FL.US
DAVE STEVENS Project Director - Champion	117 Pace Parkway P.O. Box 875 Cantonment, Fla. 32514	850-937-4849	stevedb@champint.com
Dave Burlison	FDOT Chipley Fla	850.638-0250 Ext 275	
Charles Odom	F.D.o.T. Chipley Fla.	850-638-0250 EXT. 241	
HEIDI ALLEN	FDOT - P'COLA MAINT. PERMITTING OFFICE	850.484.5055	
John Willem	WFRPL	850-595-8910	

Champion International Corporation
McDavid Sawmill Facility
Expedited Permitting Pre-application Meeting
Champion International Mill
Cantonment, Escambia County
May 6, 1999
8:30 a.m.

SIGN IN SHEET

NAME / ORGANIZATION	ADDRESS	PHONE / FAX	E-MAIL
Mike Frey Pensacola Area C of C	117 W. Garden St	(850) 438-4081 (850) 438-6369 (FAX)	MFrey@pensacolachamber.com
Jerry Campbell	P.O. Box 607 Chipley, Fl	850-638-0250	
Bill Schaal	160 Governmental Center, Pens.	(850) 595-8300 FAX (850) 595-8417	Schaal_W@PW51.DEP.STATE.FL.US
Jack McNulty	DEP 160 Gov Center Pns	"	mcnulty_j@pw51.dep.state.fl.us
Shellie Johnson	1190 W. Leonard St.	850·595·3470	Michelle_Johnson@escambia.co.fl.us
Scott Hale	" "	5956727	Health Dept.
JOSEPH KAHN FDEP/DARM/NSR	MS #5505 2600 BLAIR STONE RD. TALLAHASSEE FL 32399-2400	850-921-9519	KAHN_J@DEP.STATE.FL.US
LARRY O'DONNELL FDEP	160 GOVERNMENTAL CENTER PENSACOLA 32501	850-595-8300 850-595-8311 (FAX)	ODONNELL_L@DEP.STATE.FL.US
DON JOHNSON	117 PACE PARKWAY CANTONMENT FL. 32533	850-937-4816	don_johnson@Weldwood.com
Mary Helen Blakeslee	OTTED Suite 2001 The Capitol Talla Fl 32399-0001	850-922-8743 F 487-3014	blakesm@eog.state.fl.us
Linda J. Gampher	Jobs + Benefits 3670-A North "L" ST Pensacola, Fl 32505	850-595-5200 F 850 595-5249	Linda_Gampher@jb.dles.state.fl.com
Cat Evans	OTTED 2001 The Capitol Tall FL 32399-0001	850-487-2974 487-3014	evanscp@eog.state.fl.us

Champion
Champion International Corporation

RECEIVED

APR 23 1999

BUREAU OF
AIR REGULATION

State of Florida
Department of Environmental Protection
Division of Air Resources Management
Mail Station #5505
2600 Blair Stone Rd.
Tallahassee, FL 32399-2400

Attn: Joseph Kahn

Dear Joe:

Per your request at our meeting on April 14th, attached is:

1. PSD application (March 1998) and permit for Champion, Camden, TX for the addition of one steam heated kiln.
2. PSD application for I. P. in Riegelwood, NC (September 1996) for the addition of one steam heated kiln.

If you need additional information or have questions, please call me at (409) 398-7252 or Tom Davis (ECT) at 352-332-0444.

Thanks

Terry Kassabaum

Terry Kassabaum
Environmental Health and Safety Manager
Champion International Corporation

cc: Tom Davis - ECT - without attachment 1
Dave Stevens - without attachment 1
John Barone - without attachment 1

RECEIVED

APR 23 1999

BUREAU OF
AIR REGULATION

MAY 6, 1999 CHAMPION EXPEDITED PERMITTING

30 DAYS - STATEMENT OF PERMITABILITY BY AGENCY
FROM TODAY

DUE JUNE 7TH

MEETING - 10 ASPECTS OF PROJECT, PERMITS, SPECIAL APPROVALS

N. OF PINE BARREN, S. OF MCDAVID

250 - 300 TRUCKS, 150-175 AUTOS

18-60 HRS IN KILN

MOIST. 50% → ~~19%~~ 17%

20% OF FINISHED PROD → RAIL, 80% BY TRUCK

FILING ROOM - DISCHARGE INTO BASEMENT FROM COLLECTION

SYSTEM - SAW SHARPENING

METAL DETECTED - CUT OUT - HOGGED

100 HRS/WK - STARTUP, ULTIMATELY 3 SHIFTS 6 DAYS/WK.

KILNS - 24 HRS 50-51 WKS/YR., GAS FIRED

MID-SOUTH ENGINEERING - ARK. DESIGN, CIVIL

ECT - TOM DAVIS - AIR

KILN CONDENSATE - STEAM BLOWDOWN

180 DAYS FOR TITLE V.

PSD WILL INCL. PERIODIC MONITORING

→ FINAL AGENCY ACTION BY STATE AGENCY FOR CERTIFIED EXPEDITED PERMITTING PROJECTS - GOES IMMEDIATELY TO SUMMARY HEARING.

→ CHECK STATUTORY LANGUAGE RE: NOTICE OF INTENT & FINAL NOTICE OF RIGHTS

BEST AVAILABLE COPY

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Office Of Air Quality

Prevention Of Significant Deterioration Permit Application

NEW LUMBER DRYING KILN

Submitted by

Champion

Champion International Corporation

Camden Mill
Farm Road 62
Camden, Texas

Prepared by

WESTON
MANAGERS DESIGNERS/CONSULTANTS

5599 San Felipe, Suite 700
Houston, Texas

March 1998

Barry R. McBee, *Chairman*
R. B. "Ralph" Marquez, *Commissioner*
John M. Baker, *Commissioner*
Jeffrey A. Saitas, *Executive Director*

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

Protecting Texas by Reducing and Preventing Pollution

November 12, 1998

Mr. Jason Haynes
Environmental Manager
Champion International Corporation
P.O. Box 200
Camden, Texas 75934

Re: Permit Amendment
Permit Nos. 5628 and PSD-TX-905
Lumber Kiln No. 3
Camden, Polk County
Account ID No. PF-0003-N

Dear Mr. Haynes:

This is in response to your permit application, Form PI-1, received March 30, 1998 concerning the proposed amendment to Permit Nos. 5628 and PSD-TX-905. We understand that you propose to add an additional kiln and increase the drying capacity for lumber. Also, this will acknowledge that your application for the above-referenced permit is technically complete as of November 7, 1998.

Pursuant to 30 TAC Sections 116.116(b) and §116.160, Permit No. 5628 is hereby amended and PSD-TX-905 is modified. This information will be incorporated into the existing permit files. Enclosed are revised special conditions pages and a maximum allowable emission rates table for the combined permits. Please replace those conditions and/or the maximum allowable emission rates table currently attached to your permit with those enclosed.

This amendment will be automatically void upon the occurrence of any of the following, as per §116.115(b)(1):

1. Failure to begin construction of the changes authorized by this amendment within 18 months from the date of this authorization.

2. Discontinuance of construction of the changes authorized by this amendment for a period of 18 consecutive months or more.

3. Not completing the changes authorized by this amendment within a reasonable time.

Re: Permit Nos. 5628 and PSD-TX-905

Your cooperation in this matter is appreciated. If you have any questions, please call Mr. Kevin Ellis of our Office of Air Quality, New Source Review Permits Division at (512) 239-1599 or write him at Texas Natural Resource Conservation Commission, Office of Air Quality, New Source Review Permits Division (MC-162), P.O. Box 13087, Austin, Texas 78711-3087.

Sincerely,

Lynn R. Weber for

Jeffrey A. Saitas, P.E.
Executive Director

JS/KE/ss

Enclosures

cc: Ms. Jole Luehrs, Chief, New Source Review Section (6PD-R), Environmental Protection Agency, Region 6, Dallas
Mr. Marion Everhart, Air Program Manager, Beaumont

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION

AIR QUALITY PERMIT - GENERAL CONDITIONS

AND PERTINENT RULES EFFECTIVE FOR PERMITS ISSUED
OR AMENDED ON OR AFTER AUGUST 16, 1994

TNRCC

1. The **facilities** covered by this permit shall be constructed and operated as specified in the application for the permit. All representations regarding construction plans and operation procedures contained in the permit application shall be conditions upon which the permit is issued. Variations from these representations shall be unlawful unless the permit holder first makes application to the Executive Director of the Texas Natural Resource Conservation Commission (TNRCC or Commission) to amend this permit in that regard and such amendment is approved. (Title 30 Texas Administrative Code Section 116.116 (30 TAC 116.116))

2. **Voiding of Permit.** A permit or permit amendment is automatically void if the holder fails to begin construction within 18 months of date of issuance, discontinues construction for more than 18 consecutive months prior to completion, or fails to complete construction within a reasonable time. Upon request, the Executive Director may grant a onetime 18-month extension of the date to begin construction. (30 TAC 116.115(b)(2)(A))

3. **Construction Progress.** Start of construction, construction interruptions exceeding 45 days, and completion of construction shall be reported to the appropriate Regional Office of the TNRCC not later than 15 working days after occurrence of the event. (30 TAC 116.115(b)(2)(B))

4. **Start-up Notification.** The appropriate Air Program Regional Office of the Commission shall be notified prior to the commencement of operations of the facilities authorized by the permit in such a manner that a representative of the TNRCC may be present. Phased construction, which may involve a series of units commencing operations at different times, shall provide separate notification for the commencement of operations for each unit. (30 TAC 116.115(b)(2)(c))

5. **Sampling Requirements.** If sampling of stacks or process vents is required, the permit holder shall contact the TNRCC Office of Air Quality prior to sampling to obtain the proper data forms and procedures. All sampling and testing procedures must be approved by the Executive Director and coordinated with the regional representatives of the Commission. The permit holder is also responsible for providing sampling facilities and conducting the sampling operations or contracting with an independent sampling consultant. (30 TAC 116.115(b)(2)(D))

6. **Equivalency of Methods.** It shall be the responsibility of the permit holder to demonstrate or otherwise justify the equivalency of emission control methods, sampling or other emission testing methods, and monitoring methods proposed as alternatives to methods indicated in the conditions of the permit. Alternative methods shall be applied for in writing and must be reviewed and approved by the Executive Director prior to their use in fulfilling any requirements of the permit. (30 TAC 116.115(b)(2)(E))

7. **Recordkeeping.** A copy of the permit along with information and data sufficient to demonstrate compliance with the permit shall be maintained in a file at the plant site and made available at the request of personnel from the TNRCC or any air pollution control program having jurisdiction. For facilities that normally operate unattended, this information shall be maintained at the nearest staffed location within Texas specified by the permit holder in the permit application. This information shall include, but is not limited to, production records and operating hours. Additional recordkeeping requirements may be specified in special conditions attached to the permit. Information in the file shall be retained for at least two years following the date that the information or data is obtained. (30 TAC 116.115(b)(2)(F))

8. **Maximum allowable emission rates.** The total emissions of air contaminants from any of the sources of emissions listed in the table entitled "Emission Sources - Maximum Allowable Emission Rates" shall not exceed the values stated on the table attached to the permit. (30 TAC 116.115(b)(2)(G))

9. **Maintenance of Emission Control.** The facilities covered by the permit shall not be operated unless all air pollution emission capture and abatement equipment is maintained in good working order and operating properly during normal facility operations. Notification for upsets and maintenance shall be made in accordance with §101.6 and §101.7 of this title (relating to Notification Requirements for Major Upset and Notification Requirements for Maintenance). (30 TAC 116.115(b)(2)(H))

10. **Compliance with Rules.** Acceptance of a permit by a permit applicant constitutes an acknowledgement and agreement that the holder will comply with all rules, regulations, and orders of the Commission issued in conformity with the Texas Clean Air Act and the conditions precedent to the granting of the permit. If more than one state or federal rule or regulation or permit condition are applicable, then the most stringent limit or condition shall govern and be the standard by which compliance shall be demonstrated. Acceptance includes consent to the entrance of Commission employees and agents into the permitted premises at reasonable times to investigate conditions relating to the emission or concentration of air contaminants, including compliance with the permit. (30 TAC 116.115(b)(2)(I)) .

11. This **permit may not be transferred**, assigned, or conveyed by the holder except as provided by rule. (30 TAC 116.110(d)).

12. There may be **additional special conditions** attached to a permit upon issuance or modification of the permit. Such conditions in a permit may be more restrictive than the requirements of Title 30 of the Texas Administrative Code. (30 TAC 116.115(c))

13. **Emissions** from this facility must not cause or contribute to a condition of "air pollution" as defined in Section 382.003(3) of the Texas Clean Air Act (TCAA) or violate Section 382.085 of the TCAA. If the Executive Director determines that such a condition or violation occurs, the holder shall implement additional abatement measures as necessary to control or prevent the condition or violation.

SPECIAL CONDITIONS

Permit Nos. 5628 and PSD-TX-905

EMISSION STANDARDS AND FUEL SPECIFICATIONS

1. Emissions from the facilities under this permit are based on and compliance with emission limits shall be demonstrated through the following operational limits (Table 1):

TABLE 1

Unit	Short-Term	Long-Term	notes
Presses	51,729 ft^2/hr (on a finished 3/8-in basis)	419,689,000 ft^2/year (on a finished 3/8-in basis)	
Dryers (1-4)	66,400 ft^2/hr (on a finished 3/8-in basis)	441,344,000 ft^2/yr (on a finished 3/8-in basis)	
Boiler No. 1	35,000 lbs/hour	421,632,000 lbs/year (combined steam to the kilns - calculated)	
Boiler No. 2	35,000 lbs/hour		
Boiler No. 3	160,000 lbs/hour		
Kiln No. 1	11,054,000 board·ft/month (combined lumber production)	129,800,000 board·ft/year (combined lumber production)	SC12=3.0
Kiln No. 2			
Kiln No. 3	6,454,000 board·ft/month	64,896,000 board·ft/year	SC3=2.5

2. Fuel for the Boilers (Emission Point Nos. [EPNs] S-01, S-02, and S-03) shall be limited to wood fuel (wood fuel comprising bark, saw dust, and other pieces of wood from plant operation). Use of any other fuel will require prior written approval from the Executive Director of the Texas Natural Resource Conservation Commission (TNRCC).

3. Disposal of ash shall be accomplished in a manner that shall prevent the ash from becoming airborne.

OPACITY AND VISIBLE EMISSION LIMITATIONS

4. Opacity of emissions from the Veneer Dryer Stacks (EPNs S-04, S-05, S-06, and S-07), the Boiler Stacks (EPNs S-01, S-02, and S-03), and all plant cyclones shall not exceed 20 percent averaged over a six-minute period, except for those periods as provided in 30 TAC Sections 101.6 and 101.7 and 30 TAC Section 111.111 (a)(1)(E).

5. Opacity of emissions from all plant baghouses shall not exceed 10 percent averaged over a six-minute period, except for those periods as provided in 30 TAC Sections 101.6 and 101.7.

6. No visible fugitive emissions shall leave the plant boundary.

CONTINUOUS DETERMINATION OF COMPLIANCE

7. At the request of the TNRCC Executive Director, the holder of this permit shall perform stack sampling and other testing as required to establish the actual pattern and quantities of air contaminants being emitted into the atmosphere. The holder of this permit is responsible for providing sampling and testing facilities and conducting the sampling and testing operations at his expense.

RECORDKEEPING REQUIREMENTS

8. In order to determine compliance with the emission limits and other conditions of this permit and representations made in the permit application, the holder of this permit must keep and maintain the following records:

   A. Total monthly and previous 12-month cumulative lumber kiln production. Kiln Nos. 1 and 2 shall be recorded together while Kiln No. 3 shall be recorded separately.

   B. Total monthly and previous 12-month combined cumulative press production.

   C. Total monthly and previous 12-month combined cumulative veneer dryer production.

   D. Short-term (hourly) compliance with the steam production rates on Table 1 will be demonstrated by maintaining a continuous chart recorder of the steam production (lbs/hour) for each boiler.

   E. Long-term (monthly) compliance with the steam production rates on Table 1 will be calculated as follows:

$$\frac{lbs\ of\ Steam}{month} = (K_{12} \times SC_{12}) + (K_3 \times SC_3)$$

Where: K_{12} = Sum of Kiln No. 1 and Kiln No. 2 production, in board·ft/month
K_3 = Kiln No. 3 production, in board·ft/month
SC_{12} = Steam Consumption (lbs steam/board·ft) for Kiln Nos. 1 and 2
SC_3 = Steam Consumption (lbs steam/board·ft) for Kiln No. 3
(see Table 1 for SC factors)

Long-term (annual) compliance with the steam production rates on Table 1 will be demonstrated by maintaining a rolling 12-month total of the monthly steam production.

These records must be kept on-site on a two-year rolling retention basis from the date the data is obtained and made available to the TNRCC Executive Director or any local air pollution control agency having jurisdiction upon request.

TEMPORARY PACKAGE BOILER USED FOR STEAM REPLACEMENT

9. A temporary package boiler may be installed and operated to provide steam lost during Boiler No. 3 maintenance that requires shutdown. The installation and operation shall be in accordance with the following:

   A. Operation of the temporary boiler shall be limited to 30 days per year.

   B. The temporary boiler steam production shall be limited to 100,000 pounds per hour.

   C. Fuel-fired in the temporary boiler shall be limited to low sulfur diesel containing no more than 0.05 percent sulfur by weight.

   D. Prior to each installation of the temporary boiler, the TNRCC Beaumont Regional Office will be notified of the proposed dates of installation and operation.

   E. Records of dates of operation and fuel use shall be kept for two years.

Dated November 12, 1998

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

Permit Nos. 5628 and PSD-TX-905

This table lists the maximum allowable emission rates and all sources of air contaminants on the applicant's property covered by this permit. The emission rates shown are those derived from information submitted as part of the application for permit and are the maximum rates allowed for these facilities. Any proposed increase in emission rates may require an application for a modification of the facilities covered by this permit.

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY
S-01	Boiler No. 1	NO_x	10.00	43.80
		CO	35.00	153.30
		VOC	5.00	21.90
		SO_2	0.42	1.83
		PM_{10}	10.00	43.80
S-02	Boiler No. 2	NO_x	10.00	43.80
		CO	35.00	153.30
		VOC	5.00	21.90
		SO_2	0.42	1.83
		PM_{10}	10.00	43.80
S-03	Boiler No. 3	NO_x	45.00	162.06
		CO	1062.00	4651.56
		VOC	32.00	140.16
		SO_2	1.85	8.11
		PM_{10}	44.00	192.72
S-04	Dryer No. 1	VOC	46.22	**
		PM	9.92	
		PM_{10}	6.83	
S-05	Dryer No. 2	VOC	59.88	**
		PM	12.85	
		PM_{10}	8.85	
S-06	Dryer No. 3	VOC	60.24	**
		PM	12.93	
		PM_{10}	8.90	

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY
S-07	Dryer No. 4	VOC	71.26	**
		PM	15.29	
		PM_{10}	10.53	
S-04 through S-07	Dryer Nos. 1 through 4 Combined Annual Allowables	VOC		789.34
		PM		169.26
		PM_{10}		116.52
K-01	Kiln No. 1	VOC	28.80	**
		PM_{10}	0.71	
K-02	Kiln No. 2	VOC	28.80	**
		PM_{10}	0.71	
K-03	Kiln No. 3	VOC	28.80	**
		PM_{10}	0.71	
	Kiln Nos. 1, 2, and 3 Combined Annual Allowables	VOC		249.83
		PM_{10}		8.00
S-14	Dry Hog Baghouse	PM_{10}	0.89	3.90
S-15	Dry Waste Baghouse	PM_{10}	0.79	3.46
S-17	Sander Dust Baghouse	PM_{10}	0.04	0.18
S-19	Fuel House Cyclone	PM_{10}	0.30	1.32
S-18	Truck Bin Cyclone	PM_{10}	2.06	9.03
S-16	Dry Waste Cyclone	PM_{10}	0.21	0.92

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY
V-01/C-12	Hot Press Roof Vent	VOC	15.11	**
		PM	11.44	
		PM_{10}	4.81	
		HCHO	0.42	
V-01/C-13	Hot Press Roof Vent	VOC	15.11	**
		PM	11.44	
		PM_{10}	4.81	
		HCHO	0.42	
V-01/C-12 and V-01/C-13	Hot Press Roof Vents Combined Annual Allowables	VOC		122.52
		PM		92.75
		PM_{10}		39.04
		HCHO		3.38
F-09	Log Soaking Vats (Traditional Lathe)	VOC	14.00	61.32
F-09A	Log Soaking Vats (Centerless Lathe)	VOC	4.20	18.40
F-03	Ring Debarker (4)	PM_{10}	2.42	10.60
F-04	Drum Debarker (4)	PM_{10}	0.31	1.36
F-01	MTL Sawline (4)	PM_{10}	<0.01	0.01
F-02	Fiber Deck (4)	PM_{10}	<0.01	0.01
F-05	Even End Saws (4)	PM_{10}	<0.01	0.01
F-08	Trim Saws (4)	PM_{10}	<0.01	0.01
F-12	Truck Bin (4)	PM_{10}	<0.01	0.02
F-14	Truck Bin (4)	PM_{10}	<0.01	0.02

EMISSION SOURCES - MAXIMUM ALLOWABLE EMISSION RATES

AIR CONTAMINANTS DATA

Emission Point No. (1)	Source Name (2)	Air Contaminant Name (3)	Emission Rates * lb/hr	TPY
F-13	Rail Loading - Chips (4)	PM_{10}	<0.01	0.02
F-17	Shavings Truck Bin (4)	PM_{10}	<0.01	0.02

(1) Emission point identification - either specific equipment designation or emission point number from plot plan.
(2) Specific point source name. For fugitive sources use area name or fugitive source name.
(3) NO_x - total oxides of nitrogen
CO - carbon monoxide
VOC - volatile organic compounds as defined in General Rule 101.1
SO_2 - sulfur dioxide
PM - particulate matter, suspended in the atmosphere, including PM_{10}.
PM_{10} - particulate matter equal to or less than 10 microns in diameter. Where PM is not listed, it shall be assumed that no particulate matter greater than 10 microns is emitted.
HCHO - formaldehyde
(4) Fugitive emissions are an estimate only and should not be considered as a maximum allowable emission rate.

* Emission rates are based on and the facilities are limited by the following maximum operating schedule:

24 Hrs/day 7 Days/week 52 Weeks/year or 8,760 Hrs/year

** Annual emission limits are based on a combined total for several points. The annual limit is specified after the last point in the group.

Dated November 12, 1998

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
OFFICE OF AIR QUALITY
PREVENTION OF SIGNIFICANT DETERIORATION
PERMIT APPLICATION
NEW LUMBER DRYING KILN

Submitted by

Champion International Corporation
Camden Mill
Farm Road 62
Camden, TX 75934

Prepared by

Roy F. Weston, Inc.
5599 San Felipe, Suite 700
Houston, TX 77056

March 1998

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
OFFICE OF AIR QUALITY
PREVENTION OF SIGNIFICANT DETERIORATION
PERMIT APPLICATION
NEW LUMBER DRYING KILN

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SECTION 1
INTRODUCTION

Champion International Corporation (Champion) is submitting this application to the Texas Natural Resource Conservation Commission (TNRCC) Office of Air Quality for Champion's existing wood products manufacturing facility, Account No. PF-0003-N, located on Farm Road 62 in Camden, Polk County, Texas. The facility currently holds TNRCC air permit R-5628. This application covers the installation of a new lumber drying kiln that Champion is proposing to install at this location.

1.1 FACILITY OVERVIEW

Champion's Camden mill is located on Farm Road 62 in Camden, Polk County, Texas. The location of the facility is illustrated on a U.S. Geological Survey 7.5-minute series map in Appendix A. This map has been marked with circles delineating 3,000-foot and one-mile distances from the center of the facility. There are no schools located within 3,000 feet of the facility. The nearest residence is approximately 2,985 feet south of the location of the proposed new kiln.

Appendix B contains a plot plan showing the location of the buildings, structures, and emission points at the Champion facility. A plant benchmark is included.

The Camden mill produces plywood, lumber, and wood chips from logs transported to the facility by truck. Steam is provided by three wood waste fired boilers, with provisions in the existing permit for the temporary use of a fuel-oil fired package boiler (not presently installed at the facility).

Two general types of logs are received at the facility. Larger diameter logs known as "Modified Tree Length" (MTL) are used in the plywood process as a source of veneer. Smaller diameter logs known as "Small Sort Trees" (SST) may be used for plywood veneer, lumber, or chips.

MTLs are cut to length on a sawline, debarked in a ring debarker, soaked in hot water vats for conditioning, and peeled into veneer on conventional lathes. Bark from the debarker is used as fuel in the boilers. SSTs are cut to length on a fibersaw, debarked in a drum debarker, and then sorted for further processing in one of four areas. Pieces that are suitable for the conventional lathes are soaked in hot water vats like the MTLs, then peeled into veneer. Other pieces, generally of smaller diameter, are peeled into veneer on a centerless lathe. A third processing option is the chip-n-saw process that produces raw green lumber (e.g., 2x4s, 4x4s, etc.). Cores left over from the peeling process on the conventional and centerless lathes are also processed by the chip-n-saws. The final option for debarked SSTs is chipping in the whole log chipper.

Plywood is constructed from veneer produced on the lathes. Glue is sprayed or spread onto sheets of veneer, which are stacked in layers to make up the plywood. A sequence of unheated and heated presses bonds the veneer layers. After pressing, the panels may be patched to correct surface defects, then they are trimmed to size and may also be sanded or textured before being packaged for shipment.

Lumber from the chip-n-saws is dried in steam-heated kilns to reduce moisture content under controlled conditions. Champion is proposing to supplement the capacity of the two existing kilns with a new kiln of similar design. After drying, the lumber is planed, graded, and packaged for shipment.

Bark, wood waste, and wood trimmings are transported to the boiler fuel house for use in the boilers. These materials include bark from the debarking processes, wood waste from chip-n-saw and sanding operations, and trimmings from the plywood process. They may also be sold, depending upon availability and demand.

1.2 PROJECT SUMMARY

Champion is proposing to install a third lumber drying kiln similar in design and operation to the two existing kilns. This kiln will have a nominal capacity of 156,000 board feet (156 MBF) of lumber per drying cycle, and will be heated with steam produced by the three existing wood waste boilers. The planned operating schedule is up to eight drying cycles per week, 52 weeks per year, for an annual production capacity of 64,896 MBF. Existing log and lumber processing equipment will be used prior to the drying process to prepare the lumber and after drying to finish the lumber for shipment.

No modifications will be made to the boilers to produce the additional steam for the new kiln. In addition, no short-term steam production increases are anticipated for the boilers. This is because steam use at the mill is balanced by timing the operation of steam-using equipment to limit short-term peaks in steam demand. In addition, the boilers have each operated at capacity in the recent past, so none of the boilers will be operated at increased short-term levels. There will, however, be long-term increases in steam demand and production as a result of the new kiln installation. This will result in increased emissions from the boilers on an annual basis. These increases are discussed in Subsection 3.3 of this application.

No modifications will be made to the log and lumber processing equipment to support production from the new kiln. However, there will be an increase in the total amount of pieces processed through the log preparation areas (storage, handling, saws, debarkers, etc.). This may result in increased particulate emissions from these areas. These increases are discussed in Subsection 3.3 of this application.

Production of wood chips in chip-n-saw and dry lumber planing operations will also increase. This may result in increased particulate emissions from the cyclones at the planer shavings bin. These increases are discussed in Subsection 3.3 of this application.

1.3 APPLICATION SUMMARY

The remainder of this application has been organized into the following sections.

TNRCC New Source Review information, including:

- Subsection 2.1—TNRCC Forms and Tables includes a CORE Checklist, Form PI-1, Table 1(a), Table 30, and PSD Tables PSD-1, PSD-2, and PSD-3.

- Subsection 2.2—Permit Application Requirements includes the information requested in Sections VI through VIII of Form PI-1.

Prevention of Significant Deterioration (PSD) permitting information, including the following:

- Subsection 3.1—Introduction and Project Overview provides a summary of PSD permitting requirements, an overview of Champion's proposed kiln project, and a discussion of affected emission sources at the mill.

- Subsection 3.2—Emissions Information includes project-related emissions increases and a netting summary of contemporaneous increases of VOCs and CO.

- Subsection 3.3—Regulatory Applicability summarizes the applicability of state and federal regulations.

- Subsection 3.4—Best Available Control Technology includes an analysis of potential VOC control technologies for kiln emissions.

- Subsection 3.5—Proposed Compliance Demonstration Methods outlines Champion's proposed method of demonstrating compliance with production and steam limits that will be established by the permit.

- Subsection 3.6—Air Quality Impacts Analysis presents the results of the ambient air quality impacts analysis conducted for the kiln project, and the results of the ozone formation modeling conducted by TNRCC.

- Subsection 3.7—Additional Impacts Analysis addresses other possible impacts of the proposed kiln project on the surrounding area. This includes impacts due to growth associated with the new kiln, impacts to air quality from pollutants that will be emitted in increased quantities, and impacts to soils and vegetation resulting from the emissions.

SECTION 2
FORM PI-1 AND SUPPORTING INFORMATION

2.1 TNRCC FORMS AND TABLES

The following TNRCC forms and tables are included in this section:

- CORE—Administrative Completeness Checklist
- Form PI-1—General Application, Air Quality Permit
- Table 1(a)—Emission Sources
- Table 30—Certification of Estimated Capital Cost and Permit Application Fee
- Certificate of Good Standing—State Comptroller's Office
- Table PSD-1—PSD Air Quality Applicability Supplement
- Table PSD-2—Project Contemporaneous Changes
- Table PSD-3—Description of Creditable Reductions

BEST AVAILABLE COPY

IOTE TO APPLICANT: Please mark an "X" in the column labeled "Applicant use" to indicate that the information has been provided. You may also use the column abeled "Comments & Discussions" to further explain your action.

TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
NEW SOURCE REVIEW DIVISION
AIR QUALITY PERMIT APPLICATION (PI-1)
ADMINISTRATIVE COMPLETENESS CHECKLIST

TNRCC USE ONLY

OMPANY______ PROJ No.:______ PROJ TYPE:______ CORE ENGR______ RECORD No.:______
EGION______ COUNTY______ Tech Contact______ Phone:______
ATE REC'D by CORE:______ Comments______ DATE ADMIN COMP:______
ATE REC'D by TECH ENGR:______ Comments______ TECH ENGR:______ TECHNICAL SECT.:______

PI-1 REF	REQUIRED INFORMATION	APPLICANT USE	DATE ADMN COMPLETE (TNRCC USE ONLY)	NOT COMPLETE (TNRCC USE ONLY)	NOTHING SUBMITTED	COMMENTS & DISCUSSION
	ONFIDENTIAL Information?[1]					[ ] YES [✓] NO
	CONFIDENTIAL page marked?					[ ] YES [ ] NO
	CORE Checklist attached	✓	•			[✓] YES [ ] NO
	NOV related notification					[ ] YES [✓] NO
	Net number of new jobs created	✓				
	Name of elected State Senator	✓				Form PI-1
	Name of elected State Repr.	✓				Form PI-1
I.	Type of Application	✓	•			[ ] PERMIT [✓] AMENDMENT
A.	Permittee Name, Tax ID & Addr.	✓				Form PI-1
	Technical Contact (addr./phone)	✓				Form PI-1
B.	Owner Name, Tax ID & Addr.	✓				Form PI-1
C.	Product/Business & SIC Code	✓	•			Form PI-1
II. A.	Plant/Site Name	✓				Form PI-1
B.	Address of Facility	✓				Form PI-1
C.	Nearest City, County, and Zip	✓	•			Form PI-1
D.	Latitude and Longitude	✓				Form PI-1
E.	TNRCC Air Quality Acct. No.	✓	•			PF-0003-N
II. A.	Name of Facility	✓				Form PI-1
B.	Facility Type	✓				[✓] PERMANENT [ ] PORTABLE
C.	Operating Schedule	✓				24/7/52
D.	Start Dates	✓	•			CONST DATE 5/15/98 OPER DATE 7/15/98
V. A.	New Permit Unit - grass roots					New grass roots facility at this location.
B.	New Permit Unit - nonpermitted					Modification of exist. non-permitted facility.
C.	Amendment - permitted facility	✓				[✓] Present Permit No. R-5628
D.	Change in Location					[ ] Present Permit No.
V. A.	Compliance History - Exempt					[ ] YES [✓] NO
B.	Comp. Hist. - site ≥ 5 yr old	✓				[✓] YES [ ] NO
C.	Comp. Hist. - new site					[ ] YES [✓] NO
D.	Comp. Hist. - site < 5 yr old					[ ] YES [✓] NO
/I. A.	Area Map	✓				Appendix A
	School within 3,000 feet?	✓				[ ] YES [✓] NO
B.	Plot Plan	✓				Appendix B
C.	Table 1(a) & Emission Calc.	✓				Section 2.2.3
D.	BACT Analysis	✓				Section 2.2.4 and Section 3.4
E.	Franchise Tax Certificate	✓	•			[✓] YES [ ] Certificate good thru 5/15/98
F.	Permit Fee Required?	✓				[✓] YES [ ] NO
	Fee Certification & Table 30	✓				Section 2.2.5
G.	Actual emissions past 2 yr	✓				[✓ YES [ ] NO Section 2.2.6
H.	Stand. exempt. or grandfather unit rolled into permit?	✓				[ ] YES [✓] NO
	Information on units provided?	✓				[ ] YES [✓] NO
I. A.	Process Flow Diagram	✓				
B.	Process Description	✓				Section 2.2.7
C.	Material Balance	✓				Section 3.1
II.	116.111(1) TNRCC Rules & Regs	✓				
	116.111(2) Emissions Measurement	✓				
	116.111(3) BACT Analysis	✓				
	116.111(4) NSPS	✓				
	116.111(5) NESHAPS	✓				
	116.111(6) Facility Performance	✓				
	116.111(7) Nonattainment Review	✓				Major Source/Modification? [ ] YES [✓] NO
	116.111(8) PSD Review	✓				Major Source/Modification? [✓] YES [ ] NO
	116.111(9) Impacts/Modeling	✓				To be provided when complete
K.	Copy to EPA Region 6 office	✓	•			[✓] YES [ ] N/A
	Copy to TNRCC Regional office	✓	•			[✓] YES City - Beaumont
	Copy to Local Program(s)		•			[ ] YES [✓] N/A
I.	Application sealed by Prof. Engr.?	✓				[✓] YES [ ] N/A
I.	Int'l Boundary Water Com. notified?		•			[ ] YES [✓] N/A
I.	Authorizing Signature/Date	✓				

• These items will not result in the application being considered administratively deficient; however, they MUST be submitted prior to final action or approval of the application.
CONFIDENTIAL information MUST be clearly marked on each page and separated from non-confidential information. The application must include a non-confidential version describing the confidential information for the public file. To be considered confidential, each page must be marked "CONFIDENTIAL" at the time of submittal. ***Rev. 5/15/95***

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TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
FORM PI-1, GENERAL APPLICATION -- AIR QUALITY PERMIT -- (Page 1 of 2)

A PERMIT TO CONSTRUCT MUST BE APPROVED BEFORE ANY ACTUAL WORK IS BEGUN ON THE FACILITY. This is not a stand alone document. Please refer to the "Form PI-1, Permit Application Instructions" manual (Instructions) for specific details to complete this application. Please print or type all information. All information requested herein must be completed and submitted before public notification procedures may be authorized. Please contact the CORE Section of the New Source Review Division with any questions at 512 239-1240 (FAX No. 512 239-1300). Written inquiries may be addressed to: Texas Natural Resource Conservation Commission, Office of Air Quality, New Source Review Division (MC-162), P.O. Box 13087, Austin TX 78711-3087.

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•Is **CONFIDENTIAL** information being submitted with this application? [ ]-YES [✓]-NO
If YES, is each "confidential" page so marked in big red letters? [ ]-YES [ ]-NO
•Has a **CORE** checklist been attached to this application? [✓]-YES [ ]-NO
•Is this application in response to or related in any way to a **Notice of Violation** at this location? [ ]-YES [✓]-NO
If YES, date of Notice of Violation:________
Also, if YES, pursuant to Rule: ________

Please furnish the following information pertaining to this facility SITE:

1. Please estimate the net number of new jobs which will be created in the community as a result of the operation of the facility authorized by this application: ________
2. Name of elected State Senator: Drew Nixon
3. Name of elected State Representative: Alan Hightower

Please furnish the following information pertaining to Compliance History:
Submit a 5-year Compliance History in accordance with Sections 116.120-116.126 (Regulation VI) for all facilities classified in Sections V.C and V.D of Form PI-1 below.

I. TYPE OF APPLICATION: [ ]-CONSTRUCTION PERMIT [✓]-AMENDMENT, Permit No. R-5628
[ ]-FLEXIBLE PERMIT [ ]-FLEXIBLE PERMIT AMENDMENT

A. PERMIT ISSUED TO: Champion International Corporation
(Entity legally responsible for permit; i.e., Owner or Operator of the facility)
Permittee's Texas State Comptroller's Tax ID No.: 3-00013-0562-9
Permittee's address (Person, Title, Address): Champion International Corporation
P.O. Box 200, Camden, TX 75934
phone: (409) 398-7200 FAX: (409) 398-7226
Permittee's Technical Contact (Person, Title, Address): Jason Haynes, Environmental Manager, Champion Camden Complex, Farm Road 62, Camden, TX 75934
phone: (409) 398-7200 FAX: (409) 398-7226
Please indicate desired recipient of all correspondence: (___)Permittee (✓)Technical Contact

B. OWNER OF FACILITY: same as above (permittee)
(If different from permittee; include names of proprietor/general partner(s) if applicable)
Owner's Texas State Comptroller's Tax ID No.: same as above
Owner's address (Person, Title, Address): same as above

C. PRINCIPAL COMPANY PRODUCT OR BUSINESS: Softwood Veneer and Plywood
Plant SIC Code: 2436

I. FACILITY PHYSICAL LOCATION:
A. Name of plant or site: Camden Complex
B. Street Address: Farm Road 62 (near FM 942)
C. Nearest City Camden County: Polk Site Zip Code: 75934
D. Latitude: 30 ° 54 ' 56 "N Longitude: 90 ° 44 ' 27 "W (must be to nearest second)
E. Plant Site TNRCC Air Quality Account Number: PF - 0003 - N

I. FACILITY TYPE AND OPERATING SCHEDULE:
A. Name of facility to be permitted: Lumber Kiln #3
B. Facility Type (Check One): [✓] Permanent, [ ] Portable.
C. Facility Operating Schedule: (24)Hours/day; (7)Days/week; (52)Weeks/year
(_) Seasonal - explain:________
D. Start Dates (Proposed/Actual): Construction: 5/15/98 (P/A)____ Operation: 7/15/98 (P/A)____

V. FACILITY CLASSIFICATION (Check only one block):
A. [ ] New Permitted Facility - New grass roots Facility at this location.
B. [ ] New Permitted Facility - Modification of existing non-permitted Facility.
C. [✓] Amendment to Permitted Facility. Permit No(s) R-5628
D. [ ] Change in Location of Permitted Facility. Permit No(s) ________
Location of Present Facility: ________

V. COMPLIANCE HISTORY (See attached Supplemental Information Sheet):
A. [ ] Exemption claimed under §116.121, or
B. [✓] Existing Site => 5 years old. TNRCC will compile Compliance History, or
C. [ ] New Site (This is a new grass roots site with no operating history), or
D. [ ] Existing Site < 5 years old.
1. If "C" or "D", does applicant have similar facilities in Texas? [ ]-YES [ ]-NO.
2. If **NO**, attach one of the following:
a. [ ] Compliance History for similar sites in other States. If none, then:
b. [ ] Compliance History as required by §116.122(b) (Regulation VI).

VI. SUBMIT THE FOLLOWING GENERAL INFORMATION:

A. Submit a current area map as specified in the Instructions.
Are any schools located within 3000 feet of this facility? [ ]-YES [✓]-NO.

B. Submit a plot plan of the plant property as specified in the Instructions.

C. Submit emission data, including fugitive emissions and stack parameters, on Table 1(a). Attach emission calculations and information showing how emissions were determined. See Instructions for further details.

D. Submit an analysis of Best Available Control Technology, including the estimated installed capital and operating costs for all abatement equipment associated with the facility. See Instructions for further details.

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E. Franchise Tax. Submit a copy of a Certificate of Good Standing from the State Comptroller's Office with each application if the permit is to be issued to a corporation. See Instructions if you are not a corporation or for further information.

F. Permit Fee. Enclose required fee, fee certification and estimated capital cost (Table 30); or furnish explanation why fee is not required. (See §116.141[Regulation VI].)

G. Please submit actual emissions (tons per year) for the last two (2) years to determine federal applicability.

H. Are there any standard exemptions or grandfathered units related to this permit that you wish to roll into the permit or amendment at this time? [ ] Yes [✓] No
Provide information on these units.

VII. SUBMIT (A) PROCESS FLOW DIAGRAM, (B) PROCESS DESCRIPTION AND (C) MATERIAL BALANCE AS SPECIFIED IN THE INSTRUCTIONS (see Instructions concerning submittal of confidential information.)

VIII. GENERAL APPLICATION REQUIREMENTS: Submit itemized information and/or analysis that will demonstrate that all general application requirements as specified in §116.111 of TNRCC Regulation VI are met. **Each requirement in §116.111 must be addressed in this application.** See Instructions for further details. Atmospheric dispersion modeling may be required as part of the air quality impact analysis per §116.111(9).

Is this facility a **MAJOR SOURCE/MODIFICATION** with regard to one of the following:

1. §116.111(7) - Nonattainment [ ]-YES [✓]-NO
2. §116.111(8) - Prevention of Significant Deterioration [✓]-YES [ ]-NO.

IX. APPEAL PROCESS:

Commission §116.114(a)(3) should be consulted for the procedure to be used to appeal the failure of the agency to process an application within the prescribed time limits.

X. A COPY OF THIS APPLICATION AND ALL ATTACHMENTS MUST BE SENT by the applicant to the EPA Region 6 office in Dallas if PSD or Nonattainment Review is applicable in any form, the appropriate TNRCC Regional Office and to any local air pollution control program having jurisdiction. Copies of the application were sent to:

EPA Region 6 Office in Dallas [✓]-YES [ ]-Not applicable.
TNRCC Regional Office sent to: (city) Beaumont
Copies sent to these local programs: 1. ______
[✓]-NOT APPLICABLE. 2. ______

XI. §116.110(d). PE Seal.

Is the estimated capital cost of the project for which application is made greater than $2 million dollars? [✓]-YES [ ]-NO
if **YES**, application must be submitted under seal of a Texas registered Professional Engineer, unless exemption is claimed pursuant to the Texas Engineering Practice Act.

[ ] - Exemption is claimed pursuant to Section – of the TEPA.

XII. The International Boundary Water Commission (IBWC) wishes to be notified of any new construction within 100 kilometers of the Rio Grande River. For the mailing address of the IBWC, please refer to the PI-1 instructions.

XIII. I, Ed Taylor, Operations Manager
(Name - Please print or type) (Title: Owner, Plant Manager, President, Vice-President, Environmental Director, etc.)

state that I have knowledge of the facts herein set forth and that the same are true and correct to the best of my knowledge and belief. I further state that to the best of my knowledge and belief, the project for which application is made will not in any way violate any provision of the Texas Health & Safety Code (THSC), Chapter 382, Texas Clean Air Act, as amended, or any of the air quality Rules and Regulations of the Texas Natural Resource Conservation Commission or any local governmental ordinance or resolution enacted pursuant to the Texas Clean Air Act. I further state that I have read and understand Section 382.091, THSC, which defines CRIMINAL OFFENSES for certain violations, including intentionally or knowingly making or causing to be made false material statements or representations in this application, and Section 382.092, THSC, pertaining to CRIMINAL PENALTIES.

DATE 3-23-98 SIGNATURE Ed Taylor

NOTE - ORIGINAL SIGNATURE IN INK IS REQUIRED.

TABLE 1(a)
EMISSION SOURCES

Review of applications and issuance of permits will be expedited by suppying all necessary information requested on this Table.

AIR CONTAMINANT DATA						EMISSION POINT DISCHARGE PARAMETERS									
EMISSION POINT [1]		CHEMICAL COMPOSITION OF TOTAL STREAM		AIR CONTAMINANT EMISSION RATE		UTM COORDINATES OF EMISSION PT. [6]			STACK SOURCES [7]					AREA SOURCES [8]	
									HEIGHT ABOVE GROUND (ft)	HEIGHT ABOVE STRUCT. (ft)	EXIT DATA				
NUMBER	NAME	COMPONENT OR AIR CONTAMINANT NAME [2]	CONC (%) [3]	#/HR [4]	TONS/YR [5]	ZONE	EAST (meters)	NORTH (meters)			DIA. (ft)	VEL. (fps)	TEMP. (deg F)	LENGTH (ft)	WIDTH (ft)
K-03	No. 3 Kiln	VOC		28.8*	92.15	15	333892.5		20	0	2.63	16	200		
		PM_{10}		0.71	2.66			3421431.3	(5 rectangular roof vents, 28" square)						

GROUND LEVEL ELEVATION OF FACILITY ABOVE SEA LEVEL:
STANDARD CONDITIONS ARE 68 deg F AND 14.7 PSIA

* The hourly VOC emission rate is based on a cycle average rather than a peak hourly emission rate, as described in Section 3 of this application. The hourly and annual VOC emission rates are based on different emission factors to reflect the difference between short-term peaks and longer-term average emission rates.

Note: No existing mill emission sources affected by this project will emit more than their existing permitted emission rates. Therefore, no existing emission limits will be changed by this permit modification application, and no existing emission sources have been included on this Table 1(a).

BEST AVAILABLE COPY

TABLE 30

CERTIFICATION OF ESTIMATED CAPITAL COST AND PERMIT APPLICATION FEE

Title 30 Texas Administrative Code §116.141

ude estimated cost of the equipment and services that would normally be capitalized according to ıdard and generally accepted corporate financing and accounting procedures.

	Estimated Capital Cost
ECT COSTS	
:ess and control equipment not previously owned by the applicant and permitted in Texas	$430,000
iliary equipment, including exhaust hoods, ducting, fans, pumps, piping, conveyors, cks, storage tanks, waste disposal facilities, and air pollution control equipment cifically needed to meet permit and regulation requirements	244,600
ght charges	57,000
preparation (including demolition), construction of fences, outdoor lighting, road and :ing areas	161,000
allation (including foundations), erection of supporting structures, enclosures or ıther protection, insulation and painting, utilities and connections, process integration process control equipment	942,000
iliary buildings, including materials storage, employee facilities, and changes to ting structures	97,000
ıient air monitoring network	N/A
IRECT COSTS	
l engineering design and supervision and administrative overhead	60,000
struction expense (including construction liaison), securing local building permits, rance, temporary construction facilities and construction clean-up	100,000
tractor's fee and overhead	N/A

TOTAL ESTIMATED CAPITAL COST = $2,091,600

rtify that the total estimated capital cost of the project as defined in Title 30 Texas Administrative e Section 116.141 is equal to or less than the above figure.

Larry J. Lasiter , P. E. **Signed by:** Larry J. Lasiter

Title: Vice President

Company: Goodwin-Lasiter, Inc.

Date: 3-23-98

timated Capital Cost	Permit Application Fee	PSD Application Fee
ss than $300,000 ı00,000 to $50,000,000 ɔ0,000 to $15,000,000 ater than $50,000,000 ıter than $15,000,000	$450 (minimum fee) 0.15% of capital cost --------------------- $75,000 (maximum fee) ---------------------	$1,500 (minimum fee) ----------------------- 0.5% of capital cost ----------------------- $75,000 (maximum fee

PERMIT APPLICATION FEE (from table above) = $10,458.00

COMPTROLLER OF PUBLIC ACCOUNTS
STATE OF TEXAS
AUSTIN, 78774

JOHN SHARP
Comptroller

CERTIFICATION OF ACCOUNT STATUS

THE STATE OF TEXAS

COUNTY OF TRAVIS

I, John Sharp, Comptroller of Public Accounts of the State of Texas, DO HEREBY CERTIFY that according to the records of this office

CHAMPION INTERNATIONAL CORP

is, as of this date, in good standing with this office having no franchise tax reports or payments due at this time.

This certificate is valid through the date that the next franchise tax report will be due 05-15-98.

This certificate is valid for the purpose of conversion when the converted entity is subject to franchise tax as required by law.

This certificate is not valid for the purpose of dissolution, merger or withdrawal.

GIVEN UNDER MY HAND AND SEAL
OF OFFICE in the City of Austin,
this 12th day of December, 1997 A.D.

John Sharp

JOHN SHARP
Comptroller of Public Accounts

Charter/COA NO.: 000166173-6
Form 05-304 (Rev. 9-97/9)

Texas Natural Resource Conservation Commission
Prevention of Significant Deterioration (PSD) Review

TABLE PSD-1
PSD AIR QUALITY APPLICABILITY SUPPLEMENT

TO BE COMPLETED BY APPLICANT AT TIME OF APPLICATION

A permit applicant must complete this table if PSD netting is required or if requested by permit engineer. This is not a stand-alone document. Please refer to the TNRCC *PSD Air Quality Guidance Document* for specific details regarding information required by this form. For additional information regarding PSD applicability and review, please refer to 40 CFR Part 52 Section 21 and EPA's Draft *New Source Review Workshop Manual* of October 1990 which provides examples for illustration.

Permit Application No. ______________________

Company Champion International Corporation TNRCC Air Quality Account I.D. PF-0003-N

Company Contact Jason Haynes Phone Number (409) 398-7200

Facility Location or Street Address Farm Road 62

City Camden County Polk

Permitted Unit I.D. and Name ______________________

Permit Activity: ☐ New Major Source ☒ Major Modification

Project or Process Description New Lumber Kiln

Operating Schedule: 24 hrs/day 7 days/wk 52 wks/yr ______ hrs/yr ______ Continuous

Or throughput ______________

The information provided on this form (and Tables PSD-2 and PSD-3, if applicable) is true and correct.

Ed Taylor — Signature

Operations Manager — Title

3-23-98 — Date

If Prevention of Significant Deterioration (PSD) review is required, then the applicant must send a complete application to EPA Region 6 at the address below. EPA Region 6 must also receive copies of all subsequent correspondence.

EPA Region 6
New Source Review Section
1445 Ross Avenue
Dallas, TX 75202-2733

LIST RELEVANT DATES:

A. 5 / 15 /98 Estimated start of construction.
B. 5 / 15 /93 5 years prior to estimated start of construction.
C. 7 / 15 /98 Estimated start of operation.

DEFINE CONTEMPORANEOUS PERIOD (from B to C): 5 / 15/ 93 to 7 / 15 /98
From 5 years prior to estimated start of construction through estimated start of operation.

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	Yes	No	Regulated Pollutant[1]						
			VOCs	PM*	PM_{10}*	NO_x	CO	SO_2	Pb
xisting site potential to emit[2] (tpy)			1,771	566	460	399	6,57 0	12	
roposed project increases[2] (tpy)			120	14.9	14.9	16.2	294	0.5	0.01
onattainment New Source Review Applicability: the proposed project will be located in an area that designated nonattainment for any pollutants, place a ıeck to the right in the column under that ɔllutant(s) and complete a Table 1N.									
the existing site one of the 28 named sources?[3]		X							
the existing site a major source?[4]	X								
xisting site is a major source:									
netting required? If "Yes" attach Tables PSD-2 ı.l PSD-3.[5]		X							
ıgnificance level as defined in 40 CFR 52.21(b)(23)[6]			40	25	15	40	100	40	0.6
et contemporaneous change from Table PSD-2 (tpy)			120	14.9	14.9	16.2	294	0.5	0.01
PSD review applicable? Answer "Yes" or "No" nder each applicable pollutant.			Yes	No	No	No	Yes	No	No
xisting site is NOT a major source: N/A									
the proposed project by itself one of the 28 named ɔurces[3]									
the proposed project a major source by itself? (No ɔnsideration is given to any emissions decreases.)[4]									
nce the project is considered major all other ɔllutants are compared to their respective gnificance levels.[6] Netting is not allowed. **Is PSD ɛview applicable?** Answer "Yes" or "No" under ıch applicable pollutant.									

Regulated pollutants include criteria pollutants (pollutants for which a National Ambient Air Quality Standard [NAAQS] exists) and noncriteria pollutants (pollutants regulated by EPA for which no NAAQS exists).

Defined in Part A of the TNRCC *PSD Air Quality Guidance Document.*

The 28 named source categories are listed in 40 CFR 52.21(b)(1) and Table A of the TNRCC *PSD Air Quality Guidance Document.*

Refer to Part C "major source determination" of the TNRCC *PSD Air Quality Guidance Document.*

Refer to Part E2 of the TNRCC *PSD Air Quality Guidance Document.*

Significant emissions are defined in 40 CFR 52.21(b)(23) and Table B of the TNRCC *PSD Air Quality Guidance Document.*

For this permit application, emissions of PM were presumed to consist entirely of PM_{10}, which probably overstates actual PM_{10} emissions.

PROJECT CONTEMPORANEOUS CHANGES[1]

Company: Champion International Corporation

Permit Application No.____________ Regulated Pollutant VOCs

	PROJECT DATE[2]	EMISSION UNIT AT WHICH REDUCTION OCCURRED[3]		PERMIT NO.	PROJECT NAME OR ACTIVITY	A ALLOWABLE EMISSIONS AFTER THE ACTIVITY[4] (tons/year)	B ACTUAL EMISSIONS PRIOR TO THE ACTIVITY[4] (tons/year)	C DIFFERENCE (A-B)[5] (tons/year)	CREDITABLE DECREASE OR INCREASE[6]	REASON CODE[7]
		FIN	EPN							
1	Aug. 1995		K-01/ K-02	5628	Kiln Moisture Detection System*			1.44	N/A**	
2	Aug. 1995		S-01	5628	Kiln Moisture Detection System			0.03	N/A	
3	Aug. 1995		S-02	5628	Kiln Moisture Detection System			0.03	N/A	
4	Aug. 1995		S-03	5628	Kiln Moisture Detection System			1.45	N/A	
5										
6										
7	June 1997		F-09A	5628	New Log Soaking Vats*			18.4***	N/A	
8	June 1997		V-01, S-12, S-13	5628	New Log Soaking Vats			0.19	N/A	
9	June 1997		S-04 to S-07	5628	New Log Soaking Vats			1.16	N/A	
10	June 1997		S-01	5628	New Log Soaking Vats			2.28	N/A	
11	June 1997		S-02	5628	New Log Soaking Vats			2.28	N/A	
12	June 1997		S-03	5628	New Log Soaking Vats			13.69	N/A	
13										
14										
							PAGE SUBTOTAL[8]	18.40		
	Summary of Contemporaneous Changes						TOTAL			

* This project was not related to or contingent upon the new kiln project under review.

** Not Applicable - There have been no changes during the contemporaneous period that have resulted in any creditable emission decreases or increases.

*** Fugitive emissions only.

03/97

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TABLE PSD-3
DESCRIPTION OF CREDITABLE REDUCTIONS

Company Name: Champion International Corporation Contaminant: VOC

Date Action Occurred: August 1995 SIC code for this plant site: 2436

Check ONE of the following: ☒ Permit No. R-5628 ☐ Grandfathered Facility ☐ Standard Exemption

For CREDITABLE reductions, verify each statement by checking all appropriate boxes:

- ☐ The reductions occurred within the contemporaneous period.[1]
- ☐ For each unit at the source at which the change occurred, the reductions were calculated as the allowable emissions after the change minus the actual emissions averaged over the 2-year period immediately preceding the change.
- ☐ The reductions occurred at the applicant's contiguous or adjacent plant site and came from units with the same 2-digit major group SIC code and under the same common ownership or control.[1]
- ☐ The reductions have not been relied upon in issuing a previous PSD permit (including use in PSD netting).[1]
- ☐ The reductions have not been relied upon in issuing a nonattainment permit and the reductions have not been used as an offset[2] in a nonattainment permit or reserved in an application for use as an offset.[1]
- ☐ The reductions will be federally enforceable[3] by the start of construction of the proposed project and actually accomplished by the start of operation.[1]
- ☐ The reductions have the same qualitative significance for public health as the increase from the proposed project.[1]

Note: A reduction cannot occur at, and therefore, cannot be credited from an emissions unit which was never constructed or operated, including units that received a PSD permit.

For grandfathered facilities or standard exemptions:

- ☐ Records for this facility are available to demonstrate the actual emissions of this facility for a two-year period prior to the reduction claimed.

Please give a complete description of project's reductions and credits. Provide all emission point numbers affected by this project. Provide any explanation for above exceptions.

No reductions or credits resulted from this project. Tables PSD-2 and PSD-3 have been included for completeness only.

Units' Allowable: ______ Units' Actual[4]: ______

1 For a reduction (or increase) to be creditable these boxes must be checked. This change in emissions may not be used in netting calculations without this verification.

2 An offset is a required reduction of equal or greater magnitude (depending on the nonattainment area) than the emissions increase from the project for which nonattainment new source review is being conducted. An offset does not refer to reductions used in nonattainment netting calculations.

3 To ensure federal enforceability for standard exemptions at emission levels below those levels specified by the exemptions specifically in use, or by TNRCC Regulation VI, §116.211, the applicant should keep on-site a signed registration certification Form PI-8, verifying the maximum emission rate resulting from operations authorized by a standard exemption. The registration and certification must include the basis for estimating the emission rate.

To ensure federal enforceability of grandfathered emission rates, the grandfathered emission rates should be incorporated into the MAERT of an existing State permit on site or into an Agreed Order if no such permit exists.

4 Averaged over the two-year period prior to activity.

PROJECT CONTEMPORANEOUS CHANGES[1]

Company: Champion International Corporation

Permit Application No.____________ Regulated Pollutant CO

	PROJECT DATE[2]	EMISSION UNIT AT WHICH REDUCTION OCCURRED[3]		PERMIT NO.	PROJECT NAME OR ACTIVITY	A ALLOWABLE EMISSIONS AFTER THE ACTIVITY[4] (tons/year)	B ACTUAL EMISSIONS PRIOR TO THE ACTIVITY[4] (tons/year)	C DIFFERENCE (A-B)[5] (tons/year)	CREDITABLE DECREASE OR INCREASE[6]	REASON CODE[7]
		FIN	EPN							
1	Aug. 1995		S-01	5628	Kiln Moisture Detection System*			0.19	N/A**	
2	Aug. 1995		S-02	5628	Kiln Moisture Detection System			0.19	N/A	
3	Aug. 1995		S-03	5628	Kiln Moisture Detection System			15.7	N/A	
4										
5										
6										
7	June 1997		S-01	5628	New Log Soaking Vats*			15.96		
8	June 1997		S-02	5628	New Log Soaking Vats			15.96		
9	June 1997		S-03	5628	New Log Soaking Vats			TBD***		
10										
11										
12										
13										
14										
							PAGE SUBTOTAL[8]	18.40		
	Summary of Contemporaneous Changes						TOTAL			

* This project was not related to or contingent upon the new kiln project under review.

** Not Applicable - There have been no changes during the contemporaneous period that have resulted in any creditable emission decreases or increases.

*** To Be Determined - Emission testing has been scheduled for March 1998 to determine CO emissions from this boiler.

1 Individual PSD-2 Tables should be used to summarize a combination of activities which may be considered a single project for each regulated pollutant.

2 Date activity occurred and is documented. Attach Table PSD-3 for each project reduction claimed which explains how the reduction is creditable.

3 Emission Point No. as designated in TNRCC Permit or Emissions Inventory.

4 All records and calculations for these values need to be available upon request. Actual emissions should be estimated as an average of the actual emissions over the two-year period prior to the Project's Activity Date.

5 Allowable (column A) - Actual (column B) for all emissions.

6 If portion of the decrease not creditable, enter creditable amount. If all of decrease is creditable or if this line is an increase, enter column C again. Sum all values in this column and place in box at bottom of column.

7 For emission decreases:
Enter one of the following reason codes:
e1a - 101.29(e)1(A) Shutdowns
e1b - 101.29(e)1(B) Continuous Emission Monitors
e1c - 101.29(e)1(C) Reduction by Review
e1d - 101.29(e)1(D) Reduction by Standardized Calculation
oth - oth Describe on Table PSD-3.
Also reference appropriate PSD-3 page of this submittal

8 Sum all values for this page.

TABLE PSD-3
DESCRIPTION OF CREDITABLE REDUCTIONS

Company Name: Champion International Corporation Contaminant: VOC

Date Action Occurred: June 1997 SIC code for this plant site: 2436

Check ONE of the following: ☒ Permit No. R-5628 ☐ Grandfathered Facility ☐ Standard Exemption

For CREDITABLE reductions, verify each statement by checking all appropriate boxes:

- ☐ The reductions occurred within the contemporaneous period.[1]
- ☐ For each unit at the source at which the change occurred, the reductions were calculated as the allowable emissions after the change minus the actual emissions averaged over the 2-year period immediately preceding the change.
- ☐ The reductions occurred at the applicant's contiguous or adjacent plant site and came from units with the same 2-digit major group SIC code and under the same common ownership or control.[1]
- ☐ The reductions have not been relied upon in issuing a previous PSD permit (including use in PSD netting).[1]
- ☐ The reductions have not been relied upon in issuing a nonattainment permit and the reductions have not been used as an offset[2] in a nonattainment permit or reserved in an application for use as an offset.[1]
- ☐ The reductions will be federally enforceable[3] by the start of construction of the proposed project and actually accomplished by the start of operation.[1]
- ☐ The reductions have the same qualitative significance for public health as the increase from the proposed project.[1]

Note: A reduction cannot occur at, and therefore, cannot be credited from an emissions unit which was never constructed or operated, including units that received a PSD permit.

For grandfathered facilities or standard exemptions:

- ☐ Records for this facility are available to demonstrate the actual emissions of this facility for a two-year period prior to the reduction claimed.

Please give a complete description of project's reductions and credits. Provide all emission point numbers affected by this project. Provide any explanation for above exceptions.

No reductions or credits resulted from this project. Tables PSD-2 and PSD-3 have been included for completeness only.

Units' Allowable: ______________ Units' Actual[4]: ______________

1 For a reduction (or increase) to be creditable these boxes must be checked. This change in emissions may not be used in netting calculations without this verification.

2 An offset is a required reduction of equal or greater magnitude (depending on the nonattainment area) than the emissions increase from the project for which nonattainment new source review is being conducted. An offset does not refer to reductions used in nonattainment netting calculations.

3 To ensure federal enforceability for standard exemptions at emission levels below those levels specified by the exemptions specifically in use, or by TNRCC Regulation VI, §116.211, the applicant should keep on-site a signed registration certification Form PI-8, verifying the maximum emission rate resulting from operations authorized by a standard exemption. The registration and certification must include the basis for estimating the emission rate.

To ensure federal enforceability of grandfathered emission rates, the grandfathered emission rates should be incorporated into the MAERT of an existing State permit on site or into an Agreed Order if no such permit exists.

4 Averaged over the two-year period prior to activity.

TABLE PSD-3
DESCRIPTION OF CREDITABLE REDUCTIONS

Company Name: Champion International Corporation Contaminant: CO

Date Action Occurred: August 1995 SIC code for this plant site: 2436

Check ONE of the following: ☒ Permit No. R-5628 ☐ Grandfathered Facility ☐ Standard Exemption

For CREDITABLE reductions, verify each statement by checking all appropriate boxes:

☐ The reductions occurred within the contemporaneous period.[1]

☐ For each unit at the source at which the change occurred, the reductions were calculated as the allowable emissions after the change minus the actual emissions averaged over the 2-year period immediately preceding the change.

☐ The reductions occurred at the applicant's contiguous or adjacent plant site and came from units with the same 2-digit major group SIC code and under the same common ownership or control.[1]

☐ The reductions have not been relied upon in issuing a previous PSD permit (including use in PSD netting).[1]

☐ The reductions have not been relied upon in issuing a nonattainment permit and the reductions have not been used as an offset[2] in a nonattainment permit or reserved in an application for use as an offset.[1]

☐ The reductions will be federally enforceable[3] by the start of construction of the proposed project and actually accomplished by the start of operation.[1]

☐ The reductions have the same qualitative significance for public health as the increase from the proposed project.[1]

Note: A reduction cannot occur at, and therefore, cannot be credited from an emissions unit which was never constructed or operated, including units that received a PSD permit.

For grandfathered facilities or standard exemptions:

☐ Records for this facility are available to demonstrate the actual emissions of this facility for a two-year period prior to the reduction claimed.

Please give a complete description of project's reductions and credits. Provide all emission point numbers affected by this project. Provide any explanation for above exceptions.

No reductions or credits resulted from this project. Tables PSD-2 and PSD-3 have been included for completeness only.

Units' Allowable: ______ Units' Actual[4]: ______

1 For a reduction (or increase) to be creditable these boxes must be checked. This change in emissions may not be used in netting calculations without this verification.

2 An offset is a required reduction of equal or greater magnitude (depending on the nonattainment area) than the emissions increase from the project for which nonattainment new source review is being conducted. An offset does not refer to reductions used in nonattainment netting calculations.

3 To ensure federal enforceability for standard exemptions at emission levels below those levels specified by the exemptions specifically in use, or by TNRCC Regulation VI, §116.211, the applicant should keep on-site a signed registration certification Form PI-8, verifying the maximum emission rate resulting from operations authorized by a standard exemption. The registration and certification must include the basis for estimating the emission rate.

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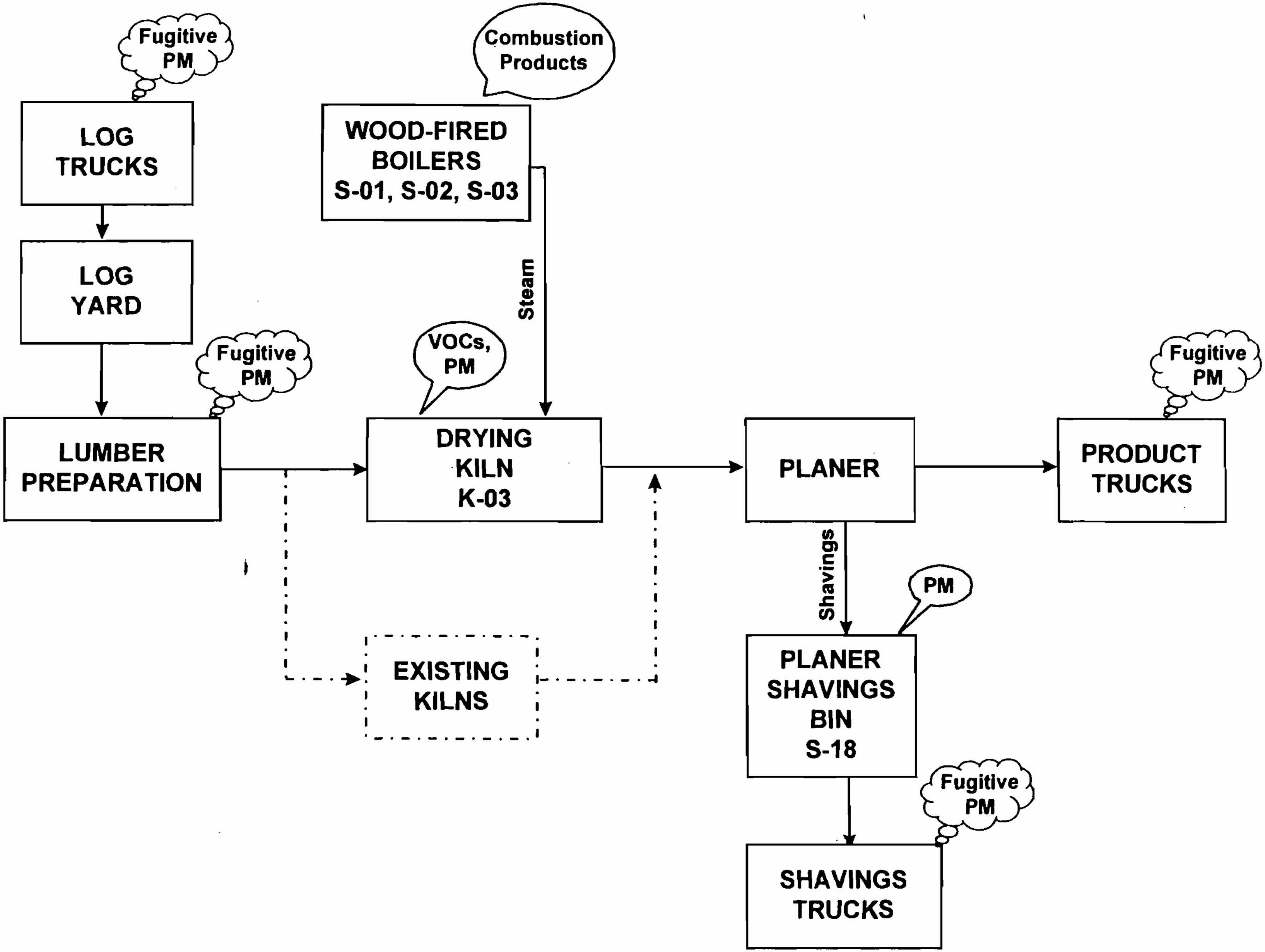

FIGURE 2-1
SIMPLIFIED FLOW DIAGRAM
LUMBER DRYING KILN AND SUPPORTING OPERATIONS

champion:22468901:fig2-1.ppt

2.2.8 General Application Requirements

Rule 116.111(1) Protection of Public Health and Welfare

As outlined below, the emissions from the proposed new kiln will comply with all air quality rules and regulations and with the intent of the Texas Clean Air Act, including protection of the health and physical property of the people.

General Rules

The new kiln will be operated in accordance with the General Rules relating to circumvention, nuisance, traffic hazard, notification requirements for major upset, notification requirements for maintenance, sampling, sampling ports, emissions inventory requirements, sampling procedures and terminology, compliance with Environmental Protection Agency Standards, the National Primary and Secondary Air Quality Standards, inspection fees, emissions fees and all other applicable General Rules.

Regulation I—Control of Air Pollution from Visible Emissions and Particulate Matter

The operation of the kiln is not expected to result in visible emissions, but any that do occur will not be in excess of the opacity limits specified in Regulation I, §111.111. The kiln will comply with the allowable particulate matter (PM) emission rate specified in §111.151. The provisions of §111.141, 111.143, 111.145, 111.147, and 111.149 are not applicable because the Champion facility is not within Harris County or El Paso County.

Regulation II—Control of Air Pollution from Sulfur Compounds

Regulation II regulates the emission of sulfur compounds, in part by setting net ground level concentration limits for sources of sulfur dioxide (SO_2) emissions. The wood waste fired boilers emit small quantities of SO_2 as a result of the presence of sulfur compounds in the wood waste fuel, and Champion has permitted authority to operate a temporary fuel-oil fired package boiler (not currently installed). However, the level of emissions from these sources will not cause the ground level concentration limits to be exceeded.

Regulation II also limits emissions of hydrogen sulfide, sulfuric acid, and total reduced sulfur. Champion's Camden facility does not emit these compounds, so the limits established for these pollutants will not be exceeded.

Regulation III—Control of Air Pollution from Toxic Materials

Regulation III regulates the emission of beryllium, inorganic fluorides and lead, and incorporates portions of the federal Maximum Achievable Control Technology (MACT) standards. There will be no emissions of beryllium, inorganic fluorides, or lead from any source at the Camden facility, except for small quantities of lead emissions from the wood waste fired boilers. However, Regulation III applies only to lead smelters in El Paso and Dallas Counties. In addition, none of

TABLE PSD-3
DESCRIPTION OF CREDITABLE REDUCTIONS

Company Name: Champion International Corporation Contaminant: CO

Date Action Occurred: August 1995 SIC code for this plant site: 2436

Check ONE of the following: ☒ Permit No. R-5628 ☐ Grandfathered Facility ☐ Standard Exemption

For CREDITABLE reductions, verify each statement by checking all appropriate boxes:

- ☐ The reductions occurred within the contemporaneous period.[1]
- ☐ For each unit at the source at which the change occurred, the reductions were calculated as the allowable emissions after the change minus the actual emissions averaged over the 2-year period immediately preceding the change.
- ☐ The reductions occurred at the applicant's contiguous or adjacent plant site and came from units with the same 2-digit major group SIC code and under the same common ownership or control.[1]
- ☐ The reductions have not been relied upon in issuing a previous PSD permit (including use in PSD netting).[1]
- ☐ The reductions have not been relied upon in issuing a nonattainment permit and the reductions have not been used as an offset[2] in a nonattainment permit or reserved in an application for use as an offset.[1]
- ☐ The reductions will be federally enforceable[3] by the start of construction of the proposed project and actually accomplished by the start of operation.[1]
- ☐ The reductions have the same qualitative significance for public health as the increase from the proposed project.[1]

Note: A reduction cannot occur at, and therefore, cannot be credited from an emissions unit which was never constructed or operated, including units that received a PSD permit.

For grandfathered facilities or standard exemptions:

- ☐ Records for this facility are available to demonstrate the actual emissions of this facility for a two-year period prior to the reduction claimed.

Please give a complete description of project's reductions and credits. Provide all emission point numbers affected by this project. Provide any explanation for above exceptions.

No reductions or credits resulted from this project. Tables PSD-2 and PSD-3 have been included for completeness only.

Units' Allowable: ____________ Units' Actual[4]: ____________

1 For a reduction (or increase) to be creditable these boxes must be checked. This change in emissions may not be used in netting calculations without this verification.

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3 To ensure federal enforceability for standard exemptions at emission levels below those levels specified by the exemptions specifically in use, or by TNRCC Regulation VI, §116.211, the applicant should keep on-site a signed registration certification Form PI-8, verifying the maximum emission rate resulting from operations authorized by a standard exemption. The registration and certification must include the basis for estimating the emission rate.

To ensure federal enforceability of grandfathered emission rates, the grandfathered emission rates should be incorporated into the MAERT of an existing State permit on site or into an Agreed Order if no such permit exists.

4 Averaged over the two-year period prior to activity.

2.2 PERMIT APPLICATION REQUIREMENTS

This section discusses and provides detail on the permit application requirements listed in Sections I, VII, and VIII of Form PI-1. Compliance with additional requirements related to PSD permitting is demonstrated in Section 3 of this application.

2.2.1 Area Map—Section VI.A.

USGS 7.5 minute quadrangle maps representing at least a 1-mile radius around the Champion facility, and showing distances of 3,000 feet and one mile, are located in Appendix A. There are no schools located within 3,000 feet of the facility.

2.2.2 Property Plot Plan—Section VI.B.

A property plot plan depicting buildings and emission points is located in Appendix B.

2.2.3 Emissions Data—Table 1(a)—Section VI.C.

The facility's emission points and emission rates are summarized in the preceding Section 2.1 on Table 1(a). Only emission sources that will experience emission rate increases or decreases are included on this table. Emissions from other mill sources will not be affected. The assumptions and calculations underlying the emission rates presented on Table 1(a) are documented in Section 3.3 and in Appendix C. Further discussion of emission rate calculations and changes is presented in Sections 3.2 and 3.4.

2.2.4 Best Available Control Technology (BACT)—Section VI.D.

BACT is required by TNRCC new source review (NSR) and PSD permitting rules. While the level of control considered to be BACT is generally equivalent under both sets of rules, the pollutants for which BACT must be specified for PSD is limited to those for which a new or modified source will experience a PSD-significant increase. Under TNRCC NSR, BACT must be reviewed for each new or increased pollutant. BACT for both programs is discussed in Section 3.5 of this application.

2.2.5 Certificate of Good Standing and Permit Fee—Sections VI.E. and VI.F.

A copy of Champion's Certificate of Good Standing from the State Comptroller's Office is included in Section 2.1. A completed copy of Table 30 with the estimated capital cost of the proposed project and the calculated fee amount is also in Section 2.1. A check for the amount of the fee is being submitted with this application.

2.2.6 Actual Emissions—Section VI.G.

The applicability of PSD review to a pollutant is based on the amount of increase of that pollutant due to a proposed new source or modification. Part of the determination of the amount of an increase is a calculation of the difference between actual emissions over a two-year period prior to the modification and the maximum potential emissions from the facility after the modification. The Champion facility's actual emissions over the past two years are detailed in Section 3.4 along with a more detailed discussion of PSD applicability.

2.2.7 Process Description

An overview of the operations at Champion's Camden mill is presented in Section 1. The proposed new drying kiln will supplement the operation of the two existing kilns, will perform the same function, and will operate in a similar manner. Figure 2-1 is a simplified process flow diagram of the kiln and associated processing steps.

Logs are brought to the mill by truck and are stored in the woodyard storage area. From storage, the logs are cut, then transported by flume to a drum debarker where bark is removed from the wet logs. From the drum debarker, logs destined for the kilns are sent to the chip-n-saw machines where they are cut to appropriate size. The cores remaining from veneer peeling on the lathes are also sent to the chip-n-saw machines. Lumber from the chip-n-saw may be stored in the air-dry storage area or transported directly to one of the kilns. Emissions from these process steps are limited to small quantities of fugitive particulate matter, primarily from the debarkers and the chip-n-saws.

In the kilns, lumber is dried to a desired moisture content under controlled conditions before being further processed. Heat is supplied to the drying kiln by steam within steam coils. Air is circulated around the coils and throughout the kiln by fans located near the ceiling of the kiln. The fans move the air horizontally across the top of the kiln's interior, causing the air to circulate past the steam coils and through the stacked lumber. To ensure even drying throughout the stack, the fans periodically reverse direction, which reverses the circulation within the kiln.

Fresh air is brought into the kiln, and moisture-laden air is exhausted, through vents located on top of the kiln. When the fans are reversed, the function of the vents is also reversed, such that the vents that were exhaust vents now let in fresh air, and the vents that had been fresh air vents now exhaust wet air. These reversing cycles continue throughout the drying period, which typically lasts from 18 to 36 hours.

Emissions during the drying cycle consist of VOCs released from the wood as it is heated and particulate matter that condenses as the emissions cool in the atmosphere.

Dried lumber is planed and graded, then readied for shipment. Planer shavings are transported to the planer shavings bin, and are loaded into trucks through the truck bin. Emissions consist of particulate matter (wood particles) from the planer shavings cyclone. In addition, small amounts of fugitive emissions are released from the truck bin during truck loading. The effect of the proposed new kiln on emissions from pre- and post-drying operations is discussed in Section 3.2.

the activities regulated by the various MACT standards are carried out at the facility. Therefore, this regulation does not apply to the Camden facility.

Regulation IV—Control of Air Pollution from Motor Vehicles

All motor vehicles owned or operated by the applicant will comply with the applicable provisions of this regulation including maintenance and operation of air pollution control systems or devices, inspection requirements, equipment evaluation procedures for vehicle exhaust gas analyzers, and use of oxygenated fuels, as applicable.

Regulation V—Control of Air Pollution from Volatile Organic Compounds (VOCs)

The only portion of Regulation V with potential applicability to the proposed addition of the new kiln is the section of Subchapter B that establishes vent gas control requirements. However, the requirements do not apply in Polk County where the Camden facility is located.

Regulation VII—Control of Air Pollution from Nitrogen Compounds

The provisions of this regulation apply in specified ozone nonattainment areas. Polk County is not in an ozone nonattainment area, so the regulation does not apply.

Regulation VIII—Control of Air Pollution Episodes

Regulation VIII specifies actions that must be taken by sources if TNRCC determines that an air pollution episode is occurring or if an imminent localized threat exists to human health or safety. Champion will comply with the requirements of this regulation if such a determination is made. Section 118.5, which requires certain major sources in specified ozone nonattainment counties to prepare an emission reduction plan, does not apply to the Camden mill because the mill is not located in one of the specified counties.

Regulation IX—Control of Air Pollution from Carbon Monoxide

The proposed facility will not emit carbon monoxide from any of the specified processes regulated by Regulation IX.

Regulation X—Control of Air Pollution from Hazardous Waste or Solid Waste Management Facilities

The proposed facility is not a hazardous waste or solid waste management facility. Therefore, Regulation X does not apply.

Regulation XI—Control of Air Pollution from Municipal Solid Waste Facilities

The proposed facility is not a municipal solid waste management facility. Therefore, Regulation XI does not apply.

Regulation XII—Federal Operating Permits

The Camden mill is subject to the requirement to obtain a Regulation XII (Title V) operating permit. An abbreviated permit application was submitted by the due date of 1 February 1998, and a full application will be due by 25 July 1998. Champion will submit this application when due, in compliance with Regulation XII.

Rule 116.111(1) Impact on Schools

There are no schools within 3,000 feet of the proposed facility. Emissions from the proposed new kiln will not have an adverse impact on any schools.

Rule 116.111(2) Measurement of Emissions

Emissions from air emission sources at the Champion facility will be sampled upon request of the Executive Director of the TNRCC.

Rule 116.111(3) Best Available Control Technology (BACT)

Subsection 3.4 of this application contains a discussion of Best Available Control Technology (BACT).

Rule 116.111(4) Federal New Source Performance Standards (NSPS)

There are no proposed sources listed in 40 CFR 60 to be constructed at the facility. Therefore, these rules do not apply.

Rule 116.111(5) National Emission Standards for Hazardous Air Pollutants (NESHAP)

There are no hazardous air pollutants listed in 40 CFR 61 that will be emitted from this facility. Therefore, these rules are not applicable.

Rule 116.111(6) Performance Demonstration

The facility will perform as represented in the permit application.

Rule 116.111(7) Nonattainment Review

The new kiln is proposed to be constructed in an area that has not been designated as a nonattainment area for any pollutant. Therefore, nonattainment new source review is not applicable.

Rule 116.111(8) Prevention of Significant Deterioration (PSD) Review

The proposed new kiln is located in an attainment area for all regulated pollutants. The proposed project will result in significant increases in emissions of VOC and CO. Therefore, PSD permitting requirements are applicable to the project. Compliance with these requirements is demonstrated in Section 3.

Rule 116.111(9) Air Dispersion Modeling

Champion has conducted dispersion modeling as part of the PSD compliance demonstration. The results have been included in subsection 3.6 of this application.

SECTION 3
PREVENTION OF SIGNIFICANT DETERIORATION

3.1 INTRODUCTION AND PROJECT OVERVIEW

The Camden mill is a major stationary source due to its potential to emit PSD regulated pollutants at rates in excess of 250 tons per year. Modifications at a major source are subject to PSD review if they are major modifications. A modification is major if any of the net emission increases that result from the modification exceed the PSD significant emission increase thresholds. PSD review includes several interrelated components which demonstrate that the proposed project will not result in significant deterioration of air quality in the vicinity of the source to be modified. The components are addressed in this section of the application, which includes the following topics.

- Emissions information, including calculation approaches and methods.
- A regulatory applicability review.
- An analysis of Best Available Control Technology for units that will be affected by the project.
- A proposed method of demonstrating compliance with a proposed lumber kiln steam cap.
- An analysis of the air quality impacts associated with the project.
- An analysis of air quality related values associated with the project.

As noted in Section 1.2, the proposed project includes the addition of a new lumber drying kiln to the mill's lumber operation that currently includes two drying kilns. The new kiln will have a nominal capacity of 156,000 board feet of lumber. The addition of a third kiln will result in a throughput increase for processing equipment such as debarkers and wood waste handling equipment, and a steam production increase from the existing wood waste boilers. The lumber kiln itself will emit VOCs released from the lumber as it dries, and a small amount of particulate matter. The existing processing equipment (excluding the two existing kilns) will emit additional amounts of fugitive and point source particulate matter. The boilers will emit more combustion products as a result of supplying additional steam to the lumber drying kilns. These emission increases are calculated and discussed in the following section.

Table 3-1 lists net emission increases that will result from the new kiln project, and compares the increases with the significant increase levels. This table shows that only VOCs and CO will increase by significant amounts.

TABLE 3-1
SUMMARY OF EMISSION INCREASES

POLLUTANT	ANNUAL EMISSION INCREASES (tons per year)	PSD SIGNIFICANCE LEVELS (tons per year)	PSD SIGNIFICANT?
PM*	14.9	25	No
PM_{10}	14.9	15	No
VOCs (as C)	119.65	40	**Yes**
NO_x	16.1	40	No
CO	293.6	100	**Yes**
SO_2	0.45	40	No
Lead	0.002	0.6	No

* Note that all PM has been conservatively assumed to be PM_{10}.

The proposed project is subject to PSD review for VOC and CO emissions based on the projected emission increases. All other criteria and PSD pollutant emissions are projected to be less than the significant emissions increase levels identified in the PSD regulations.

To establish the emission increases that will occur from the boilers, Champion has calculated the additional amount of steam that can be produced by the boilers without resulting in a PSD significant PM_{10} emission increase. This additional steam, along with the amount of steam used historically by the existing kilns, was used to develop a steam cap of 423,242,000 pounds of steam per year for the three kilns combined. This steam cap ensures that the PSD significant emission level for PM_{10} is not exceeded by the project. In order to demonstrate compliance with the proposed steam cap, Champion is proposing to track lumber production through the kilns as a surrogate for actual steam usage. This approach is feasible because the lumber production rate is directly related to steam use by the kilns.

VOC and CO Netting Summary

At the request of TNRCC, Champion has determined the net CO and VOC emission increases that occurred due to changes made at the mill during the contemporaneous period between 1993 and 1998. Two projects were identified during this review that had the potential to result in increases in emissions of VOCs and/or CO, the pollutants for which the proposed kiln project is significant.

In 1995, a moisture detection system was installed on the existing drying kilns. This system allowed increased kiln production by improving control of kiln drying conditions. The increased throughput resulted in increased emissions of VOCs from the kilns, and in increased emissions of VOCs and CO from the boilers due to increased steam production. This project was authorized under Standard Exemption 106 (now §106.261).

In 1997, two new log soaking vats were installed. Operation of these vats increased production in the plywood presses and in the veneer dryers, resulting in increased VOC emissions from these sources. In addition, the vats and presses required additional steam for process heat, which resulted in VOC and CO emission increases from the boilers. The vats themselves were also new sources of fugitive VOC emissions. This project was carried out under a TNRCC minor new source review permit.

The emission increases discussed above are summarized on the following table.

TABLE 3-2
CO AND VOC EMISSION NETTING SUMMARY

PROJECT	VOCs tons per year	CO tons per year
Kiln Moisture Detection System		
• Kiln Increases	1.44	NA
• Boiler No. 1 Increases	0.03	0.19
• Boiler No. 2 Increases	0.03	0.19
• Boiler No. 3 Increases	1.45	15.7
New Soaking Vats		
• Vat Increases (fugitive)	18.4	NA
• Press Increases	0.19	NA
• Veneer Dryer Increases	1.16	NA
• Boiler No. 1 Increases	2.28	15.96
• Boiler No. 2 Increases	2.28	15.96
• Boiler No. 3 Increases	13.69	To be determined*
Proposed New Kiln		
• Kiln Increases	92.15	NA
• Boiler No. 1 Increases	0.5	3.4
• Boiler No. 2 Increases	0.5	3.4
• Boiler No. 3 Increases	26.5	286.8

* In accordance with the requirements of the permit amendment authorizing this change, the increase in CO emissions from Boiler No. 3 will be determined based on the results of emission tests scheduled for March 1998. This information will be provided to TNRCC under separate cover after the tests have been conducted.

3.2 EMISSIONS INFORMATION

3.2.1 Introduction

Champion has evaluated the changes in air contaminant emission rates at the Camden mill that will occur as a result of the proposed new lumber kiln. Installation of the kiln will result in new point source emissions consisting of VOCs and PM from the kiln, increased point source emissions of

PM from the planer shavings bin cyclone, and increased point source emissions of combustion products from the boilers. In addition, use of the new kiln will result in increased fugitive emissions from slightly increased truck traffic and from increased throughput and processing of logs. The amounts of these emissions have been calculated using the best available information, as detailed in the following subsections. It should be noted that, for the purpose of determining PSD major source status and PSD applicability, only point source emission rates are included. Fugitive emissions have been estimated and included in this application for the purpose of state NSR completeness.

Champion developed the emission rate increase estimates listed in Table 3-1 by using the best available emission information and by incorporating a proposed limit on the steam to be utilized by all three kilns combined. As part of the new kiln project, Champion is proposing to establish a steam cap of 423,242,000 pounds of steam per year for the three kilns. By establishing this cap, the proposed new kiln project will result in PSD significant increases for only VOC and CO.

The net emission increase from the project includes the increase from the new kiln itself plus related increases from other point sources at the mill that will experience increases in throughput or, in the case of the boilers, steam production due to the operation of the new kiln. The emission increases from these other sources consist of the incremental increases in emissions directly related to the increase in throughput or production (e.g., steam production in the boilers). The net emission increase from the project is the sum of the individual point source emission increases from all units affected by the project.

The following subsections provide detailed information on the methods used to calculate the net emissions increases on a unit-by-unit basis.

3.2.2 Emissions from New Kiln

As the green lumber is heated it releases volatile constituents (such as turpentine and terpenes) along with water, which are expelled from the kiln through the vents. In addition, small amounts of particulate matter are emitted from the vents. The source of the particulate matter may be entrainment of dust particles present on the green lumber or condensation of some of the volatile constituents as they cool upon being released from the kiln.

VOC Emissions from New Kiln

Lumber kilns have only recently been recognized as VOC emission sources, so emissions information is limited. The most recent emissions information has been found in Technical Bulletin No. 718 issued in July 1996 by the National Council of the Paper Industry for Air and Stream Improvement (NCASI). This bulletin details the results of kiln emissions testing that was conducted primarily to compare emission test methods. However, the document also presents drying kiln emissions data for several types of lumber from various locations.

Most of the lumber processed at the Camden mill is southern yellow pine (SYP). The NCASI technical bulletin reports two VOC emission factors for SYP, 2.36 pounds per thousand board feet (lb/MBF) and 3.32 lb/MBF. The higher factor was used to calculate short-term emission rates and an average of the two was used to calculate annual emissions.

The differences between the two factors reported by NCASI appear to relate primarily to size and storage characteristics. Specifically, the lower emission factor was derived from the drying of SYP from Arkansas that was smaller in diameter and had been stored longer than the East Texas lumber from which the higher emission factor had been developed. Volatile materials are released from lumber as it is stored, so a longer storage time before sawing and drying results in less volatile material driven off in the kiln, and a lower VOC emission factor. In addition, smaller diameter logs have a larger surface area per unit of wood, further increasing the loss of volatile material during storage.

Storage times vary widely at the Camden mill. Logs may be used shortly after delivery to the mill, or logs may be retrieved from the mill's storage area. Because of this variability, long-term emission estimates for the new kiln have been based on an average of the two emission factors discussed above. A simple arithmetic average was used since the amount of detail available did not permit a more sophisticated statistical evaluation. The average emission factor of 2.84 lb/MBF was used, along with nominal kiln capacity and operating schedule noted in Section 1.2, to calculate annual emissions from the new kiln, as follows:

$$\frac{2.84 \text{ lb VOC/MBF} \times 156 \text{ MBF/cycle} \times 8 \text{ cycles/week} \times 52 \text{ weeks/yr}}{2{,}000 \text{ lb/ton}} = \mathbf{92.15 \text{ ton VOC/year}}$$

In addition to these annual emissions, Champion has also calculated short-term emission rates for the new kiln based on the higher of the two emission factors, 3.32 lb/MBF. This emission factor was developed from kiln emissions measured over entire kiln cycles, which can typically last from 18 to 36 hours. The rate of emissions varies during the course of a drying cycle, so the emission factor may not represent maximum hourly emissions. For this reason, the short-term emission rates should be considered as drying cycle averages rather than actual hourly maximums. It should be noted that the emission calculations are based on cycle times at the short end of the range (18 hours), resulting in conservatively higher emission estimates than if longer cycle times had been assumed. The short-term emissions were calculated as follows:

$$3.32 \text{ lb VOC/MBF} \times \frac{156 \text{ MBF/cycle}}{18 \text{ hr/cycle}} = \mathbf{28.8 \text{ lb VOC/hr}}$$

Particulate Emissions from New Kiln

Particulate emissions from the new kiln were estimated in a similar manner using an emission factor of 0.082 lb/MBF. Like the hourly VOC estimate, the short-term PM emission rate is an average over the course of a drying cycle rather than an actual one-hour maximum. Based on these assumptions, PM emissions have been calculated as follows:

$$0.082 \text{ lb PM/MBF} \times \frac{156 \text{ MBF/cycle}}{18 \text{ hr/cycle}} = \mathbf{0.71 \text{ lb PM/hr}}$$

$$\frac{0.082 \text{ lb PM/MBF} \times 156 \text{ MBF/cycle} \times 8 \text{ cycles/week} \times 52 \text{ weeks/yr}}{2{,}000 \text{ lb/ton}} = \textbf{2.66 ton PM/year}$$

Even though PM_{10} emissions are probably lower than total PM emissions, it has been assumed that all PM emitted from the new kiln will be PM_{10} because of the infeasibility of quantifying the difference.

3.2.3 Boiler Emissions

Calculation of Steam Cap

The mill's existing wood waste boilers will experience increased utilization in supplying the steam needed by the proposed new kiln. This increased steam utilization will result in an increase in emissions from the boilers on a long-term (annual) basis. There will not be a short-term increase over currently permitted rates since the boilers routinely operate at their permitted capacity. Champion is proposing to accept a cap on steam use from the boilers in order to ensure that the total mill-wide increase in PM_{10} emissions is less than the PSD significant increase level of 15 tons per year. The steam cap, which will be applied to all three kiln operations, is based on the sum of:

- the actual amount of steam used by the two existing kilns for the last two years (1996 and 1997), and
- the incremental amount of steam that can be produced without exceeding the PSD significant increase level for PM_{10} (note: this includes emissions of PM_{10} from all other PM_{10} point sources affected by the project).

Several factors have been used to develop this steam cap for the two existing kilns and the proposed new kiln combined. These factors are described below and discussed in more detail in the following paragraphs.

- Boiler efficiency determines how much fuel is required to produce a pound of steam (bone dry pounds of fuel per thousand pounds of steam, or BDlb fuel/Mlb steam). The value of 169.4 BDlb fuel/Mlb steam used in these calculations is an average for the three boilers derived from boiler efficiency testing conducted at the mill in 1997. A summary of the test results is provided in Appendix D.
- The heat content of the fuel determines the heat input rate from a given amount of fuel (millions of British thermal units per BDlb fuel, or MMBtu/BDlb fuel).
- Emission factors express emissions in terms of heat input (pounds of emissions per MMBtu, or lb/MMBtu).
- Kiln-specific steam demand factors indicate the amount of steam needed to dry one board foot of lumber (lb steam/BF).

As established in subsections 3.2.2 and 3.2.4, PM_{10} emissions from sources other than the boilers will consist of 2.66 ton/yr from the new kiln and 1.48 ton/yr from the planer shavings bin cyclone, for a total of 4.14 ton/yr. Therefore, an increase in overall steam demand from the three kilns that results in an incremental PM_{10} emission increase from the boilers of 10.76 ton/yr will result in a PM_{10} emission increase from the project that is less than the PSD significant increase level of 15 ton/yr (10.76 + 4.14 = 14.9).

The three boilers that provide steam for the lumber kilns each have a PM_{10} emission limit of 0.2 lb/MMBtu. This limit was used to calculate the total heat input required to achieve an incremental increase in emissions of 10.76 ton/yr.

$$\frac{10.76 \text{ ton/yr} \times 2{,}000 \text{ lb/ton}}{0.2 \text{ lb/MMBtu}} = 107{,}600 \text{ MMBtu/yr}$$

The amount of wood waste fuel needed to provide this heat input will be:

$$\frac{107{,}600 \text{ MMBtu/yr}}{8{,}800 \text{ Btu/BD lb fuel}} = 12{,}227{,}273 \text{ BD lb fuel/yr}$$

The incremental amount of steam that will be provided by this fuel input will be:

$$\frac{12{,}227{,}273 \text{ BD lb fuel/yr}}{169.4 \text{ BD lb fuel/Mlb steam}} = 72{,}179{,}886 \text{ lb steam/yr}$$

Actual steam usage by the kilns over the past two years has been calculated on the basis of actual kiln throughput and the existing kilns' steam demand factor of 3.0 lb steam/BF.

$$116{,}484 \text{ MBF/yr} \times 3.0 \text{ lb steam/BF} = 349{,}452{,}000 \text{ lb steam/yr}$$

Therefore, the proposed steam cap for the three kilns combined is the sum of current actual steam usage plus the amount of steam that can be produced without resulting in a significant increase in PM_{10} emissions.

$$349{,}452{,}000 \text{ lb steam/yr} + 72{,}179{,}886 \text{ lb steam/yr} = \mathbf{421{,}631{,}890 \text{ lb steam/yr}}$$

(rounded to **421,632 Mlb/yr**)

Boiler Emission Factors

The emission factors used as the basis for the boilers' current permitted emission limits were used to identify annual boiler emission increases resulting from production of the additional steam that can be used under the proposed steam cap. These factors are listed in the mill's permit renewal application dated 1 March 1996, and are summarized in Table 3-3.

TABLE 3-3
BOILER EMISSION FACTORS

POLLUTANT	NO. 1 BOILER	NO. 2 BOILER	NO. 3 BOILER
PM[1]	0.2 lb/MMBtu	0.2 lb/MMBtu	0.2 lb/MMBtu
PM_{10}	0.2 lb/MMBtu	0.2 lb/MMBtu	0.2 lb/MMBtu
VOCs (as carbon)	0.1 lb/MMBtu	0.1 lb/MMBtu	0.6 lb/MMBtu
NO_x	0.2 lb/MMBtu	0.2 lb/MMBtu	0.323 lb/MMBtu[2]
CO	0.7 lb/MMBtu	0.7 lb/MMBtu	6.5 lb/MMBtu
SO_2	0.075 lb/ton fuel[3]	0.075 lb/ton fuel[3]	0.075 lb/ton fuel[3]
Lead	3.5×10^{-4} lb/ton fuel[3]	3.5×10^{-4} lb/ton fuel[3]	3.5×10^{-4} lb/ton fuel[3]

[1] Note that all PM has been conservatively assumed to be PM_{10}.
[2] Based on a permit limit of 71.06 lb/hr and a maximum heat input rate of 220 MMBtu/hr.
[3] Tons of fuel on a wet basis, 4,500 Btu/lb.

All three boilers can reasonably be expected to supply steam to the proposed kiln because they feed into a common steam header. Because emission factors are not identical among the three boilers, the increase in steam use was apportioned among the boilers based on their contributions to mill steam demand in 1995 and 1996. Future steam production can reasonably be expected to follow the same distribution pattern among the three boilers as these two years. The average contributions to total mill steam production by the three boilers over 1995 and 1996 were as follows:

- No. 1 Boiler: 9%
- No. 2 Boiler: 9%
- No. 3 Boiler: 82%

Boiler Emission Calculations

The incremental increases in annual emissions from the boilers, resulting from operation of the new kiln and the existing kilns under the steam cap identified above, have been calculated. The calculation used the emission factor, the relevant annual fuel or heat input increase, and the percentage listed above for each boiler, as follows.

$$ER_{NP} = \frac{EF_{NP} \times FR \times \%SD_N}{2{,}000 \text{ lb/ton}}$$

Where:

ER_{NP}	=	Annual emission rate for boiler N, pollutant P
EF_{NP}	=	Emission factor for boiler N; pollutant P
FR	=	Annual fuel rate, MMBtu or tons (wet)
$\%SD_N$	=	Percent of annual steam demand, boiler N
2,000 lb/ton	=	Constant (conversion factor)

For example:

No. 1 Boiler NO_x:

$$\frac{0.2 \text{ lb } NO_x \text{ /MMBtu} \times 107{,}600 \text{ MMBtu/yr} \times 0.09}{2{,}000 \text{ lb/ton}} = 0.97 \text{ ton/yr}$$

The total NO_x emissions increase attributable to the operation of the three kilns will be the sum of the increases from each of the three boilers. Emissions of the criteria pollutants have been calculated in this manner and are presented in Table 3-4.

TABLE 3-4
BOILER EMISSION INCREASES
(TONS PER YEAR)

POLLUTANT	NO. 1 BOILER	NO. 2 BOILER	NO. 3 BOILER	TOTAL
PM*	0.97	0.97	8.8	10.74
PM_{10}	0.97	0.97	8.8	10.74
VOCs (as C)	0.48	0.48	26.5	27.5
NO_x	0.97	0.97	14.2	16.1
CO	3.4	3.4	286.8	293.6
SO_2	0.04	0.04	0.37	0.45
Lead	1.9×10^{-4}	1.9×10^{-4}	1.7×10^{-3}	0.002

* Note that all PM has been conservatively assumed to be PM_{10}.

3.2.4 Planer Shavings Bin Cyclone Emissions

Dried lumber is finished in the planer building. Shavings from the planer are conveyed to the planer shavings bin before being loaded into trucks for sale. Planer throughput will increase upon start-up of the proposed new kiln, which will result in increased production of planer shavings and increased emissions from the planer shavings bin cyclone.

The magnitude of the increase has been calculated on the basis of permitted hourly emission rates and an increase in the hours of cyclone operation that is proportional to the increase in overall kiln capacity that will result from the installation of the new kiln.

Actual emissions for 1996, as reported in the mill's Emissions Inventory report to TNRCC, were calculated on the basis of the permitted hourly emission rate of 2.06 lb/hr and 4,660 operating hours per year. To determine the increase in operating hours that will result from the new kiln's production, 1996 planer throughput and annual hours of operation were used to calculate an average planer throughput per hour:

$$\frac{113{,}250 \text{ MBF/yr}}{4{,}660 \text{ hr/yr}} = 24.3 \text{ MBF/hr}$$

The highest feasible increase in overall kiln production that would result under the "steam cap" described in the previous subsection was back-calculated to be 34,876 MBF/yr. This calculation was based on the new kiln's annual throughput capacity of 64,896 MBF/yr and anticipated steam demand of 2.5 lb/BF.

64,896 MBF/yr x 2.5 lb steam/BF = 162,240 Mlb steam/yr used by new kiln

421,632 Mlb steam/yr - 162,240 Mlb steam/yr = 259,392 Mlb steam/yr available for existing kilns

$$\frac{259{,}392 \text{ Mlb steam/yr}}{3.0 \text{ lb steam/BF}} = 86{,}464 \text{ MBF/yr production in existing kilns}$$

Maximum production under the steam cap given the production rates used in the calculations above.

64,896 MBF/yr + 86,464 MBF/yr = 151,360 MBF/yr

Production increase over recent actual production:

151,360 MBF/yr - 116,484 MBF/yr ('96/'97 production average) = 34,876 MBF/yr

The average throughput factor of 24.3 MBF/hr and the maximum production increase of 34,876 MBF/yr were used to estimate the annual planer operating hours after installation of the new kiln, with the assumption that the planer operation is currently operating at its capacity on an hourly basis.

$$\frac{34{,}876 \text{ MBF/yr}}{24.3 \text{ MBF/hr}} = 1{,}435 \text{ hr/yr}$$

The annual emission increase resulting from this increase in annual operating hours is calculated using the permitted PM emission rate:

$$\frac{1{,}435 \text{ hr/yr} \times 2.06 \text{ lb/hr}}{2{,}000 \text{ lb/ton}} = 1.48 \text{ ton/yr}$$

A short-term emission increase is not expected because the short-term emission rate is based on outlet grain loading and flow rate, which are not expected to increase.

3.2.5 Emission Increase Summary

Emission increases from point sources must be compared with PSD significant increase levels to determine which, if any, pollutants must undergo PSD review. The previous subsections have detailed the maximum emission rate increases that are expected to occur as a result of the changes proposed in this application. The PSD significant increase levels are discussed and listed in Subsection 3.2.1. Table 3-5 lists emission increases by pollutant and compares the increases with the significant increase levels. This table shows that only VOCs and CO will increase by significant amounts. Therefore, these pollutants have been evaluated with respect to PSD permitting requirements.

TABLE 3-5
COMPARISON OF PROJECT-RELATED EMISSION INCREASES WITH PSD SIGNIFICANCE LEVELS (TONS PER YEAR)

POLLUTANT	NEW KILN	BOILERS	PLANER SHAVINGS BIN	TOTALS	PSD SIGNIF. LEVELS	PSD SIGNIF?
PM*	2.66	10.74	1.48	14.88	25	No
PM_{10}	2.66	10.74	1.48	14.88	15	No
VOCs (as C)	92.15	27.5	—	119.65	40	**Yes**
NO_x	—	16.1	—	16.1	40	No
CO	—	293.6	—	293.6	100	**Yes**
SO_2	—	0.45	—	0.45	40	No
Lead	—	0.002	—	0.002	0.6	No

* Note that all PM has been conservatively assumed to be PM_{10}.

3.2.6 Fugitive Particulate Emissions

Fugitive particulate emissions related to an increase in kiln operations primarily include emissions from debarking of the logs prior to further processing in the mill, and potentially road dust from log and lumber trucks.

Most of the increase in logs brought to the mill will be of the "Small Sort Tree" (SST) variety discussed in Subsection 1.1. The SSTs are transported to the drum debarker by a log flume, which thoroughly wets each log, reducing the potential for fugitive emissions. An increase in hourly throughput is not expected, but a long-term throughput increase may result in increased fugitive emissions over the long term.

For the Camden Mill's March 1996 permit renewal application, emissions from the drum debarker were estimated on the basis of throughput, an emission factor of 0.024 lb PM/ton of wood, and an assumed control factor of 90% because of wet conditions (from the log flume). The particulate emissions were estimated to be 0.31 lb/hr and 0.97 ton/yr.

The potential increase in kiln production represented by the proposed new kiln project is up to 34,876 MBF/yr over the existing kilns' recent actual production). The amount of logs represented by this increase has been calculated using a mill-specific factor of 3.65 tons of logs per MBF produced. (Derivation of this factor is included in Appendix C).

$$34{,}876 \text{ MBF/yr} \times 3.65 \text{ tons/MBF} = 127{,}297 \text{ tons/yr}$$

From this annual increase in logs an annual emission increase has been calculated using the debarking emission factor of 0.024 lb PM/ton of wood.

$$\frac{127{,}297 \text{ tons/yr} \times 0.024 \text{ lb PM/ton} \times (1-0.9)}{2{,}000 \text{ lb PM/ton PM}} = 0.15 \text{ ton PM/yr}$$

Other processing steps such as sawing may produce very low amounts of particulate emissions. However any increase will not be appreciable, since the operations have a low emission potential and they are carried out within a 3-sided, roofed enclosure.

Traffic increases will consist of additional log, lumber, and planer shavings trucks. Estimates of these increases have been made using AP-42 estimating equations as documented in Appendix C. Traffic increases have been based on estimates of the new kiln's impact on mill traffic. Increases of 21.3 ton/yr in total particulate emissions and 4.2 ton/yr in PM_{10} emissions have been calculated.

3.3 REGULATORY APPLICABILITY

This subsection discusses the federal and State of Texas regulations potentially affecting the Camden mill kiln project.

3.3.1 Prevention of Significant Deterioration

Prevention of Significant Deterioration (PSD) regulations are established by Title 40 of the Code of Federal Regulations (40 CFR) §52.21. These regulations have been incorporated into TNRCC regulations at Title 30 of the Texas Administrative Code (30 TAC) §116.111, with certain specified exceptions. Applicability of the PSD program to a proposed new source or modification of an existing source is based on the magnitude of the emissions increases that will result from the new source or modification. Sources subject to the PSD program must address the following program components.

- Application of Best Available Control Technology (BACT).
- Determination of ambient air quality impacts.
- Analysis of additional impacts

Champion's Camden mill is an existing major stationary source of air emissions because it emits more than 250 tons of at least one regulated pollutant. Because it is an existing major source, any modification resulting in a significant increase in emissions of a regulated pollutant must receive

PSD preconstruction authorization. The amount of increase considered significant varies by pollutant, and is listed in Table 3-6.

TABLE 3-6
PSD SIGNIFICANT INCREASE LEVELS

POLLUTANT	SIGNIFICANT INCREASE LEVEL (tons per year)
Particulate Matter (total)	25
Particulate Matter (PM_{10})	15
Volatile Organic Compounds	40
Nitrogen Oxides	40
Sulfur Oxides	40
Carbon Monoxide	100
Lead	0.6

Subsection 3.2 of this document includes emissions estimates and an analysis of net emission rate changes over the contemporaneous period. This analysis indicates that the Camden mill kiln project is significant for VOCs and CO.

Once a project has been determined to be PSD-significant for one or more pollutants, BACT must be established for each pollutant subject to review. Subsection 3.4 of this document defines BACT and includes an analysis of BACT for the significant pollutants.

The emission levels resulting from the application of BACT are used with physical emission parameters, meteorological data, and other site-specific information to estimate the off-property impacts that will result from the project. Subsection 3.6 of this document describes the ambient air quality impacts analysis and the results of that analysis.

3.3.2 Other Federal Regulations

Other federal regulatory programs with potential applicability to the proposed new kiln include the following.

- New Source Performance Standards (NSPS) established in 40 CFR Part 60.
- National Emission Standards for Hazardous Air Pollutants (NESHAP) established in 40 CFR Part 61.
- National Emission Standards for Hazardous Air Pollutants for Source Categories (known as MACT standards for their requirement of Maximum Achievable Control Technology) established in 40 CFR Part 63.
- Federal operating permits program (Title V) established in 40 CFR Part 70.

- Compliance Assurance Monitoring (CAM) requirements established in 40 CFR Part 64.

EPA has not promulgated any NSPS, NESHAP, or MACT standards that apply to lumber drying kilns.

The Title V program has been incorporated into TNRCC regulations by 30 TAC Chapter 122. A full Title V permit application for the Camden mill will be due by 25 July 1998, and the permit will be issued by 25 July 2001. Requirements affecting the new kiln will be incorporated into the mill's Title V permit application after issuance of the kiln's new source review preconstruction permit.

The CAM program affects individual emission sources that use a control device to meet an emission limitation and that emit more than the major source threshold of the controlled pollutant. This program will not affect the proposed kiln because no control device has been proposed to control the VOCs or PM_{10} that will be emitted. In addition, the kiln project itself will not trigger the applicability of the CAM program for any other source affected by the project.

3.3.3 State of Texas Regulations

TNRCC has established preconstruction permitting requirements in 30 TAC Chapter 116. These requirements include state (minor source) new source review (NSR) as well as PSD program elements.

Under the NSR provisions, preconstruction review is required before any addition or change may be made to an air contaminant emitting facility or unit that may alter the nature or quantity of its emissions.

State regulations are addressed in more detail in Subsection 2.2.8, General Application Requirements.

3.4 BEST AVAILABLE CONTROL TECHNOLOGY

3.4.1 Introduction

The installation of the new lumber drying kiln at the Camden plywood mill will result in PSD significant net emission increases for VOC and CO, and non-significant increases of other pollutants. The emission increases will be due to emissions from the new kiln as well as increases from other mill sources which will experience production rate throughput increases due to the additional mill capacity provided by the new kiln. None of the existing emission sources which will experience increased throughput and increased emissions will be physically modified or undergo changes in the method of their operation. Therefore, only emissions from the new kiln must be reviewed for PSD BACT.

TNRCC rule §116.111 specifies that in order to be granted a new source review permit the applicant must demonstrate that a new facility will utilize best available control technology (BACT), with consideration given to the technical practicability and economic reasonableness of reducing or eliminating the emissions from the facility. TNRCC rule §116.160 incorporates most Federal PSD requirements, one exception being the Federal BACT requirements established by 40 CFR 52.21(j).

Although the federal BACT requirement is not incorporated into TNRCC's regulations, the federal definition of BACT can provide a perspective on how BACT may be determined. BACT is defined in the Federal PSD regulations at 40 CFR 52.21(b)(12) as:

> "An emissions limitation (including a visible emission standard) based on the maximum degree of reduction for each pollutant subject to regulation under the Act which would be emitted from any proposed major stationary source or major modification which the Administrator, on a case-by-case basis, taking into account energy, environmental and economic impacts and other costs, determines is achievable for such source or modification through application of production processes or available methods, systems, and techniques, including fuel cleaning or treatment or innovative fuel combustion techniques for control of such pollutant. In no event shall application of best available control technology result in emissions of any pollutant which would exceed the emissions allowed by any applicable standard under 40 CFR Parts 60 and 61. If the Administrator determines that technological or economic limitations on the application of measurement methodology to a particular emissions unit would make the imposition of an emissions standard infeasible, a design, equipment, work practice, operational standard, or combination thereof, may be prescribed instead to satisfy the requirement for the application of best available control technology. Such standard shall, to the degree possible, set forth the emissions reduction achievable by implementation of such design, equipment, work practice, or operation, and shall provide for compliance by means which achieve equivalent results".

In addition to this federal definition, TNRCC has issued a BACT Guidance Document which specifies that "a BACT review is accomplished using a three tiered approach. In each tier BACT is reviewed on a case-by-case basis for technical practicability and economic reasonableness." The Guidance Document goes on to further describe in more detail how the tiered approach BACT review is conducted:

> "In the first tier, controls accepted as BACT in a recent permit review for the same process/industry are approvable as BACT in a current review if no new technical developments have been made which would justify additional controls as economically or technically reasonable. The review of control technologies under the first tier is relatively straightforward in that technical practicability and economic reasonableness have already been demonstrated by use."

"The second tier takes into account controls which have been accepted as BACT in recent permits for similar streams in a different process/industry. The second tier is also fairly straightforward. It may require additional research to review cross technology, but an in-depth economic analysis is avoided since economic reasonableness has also already been demonstrated by use."

"The third tier of review is a detailed technical and economic analysis of all control options available for the process being reviewed. Technical practicability aspects include the demonstrated success of the control technology as determined by previous use, an assessment of the technical success of a new technology, and/or the availability and reliability of the proposed control system. Economic reasonableness is determined solely in the cost effectiveness of controlling emissions and does not take into account the effect of control cost on corporate economics. Economic reasonableness is evaluated on a $/ton basis considering both incremental and total tons controlled although the focus is primarily on the $/ton number."

Champion has followed the TNRCC guidance while at the same time satisfying the EPA's recommended approach for conducting a BACT demonstration for the control of VOC emissions from the proposed new kiln. In addition, BACT has been addressed for emissions of PM_{10} and air toxics from the proposed new kiln for state NSR purposes.

3.4.2 Kiln VOC BACT

Champion is not aware of any existing lumber drying kilns that have VOC emission controls. The most recently constructed new lumber drying kiln subject to the federal PSD rules with which Champion is familiar is a unit installed at the International Paper mill located in Riegelwood, North Carolina. This kiln has a capacity of 135,000 board feet per drying cycle. The kiln is similar in design to the kiln proposed for the Camden mill, and no add-on controls were required as BACT. North Carolina issued the PSD permit for this facility in mid-1997. In addition, based upon information from the lumber drying kiln manufacturer and other industry sources, no add-on VOC controls have ever been applied to lumber drying kilns, including new kilns constructed in Texas.

As a first step in the kiln VOC analysis, Champion conducted a thorough review of existing lumber kiln operations and concluded that no controls for VOC have been applied to kilns such as that proposed for the Camden mill.

This conclusion is based on the following:

- A review of the EPA RACT/BACT/LAER clearinghouse on the Technology Transfer Network (TTN) on EPA's electronic bulletin board.

- Discussion with TNRCC staff on similar projects in Texas and in EPA Region 6.

- Discussions with other lumber industry companies.

- Discussions with the lumber kiln manufacturer Wellons Inc., the likely kiln supplier for this project.

- Discussions with control technologies vendors.

- A review of NCASI publications and discussions with NCASI representatives responsible for lumber manufacturing operations.

- A review of recent PSD permit applications, including a recent evaluation in North Carolina for a similar lumber kiln in which the determination was made that BACT for VOC emissions consisted of no add-on controls.

All these data indicate that "no control" is considered BACT for VOC emissions from lumber kilns.

Although this review satisfies the TNRCC Tier 1 requirements in demonstrating that "no control" is BACT for the lumber drying kiln, Champion has conducted an analysis of control systems that could possibly be applied to lumber drying kilns (Tier 2 and Tier 3 analysis). This review evaluated the technical and economic feasibility of applying control systems that have been demonstrated in other industries but that have not been used on lumber kilns. The remainder of this section discusses the technical issues associated with the lumber drying process and potential VOC control technologies, and evaluates the technical and economic issues surrounding these technologies relative to the Camden mill kiln project. The results of this evaluation demonstrate that the emission control technologies used for similar source operations are not feasible for lumber drying kilns for technical and/or economic reasons.

3.4.2.1 Technical Background

Lumber is dried to a desired moisture content under controlled conditions in a drying kiln before being further processed. Heat is supplied to the drying kiln by steam circulated within steam coils. Air is circulated around the coils and throughout the kiln by fans located near the ceiling of the kiln. The fans move the air horizontally across the top of the kiln's interior, which sets up a circulation past the steam coils and through the stacked lumber. To ensure even drying throughout the stack, the fans periodically reverse direction, which reverses the air circulation within the kiln.

Fresh air is brought into the kiln, and moisture laden air is exhausted, through vents located on top of the kiln. When the fans are reversed, the function of the vents is also reversed, such that the vents that were exhaust vents now let in fresh air, and the vents that had been fresh are vents now exhaust wet air. These reversing cycles continue throughout the drying period, which typically lasts from 18 to 36 hours. In order to collect kiln gases for control, a complex system of dampers and ducts would be necessary to ensure that the air flow within the kiln is not restricted or altered.

As the wood in the kiln is heated, a large volume of water is released. The kiln exhaust air typically has a moisture content of more than 25%, which remains fairly constant over the duration of the drying cycle. In addition to the moisture, other wood constituents (primarily turpentine) are released as the wood is heated, resulting in VOC emissions.

Air flow through the kiln may entrain small amounts of dust from the stacked lumber. Additionally, heavier VOCs exiting the kiln may condense into small liquid or solid particles. As a result, minor amounts of PM_{10} may also be emitted in the kiln exhaust.

3.4.2.2 VOC Emission Control Technologies

As part of the Texas Tier 2 and Tier 3 BACT review, Champion evaluated available technologies for other types of VOC sources for potential applicability to the new kiln. The emission control technologies Champion has evaluated would all require that the exhaust gases from the kiln vents be collected in a common duct and vented to a control device. The following emission control technologies were evaluated for suitability for controlling the VOC emissions captured by such a system.

- Biofiltration.
- Combustion in an existing wood waste boiler.
- Combustion in a catalytic thermal oxidizer.
- Combustion in a regenerative thermal oxidizer.

The detailed review of these technologies, with the exception of biofiltration, constitute a Tier 3 TNRCC BACT review. The review of the biofiltration technology (Tier 2 review) indicates that this technology is not directly transferable to the Camden mill kiln. Each of the VOC control technologies identified above are discussed in the following subsections.

<u>Biofiltration</u>

Biofiltration systems involve natural biodegradation processes used to break down volatile constituents in waste gases. The gases are passed through a substrate bed which supports microorganisms. Contaminants within the gas stream are biodegraded into simpler compounds by the organisms as the gas passes through. The organisms receive energy and/or nutrients from this process.

Two companies that design biofiltration systems were contacted. Neither company has installed or designed a system for a lumber drying kiln or similar process. Because of this lack of experience a substantial amount of up-front work would be required before the biofiltration vendors could design a system and offer a reliable price quote. The information needed would include complete specification of the kiln emissions as well as temperature and air flow profiles over the course of a drying cycle. Even with this information it would be necessary to identify appropriate organisms that could degrade the waste constituents and not be adversely affected by any of the compounds present or by their changing concentrations.

Adequate degradation would require a relatively long contact time. The high exhaust flow rates from a lumber kiln (maximum of approximately 46,000 actual cubic feet per minute [acfm]) would require a large volume of substrate to ensure a low enough velocity and appropriate contact time. In addition, much of the volatile matter emitted from a kiln may condense at the temperature at which a biofiltration system would need to operate (approximately 95 - 100 °F) which could cause plugging of the substrate bed. Furthermore, the vendors indicated that pilot scale testing and operation of a system would be required to properly design and size a system suitable for the Camden kiln.

Because of the lack of experience with designing biofiltration systems for lumber kilns and the difficulties that would appear to be inherent in designing and operating such a system, Champion believes that this type of system has not been demonstrated and is not a feasible option as BACT for the proposed new Camden lumber drying kiln. Therefore, Champion has eliminated this technology from further consideration on the basis of technical infeasibility.

Combustion in an Existing Wood Waste Boiler

Combustion of VOCs in an existing boiler has the apparent benefit of avoiding the cost of purchasing and installing an add-on emission control device. Existing wood waste boilers have been used to burn emissions from plywood dryers and other sources but Champion is not aware of any wood waste boilers being used to control lumber kiln emissions. Although potentially feasible, there are drawbacks that would make it technically challenging and that would raise the cost to an unreasonable level. The challenges would include ducting the kiln vent gas stream a substantial distance (approximately 800 feet) to the existing boiler while maintaining a sufficiently high temperature to prevent condensation of moisture and organics. This would require steam heating the kiln effluent as it leaves the kiln and transporting it in heated or heavily-insulated ducting.

Additionally, the boiler's performance would be degraded because of the increased moisture input. This would result in higher fuel requirements to maintain a given level of steam production, and higher emissions of carbon monoxide. Currently Champion burns wood waste produced at the mill, but would need to supplement this "free" fuel with wood waste available on the market for approximately $15 per ton.

Cost estimates for the use of Champion's No. 3 wood waste boiler are presented in Tables 3-7 and 3-8. The estimates include a kiln manufacturer's estimate of the cost to develop and install ductwork on a new lumber kiln, and a wood waste boiler expert's estimate of the cost to modify the boiler to handle the new duty. The estimates of capital and operating costs were based on methodology recommended in the EPA's Control Cost Manual, including the use of 7% as the interest rate when calculating the capital recovery factor, as required by the most recent (5th) edition of the Manual. These estimates show a control effectiveness cost of $16,160 per ton of VOC controlled. This cost would be excessive and, therefore, combustion of the lumber kiln's exhaust in the wood waste boiler is economically infeasible and does not represent BACT.

Table 3-7
Capital Costs for Lumber Drying Kiln - Collection and Incineration System (Boiler)
Champion International - Camden, Texas

Cost Item	EPA Cost Factor				Cost, dollars	
Direct Costs						
Purchased Equipment Cost:						
Control Equipment (Boiler mods, Steam Engineering, Inc.)					$ 500,000	
Collection Hood and Ductwork to Boiler					$ 1,130,000	NOTE 1
Control device and auxillary equipment					$ 1,630,000	(A)
Instruments and controls	0.01 (A)				$16,300	
Taxes	0.03 (A)				$48,900	
Freight	0.05 (A)				$81,500	
Total purchased equipment cost :					$1,776,700	(B)
Direct Installation Cost:						
Foundations and supports	0.08 (B)				$142,140	
Erection and handling	0.14 (B)				$248,740	
Electrical	0.04 (B)				$71,070	
Piping	0.02 (B)				$35,530	
Insulation	0.01 (B)	x	10.0	(exceptionally long pipe run)	$177,670	
Painting	0.01 (B)				$17,770	
Total direct installation costs:					$692,920	
Architectural Modifications					$0	
Total direct costs:					$2,469,620	
Indirect Costs:						
Engineering and supervision (included in equipment cost estimates)	0.00 (B)	x	2.0	(custom, automated controls)	$0	
Construction and field expenses	0.05 (B)				$88,840	
Contractor fees	0.10 (B)				$177,670	
Startup	0.02 (B)				$35,530	
Performance test	0.01 (B)	x	4.0	(pre/post modification on boiler)	$71,070	
Contingencies	0.50 (A)	-		(first time application on lumber kiln)	$815,000	
Contingencies	0.03 (B)	x	5.0	(efficiency guarantee)	$266,510	
Total indirect costs:					$1,454,620	
Total installed capital costs :					$3,924,240	

NOTE 1: This cost includes the recommended stainless steel collection system and ductwork that would be necessary to avoid corrosion.

Table 3-8

Operating Costs for Lumber Drying Kiln - Collection and Incineration System (Boiler)
Champion International - Camden, Texas

Cost item	Computation method								Cost, dollars/year	
Direct operating costs										
Operating Labor										
Operator	15.00	, $/hr	x	2,190	h/yr	(2 hrs/shift each shift at kiln and at boiler			32,850	
Supervision	15%	of operator labor cost				because of complexity - never done before)			4,928	
Operating materials										
Caustic	1.63	, $/gal	x	0	gal/yr				0	
Chemicals	0	, $/ton	x	0	ton/yr				0	
Maintenance (general)										
Labor	18.00	, $/hr	x	2,190	h/yr	(1 hr/shift each shift at kiln and at boiler			39,420	
Materials	100%	of maintenance labor				because of complexity - never done before)			39,420	
Replacement parts										
Materials		As required (2.00% of capital costs)							78,485	
Labor		100% of replacement parts cost							78,485	
Utilities										
Electricity (including comp. air)	0.0370	, $/kWh	x	535,651	kWh/yr				19,819	
Fuel (wood)	15.000	, $/BDT	x	4,000	BDT/yr				60,000	NOTE 1
Gas	6.000	, $/M ft.^3	x	0	M cu.ft./yr				0	
Water	0.790	, $/M gal	x	0	M gal/yr				0	
Steam	7.120	, $/M lb	x	0	M lb/yr				0	
Ammonia	250	, $/ton	x	0.0	ton/yr				0	
Waste disposal	7.78	, $/cu. yd.	x		cu. yd./yr				0	
Wastewater disposal	0.0027	, $/M gal	x	0	M gal/yr				0	
Total Direct Operating Costs (DC)		Subtotal of above								353,406 (DC)
Indirect operating (fixed) costs										
Overhead	60%	of operating and maintenance labor and materials.						$116,618	69,971	
Property Tax	1%	of total installed capital costs.						$3,924,240	39,242	
Insurance	1%	of total installed capital costs.						$3,924,240	39,242	
Administration	2%	of total installed capital costs.						$3,924,240	78,485	
Capital Recovery	CRF,	0.1424 x (total installed capital costs)						$3,924,240	558,723	
	(at	7% interest and		10	years)					
Total Fixed Costs (IC)	Subtotal of above									785,664 (IC)
Total Annualized Costs	(DC+IC)									1,139,070
Tons Per Year of VOC Emitted:	92	2.84	lb/MBF	64,896	MBF/yr					
Cost Effectiveness at Emission Reduction, $/Ton Of VOC Reduced										
76.5%	**=**	**$16,160**	**at**	**85%**	**capture and**	**90% control**				

NOTE 1: Fuel costs would be incurred by the increased fuel needed to offset reduced boiler efficiency, which would need to be purchased to supplement wood waste produced at the mill.

Combustion in a Catalytic Thermal Oxidizer

Catalytic thermal oxidizers use a catalyst bed in the gas stream to lower the temperature at which the contaminants will combust. This can result in substantial cost efficiencies because less auxiliary fuel may be required. However, catalyst beds are subject to plugging which would be a concern with the kiln exhaust stream under consideration. The catalytic system vendors contacted for this evaluation confirmed that a catalytic system would not be the best choice and suggested that a more appropriate device may be a regenerative thermal oxidizer.

Nonetheless, cost estimates were obtained for a catalytic unit and these costs are summarized in Tables 3-9 and 3-10. Again, the estimates of capital and operating costs were based on methodology recommended in the EPA's Control Cost Manual. These estimates show a control effectiveness cost of $17,380 per ton of VOC controlled. This cost would be excessive, such that combustion of the lumber kiln's exhaust in a catalytic thermal oxidizer is economically infeasible and does not represent BACT.

Combustion in a Regenerative Thermal Oxidizer

Regenerative thermal oxidizers use heat from the oxidation process to preheat incoming gases and, under suitable conditions, to raise the gas temperature to the auto-ignition temperature of the VOCs in the stream. This can result in cost-effective operation because auxiliary fuel may not be required after the system reaches operating temperature. However, the large volumes of air and water that would need to be accommodated by a system controlling lumber kiln exhaust would require a substantial input of auxiliary fuel to maintain combustion.

Cost estimates from a supplier of regenerative thermal oxidizers are presented in Tables 3-11 and 3-12, again using the EPA cost estimating template. These estimates show control cost efficiencies of $11,050 per ton of VOC controlled for these systems. These costs would be excessive. Therefore, combustion of the lumber kiln's exhaust in a regenerative thermal oxidizer is economically infeasible and does not represent BACT.

Proposed BACT for VOC

Champion believes that the technologies available for controlling VOC emissions from other source types are not applicable to a steam heated lumber drying kiln for the technological and economic reasons outlined in the previous subsections. Champion proposes that BACT for the control of VOC emissions from the new kiln is proper installation, operation, and maintenance of the kiln. This will minimize the steam requirements for the kiln and maximize the kiln efficiency, thereby reducing unnecessary emissions from ancillary equipment such as the wood-fired boilers which supply steam to the kiln.

Table 3-9
Capital Costs for Lumber Drying Kiln - Thermal Catalytic Oxidizer
Champion International - Camden, Texas

Cost Item	EPA Cost Factor				Cost, dollars	
Direct Costs						
Purchased Equipment Cost:						
Control Equipment (Catalytic Products International)					$ 618,733	
Collection Hood and Ductwork to CE					$ 150,000	
Installation of new propane tank (Amerigas)					$ 22,000	
Control device and auxiliary equipment					$ 790,733	(A)
Instruments and controls	0.01 (A)				$7,910	
Taxes	0.03 (A)				$23,720	
Freight	0.05 (A)				$39,540	
Total purchased equipment cost :					$861,903	(B)
Direct Installation Cost:						
Foundations and supports	0.08 (B)				$68,950	
Erection and handling	0.14 (B)				$120,670	
Electrical	0.04 (B)				$34,480	
Piping	0.02 (B)				$17,240	
Insulation	0.01 (B)				$8,620	
Painting	0.01 (B)				$8,620	
Total direct installation costs:					$258,580	
Architectural Modifications					$0	
Total direct costs:					$1,120,483	
Indirect Costs:						
Engineering and supervision	0.10 (B)	x	2.0	(custom, automated controls)	$172,380	
Construction and field expenses	0.05 (B)				$43,100	
Contractor fees	0.10 (B)				$86,190	
Startup	0.02 (B)				$17,240	
Performance test	0.01 (B)	x	4.0	(inlet/outlet, multiple scenarios)	$34,480	
Contingencies	0.50 (A)	–		(first time application on lumber kiln)	$395,370	
Contingencies	0.03 (B)	x	5.0	(efficiency guarantee)	$129,290	
Total indirect costs:					$878,050	
Total installed capital costs :					$1,998,533	

Table 3-10
Operating Costs for Lumber Drying Kiln - Thermal Catalytic Oxidizer
Champion International - Camden, Texas

Cost item	Computation method								Cost, dollars/year	
Direct operating costs										
Operating Labor										
Operator	15.00	, $/hr	x	2,190	h/yr	(4x reference costs, complex system			32,850	
Supervision	15%	of operator labor cost				never done before)			4,928	
Operating materials										
Catalyst replacement	635.00	, $/cf	x	120	cf				76,200	
Chemicals	0	, $/ton	x	0	ton/yr				0	
Maintenance (general)										
Labor	18.00	, $/hr	x	2,190	h/yr	(4x reference costs, complex system			39,420	
Materials	100%	of maintenance labor				never done before)			39,420	
Replacement parts										
Materials		As required (2.00% of capital costs)							39,971	
Labor		100% of replacement parts cost							39,971	
Utilities										
Electricity (w/o comp. air)	0.0370	, $/kWh	x	1,401,600	kWh/yr				51,859	
Fuel (propane)	0.715	, $/gal	x	744,073	gal/yr				532,013	
Electricity (comp. air)	0.0370	, $/kWh	x	65,323	kWh/yr	(10 hp compressor)			2,417	
Water	0.790	, $/M gal	x	0	M gal/yr				0	
Steam	7.120	, $/M lb	x	0	M lb/yr				0	
Ammonia	250	, $/ton	x	0.0	ton/yr				0	
Waste disposal	7.78	, $/cu. yd.	x	0	cu. yd./yr				0	
Wastewater disposal	0.0027	, $/M gal	x	0	M gal/yr				0 ?	
Total Direct Operating Costs (DC)		Subtotal of above								859,047 (DC)
Indirect operating (fixed) costs										
Overhead	60%	of operating and maintenance labor and materials,						$116,618	69,971	
Property Tax	1%	of total installed capital costs,						$1,998,533	19,985	
Insurance	1%	of total installed capital costs,						$1,998,533	19,985	
Administration	2%	of total installed capital costs,						$1,998,533	39,971	
Capital Recovery	CRF,	0.1424 x (total installed capital costs)						$1,998,533	284,546	
	(at	7% interest and		10	years)					
Subtotal of above										434,458 (IC)
Total Annualized Costs	(DC+IC)									1,293,505

Tons Per Year of VOC Emitted: 92 2.84 lb/MBF 64,896 MBF/yr

Cost Effectiveness at Emission Reduction, $/Ton Of VOC Reduced

80.8% = $17,380 at 85% capture and 95% control

Table 3-11
Capital Costs for Lumber Drying Kiln - Regenerative Thermal Oxidizer
Champion International - Camden, Texas

Cost Item	EPA Cost Factor				Cost, dollars	
Direct Costs						
Purchased Equipment Cost:						
Control Equipment (REECO - RE-THERM RL Model R40-V3-95V RTO)					$ 715,000	
Collection Hood and Ductwork to CE					$ 150,000	
Installation of new propane tank (Amerigas)					$ 22,000	
Control device and auxillary equipment					$ 887,000	(A)
Instruments and controls	0.01 (A)				$8,870	
Taxes	0.03 (A)				$26,610	
Freight	0.02 (A)			(only covers hood and tank, included in CE costs)	$17,740	
Total purchased equipment cost :					$940,220	(B)
Direct Installation Cost:						
Foundations and supports	0.08 (B)				$75,220	
Erection and handling	0.14 (B)				$131,630	
Electrical	0.04 (B)				$37,610	
Piping	0.02 (B)				$18,800	
Insulation	0.01 (B)				$9,400	
Painting	0.01 (B)				$9,400	
Total direct installation costs:					$282,060	
Architectural Modifications					$0	
Total direct costs:					$1,222,280	
Indirect Costs:						
Engineering and supervision	0.10 (B)	x	2.0	(custom, automated controls)	$188,044	
Construction and field expenses	0.05 (B)				$47,010	
Contractor fees	0.10 (B)				$94,020	
Startup	0.02 (B)				$18,800	
Performance test	0.01 (B)	x	4.0	(inlet/outlet, multiple scenarios)	$37,610	
Contingencies	0.50 (A)	–		(first time application on lumber kiln)	$443,500	
Contingencies	0.03 (B)	x	5.0	(efficiency guarantee)	$141,030	
Total indirect costs:					$970,014	
Total installed capital costs :					$2,192,294	

Table 3-12
Operating Costs for Lumber Drying Kiln - Regenerative Thermal Oxidizer
Champion International - Camden, Texas

Cost item	Computation method							Cost, dollars/year	
Direct operating costs									
Operating Labor									
Operator	15.00	, $/hr	x	2,190	h/yr	(4x reference costs, complex system		32,850	
Supervision	15%	of operator labor cost				never done before)		4,928	
Operating materials									
Chemicals	0	, $/ton	x	0	ton/yr			0	
Maintenance (general)									
Labor	18.00	, $/hr	x	2,190	h/yr	(4x reference costs, complex system		39,420	
Materials	100%	of maintenance labor				never done before)		39,420	
Replacement parts									
Materials		As required (2.00% of capital costs)						43,846	
Labor		100% of replacement parts cost						43,846	
Utilities									
Electricity (w/o comp. air)	0.0370	, $/kWh	x	350,400	kWh/yr			12,965	
Fuel (propane)	0.715	, $/gal	x	186,018	gal/yr			133,003	
Electricity (comp. air)	0.0370	, $/kWh	x	65,323	kWh/yr	(10 hp compressor)		2,417	
Water	0.790	, $/M gal	x	0	M gal/yr			0	
Steam	7.120	, $/M lb	x	0	M lb/yr			0	
Ammonia	250	, $/ton	x	0.0	ton/yr			0	
Waste disposal	7.78	, $/cu. yd.	x	0	cu. yd./yr			0	
Wastewater disposal	0.0027	, $/M gal	x	0	M gal/yr			0	
Total Direct Operating Costs (DC)		Subtotal of above							352,694 (DC)
Indirect operating (fixed) costs									
Overhead	60%	of operating and maintenance labor and materials,					$116,618	69,971	
Property Tax	1%	of total installed capital costs,					$2,192,294	21,923	
Insurance	1%	of total installed capital costs,					$2,192,294	21,923	
Administration	2%	of total installed capital costs,					$2,192,294	43,846	
Capital Recovery	CRF,	0.1424	x (total installed capital costs)				$2,192,294	312,133	
	(at	7%	interest and	10	years)				
Total Fixed Costs (IC)	Subtotal of above								469,796 (IC)
Total Annualized Costs	(DC+IC)								822,490

Tons Per Year of VOC Emitted: 92 2.84 lb/MBF 64,896 MBF/yr

Cost Effectiveness at Emission Reduction, $/Ton Of VOC Reduced

80.8% = $11,050 at 85% capture and 95% control

3.4.3 Kiln PM_{10} BACT

The proposed new lumber drying kiln may have minor amounts of PM_{10} present in the exhaust stream. The activities within a lumber drying kiln during the drying cycle do not include any mechanical operations that would result in the creation of particulate matter. However, PM_{10} may be present in the exhaust because of dust present on the surface of the lumber as it dries, or carried into the kiln as the lumber is loaded and unloaded. The air movement within the kiln is at a relatively low velocity. Therefore, only very fine particles would have the potential to be entrained and exhausted from the kiln. Alternatively, particulate matter may be formed as VOCs condense after cooling when released from the kiln. BACT for these emissions has been evaluated for Texas New Source Review only.

Champion is unaware of any PM_{10} controls applied to a lumber drying kiln. The exhaust volume from the new kiln will be relatively high, approximately 46,000 acfm maximum, with a high moisture content. Fabric filter type control devices would be the only type of device potentially applicable to such a source, although moisture levels and the corrosive nature of the exhaust gas could cause operating problems with such a system. The predicted uncontrolled PM_{10} outlet loading from the kiln is an average of 0.003 to 0.006 grains per dry standard cubic foot (gr/dscf). This level is consistent with typical levels guaranteed by fabric filter vendors at their system outlets. Therefore, applying such a control technology for PM_{10} emissions from a lumber dry kiln is not technically reasonable and does not represent BACT.

Champion proposes that BACT for PM_{10} emissions from the new kiln will be proper installation, operation, and maintenance. This will minimize steam requirements for the kiln and maximize the kiln efficiency, thereby reducing unnecessary emissions from ancillary equipment such as the wood-fired boilers which supply steam to the kiln.

3.4.4 Kiln Air Toxics BACT

The VOC emissions from the proposed lumber drying kiln will include potentially hazardous air pollutants. EPA has recently reviewed air toxics emissions associated with operations at lumber manufacturing facilities as part of their MACT study for this source category. While EPA is evaluating emissions from other emission units at lumber manufacturing facilities, they have not included lumber drying kilns in their planned studies. This is likely due to the nature and quantity of emissions associated with these units. That is, the concentrations and mass emission rates, coupled with the relatively low toxicity of the compounds emitted, do not warrant additional studies and/or controls on such sources.

The limited data available on emissions from lumber kilns suggest that the primary constituents emitted from these processes are the typical VOCs emitted from wood (e.g., turpentine, terpenes and pinenes). Based on the relatively low toxicity of these compounds, their low concentrations, and the apparent lack of a MACT standard for this source type, Champian proposes that BACT for air toxics emissions from the proposed new kiln will be proper installation, operation, and maintenance. This proposal is consistent with the proposed BACT for VOCs in general.

3.5 PROPOSED COMPLIANCE DEMONSTRATION METHODS

Champion currently has an annual production limit on the two existing kilns of 129,800,000 board feet per year. The proposed new kiln will be limited to 64,896,000 board feet of lumber per year. In addition, as noted in section 3.2, Champion has proposed a steam cap of 423,242,000 pounds of steam per year for the three kilns combined. It is proposed that compliance with all three of these limits be demonstrated as follows.

Champion proposes to demonstrate compliance with the production limit for the two existing kilns by adding the current month's production amount for the two kilns combined to the previous 11 months' production for the two kilns, and comparing this total with the permitted production limit for the existing kilns of 129,800,000 board feet. For the new kiln, the current month's production for the kiln will be added to the previous 11 months' production, and the sum will be compared with the proposed production limit for the new kiln of 64,896,000 board feet.

Champion proposes to demonstrate compliance with the steam cap on the three kilns by tracking lumber production and relating this production to steam usage. As noted in section 3.2, the new kiln is projected to use 2.5 pounds of steam per board foot of production, and the existing kilns have been determined to use 3 pounds of steam per board foot of production. Therefore, by tracking lumber production in the kilns it will be possible to determine the total steam used by the combined three kilns using the appropriate steam factor as listed above. Total steam usage will be calculated on a monthly basis using the actual production through each kiln and the applicable steam factor. The total monthly steam usage for each current month will be added to the usage for the previous 11 months, and the sum will be compared with the annual limit of 423,242,000 pounds of steam. This will allow Champion to use any of the kilns to produce dried lumber while maintaining compliance with the applicable steam cap.

The proposed compliance methodology will allow Champion to track lumber production as a surrogate for emissions. This methodology will allow the mill and TNRCC to determine the compliance status of the mill at any time by referring to appropriate records on lumber production.

3.6 AIR QUALITY MODELING ANALYSIS

3.6.1 Introduction

This section of the application addresses the air quality modeling requirements associated with the Camden mill project. As noted in section 3.2.1, the only pollutants that will be emitted in quantities greater than the PSD significant emissions increase levels are CO and VOC. In addition, the new kiln will emit pollutants that must be evaluated under the state's effects evaluation analysis for non-criteria pollutants. Based on the limited amount of speciation data available for lumber drying kiln emissions, three pollutants that have been identified as potentially being emitted from the new kiln are turpentine, terpenes, and pinenes. These compounds are included on the Effects Screening Level (ESL) list. The non-criteria pollutant evaluation included the air quality impacts associated with emissions of these pollutants.

While an annual increase in CO emissions is projected due to the proposed project, the short-term emissions of CO due to boiler operations are not projected to increase over historic short-term emissions. This is due to the fact that the boilers have routinely operated at their maximum potential steaming rates to meet short-term steam demands at the mill. For example, during startup of operations such as the existing kilns, or during periods when production through the kilns coupled with steam demands from the plywood facility are maximized, all three boilers have been operated for short periods (1 to 16 hours) at their maximum potential steaming rates. Hence, there will be no increase in short-term emissions due to the proposed project. Data supporting this assertion is presented in Appendix D. Since CO is only regulated on a short-term basis (1-hour and 8-hour ambient air quality standards), CO impacts on air quality in the area will not change as a result of the proposed project. Therefore, modeling for CO was not conducted.

In order to evaluate VOC emission increases resulting from the proposed project, a screening technique known as the Scheffe technique was used to calculate the impact that VOC emissions would have on ozone formation in the area. Appendix E includes a summary of the results of this analysis, which was conduced by the TNRCC based on information provided by Champion on emissions of VOC and NO_x.

The air quality dispersion models used in the effects evaluation analysis of the Camden mill project were U.S. EPA-approved models. The air quality modeling analysis included screening and refined air dispersion models. The procedures used in conducting the modeling analysis followed the requirements outlined in U.S. EPA's Guideline on Air Quality Models, 40 CFR Part 51, Appendix W; and in TNRCC's Air Quality Modeling Guidelines.

The potential for off-site cavity zone impacts associated with emissions of pinenes, terpenes, and turpentine resulting from the proposed kiln were evaluated using the EPA SCREEN3 model. Short-term and annual air quality impacts resulting from emissions of pinenes, terpenes, and turpentine from the proposed kiln were calculated using the ISCST3 model. The remainder of this section of the permit application addresses the models, modeling parameters, meteorological data, and receptor grid, presents a GEP stack height analysis, and reports the results of the analysis.

3.6.2 Screening Model Selection

The U.S. EPA SCREEN3 (version 96043) air dispersion model was used to determine the off-site cavity zone impacts. SCREEN3 is a computerized version of the modeling techniques described in the SCREEN3 Model User's Guide. The SCREEN3 regulatory mixing height option and an anemometer height of 10 meters were used.

The SCREEN3 air dispersion model contains cavity zone concentration algorithms to provide predictions of the impacts in the cavity recirculation zones of buildings. The cavity zone concentrations was determined using the Schulman-Scire cavity zone algorithms. The results from the Building Profile Input Program were used to determine which structures influence a source. The SCREEN3 model was used to predict the maximum cavity concentration for each of the four downwind recirculation cavities that would be formed by winds perpendicular to each building face. The model calculates the maximum cavity concentrations for wind speeds measured at a height of 10 meters at speeds up to 20 m/s. In addition, the model reports the predicted concentrations for each of the 20 wind speeds from 1 m/s to 20 m/s. Annual cavity zone concentrations were not calculated since cavity zone impacts are short-term phenomena and are not representative of long-term conditions.

The cavity zone for each structure or building at the facility was determined and compared with the location of the proposed new kiln. For cavity zones that could potentially affect the new kiln vents, the downwind length of the cavity zone was compared with the downwind distance to the fence line. Only the Planer Building with a 63 meter cavity zone both affects the new kiln and extends beyond the fence line. Furthermore, the portion of the cavity zone extending beyond the fence line is associated with the northern end of the Planer Building. The new kiln will be located at the southern end of the Planer Building. The minimum distance to the fence line at the southern end of the Planer Building is greater than 80 meters. Therefore, no cavity concentrations are projected to occur off-site.

3.6.3 Refined Model Selection

The U.S. EPA Industrial Source Complex Short-Term 3 (ISCST3, version 96113) model was used to perform the refined modeling analysis used to evaluate impacts associated with pinenes, terpenes and turpentine emitted by the proposed new kiln. The ISCST3 model can predict short-term and long-term (annual) concentrations from multiple emission points in rural or urban areas. The ISCST3 air dispersion model can also account for the effects of aerodynamic downwash of a stack's plume by nearby structures. The ISCST3 air dispersion model accepts hourly meteorological data to define the conditions for plume rise, transport, and dispersion. The model estimates the concentration for each source and receptor combination for each hour.

The ISCST3 air dispersion model has various options to simulate a variety of dispersion conditions for emissions from a stack or non-stack source. The U.S. EPA has recommended various default options to be used in dispersion modeling for regulatory purposes. The recommended regulatory default options were used in the air quality impact analysis as follows:

- Stack-tip downwash.
- Final plume rise.
- Buoyancy-induced dispersion (BID).
- Vertical potential temperature gradients of 0.0, 0.0, 0.0, 0.0, 0.02, and 0.035 for stability classes A through F, respectively.
- Automatic treatment of calms.
- Wind profile exponents of 0.07, 0.07, 0.010, 0.15, 0.35, and 0.55 for stability classes A through F, respectively.

- Infinite pollutant half-life.

- Upper bound value for "supersquat" buildings.

- Missing data processing not used.

3.6.4 Land Use and Topography

The land use classification for the area was based on a simplified review of land use patterns surrounding the Camden mill. For the qualitative review, the 7.5 minute United States Geological Survey (USGS) topographic maps were used. The USGS topographic maps are provisional maps dated 1984. Despite the date of the maps, the maps are still representative of the land use surrounding the mill. The land use analysis followed the procedures recommended by the TNRCC in Section 5.1.1 of the air quality modeling document. To evaluate the land use using USGS topographic maps an area is defined as rural if more than 70 percent of the surface within 3 kilometers of the source falls under a rural land use type. The TNRCC simplified land use analysis indicated that the area surrounding the mill is rural. Therefore, rural dispersion coefficients were used to assess the air quality impacts from the stacks.

3.6.5 Receptor Grid Selection

Receptor grids used in the refined air quality analysis were prepared for the ISCST3 model that conform with TNRCC recommendations. The receptor grids incorporated terrain elevations that were determined from USGS 7.5 topographic maps.

A Cartesian receptor grid was used as the main receptor grid, with additional receptors placed around the mill fence line. The Cartesian receptor grid was centered on a location near the central portion of the Champion facility. The Universal Transverse Mercator (UTM) coordinates of the grid center are 334,000 Easting 3,421,000 Northing. The following receptor spacing was used:

- 25 meters out to ± 0.5 kilometers;
- 100 meters out to ± 1 kilometer
- 200 meters out to ± 3 kilometers;
- 500 meters out to ± 10 kilometers.

Cartesian receptors that are inside the Champion fence line were excluded from the receptor grid. The fence line was represented by discrete receptors at 25 meter intervals. Terrain elevations were included in the modeling analysis. Terrain heights for all receptors were obtained from USGS 7.5 minute topographical maps. The maximum elevation falling within a rectangular area extending from each modeled receptor point to halfway to an adjoining receptor was assigned to the modeled receptor.

3.6.6 Meteorological Data

The meteorological database for the ISCST3 air dispersion model consisted of five years (1987-1991) of National Weather Services (NWS) surface data collected at Shreveport, Louisiana. Coincident mixing heights was derived by merging surface temperatures with concurrent twice-daily rawinsonde data obtained from Lake Charles, Louisiana. The processed meteorological data was obtained directly from the TNRCC. Shreveport is located approximately 122 miles northeast of the Champion facility. Due to the absence of significant terrain features between Camden and Shreveport, the NWS data can be considered representative of the Camden area.

3.6.7 Good Engineering Practice Stack Height Analysis

Following EPA guidance, a Good Engineering Practice (GEP) stack height analysis was performed to evaluate the potential for building downwash. The following procedure was used to analyze the kiln vents for downwash effects. The vents and influencing buildings were located on a plant map. The vent height and relevant building dimensions were evaluated using the U.S. EPA Building Profile Input Program (BPIP, Date 95086). BPIP determines, in each of the 36 wind directions (10° sectors), which building may cause downwash for a particular emission point. The building-specific dimensions produced by BPIP were included in the air quality modeling analysis. The direction-specific dimensions were also used for the cavity zone analysis.

3.6.8 Emissions Inventory for Modeling

As noted in subsection 3.6.1, NO_x and VOC emission estimates were provided to TNRCC for an ozone formation screening analysis. It is important to note that the data provided to TNRCC were based on initial estimates of the expected emissions of NO_x and VOC from the project. The refined analysis of project related emissions resulted in lower projected increases for these pollutants than those initially projected and reported to TNRCC. Therefore, it is anticipated that ozone impacts will be less than those projected by the initial screening analysis. Table 3-13 provides a comparison between the NO_x and VOC emissions used in the initial analysis and the refined projections contained in this application.

TABLE 3-13
COMPARISON OF
INITIAL NO_x AND VOC EMISSIONS USED IN AREA OZONE MODELING
WITH REVISED PROJECTED EMISSIONS

POLLUTANT	INITIAL PROJECTIONS[1]		CURRENT PROJECTION[2]	
	DAILY MAX.	ANNUAL	DAILY	ANNUAL
VOC	1,070 lbs	200 tons	842 lbs	119.7 tons
NO_x	---	50 tons	---	16.1 tons

[1] Initial projections used in the TNRCC screening modeling analysis.
[2] Based on estimates included in this permit application.

The VOC emissions from the proposed kiln can be speciated as turpentine, terpenes, and pinenes, compounds for which ESLs have been established. Turpentine is the general term used to describe the volatile oil contained in coniferous trees such as the southern yellow pine used at the Camden mill. Based on data for similar tree species, the composition of turpentine can be characterized as consisting of terpenes, most of which are alpha and beta pinenes.

The emission rates used in the health effects modeling for the kiln project are based on the following assumptions:

- All of the VOC emissions from the kiln will be turpentine.
- All of the turpentine will consist of various terpenes.
- 85% of the terpenes will be pinenes.

Research (Ingram, et al) indicates that approximately 85% of the turpentine will be alpha and beta pinenes. Additional research (Drew and Pylant) provides support for the VOC emission rates established in section 3.2. This research reports a turpentine content of approximately 6.3 lb/MBF for Loblolly pine, which makes up virtually all of Camden's log furnish. Of this turpentine content, the research indicates that approximately 40%, or 2.5 lb/MBF, is emitted to the atmosphere during the drying process. This is consistent with the use of 2.84 lb/MBF as a long-term emission factor in this application. The assumption that all VOCs are turpentine is conservative, and equivalent to assuming that 45% of the wood's turpentine content is released to the atmosphere during the drying process. References cited above are listed at the end of this section.

The turpentine, terpene, and pinene emission rates used in the health effects analysis are shown in Table 3-14. It has been conservatively assumed that all VOCs are turpentine, as discussed above. The emission rates are based on the VOC emission rates developed for the new kiln and discussed in Section 3.2. The short-term (1-hour) emission rates used in the analysis are based on the projected 1-hour emission rate for VOC emissions from the kiln (28.8 pounds per hour). The long-term (annual) emission rates used in the analysis are based on the annual VOC emission rate (92.15 tons per year or an average of 21.0 pounds per hour).

3.6.9 Ozone Modeling Results

The results of the ozone modeling study conducted by TNRCC based on data provided by Champion indicate that the predicted incremental impact due to the proposed project, when added to a conservative background ozone concentration, should not adversely affect ambient ozone concentrations in Polk County. The results of the analysis also suggest that data from Jasper County can be used to characterize background ozone concentrations. Therefore, pre-construction monitoring should not be required. A copy of the TNRCC analysis for this evaluation is included in Appendix E.

3.6.10 Health Effects Modeling Results

The health effects modeling results for the proposed project are included in Table 3-15. The results of the analysis of emissions of turpentine, terpenes, and pinenes from the new kiln are

TABLE 3-14
PHYSICAL VENT CHARACTERISTICS AND POLLUTANT EMISSION RATES
FOR THE PROPOSED KILN
CHAMPION INTERNATIONAL CORPORATION
CAMDEN, TEXAS

Source	Vent Location UTM (m)	Base Elevation (m)	Vent Height (m)	Equivalent Vent Diameter* (m)	Vent Exit Velocity (m/sec)	Vent Temperature (°k)	Pollutant Emission Rate (g/sec)					
							Turpentine		Terpenes		Pinenes	
							1-hour	Annual	1-hour	Annual	1-hour	Annual
New Kiln (5 vents)	333896, 3421444	91.44	6.32	0.80	4.87	366.5	0.726	0.529	0.726	0.529	0.617	0.450
	333894, 3421438	91.44	6.32	0.80	4.87	366.5	0.726	0.529	0.726	0.529	0.617	0.450
	333893, 3421431	91.44	6.32	0.80	4.87	366.5	0.726	0.529	0.726	0.529	0.617	0.450
	333891, 3421425	91.44	6.32	0.80	4.87	366.5	0.726	0.529	0.726	0.529	0.617	0.450
	333889, 3421418	91.44	6.32	0.80	4.87	366.5	0.726	0.529	0.726	0.529	0.617	0.450

NA = Not applicable
* Equivalent diameter based on a 28" square opening

TABLE 3-15
COMPARISON OF KILN IMPACTS WITH ESL VALUES
CHAMPION INTERNATIONAL CORPORATION
CAMDEN, TEXAS

POLLUTANT	SHORT-TERM IMPACT[a], $\mu g/m^3$			ANNUAL IMPACT, $\mu g/m^3$		
	PEAK	NEAREST RESIDENCE	ESL	PEAK	NEAREST RESIDENCE	ESL
Turpentine	4,886	732	5,560	164	4.2	556
Terpenes	4,886	732	2,000	164	4.2	200
Pinenes[c]	4,153	622	64	[b]	[b]	[b]

[a] Based on peak 1-hour concentration
[b] No annual value for pinene—short-term value is more restrictive than long-term value
[c] Pinene values are odor based

compared with the applicable ESL values in the table. These values include the peak predicted off-property impact as well as impacts predicted for the nearest residence. For annual impacts, the peak off-property concentrations of turpentine and terpenes are below the annual ESLs. There is no annual ESL established for pinenes because the hourly value (based on odor) is more restrictive than the annual would be. The highest annual turpentine and terpene concentrations at the nearest residence are less than 1% and 2.1% of the ESLs for turpentine and terpenes, respectively.

For hourly impacts, the peak predicted off-property concentration of turpentine is below the ESL and the highest turpentine concentration predicted at the nearest residence is less than 15 per cent of the ESL. The peak predicted off-property concentration of terpene is greater than the ESL by a factor of 2.4, but at the nearest residence, where the potential for exposure is highest, the highest concentration is less than 40% of the relevant ESL.

The pinene impacts exceed the short-term ESL at the nearest residence as well as at the peak off-property location. However, the pinene ESL is based on the odor threshold for these compounds and is not related to health risk concerns. The mill has not experienced odor complaints due to the operation of their current kilns, which have similar emissions, so it is not anticipated that the new kiln will result in odor complaints or nuisance odors. In addition, the nuisance provision in the General Rules (30 TAC Chapter 101) provides a mechanism to address odor complaints should they arise due to emissions from the kiln.

3.7 IMPACT ON GROWTH, VISIBILITY, SOILS, AND VEGETATION

PSD regulations require that an analysis be conducted to determine whether any impairment to visibility or other adverse impacts on soils and vegetation in the vicinity of the source would occur. Specifically, five areas have been examined: associated growth, visibility, acidification of rainfall, soils, and vegetation. The proposed mill modifications should not cause adverse impacts in any of these areas; however, it is important to recognize their potential existence.

3.7.1 Associated Growth

It is not anticipated that the mill modifications will require any additional staff. Thus, there will be no perceptible negative growth impacts resulting from the project.

3.7.2 Visibility

Pollutants responsible for visibility reduction are classified into three major groups:

- Hygroscopic particles.
- Opaque agglomerates (e.g., carbon, metal particles).
- Transparent crystals (e.g., silicon, calcium).

The mill modifications are estimated to result in a less than significant increase in PM_{10} emissions and an increase of less than 1 ton per year of sulfur dioxide. Hence, it is not anticipated that any perceptible reduction in visibility will occur due to the emission of primary or secondary aerosols by the proposed mill modification.

Nitrogen dioxide absorbs light energy over the entire visible spectrum, although primarily in the shorter, blue wave length regions. Thus, nitrogen dioxide can by itself reduce visibility. In addition, visibility reducing aerosols are formed by photochemical processes involving oxides of nitrogen and hydrocarbons. However, no significant increase in NO_x emissions is projected for the proposed project. Hence, visibility impairment should not occur.

3.7.3 Acidification of Rainfall

Sulfuric acid may be formed in the natural atmospheric removal process associated with sulfur dioxide. Acidity levels of precipitation can be increased with this addition of hydrogen ions and potentially may have an adverse impact on biotic communities.

As previously indicated, the emission rate of SO_2 from the proposed project is estimated to be less than 1 ton per year. At this relatively low emission rate, no measurable increase in rainfall acidification is anticipated due to the proposed project.

3.7.4 Soils

Operation of the facility must be addressed to determine the impacts of its emissions on soils in the vicinity by mechanisms including the following.

- Dry deposition of emitted particulate matter.
- Washout deposition of particulate and water soluble gases.
- Dry reaction of gaseous compounds with the soil via metabolic incorporation into plant root systems
- Deposition of combustion particulate matter.

It is extremely difficult to quantify any of the potential impacts delineated above. However, at the low estimated emission rates for the proposed mill modifications, adverse impacts are unlikely.

Atmospheric washout will remove some particulate matter, SO_2, and NO_2. The amounts removed and initially deposited on the soil will be quite small in comparison with deposition due to emissions or sources in urban areas. It is doubtful that the pH of the rainfall in the region will be measurably lowered. Some field experiments at other locations using simulated rainfall with a pH as low as 4 have shown only small effects on soil chemical properties. These same studies have shown that forested areas absorbed much of the deposited nitrogen and benefited therefrom.

3.7.5 Vegetation

The emission of common atmospheric pollutants such as SO_2 and NO_2 has the potential to cause damage to vegetation. The proposed mill modification must be addressed to determine if it has a potential impact on vegetation.

The sensitivity of vegetation to air pollution injury varies greatly with such factors as plant species and variety, climatic and seasonal conditions, soil composition, and the nature or combinations of pollutants. In general, plants tend to be more susceptible to damage during spring and summer growing seasons and when exposed to short-term high concentrations as opposed to continuous lower levels of pollution.
A summary of research on air pollution effects on vegetation divides air pollution injuries to plants into three general categories: acute, chronic, and subtle. Acute injury is caused by exposure to a high concentration of a deleterious substance resulting in rapid visible death of some tissue. Chronic injury is caused by long-term exposure to low pollutant levels which gradually disrupts physiological processes and retards growth or yield.

Long-term subtle effects on vegetation are difficult to define and little is known to date as to the threshold concentrations and exposure times which may cause damage. The following paragraphs will, therefore, focus on acute injuries for which exposures and effects are known.

SO_2 will be emitted at extremely low levels, resulting in concentrations which will be below detection level in the atmosphere. Hence, increased emissions of SO_2 from the facility are not expected to have an adverse impact on vegetation.

Potential NO_2 damage to vegetation in the area is also unlikely. In general, acute NO_2 damage to vegetation is not likely to occur at levels found outdoors although some reduction in growth might occur at continuous levels of 200 - 500 $\mu g/m^3$. Sensitive species may be damaged by 4-hour concentrations of 3,800 - 13,3000 $\mu g/m^3$. Soybeans are considered to have intermediate sensitivity (4-hour injury threshold of 9,400 - 18,800 $\mu g/m^3$), while corn is rated as resistant (4-hour injury threshold of 16,900 $\mu g/m^3$). In view of the minor increase in NO_2 emissions anticipated as a result of operation of the proposed new kiln, no adverse effects on vegetation are expected to occur.

3.8 REFERENCES

NCASI Technical Bulletin #718, July 1996.

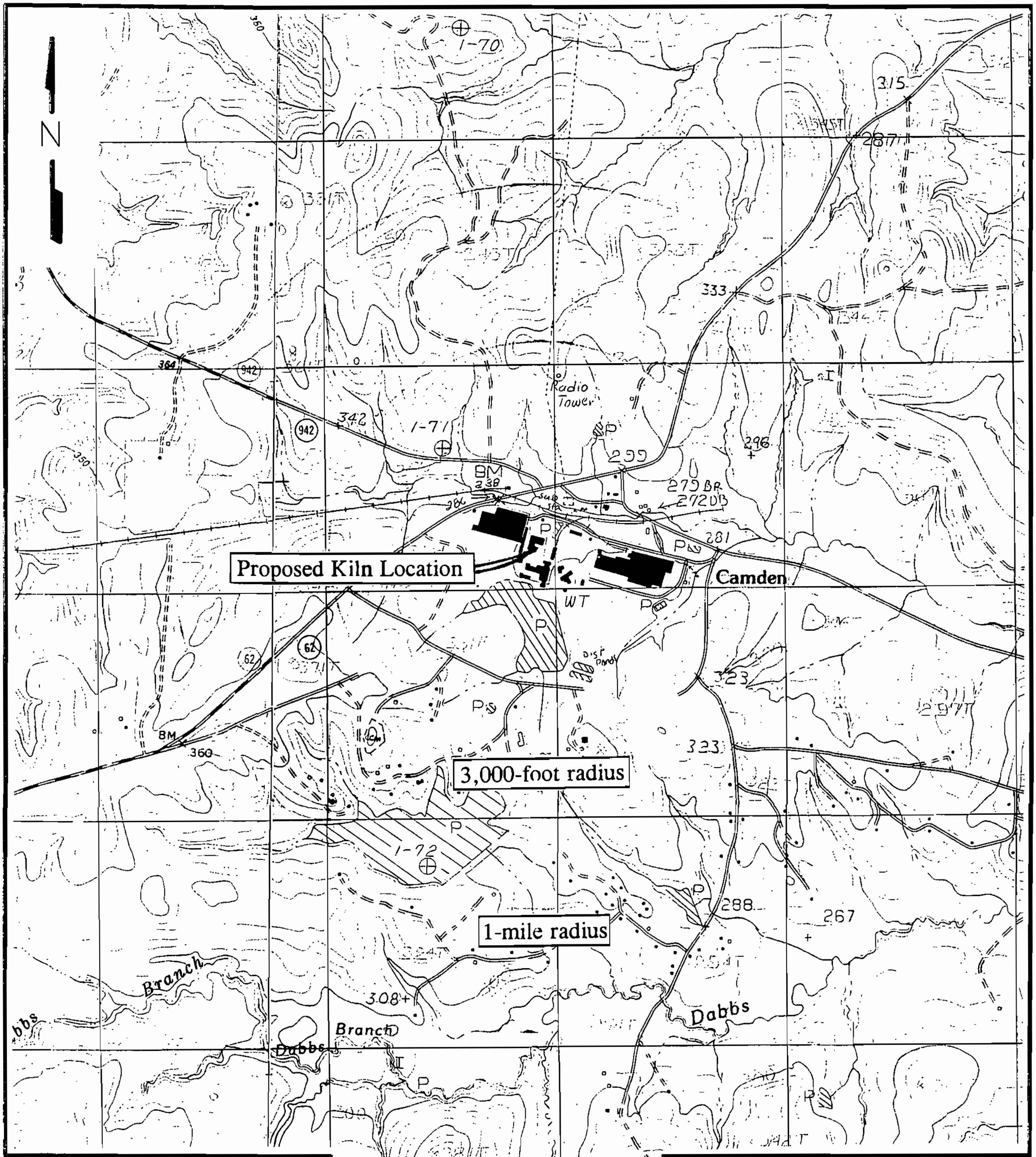
Ingram, Taylor, Punsavon, and Templeton, "Identification of volatile organic compounds emitted during the drying of southern pine in pilot and laboratory experiments," Internal Report, Forest Products Laboratory, Mississippi State University, 1994.

Drew and Pylant, "Turpentine from the Pulpwoods of the United States and Canada," Volume 49, No. 10, October 1966, pg. 430-438.

APPENDICES

APPENDIX A

FACILITY LOCATION (AREA) MAP



BASE MAP FROM:
U.S. DEPT. OF THE INTERIOR
GEOLOGICAL SURVEY
CAMDEN QUADRANGLE
CORRIGAN QUADRANGLE
TEXAS
7.5 MINUTE SERIES (TOPOGRAPHIC)
RESPECTIVELY
SCALE 1: 24,000

0 1000 2000
SCALE IN FEET

WESTON
MANAGERS DESIGNERS/CONSULTANTS

APPENDIX – A

AREA MAP

CHAMPION INTERNATIONAL
CAMDEN, TEXAS

DATE	PROJECT NO.	SCALE
MAR 98	02246089001	1: 24,000

H: \DWG\CHAMPIONS-INTL\APPENDIX-A.PB.GG 1=1 03-17-98 (NEWWEST.PCP)

APPENDIX B

FACILITY PLOT PLAN

APPENDIX C

DOCUMENTATION OF EMISSION CALCULATIONS

CHAMPION INTERNATIONAL
CAMDEN MILL
CALCULATION OF BOILER EMISSION INCREASES

Data:			Boiler 1	Boiler 2	Boiler 3
Btu requirement	107,600	MMBtu/yr	9,684	9,684	88,232
Fuel requirement	6,114	BD tons fuel			
	11,956	wet tons fuel	1,076	1,076	9,804

Pollutant	Emission Factor	Units	Annual Emissions
Boiler 1	**9**	**percent of steam supply**	
PM	0.2	lb/MMBtu	0.97
PM10	0.2	lb/MMBtu	0.97
VOCs (as carbon)	0.1	lb/MMBtu	0.48
NOx	0.2	lb/MMBtu	0.97
CO	0.7	lb/MMBtu	3.39
SO2	0.075	lb/wet ton fuel	0.04
Lead	3.50E-04	lb/wet ton fuel	1.9E-04
Boiler 2	**9**	**percent of steam supply**	
PM	0.2	lb/MMBtu	0.97
PM10	0.2	lb/MMBtu	0.97
VOCs (as carbon)	0.1	lb/MMBtu	0.48
NOx	0.2	lb/MMBtu	0.97
CO	0.7	lb/MMBtu	3.39
SO2	0.075	lb/wet ton fuel	0.04
Lead	3.50E-04	lb/wet ton fuel	1.9E-04
Boiler 3	**82**	**percent of steam supply**	
PM	0.2	lb/MMBtu	8.8
PM10	0.2	lb/MMBtu	8.8
VOCs (as carbon)	0.6	lb/MMBtu	26.5
NOx	0.323	lb/MMBtu	14.2
CO	6.5	lb/MMBtu	286.8
SO2	0.075	lb/wet ton fuel	0.37
Lead	3.50E-04	lb/wet ton fuel	1.7E-03
Summary			
PM			10.76
PM10			10.76
VOCs (as carbon)			27.4
NOx			16.2
CO			293.5
SO2			0.4
Lead			2.1E-03

CHAMPION INTERNATIONAL
CAMDEN MILL
PAVED ROADS EMISSIONS INCREASE ESTIMATE

	Particle Size Multiplier	Road Surface Silt Loading (sL) (g/m^2)	Mean Vehicle Weight [a] (W) (ton)	Trips / Year	Trips / Hour [b]	Miles / Trip	Total Vehicle Miles/Year (VMT/yr)	Emission Factor [c] (E) (Lb/VMT)	Uncontrolled Emission Rate (lb/hr)	Uncontrolled Annual Emissions (ton/yr)	Control Efficiency (%)	Controlled Annual Emissions (ton/yr)
AP-42 Section 13.2.4 Paved Roads (01/95) (TSP <30um)												
Short Log Truck Increase (10,000 Trucks)	0.082	8.2	27.10	10,000	2.67	0.68	6,818	5.57	10.14	18.99		18.99
Lumber Truck Increase (750 Trucks)	0.082	8.2	26.38	750	0.20	0.91	682	5.35	0.97	1.82		1.82
Shavings Truck Increase (240 Trucks)	0.082	8.2	24.43	240	0.06	0.87	209	4.77	0.27	0.50		0.50
												21.31
AP-42 Section 13.2.4 Paved Roads (01/95) (PM10 <10um)												
Short Log Truck Increase (10,000 Trucks)	0.016	8.2	27.10	10,000	2.67	0.68	6,818	1.09	1.98	3.71		3.71
Lumber Truck Increase (750 Trucks)	0.016	8.2	26.38	750	0.20	0.91	682	1.04	0.19	0.36		0.36
Shavings Truck Increase (240 Trucks)	0.016	8.2	24.43	240	0.06	0.87	209	0.93	0.05	0.10		0.10
											TOTALS	4.16

General paved road fugitive emissions calculation is: $E = k\,(sL/2)^{0.65}\,(W/3)^{1.5}$.

Derivation of Log Weight/Lumber Production Factor

100 ft^3 logs results in production of 70 ft^3 of lumber (70/100 = 0.7 ft^3 lumber/ft^3 logs)
An average 100 cubic feet of logs as received weighs 6,133 pounds (61.33 lb/ft^3)
There are 12 BF of lumber per ft^3 of lumber (board foot = 1 ft x 1 ft x 1 inch)

$$0.7\ ft^3\ \text{lumber}/ft^3\ \text{logs} \times 12\ BF/ft^3\ \text{lumber} = 8.4\ BF/ft^3\text{logs}$$

$$\frac{61.33\ lb/ft^3\ \text{logs} \times 1{,}000\ BF/MBF}{8.4\ BF/ft^3\ \text{logs} \times 2{,}000\ lb\ \text{logs/ton logs}} = 3.65\ \text{tons logs}/MBF$$

APPENDIX D

BOILER OPERATING DATA

CHAMPION INTERNATIONAL
CAMDEN MILL
ESTIMATION OF KILN STEAM DEMAND (EXISTING KILNS)

DATE	#1 DRY TIME[1]	#2 DRY TIME[1]	AVG. DRY TIME	BF DRIED[2]	AVG. PPH STEAM USAGE[3]	AVG. lb/BF[4],[5]
2/16/97	23.67	22.67	23.17	313200	36000	2.66
2/17/97	22.17	29.00	25.59	300000	36500	3.11
2/19/97	16.00	18.92	17.46	300000	34700	2.02
3/1/97	20.08	24.42	22.25	313200	34425	2.45
3/3/97	23.00	21.67	22.34	300000	37300	2.78
4/2/98	21.83	28.17	25.00	300000	34850	2.90
5/1/97	23.58	19.00	21.29	300000	33070	2.35
5/5/97	20.50	23.25	21.88	313200	34655	2.42
5/6/97	24.17	24.67	24.42	313200	33160	2.59
9/27/97	22.00	25.50	23.75	313200	29790	2.26
10/10/97	23.67	20.83	22.25	300000	33030	2.45
11/3/97	22.17	19.83	21.00	300000	40190	2.81
11/6/97	24.92	20.75	22.84	300000	40215	3.06
11/7/97	21.75	25.75	23.75	313200	41070	3.11
11/10/97	20.75	21.33	21.04	300000	39875	2.80

AVERAGE	2.65 [5]

[1] #1 and #2 kiln drying times from kiln log sheets.

[2] BF dried from kiln log sheets - 2x4's = 150,000 BF/charge, 4x4's = 163,200 BF/charge

[3] Steam usage from boiler log sheets.

[4] Avg. lb/BF = Avg. Dry Time x Avg. PPH steam usage/BF dried.

[5] Does not include steam supplied to kilns through boiler ID fan turbine. This additional steam is assumed to increase total steam supply to the existing kilns to 3.0 lbMBF.

1.9 Upgrade efficiency of small boilers to include flue gas oxygen trim to reduce the still very high levels of excess air.

1.10 Install air heaters and or feedwater economizers on boilers 1 and 2 to increase the efficiency.

1.11 Improve fuel sizing and mix of fuel to boilers; blend dry fuel and wet fuel to improve average fuel moisture content.

I have notes and flue gas data that indicate the efficiency of the boiler operations in April 1993, December 1994, July 1995, July 1996, and July 1997. Some of the data is incomplete, because we were emphasizing the testing of boiler #3, the boiler that was being improved.

Date	April 93	Dec. 94	July 95	July 96	July 97
Steam flow lbs/hr Boiler #1	10,000	10,000	12,000	18,000	15,000
Boiler #2	10,000	10,000	12,000	18,000	15,000
Boiler #3	129,000	129,000	125,000	134,000	140.000
Total Steam Flow	149,000	149,000	149,000	170,000	170,000
Boiler Efficiency % Boiler #1	46.6	46.6	50.5	57.0	54.3
Boiler #2	46.6	46.6	50.5	57.0	54.3
Boiler #3	60.2	66.0	60.5	59.8	68.1
Fuel Use BDT/hr Boiler #1	1.2	1.2	1.3	1.8	1.5
Boiler #2	1.2	1.2	1.3	1.8	1.5
Boiler #3	11.9	10.8	11.4	12.4	11.4
Total Fuel Use	14.3	13.2	14.0	16.0	14.4
Heat Input MM Btu/hr Boiler #1	21.2	21.2	23.2	30.8	26.9
Boiler #2	21.2	21.2	23.2	30.8	26.9
Boiler #3	208.6	190.3	201.3	218.5	200.4
Total Heat Input	251.0	232.7	247.7	280.1	254.2
Bone dry pounds of fuel per 1000 pounds of stm.	191.9	177.2	187.9	188.2	169.4
MMBtu/Mlb steam			1.658	1.647	1.495

BEST AVAILABLE COPY

Champion

Champion International Corporation

Wednesday 8/19/92

HOUR	WATER LEVEL: Boiler Drum #1	Boiler Drum #2	Boiler Drum #3	DA TANK	STORAGE TANK	PRESSURE: DRUM	FEED WATER	DA TANK	DIESEL PUMP	DRAFT / PRESSURE: UNDER GATE	FURNACE DRAFT	BOILER OUTLET	Boiler #3 ID Fan AMPS: #1 MTR	#2 MTR	INSTRUMENT AIR	O_2: #3	TEMPERATURE: DA TANK	BOILER OUTLET	F.W.P.	#3 FURNACE
7:00 A	.2	.4	.1	-3	✓	453	682	22	120		-.34		325	348	70	6.9	258			1377
8:00	.1	.8	.6	-2	✓	455	751	21	120		-.41		304	335	70	5.1	255			1401
9:00	.4	.9	.6	1	✓	452	701	30	130		-.56		318	341	70	8.3	259			1364
10:00	.5	.4	.2	4	✓	453	781	18	120		-.19		338	350	70	4.7	240			1360
11:00	.5	.6	.5	3	✓	457	756	27	120		-.26		301	349	70	6.6	255			1412
12:00	.5	-.1	.8	-1	✓	451	745	26	120		-.20		308	347	70	6.0	260			1392
1:00 P	.1	.1	.2	0	Low	453	754	20	120		-.15		316	351	70	8.1	252			1415
2:00	.2	.3	.4	3	✓	454	709	35	120		-.29		305	349	70	7.3	260			1412
3:00	.9	.7	.4	2	✓	457	798	29	120		-.23		321	338	70	2.3	248			1396
4:00	.4	0	.3	0	✓	455	741	20	120		-.36		304	351	70	2.6	250			1402
5:00	.9	-.5	.6	43	✓	385	605	19	120		-.31		318	324	70	7.9	246			1306
6:00	.9	.3	.1	-2	✓	449	711	21	120		-.01		257	315	70	5.6	251			1383
7:00																				
8:00																				
9:00																				
10:00																				
11:00																				
12:00																				
1:00 A																				
2:00																				
3:00																				
4:00																				
5:00	.1	.3	.3	-2	✓	404	627	21	120		-.2		258	346	70	4.4	252			1422
6:00	.1	.4	.3	-2	✓	410	633	21	110		-.2		320	354	70	4.9	253			1422

HOUR	MECHANICAL DRIVES: R.S.V.'S	SAND CLASS	I.D. FANS	I.D. FAN BEARINGS	I.D. FAN	I.D. TURBINE	SCRUBBERS	EMERGENCY STACKS	CONVEYOR DRIVES	STEAM FLOWS: PLY	KILNS	TURBINE	PSI	#1	#2	#3	T.D.S.	A. UNIT PH		#1	#2
7:00 A	✓	✓	✓	✓	✓	✓	✓	✓		114	50	15	120	8	11	142				1145	1452
8:00	✓	✓	✓	✓	✓	✓	✓	✓		114	38	15	120	6	10	137				1180	1258
9:00	✓	✓	✓	✓	✓	✓	✓	✓		91	46	15	120	7	12	132				1228	1358
10:00	✓	✓	✓	✓	✓	✓	✓	✓		113	43	15	120	12	14	135				1255	1514
11:00	✓	✓	✓	✓	✓	✓	✓	✓		111	39	15	120	8	11	136				1186	1508
12:00	✓	✓	✓	✓	✓	✓	✓	✓		113	38	15	120	10	12	140				1266	1531
1:00 P	✓	✓	✓	✓	✓	✓	✓	✓		115	37	16	120	10	13	139				1187	1457
2:00	✓	✓	✓	✓	✓	✓	✓	✓		116	36	15	120	8	12	142				1129	1505
3:00	✓	✓	✓	✓	✓	✓	✓	✓		114	36	15	120	14	13	135				1229	1513
4:00	✓	✓	✓	✓	✓	✓	✓	✓		116	35	15	120	8	12	140				1153	1428
5:00	✓	✓	✓	✓	✓	✓	✓	✓		110	39	15	120	19	13	137				1246	1172
6:00	✓	✓	✓	✓	✓	✓	✓	✓		119	35	15	120	19	14	137				1219	1509
7:00																					
8:00																					
9:00																					
10:00																					
11:00																					
12:00																					
1:00 A																					
2:00														17	16	156	✓				
3:00	✓	✓	✓		✓	✓	✓	✓				15		20	19	153	✓				
4:00																					
5:00	✓	✓	✓	✓	✓	✓	✓	✓		134	40	15	120	21	22	141	✓			1505	1683
6:00	✓	✓	✓	✓	✓	✓	✓	✓		133	40	15	120	14	20	146	✓			1463	1572

DAYS 7A/M - 7P/M

OPERATOR Ware

	TIME
WATER COLUMN BLOWDOWN	2:00
BOILER BLOWDOWN	

NIGHTS 7P/M - 7A/M

OPERATOR

	TIME
WATER COLUMN BLOWDOWN	
BOILER BLOWDOWN	

BEST AVAILABLE COPY

Champion
Champion International Corporation

Monday 2/17/97

HOUR	WATER LEVEL Boiler Drum #1	#2	#3	DA TANK	STORAGE TANK	PRESSURE DRUM	FEED WATER	DA TANK	DIESEL PUMP	DRAFT / PRESSURE UNDER GATE	FURNACE DRAFT	BOILER OUTLET	Boiler #3 ID Fan AMPS #1 MTR	#2 MTR	INSTRUMENT AIR	O_2	TEMPERATURE DA TANK	BOILER OUTLET	F. W. P.	#3 FURNACE
7:00 A	.1	.7	.2	1	✓	450	815	38	120		-.19		322	350	20	2.4	273	695		1365
8:00	.4	1.4	.2	-3	✓	449	651	25	120		-.08		321	364	20	2.2	262	713		1402
9:00	.4	.7	.5	3	✓	438	623	30	130		-.21		313	334	20	6.7	265	736		1363
10:00	-.3	.9	1.1	-3	✓	454	721	29	120		-.12		314	312	20	6.2	268	758		1456
11:00	-.6	.3	-.4	-3	✓	416	623	21	120		-.56		308	389	20	2.5	254	740		1343
12:00																				
1:00 P	.1	1.1	.5	-1	✓	426	572	26	120		-.43		240	395	20	9.2	263	741		1446
2:00	-.1	.2	.3	2	✓	420	655	20	120		-.18		254	383	20	6.3	245	748		1398
3:00	.1	-.1	.2	1	✓	448	611	32	120		-.36		278	357	20	7.0	250	764		1423
4:00	.2	.7	.8	0	✓	432	645	30	130		-.25		264	373	20	6.1	255			1440
5:00	.1	.2	.2	3	LOW	454	731	38	120		-.35		296	376	20	8.5	268			1417
6:00	.2	.4	.2	4	✓	452	658	34	120		-.34		279	387	20	8.1	265			1406
7:00	.5	.1	-.2	1	✓	448	638	25	120		-.30		225	388	20	7.8	263			1369
8:00	-.1	.1	.2	1	✓	454	620	33	120		-.32		229	360	20	8.3	266			1327
9:00	.1	.7	.4	1	✓	453	699	27	120		-.21		278	405	20	7.5	266			1377
10:00	.2	-.4	.7	1	✓	454	743	39	120		-.43		276	388	20	9.0	270			1356
11:00	.4	.4	.2	-2	✓	453	704	35	120		.33		262	414	20	7.6	267			1316
12:00	-.1	.7	.5	0	✓	450	710	37	120		-.14		288	398	20	10.0	260			1365
1:00 A	-.2	-.4	.2	1	✓	451	712	35	120		-.21		305	326	20	11.1	268			1365
2:00	-.1	-.1	0	1	✓	450	675	34	120		.12		253	427	20		268			1423
3:00	.1	.6	.5	3	✓	453	721	21	120		.41		313	323	20	10.4	264			1393
4:00	-.3	.6	.3	1	✓	454	621	27	120		.05		323	352	20	6.9	265			1440
5:00																				
6:00	.3	-.6	.4	2	✓	454	735	28	120		.09		314	346	20	7.6	265			1394

HOUR	MECHANICAL DRIVES R S V'S	SAND CLASS	I D FANS	I D FAN BEARINGS	F D FAN	F D TURBINE	SCRUBBERS	EMERGENCY STACKS	HOG CONVEYOR DRIVES	STEAM FLOWS PLY	KILNS	TURBINE	PSI	#1	#2	#3	T D S	A - UNIT P II		Furnace Temp #1	#2
7:00 A	✓	✓	✓	✓	✓	✓	✓	✓		90	39	16	120	1	6	131				1152	1270
8:00	✓	✓	✓	✓	✓	✓	✓	✓		127	37	16	120	10	14	140				1131	1508
9:00	✓	✓	✓	✓	✓	✓	✓	✓		130	36	16	120	15	11	148				1327	1396
10:00	✓	✓	✓	✓	✓	✓	✓	✓		135	30	15	120	7	12	152				1214	1360
11:00	✓	✓	✓	✓	✓	✓	✓	✓		112	50	16	130	17	14	143				1360	1498
12:00																					
1:00 P	✓	✓	✓	✓	✓	✓	✓	✓		134	43	15	120	20	19	142				1517	1525
2:00	✓	✓	✓	✓	✓	✓	✓	✓		129	42	16	120	18	17	144				1482	1619
3:00	✓	✓	✓	✓	✓	✓	✓	✓		134	40	15	120	15	17	146				1414	1680
4:00	✓	✓	✓	✓	✓	✓	✓	✓		132	40	15	120	30	17	148				1524	1625
5:00	✓	✓	✓	✓	✓	✓	✓	✓		135	39	15	120	11	16	155	✓			1359	1596
6:00	✓	✓	✓	✓	✓	✓	✓	✓		133	38	15	120	15	17	158	✓			1320	1616
7:00	✓	✓	✓	✓	✓	✓	✓	✓		128	37	15	120	18	12	142				1365	1503
8:00	✓	✓	✓	✓	✓	✓	✓	✓		125	37	15	120	18	14	139				1437	1549
9:00	✓	✓	✓	✓	✓	✓	✓	✓		131	36	15	120	19	15	144				1580	1513
10:00	✓	✓	✓	✓	✓	✓	✓	✓		132	37	15	120	21	14	141				1519	1424
11:00	✓	✓	✓	✓	✓	✓	✓	✓		117	36	15	120	20	12	140				1423	1315
12:00	✓	✓	✓	✓	✓	✓	✓	✓		117	35	15	120	20	9	140					
1:00 A	✓	✓	✓	✓	✓	✓	✓	✓		118	35	15	120	15	12	138				1463	1272
2:00	✓	✓	✓	✓	✓	✓	✓	✓		113	35	15	120	12	15	132				1320	1516
3:00	✓	✓	✓	✓	✓	✓	✓	✓		113	35	15	120	17	15	127				1392	1416
4:00	✓	✓	✓	✓	✓	✓	✓	✓		114	33	15	120	12	12	135				1323	1330
5:00																					
6:00	✓	✓	✓	✓	✓	✓	✓	✓		126	27	15	120	15	13	141				1458	1452

DAYS 7A/M - 7P/M

OPERATOR *ATP / Wans*

	TIME
WATER COLUMN BLOWDOWN	7:25
BOILER BLOWDOWN	

NIGHTS 7P/M - 7A/M

OPERATOR *Morris*

	TIME
WATER COLUMN BLOWDOWN	
BOILER BLOWDOWN	

D4

BEST AVAILABLE COPY

Champion
Champion International Corporation

Sunday 2/16/97

HOUR	WATER LEVEL Boiler Drum #1	#2	#3	DA TANK	STORAGE TANK	PRESSURE DRUM	FEED WATER	DA TANK	DIESEL PUMP	DRAFT / PRESSURE UNDER GATE	FURNACE DRAFT	BOILER OUTLET	Boiler #3 ID Fan AMPS #1 MTR	#2 MTR	INSTRUMENT AIR	O_2 #3	TEMPERATURE DA TANK	BOILER OUTLET	F. W. P.	#3 FURNACE
7:00 A	0	.1	0	-1	✓	415	710	31	120		.01		329	344	70	8.4	268	708		1379
8:00	.7	.6	.4	-2	✓	416	691	28	120		-.14		302	363	70	8.2	266	718		1415
9:00	-.2	-.2	.6	-1	Low	419	722	34	120		-.35		282	287	70	8.9	273	691		1410
10:00	.9	.9	.3	-1	Low	418	654	26	120		-.13		300	309	70	5.2	265	709		1474
11:00	0	.2	.3	-2	✓	420	734	27	120		-.11		285	304	70	7.2	264	729		1467
12:00	0	.6	.5	-1	✓	419	781	30	120		-.13		315	328	70	7.6	268	724		1390
1:00 P	-.4	-.4	.5	-1	✓	419	727	35	120		-.17		308	321	70	4.9	276	738		1404
2:00	.9	-.1	.2	-1	✓	420	735	24	120	1	-.12		293	300	70	6.7	256	724		1391
3:00	.3	.3	.4	-2	✓	422	788	21	120		-.15		319	329	70	5.7	254	727		1392
4:00	-.1	.1	.1	-1	✓	420	759	29	120		-.25		294	302	70	7.3	267	703		1400
5:00	.6	.3	.4	3	✓	424	669	23	120		-.16		313	318	70	7.6	262	700		1409
6:00	.2	0	.2	-1	✓	453	707	38	120		-.11		307	337	70	6.6	280	738		1428
7:00	.	.1	.7	-1	✓	454	764	27	120		-.1		308	357	70	8.0	262	731		1420
8:00	-.4	.1	.6	-1	✓	452	610	32	120		-.09		324	379	70	7.7	272	731		1447
9:00																				
10:00																				
11:00	-.1	.2	.5	1	✓	451	750	28	120		-.2		324	361	70	7.3	267	760		
12:00	.7	.4	.2	-1	✓	445	760	25	120		-.1		33[illegible]	365	70	7.6	269	703		
1:00 A																				
2:00	.5	-.7	.3	-.1	✓	456	611	26	120		-.01		306	316	70	6.9	266	727		1429
3:00	-.1	-.3	.3	-2	✓	452	650	30	120		.08		323	358	70	6.2	273	714		1429
4:00	.5	-.3	.1	-2	✓	451	720	30	120		-.1		271	453	70	7.9	283	721		1346
5:00																				
6:00	-.1	0	.15	-3	✓	354	710	25	120		.1		264	451	70	10.2	251	682		1331

HOUR	MECHANICAL DRIVES R S V'S	SAND CLASS	I D FANS	I D FAN BEARINGS	F D FAN	F D TURBINE	SCRUBBERS	EMERGENCY STACKS	[illegible] DRIVES	STEAM FLOWS PLY	KILNS	TURBINE	PSI	#1	#2	#3	T D S	A - UNIT P H		Furnace Temp #1	#2
7:00 A	✓	✓	✓	✓	✓	✓	✓	✓		112	26	16	120	6	12	135				1083	1149
8:00	✓	✓	✓	✓	✓	✓	✓	✓		124	38	16	120	13	15	145				1128	1331
9:00	✓	✓	✓	✓	✓	✓	✓	✓		85	35	16	120	0	0	144				937	988
10:00	✓	✓	✓	✓	✓	✓	✓	✓		123	49	16	120	12	18	153	✓			1030	1279
11:00	✓	✓	✓	✓	✓	✓	✓	✓		126	45	16	120	14	15	149	✓			1362	1370
12:00	✓	✓	✓	✓	✓	✓	✓	✓		100	43	16	120	1	7	149				1042	1185
1:00 P	✓	✓	✓	✓	✓	✓	✓	✓		101	41	16	120	2	6	143				1018	1165
2:00	✓	✓	✓	✓	✓	✓	✓	✓		101	38	16	120	0	0	151				808	857
3:00	✓	✓	✓	✓	✓	✓	✓	✓		102	37	16	120	0	2	147				811	845
4:00	✓	✓	✓	✓	✓	✓	✓	✓		100	37	16	120	0	2	142				862	920
5:00	✓	✓	✓	✓	✓	✓	✓	✓		103	37	16	120	0	0	157				836	807
6:00	✓	✓	✓	✓	✓	✓	✓	✓		108	35	15	120	1	6	147				901	1020
7:00	✓	✓	✓	✓	✓	✓	✓	✓		110	34	15	120	0	7	147				881	1070
8:00	✓	✓	✓	✓	✓	✓	✓	✓		124	34	15	120	8	13	153				1176	1360
9:00																					
10:00																					
11:00	✓	✓	✓	✓	✓	✓	✓	✓		120	32	15	120	0	10	124				1136	1346
12:00	✓	✓	✓	✓	✓	✓	✓	✓		122	34	15	120	19	14	134				1160	1406
1:00 A																					
2:00	✓	✓	✓	✓		✓	✓	✓		121	32	15	120	7	12	141				1137	1349
3:00	✓	✓	✓	✓	✓	✓	✓	✓		121	32	15	120	6	9	105				1132	1341
4:00	✓	✓	✓	✓	✓	✓	✓	✓		126	30	15	120	1	11	137				1372	1293
5:00																					
6:00	✓	✓	✓	✓	✓	✓	✓	✓		111	27	15	120	18	7	128				1300	1358

DAYS 7A/M - 7P/M

OPERATOR [illegible]

TIME

WATER COLUMN BLOWDOWN 7:35

BOILER BLOWDOWN

NIGHTS 7P/M - 7A/M

OPERATOR KCS

TIME

WATER COLUMN BLOWDOWN

BOILER BLOWDOWN

D-5

KY 4959

BEST AVAILABLE COPY

Champion
Champion International Corporation

Saturday 3/1/97

HOUR	WATER LEVEL: Boiler Drum #1	Boiler Drum #2	Boiler Drum #3	DA TANK	STORAGE TANK	PRESSURE: DRUM	FEED WATER	DA TANK	DIESEL PUMP	DRAFT / PRESSURE: UNDER GATE	FURNACE DRAFT	BOILER OUTLET	Boiler #3 ID Fan AMPS #1 MTR	#2 MTR	INSTRUMENT AIR	O2: 3 %	TEMPERATURE: DA TANK	BOILER OUTLET	F.W.P.	#3 FURNACE
7:00 A																				
8:00																				
9:00											2									
10:00																				
11:00																				
12:00																				
1:00 P																				
2:00																				
3:00																				
4:00																				
5:00																				
6:00																				
7:00	-.3	-.1	.4	5	✓	452	681	43	120		-.27		350	318	70	6.8	278	760		1384
8:00	0	-.3	.6	-1	✓	425	655	46	120		-1.74		308	299	70	6.3	282	727		1309
9:00	.1	.4	.3	-2	✓	425	691	40	120		-.15		336	296	70	4.1	283	736		1360
10:00	.1	.1	.5	-1	✓	455	781	43	120		-.28		328	294	70	2.0	285	746		1449
11:00	-.2	.5	.4	3	✓	450	750	33	120		-.31		326	295	70	4.9	269	739		1438
12:00	-.2	1.0	.5	-1	✓	454	623	32	120		-.30		320	289	70	6.1	271	729		1431
1:00 A	.2	.4	.3	-1	✓	450	728	33	120		-.22		346	306	70	4.9	271	735		1461
2:00	.2	.5	.4	-1	✓	444	749	45	120		-.29		345	300	70	3.9	286	732		1472
3:00	.2	.2	.2	3	✓	450	679	35	120		-.32		327	301	70	5.0	266	741		1442
4:00	-.1	.4	.8	-1	✓	453	718	41	120		-.37		313	298	70	2.0	281	700		1462
5:00	0	.2	.5	-2	✓	455	754	37	120		-.26		315	297	70	2.8	281	709		1421
6:00	-.2	-.4	.5	-1	✓	456	697	38	120		-.50		297	285	70	5.8	282	716		1459

HOUR	MECHANICAL DRIVES: R S V S	SAND CLASS	I D FANS	I D FAN BEARINGS	F D FAN	F D TURBINE	SCRUBBERS	EMERGENCY STACKS	[illegible] DRIVES	STEAM FLOWS: PLY	KILNS	TURBINE	PSI	#1	#2	#3	T D S	A UNIT PH		*Furnace Temp* #1	#2
7:00 A																					
8:00																					
9:00														12	14	147	✓				
10:00																					
11:00																					
12:00																					
1:00 P																					
2:00																					
3:00																					
4:00																					
5:00																					
6:00																					
7:00	✓	✓	✓	✓	✓	✓	✓	✓		125	28	15	120	10	14	139				1118	1423
8:00	✓	✓	✓	✓	✓	✓	✓	✓		119	27	15	120	16	18	127				1333	1450
9:00	✓	✓	✓	✓	✓	✓	✓	✓		122	36	15	120	18	16	124				1463	1415
10:00	✓	✓	✓	✓	✓	✓	✓	✓		121	25	15	120	3	11	142				1067	1322
11:00	✓	✓	✓	✓	✓	✓	✓	✓		121	26	15	120	9	12	138				1264	1400
12:00	✓	✓	✓	✓	✓	✓	✓	✓		118	44	15	120	9	17	147	✓			1325	1371
1:00 A	✓	✓	✓	✓	✓	✓	✓	✓		125	42	15	120	14	15	145	✓			1536	1497
2:00	✓	✓	✓	✓	✓	✓	✓	✓		124	43	15	120	18	13	145				1501	1507
3:00	✓	✓	✓	✓	✓	✓	✓	✓		120	37	15	120	13	13	141				1384	1459
4:00	✓	✓	✓	✓	✓	✓	✓	✓		115	36	15	120	4	12	144				1274	1414
5:00	✓	✓	✓	✓	✓	✓	✓	✓		112	37	15	120	6	11	142				1219	1397
6:00	✓	✓	✓	✓	✓	✓	✓	✓		123	36	15	120	10	10	151				1334	1431

DAYS 7A/M - 7P/M

OPERATOR *KCS*

TIME

WATER COLUMN BLOWDOWN ______

BOILER BLOWDOWN ______

NIGHTS 7P/M - 7A/M

OPERATOR *JP*

TIME

WATER COLUMN BLOWDOWN ______

BOILER BLOWDOWN ______

BEST AVAILABLE COPY

Champion
Champion International Corporation

Monday 3/3/92

HOUR	WATER LEVEL: Boiler Drum #1	Boiler Drum #2	Boiler Drum #3	DA Tank	Storage Tank	PRESSURE: Drum	Feed Water	DA Tank	Diesel Pump	DRAFT / PRESSURE: Under Gate	Furnace Draft	Boiler Outlet	Boiler #3 ID Fan AMPS #1 MTR	#2 MTR	Instrument Air	O_2 %	TEMPERATURE: DA Tank	Boiler Outlet	F.W.P.	#3 Furnace	MECHANICAL DRIVES: R.S.V.'s	Sand Class	I.D. Fans	I.D. Fan Bearings	F.D. Fan	F.D. Turbine	Scrubbers	Emergency Stacks	Conveyor Drives	STEAM FLOWS: PLY	Kilns	Turbine	PSI	#1	#2	#3	TDS	A-Unit PH			
7:00 A	.1	.2	.1			423														1366	✓	✓	✓		✓	✓	✓	✓	✓		36	15	120								
8:00	.2	0	.1	-.2	✓	447	740	21	120		-.3		354	311	70	8.1	262	238		1381	✓	✓	✓	✓	✓	✓	✓	✓	✓	120	35	15	120	12	14	132				1269	1524
9:00	2	.1	.3	-.3	✓	407	640	30	120		-.3		345	317	70	5.1	258	725		1394	✓	✓	✓	✓	✓	✓	✓	✓	✓	133	37	15	120	14	15	147				1471	1646
10:00																																									
11:00																																									
12:00	.4	.3	.8	2	✓	421	640	32	120		-.3		311	305	70	5.3	267	236		1433	✓	✓	✓	✓	✓	✓	✓	✓	✓	139	33	15	120	16	17	146				1462	1651
1:00 P	.2	.3	0	2	✓	446	640	37	120		-.3		352	341	70	5.7	267	260		1488	✓	✓	✓	✓	✓	✓	✓	✓	✓	140	32	15	120	20	17	139				1421	1653
2:00																																									
3:00																																									
4:00																																									
5:00																																									
6:00																																									
7:00	.2	.4	.2	0	✓	436	750	30	120		.20		355	323	70	4.7	260	263		1397	✓	✓	✓							131	32	16	120	13	14	145				1192	14
8:00	.1	.1	.2	0	✓	452	724	17	120		.24		321	339	70	4.5	245	729		1418	✓	✓	✓	✓	✓	✓	✓	✓	✓	108	37	16	120	6	11	149				1172	1269
9:00	.2	.2	.4	.1	✓	453	664	32	120		.34		342	331	70	4.7	266	721		1404	✓	✓	✓	✓	✓	✓	✓	✓	✓	123	32	16	120	9	9	146				1231	1459
10:00	.2	.1	.5	0	✓	441	652	32	120		.19		350	320	70	5.2	260	718		1425	✓	✓	✓	✓	✓	✓	✓	✓	✓	117	47	15	120	15	12	144				1415	1372
11:00	.1	.2	.4	.2	✓	415	681	20	120		.14		331	304	70	4.4	259	726		1435	✓	✓	✓	✓	✓	✓	✓	✓	✓	125	43	16	120	20	18	153	✓			1597	1658
12:00	.2	.1	.1	2	✓	436	673	25	120		.43		300	330	70	5.6	253	759		1449	✓	✓	✓	✓	✓	✓	✓	✓	✓	132	42	16	120	20	14	155	✓			1564	1560
1:00 A	.3	.2	.4	.1	✓	455	705	32	120		.22		344	337	70	4.7	256	739		1431	✓	✓	✓	✓	✓	✓	✓	✓	✓	116	37	16	120	6	8	150				1179	1369
2:00	.4	.3	.3	3	✓	444	712	27	120		.18		366	311	70	5.5	261	742		1408	✓	✓	✓	✓	✓	✓	✓	✓	✓	125	40	16	120	14	20	155	✓			1524	1051
3:00	.2	.1	0	.2	✓	452	705	23	120		.21		362	301	70	4.2	260	774		1417	✓	✓	✓	✓	✓	✓	✓	✓	✓	116	39	15	120	4	11	146				1344	1487
4:00	.3	.2	.1	.2	✓	451	703	32	120		.37		356	320	70	2.6	255	755		1395	✓	✓	✓	✓	✓	✓	✓	✓	✓	110	39	15	120	3	9	144				1029	1301
5:00	.4	.5	.6	.2	✓	384	711	21	120		.20		315	317	70	5.0	253	726		1421	✓	✓	✓	✓	✓	✓	✓	✓	✓	134	42	16	120	18	16	147	✓			1331	1513
6:00																																									

-0

6:30

DAYS 7A/M - 7P/M

OPERATOR KCS

TIME

WATER COLUMN BLOWDOWN ____

BOILER BLOWDOWN ____

NIGHTS 7P/M - 7A/M

OPERATOR W Dus

TIME

WATER COLUMN BLOWDOWN ____

BOILER BLOWDOWN ____

D-7

BEST AVAILABLE COPY

Champion
Champion International Corporation

Tuesday 4/8/97

WATER LEVEL / PRESSURE

HOUR	Boiler Drum #1	Boiler Drum #2	Boiler Drum #3	DA TANK	STORAGE TANK	DRUM	FEED WATER	DA TANK	DIESEL PUMP
7:00 A	0	-.6	0	4	✓	453	549	36	125
8:00	.1	0	.2	3	✓	453	593	32	125
9:00	.6	-.1	-.4	2	Low	453	607	29	125
10:00	-.1	.1	-.1	1	✓	430	505	15	125
11:00	.7	.4	.2	0	✓	405	811	16	125
12:00	.2	.5	-.2	-1	✓	445	704	26	125
1:00 P	0	-.1	-.2	2	✓	400	599	24	125
2:00	-.2	.5	.4	-2	✓	447	740	25	125
3:00	-.2	-.5	.1	0	✓	452	575	26	125
4:00	.6	.6	-.4	-1	✓	453	717	30	125
5:00	0	-.3	.2	-1	✓	442	757	27	125
6:00	.1	.1	0	-2	✓	440	767	23	125
7:00									
8:00									
9:00									
10:00									
11:00									
12:00									
1:00 A									
2:00									
3:00									
4:00									
5:00									
6:00									

DRAFT / PRESSURE / O_2 / TEMPERATURE

HOUR	UNDER GATE	FURNACE DRAFT	BOILER OUTLET	Boiler #3 ID Fan AMPS #1 MTR	Boiler #3 ID Fan AMPS #2 MTR	INSTRUMENT AIR	O_2 #3 %	DA TANK	BOILER OUTLET	F.W.P	#3 FURNACE
7:00 A		-.25		360	334	70	9.2	266	725		1474
8:00		-.55		350	348	70	9.1	271	750		1427
9:00		-.25		351	335	70	8.2	268	744		1416
10:00		-.30		341	307	70	5.7	241	730		1430
11:00		-.22		317	313	70	2.8	245	724		1394
12:00		-.19		338	342	70	5.7	258	757		1408
1:00 P		-.27		335	321	70	3.7	247	740		1450
2:00		-.40		346	342	70	4.9	262	761		1425
3:00		-.27		350	340	70	6.5	265	777		1440
4:00		-.46		350	331	70	8.9	270	751		1426
5:00		-.72		345	321	70	9.3	267	700		1362
6:00		-.47		341	337	70	7.2	263	673		1498
7:00											
8:00											
9:00											
10:00											
11:00											
12:00											
1:00 A											
2:00											
3:00											
4:00											
5:00											
6:00											

MECHANICAL DRIVES

HOUR	R.S.V.'S	SAND CLASS	I.D. FANS	I.D. FAN BEARINGS	F.D. FAN	F.D. TURBINE	SCRUBBERS	EMERGENCY STACKS	DUST CONVEYOR DRIVES
7:00 A	✓	✓	✓	✓	✓	✓	✓	✓	
8:00	✓	✓	✓	✓	✓	✓	✓	✓	
9:00	✓	✓	✓	✓	✓	✓	✓	✓	
10:00	✓	✓	✓	✓	✓	✓	✓	✓	
11:00	✓	✓	✓	✓	✓	✓	✓	✓	
12:00	✓	✓	✓	✓	✓	✓	✓	✓	
1:00 P	✓	✓	✓	✓	✓	✓	✓	✓	
2:00	✓	✓	✓	✓	✓	✓	✓	✓	
3:00	✓	✓	✓	✓	✓	✓	✓	✓	
4:00	✓	✓	✓	✓	✓	✓	✓	✓	
5:00	✓	✓	✓	✓	✓	✓	✓	✓	
6:00	✓	✓	✓	✓	✓	✓	✓	✓	
7:00									
8:00									
9:00									
10:00									
11:00									
12:00									
1:00 A									
2:00									
3:00									
4:00									
5:00									
6:00									

STEAM FLOWS

HOUR	PLY	KILNS	TURBINE	PSI	#1	#2	#3	TDS	A UNIT PH		Furnace Temp #1	Furnace Temp #2
7:00 A	133	34	16	120	7	12	156	✓			1323	1375
8:00	132	33	16	120	11	14	151	✓			1221	1335
9:00	123	32	16	120	7	14	143				1400	1329
10:00	131	33	16	120	19	15	148	✓			1458	1320
11:00	123	31	16	120	20	16	133				1432	1525
12:00	125	25	16	120	9	19	134				1203	1322
1:00 P	132	34	16	120	2	18	153				1175	1364
2:00	135	29	16	120	12	12	151				1404	1352
3:00	135	28	16	120	10	12	146				1289	1525
4:00	131	27	16	120	7	13	149				1175	1297
5:00	117	27	16	120	17	18	133				1212	1361
6:00	132	41	16	120	12	16	156	✓			1145	1344
7:00												
8:00												
9:00												
10:00												
11:00												
12:00												
1:00 A												
2:00												
3:00												
4:00												
5:00												
6:00												

DAYS 7A/M - 7P/M

OPERATOR JD

WATER COLUMN BLOWDOWN ______ TIME

BOILER BLOWDOWN ______

Trisha
1 800 777 3167
ext 339

NIGHTS 7P/M - 7A/M

OPERATOR ______

WATER COLUMN BLOWDOWN ______ TIME

BOILER BLOWDOWN ______

D-8

322
416

BEST AVAILABLE COPY

Champion
Champion International Corporation

Wednesday 1-2-92

HOUR	WATER LEVEL: Boiler Drum #1	Boiler Drum #2	Boiler Drum #3	DA TANK	STORAGE TANK	PRESSURE: DRUM	FEED WATER	DA TANK	DIESEL PUMP	DRAFT / PRESSURE: UNDER GATE	FURNACE DRAFT	BOILER OUTLET	Boiler #3 ID Fan AMPS #1 MTR	#2 MTR	INSTRUMENT AIR	O_2	TEMPERATURE: DA TANK	BOILER OUTLET	F.W.P.	#3 FURNACE
7:00 A	2.0	.1	.0	1	✓	463	735	29	120		.61		350	353	70	9.1	248	729		1441
8:00	2.1	.2	.2	-1	✓	463	710	27	120		.10		352	350	70	6.6	250	744		1444
9:00	.55	.1	.3	-3	✓	464	651	20	120		.32		352	328	70	6.5	251	710		1446
10:00	1.9	.1	.1	-1	✓	463	714	26	120		.43		337	322	70	7.1	259	727		1422
11:00	1.7		.2	.1	✓	450	710	30	120		.79		339	317	70	10.4	259	683		1412
12:00	1.6	.2	.1	-1	✓	455	813	23	120		.73		351	331	70	11.4	259	716		1313
1:00 P	1.6	.1	.1	2	✓	423	715	19	120		.05		337	323	70	2.6	248	722		1413
2:00	1.7	.6	.5	2	✓	455	705	21	120		.12		335	326	70	[illegible]	257	712		1325
3:00	1.6	.1	.3	2		435	665	17	120		.04		337	323	70	2.3	242	703		1412
4:00	1.6	.0	.2	2	✓	425	623	21	120		.19		338	316	70	6.3	253			1436
5:00	.2	.6	.3	1	✓	418	711	26	120		.10		338	321	70	4.8	262	710		1419
6:00	.2	.1	.3	1	✓	400	700	35	120		.10		345	320	70	4.1	266	724		1436
7:00	.2	.9	.5	0	✓	401	652	34	125		.07		340	318	70	5.8	262	696		1417
8:00	.1	.2	.6	-1	✓	457	633	35	125		.50		337	330	70	4.8	274	721		1500
9:00	.2	.2	.5	-1	✓	456	746	39	125		.45		328	312	70	9.2	279	717		1454
10:00	.5	.9	.3	2	✓	452	599	33	125		.41		363	334	70	6.2	272	744		1452
11:00	.2	.3	.5	5	✓	451	700	35	125		.39		354	343	70	8.1	273	773		1433
12:00	.6	.4	.9	-2		453	733	22	125		.40		352	349	70	2.6	259	748		1410
1:00 A	.1	.5	.8	-3	✓	454	727	25	125		.35		351	341	70	2.6	265	759		1475
2:00	.4	.7	0	2	✓	390	719	20	125		.12		314	289	70	11.0	252	702		1460
3:00	.4	.4	.7	-1	✓	454	676	26	125		.21		351	317	70	6.7	264	740		1477
4:00	.3	.4	.4	4	✓	400	778	34	125		.46		354	337	70	11.6	274	678		1364
5:00																				
6:00																				

HOUR	MECHANICAL DRIVES: R.S.V.'S	SAND CLASS	I.D. FANS	I.D. FAN BEARINGS	I.D. FAN	F.D. TURBINE	SCRUBBERS	EMERGENCY STACKS	FUEL CONVEYOR DRIVES	STEAM FLOWS: PLY	KILNS	TURBINE	PSI	#1	#2	#3	T.D.S.	A. UNIT PH		FURNACE TEMP #1	#2
7:00 A	✓	✓	✓	✓	✓	✓		✓		104	24	16	120	0	5	141				574	1024
8:00	✓	✓	✓	✓	✓	✓	✓	✓		105	41	16	120	0	19	143				544	1495
9:00	✓	✓	✓	✓	✓	✓	✓	✓		101	35	16	120	0	16	141				[illegible]	1293
10:00	✓	✓	✓	✓	✓	✓	✓	✓		102	33	16	120	0	17					1473	1314
11:00	✓	✓	✓	✓	✓	✓	✓	✓		82	32	16	120	0	7	126				1466	1126
12:00	✓	✓	✓	✓	✓	✓	✓	✓		81	35	15	120	0	16	131				1424	1306
1:00 P	✓	✓	✓	✓	✓	2	✓	✓		102	42	16	120	0	20	140				1418	1519
2:00	✓	✓	✓	✓	✓	✓	✓	✓		80	38	15	120	0	20	137				1402	1419
3:00	✓	✓	✓	✓	✓	✓	✓	✓		93	39	15	120	0	19	132				1401	1329
4:00	✓	✓	✓	✓	✓	✓	✓	✓		105	40	15	120	0	13	144				1335	1462
5:00	✓	✓	✓	✓	✓	✓	✓	✓		120	39	16	120	16	16	146	✓			1374	1521
6:00	✓	✓	✓	✓	✓	✓	✓	✓		133	40	16	120	19	19	146	✓			1439	1410
7:00	✓	✓	✓	✓	✓	✓	✓	✓		130	38	16	120	20	21	144	✓			1504	1506
8:00	✓	✓	✓	✓	✓	✓	✓	✓		131	38	16	120	17	12	154	✓			1443	1424
9:00	✓	✓	✓	✓	✓	✓	✓	✓		118	37	16	120	9	9	147				1265	1584
10:00	✓	✓	✓	✓	✓	✓	✓	✓		132	36	16	100	11	13	153	✓			1277	1051
11:00	✓	✓	✓	✓	✓	✓	✓	✓		132	35	16	120	13	15	150	✓			1323	1217
12:00	✓	✓	✓	✓	✓	✓	✓	✓		111	35	16	120	6	8	144				1043	1186
1:00 A	✓	✓	✓	✓	✓	✓	✓	✓		109	34	16	120	1	4	147				947	1105
2:00	✓	✓	✓	✓	✓	✓	✓	✓		109	36	16	120	12	20	126				1067	1294
3:00	✓	✓	✓	✓	✓	✓	✓	✓		112	33	16	120	0	3	150				999	1076
4:00	✓	✓	✓	✓	✓	✓	✓	✓		127	26	16	120	12	12	134				1335	1341
5:00																					
6:00																					

DAYS 7A/M - 7P/M

OPERATOR Davis

TIME

WATER COLUMN BLOWDOWN ______

BOILER BLOWDOWN ______

NIGHTS 7P/M - 7A/M

OPERATOR ______

TIME

WATER COLUMN BLOWDOWN ______

BOILER BLOWDOWN ______

BEST AVAILABLE COPY

Tuesday 5/6/97

HOUR	WATER LEVEL Boiler Drum #1	#2	#3	DA TANK	STORAGE TANK	PRESSURE DRUM	FEED WATER	DA TANK	DIESEL PUMP	DRAFT / PRESSURE UNDER GATE	FURNACE DRAFT	BOILER OUTLET	Boiler #3 ID Fan AMPS #1 MTR	#2 MTR	INSTRUMENT AIR	O_2 #3	TEMPERATURE DA TANK	BOILER OUTLET	F.W.P.	#3 FURNACE	MECHANICAL DRIVES R.S.V.'S	SAND CLASS	I.D. FANS	I.D. FAN BEARINGS	I.D. FAN	I.D. TURBINE	SCRUBBERS	EMERGENCY STACKS	[illegible] DRIVES	STEAM FLOWS PLY	KILNS	TURBINE	PSI	#1	#2	#3	TDS	UNIT PH	Furnace Temp #1	#2
7:00 A	.1	.5	0	-2	✓	453	654	24	130	[illegible]	-.13	[illegible]	327	321	70	8.7	264	723		1448	✓	✓	✓	✓	✓	✓	✓	✓	✓	126	23	15	120	6	13	140			1088	1265
8:00	.2	.8	-.1	5	✓	448	694	20	130		-.30		338	332	70	6.4	254	724		1455	✓	✓	✓	✓	✓	✓	✓	✓		126	41	15	120	17	17	145			1481	1248
9:00	-.2	.1	-.2	3	✓	450	527	25	130		-.48		343	338	70	5.9	260	739		1467	✓	✓	✓	✓	✓	✓	✓	✓		125	39	15	120	12	16	146			1213	1247
10:00	-.1	-.1	-.1	2	✓	420	592	28	130		-.29		341	337	70	6.1	261	737		1439	✓	✓	✓	✓	✓	✓	✓	✓		143	40	15	120	17	18	154	✓		1308	1253
11:00	-.1	.4	0	4	✓	448	578	32	130		-.37		337	329	70	6.4	265	732		1454	✓	✓	✓	✓	✓	✓	✓	✓		134	35	15	120	16	16	147			1457	1295
12:00	-.2	-1.2	-.1	-2	✓	453	556	26	130		-.43		333	327	70	6.6	264	729		1447	✓	✓	✓	✓	✓	✓	✓	✓		130	34	15	120	9	16	150	✓		1379	1257
1:00 P	-.3	.3	-.2	5	✓	435	687	31	130		-.08		331	326	70	6.5	263	718		1397	✓	✓	✓	✓	✓	✓	✓	✓		128	35	15	120	15	21	136			1489	1229
2:00	-.3	.5	.1	-2	✓	452	619	25	130		-.25		330	328	70	7.0	263	728		1418	✓	✓	✓	✓	✓	✓	✓	✓		132	33	15	120	10	20	143			1399	1335
3:00	.2	.6	.2	2	✓	450	718	32	130		-.27		332	326	70	8.1	267	731		1396	✓	✓	✓	✓	✓	✓	✓	✓		108	33	15	120	1	16	133			910	1282
4:00	-.2	0	0	-1	✓	438	573	35	130		-.32		330	321	70	5.7	223	732		1421	✓	✓	✓	✓	✓	✓	✓	✓		126	32	15	120	15	16	139			1362	010
5:00	-.1	-.5	-.1	0	✓	430	619	27	130		-.10		324	319	70	5.9	262	702		1411	✓	✓	✓	✓	✓	✓	✓	✓		127	33	15	120	8	18	143			1367	1311
6:00	-.1	.2	-.3	0	✓	453	671	34	130		-.52		336	330	70	9.5	272	731		1413	✓	✓	✓	✓	✓	✓	✓	✓	✓	130	31	15	120	8	18	142				
7:00	[illegible]	[illegible]																		[illegible]												[illegible]								
8:00																																								
9:00	[illegible]	[illegible]																																						
10:00				3														[illegible]																						
11:00	.3	-.2	[illegible]	3	✓	446	540	27	13[illegible]		.4		344	337	7[illegible]	6.[illegible]	263	756		1446	✓	✓	✓	✓	✓	✓	✓	✓		130	36	15	12[illegible]	16	16	148	✓		119[illegible]	13[illegible]
12:00	[illegible]	[illegible]			✓	45[illegible]	[illegible]	[illegible]					[illegible]																											
1:00 A	-.3	[illegible]		[illegible]	✓		[illegible]	[illegible]					[illegible]																	[illegible]	[illegible]			[illegible]						
2:00											.3						[illegible]	[illegible]												133	33									
3:00																																								
4:00	[illegible]			1					[illegible]		1							[illegible]		[illegible]										[illegible]	[illegible]									
5:00	[illegible]	[illegible]							[illegible]							[illegible]		[illegible]		13[illegible]										13[illegible]	31	[illegible]		[illegible]	19	[illegible]			[illegible]	[illegible]
6:00																																								

DAYS 7A/M - 7P/M

OPERATOR [signature]

	TIME
WATER COLUMN BLOWDOWN	
BOILER BLOWDOWN	

NIGHTS 7P/M - 7A/M

OPERATOR

	TIME
WATER COLUMN BLOWDOWN	
BOILER BLOWDOWN	

2054

D-10

BEST AVAILABLE COPY

Champion
Champion International Corporation

Monday 5-5-97

HOUR	Water Level: Boiler Drum #1	Boiler Drum #2	Boiler Drum #3	DA Tank	Storage Tank	Pressure: Drum	Feed Water	DA Tank	Diesel Pump	Draft / Pressure: Under Gate	Furnace Draft	Boiler Outlet	Boiler #1 ID Fan AMPS #1 MTR	#2 MTR	Instrument Air	O_2	Temperature: DA Tank	Boiler Outlet	F.W.P	#2 Furnace
7:00 A	0	.2	.1	2	✓	447	558	24	130		.5		320	316	70	4.3	261	232		1463
8:00	.2	.2	.1	0	✓	442	612	28	130		.12		324	325	70	5.8	262	212		1446
9:00	.3	.5	.1	1	✓	450	622	35	130		.15		320	314	70	4.4	222	212		1425
10:00	.1	.1	.2	2	✓	455	655	35	130		.10		321	314	70	5.2	261	237		1413
11:00	.6	1.6	.1	1	✓	428	521	29	130		.12		323	318	70	6.9	259	203		1436
12:00	.3	1.1	.1	2	✓	424	514	24	130		.21		329	318	70	6.7	244	218		1438
1:00 P																				
2:00	.1	0	.5	1	✓	437	545	23	130		.14		326	319	70	4.4	257	209		1398
3:00	.2	.4	.1	1	✓	430	513	13	130		.01		319	308	70	4.2	243	195		1323
4:00	.2	.2	.1	3	✓	449	643	32	130		.5		315	309	70	5.5	266	224		1415
5:00	.4	.3	.1	5	✓	449	612	31	130		.1		322	300	70	5.5	262	240		1427
6:00	.1	.4	.2	1	✓	446	710	30	130		.37		335	326	70	9.3	261	232		1394
7:00																				
8:00																				
9:00																				
10:00																				
11:00																				
12:00																				
1:00 A																				
2:00																				
3:00																				
4:00																				
5:00																				
6:00																				

HOUR	Mechanical Drives: R.S.V.S.	Saw Class	F.D. Fans	I.D. Fan Bearings	I.D. Fan	T.D. Turbine	Scrubbers	Emergency Stacks	[illegible]	Steam Flows: PLY	Kilns	Turbine	PSI	#1	#2	#3	TDS	Unit PH		Furnace Temp #1	#2
7:00 A	✓	✓	✓	✓	✓	✓	✓	✓		127	33	15	120	15	11	146				1481	1128
8:00	✓	✓	✓	✓	✓	✓	✓	✓		125	32	15	120	14	11	147				1496	1196
9:00	✓	✓	✓	✓	✓	✓	✓	✓		128	32	15	120	14	14	148				1363	1219
10:00	✓	✓	✓	✓	✓	✓	✓	✓		124	44	15	120	17	19	151	✓			1386	1223
11:00	✓	✓	✓	✓	✓	✓	✓	✓		121	41	15	120	18	21	135				1500	1343
12:00	✓	✓	✓	✓	✓	✓	✓	✓		127	38	15	120	20	21	132				1622	1325
1:00 P																					
2:00	✓	✓	✓	✓	✓	✓	✓	✓		126	36	15	120	17	27	131				1553	1439
3:00	✓	✓	✓	✓	✓	✓	✓	✓		121	35	15	120	20	26	132				1586	1413
4:00	✓	✓	✓	✓	✓	✓	✓	✓		118	34	15	120	2	10	143				1131	1357
5:00	✓	✓	✓	✓	✓	✓	✓	✓		130	34	15	120	15	22	137				1449	1427
6:00	✓	✓	✓	✓	✓	✓	✓	✓		107	33	15	120	8	7	140				1388	1413
7:00																					
8:00																					
9:00																					
10:00																					
11:00																					
12:00																					
1:00 A																					
2:00																					
3:00																					
4:00																					
5:00																					
6:00																					

DAYS 7A/M - 7P/M

OPERATOR Morris

WATER COLUMN BLOWDOWN
BOILER BLOWDOWN

TIME

NIGHTS 7P/M - 7A/M

OPERATOR

WATER COLUMN BLOWDOWN
BOILER BLOWDOWN

TIME

BEST AVAILABLE COPY

Champion
Champion International Corporation

Thursday 5/1/97

HOUR	WATER LEVEL Boiler Drum #1	#2	#3	DA TANK	STORAGE TANK	PRESSURE DRUM	FEED WATER	DA TANK	DIESEL PUMP	DRAFT / PRESSURE UNDER GATE	FURNACE DRAFT	BOILER OUTLET	Boiler #1 ID Fan AMPS #1 MTR	#2 MTR	INSTRUMENT AIR	O_2	TEMPERATURE DA TANK	BOILER OUTLET	F.W.P.	#3 FURNACE
7:00 A	[illegible]	[illegible]				[illegible]	[illegible]			[illegible]			[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]
8:00						[illegible]	[illegible]											[illegible]		
9:00	-.4	.3	-.2	2	✓	438	661	21	125		-.25		317	313	70	6.7	261	724	130	1316
10:00																				
11:00	[illegible]	[illegible]	[illegible]		✓	[illegible]	[illegible]	[illegible]					[illegible]	[illegible]			[illegible]	[illegible]	[illegible]	[illegible]
12:00	[illegible]			[illegible]		[illegible]	[illegible]						[illegible]					[illegible]	[illegible]	[illegible]
1:00 P	.2	-.1	.3	2	✓	441	577	34	125		-.21		321	321		5.9	270	736	130	1461
2:00	[illegible]					[illegible]					[illegible]						[illegible]			[illegible]
3:00																				
4:00	[illegible]	.1	[illegible]	1	✓	446	651	31	125		-.22		306	313	[illegible]	6.1	264	766	130	1461
5:00	.1	.2	.2	-1	✓	452	723	21	125		.14		321	314	[illegible]	6.5	261	720	130	1453
6:00	0	-.1	0	0	✓	448	555	23	125		-.52		312	330	70	7.6	261	717	130	1453
7:00	.7	0	.3	2	✓	454	702	33	130		-.51		312	340	70	8.1	270	745	130	1475
8:00	-.2	.7	0	3	✓	450	566	32	130		-.20		285	298	70	9.2	267	727	130	1466
9:00	-.4	.5	-.3	-2	✓	451	539	25	130		-.18		295	322	70	7.0	263	711	130	1452
10:00	-.1	.1	0	-1	✓	450	594	30	130		-.20		301	319	70	7.9	270	737	130	1469
11:00	-.3	.3	0	2	✓	452	644	32	130		-.11		310	333	70	4.0	271	756	130	1447
12:00	-.2	.1	-.3	-2	✓	453	643	23	130		-.24		291	302	70	8.3	261	734	130	1503
1:00 A	-.4	.5	.2	-2	✓	445	621	24	130		-.31		308	335	70	5.4	263	697	130	1428
2:00	-.1	-.1	0	4	✓	448	514	30	130		-.31		295	326	70	5.2	267	738	130	1410
3:00	-.3	.7	0	3	✓	450	619	30	130		-.49		311	337	70	6.6	268	742	130	1433
4:00	-.1	.6	.4	-2	✓	447	657	29	130		-.35		308	328	70	4.5	269	764	130	1386
5:00	-.2	-.6	0	5	✓	435	550	28	130		-.27		310	338	70	7.9	265	733	130	1354
6:00	-.4	.1	.1	1	✓	455	612	31	130		-.66		297	325	70	9.4	269	741	130	1440

HOUR	MECHANICAL DRIVES R.S.V.'S	SAND CLASS	I.D. FANS	I.D. FAN BEARINGS	I.D. FAN	I.D. TURBINE	SCRUBBERS	EMERGENCY STACKS	[illegible] DRIVES	STEAM FLOWS PLY	KILNS	TURBINE	PSI	#1	#2	#3	TDS	A UNIT PH		Furnace Temp #1	#2
7:00 A										[illegible]		[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	✓			[illegible]	[illegible]
8:00																				[illegible]	[illegible]
9:00		✓	✓		✓		✓	✓		132	35	16	120	13	23	130				1356	1395
10:00																					
11:00										[illegible]	[illegible]					[illegible]					[illegible]
12:00											[illegible]	[illegible]			[illegible]	[illegible]				[illegible]	[illegible]
1:00 P		✓	✓		✓	✓	✓	✓	✓	126	35	16	120	12	16	138				1311	1357
2:00										[illegible]		[illegible]			[illegible]	[illegible]				[illegible]	[illegible]
3:00																					
4:00		✓								121	32	15	120	14	23	149				1102	1321
5:00		✓	✓				✓			123	32	[illegible]	120	7	11	142				1101	1241
6:00		✓	✓	✓	✓	✓				125	37	16	120	8	16	149				1386	1382
7:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	105	35	16	120	1	6	145				807	1244
8:00	✓	✓	✓	✓	✓	✓	✓	✓		128	33	16	120	11	14	144				1057	1357
9:00	✓	✓	✓	✓	✓	✓	✓	✓		123	31	15	120	6	17	141				1033	1298
10:00	✓	✓	✓	✓	✓	✓	✓	✓		126	31	13	120	10	16	141				1228	1297
11:00	✓	✓	✓	✓	✓	✓	✓	✓		121	26	15	120	3	10	145	✓			1016	1155
12:00	✓	✓	✓	✓	✓	✓	✓	✓		125	40	15	120	14	14	150				1476	1204
1:00 A	✓	✓	✓	✓	✓	✓	✓	✓		127	38	15	120	16	19	143				1453	1358
2:00	✓	✓	✓	✓	✓	✓	✓	✓		122	37	15	120	9	14	144				1251	1356
3:00	✓	✓	✓	✓	✓	✓	✓	✓		131	37	15	120	14	20	140				1413	1372
4:00	✓	✓	✓	✓	✓	✓	✓	✓		129	35	15	120	12	17	147				1476	1367
5:00	✓	✓	✓	✓	✓	✓	✓	✓		125	35	15	120	18	18	133				1454	1294
6:00	✓	✓	✓	✓	✓	✓	✓	✓		129	36	15	120	15	20	138				1523	1261

DAYS 7A/M - 7P/M

OPERATOR [illegible]

TIME

WATER COLUMN BLOWDOWN ______

BOILER BLOWDOWN ______

NIGHTS 7P/M - 7A/M

OPERATOR [illegible]

TIME

WATER COLUMN BLOWDOWN ______

BOILER BLOWDOWN ______

BEST AVAILABLE COPY

Champion
Champion International Corporation

Saturday 9/27/97

HOUR	WATER LEVEL: Boiler Drum #1	#2	#3	DA TANK	STORAGE TANK	PRESSURE: DRUM	FEED WATER	DA TANK	DIESEL PUMP	DRAFT / PRESSURE: UNDER GATE	FURNACE DRAFT	BOILER OUTLET	Boiler #3 ID Fan AMPS #1 MTR	#2 MTR	INSTRUMENT AIR	O_2 #3	TEMPERATURE: DA TANK	BOILER OUTLET	F.W.P	#3 FURNACE
7:00 A	-.1	.3	0	-2	✓	459	533	31	125		-.22		205	–	70	9.5	260	707		1500
8:00	-.2	.5	0	-7	✓	450	551	25	125		-.27		205	–	70	11.2	265	703		1379
9:00	-.3	0	-.4	-4	✓	448	543	30	125		-.22		214	–	70	10.3	266	702		1407
10:00	-.3	.1	-.1	-3	✓	441	559	35	125		-.20		194	–	70	9.5	270	677		1408
11:00	-.1	.5	0	-4	✓	452	577	23	125		-.09		201	–	70	9.9	263	714		1476
12:00	-.3	.2	-.4	-3	✓	455	526	34	125		-.17		195	–	70	10.2	273	693		1436
1:00 P	-.2	-.1	-.1	-4	✓	440	552	33	125		-.24		205	–	70	10.3	272	687		1484
2:00	-.3	.2	-.3	-4	✓	454	542	32	125		-.42		207	–	70	9.6	266	712		1488
3:00	-.2	0	0	-7	✓	451	599	30	125	1	-.22		201	–	70	9.7	264	702		1482
4:00	-.2	.3	-.2	-3	✓	463	536	28	125		-.29		192	–	70	7.4	260	716		1506
5:00	0	.4	.6	0	✓	450	614	27	125		-.11		205	–	70	8.3	257	709		1438
6:00	-.2	.2	-.4	-6	✓	460	538	29	125		-.28		169	–	70	7.9	269	715		1434
7:00	-.2	.1	+.2	-7	✓	416	550	20	125		-.2		214	–	70	8.5	256	740		1444
8:00	-.3																			
9:00	-.2	.2	-.1	-6	✓	451	530	19	125		-.1		212		70	6.5	261	670		1326
10:00	-.4	.8	-.2	-6	✓	461	537	20	125		-.18		196	–	70	6.2	254	698		1413
11:00																				
12:00	0	.8	-.1	-6	✓	452	595	22	125		-.2		217		70	7.8	258	716		1467
1:00 A	-.3	.3	0	-5	✓	419	595	27	125		-.2		212		70	10.2	268	711		1294
2:00	-.2	.7	-.1	-6	✓	456	545	39	125		-.2		187		70	9.7	282	681		1363
3:00	-.3	3.5	.1	-.6	✓	447	540	21	125		-.3		192		70	9.9	254	690		1274
4:00	-.1	3.7	.2	-6	✓	451	565	23	115		-.3		219		70	10.7	263	691		1269
5:00	-.12	-5.8	.1	0	✓	457	600	34	115		-.3		198		70	8.2	270	689		1317
6:00																				

HOUR	MECHANICAL DRIVES: R.S.V.'S	SAND CLASS	I.D. FANS	I.D. FAN BEARINGS	F.D. FAN	I.D. TURBINE	SCRUBBERS	EMERGENCY STACKS	I.D. CONVEYOR DRIVES	STEAM FLOWS: PLY	KILNS	TURBINE	PSI	#1	#2	#3	T.D.S.	A UNIT PH		Furnace Temps #1	#2
7:00 A	✓	✓	✓	✓	✓	✓	✓	✓		118	23	18	120	12	8	137				1435	1361
8:00	✓	✓	✓	✓	✓	✓	✓	✓		131	25	19	120	11	9	146				1140	1165
9:00	✓	✓	✓	✓	✓	✓	✓	✓		117	23	20	120	9	9	136				1325	1233
10:00	✓	✓	✓	✓	✓	✓	✓	✓		124	22	20	120	10	12	135	✓			1299	1205
11:00	✓	✓	✓	✓	✓	✓	✓	✓		141	21	20	120	12	9	154				1348	1359
12:00	✓	✓	✓	✓	✓	✓	✓	✓		121	35	19	120	9	9	149				1276	1137
1:00 P	✓	✓	✓	✓	✓	✓	✓	✓		117	32	20	120	9	7	146				1273	1132
2:00	✓	✓	✓	✓	✓	✓	✓	✓		118	28	20	120	10	10	147				1328	1169
3:00	✓	✓	✓	✓	✓	✓	✓	✓		119	35	19	120	13	8	145				1398	1210
4:00	✓	✓	✓	✓	✓	✓	✓	✓		124	34	18	120	8	8	152				1229	1234
5:00	✓	✓	✓	✓	✓	✓	✓	✓		121	33	18	120	6	14	145				1178	1186
6:00	✓	✓	✓	✓	✓	✓	✓	✓		123	34	17	120	8	9	150				1232	1234
7:00	✓	✓	✓	✓	✓	✓	✓	✓		126	32	20	120	6	10	152				1171	1196
8:00																					
9:00	✓	✓	✓	✓	✓	✓	✓	✓		119	32	19	120	8	13	141				1189	1170
10:00	✓	✓	✓	✓	✓	✓	✓	✓		115	33	17	120	8	4	146				1182	1177
11:00																					
12:00	✓	✓	✓	✓	✓	✓	✓	✓		121	30	19	120	3	11	152				1215	1218
1:00 A	✓	✓	✓	✓	✓	✓	✓	✓		107	31	19	120	9	11	133				1145	1207
2:00	✓	✓	✓	✓	✓	✓	✓	✓		114	30	19	120	7	5	142				1191	1182
3:00	✓	✓	✓	✓	✓	✓	✓	✓		67	26	19	120	8	1	119				1066	932
4:00	✓	✓	✓	✓	✓	✓	✓	✓		85	27	20	120	9	—	127				1198	—
5:00	✓	✓	✓	✓	✓	✓	✓	✓		104	27	18	120	9	—	136				1192	
6:00																					

DAYS 7A/M - 7P/M

OPERATOR SMP

TIME

WATER COLUMN BLOWDOWN ______

BOILER BLOWDOWN ______

NIGHTS 7P/M - 7A/M

OPERATOR KGS

TIME

WATER COLUMN BLOWDOWN ______

BOILER BLOWDOWN ______

Tenisha
1800-777-3167
ext 334

D-13

534-8838

BEST AVAILABLE COPY

Champion
Champion International Corporation

Friday 11/10/??

HOUR	WATER LEVEL: Boiler Drum #1	#2	#3	DA Tank	Storage Tank	PRESSURE: Drum	Feed Water	DA Tank	Diesel Pump	DRAFT / PRESSURE: Under Gate	Furnace Draft	Boiler Outlet	Boiler #3 ID Fan AMPS: #1 MTR	#2 MTR	Instrument Air	O_2	TEMPERATURE: DA Tank	Boiler Outlet	F.W.P.	#3 Furnace
7:00 A	-.4	.1	2.2	-3	✓	390	624	24	125		-.36		235		70	8.1	257	628		1499
8:00	-.3	0	.9	-8	Low	443	602	12	125		-.06		232		70	6.2	248	669		1462
9:00	-.1	-.4	.6	-3	Low	408	564	28	125		-.12		251		70	5.5	250	652		1372
10:00	-.4	.1	.2	-6	✓	332	582	13	125		-.22		238		70	2.6	246	713		1322
11:00	Raking Grates.																			
12:00	Raking Grates																			
1:00 P																				
2:00	Raking Grates																			
3:00	-.2	.1	.2	0	✓	452	547	22	125		-.21		235		70	6.5	249	711		1475
4:00	-.2	.1	1.2	-2	✓	429	646	16	125		-.24		223		70	6.8	243	706		1432
5:00	Raking Grates																			
6:00																				
7:00	-.1	.8	1.2	-7	.	450	610	14	125		-.28		230		70	9.0	245	725		1480
8:00	-.2	.5	1.2	-5	✓	457	552	16	125		-.22		223		70	9.4	250	672		1427
9:00	-.1	.3	.1	-6	✓	452	593	25	125		-.09		223		70	7.2	259	714		1449
10:00	-.5	.7	0	-5	✓	425	614	21	125		-.07		217		70	5.3	255	733		1470
11:00	.2	.6	.1	-4	.	420	611	11	125		-.08		214		70	6.5	235	704		1469
12:00	-.3	.1	0	-3	✓	435	557	29	125		-.27		214		70	6.0	258	714		1478
1:00 A	-.5	-.1	.1	0	✓	400	579	25	125		-.24		217		70	5.5	254	710		1452
2:00	-.4	.2	-.3	-4	✓	444	544	32	125		-.20		225		70	6.3	265	706		1457
3:00	-.1	.1	0	0	✓	432	520	26	125		-.23		223		70	8.0	256	707		1396
4:00	-.2	-.3	.3	-5	✓	446	604	25	125		-.21		219		70	5.7	245	726		1411
5:00	-.2	.3	.3	-4	✓	456	537	35	125		-.26		217		70	7.0	267	720		1413
6:00	-.2	-.2	.1	-6	✓	452	643	21	125		-.18		216		70	6.7	261	709		1444

HOUR	MECHANICAL DRIVES: RSVS	Sand Class	ID Fans	ID Fan Bearings	FD Fan	FD Turbine	Scrubbers	Emergency Stacks	Hyd. Drives	STEAM FLOWS: Fly	Kilns	Turbine	PSI	#1	#2	#3	TDS	A-Unit PH		Furnace Temps #1	#2
7:00 A	✓	✓	✓	✓	✓	✓	✓	✓		126	30	21	110	9	11	144				1316	1359
8:00	✓	✓	✓	✓	✓	✓		✓		123	26	17	110	11	16	132				1336	1405
9:00	✓	✓	✓	✓	✓	✓	✓	✓		103	38	17	110	13	19	132				1240	1345
10:00	✓	✓	✓	✓	✓	✓	✓	✓		128	37	19	110	19	20	149				1323	1355
11:00																					
12:00																					
1:00 P																					
2:00																					
3:00	✓	✓	✓	✓	✓	✓	✓	✓		129	30	17	100	16	17	147				1434	1340
4:00	✓	✓	✓	✓	✓	✓	✓	✓		128	31	19	100	15	20	139	✓			1440	1356
5:00																					
6:00																					
7:00	✓	✓	✓	✓	✓	✓	✓	✓		129	29	18	100	16	12	147				1400	1327
8:00	✓	✓	✓	✓	✓	✓	✓	✓		121	28	18	100	16	14	148	✓			1354	1222
9:00	✓	✓	✓	✓	✓	✓	✓	✓		124	29	20	120	17	11	144				1320	1212
10:00	✓	✓	✓	✓	✓	✓	✓	✓		127	30	21	120	15	7	156	✓			1396	1210
11:00	✓	✓	✓	✓	✓	✓	✓	✓		127	25	20	120	15	21	130				1364	1293
12:00	✓	✓	✓	✓	✓	✓	✓	✓		120	36	20	120	13	15	148				1416	1141
1:00 A	✓	✓	✓	✓	✓	✓	✓	✓		124	37	22	120	13	18	149	✓			1314	1286
2:00	✓	✓	✓	✓	✓	✓	✓	✓		125	34	20	120	13	16	145				1383	1343
3:00	✓	✓	✓	✓	✓	✓	✓	✓		126	32	20	120	17	17	147	✓			1304	1383
4:00	✓	✓	✓	✓	✓	✓	✓	✓		120	31	20	120	8	12	150				1012	1251
5:00	✓	✓	✓	✓	✓	✓	✓	✓		123	30	19	120	11	13	149				1243	1329
6:00	✓	✓	✓	✓	✓	✓	✓	✓		125	30	19	120	11	17	148				1255	1369

DAYS 7A/M - 7P/M

OPERATOR [illegible]

TIME

WATER COLUMN BLOWDOWN ______

BOILER BLOWDOWN ______

NIGHTS 7P/M - 7A/M

OPERATOR TP

TIME

WATER COLUMN BLOWDOWN

BOILER BLOWDOWN

Champion International Corporation

BEST AVAILABLE COPY

Monday 11/2/79

HOUR	WATER LEVEL: Boiler Drum #1	Boiler Drum #2	Boiler Drum #3	DA TANK	STORAGE TANK	PRESSURE: DRUM	FEED WATER	DA TANK	DIESEL PUMP	DRAFT / PRESSURE: UNDER GATE	FURNACE DRAFT	BOILER OUTLET	Boiler #3 ID Fan AMPS #1 MTR	#2 MTR	INSTRUMENT AIR	O_2 #3	TEMPERATURE: DA TANK	BOILER OUTLET	F.W.P.	#3 FURNACE
7:00 A																				
8:00	.2	0	-.3	-18	✓	539	604	40	125		-.46		180		70	10.8	277	721		1369
9:00	0	.2	-.1	2	✓	525	662	45	125		-.15		160		70	11.4	280	621		1321
10:00	0	-.1	-.2	2	✓	537	637	34	125		-.37		180		70	6.6	279	715		1429
11:00	.1	0	-.2	1	✓	526	691	36	125		-.44		162		70	5.6	275	727		1452
12:00	-.1	0	-.5	3	✓	540	716	42	125		-.34		171		70	2.1	282	697		1425
1:00 P	.1	.1	.2	3	✓	536	671	34	125		-.33		184		70	8.7	276	737		1446
2:00	.1	-.1	-.2	4	✓	530	654	39	125		-.34		160		70	10.3	280	670		1403
3:00	0	.1	0	11	✓	533	653	43	125		-.41		161		70	4.4	275	735		1500
4:00	Bulking Grates																			
5:00																				
6:00	.1	-.5	-.3	-.2	✓	533	572	41	125		-.87		203		70	7.8	281	731		1403
7:00	0	.2	.2	-4	✓	525	699	46	125		-.33		196		70	10.4	282	754		1367
8:00	.1	-.2	-.3	-19	✓	530	641	41	125		-.39		166		70	9.5	282	684		1502
9:00	-.1	.0	.1	-25	✓	532	638	34	125		-.19		166		70	9.1	271	697		1342
10:00	.2	.2	-.1	?	✓	511	656	40	125		-.09		171		70	8.1	282	699		1405
11:00	0	0	.4	?	✓	534	712	40	125		-.10		164		70	8.1	284	693		1393
12:00	-.2	.5	-1.4	?	✓	531	614	35	125		-.22		169		70	8.7	279	716		1503
1:00 A	-.1	.2	0	?	✓	521	606	36	125		-.16		162		70	5.7	279	729		1369
2:00	0	.1	-.7	?	✓	528	627	41	125		-.15		169		70	9.0	283	646		1314
3:00	-.1	.1	-.5	?	✓	527	671	38	125		-.11		194		70	9.3	283	749		1356
4:00	-.1	0	0	?	✓	516	675	41	125		-.30		192		70	8.4	283	762		1333
5:00	0	.2	0	?	✓	539	637	36	125		-.34		212		70	7.8	281	754		1390
6:00	.2	.5	.2	?	✓	487	717	36	125		-.30		196		70	9.7	281	809		1283

HOUR	MECHANICAL DRIVES: R S V S	SAND CLASS	I.D. FANS	I.D. FAN BEARINGS	I.D. FAN	I.D. TURBINE	SCRUBBERS	EMERGENCY STACKS	CONVEYOR DRIVES	STEAM FLOWS: PLY	KILNS	TURBINE	PSI	#1	#2	#3	TDS	UNIT PH		#1	#2
7:00 A																					
8:00	✓	✓	✓		✓	✓				103	43	16	120	11	13	126				1265	1319
9:00	✓	✓	✓	✓	✓	✓				99	40	16	120	11	13	120				[illegible]	1309
10:00	✓	✓	✓	✓	✓	✓		✓	✓	120	41	15	120	13	13	135				1351	1391
11:00	✓	✓	✓		✓				✓	122	46	14	130	15	15	135				1363	1363
12:00	✓	✓	✓	✓	✓	✓	✓		✓	128	41	15	120	13	15	140				1396	1364
1:00 P	✓	✓	✓	✓	✓	✓	✓		✓	131	37	10	120	11	11	142				1354	1362
2:00	✓	✓	✓	✓	✓	✓	✓		✓	120	33	15	120	15	13	129				1396	1391
3:00	✓	✓	✓	✓	✓					130	47	15	120	14	14	140				[illegible]	1333
4:00																					
5:00																					
6:00										125	41	16	120	14	15	142				1370	1396
7:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	126	39	18	120	12	13	142				1329	1368
8:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	105	40	14	120	12	14	122				1262	1300
9:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	103	37	15	120	9	13	118				1239	1292
10:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	127	37	15	120	12	12	141				1277	1287
11:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	122	33	14	120	10	10	135				1236	1281
12:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	120	51	16	120	14	17	146	✓			1272	1241
1:00 A	✓	✓	✓	✓	✓	✓	✓	✓	✓	117	47	15	120	12	12	142				1274	1293
2:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	128	43	15	120	11	12	149				1266	1298
3:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	122	41	17	120	11	11	143				1259	1287
4:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	131	40	18	120	11	12	150				1267	1310
5:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	135	38	18	120	14	15	149	✓			1366	1364
6:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	129	37	18	120	15	13	139				1328	1277

DAYS 7A/M - 7P/M

OPERATOR Ware

	TIME
WATER COLUMN BLOWDOWN	7:45
BOILER BLOWDOWN	

NIGHTS 7P/M - 7A/M

OPERATOR AP

	TIME
WATER COLUMN BLOWDOWN	
BOILER BLOWDOWN	

BEST AVAILABLE COPY

Champion
Champion International Corporation

Friday Nov. 2[illegible] 1987

HOUR	WATER LEVEL Boiler Drum #1	#2	#3	DA TANK	STORAGE TANK	PRESSURE DRUM	FEED WATER	DA TANK	DIESEL PUMP	DRAFT / PRESSURE UNDER GATE	FURNACE DRAFT	BOILER OUTLET	Boiler #3 ID Fan AMPS #1 MTR	#2 MTR	INSTRUMENT AIR	O_2	TEMPERATURE DA TANK	BOILER OUTLET	F.W.P.	#3 FURNACE
7:00 A	.2	.3	-.3	✓	✓	533	255	29	125		-.32		176		70	11.1	265	642		1170
8:00	-.1	-.2	.2	✓	✓	527	696	34	125		-.38		166		70	14.0	279	680		1329
9:00	-.1	-.1	0	✓	✓	538	668	37	125		-.43		210		70	7.0	278	735		1420
10:00	Rake Grates																277	719		
11:00	0	-.2	-.1	✓	✓	536	634	34	125		-.40		196		70	9.9	272	719		1314
12:00	-.1	.2	0	✓	✓	530	658	32	125		-.39		176		70	8.4	272	716		1439
1:00 P	-.1	-.1	-.6	✓	✓	531	599	38	125		-.37		173		70	9.5	242	693		1468
2:00	-.1	0	.4	✓	✓	524	714	36	125		-.31		180		70	10.7	279	766		1447
3:00	-.1	0	-.1	✓	✓	529	654	36	125		-.37		217		70	7.8	281	804		1456
4:00	0	0	-.4	✓	✓	527	595	37	125		-.36		182		70	9.6	282	723		1464
5:00	Rake Grates																			
6:00	.1	-.2	-.1	✓	✓	536	587	38	125		-.32		201		70	8.6	241	766		1455
7:00	0	-.3	-.1	✓	✓	538	676	40	125		-.47		164		70	10.2	283	703		1477
8:00	0	.2	.5	✓	✓	537	732	40	125		-.29		166		70	9.3	281	729		1492
9:00	-.2	-.1	-.3	✓	✓	525	624	39	125		-.34		176		70	10.7	279	733		1518
10:00	-.1	0	-.1	✓	✓	523	641	43	125		-.17		157		70	7.8	284	683		1420
11:00	-.1	.1	0	✓	✓	537	733	36	125		-.30		180		70	11.2	279	726		1473
12:00	0	-.2	0	✓	✓	534	629	35	125		-.21		205		70	7.5	275	753		1501
1:00 A	.1	0	-.8	✓	✓	530	603	34	125		-.18		173		70	9.3	276	701		1508
2:00	.1	.1	.1	✓	✓	529	653	39	125		-.10		207		70	6.7	275	693		1523
3:00	-.2	-.1	0	✓	✓	518	642	37	125		-.12		178		70	10.3	277	692		1487
4:00	0	0	-.4	✓	✓	521	592	33	125		-.23		189		70	7.7	276	727		1478
5:00	-.1	0	.4	✓	✓	541	737	34	125		-.57		203		70	10.3	274	298		1557
6:00	0	0	1.0	✓	✓	524	656	38	125		-.12		177		70	8.2	281	737		1482

HOUR	MECHANICAL DRIVES R.S.V.'S	SAND CLASS	I.D. FANS	I.D. FAN BEARINGS	F.D. FAN	F.D. TURBINE	SCRUBBERS	EMERGENCY STACKS	[illegible] DRIVES	STEAM FLOWS PLY	KILNS	TURBINE	PSI	#1	#2	#3	TDS	ALKALI PH	Furnace Temp #1	#2
7:00 A	✓	✓	✓	✓	✓	✓	✓	✓	✓	107	45	7	120	12	8	121			1409	1371
8:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	104	44	16	120	20	17	114			1503	1432
9:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	105	44	16	120	15	19	120			1367	1430
10:00																				
11:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	129	34	16	120	19	17	131			1512	1433
12:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	128	38	16	120	20	18	132			1550	1445
1:00 P	✓	✓	✓	✓	✓	✓	✓	✓	✓	128	37	16	120	13	14	132			1468	1432
2:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	131	39	17	120	12	15	129			1436	1431
3:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	135	37	19	120	5	17	154	✓		1047	1434
4:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	131	37	11	120	6	19	145			1040	1428
5:00																				
6:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	130	35	16	120	15	20	135			1361	1456
7:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	126	34	15	120	16	19	128			1403	1457
8:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	124	28	15	120	14	16	132			1319	1326
9:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	122	44	16	120	14	16	148	✓		1316	1345
10:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	121	36	14	120	13	9	136			1318	1333
11:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	121	51	16	120	13	15	146			1317	1347
12:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	121	46	18	120	7	15	148			1088	1342
1:00 A	✓	✓	✓	✓	✓	✓	✓	✓	✓	127	45	15	120	13	15	145			1335	1340
2:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	131	43	18	120	14	15	149	✓		1329	1348
3:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	126	44	16	120	18	16	141			1392	1357
4:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	126	43	17	120	14	12	147			1339	1333
5:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	130	41	18	120	14	16	147	✓		1394	1331
6:00	✓	✓	✓	✓	✓	✓	✓	✓	✓		43	15	120	14	14	141			1344	1368

DAYS 7A/M - 7P/M

Pushup
#1 sump pit

NIGHTS 7P/M - 7A/M

D-16

OPERATOR Ware

TIME

WATER COLUMN BLOWDOWN ______

BOILER BLOWDOWN ______

OPERATOR Farle

TIME

WATER COLUMN BLOWDOWN ______

BOILER BLOWDOWN ______

BEST AVAILABLE COPY

Champion
Champion International Corporation

Monday 11/10/97

HOUR	WATER LEVEL: Boiler Drum #1	#2	#3	DA TANK	STORAGE TANK	PRESSURE: DRUM	FEED WATER	DA TANK	DIESEL PUMP	DRAFT / PRESSURE: UNDER GATE	FURNACE DRAFT	BOILER OUTLET	Boiler #3 ID Fan AMPS #1 MTR	#2 MTR	INSTRUMENT AIR	O_2	TEMPERATURE: DA TANK	BOILER OUTLET	F.W.P.	#3 FURNACE
7:00 A	.1	.0	-.1	-.5	✓	539	731	37	125		.23		164		70	8.3	279	684		1338
8:00	0	-.1	-.2	.5	✓	525	664	32	125		.12		157		70	10.3	274	669		1359
9:00	-.1	0	.0	.4	✓	521	721	38	125		.21		176		70	10.0	281	738		1381
10:00	.0	.2	.2	.2	✓	539	664	43	125		.21		162		70	10.3	283	695		1324
11:00	-.1	.1	.0	.5	✓	535	714	35	125		.24		180		70	9.0	280	734		1399
12:00	0	-.1	.2	5	✓	525	716	40	125		.21		173		70	10.3	281	697		1405
1:00 P	+.1	-.1	.3	5	✓	543	715	38	125		.25		171		70	10.2	279	701		1423
2:00	-.1	.1	.2	.1	✓	523	647	39	125	1	.12		173		70	9.0	218	612		1395
3:00	.1	-.1	.2	-.1	✓	532	654	31	125		.11		173		[illegible]	10.5	273	743		1453
4:00	.1	.1	0	-.5	✓	524	737	36	125		.14		166		70	9.9	277	707		1414
5:00	.1	-.1	.0	-.3	✓	530	651		Raking Grates											
6:00	1	.1	.0	3	✓	530	651	37	125		.26		1[illegible]		7[illegible]	8.1	273	717		1481
7:00	.0	.0	.0	-.4	✓	523	682	36	125		.18		176		70	10.0	277	742		1431
8:00	.2	.1	.1	-.2	✓	527	674	39	125		.23		195		70	10.3	278	721		1495
9:00	.2	.1	.1	.5	✓	530	612	36	125		.26		198		70	11.2	276	736		1450
10:00	.1	.0	.1	.3	✓	529	720	40	125		.19		153		70	10.4	280	671		1290
11:00	.0	.3	.3	.4	✓	552	715	33	125		.33		160		70	12.2	269	658		1339
12:00	.1	.2	.0	.1	✓	559	722	37	125		.41		164		70	11.1	275	680		1390
1:00 A	.2	.1	.0	.4	✓	535	611	35	125		.32		182		70	9.3	223	766		1524
2:00																				
3:00	.1	.2	.1	.4	✓	539	682	36	125		.40		169		70	9.7	277	723		1503
4:00	.1	.1	.1	.5	✓	536	672	39	125		.37		185		70	10.2	229	734		1541
5:00																				
6:00	.1	0	.2	.4	✓	534	700	32	125		.28		150		70	10.0	275	660		1416

HOUR	MECHANICAL DRIVES: R.A.V.'S	SAND CLASS	I.D. FANS	I.D. FAN BEARINGS	I.D. FAN	I.D. TURBINE	SCRUBBERS	EMERGENCY STACKS	[illegible] DRIVES	STEAM FLOWS: PLY	KILNS	TURBINE	PSI	#1	#2	#3	T.D.S.	UNIT PH		Furnace Temps #1	#2
7:00 A	✓	✓	✓	✓	✓	✓	✓	✓	✓	97	41	12	120	13	14	114				1281	1310
8:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	94	48	14	120	12	14	113				1274	1311
9:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	104	38	16	120	12	14	121				1294	1304
10:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	96	39	14	120	13	13	112				1278	1314
11:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	105	37	15	120	12	15	120				1275	1324
12:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	107	37	15	120	12	13	123				1261	1326
1:00 P	✓	✓	✓	✓	✓	✓	✓	✓	✓	106	36	15	120	13	14	119				1266	1311
2:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	80	35	14	120	12	14	100				1264	1309
3:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	109	34	14	120	13	14	121				1255	1327
4:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	109	34	15	[illegible]	13	14	120				1259	1323
5:00										/											
6:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	110	52	[illegible]	120	1[illegible]	14	1[illegible]				1252	1164
7:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	111	44	17	120	14	7	135				1296	1119
8:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	111	41	17	120	5	12	137				1165	1211
9:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	133	39	18	120	1	8	132				929	1306
10:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	90	41	14	120	5	16	112				1029	1385
11:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	73	39	14	120	12	7	92				1361	1104
12:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	100	40	15	120	12	18	114				1231	1435
1:00 A	✓	✓	✓	✓	✓	✓	✓	✓	✓	121	51	16	120	14	13	148	✓			1310	1303
2:00																					
3:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	123	45	15	120	13	12	145				1309	1518
4:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	125	43	17	120	14	11	141				1312	1225
5:00																					
6:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	104	45	13	120	14	14	125				1334	1297

DAYS 7A/M - 7P/M

OPERATOR [illegible signature]

TIME

WATER COLUMN BLOWDOWN ______

BOILER BLOWDOWN ______

NIGHTS 7P/M - 7A/M

OPERATOR [illegible signature]

TIME

WATER COLUMN BLOWDOWN ______

BOILER BLOWDOWN ______

Champion
Champion International Corporation

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Thursday 11/6/97

HOUR	WATER LEVEL: Boiler Drum #1	#2	#3	DA TANK	STORAGE TANK	PRESSURE: DRUM	FEED WATER	DA TANK	DIESEL PUMP	DRAFT / PRESSURE: UNDER GATE	FURNACE DRAFT	BOILER OUTLET	Boiler #3 ID Fan AMPS #1 MTR	#2 MTR	INSTRUMENT AIR	O_2	TEMPERATURE: DA TANK	BOILER OUTLET	F.W.P.	#3 FURNACE
7:00 A																				
8:00	.1																			
9:00	0	.1	-.4	0	✓	[illegible]	685	32	125		.18		162		70	9.8	272	683	135	1440
10:00	0	-.3	-.2	-.5	✓	535	640	28	125		-.23		186		70	9.7	273	749	135	1421
11:00	-.1	.1	-.1	-.25	✓	540	622	25	126		-.21		173		70	10.7	268	721	135	1518
12:00	-.1	0	0	-.24	✓	537	682	32	125		-.28		189		70	11.1	276	779	135	1479
1:00 P	0	-.1	-.1	?	✓	540	686	29	125		-.38		171		70	10.7	273	722	135	1401
2:00	.1	-.1	-.9	?	✓	500	589	27	125		-.22		196		70	10.1	271	753	135	1437
3:00	-.1	0	-.2	?	✓	538	641	30	125		-.35		185		70	10.0	272	746	135	1489
4:00	0	.1	-.2	?	✓	542	668	34	125		-.38		171		70	10.6	275	727	135	1501
5:00	-.2	0	-.1	?	✓	537	632	29	125		-.20		201		70	8.1	272	774	135	1511
6:00	.1	0	.3	?	✓	490	600	25	125		-.31		189		70	10.8	265	658	135	1288
7:00	.1	0	.3	-	✓	512	671	30	125		.28		192		70	10.4	273	755	135	1479
8:00	.1	0	-.2	-	✓	527	615	30	125		.14		178		70	9.7	275	776	135	1463
9:00	.1	.1	.1	-	✓	508	602	27	125		.16		192		70	9.5	266	790	135	1477
10:00	-.1	0	-.2	-	✓	531	621	31	125	1	.21		169		70	8.9	279		135	1461
11:00	-.1	.1	-.3	-	✓	517	636	34	125		.17		180		70	11.3	281	735	135	1417
12:00	.3	.2	.4	-	✓	533	631	27	125		.24		162		70	9.5	266	704	135	1411
1:00 A	.3	.1	-.2	-	✓	530	632	33	125		.20		190		70	9.5	276	746	135	1477
2:00	.2	.2	.2	-	✓	530	589	26	125		.20		185		70	10.3	262	749	135	1398
3:00	-.2	.1	.1	-	✓	533	712	30	125		.24		174		70	10.5	220	253	135	1433
4:00	-.2	-.2	-.3	-	✓	526	638	31	125		.20		169		70	9.8	275	700	135	1429
5:00	.4	.3	.4	-	✓	534	691	37	125		.20		178		70	8.6	280	733	135	1475
6:00	0	0	0	-	✓	533	660	31	125		.12		178		70	7.9	277	721	135	1458

HOUR	MECHANICAL DRIVES: R.S.V.S.	SAND CLASS	I.D. FANS	I.D. FAN BEARINGS	F.D. FAN	I.D. TURBINE	SCRUBBERS	EMERGENCY STACKS	CONVEYOR DRIVES	STEAM FLOWS: PLY	KILNS	TURBINE	PSI	#1	#2	#3	TDS	UNIT	Furnace Temp #1	#2
7:00 A																				
8:00																				
9:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	114	45	15	112	17	17	128			[illegible]	1341
10:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	114	43	16	120	15	15	131			1322	1291
11:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	127	41	16	120	13	14	142			1338	1305
12:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	128	41	18	120	12	14	146			1312	1254
1:00 P	✓	✓	✓	✓	✓	✓	✓	✓	✓	127	40	15	120	12	13	148			1328	1303
2:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	129	39	18	120	14	13	143			1290	1301
3:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	124	37	17	120	11	14	148			1301	1296
4:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	122	37	16	120	13	14	133			1305	1289
5:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	133	33	18	120	4	15	151			1302	1321
6:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	115	29	16	120	15	16	128			1331	1301
7:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	129	50	17	120	12	14	156	✓		1269	1285
8:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	124	45	17	120	12	14	147			1288	1291
9:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	126	42	18	120		14	146			1315	1307
10:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	121	41	15	120	15	14	135			1328	1294
11:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	119	39	17	120	14	15	136			1319	1298
12:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	120	39	16	120	13	14	134			1284	1306
1:00 A	✓	✓	✓	✓	✓	✓	✓	✓	✓	124	34	17	120	14	15	135			1345	1308
2:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	124	32	16	120	13	14	143			1305	1309
3:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	98	47	16	120	12	14	118			1339	1299
4:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	105	46	15	120	12	14	124			1276	1305
5:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	123	45	16	120	12	13	144			1272	1311
6:00	✓	✓	✓	✓	✓	✓	✓	✓	✓	125	44	16	120	11	14	144			1271	1292

DAYS 7A/M - 7P/M

OPERATOR [illegible signature]

TIME

WATER COLUMN BLOWDOWN ______

BOILER BLOWDOWN ______

NIGHTS 7P/M - 7A/M

OPERATOR Morris

TIME

WATER COLUMN BLOWDOWN ______

BOILER BLOWDOWN ______

T.C. Bonnie 240

APPENDIX E

OZONE FORMATION MODELING RESULTS

Dom the following is a summary of the "worst case" VOC and NOx emissions associated with the Champion Camden Mill Kiln project.

Nitrogen Dioxide	255 lbs/day	50 tons/yr
VOC	1070 lbs/day	200 tons/yr

I believe the estimates are an upper bound on the emissions for these pollutants and that the actual emissions increase we will project will be less than these values.

Please call me at 610/701-7218 if you have questions or need additional information.
Have a nice Thanksgiving.

John Barone

cc: T. Kassabaum
J. Keane

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TNRCC
Protecting Texas by Reducing and Preventing Pollution

FAX TRANSMITTAL

DATE: 12/2/97 NUMBER OF PAGES (including this cover sheet): 4

TO: Name JOHN BARONE
Organization WESTON
FAX Number 610-701-7401

FROM: TEXAS NATURAL RESOURCE CONSERVATION COMMISSION
Name Dom Ruggeri
Division/Region NSRP
Telephone Number 512-239-1508
FAX Number

NOTES: John - here's a copy of the memo I gave Patrick + Kevin. Call if you have questions.

Dom

Texas Natural Resource Conservation Commission

INTEROFFICE MEMORANDUM

To:	Patrick Agumadu, Kevin Ellis Mechanical Section	Date:	December 2, 1997
From:	Dom Ruggeri, Team Leader DGR Air Dispersion Modeling Team		
Subject:	Ozone Air Quality Analysis for Proposed Champion PSD Permit		

John Barone, Champion's consultant, gave me his estimate of worst-case emissions from the proposed PSD project near Camden, Texas. I used a screening procedure referred to as the Scheffe technique to conduct the evaluation. The technique calculates an ozone increment due to a VOC dominated point source (that is, VOC mass emissions greater than NO_x emissions). Based on my evaluation, the proposed emissions should not significantly affect the ozone standard in Polk County. In addition, we should be able to use ambient monitoring data from Jasper County to satisfy the preconstruction monitoring requirement that would be triggered by a VOC increase of 100 tons/year. The procedure and screening table are attached.

Attachments

Screening Procedure for Ozone Air Quality Analysis for Champion
Based on the Scheffe Table 1

Given:

Total Nonmethane VOCs (NMOC) = 200 tons/year
Maximum daily rate = 1070 lb/day = 195 tons/year
Total NO_x = 50 tons/year

Monitored 1-hour ozone concentration for 1992 in Jasper County = 0.110 parts per million (ppm).

Ozone increment = 0.015 ppm. The ozone increment is the difference between the monitoring standard of 0.125 ppm and the predicted increase in ozone due to the new or increased emissions. In this case, 0.125 - 0.110 ppm.

Screening Estimate Procedure:

- Determine the molar equivalent NMOC/NO_x ratio based on annual estimates. The molar equivalent conversion factor represents the ratio of NO_2 to CH_4 molecular weights and is used to relate the emissions to molar units consistent with ambient NMOC/NO_x ratios. Use this value to determine the appropriate column in the screening table. Table 1 is used because the facility is in a rural environment.

  200 / 50 (2.875) = 11.5 (column 3 of Table 1)

- Calculate the annual NMOC emission rate in tons/year from the daily maximum rate.

  Annual rate = 1070 lb/day = 195 tons/year (column 1 of Table 1). Applicant assumes 200 lb/day as worst case.

- Determine the ozone increment from the appropriate screening table.
  The ozone increment is determined from the following interpolation of columns 1 and 3 of Table 1:

  ozone increment = 0.75 pphm or 0.0075 ppm

- Add the delta to the maximum monitored ozone concentration to predict the worst-case impact of the addition of the Champion facility's emissions.

  0.0075 + 0.110 = 0.118 ppm. This concentration is below the monitoring standard of 0.125 ppm.

Table 1. Rural based ozone increment (pphm) as a function of NMOC emissions and NMOC/NOx ratios.

	NMOC/NOx TONS NMOC/TONS NOx (PPMC/PPM)		
1	2	3	4
NMOC EMISSIONS (TONS/YR) ↓ VOC	> 20.7 (> 20)	5.2-20.7 (5-20)	< 5.2 (< 5)
50	0.4	0.4	1.1
75	0.4	0.4	1.2
100	0.4	0.5	1.4
300	0.8	1.0	1.7
500	1.1	1.4	1.9
750	1.6	1.9	2.3
1000	2.0	2.4	2.7
1500	2.7	3.0	3.3
2000	3.4	3.8	3.7
3000	4.8	5.2	4.3
5000	7.0	7.5	4.8
7500	9.8	10.1	5.1
10000	12.2	12.9	5.4

* multiply pphm by 0.01 to obtain ppm

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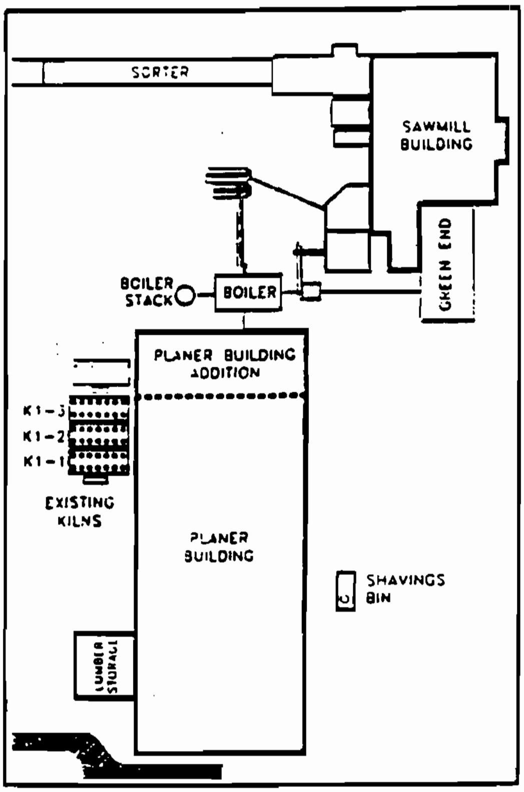
FINAL REPORT

OCT
AIR PER

PREVENTION OF SIGNIFICANT DETERIORATION (PSD) PERMIT APPLICATION FOR INTERNATIONAL PAPER COMPANY RIEGELWOOD, NORTH CAROLINA



Prepared for:

INTERNATIONAL PAPER

P.O. Box 57, Federal Road
Riegelwood, North Carolina

Prepared by:

Woodward-Clyde

3109 Poplarwood Court
Suite 301
Raleigh, North Carolina 27604

September 1996

Project No. 96R129

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1.0
EXECUTIVE SUMMARY

1.1 BACKGROUND

Federal Paper Board Inc., a wholly-owned subsidiary of International Paper Company, proposes to construct a new lumber drying kiln at its Armour sawmill facility located in Riegelwood, North Carolina. This report constitutes a preconstruction permit application request for New Source Review (NSR) in accordance with the North Carolina regulations governing the Prevention of Significant Deterioration (PSD). The construction project is subject to PSD because the facility is considered a major stationary source, having the potential to emit 250 tons or more per year of volatile organic compounds (VOCs) and carbon monoxide, and because the maximum emission increases of VOCs from the proposed kiln exceed PSD "significance rates" for VOC of 40 tons per year. This application also constitutes a request to discharge toxic air pollutants because the kiln project will result in a slight increase in emissions of two North Carolina toxic air pollutants (TAPs). This report contains air dispersion modeling analyses demonstrating that off-site maximum ambient air concentrations of these pollutants are well below concentrations considered hazardous to health. as specified in North Carolina regulation 15A NCAC 2D. 1100.

1.2 SUMMARY AND CONCLUSIONS

Under North Carolina's PSD program, preconstruction permit applications must assess the following in regards to installation of the proposed kiln: (1) best available control technology (BACT) for VOC emissions and (2) an "additional impacts analysis," which assesses potential air, soils, vegetation, and visibility impacts. The conclusion of the BACT analysis is that installation of air pollution controls are cost-ineffective and that a requirement to install air pollution controls would cause such severe economic impacts that installation of the kiln would make the project economically unviable. The conclusion reached in the additional impacts analysis is that potential adverse environmental impacts associated with installation of the lumber kiln would be insignificant and that beneficial impacts will actually be realized by the facility's increased capacity to use pine trees downed by Hurricane "Fran." which are readily available throughout eastern North Carolina.

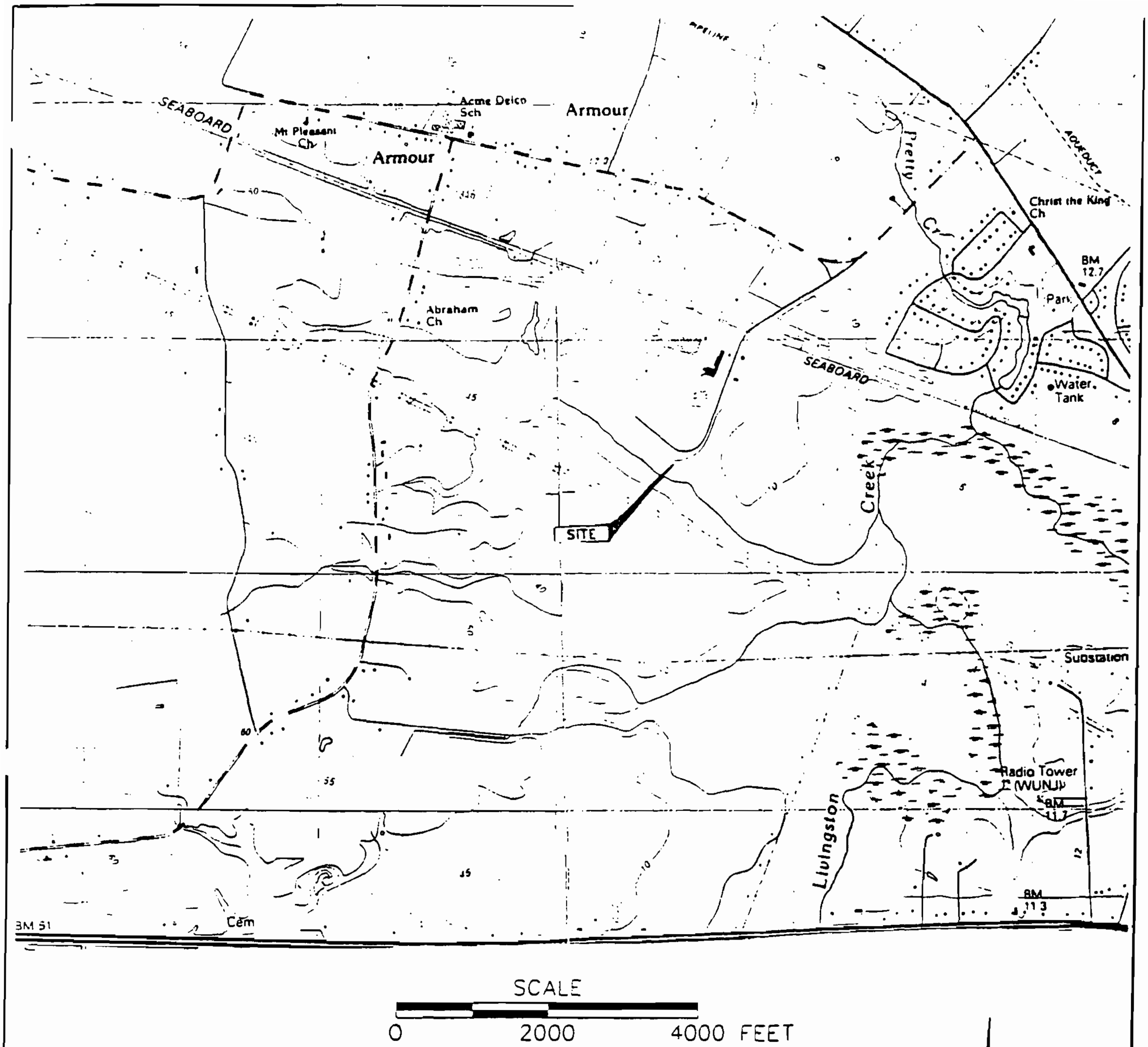
Due to emission increases associated with this project. formaldehyde and acetaldehyde are subject to permitting under the North Carolina Air Toxics Program and. consequently, air dispersion modeling was performed to demonstrate that emissions of these pollutants from the Armour facility will not cause or contribute to concentrations of toxic air pollutants exceeding allowable North Carolina acceptable ambient levels (AALs). Results from the modeling analysis indicate that maximum emission rates from all sources at the facility result in off-site concentrations of formaldehyde and acetaldehyde of approximately 0.2 percent and 13 percent. respectively, of the AALs. However. basing enforceable emission limitations on these estimated "worst-case" emission rates substantially increases the stringency of the permit limits beyond that of the North Carolina regulation and provides little or no flexibility for accommodating unforeseen changes in available emission factors or calculated emission rates. Thus, adopting these "worst-case" emission estimates as permit limits creates the potential for inadvertently exceeding the air permit limits even though the predicted ambient concentrations are significantly lower than the AALs allowed in 15A NCAC 2D. 1104. Therefore, is requesting emission limitations for formaldehyde and acetaldehyde which closely correspond to the AALs allowed in 15A NCAC 2D. 1104. This approach provides a window of operating flexibility that is well within compliance requirements. without being unduly restrictive. These "optimized" emission rates have been modeled and are outlined in this document.

1.3 PERMIT REQUEST

International Paper is committed to demonstrating compliance with all federal and North Carolina air quality protection requirements. This permit application fulfills all federal and North Carolina PSD application requirements specified in the relevant PSD regulations. the New Source Review Workshop Manual published by EPA. and by the North Carolina Division of Air Quality (NCDAQ) during a preapplication meeting in July 1996. Therefore. International Paper requests permission to construct a new lumber drying kiln and that a Permit to Construct the Operate under the North Carolina Air Quality Regulations be issued.

1.4 DOCUMENT CONTENTS AND ORGANIZATION

This application contains six additional sections and six appendices. Section 2.0 provides an overview of the facility and the proposed modification. Section 3.0 identifies the air quality regulatory requirements affecting the new lumber drying kiln. Sections 4.0 through 6.0 contains the PSD applicability. BACT. and additional impact analyses. respectively. Section 7.0 summarizes the North Carolina TAP modeling analysis and compliance demonstration.



Reference:

U.S. Geological Survey
Spring Hope Quadrangle
North Carolina
7.5 Minute Series (Topographic)
National Geodetic Vertical Datum
1978

FIGURE 2-1
SITE LOCATION MAP
INTERNATIONAL PAPER - ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

FIG. NO.
2-1

2.0 SITE AND PROCESS DESCRIPTIONS

2.1 SITE DESCRIPTION

The International Paper Armour facility is located in Columbus County, North Carolina, which is in the southeastern corner of the state. A site location map with topographical features is presented in Figure 2-1. Based on area classification systems recognized by EPA, the facility is located in a rural section of the state. EPA guidance shows two alternative procedures to determine whether the character of an area is predominately urban or rural: (1) land use typing or (2) population density. The area classification system as described by Auer in the Journal of Applied Meteorology, Vol. 17 pg. 636-643, 1978, Correlation of Land Use and Cover With Meteorological Anomalies, was used to classify the area as rural. This system uses USGS maps and an area 3 kilometers in radius around a source in the determination.

2.1.1 Class I Areas

There are no Class I areas within 100 kilometers (60 miles) of the Armour facility.

2.1.2 Topography

The Armour facility is located near the southern coast of North Carolina. The terrain surrounding the site is predominantly flat with elevations changing only a few feet within several kilometers of the plant site. Therefore, intermediate or complex terrain is not required in the air dispersion modeling analysis presented in Section 7.0 of this report.

2.1.3 Climatology and Meteorology

The site lies within a general climatic region known as Humid Subtropical. Temperatures are moderate with long summers and brief winters. An extended summer drought may result from

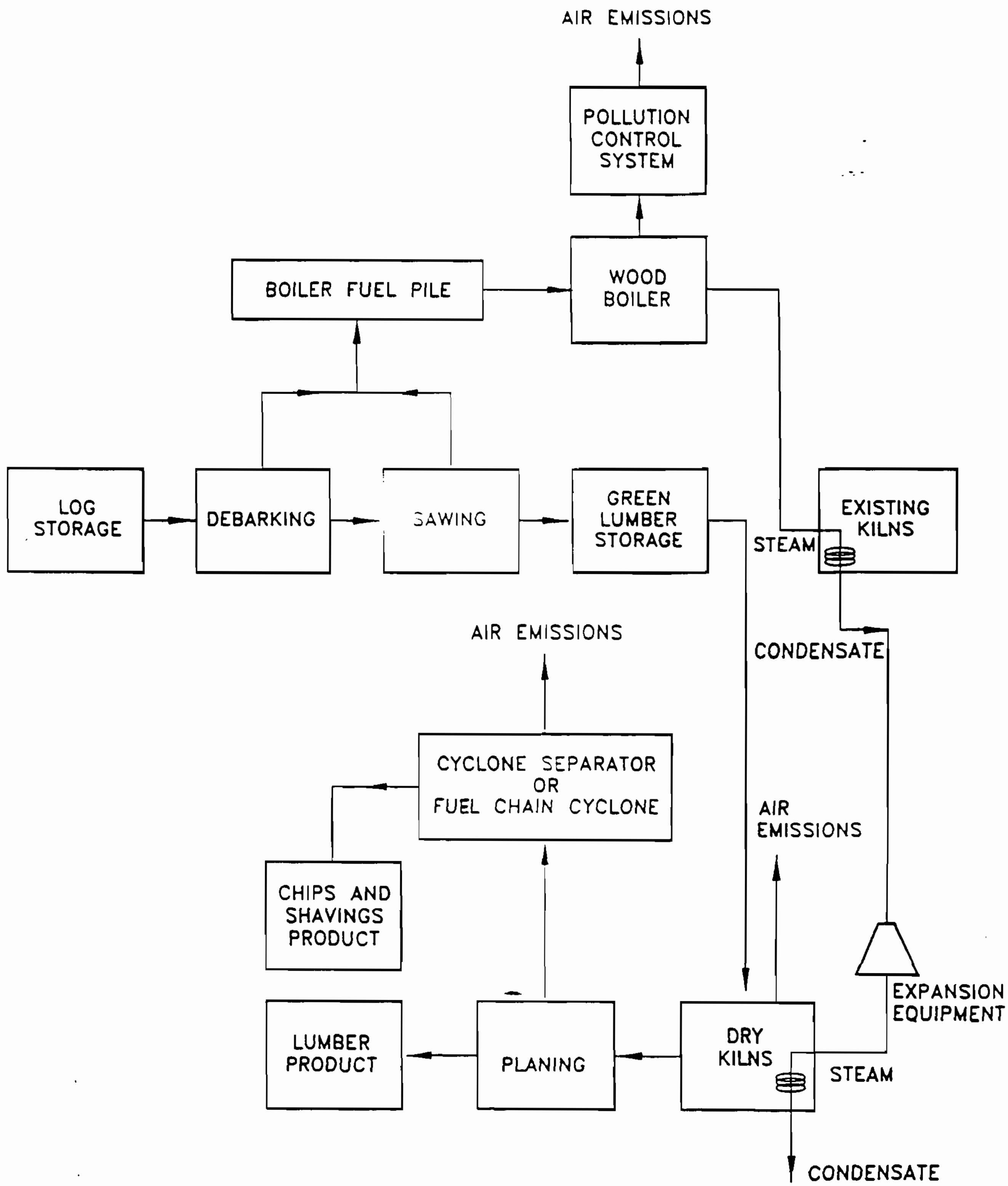


FIGURE 2-2
SIMPLIFIED LUMBER MANUFACTURING PROCESS FLOW DIAGRAM
INTERNATIONAL PAPER - ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

Location: HOUSTON, TX. CADD 1, File name: K:\DWG\96R129\PFD.DWG Last edited: 09/12/96 @ 13:29

dominance of the Bermuda high pressure off the east coast. Warm, moist air from the tropics dominates summer conditions while cooler, drier continental polar air typically controls winter weather.

Daily mean air temperatures over most of eastern North Carolina range between 41°F and 50°F in January, the coldest month, and between 75°F and 81°F in July, the warmest month. Annual precipitation averages about 50 inches per year throughout the basin.

2.2 PROCESS DESCRIPTIONS

2.2.1 Existing Operations

International Paper's Armour sawmill facility is located on Federal Road in Columbus County. The primary product manufactured at this facility is southern yellow pine dimensional lumber, corresponding to a standard industrial classification (SIC) code of 2421. The facility is located on 184 acres and employs approximately 183 full time employees. The debarking, planing, sawing, and production units operate 52 weeks per year, 5 days a week, and 16 hours per day. Some units such as the wood-fired boiler and lumber drying kilns, are operated on a 24 hour per day, 7 day a week schedule. A plot of the facility is included with the preconstruction permit application forms in Appendix A.

A simplified process flow diagram for lumber manufacturing is presented in Figure 2-2. Air emission sources identified on this diagram are permitted to operate under North Carolina Air Permit No. 2248R10. All air emission sources covered by this modification request are identified in Figure 2-3.

In the lumber manufacturing process, pine logs are trucked in, debarked, and cut into appropriate dimensions in the sawmill. The green lumber is then planed and dried. Three steam-fired kilns are used to dry the lumber reducing moisture content from approximately 50 to 20 percent. Steam is provided by a 93 million Btu/hr wood-fired boiler. The dried lumber is sorted by length, size, and grade and transported by truck or rail for delivery to customers.

2-5

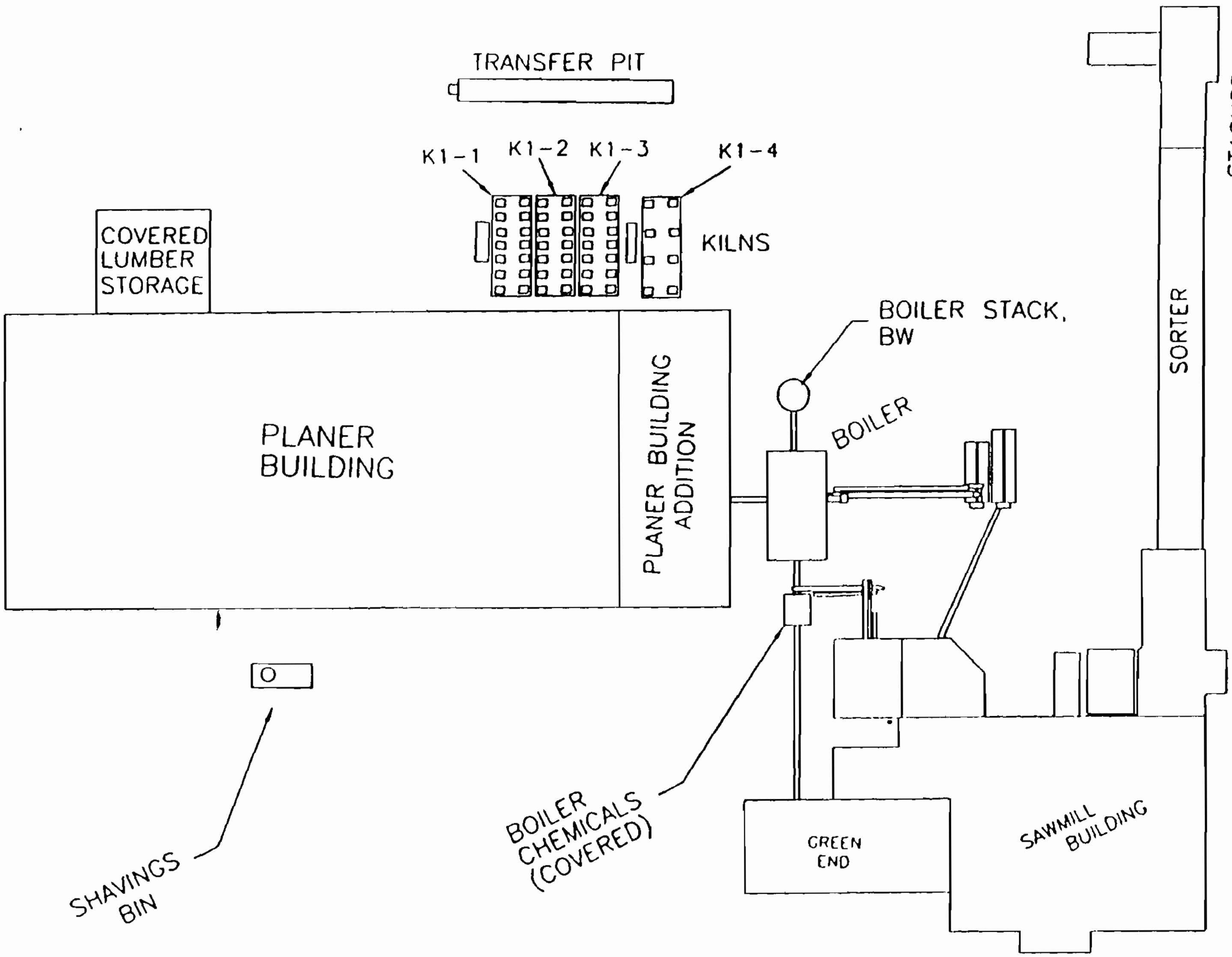


FIGURE 2-3
LOCATION OF AIR EMISSION SOURCES (MODELED SOURCES ONLY)
INTERNATIONAL PAPER - ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

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Secondary products generated at this facility are wood chips, sawdust, bark, and shavings. Wood chips and shavings created from the sawing and planing processes are collected by the cyclone separator and fuel chain cyclone. Chips and shavings collected by the cyclone separator are sold and shipped off-site; those collected by the fuel chain cyclone are used to fuel the wood-fired boiler.

2.2.2 Proposed Modification

With this application, International Paper is proposing to increase the capacity of the Armour facility by 32.9 million board feet per year. The maximum capacity of the proposed kiln is 135,000 board feet per drying cycle, with each drying cycle requiring 36 hours. The kiln is to be located adjacent to the three existing kilns at the facility, as shown in Figure 2-3. A schematic of the proposed kiln is presented in Figure 2-4.

Drying is accomplished by circulating heated air over stacked "green" lumber. Moisture removed from the lumber is exhausted through vents located in the roof of the kiln. Kiln temperatures and relative humidity are carefully controlled throughout the drying cycle via control of heat input and adjustment of fresh air intake to and moist air exhaust from the kiln. Temperatures during a typical drying cycle range from approximately 170 to 220°F, dry bulb, and remain fairly constant at 160°F, wet bulb.

Heating in the kiln is to be accomplished using "flash steam" generated from the thermal energy retained in the waste steam condensate from the three existing kilns and supplemented as necessary by steam from the facility's wood-fired boiler. Flash steam is to be produced by reducing the 150 pounds per square inch gauge (psig) pressure of condensate from the existing kilns to a pressure of approximately 25 psig, which revolatilizes ("flashes") a significant amount of condensate to steam. Currently, the thermal energy of the condensate from the existing kilns is not utilized.

3.0
REGULATORY APPLICABILITY

3.1 INTRODUCTION

The purpose of this section is to summarize all federal and state regulations that are applicable to operation of the proposed kiln and to explain why certain regulations applicable to the kiln. Regulatory applicability discussions are separated into two categories: 1) federally-enforceable requirements and 2) state-only requirements. Requirements are presented in this format to facilitate their incorporation into the facility's "Title V" Operating Permit, which is to contain separate sections for federally-enforceable and state-only permit requirements. A Title V permit application has already been submitted by International Paper to the NCDAQ for the Armour facility.

3.2 FEDERALLY-ENFORCEABLE REQUIREMENTS

This section describes applicable and important non-applicable regulations considered federally enforceable under North Carolina regulations. In this regulatory analysis for the proposed kiln, the following regulations were considered federally enforceable and were reviewed for potential applicability:

- Federal regulations that have been promulgated pursuant to the Clean Air Act, as amended in 1990; and
- North Carolina regulations that are part of the State Implementation Plan (SIP) approved by the EPA.

3.2.1 Applicable Requirements

Only two federally-enforceable regulation applies to operation of the proposed kiln, as described below.

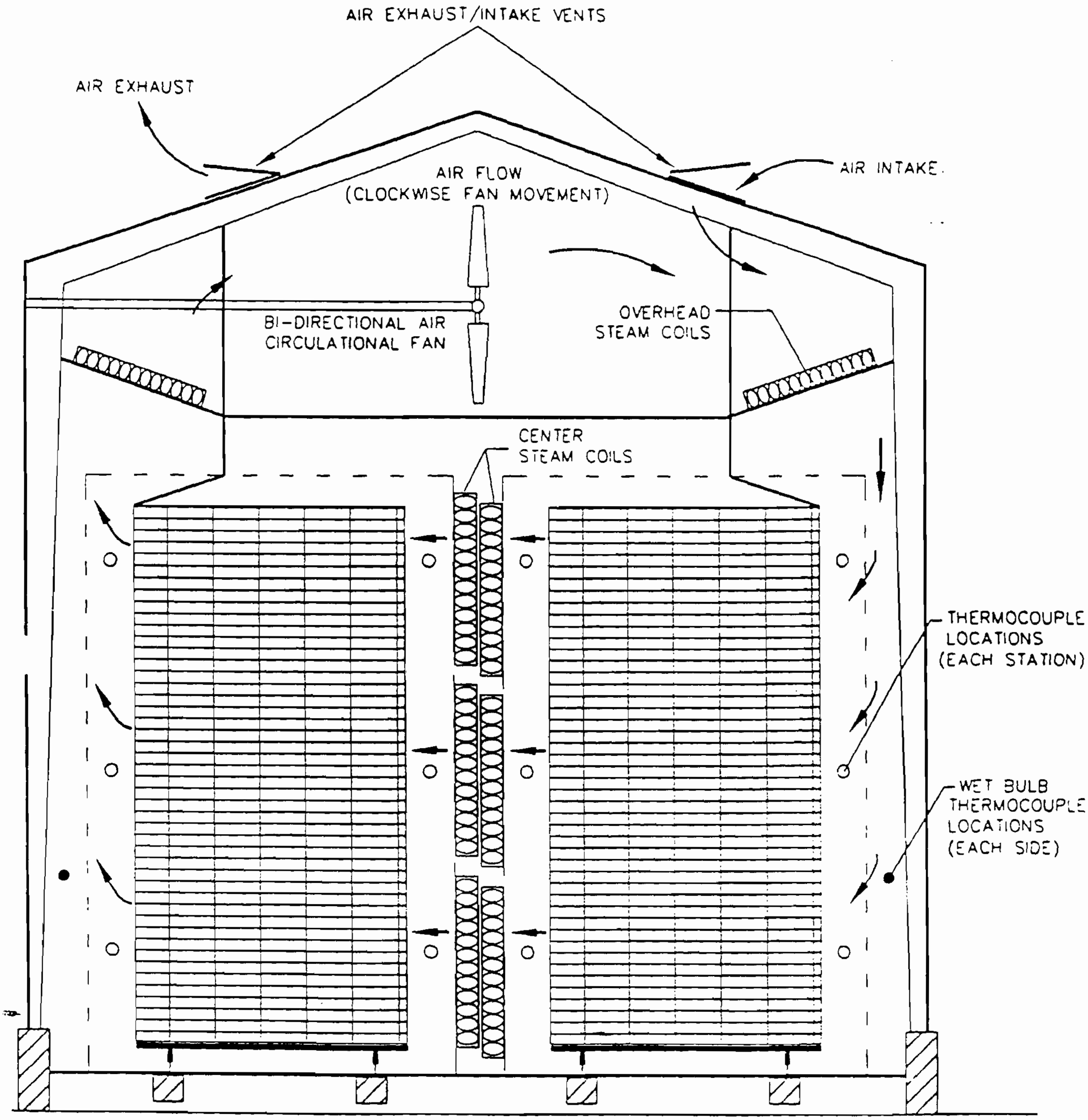

FIGURE 2-4
SCHEMATIC OF LUMBER DRYING KILN
INTERNATIONAL PAPER - ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

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visible emissions (EPA Reference Method 9) and, hence, emissions of water vapor do not trigger applicability of this regulation.

3.3 STATE-ONLY REQUIREMENTS

States may impose requirements upon a facility that are not based on federal regulations or are not specified in SIP regulations. These requirements are considered "state-only" requirements and are identified as such in this report to clarify to both the NCDAQ and to International Paper those conditions with which the facility must comply, but are not considered federally enforceable. Unlike the previous subsection discussing non-applicable federally-enforceable requirements, this section does not discuss non-applicable state-only requirements because there is clearly just one state-only regulation applicable to the new kiln.

The only state-only regulation that applies to the Armour facility is Control of Toxic Air Pollutants (15A NCAC 2D .1100), which prohibits new and modified sources of toxic air pollutants from emitting in quantities which cause or contribute to ambient air concentrations exceeding regulated levels. Section 7.0 of this report presents an analysis demonstrating applicability and compliance with this regulation.

Prevention of Significant Deterioration (15A NCAC 2D .0530). The North Carolina PSD regulations are designed to prevent significant deterioration of ambient air quality and deleterious impacts to the environment from major modifications at major sources of PSD pollutant emissions. PSD requires a number of environmental impact and pollution control technology assessments prior to construction, as well as continuing emission limitations after a PSD permit is issued.

This report and accompanying permit application forms fulfill all application requirements under North Carolina's PSD program. The only "continuing" requirement affecting the kiln upon issuance of a Permit to Construct and Operate will be to operate within the emission limits considered Best Available Control Technology (BACT) for VOC emissions (see Section 5.0). There are no PSD requirements associated with any other emission sources at the facility.

3.2.2 Non-Applicable Requirements

There are several key regulations that are sometimes applicable to emission units similar to the kiln, but are not applicable to the kiln proposed for the Armour facility. A brief discussion of each of these regulations is provided below to substantiate these findings.

Miscellaneous Volatile Organic Compound Emissions (15A NCAC 2D .0518) is a regulation that is applicable to various liquid hydrocarbon storage vessels and to equipment used to apply, evaporate, or dry photochemically reactive solvents. The proposed kiln does not meet either of these applicability criteria.

Particulates From Miscellaneous Industrial Processes (15A NCAC 2D .0515) does not apply because only VOC and water are emitted from the kiln.

Control of Visible Emissions (15A NCAC 2D .0521) does not apply because insignificant quantities of "visible emissions" are emitted from the kiln. Water vapor is emitted from the kiln and is visible; however, it is not measured using EPA's test method for quantifying

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Detailed emission increase calculations are presented in Table 4-1; however, a brief summary of the calculations is provided below.

4.2.1 VOC Emissions Increase Calculations

The VOC emissions increase for the proposed kiln were calculated by multiplying a conservative emission factor for drying of southern yellow pine dimensional lumber by the maximum annual capacity of the kiln. The emission factor used, 5.73 lb VOC (as carbon)/MBF, was developed from numerous emission tests compiled by the National Council of the Paper Industry for Air and Stream Improvement (NCASI) for steam-heated lumber kilns drying southern yellow pine. The NCASI data included 14 VOC "emission factors," with each emission factor having been developed from several stack test results provided by NCASI member companies. Emission factor. ..nged from 0.63 to 5.3 pounds per thousand board feet (lb/MBF) of lumber dried, with an average of 3.15 lb/MBF. Using statistical mathematical principals and the "population" of emission factors developed by NCASI, the "99th percentile" of all emission factors is 5.73 lb/MBF, meaning that 99 percent of all emission factors that would be calculated if an infinite number of stack test were conducted on southern yellow pine drying are predicted to be less than 5.73 lb/MBF. Based on an emission factor of 5.73 lb/MMBF, maximum VOC emissions from the kiln are estimated to be approximately 94 tons per year, which exceeds the PSD significance threshold of 40 tons per year and, consequently, VOC is subject to PSD review.

The emission factor of 5.73 lb/MMBF used to estimate VOC emissions is believed to drastically overestimate the maximum emission increases from the proposed kiln. The Forest Products industry, other state permitting agencies, and EPA generally recognize that the best available emission factor for calculating long-term emissions from a lumber drying kiln is approximately 3.15 lb/MMBF, which is the average emission factor developed from the NCASI data discussed above. However, since emission limits under PSD are generally based on short-term emission rates, International Paper has decided to use an "ultra-conservative" emission factor to allow an adequate safety margin over the best available emission factor of

4.0
PREVENTION OF SIGNIFICANT DETERIORATION APPLICABILITY ANALYSIS

4.1 INTRODUCTION

Major modifications to major stationary sources are required by the Clean Air Act to obtain an air permit before commencing construction. The process is called New Source Review (NSR) and requires the source to obtain a PSD permit if the source making a modification is located in an attainment area. Since the Armour facility is a major stationary source and is located in an attainment area for all pollutants regulated under NSR, the analysis presented in this section was conducted to determine PSD applicability.

In short, PSD applicability is determined by comparing the total emission increases of PSD pollutants associated with a modification to their respective PSD "significant emission rates." Each pollutant for which emission increases exceed a significant emission rate is considered a "major modification" and is subject to PSD permitting requirements. The proposed modification will increase volatile organic compound (VOC), total suspended particulate (TSP) and particulate matter, 10 micron diameter or smaller (PM-10). The PSD significant emission rates for these pollutants are 40, 25, and 15 tons per year, respectively.

4.2 NET EMISSION INCREASE CALCULATIONS

The only PSD pollutant emitted from the proposed kiln is VOC. However, operation of the kiln will also increase the utilization of other operations at the Armour facility because lumber drying is the "bottleneck" of the facility. Consequently, emission increases associated with the "debottlenecked" sources are included in the applicability analysis. Debottlenecked emission sources at the facility are debarking, sawing, and planing operations, which emit TSP and PM-10. The wood-waste boiler was not considered a debottlenecked source because: 1) the proposed kiln will use flash steam from the three existing kilns, which has no effect on boiler combustion, and 2) the occasional supply of steam by the boiler to the proposed kiln will be minimal and will not measurably alter the quantity of steam produced by this existing boiler.

TABLE 4-1
PSD APPLICABILITY DETERMINATIONS
INTERNATIONAL PAPER ARMOUR FACILITY
WCC PROJECT NO. 96R129

Assumptions

- The maximum emissions increase associated with installation of a 32.9 million board feet (32.9 MMBF) per year kiln includes emission increases from the kiln and planing operations.
- Sawmill fugitives from debarking and sawing operations and road fugitives are not included in calculations because fugitive emissions are not required in PSD emission increase calculations for this type of facility.
- Wood waste collection system TSP emissions conservatively based on the maximum emissions from either the cyclone separator and fuel chain cyclone (4 lb/hr) divided by the ratio of planed wood in 1994 to production hours in 1994 (163 MMBF/3925). Resulting conservative emission factor = 96.3 lb TSP MMBF
- PM-10 emissions from the collection system are conservatively estimated to be 30 percent of total suspended particulate (TSP) emissions.
- Boiler emissions are not included in these calculations because waste steam will be used to heat the kiln

Emissions Unit	Point Source Identification Number	Activity Factor Value	Activity Factor Units	Emission Factor Pollutant	Emission Factor Value	Emission Factor Units	Emissions (tpy) TSP	Emissions (tpy) PM-10	Emissions (tpy) VOC
Wood Waste Cyclones	A1-1 and C1-1	32.9	MMBF/yr	TSP	96.3	lb MMBF	1.58		
		32.9	MMBF/yr	PM-10	28.9	lb MMBF		0.48	
Proposed Drying Kiln	K1-4	32.9	MMBF/yr	VOC	5.73	lb/MBF[1]			94.26
Totals from Project							1.58	0.48	94.26
PSD Levels (tpy)							25	15	40
Subject to Review?							No	No	Yes

Notes:

1. "*A Small Scale Kiln Study on Method 25A Measurements of Volatile Organic Compound Emissions From Lumber Drying*" (background test data). Technical Bulletin No. 718, National Council of the Paper Industry for Air and Stream Improvement. July 1996

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3.15 lb/MMBF. On a short term basis, emission rates may fluctuate drastically due to a number of operating variables. Significant variations are even possible between different batches of lumber being dried due to the variability of the VOC content of undried lumber. Based on the best available emission factor of 3.15 lb VOC/MMBF, the estimated maximum emission increase associated with the proposed kiln is only 51.7 tons per year, corresponding to an emission rate 45 percent lower than that calculated using the ultra conservative factor.

4.2.2 Particulate Matter Emissions Increase Estimates

Debarking and sawing operations have no point source emissions and only minor fugitive emissions of particulates. This facility does not belong to one of the PSD Source Categories for which fugitive emissions must be included in emission increase calculations and, therefore, the minor particulate matter increases from the debarking and sawing operations were not included in the PSD applicability analysis. Emissions from planing operations are controlled by two wood waste cyclones. Only one wood waste cyclone is operated at any time to control planing emissions. In order to conservatively estimate emissions, the emission increase calculations presented in Table 4-1 were based on continuous operation of the wood waste cyclone with the higher particulate emissions rate. maximum TSP and PM-10 emissions from the cyclones are estimated to be 1.58 and 0.47 tons per year, respectively, which are well below their PSD significance levels of 25 and 15 tons per year, respectively. consequently, TSP and PM-10 are not subject to PSD review.

5.2 TECHNICAL APPROACH

The BACT analysis for VOC emissions from the lumber drying kiln was performed based on the "top-down" approach outlined in the December 1. 1987 policy memorandum issued by the EPA and in EPA's New Source Review Workshop Manual. The first step in this analysis was to characterize the emission stream of interest to identify all control options with a practical potential for application to control VOC emissions from the proposed kiln. After identifying available control options, infeasible options were rejected from additional consideration. Next, the economic, environmental. and energy impacts associated with each control option were evaluated in decreasing order of control effectiveness to determine whether negative impacts preclude their selection as BACT.

5.3 CHARACTERIZATION OF IISSION STREAM

The first step in this BACT analysis was to characterize the emissions from each emission source for which BACT is required in order to identify possible control options. Information pertaining to the exhaust stream from the proposed lumber drying kiln was obtained from numerous sources including studies of emissions from lumber drying conducted by NCASI, humidity data based on typical wet and dry bulb temperatures of kiln exhausts, suggested drying schedules from Wellons, Inc. (kiln manufacturer). actual process data from a nearly identical kiln operated by another lumber manufacturing company in North Carolina, and a number of industry experts familiar with kiln operating procedures and exhaust characteristics.

Typical kiln exhaust characteristics upon which control technology feasibility and costs were based are discussed below. A summary of these characteristics is presented in Table 5-1. A chart of actual run data for a typical flash steam-heated kiln is presented in Appendix E of this report. This chart was provided by another lumber manufacturer operating a flash steam kiln in the southeastern United States.

5.0 BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

Emission units subject to PSD review are required to apply Best Available Control Technology (BACT) to each new or modified emissions unit to reduce emissions of each pollutant for which the source is subject to PSD review. BACT is defined as an emission limitation based on the maximum degree of reduction of each pollutant subject to PSD review that the permitting authority determines to be achievable, taking into account economic, environmental and energy impacts. This emission limit can be based on the application of air pollution equipment, specific production processes, methods, systems or techniques. In no event can the application of BACT result in the emission of any pollutant that would exceed applicable New Source Performance Standards (NSPS) or National Emission Standards for Hazardous Air Pollutants (NESHAP).

As discussed in Section 3.0, no NSPS or NESHAP apply to lumber drying and, consequently, the BACT analysis for the Armour facility does not involve "mandatory" control technologies or "minimum" pollution control efficiencies.

5.1 POLLUTANT APPLICABILITY

The International Paper facility is a major PSD facility as described in Section 1.1. Because the emission increase from the proposed kiln exceeds the PSD significant emission rate for VOC (40 tons per year), the project is considered a major modification and, thus, subject to PSD review. Therefore, a BACT evaluation must be performed to determine the feasibility of reducing VOC emissions. EPA guidelines require that the BACT analysis evaluate benefits associated with any reduction of emissions of hazardous air pollutants resulting from adding controls for VOC. These are addressed in the "environmental impacts" portion of the BACT analysis. Three biogenic (i.e., naturally occurring) hazardous air pollutants, acetaldehyde, formaldehyde, and methanol are emitted as a small constituent of the VOC emitted from the kiln and are therefore discussed in this BACT analysis.

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Kiln Vent Locations and Operating Characteristics: A total of eight vents measuring 28 inches by 28 inches are spaced equidistantly along the V-shaped roof of the proposed kiln, which measures 34 feet wide by 68.5 feet long. Four of the eight vents are located on both sides of the kiln roof and each set of four vents react in unison during the kiln drying cycle. At any given time, one set of vents allow moisture to exhaust from the kiln while the other set of vents allow dry make-up air to enter from the atmosphere. Approximately every two hours, the direction of heated air circulating within the kiln is changed to ensure proper drying. As this direction is changed, kiln dampers are automatically adjusted to allow vents that were exhausting to provide the fresh air intake and vents that were providing fresh air to exhaust.

Exhaust Flow Rate: Exhaust flow rates in flash steam kilns like the one proposed at the Armour facility can be highly variable, largely because the availability of steam to the kiln heat exchangers is variable and is dependent upon the quantity of high-pressure condensate available from the existing kilns (see Section 2.2.2). The amount of venting is controlled by sophisticated automated controls that are influenced by a variety of kiln process parameters including relative humidity, moisture removal rate, and internal kiln temperatures and, therefore, is directly linked to the quantity of flash steam available.

During periods when flash steam supply does not completely meet necessary heat demands, vents may completely or almost completely close rapidly to maintain optimal conditions within the kiln. After return of an adequate steam supply to the kiln, kiln conditions may rapidly rise to their proper set point conditions or may even slightly overshoot these conditions causing a response by the kiln controls to quickly open the vents to maintain optimum drying conditions. As a visual aid to understanding the rapid fluctuation in kiln vent positions/exhaust flow rates, two figures depicting vent position (0 to 100%) charted over a typical flash steam-heated kiln cycle are provided in Appendix E.

Based on the vendor-recommended drying schedule for this kiln, the total cycle drying time of the proposed kiln is approximately 36 hours. There is typically no venting to the atmosphere during the first six hours of the drying cycle as stacked lumber is heated from ambient temperatures. After 6 hours, substantial evaporation from the lumber begins.

Table 5-1
Steam-Heated Lumber Kiln Exhaust Stream Characteristics
International Paper - Armour Facility
Woodward-Clyde Project No. 96R129

Parameter	Range	Average
Flow Rate (actual cubic feet per minute)	0 - 15,000	11,700
Temperature (°F)		
Dry Bulb	170 - 230	180
Wet Bulb	160 - 180	160
Moisture		
Percent by Weight	27.5 - 29.5	28.5
Evaporation Rate (lb/hr)	0 - 10,000	8,000
VOC Concentration (ppmv)	600 - 2,000	1,000

requiring venting of moisture from the kiln. This venting continues through the 36th hour, excluding periods when an inadequate steam supply is available causing vents to completely close. For purposes of BACT cost estimates, an average kiln exhaust rate of 11,700 actual cubic feet per minute (acfm) and a maximum flow rate of 15,000 acfm were specified.

Exhaust Temperature and Moisture Content: Between hours 6 and 30 or the drying cycle, kiln exhaust temperatures are typically equal to the nominal kiln set points of 170 deg. F dry bulb and 160 deg. F wet bulb, resulting in a nearly saturated air exhaust stream. The moisture content of the exhaust is approximately 29.5 percent by weight, and 47.5 percent by volume. Between hours 30 and 36, exhaust temperatures are approximately 220 deg. F dry bulb and 160 deg. wet bulb with 27.5 and 44.3 percent moisture by weight and volume, respectively. A constant evaporation rate of 8,000 pounds per hour of water was assumed in the BACT analysis, although actual rate of evaporation may fluctuate during the cycle.

VOC Concentrations: Based on industry experience and background data obtained in the NCASI kiln study mentioned earlier, the ppmv concentration of VOC in the kiln exhaust peaks at approximately 2,000 ppmv VOC, shortly after the kiln begins venting and thereafter, decreases to a concentration of around 800 ppmv over the next few hours. VOC concentrations remain fairly constant at about 800 ppmv during the rest of the drying cycle, although a gradual decrease during the last few hours of the drying cycle is possible. A chart of typical VOC concentrations during the drying cycle is presented in Appendix E.

VOC Emission Rate: The VOC emissions rate during the drying cycle is expected to vary during the drying cycle due to the extreme fluctuations in flow rate and, to a lesser extent, fluctuations in VOC concentration. To simplify the BACT analysis and efforts to obtain cost information from control technology vendors, a constant VOC emission rate of 35.5 pounds per hour was assumed for the first four hours of the drying cycle, during the period when peak VOC concentrations typically occur, and 14.2 pounds per hour during the rest of the cycle.

5.4 IDENTIFICATION OF AVAILABLE CONTROL TECHNOLOGIES

An extensive study of potentially applicable control technologies was conducted prior to evaluation of specific control options to ensure that the top-down BACT analysis would be as comprehensive as possible. Information from the following sources were used in the analysis:

- BLIS database (the RACE/BACT/LAER Clearinghouse) located on the Technology Transfer Network on EPA's electronic bulletin board system;
- Pollution control technology vendors;
- Plywood and oriented strandboard manufacturers using pollution control technologies considered in the BACT analy that, although control emissions from very different applications, control similar VO species;
- EPA Regional personnel responsible for review of PSD BACT analyses;
- North Carolina and Virginia permitting staff;
- EPA control technology documents;
- Experts familiar with both the Lumber Manufacturing Industry and control of similar VOCs;
- Lumber drying kiln manufacturers including the likely manufacturer of the proposed kiln (Wellons, Inc.); and
- Babcock and Wilcox, manufacturer of the wood fired steam boiler at the Armour facility.

Information obtained from the data sources reviewed and interviews conducted during this study indicate that no pollution controls have ever been applied to lumber drying kilns and that the combined characteristics of the exhaust from steam-heated lumber drying kilns present a number of obstacles to control. However, several control technologies were identified that have been used by other industries to control similar VOC species and were considered in this analysis. These technologies are as follows:

- Regenerative catalytic oxidation;
- Regenerative thermal oxidation;
- Non-regenerative thermal oxidation technologies;

- Carbon adsorption;
- Biofiltration; and
- Thermal oxidation in the existing wood-fired boiler.

Although a few other pollution control technologies are available that reduce VOC emissions, these technologies primarily target reduction of other criteria pollutants and are generally recognized by industry and permitting agencies as not being particularly effective for VOC pollution control. For example, wet electrostatic precipitators and wet scrubbing systems are control technologies designed to reduce particulate matter emissions and have low reduction efficiencies for the VOC species typically emitted from lumber kilns. Consequently, these technologies were not considered in this analysis.

5.5 GENERAL CHALLENGES OF KILN EMISSIONS CONTROL

The purpose of this section is to describe the technical challenges that are involved in applying any of the previously mentioned control technologies to lumber kiln emissions. Although the control technologies previously identified have been proven as being effective VOC control technologies for specific applications, none of these technologies has been applied to steam-heated lumber kilns or emission streams with a similar combination of characteristics and, consequently, there are a number of inherent difficulties in designing a cost-effective control system for a lumber kiln. Because emission control technologies have never been applied to lumber kilns, actual maintenance and operational problems are unknown and it is possible that the technologies considered in this BACT analysis would cost substantially more than presented in this analysis. These challenges are categorized as follows:

- Exhaust collection/kiln air intake ductwork and automated control system design;
- Reduction of condensation formation;
- Collection and treatment of condensation;
- Maintenance; and
- Potential pollution control system re-engineering after installation.

Each of these challenges are discussed below.

5.5.1 Exhaust Collection/Kiln Air Intake Design

To summarize the operation of the kiln exhaust collection and air intake system, two sets of four vents are spaced equidistantly along the roof of the proposed kiln, which measures 34 feet wide by 68.5 feet long. Each set of four vents react in unison during the kiln drying cycle and, at any given time, one set of vents exhaust from the kiln while the other set of vents intake air from the atmosphere. As the direction of "drying air" inside the kiln is changed, dampers are automatically adjusted to allow switching between intake and exhaust vents. A drawing of the kiln air intake, circulation, and exhaust flow patterns is presented in Figure 2-1.

In order to route emissions from the kiln to any pollution control device, a complex ductwork system must be connected to all eight exhaust vents on the kiln roof, which in turn connects all vents to a single duct connected to the pollution control device. While many pollution control systems have been designed that connect multiple vents to a single control device, this design is especially complicated because several damper controllers and additional ductwork must be installed to allow instantaneous switching between air intake ducts and exhaust ducts. Damper controls must always allow one set of vents to exhaust while the other intakes air. Design and operation of this system are further complicated by the extraordinary measures necessary to reduce condensation, collect and treat condensate, and finally to prevent malfunction of the ductwork control system due to condensation, each of which is discussed in the following subsections.

5.5.2 Reduction of Condensation Formation

One of the most critical aspects of operation of any pollution control system for a lumber kiln is that condensation of the kiln exhaust must be minimized as much as possible to reduce the number and severity of system malfunctions and to reduce the amount of wastewater that must be treated. As explained earlier, approximately 8,000 pounds (960 gallons) per hour of water is evaporated and exhausted from the kiln in a nearly saturated air stream.

First, any ductwork system must be very well insulated due to the large surface area involved. Furthermore, ductwork would be heated if possible. Typical "heat tracing" techniques such as steam and electrical tracing are not viable options due to the substantial costs of tracing such large surface areas and the great financial risks of tracing large amounts of ductwork that may require frequent disassembly, maintenance, and re-design. Routing of hot combustion gases from thermal and catalytic oxidation technologies and introducing these gases directly into the kiln exhaust ductwork would have the greatest likelihood of reducing condensation. However, it is unlikely that this method can completely prevent all condensation and requires additional ductwork and damper controls. Although it is theoretically possible to introduce enough hot gas from the oxidation technologies to prevent condensation, reintroduction of gases causes the total air flow rate to the oxidation control device to increase, which increases the size and cost of the oxidation equipment. Other technologies under consideration in this BACT analysis cannot heat the kiln exhaust and would generate considerable condensate.

5.5.3 Condensation-Related Problems

Kiln condensate is very "sticky" due to the presence of resinous VOC compounds in the exhaust and points of condensation will, over time, build up and could cause severe blockages and malfunctions of ductwork dampers openings. The quantity of buildup could not be predicted by any of the various control technology vendors and kiln experts consulted during this BACT analysis. However, several persons interviewed about problems caused by kiln condensate agreed that severe control system malfunctions are possible and that an abnormally large amount of maintenance labor is likely. Because pollution controls on the proposed kiln would be the "first-of-a-kind," substantial ductwork re-engineering and replacement is possible due to problems caused by condensation.

Condensation in control system ductwork must be collected and treated prior to off-site discharge to remove VOC and to adjust pH because the condensate is slightly acidic. The facility is equipped with ponds that provide recirculating water to the facility's boiler exhaust scrubber; however, the condensate cannot be managed in these ponds due to insufficient capacity. Therefore, additional wastewater treatment facilities would have to be constructed to manage the condensate. *It is important to note that the costs of wastewater treatment were not included in any of the cost impacts analyses presented in this section due to the difficulty of accurately estimating the quantity of condensate generated.*

5.6 TECHNICALLY INFEASIBLE AND INFERIOR CONTROL OPTIONS

Of the "available" control technologies presented earlier, one of the technologies is technically infeasible and another is inferior to other technologies under consideration and, consequently, these technologies were rejected from further consideration as BACT. The following describes these control technologies.

Adsorption systems utilize adsorption media that must be periodically regenerated to desorb VOC from the adsorption media so that the media can be reused. Although some VOC can be desorbed by chemical treatment, information obtained during this study indicates that terpenes, the primary VOC constituent in kiln exhaust, must be thermally desorbed and that temperatures necessary for desorption are excessively high and would damage any commercially-available adsorption media. Therefore, adsorption is technically infeasible due to an inability to desorb kiln VOCs from the adsorption media.

Regenerative oxidation technologies considered in this BACT analysis are superior to other oxidation technologies sometimes used to control VOC emissions, such as simple flaring and recuperative thermal oxidation. Therefore, these "other" oxidation technologies were not evaluated. Regenerative oxidation technologies are almost as effective at controlling VOC emissions as the "other" oxidation technologies, 95 percent control efficiency for regenerative technologies compared to 98 or higher percent efficiency for other technologies; however, regenerative technologies are much more cost-effective for controlling VOC in the kiln exhaust because regenerative technologies use much less fuel.

5.7 TECHNICAL EVALUATION AND RANKING OF FEASIBLE CONTROL TECHNOLOGIES

This section presents a technical evaluation of each control technology included in the analysis, describing the principals of operation and the VOC control efficiency associated with each technology. The technical evaluation of control technologies is followed by "ranking" of the effectiveness of each technology.

5.7.1 Technical Evaluation of Feasible Control Technologies

5.7.1.1 Regenerative Catalytic and Thermal Oxidation

The principles utilized in regenerative catalytic and thermal oxidation of VOC are based on simple chemistry and heat transfer phenomena. Since oxidation technologies have been widely accepted as the most effective technologies for VOC destruction and are well-understood by the environmental community, a rigorous technical evaluation is unwarranted. However, a brief explanation is provided here to provide those readers unfamiliar with these technologies with enough background to understand the basic principles of operation and performance of these technologies.

Oxidation, often called "combustion", of VOC involves a chemical reaction between hydrocarbons and oxygen to form carbon dioxide and water. Combustion of VOC emissions streams occurs spontaneously at elevated temperatures, which are typically attained by combustion of an auxiliary fuel within the "combustion zone" of the combustion equipment. The percent conversion of VOC to carbon dioxide and water is dependent upon temperature and "residence time" of the VOC in the fuel combustion zone. Combustion of VOC in the presence of a catalyst is referred to as "catalytic oxidation" and requires substantially lower temperatures for oxidation to occur and, therefore, requires less auxiliary combustion fuel.

Regenerative oxidation systems operate on the same principal of reacting VOC in the presence of oxygen at elevated temperatures; however, the heat generated by combustion of auxiliary fuel and VOC is "reused" to reduce the amount of auxiliary fuel necessary for VOC oxidation. VOC oxidation is accomplished by passing the emission stream being controlled through a heated "bed" of media such as ceramic packing to preheat the emission stream, followed by a final combustion zone in which auxiliary fuel is burned to "boost" the stream to the required combustion temperature. Exhaust from the combustion zone is then passed through another packed bed, which absorbs and retains heat until it can be used later to preheat the emission stream being controlled. Air flow is periodically switched to allow beds through which hot exhaust gases have passed to preheat the emission stream prior to passing through the combustion zone. Regenerative systems are typically designed to recover nearly all heat of combustion, greatly reducing auxiliary fuel requirements.

The regenerative catalytic and thermal oxidizer (RCO and RTO) upon which the BACT evaluations were based is manufactured by Monsanto-Envirochem and REECO, respectively. The design specifications for this system include 85.5 percent overall VOC destruction efficiency based on 95 percent destruction efficiency within the oxidizer and a 90 percent "capture" efficiency to account for a 10 percent loss of emissions from kiln and ductwork leakage. The RCO and RTO also include ductwork needed to recirculate hot gases from a "hot zone" of the oxidizer to the kiln exhaust collection points directly above the kiln to raise kiln exhaust temperatures and reduce condensation.

5.7.1.2 Thermal Oxidation Using Existing Boiler

Another control option considered in the BACT analysis is thermal oxidation of VOC in the facility's existing wood-fired boiler. In this option, kiln exhaust is collected by a ductwork system similar to the two previous options and routed through a single duct 150 to 200 feet long to the boiler. The exhaust is introduced as "combustion air" in the boiler and, consequently, most of the VOC in the kiln exhaust is destroyed. The VOC control efficiency of this option is estimated to be approximately 76.5 percent, based on a 90 percent VOC destruction efficiency in the boiler and a 15 percent loss of VOC from kiln and ductwork leakage. Fugitive losses were estimated to be higher for the existing boiler than for RCO and RTO technologies because more than twice the amount of ductwork would be necessary to route kiln exhaust from the kiln to the boiler. The VOC destruction efficiency is slightly lower than the RCO and RTO technologies due to uncertainties regarding air turbulence in the boiler's combustion zone.

Using this control strategy, all ductwork between the kiln and boiler would be insulated but not heated and consequently, substantially greater condensation is likely to occur, increasing the likelihood of the operational difficulties associated with condensation. The surface area of ductwork required to route exhaust to the boiler is more than double the area required for the first two options evaluated in this analysis and, practically speaking, the kiln exhaust temperature cannot be "boosted" by introducing hot air from the boiler to the kiln exhaust due to the substantial distance from the boiler to the kiln.

Although this option has been considered "technically feasible" in this analysis, this option is believed to be the most technically complex and problematic of all options considered, and the ability to continuously and reliably operate this system within the cost estimated in this evaluation is highly questionable. Both the manufacturer of key components of the facility's wood-fired boiler, Babcock and Wilcox, and the engineering firm that constructed the boiler could not determine whether substantially greater costs and problems documented in this evaluation would be encountered without an extensive engineering study. Furthermore, this option has the greatest likelihood of adversely affecting existing operations at the facility because the wood boiler provides heat to the two existing lumber kilns and, therefore, any significant problems affecting the wood boiler's ability to provide a constant heat supply will adversely impact production.

One important technical limitation of combusting air in the *boiler that is not accounted for in the economic impacts of this analysis* is that the existing emission control system on the wood boiler (multicyclone followed by venturi scrubber and cyclonic separator) may be inadequate to handle the larger air flow rates resulting from using the kiln exhaust as combustion air. Kiln exhaust contains only slightly more than 50 percent air and in order to provide enough combustion air to the boiler for proper combustion, an estimated 30 to 40 percent higher gas flow rate to the boiler is necessary, resulting in a commensurate increase in flow rate from the boiler to the boiler pollution controls. With such a large increase in flow rate anticipated. it is easily possible that existing controls will be undersized and that replacements or modifications will be necessary.

5.7.1.3 Biofiltration

Biofiltration uses microorganisms to biologically degrade VOC into carbon dioxide and water. In biofiltration systems. the emission stream being controlled is passed through one or more beds of biomedia such as compost or beds of packing using nutrient recycle. Since biofilters are dependent upon biological activity to destroy VOC, removal efficiencies of biofilters are widely variable. All biofilters are extremely sensitive to a number of exhaust stream characteristics including moisture content. temperature, VOC species. and concentration. and bed retention time.

The biofiltration vendor contracted for the BACT evaluation has substantial experience in treating the same VOC species that are emitted from the lumber kiln, primarily alpha- and beta-pinenes, although this manufacturer has not built a biofiltration system for an emission stream with especially similar characteristics to the kiln exhaust. however, this vendor was able to provide rough estimates of necessary exhaust "conditioning" requirements and control efficiency. The only conditioning requirement for this system is that the kiln exhaust gas temperature must be cooled using a water-cooled heat exchanger to approximately 100 deg. F to achieve a temperature suitable for the biofiltration microorganisms. An estimated VOC control efficiency of nearly 90 percent was quoted as being achievable during "average" ppmv loading, but is much less during the first few hours of kiln venting when ppmv concentrations peak at about 2.5 times the "average" ppmv level. Consequently, 80 percent control efficiency was used in the BACT impact analyses.

The only major technical uncertainty about this control option other than actual control efficiency and than the technical considerations pertaining to reliability of the damper systems, which has been discussed in detail in previous sections, is whether or not the biofilter beds would periodically plug due to buildup of the sticky terpenes present in the kiln exhaust. It is believed that the likelihood of bed pluggage cannot be conclusively determined without pilot scale testing.

5.7.2 Ranking of Feasible Control Technologies

A summary of the VOC control efficiencies of all technologies under consideration, ranked in order of decreasing effectiveness is presented below:

- RCO and RTO = 85.5 percent;
- Existing wood-fired boiler = 76.5 percent; and
- Biofiltration = 72 percent.

5.8 IMPACTS ANALYSIS OF FEASIBLE CONTROL TECHNOLOGIES

As discussed earlier, the top-down BACT approach requires evaluation of control options beginning with the most stringent option, followed by evaluation of the remaining options in decreasing order of efficiency, if adverse economic, environmental, or energy impacts precludes selection of an option as BACT. Adverse economic impacts were determined for all control options evaluated and, consequently, all options identified in Section 5.5 were included in the following impacts analysis. In order to streamline discussion of each type of impact (i.e., economic, etc.) the impacts discussions of all technologies are discussed collectively.

5.8.1 Economic Impacts

As required by EPA, the following economic impacts portion of the BACT analysis includes budgetary estimates of total capital and annual costs, as well as an estimated cost effectiveness of each control technology evaluated, which is calculated from estimated annual costs and VOC control effectiveness. Although the cost estimates presented in the following analysis are considered high enough to demonstrate that all control options under consideration are cost prohibitive, these costs do not fully convey the magnitude of the economic impacts that would be caused by requirements to apply any of the technologies under consideration. Therefore, this evaluation presents other costs impacts, including impacts on profitability, competitiveness, and project viability.

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5.8.1.1 Capital and Operating Costs and Cost Effectiveness

Tables 5-2, 5-3, 5-4, and 5-5 present results of the cost analyses for the RCO, RTO, existing boiler, and biofiltration options, respectively, and Table 5-6 presents a summary of all control options. Total capital costs range from $492,870 for existing boiler control to $1,279,500 for RTO control. Total annual costs range from $261,941 for use of the existing boiler to $444,997 for RTO control. All capital costs include a 50 percent contingency above vendor quote to adequately take into account the high capital costs that may be involved in construction cost overruns often associated with "first-of-kind" control systems and to account for the potentially high replacement, repair, and re-engineering costs involved in developing a control system that will provide continuous compliance with the control efficiencies of each option. Annual maintenance costs were estimated as being two times the costs typically associated with the technologies evaluated to account for the additional routine and repair maintenance costs that are anticipated.

Not only are the capital and maintenance cost contingencies deemed justifiable given that the control equipment vendors from whom capital cost quotes were obtained have not previously built a system to control an emissions stream with a similar combination of characteristics, but it is possible that these costs actually *underestimate* the actual capital and operating costs that would be incurred. It is important to note that these costs do not account for production losses to kiln down-time or costs associated with wastewater treatment of kiln condensate.

Cost effectiveness estimates are summarized in Table 5-6 and range from $6,623 per ton for existing boiler control to $10,067 per ton for RTO control, based on the "best available" emission factor of 3.15 lb VOC/MBF for lumber drying kilns (see Section 4.2.1). Using a "worst-case" emission factor of 5.73 lb VOC/MBF (see Section 4.2.1), cost effectiveness estimates range from $3,607 per ton for existing boiler control to $5,222 for RTO control.

International Paper believes that the cost effectiveness estimates presented in Table 5-6 are unreasonably high given that kiln pollution controls have not been required on any other kilns in the United States (and perhaps the entire world) and a requirement for International Paper to install such controls would severely damage the Armour facility's ability to remain competitive with other lumber manufacturers and drastically reduce profits (see Section 5.8.1.2 for further discussion). Furthermore, such costly controls are considered unnecessary because control of VOC emissions would have a minimal impact on air quality. Additional discussions pertaining to economic and environmental impacts are presented later in this analysis.

5.8.1.2 General Economic Considerations

In order to fully appreciate the economic impacts that would be incurred if any of the control options evaluated it is necessary to provide the following information pertaining to the Lumber Manufacturing Industry:

- Lumber pricing and profit margin;
- Costs of kiln control that result in a non-competitive position in the Lumber Market;
- Project viability; and
- Control cost relative to total project cost.

Lumber Pricing and Profit Margin

The Lumber Manufacturing Industry is characterized by stiff competition and low profit margins because the Lumber Manufacturing Industry is a fully mature industry and because lumber is a commodity item. Although manufacturers are theoretically free to set their own prices, prices are essentially set by the Chicago Board of Trade, which like other high-commodity items sold on the stock market, results in highly competitive pricing. International Paper and all other Lumber Manufacturers closely adhere to costs established by the Board of Trade to remain competitive.

The average profit margin realized by sales of lumber from the Armour facility are indicative of the low profit margins obtained by other lumber manufacturers. Over the past 10 years, the net profit margin on lumber sales from the Armour facility was approximately $24.95 per thousand board feet, corresponding to a profit of only 10.7 percent.

TABLE 5-2
REGENERATIVE CATALYTIC OXIDATION CONTROL COSTS
INTERNATIONAL PAPER COMPANY - ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

Basis:
1) Enviro-Chem Systems - Installed cost, fan & fuel operating costs
2) Control Technologies for Hazardous Air Pollutants, EPA/625/6-91/014 - Indirect Annual Costs
3) Carolina Distributors - Fuel Oil Costs
4) SPATCO Environmental - Fuel Oil Storage Costs
5) Wellons (Kiln Manufacturer) and REECO (Control Technology Vendor) - Ductwork Costs

Direct Costs	Cost	Cost Factor/Comments		
Total Capital Cost (TCC)	$844,500	Enviro-Chem, DynaCycle Model DCS-6 Includes 50% contingency; no lumber kilns before. Includes $35,000 catalyst replacement after 5 years and $18,000 for 4K fuel oil storage tank.		
Note: RCO "footprint" = 20' x 22'. Assumes placement adjacent to kiln.				
Direct Annual costs				
Electricity Cost	$8,500	Elec. Cost=	$0.050	$/kWh
		Operation=	7,300	hr/yr
		(no venting for 6 of 36 cycle hours)		
Fuel Cost	$23,013	0.626 MM Btu/hr=	4,570 MM Btu/yr	
		@ 150,000 Btu/gal =	32,876 gal/yr	
		No. 6 fuel oil cost =	$0.70 /gal	
		Road-use No. 2 oil (Carolina Distributors, ~$0.01/gal greater cost than 0.3% sulfur)		
Operating Labor				
Operator	$19,422	Reference 2, scaled to 1996 dollars. 1.0 hr/8-hr shift (Two times Reference 2 costs; never been done before)		
Supervisor	$2[illegible]	15% of operating labor		
Maintenance				
Labor	$21,370	Reference 2, scaled to 1996 dollars. 1.0 hr/8-hr shift (Two times Reference 2 costs; never been done before)		
Material	$21,370	100% of maintenance labor		
Indirect Annual Costs				
Overhead	$39,045	0.6	* C	C = operating labor + maintenance costs
Administration	$16,890	2%	TCC	
Property Taxes	$8,445	1%	TCC	
Insurance	$8,445	1%	TCC	
Capital Recovery	$137,485	0.1628	10 years, 10% interest	
Total Annual Cost	$306,897			

TABLE 5-3
REGENERATIVE THERMAL OXIDATION CONTROL COSTS
INTERNATIONAL PAPER COMPANY - ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

Basis:
1) Regenerative Environmental Equipment Co., Inc. (REECO) - Installed cost and energy costs
2) Control Technologies for Hazardous Air Pollutants, EPA/625/6-91/014 - Indirect Annual Costs
3) Carolina Distributors - Fuel Oil Costs
4) SPATCO Environmental - Fuel Oil Storage Costs
5) Wellons (Kiln Manufacturer) and REECO (Control Technology Vendor) - Ductwork Costs

Direct Costs	Cost	Cost Factor/Comments		
Total Capital Cost (TCC)	$1,279,500	REECO, Model VFC RE-THERM Includes 50% contingency; never been done before. Includes $20,000 for 4K fuel oil storage tank		
Direct Annual costs				
Electricity Cost	$20,075	Elec. Cost=	$0.050	$/kWh
		Motor= 125 hp =	55	kW
		Operation=	7,300	hr/yr
		(no venting for 6 of 36 cycle hours)		
Fuel Cost	$61,320	1.8 MM Btu/hr=	13,140 MM Btu/yr	
		@ 150,000 Btu/gal =	87,600 gal/yr	
		No. 6 fuel oil cost =	$0.70 /gal	
		Road-use No. 2 oil (Carolina Distributors,		
		~$0.01/gal greater cost than 0.3% sulfur)		
Operating Labor				
Operator	$19,422	Reference 2, scaled to 1996 dollars. 1.0 hr/8-hr shift (Two times Reference 2 costs; never been done before)		
Supervisor	$2,913	15% of operating labor		
Maintenance				
Labor	$21,370	Reference 2, scaled to 1996 dollars. 1.0 hr 8-hr shift (Two times Reference 2 costs; never been done before)		
Material	$21,370	100% of maintenance labor		
Indirect Annual Costs				
Overhead	$39,045	0.6	* C	C = operating labor + maintenance costs
Administration	$25,590	2%	TCC	
Property Taxes	$12,795	1%	TCC	
Insurance	$12,795	1%	TCC	
Capital Recovery	$208,303	0.1628	10 years, 10% interest	
Total Annual Cost	**$444,997**			

TABLE 5-4
EXISTING BOILER CONTROL COSTS
INTERNATIONAL PAPER COMPANY - ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

Basis:
1) Control Technologies for Hazardous Air Pollutants. EPA/625/6-91/014 (indirect annual costs)
2) Wellons (Kiln manufacturer) and REECO (Control Technology Vendor) - Ductwork Costs
3) Babcock and Wilcox and International Paper - Fuel Penalty Costs
4) Babcock and Wilcox and ETEC - VOC Destruction Efficienty
5) Plant Design and Economics. Peters. and Timmerhaus. McGraw-Hill. p.562 - Boiler Fan Cost

Direct Costs	Cost	Cost Factor/Comments
Total Capital Cost (TCC)	$492,870	Includes 50% contingency for ducts and flow controls. Includes boiler fan modification/replacement for increased flowrate to pollution controls (no contingency). Includes $20,000 engineering study to assess design modifications.

Note: Capital costs do not include any modifications to the boiler other than to introduce kiln exhaust air through preheater system and do not include any costs to existing pollution control equipment for the boiler other than those associated with modifying the boiler exhaust fan.

Direct Annual costs	Cost	Cost Factor/Comments		
Fan Electricity to Boiler	$20,440	Total ductwork length = 342 ft.		
		Fan electrical requirememts = 75 hp		
		Hours per yerar =	7,300	
		Electricity Cost =	$0.05	
Fuel Penalty	$33,190	H2O rate to boiler =	8,000	lb/hr
		Enthalpy inc. from 160 F to 2,200 F:		776 Btu/lb
		Wood heat content =	9.00E+06	Btu/ton
		Fuel cost (per ton) =	$7	
		Heat input from VOC in exhaust = 2,588 MM Btu/yr		
Additional Boiler Fan Electricity	$4 [illegible]	Reference 2. Fan Power Equation.		
		KW-hr/yr =	84,752	
		Electricity Cost =	$	0.05
		Increase flow (acfm):	12,829	
		Scrubber Pressure Drop = 5 inches of H2O		
Operating Labor				
Operator	$19,422	Reference 2, scaled to 1996 dollars. 1.0 hr/8-hr shift (Two times Reference 2 costs; never been done before)		
Supervisor	$2,913	15% of operating labor		
		Operation=	8,760	hr/yr
Maintenance				
Labor	$21,370	Reference 2, scaled to 1996 dollars. 1.0 hr/8-hr shift (Two times Reference 2 costs; never been done before)		
Material	$21,370	100% of maintenance labor		
Indirect Annual Costs				
Overhead	$39,045	0.6	* C	C = operating labor + maintenance costs

TABLE 5-4
EXISTING BOILER CONTROL COSTS
INTERNATIONAL PAPER COMPANY - ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

Basis:
1) Control Technologies for Hazardous Air Pollutants, EPA/625/6-91/014 (indirect annual costs)
2) Wellons (Kiln manufacturer) and REECO (Control Technology Vendor) - Ductwork Costs
3) Babcock and Wilcox and International Paper - Fuel Penalty Costs
4) Babcock and Wilcox and ETEC - VOC Destruction Efficienty
5) Plant Design and Economics, Peters, and Timmerhaus, McGraw-Hill, p.562 - Boiler Fan Cost

Administration	$9,857	2%	TCC
Property Taxes	$4,929	1%	TCC
Insurance	$4,929	1%	TCC
Capital Recovery	$80,239	0.1628	10 years, 10% interest
Total Annual Cost	$261,941		

TABLE 5-5
BIOFILTRATION CONTROL COSTS
INTERNATIONAL PAPER COMPANY - ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

Basis: 1) PPC Biofilter (capital and operating costs)
2) Control Technologies for Hazardous Air Pollutants, EPA/625/6-91/014 (indirect annual costs)
3) Wellons (Kiln Manufacturer) and REECO (Control Technology Vendor) - Ductwork Costs

Direct Costs	Cost	Cost Factor/Comments		
Total Capital Cost (TCC)	$1,106,565	PPC Biofilter Includes 50% contingency; no lumber kilns before. Includes $100,000 ductwork and electrical costs.		

Note: Costs conservatively assume placement adjacent next to kiln, which is likely not feasible due to the large size of biofilter (~30' x 60')

Direct Annual costs	Cost	Cost Factor/Comments		
Non-labor Operating Cost	$13,140	Operation=	8,760	hr/yr
		$1.50/hr; year-round humidification and air circulation through beds		
Operating Labor				
Operator	$19,422	Reference 2, scaled to 1996 dollars. 1.0 hr/8-hr shift (Two times Reference 2 costs; never been done before)		
Supervisor	$2,913	15% of operating labor		
Maintenance				
Labor	$21,370	Reference 2, scaled to 1996 dollars. 1.0 hr/8-hr shift (Two times Reference 2 costs; never been done before)		
Material	$21,370	100% of maintenance labor		

Indirect Annual Costs	Cost			
Overhead	$39,045	0.6	* C	C = operating labor + maintenance costs
Administration	$22,131	2%	TCC	
Property Taxes	$11,066	1%	TCC	
Insurance	$11,066	1%	TCC	
Capital Recovery	$180,149	0.1628	10 years, 10% interest	
Total Annual Cost	$341,671			

TABLE 5-6
SUMMARY OF TOP-DOWN BACT: ECONOMIC IMPACT ANALYSIS
INTERNATIONAL PAPER COMPANY - ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

Average Lumber Selling Price (1987 - 1996): 233 $/MBF
Pre-tax Net Profit (International Paper sawmills, 1987 - 1996): 24.95 $/MBF
Pre-tax Net Profit, % ("no control"): 10.7%
Profit Margin after Most Cost Effective Control: [1] -0.5%

Control Alternatives	"True" VOC Emissions Reduction (ton/yr)[2]	"Worst-Case" VOC Emissions Reduction (ton/yr)[3]	Economic Impacts					
			Total Capital Cost ($)[4]	Annual Cost ($/yr)[4]	Unit Cost of Control ($/MBF)[5]	Percent of Net Profit Loss	"True" Cost Effectiveness ($/ton)[2,4]	"Worst-Case" Cost Effectiveness ($/ton)[3,4]
Regenerative Catalytic Oxidation	44.2	80.6	$844,500	$306,897	$30.68	123%	6,943	3,808
Regenerative Thermal Oxidation	44.2	80.6	$1,279,500	$444,997	$44.48	178%	10,067	5,522
Existing Boiler[6]	39.6	72.6	$492,870	$261,941	$26.18	105%	6,623	3,607
Biofiltration	37.2	67.9	$1,106,565	$341,671	$34.15	137%	9,179	5,034

Notes:
1. Represents net profit on lumber sales after emissions are routed to existing boiler. Net profit margin shown is well below the net profit typically achieved by most Industries in the United States.
2. "True" emissions reductions represent the emission reductions achieved by each control technology using the "best available" emission factor for lumber drying (3.15 lb/MBF) (see Section 4.2.1 for discussion of emission factor). "True" cost effectiveness was calculated by dividing the true emissions reductions by estimated annual costs.
3. "Worst-case" emissions reductions represent the reductions achieved by each control technology using highly conservative emission factor for lumber drying (5.73 lb/MBF) (see Section 4.2.1 for discussion of emission factor). "Worst case" cost effectiveness was calculated by dividing worst-case emissions reductions by estimated annual costs.
4. Costs do not include wastewater treatment, which although only a fraction of total system costs, will increase costs of all options shown.
5. Increased cost per thousand board feet (MBF) of lumber produced. Increase is based on the maximum estimated lumber production during first few years after kiln installation, which is approximately 30.5 percent of maximum capacity (10.0 MMBF/yr).
6. Capital costs do not include any modifications to the boiler other than to introduce kiln exhaust air through existing preheater system and do not include any costs to existing pollution control equipment for the boiler other than those associated with modifying/replacing the boiler fan. Any boiler modification could drive costs substantially higher and substantially reduce profits by more than the estimates presented above.

Cost of Control Would Result In Non-Competitive Position In Market

Although costs presented in the previous BACT analyses *may be underestimated* for reasons already discussed, the cost for all control options are considered unbearably high in a market characterized by very low profit margins. A summary of economic impacts are presented in Table 5-6. As shown in this table, the minimum cost of any of the control options evaluated in the BACT analysis (i.e., use of the existing boiler) would result in an increased production cost of $26.18 per thousand board feet (MBF), corresponding to a net profit of -0.5 percent and a loss in net profit of 105 percent. Thus, *all* profits would be consumed if pollution controls are required. In order to recoup these costs, International Paper would have to raise its lumber prices substantially higher than other competitors. However, since costs are essentially "fixed" by the market, these prices would be considered extremely uncompetitive, making sale of the lumber impossible.

Project Viability

In order to remain competitive with other manufacturers if pollution controls are required on the kiln, lumber from the kiln must be sold at essentially the same price as other manufacturers. However, because the costs to control VOC emissions would result in unreasonably low profit, International Paper would consider the project economically unviable and would not install the kiln.

Control Cost Relative to Total Project Cost

Another issue that International Paper request reviewing agencies to consider when determining whether to concur with International Paper's finding that pollution controls are cost prohibitive is that the capital cost of even the least costly of the control options evaluated is more than 60 percent of the entire capital cost of the kiln installation project itself. Use of the existing boiler to control kiln emissions is expected to incur a capital cost of at least $492,870. For comparison, the total installed capital cost of the kiln is estimated to be $800,000.

5.8.2 Environmental Impacts

Table 5-7 summarizes the environmental impacts associated with each control option. An essentially negligible beneficial impact on air quality is accomplished by reducing acetaldehyde and formaldehyde emissions present in kiln exhaust using any of the control options evaluated. Emissions reductions of only 220, 110, and 1,218 pounds per year or less of acetaldehyde, formaldehyde, and methanol would be obtained using any option evaluated. The minimal environmental benefit that is realized is evidenced by the high cost effectiveness estimates associated with any of the control options under consideration. The cost effectiveness of controlling either acetaldehyde and formaldehyde is estimated to be a minimum of $2.7 million dollars per ton and for methanol at least $589,000 per ton.

Slight adverse air quality impacts are caused by the RCO, RTO, and existing boiler control options in that NO_x and HAPs are emitted from each option. RCO and RTO options emit up to 2.5 and 3.8 tons per year of NO_x, respectively, and substantially smaller quantities of HAPs from No. 2 fuel oil combustion required for heating. Up to 3.8 tons per year of NO_x and substantially smaller quantities of HAPs are emitted from the existing boiler option from the additional wood waste required to combust the kiln exhaust in the wood-fired boiler.

Although wastewater will be generated from kiln exhaust condensate, no adverse impacts are incurred from wastewater discharges because kiln condensate is dilute in VOC, which could readily be removed prior to discharge. There are no hazardous waste impacts associated with any of the options evaluated.

Not only are the beneficial impacts of reducing toxic air pollutants considered negligible, but it is believed that reduction of the primary pollutant being controlled, VOC, would have a negligible impact on air quality in the vicinity of the facility. Under the PSD program, VOC is regulated to prevent significant deterioration of air quality due to ozone formation. Ozone is formed in the atmosphere due to atmospheric chemical reactions of NO_x and VOC, catalyzed by sunlight and excessive ambient concentrations of ozone in the lower atmosphere can be injurious to health and damage vegetation. The facility is located in a lightly populated and developed area of North Carolina and ambient concentrations of ozone in this area are known to be significantly below regulated levels. It should also be noted that under PSD regulations, ambient air quality impacts are considered "significant" only when VOC emission increases associated with a modification are at least 100 tons per year, which is greater than the approximate 94 tons per year potential emissions increase associated with the kiln.

Recent developments in air dispersion modeling and studies in ozone formation seem to indicate that even substantial reductions in VOC emissions in rural areas such as Riegelwood will have a relatively small impact on ozone formation. This phenomena has been substantiated in previous modeling analyses conducted by the NCDEM using the Urban Airshed Model (UAM). Moreover, it should also be noted that VOC emissions from the proposed kiln are extremely small compared to the biogenic (naturally occurring) VOC emissions from forests in the vicinity of the facility and, consequently, reduction of VOC from the kiln will negligibly reduce ozone formation and concentrations in the area.

5.8.3 Energy Impacts

Table 5-7 summarizes the energy impacts that are associated with each control option. All of the technologies require energy to operate exhaust collection fans, with impacts ranging from 170,000 KWH per year for RCO control to 493,[illegible] KWH per year for existing boiler control. All of the oxidation technologies under consideration also require additional fuel, ranging from 4,570 million Btu per year for RCO control and 493,522 for existing boiler control. There are no additional fuel requirements associated with biofiltration.

5.9 BACT SELECTION

Results of the top-down BACT analysis indicate that there are no cost-effective pollution control technologies for control of VOC emissions from lumber drying kilns and, consequently, the BACT proposed for the kiln is "no control." All of the control technologies under consideration cause severe economic impacts that would make installation of the kiln uneconomically unviable. Furthermore, it is believed that controlling

TABLE 5-7
SUMMARY OF TOP-DOWN BACT: ENVIRONMENTAL AND ENERGY IMPACT ANALYSES
INTERNATIONAL PAPER COMPANY - ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

Control Alternatives	Toxic Pollutant Impacts						Adverse Impacts From Other Air Pollutants?[3] (Yes/No)	Hazardous Waste Impacts? (Yes/No)	Energy Impacts	
	Acetaldehyde		Formaldehyde		Methanol					
	Emission Reduction (ton/yr)[1]	Cost Effectiveness ($/ton)[2]	Emission Reduction (ton/yr)[1]	Cost Effectiveness ($/ton)[2]	Emission Reduction (ton/yr)[1]	Cost Effectiveness ($/ton)[2]			Electrical (kW*hr/yr)	Fuel (MM Btu/yr)
Regenerative Catalytic Oxidation	0.11	2,796,952	0.055	5,613,061	0.52	589,399	Yes	No	170,000	4,570
Regenerative Thermal Oxidation	0.11	3,876,757	0.055	7,780,067	0.52	816,945	Yes	No	401,500	13,140
Existing Boiler	0.10	3,126,005	0.049	5,354,448	0.47	562,243	Yes	No	493,552	45,260
Biofiltration	0.09	3,697,714	0.046	7,420,755	0.44	779,216	No	No	262,800	0

Notes:
1. Emission reductions based on maximum uncontrolled emission rates and VOC control efficiencies for each control option. Uncontrolled acetaldehyde and formaldehyde emission estimates are presented in Section 7. Methanol emissions calculated from draft AP-42 factors developed by NCASI in January 1995.
2. Cost effectiveness based on emission reductions shown in this table divided by annual costs presented in the cost analysis for each control option.
3. Determination of whether adverse impacts are caused by control alternative evaluated. "Yes" response indicates that criteria or hazardous air pollutants are emitted.

VOC emissions from the kiln would result in essentially no benefit in the air quality of the region because VOC emissions are dwarfed by biogenic emissions in the vicinity of the Armour sawmill and because reducing the quantity of VOC emissions from a source as minor as a lumber drying kiln will negligibly reduce ozone formation in the area.

6.0 ADDITIONAL IMPACTS ANALYSIS

6.1 INTRODUCTION

Under PSD application requirements, an additional impacts analysis is required to evaluate impacts on the industrial, commercial, and residential growth; soils and vegetation; and visibility from PSD pollutants emitted in significant quantities from a new or modified major stationary source. A discussion of each additional impact associated with the proposed VOC emission increases at the Armour facility is provided in this section.

The conclusion of the additional impacts analysis is that negligible adverse environmental impacts are associated with VOC emissions from the proposed kiln and that important beneficial impacts to the environment may be realized if a permit is expeditiously issused because International Paper will be able to salvage trees downed by Hurricane "Fran." Potential beneficial impacts are discussed in greater detail in Section 6.4.2.

6.2 GROWTH

It is anticipated that installation of a new kiln would have negligible impact on the industrial, commercial, and residential growth in the area. No new employees will be needed to accommodate the increased production of the facility and only minimal revenues will be introduced into local commerce from increased lumber production at the facility.

6.3 SOILS

The Armour facility is located in the southeast coastal region of North Carolina. The soils in the vicinity of the Armour facility are classified as Woodington-Foreston and have the following characteristics:

- Loamy fine sand;
- Weak fine to weak medium granular structure;
- Very friable:
- Common fine roots:
- Strongly and extremely acidic: and
- Poor to moderate drainage.

VOC can precipitate from the air and may accumulate in soil through wet deposition (rain, snow, mist) and dry deposition (sedimentation. impaction). The impact of deposition of air pollutants on soil is dependent upon many factors including pollutant type and ambient concentrations, the depth to bedrock and groundwater, vegetation, soil types, precipitation. temperature, organic content, and soil pH buffering capacity (United States Fish and Wildlife Service, 1978).

Since the only PSD pollutant subject to the impacts analysis is VOC rather than pollutants such as particulates or sulfates, for which deposition effects have been well-documented, it is difficult to determine the exact soil impacts due to deposition. However, it is highly unlikely that the maximum potential VOC emission increases of only 94 tons per year from the facility will significantly impact the surrounding soils.

6.4 VEGETATION

6.4.1 Adverse Impacts Analysis

Because of the relatively small amount of toxic air pollutants present in the kiln exhaust (see calculations in Section 7.2) and since other VOC emitted from lumber drying have not been documented as having a particularly deleterious effect on vegetation, it is believed that the only vegetation impacts requiring evaluation are those associated with ozone.

Ozone is formed in the atmosphere due to atmospheric chemical reactions between NO_x and VOC, catalyzed by sunlight, and excessive ambient concentrations of ozone in the lower atmosphere can damage vegetation. Past modeling analyses by the NCDAQ using the Urban

Airshed Model (UAM) indicate that in most areas of North Carolina (rural and urban), the formation of ozone is NO_X limited due to the abundance of VOCs emitted from trees and vegetation (biogenic VOC). The large concentrations of biogenic VOC create high VOC/NO_X ratios, thus limiting the photochemical reactions that form ozone. Conclusions of the study were that even significant changes in VOC emissions have little impact on ozone concentrations, and that changes in NO_X emissions have a substantially greater impact. Due to the rural location of the Armour facility and the abundance of trees and vegetation in the area, it is unlikely that the VOC emission increases from the proposed kiln will cause a significant increase in ozone formation and, therefore, will have negligible impacts on vegetation in the area.

There are two additional points that should be made pertaining to VOC emissions from the kiln and area ozone concentrations. First, under PSD regulations ambient air impacts due to VOC emissions are considered "significant" only when VOC emissions increases associated with a modification are at least 100 tons per year, which is greater than the approximate 94 tons per year emissions increase associated with the new kiln. Second, it should be noted that the facility is located in a lightly populated and developed area of North Carolina where "background" ambient ozone in the area are below regulated limits, installation of the proposed kiln should not threaten the national ambient air quality standards (NAAQS), which are intended to protect not only ambient air quality, but also the natural resources of the environment affected by air quality, such as vegetation.

6.4.2 Beneficial Impacts Analysis

In early September of 1996, Hurricane "Fran" downed hundreds of thousands of southern yellow pines located in southeastern/eastern North Carolina. As of late September, only a small fraction of these pines have been cleared and of the pines that have been cleared, most are being discarded as "undesirable waste."

The Armour facility, as well as other nearby lumber manufacturers, are attempting to salvage as many of these trees for lumber production as possible to effectively utilize natural resources.

However, in order for lumber manufacturers to be able to use these trees, trees must be gathered and processed in a timely fashion, before lumber quality is compromised

Installation of the proposed lumber kiln will result in a beneficial environmental impact in that the kiln will increase the production capacity of the facility and, consequently, increase the facility's ability to use downed timber. However, the magnitude of these benefits are directly linked to the length of time required to obtain the requested PSD permit.

6.5 VISIBILITY IMPAIRMENT

Visual quality in the vicinity of the Armour facility is currently excellent due to the rural nature and low density population of the region. Although VOC is a precursor to ozone, which is known to cause "haze" in significant concentrations, there are currently no regulatory approved modeling tools to quantify impacts of VOC on visibility. However, as discussed in vegetation analysis VOC emissions from the kiln are expected to cause a negligible increase in area ozone concentrations and, consequently, a negligible impact on visibility.

7.0 NORTH CAROLINA AIR TOXICS APPLICATION AND MODELING

7.1 INTRODUCTION

As part of this application a facility-wide air dispersion modeling analysis was performed for formaldehyde and acetaldehyde. This modeling demonstration is required under North Carolina regulations to demonstrate compliance with acceptable ambient limits (AALs) (15A NCAC 2D. 1100). The analysis was performed using maximum potential emissions rates, along with optimization to approximately 95% of the regulated ambient air levels (AALs), and predicted ambient concentrations at and beyond the property line. All modeling was performed using updated dispersion models and wake effect and downwash programs and follows the guidance given in the NCDAQ's Guideline for Evaluating the Air Quality Impacts of Toxic Air Pollutants in North Carolina (Guideline).

Applicability of the North Carolina regulation was "triggered" by the proposed kiln and is discussed in greater detail in the next subsection. Subsequent subsections provide a detailed description of the modeling analysis including the area description, the dispersion models, the meteorological data, the maximum potential and optimized emission rates, the modeling methodology, the GEP analysis, receptor grids, the cavity effect analysis, and the modeling results for all toxics that exceeded their *de minimis* levels.

7.2 AIR TOXICS APPLICABILITY ANALYSIS

According to North Carolina regulation 15 NCAC 2D.0610, a permit to emit toxic air pollutants is required for any facility undergoing a modification that increases emissions of a TAP, and that subsequent to the modification, total maximum emission of that TAP from all sources at the facility exceed specified emission rates, often referred to as the modeling exemption emission rates (MEERs). Based on stack test information obtained from NCASI, only two pollutants classified as North Carolina toxic air pollutants are emitted from steam-heated lumber drying kilns, acetaldehyde and formaldehyde.[1]

To determine whether an air toxics permit was needed for this project, maximum emission rates of acetaldehyde and formaldehyde from all sources at the plant were totaled and compared to the MEERs. Other than the lumber kilns, the only other source at the facility emitting acetaldehyde or formaldehyde is the wood-fired boiler, which also emits both pollutants. Emission estimates for each source, presented in Table 7-1, were based on emission factor calculations using factors developed by NCASI and on the maximum production rate of each source.[1]

Comparison of the total maximum emission rates to the MEERs indicates that formaldehyde is subject to air toxics permitting, but that acetaldehyde is not. However, maximum emission estimates for all kilns are based on average hourly emissions over the entire kiln drying cycle and, although the expected fluctuation in the emission rates of acetaldehyde during the lumber drying cycle are anticipated to remain well below the MEERs, International Paper is requesting permitting for acetaldehyde to ensure that an unintentional violation of the North Carolina air toxics regulations will not occur.

7.3 DISPERSION MODELS

The modeling analysis was performed using EPA computer models which evaluate the ambient impact of air pollution sources by simulating the processes of transport and diffusion of effluent into the atmosphere. Toxic emissions from the facility will occur from multiple source locations. Thus, Woodward-Clyde performed a modeling analysis for each applicable pollutant using the Industrial Source Complex Short Term (ISCST3) computer dispersion model, Version 96250. The ISCST3 model was used to model the sources and determine overall worst-case concentrations.

The modeling analysis was performed using hourly meteorological observations (8760 hours per year) to estimate maximum ambient concentrations for each pollutant subject to the modeling analysis. The ISCST3 modeling options selected for the analysis included:

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TABLE 7-1
NORTH CAROLINA AIR TOXICS MODELING APPLICABILITY DETERMINATIONS
INTERNATIONAL PAPER ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

Emissions Unit	Activity Factor		Emission Factor			Nominal Emissions Rate (lb/hr)	
	Value	Units	Pollutant	Value	Units	Acetaldehyde	Formaldehyde
Proposed Drying Kiln	135	MBF/cycle[4]	Acetaldehyde	0.0078	lb/MBF[1]	2.93E-02	
	135	MBF/cycle[4]	Formaldehyde	0.0039	lb/MBF[1]		1.46E-02
Existing Drying Kilns (3 Kilns)	395	MBF/cycle[3]	Acetaldehyde	0.0078	lb/MBF[1]	1.62E-01	
	395	MBF/cycle[3]	Formaldehyde	0.0039	lb/MBF[1]		8.11E-02
Wood-Fired Boiler	10.33	ton wood/hr	Acetaldehyde	3.00E-03	lb/ton wood[2]	3.10E-02	
	10.33	ton wood/hr	Formaldehyde	6.60E-03	lb/ton wood[2]		6.82E-02
Totals from Project						2.22E-01	1.64E-01
Permitting Exemption Levels						6.80E-00	4.00E-02
Toxics Permitting Required?						No	Yes

Notes:

1. Reference: Compilation of Air Pollutant Emission Factors. AP-42. Section 10.1. Draft (1996). USEPA.
2. Reference: Compilation of Air Pollutant Emission Factors. Volume I. Fifth Edition. AP-42. USEPA. Table1.6-5 (average factor). January 1995.
3. Batch cycle time = 19 hours
4. Batch cycle time = 36 hours

- Calculation of average concentrations
- Rural dispersion coefficients
- Regulatory default options
- Final plume rise
- Stack-tip downwash
- Buoyancy-induced dispersion
- Calms processing routine
- Default wind profile exponents
- Default vertical potential temperature gradients
- "Upper Bound" Values for supersquat buildings
- No exponential decay

Maximum 1-hour emission estimates were used in modeling to predict 1-hour ambient concentrations.

An evaluation of building cavity effects for each source was performed using the EPA SCREEN3 model (Version 96043). The SCREEN3 model was used to evaluate the building cavity region to determine the cavity distance from the edge of the structure causing the maximum GEP stack height. Section 7.5.4 describes the cavity effect analysis.

7.4 METEOROLOGICAL DATA

Following the North Carolina Air Toxic Guidelines and NCDEM recommendations, the dispersion modeling analysis was performed using one to five years (1987-1991) of Wilmington surface meteorological data (NWS. No. 13748) and Charleston, SC. mixing height data (NWS No. 13880) derived from upper-air sounding data recorded at the Charleston, SC, International Airport.

An anemometer height of 10 meters was used in the modeling analysis for each year of data. The processed meteorological data set consists of 8760 hourly observations of the following parameters:

- wind speed
- wind direction
- ambient temperature
- atmospheric stability
- mixing heights

Data are used to calculate hourly plume rise and downwind concentrations at downwind receptor locations for a period up to a year. Using these meteorological data and the ISCST3 model, each year is processed individually and maximum predicted concentrations for each year for five years are reported in the modeling results table for comparison to the NC AAL standards.

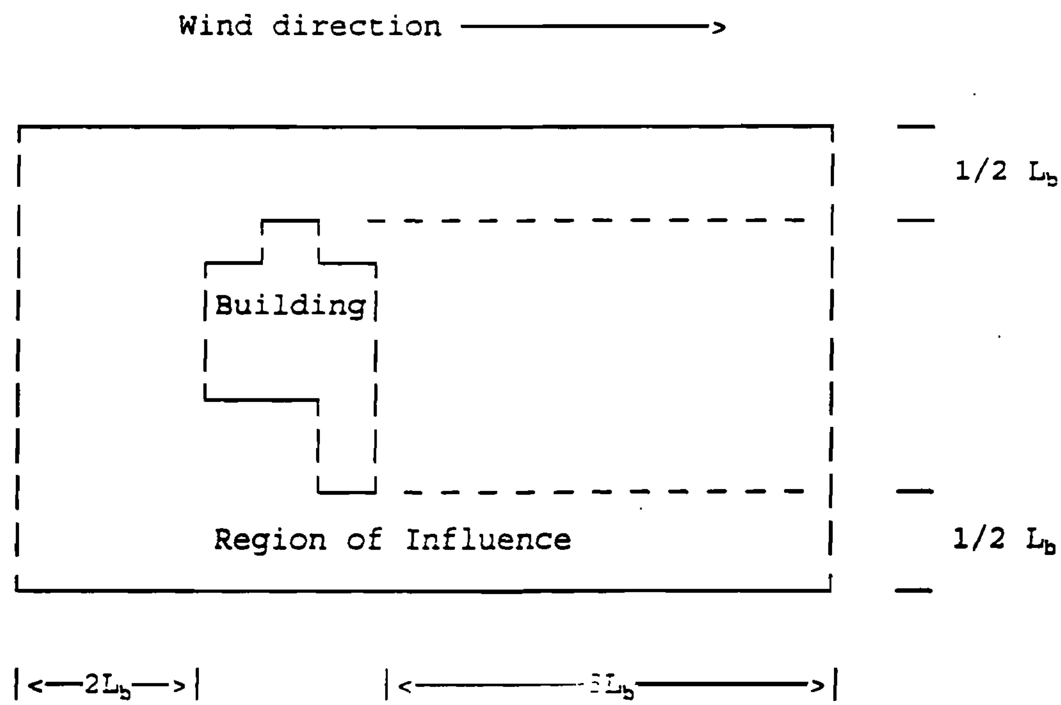
7.5 MODELING METHODOLOGY

A dispersion modeling analysis was performed for all impacted emission sources at the plant site and the maximum predicted concentration was compared to the respective AAL standard. The following subsections describe the GEP analysis, the receptors, the modeled sources, and the cavity effect analysis.

7.5.1 Good Engineering Practice (GEP) Stack Height Analysis

Based on the North Carolina Air Toxics Guidelines, a GEP analysis is required for all emission sources subject to a modeling analysis in order to determine if wake effects and downwash options need to be selected in the computer models. Thus, a GEP analysis was performed following the procedures outlined in the EPA documents Guideline For Determination of Good Engineering Practice Stack Height (Technical Support Document For the Stack Height Regulations) Revised (EPA-450/4-80-023R), the User's Guide to the Building Profile Input Program (October 1993), and the Bowman Engineering "GEP" program (Version 5.1).

The building wake and downwash effect analysis was applied to each air emission source. For each building, an area of wake and downwash effects extends outward to a distance of five times L (the lesser of the maximum projected width or height of the building) directly downwind from the leeward side of the building. Wake effects were assumed to occur if the emission source is located within a rectangle composed of two lines perpendicular to the wind direction. one at 5L downwind of the building and the other at 2L upwind of the building. and by two lines parallel to the wind direction. each at 0.5L away from each side of the building. The following presents an example of the wake effect and downwash region of influence.



As the wind direction rotates. the wake and downwash effect region of influence changes and is combined to form a GEP 5L region of influence in all wind directions. Any emission source within the region of influence is affected by wake and downwash effects. For buildings close to an emission source. wake and downwash effects were considered where the distance between the emission source and the nearest part of the building is less than or equal to 5L. Wake and downwash effects from buildings that are closer than the greater of either building's maximum projected width or height are considered to have one region of influence.

When an emission source height is less than the GEP height and is located within the region of influence. direction-specific building dimensions are included in the modeling analysis and either the Schulman-Scire or the Huber-Snyder equations are used for calculating the wake and downwash concentrations.

The ISCST3 model uses the Schulman and Scire method when the physical stack height is less than 1.5 times the height of the building causing the maximum GEP height. The Schulman and Scire equations reduce plume rise due to initial plume dilution, enhance vertical plume spread as a linear function of the effective plume height, and include appropriate building dimensions as a function of wind direction.

The ISCST3 model also accepts direction-specific building dimensions for emission source between 1.5 times the height of the building causing the maximum GEP height and the actual GEP height. In this case, the Huber-Snyder downwash equations are used for the wake and downwash calculations.

The GEP analysis was completed for the International Paper facility using the latest version of the Bowman GEP program to demonstrate compliance with stack height regulations (40 CFR Part 51) and to determine which emission sources are impacted by building wake and downwash effects. The building heights and projected widths, for 10 structures, were input into the model for each ten degrees of wind direction. These building heights and projected widths are the same as are used for the GEP stack height calculation. The x, y coordinates used in the analysis were taken from a map in which Plant North represent True North coordinates in the GEP and ISC models. All coordinates (stack locations, building corners, and property line receptors) used in this analysis reflect True North.

Table 7-2 presents the buildings/structures and associated heights used in the GEP analysis. Figure 2-2 shows the facility layout and buildings used in the GEP analysis. Appendix B contains the results of the GEP analysis including the direction specific building dimensions.

TABLE NO. 7-2
BUILDINGS/STRUCTURES USED IN MODELING ANALYSIS
INTERNATIONAL PAPER COMPANY-ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

Buildings	Height		Width		Length	
	(ft)	(m)	(ft)	(m)	(ft)	(m)
Warehouse #1	33.00	10.06	120.00	36.58	200.00	60.96
Warehouse #2	33.00	10.06	100.00	30.48	200.00	60.96
Planer Bldg.	33.00	10.06	200.00	60.96	410.00	124.97
Shavings Bin	125.00	38.10	20.00	6.10	40.00	12.19
Kiln Bldg. #1	25.00	7.62	40.00	12.19	70.00	21.34
Kiln Bldg. #2	25.00	7.62	75.00	22.86	65.00	19.81
Kiln Bldg. #3	26.00	7.92	60.00	18.29	70.00	21.34
Boiler Bldg.	40.00	12.19	40.00	12.19	75.00	22.86
Sawmill Main Bldg.	40.00	12.19	250.00	76.20	150.00	45.72
Sawmill Bldg. #1	33.00	10.06	65.00	19.81	140.00	42.67
Sawmill Bldg #2	33.00	10.06	60.00	18.29	100.00	30.48
Sawmill Bldg. #3	33.00	10.06	20.00	6.10	40.00	12.19
Sawmill Bldg. #4	33.00	10.06	30.00	9.14	45.00	13.72
Sorter	33.00	10.06	40.00	12.19	560.00	170.69

TABLE NO. 7-3
POINT SOURCE INFORMATION
INTERNATIONAL PAPER COMPANY-ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

Stack ID	Source Description	UTM		Stack parameters									Exhaust Direction	Rain Cap
		East	North	Height		Flow Rate	Velocity		Diameter		Temperature			
		(m)	(m)	(ft)	(m)	(acfm)	(fps)	(m/s)	(ft)	(m)	(°F)	(°K)	(Hor. or Vert)	
Boiler	Wood Fired Boiler	753594.22	3802953.83	78.00	23.77	64,250	85.26	25.99	4.00	1.22	170.00	349.81	Vert	N

Woodward-Clyde

7.5.2 Point & Volume Sources

Point Sources

The ISCST3 model uses a steady-state Gaussian plume equation to model emissions from point sources such as stacks and vents. One point source, the wood-fired boiler was included in this modeling analysis. This source was modeled using actual (nominal) stack exhaust parameters.

Volume Sources

The ISCST3 model can be used to simulate the effects of emissions from volume sources such as fugitive emissions from enclosed building areas. Four lumber drying kilns (one new and three existing) were simulated as volume sources.

For each volume source modeled at International Paper, an initial lateral (σ_{yo}) and vertical (σ_{zo}) dimension were calculated. For elevated volume sources, an effective emission height (center of the volume) was determined. The following presents the methodology that was used to calculate the σ_{yo} and σ_{zo} for volume sources included in the International Paper modeling analysis.

The σ_{yo} for each single volume source was determined by dividing the minimum horizontal dimension of the volume (side of volume) by 4.3. The (σ_{zo}) for each single volume source with an effective emission height of zero or with an elevated effective emission height on or near a building was determined by dividing the vertical dimension of the volume by 2.15.

Tables 7-3 and 7-4 present the point and volume source parameters used in the modeling analyses. Figure 2-3 presents the location of all the sources used in the model in the facility layout drawing.

TABLE NO. 7-4
VOLUME SOURCE INFORMATION
INTERNATIONAL PAPER COMPANY-ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

Stack ID	Source Description	UTM		Source Height		Release Height		Source Width		Aj/Close Bldg Height		Source	
		East	North									Sigma Y	Sigma Z
		(m)	(m)	(ft)	(m)	(ft)	(m)	(ft)	(m)	(ft)	(m)	(m)	(m)
Kiln1&2	All of Kiln 1 and 1/2 of Kiln 2	753540.21	3802998.28	25.00	7.62	25.00	7.62	54.00	16.46	33.00	10.06	3.84	4.68
Kiln2&3	All of Kiln 3 and 1/2 of Kiln 2	753556.77	3802991.39	25.00	7.62	25.00	7.62	54.00	16.46	33.00	10.06	3.84	4.68
NewKiln	Proposed New Kiln	753574.25	3802984.10	26.00	7.92	26.00	7.92	54.00	16.46	33.00	10.06	3.84	4.68

Woodward-Clyde

7.5.3 Receptors

The dispersion modeling receptor grids were developed following procedures outlined in the North Carolina Air Toxics Modeling Guidelines. A discrete cartesian receptor grid system was created to adequately assess air quality impacts at the International Paper property line. Discrete receptors were placed along the property line at 100 meter intervals and then a cartesian grid system was extended outward from the property line at 100 meter intervals, to find the maximum modeled concentration. Receptors were also placed with 100 meter spacing along a railroad line that traverses the northern side of the property. Terrain elevations were not included in the modeling analysis. Figures 7-1 and 7-2 show the facility sources and property line and the expanded receptor grid used in the analysis.

7.5.4 Cavity Effect Screening Analysis

For the point source modeled (the wood-fired boiler), all buildings causing wake and downwash effects for any wind direction were determined. The building dimensions of the primary controlling structure was used in the SCREEN3 model to determine the maximum cavity effect concentration for the boiler. The cavity effect analysis methodology is described below.

1. The GEP analysis results were used to determine, for each source wind direction, the buildings causing the maximum GEP stack heights.
2. The SCREEN3 model was run for the controlling building at the site.
3. The cavity length for the controlling building was compared to the distance from the leeward side of the building to the property line in the direction in which the source is impacted by the building. If the cavity length did not extend beyond the property line, then no cavity concentration was calculated.
4. When the cavity height is less than stack height or cavity length does not extend off property the cavity concentration is 0 ug/m^3.

FIGURE 7-1
PROPERTY LINE RECEPTORS AND SOURCE LOCATIONS
INTERNATIONAL PAPER - ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

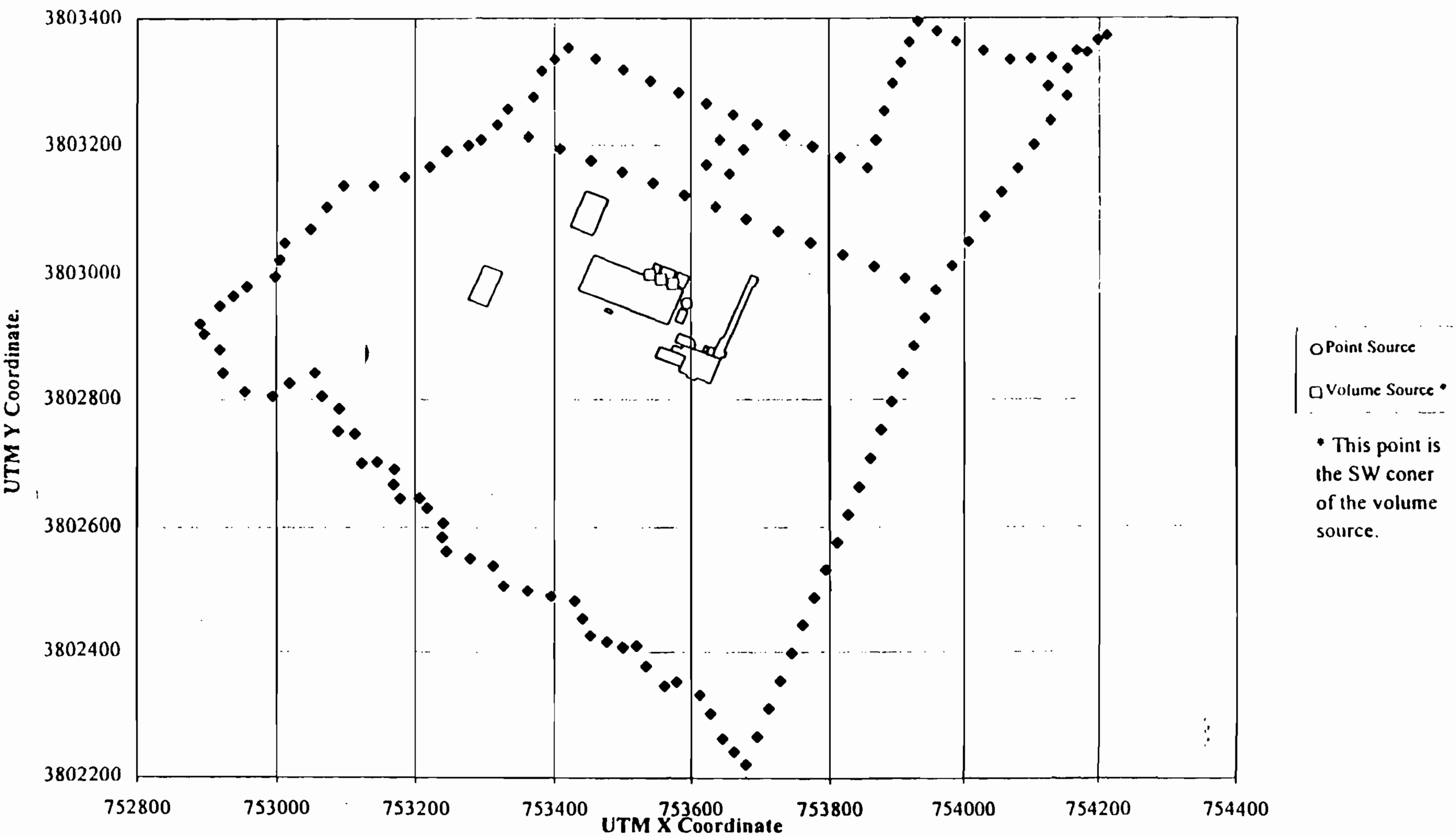
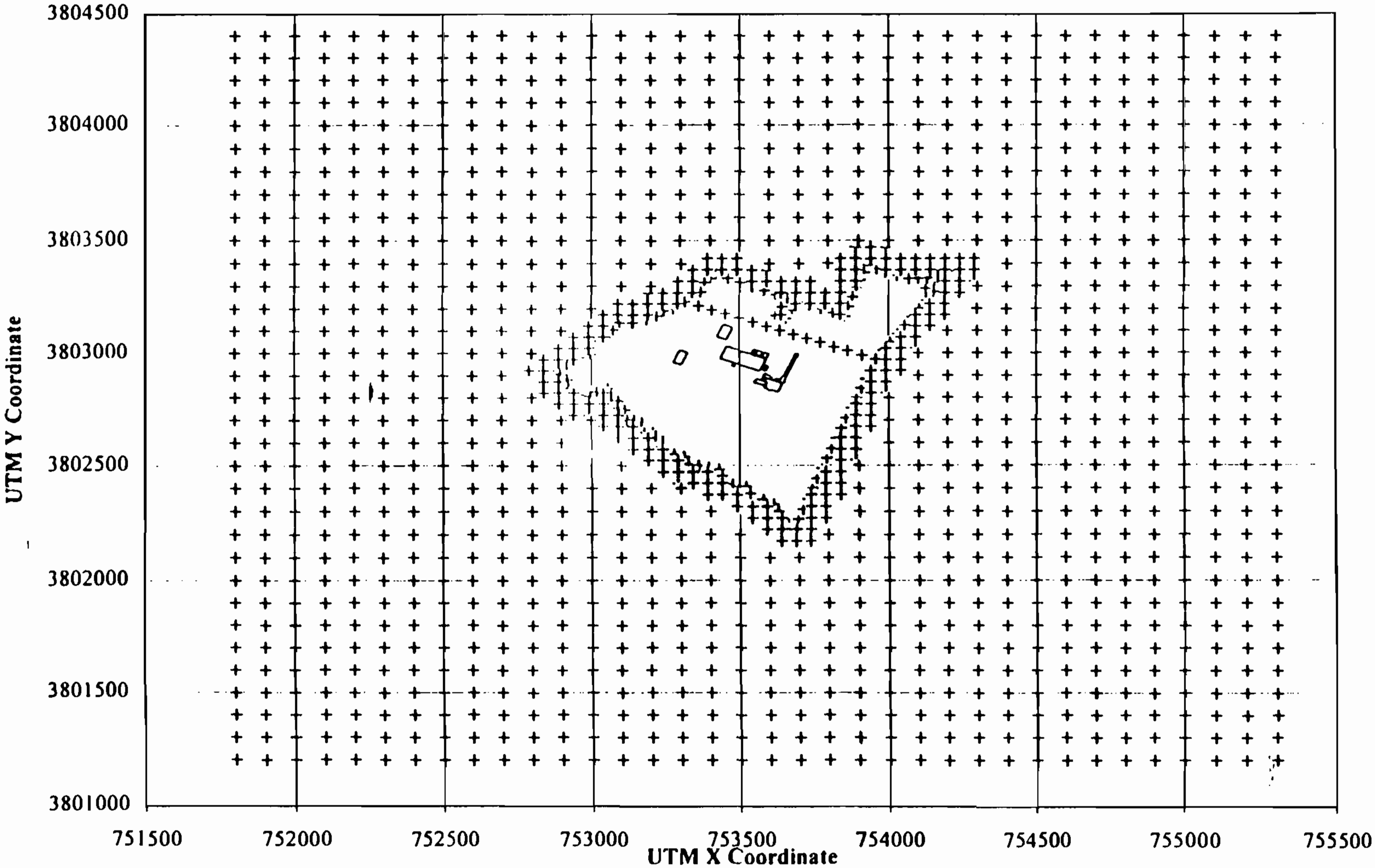


FIGURE 7-2
EXPANDED RECEPTOR GRID
INTERNATIONAL PAPER COMPANY - ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129



The cavity effect analysis indicates that the cavity wake effect region for each building does not extend beyond the International Paper property line, and thus, further analyses are not required. The SCREEN3 output for the cavity analysis is in Appendix B.

7.6 AIR TOXICS MODELING ANALYSIS

7.6.1 Baseline Modeling Analysis

For completeness, the ISC3 model was executed with all meteorological data (1987 - 1991). Baseline results for the modeled toxics indicated concentrations of acetaldehyde and formaldehyde of approximately 0.2 percent and 13 percent, respectively, of their AALs.

7.6.2 Optimization Modeling Analysis To Determine Maximum Allowables

The results of the baseline air quality dispersion modeling analysis demonstrates that calculated potential emissions from International Paper will not result in any ambient concentrations that exceed the applicable AALs. Therefore, International Paper is requesting emission limitations which correspond more closely to those ambient levels allowed in 15 NCAC 2D .1104. Optimization (i.e. increase) of emissions from several sources to determine allowable emissions was performed, thereby allowing additional operating flexibility while at the same time complying with all applicable AALs.

The optimized allowable emission rates are not intended to provide authorization to operate existing equipment in a manner that contravenes standards for currently regulated pollutants, such as criteria pollutants, nor are they intended to provide authorization to modify existing equipment or install new equipment beyond the scope of the plans presented in this analysis. Rather, optimized emission rates are intended to minimize future compliance demonstration iterations by allowing for some variability in emissions as more data become available. This approach provides a window of operating flexibility for the facility that is well within compliance requirements of the North Carolina Toxic Air Pollutant Regulations, without being unduly restrictive.

Optimized emission rates were developed using a mathematical technique known as linear optimization. This technique provides a mathematical method for solving practical problems by means of linear function where the variables involved are subject to constraints. There were two primary constraints applied to this analysis:

- The optimized emission rate could not be lower than the emission rate used in the baseline analysis;
- The ambient impact resulting from the optimized emissions could not exceed a predetermined percent of the applicable AAL (discussed below).

Emission rate limitations that result in ambient impacts equal to approximately 95 percent of the AAL were established for both formaldehyde and acetaldehyde.

The compliance demonstration for the optimized emission rates was based on a refined-level simple terrain dispersion modeling analysis. The compliance demonstration was based on five years of meteorological data (1987-1991).

Based on the maximum modeled results, the optimized emission rates (Table 7-5) for all emission sources show that ambient concentrations at the property-line and beyond are maintained below each respective AAL. The results of the five year optimized modeling analyses are presented in Table 7-6.

Input and output computer files are being supplied on diskettes with this report. The modeling demonstrated compliance for all proposed air toxic emission rates.

7.7 CONCLUSIONS

Dispersion modeling was conducted to demonstrate compliance with air toxics limits for formaldehyde and acetaldehyde. This modeling analysis evaluated the impacts of pollutants emitted from sources located across the facility at the property line and beyond. Modeling results show that concentrations in simple terrain and within building cavities for acetaldehyde

TABLE NO. 7-5
COMPARISON OF MAXIMUM POTENTIAL AND OPTIMIZED EMISSION RATES
INTERNATIONAL PAPER COMPANY-ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

Stack ID	Source Description	Emission Rates			
		Acetaldehyde		Formaldehyde	
		Baseline (lb/hr)	Optimized (lb/hr)	Baseline (lb/hr)	Optimized (lb/hr)
Boilers	Wood Fired Boiler	3.10E-02	19.61	6.82E-02	0.48
Kiln1&2	All of Kiln 1 and 1/2 of Kiln 2	8.10E-02	50.70	4.06E-02	0.29
Kiln2&3	All of Kiln 3 and 1/2 of Kiln 2	8.10E-02	50.70	4.06E-02	0.29
NewKiln	Proposed New Kiln	2.93E-02	18.34	1.46E-02	0.10
	TOTAL	0.22	139.35	0.16	1.15

TABLE NO. 7-6
REFINED MODELING RESULTS FROM OPTIMIZED EMISSIONS RATES
INTERNATIONAL PAPER COMPANY-ARMOUR FACILITY
WOODWARD-CLYDE PROJECT NO. 96R129

Pollutant	Averaging Period	Concentration ($\mu g/m^3$)					AAL (mg/m^3)	AAL ($\mu g/m^3$)	MAX. Model Conc. ($\mu g/m^3$)	UTM	
		1987	1988	1989	1990	1991				East (m)	North (m)
Acetaldehyde	1-Hour	25,639	25,343	21,566	20,976	22,916	27.00	27,000	25,639	753453.38	3803176.00
Formaldehyde	1-Hour	143	143	121	118	129	0.15	150	143	753453.38	3803176.00

and formaldehyde averaging periods are approximately 0.2 percent and 13 percent of their respective AALs.

7.8 REFERENCES

1. "Steam Fired Kilns, Summary of HAP Test Data," National Council of the Paper Industry for Air and Stream Improvement, Inc. January 1995. Draft AP-42 submittal to EPA.

SECTION A

FACILITY (General Information)

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A1

REVISED 04/15/94

AIR QUALITY SECTION - APPLICATION FOR AIR PERMIT TO CONSTRUCT/OPERATE

OCT

FACILITY NAME: Federal Paper Board, Inc., Armour Plant

MAILING ADDRESS: P. O. Box 57 | SITE ADDRESS: Federal Road

CITY: Riegelwood | CITY: Riegelwood | COUNTY: Columbus

AIR PERMITS

STATE: NC | ZIP CODE: 28456 | ZIP CODE: 28456 | [redacted]

CONTACT PERSON: Michael Wilson | TITLE: Environmental Compliance Manager

TELEPHONE: (910) 655-4106 | FAX: (910) 655-9368 | [redacted]

OWNER OF FACILITY: International Paper Company

MAILING ADDRESS: Manhattanville Road

CITY: Purchase | STATE: NY | ZIP CODE: 10577

CONTACT PERSON: Michael Wilson | TITLE:

TELEPHONE: (910) 655-4106 | FAX: (910) 655-9368

DESCRIBE TYPE OF OPERATION: Sawmill producing southern yellow pine dimensional lumber

SIC CODE(S): 2421 | DESCRIPTION OF PRIMARY SIC GROUP: Lumber, dry

FACILITY COORDINATES		OR		
UTM EAST:	380350		LATITUDE:	[redacted]
UTM NORTH:	75132		LONGITUDE:	

HAVE YOU INCLUDED (X) CONSISTENCY DETERMINATION (X) SOURCE REDUCTION & RECYCLING FORM D3-3 AND (X) APPLICATION FEE?

FACILITY IS: (X) TITLE V FACILITY ( ) NON-TITLE V FACILITY ( ) SYNTHETIC MINOR

IF TITLE V INDICATE APPLICABILITY 1 2 3 4 5 (CIRCLE ALL THAT ARE APPLICABLE)

APPLICATION IS BEING MADE FOR (CHECK ALL THE APPLY. NOTE: (TV) INDICATES APPLICABILITY TO TITLE V FACILITIES ONLY):

( ) NEW FACILITY	( ) INITIAL TITLE V PERMIT (TV)	( ) RENEWAL (TV)
(X) MODIFICATION	( ) NEW FACILITY (TV)	(X) PSD (TV)
(X) EXISTING EMISSION SOURCE(S)	( ) MINOR MODIFICATION (TV)	( ) NON-ATTAINMENT (TV)
	( ) SIGNIFICANT MODIFICATION (TV)	( ) 112 (g) (TV)

IF APPLICATION IS BEING MADE FOR ANY OF THE FOLLOWING, FORM A2 MUST BE ATTACHED TO THIS FORM:

( ) ADMINISTRATIVE AMENDMENT	( ) CHANGE OF OWNERSHIP	( ) RELOCATION (WITHIN FACILITY) (TV)
( ) ADMINISTRATIVE AMENDMENT (TV)	( ) CHANGE OF OWNERSHIP (TV)	( ) LIKE-FOR-LIKE REPLACEMENT
( ) RENEWAL	( ) RELOCATION (WITHIN FACILITY)	( ) LIKE-FOR-LIKE REPLACEMENT (TV)
		( ) 502(b)(10) NOTIFICATION (TV)

HAVE YOU INCLUDED: (X) FLOW CHART(S) (X) ROOF DIAGRAM (X) PLANT LAYOUT (X) PLOT PLAN (X) AREA DIAGRAM

CURRENT/PREVIOUS PERMIT NO: 2248R10 | EXPIRATION/DISCONTINUED DATE: [redacted]

DO YOU CLAIM CONFIDENTIALITY OF DATA ( ) YES (X) NO *(SEE INSTRUCTIONS)*

SIGNATURE OF RESPONSIBLE PERSON OR COMPANY OFFICIAL: | TITLE: Plant Manager | DATE:

X Daniel T. Alford | 10/1/96

(TYPED) Daniel Thomas Alford

DEPARTMENT USE ONLY:	RECEIVED:	ASSIGNED TO:	PREMISE NUMBER:
APPLICATION NUMBER:	RETURNED:	COMPLETE:	REVIEW DATE:
PERMIT NUMBER:	DATE ISSUED:	[redacted]	

SECTION A

EMISSION SOURCE LISTING (EXISTING FACILITY)

A3

(New, Modified, Previously Unpermitted, Replaced, Deleted)

REVISED 04/15/94

AIR QUALITY SECTION

EMISSION SOURCE ID NO.	EMISSION SOURCE DESCRIPTION	CONTROL DEVICE ID NO.	CONTROL DEVICE DESCRIPTION	EMISSION POINT ID NO. or "FUGITIVE"
EQUIPMENT TO BE MODIFIED BY THIS APPLICATION				
N/A				
EQUIPMENT TO BE ADDED BY THIS APPLICATION (New, Previously Unpermitted, or Replacement)				
K1-4	Dry Kiln	N/A	N/A	K1-4
EQUIPMENT TO BE DELETED BY THIS APPLICATION				
N/A				
EQUIPMENT TO BE REPLACED BY THIS APPLICATION				
N/A				

SECTION D

TOXIC AIR POLLUTANT EMISSIONS SUMMARY

D2-1

REVISED 04/15/94

AIR QUALITY SECTION

EMISSION SOURCE ID NO: K1-4

SOURCE DESCRIPTION: Dry Kiln

CONTROL DEVICE(S): N/A

ID NO(S): N/A

REQUESTED MAXIMUM EMISSIONS

TOXIC AIR POLLUTANT (TAP)	TAP NO.	LB/YEAR	LB/DAY	LB/HOUR	LB/15 MIN	EMISSION POINT ID	EMISSION FACTOR TYPE
Acetaldehyde				0.10		K1-4	N/A[1]
Formaldehyde				18.34		K1-4	N/A[1]

READ INSTRUCTIONS PRIOR TO COMPLETING MODELING PARAMETERS SECTION

MODELING PARAMETERS

EMISSION POINT ID	EXHAUST TEMP. (F)	EMISSION POINT DIAMETER (FT)	EMISISON POINT HEIGHT (FT)	EXIT VELOCITY (FT/SEC)	RAIN CAP?
					Y N
					Y N
					Y N
					Y N
					Y N

COMMENTS:

1. Emission rates based on modeling (see Section 7.0 of accompanying report).
2. This source was modeled as a "volume source." See Table 7-4 of accompanying report for modeling parameters.

SECTION D

TOXIC AIR POLLUTANT EMISSIONS SUMMARY

D2-1

REVISED 04/15/94

AIR QUALITY SECTION

EMISSION SOURCE ID NO: BW

SOURCE DESCRIPTION: Wood-Fired Boiler

CONTROL DEVICE(S): Multicyclone followed by venturi scrubber and wet cyclone

ID NO(S): APC-1,2, and 3

REQUESTED MAXIMUM EMISSIONS

TOXIC AIR POLLUTANT (TAP)	TAP NO	LB/YEAR	LB/DAY	LB/HOUR	LB/15 MIN	EMISSION POINT ID	EMISSION FACTOR TYPE
Acetaldehyde				0.48		BW	N/A[1]
Formaldehyde				19.61		BW	N/A[1]

READ INSTRUCTIONS PRIOR TO COMPLETING MODELING PARAMETERS SECTION

MODELING PARAMETERS

EMISSION POINT ID	EXHAUST TEMP. (F)	EMISSION POINT DIAMETER (FT)	EMISISON POINT HEIGHT (FT)	EXIT VELOCITY (FT/SEC)	RAIN CAP?
BW	170	4	78	85.3	Y N
					Y N
					Y N
					Y N
					Y N

COMMENTS:

1. Emission rates based on modeling (see Section 7.0 of accompanying report).

SECTION D

TOXIC AIR POLLUTANT EMISSIONS SUMMARY

D2-1

REVISED 04/15/94

AIR QUALITY SECTION

EMISSION SOURCE ID NO: K1-1/K1-2

SOURCE DESCRIPTION: All of Dry Kiln K1-1 emissions and 1/2 of Dry Kiln K1-2 emissions.

CONTROL DEVICE(S): N/A

ID NO(S): N/A

		REQUESTED MAXIMUM EMISSIONS					
TOXIC AIR POLLUTANT (TAP)	TAP NO	LB/YEAR	LB/DAY	LB/HOUR	LB/15 MIN	EMISSION POINT ID	EMISSION FACTOR TYPE
Acetaldehyde				0.29		K1-1, K1-2	N/A[1]
Formaldehyde				50.70		K1-1, K1-2	N/A[1]

READ INSTRUCTIONS PRIOR TO COMPLETING MODELING PARAMETERS SECTION

MODELING PARAMETERS

EMISSION POINT ID	EXHAUST TEMP. (F)	EMISSION POINT DIAMETER (FT)	EMISISON POINT HEIGHT (FT)	EXIT VELOCITY (FT/SEC)	RAIN CAP?
					Y N
					Y N
					Y N
					Y N
					Y N

COMMENTS:

1. Emission rates based on modeling (see Section 7.0 of accompanying report).
2. This source was modeled as a "volume source." See Table 7-4 of accompanying report for modeling parameters.

SECTION D

TOXIC AIR POLLUTANT EMISSIONS SUMMARY

D2-1

REVISED 04/15/94

AIR QUALITY SECTION

EMISSION SOURCE ID NO	K1-2/K1-3
SOURCE DESCRIPTION	All of Dry Kiln K1-3 emissions and 1/2 of Dry Kiln K1-2 emissions.
CONTROL DEVICE(S).	N/A
ID NO(S):	N/A

REQUESTED MAXIMUM EMISSIONS

TOXIC AIR POLLUTANT (TAP)	TAP NO	LB/YEAR	LB/DAY	LB/HOUR	LB/15 MIN	EMISSION POINT ID	EMISSION FACTOR TYPE
Acetaldehyde				0.29		K1-2/K1-3	N/A[1]
Formaldehyde				50.70		K1-2/K1-3	N/A[1]

READ INSTRUCTIONS PRIOR TO COMPLETING MODELING PARAMETERS SECTION

MODELING PARAMETERS

EMISSION POINT ID	EXHAUST TEMP (F)	EMISSION POINT DIAMETER (FT)	EMISISON POINT HEIGHT (FT)	EXIT VELOCITY (FT/SEC)	RAIN CAP?
					Y N
					Y N
					Y N
					Y N
					Y N

COMMENTS.

1. Emission rates based on modeling (see Section 7.0 of accompanying report).
2. This source was modeled as a "volume source." See Table 7-4 of accompanying report for modeling parameters.

SECTION D

SPECIFIC EMISSION SOURCE (EMISSION INFORMATION)

D3-1

(*see note in instructions concerning state air toxics regulations)

REVISED 04/15/94

AIR QUALITY SECTION

EMISSION SOURCE DESCRIPTION: Dry Kiln

EMISSION SOURCE ID NO: K1-4

IS THIS SOURCE A FUGITIVE SOURCE? ( ) YES (X) NO[1]

ALTERNATIVE OPERATING SCENARIO (AOS) NO:

POLLUTANT	EMISSION FACTOR TYPE	EMISSION RATE IN LBS/HR		EMISSION RATE IN LBS/YR	
		POTENTIAL	ACTUAL	POTENTIAL	ACTUAL[2]
VOC	1	21.45	11.8	188,520	94,260
Acetaldehyde	1	0.0293	0.0293	257	128
Formaldehyde	1	0.0146	0.0146	128	64

COMMENTS:

[1] Approximately 5 percent of emissions from the kiln are fugitives.

[2] Actual annual emissions are based on 50 percent utilization.

SECTION D

SPECIFIC EMISSION SOURCE (REDUCTION AND RECYCLING ACTIVITIES)

D3-3

REVISED 04/15/94

AIR QUALITY SECTION

EMISSION SOURCE DESCRIPTION: Dry Kiln

EMISSION SOURCE ID NO: K1-4

REGULATED POLLUTANT	ONGOING SOURCE REDUCTION ACTIVITIES (ENTER CODES)	QTY. EMITTED BEFORE REDUCTION (LBS/YR)	QTY. EMITTED AFTER REDUCTION (LBS/YR)	PLANNED SOURCE REDUCTION ACTIVITIES (ENTER CODES)
N/A				

COMMENTS:

No "source reduction activities" affecting air emissions from the kiln are planned for this source.

SECTION D

EMISSION POINT SUMMARY

D4

REVISED 04/15/94

AIR QUALITY SECTION

LIST ALL INFORMATION ASSOCIATED WITH EACH EMISSION POINT

EMISSION POINT ID NO.	EMISSION POINT HEIGHT (FT)	EQUIV. DIAM. (FT)	TEMP. (F)	VELOCITY (FT/SEC)	FLOW RATE (ACFM)	EMISSION POIN DIRECTION	RAIN CAP? (Y OR N)
K1-4	26	2.3 [1]	180	- [2]	- [2]	H	N

COMMENTS:

[1] Eight square vents on kiln roof. Equivalent diameter shown above.

[2] Flow rate and velocity through drying cycle are variable. Source modeled as a "volume source" in air toxics modeling.

DISPERSION MODELING BRIEFING SHEET

CHAMPION INTERNATIONAL CORPORATION
Pine Barren Sawmill
225 MMBF/YR Lumber Mill
Escambia County, Florida

- WOOD PRODUCTS NESHAP
- HAPs - NOT MAJOR FOR HAPs

- Pollutants Evaluated – NO_x ~~Only~~ , PM_{10}
- Background Ambient Air Quality Data
  - o *De Minimis* impact expected for NO_x , PM_{10}
  - o Use Ozone Data from Pensacola Area for VOCs BACKGROUND MONITORING
- Modeled Sources – Steam Boiler Only
  - o Less than PSD significant impact level expected for NO_x , PM_{10}
- Use Current Version of EPA ISCST3 Model
- Rural Dispersion Coefficients and Mixing Heights
- Assign Terrain Elevations to Each Receptor
- Evaluate Building Downwash Using Current Version of EPA BPIP Model
- Receptor Grids
  - o Initial "Fenceline" Grid Around Main Process Area at 25-m Spacings
  - o Near-Field Cartesian; 100 m from "Fenceline" Extending to 1 km at 100-m Spacings
  - o Mid-Field Polar; From 1 km to 5 km at 500-m Spacings
  - o Far-Field Polar; From 6 km to 10 km at 1-km Spacings

1 km - 2.5 250
2.5 - 5 500

- Meteorology
  - o 5-Years (86-90) of Surface Data from Pensacola Regional Airport (Station 13899)
  - o 5-Years (86-90) of Upper Air Data from Apalachicola Municipal Airport (Station 12832)

- Copy for NPS/FWS
- Copy for EPA

AIR PERMITTING ISSUES BRIEFING SHEET

CHAMPION INTERNATIONAL CORPORATION
Pine Barren Sawmill
225 MMBF/YR Lumber Mill
Escambia County, Florida

- Estimated Maximum Annual Emissions – Point Sources (Preliminary)
  - o 10 tpy PM/PM_{10} — PM_{10} > 15 TPY
  - o <1 tpy SO_2
  - o 70 tpy NO_x
  - o 45 tpy CO — 18-24 HRS ~~PER~~ DRYING CYCLE
  - o 300 tpy VOC — NCASI EMISSION FACTORS FOR KILNS
    SEPT '98 BACT DETERMINATION FROM TEXAS
    L-P BACT IN NORTH CAROLINA

- PSD Applicability
  - o Major Source for VOCs (Exceeds 250 tpy) — METHANOL, TERPENES, PINENES
  - o Significant for NO_x (Steam Boiler) and VOC (Drying Kilns) — LAER DETERMINATIONS?

- Phased Construction
  - o Initially 3 Kilns, Additional 4th in 2-4 Years — PERMIT ALLOW - 18 MO. RESTR.

- Steam Boiler Options
  - o Two, Smaller Units (< 100 MMBtu/hr each) — NSPS Dc BACT FOR NO_x 0.12 LB/MMBTU
  - ~~o Relocated Unit(s)~~

- Preliminary BACT Analysis
  - o Steam Boiler NO_x: Low-NO_x Burners, Approx. 0.12 lb/MMBtu
  - o Drying Kilns VOC: No Controls

PROJECT BRIEFING SHEET

CHAMPION INTERNATIONAL CORPORATION
Pine Barren Sawmill
225 MMBF/YR Lumber Mill
Escambia County, Florida

- Location
  - 12 Miles North of Cantonment, Escambia County
  - Fenced Access From U.S. Highway 29
  - 32 Acre Site — MILL FOOTPRINT — ON 1000 AC
  - Nearest Residential Housing – Approximately 1.2 mi (2 km) S of Site
  - Nearest Town, McDavid – Approximately 5 mi (8 km) N of Site
  - Nearest Class I Area, Breton NWR – Approximately 95 mi (155 km) SW of Site

    APPROX 22 MI FROM PENSACOLA

- Process Description
  - Log Processing 2 155' LOG CRANES, RING DEBARKERS, 2 BUCKING STATIONS
  - Sawmill 2 DIFF SIZE BLOCKS – SMALL & LARGE
  - Kiln Drying LOADED W/ FORKLIFT.
  - Finishing
  - Shipping 250-300 TRUCK-TRIPS 158 LOG, 35-40 BYPRODUCTS, BAL. LUMBER
    RAIL LINE – CSX 20-40% OF LUMBER

- Project Emission Points
  - MAJOR — Natural Gas-Fired Steam Boiler; Nominal 125 MMBtu/hr MAYBE 2 PKG. BOILERS NSPS Dc
  - MAJ. — Indirect (Steam) Heated Lumber Kilns VOC EMISSIONS 2 FROM VENTILATION POINTS
  - MAJ. — Cyclone/Baghouse for Planer Building PM Fugitives PM PERMIT 4 KILNS
  - EXEMPT — Small Baghouse for Machine Shop (Saw Sharpening)
  - FUL — Log Processing, Sawmill, Storage/Shipping PM Fugitives
  - FUL — Truck Traffic (Paved Roads) PM Fugitives

- Schedule
  - File Air Permit Application by May 28, 1999 105 DAYS FOR APPLIC. REVIEW
  - Start Construction by September 10, 1999
  - Operational by June, 2000

MEETING AGENDA

CHAMPION INTERNATIONAL CORPORATION
Pine Barren Sawmill
225 MMBF/YR Lumber Mill
Escambia County, Florida

Florida DEP, Tallahassee, Florida
Wednesday, April 14, 1999

- Introductions

- Project Overview – (See Project Briefing Sheet)
  - Location
  - Process Description
  - Project Emission Points
  - Schedule

- Air Permitting Issues – (See Air Permitting Issues Briefing Sheet)
  - Estimated Annual Emissions (Preliminary)
  - PSD Applicability
  - Phased Construction
  - Steam Boiler Options
  - Preliminary BACT Analysis
  - Dispersion Modeling (see Dispersion Modeling Briefing Sheet)
  - FDEP Permit Application Processing Schedule

4/14/99 MTG. W/ ENTERPRISE FL & CHAMPION INTL.

NAME	COMPANY	PHONE
JOSEPH KAHN	FDEP - NEW SOURCE REV.	850-921-9519
Roger Miller	ENTERPRISE FLA, INC	850-922-8751
PAT EVANS	OTTED / EOG	850-487-2974
Tom Davis	ECT	352 332-0444
DAVE STEVENS	Champion	850-937-4849
TERRY KASSABAUM	Champion	409-398-7252
Andra S. Cornelius	Enterprise Florida	850/487-2157
John Barone	champion	203/358-7676
Clair Fancy	FDEP - BAR	8509219503
Cleve Holladay	FDEP-BAR/NSRS	850-921-8986

SECTION D

FACILITY EMISSIONS SUMMARY

D5

AIR QUALITY SECTION

REVISED 04/15/94

TOTAL FROM SPECIFIC EMISSION SOURCE SUMMARIES

POLLUTANT	CAS NO.	ANNUAL EMISSIONS IN LBS/YR	
		ACTUAL	POTENTIAL
PM[1]	[redacted]	10,066	21,429
VOC	[redacted]	623,710	782,431
Acetaldehyde[2]	[redacted]	1,616	1,937
Formaldehyde[3]	[redacted]	1,177	1,402

TOTAL FACILITY FIRING RATE FOR FOSSIL AND WOOD-FIRED BURNERS: ________ MILLION BTU/HR

TOTAL REACTIVE VOC's FROM THE FACILITY: ______ LBS/DAY or ______ % Total Control or OTHER (specify) ____________

COMMENTS:

[1] Actual and potential emissions of PM were calculated by adding 50 percent and 100 percent of the maximum emission increases, respectively, to the estimated facilitywide totals reported in the Armour Title V application.

[2] VOC emissions were calculated by adding annual emission estimates shown on Form D3-1 to emission estimates included in the Title V application.

[3] Potential emissions of acetaldehyde and formaldehyde are based on calculated maximum emissions and not modeled rates.

ECT
Environmental Consulting & Technology, Inc.

RECEIVED
JUL 29 1999
BUREAU OF AIR REGULATION

July 28, 1999

SENT BY OVERNIGHT MAIL ON 7/28/99

Mr. Cleve Halliday
New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road
Tallahassee, Florida 32399-2400

Re: Champion International Corporation
McDavid Sawmill – Air Construction Permit Application
DEP File No. 0330260-001-AC (PSD-FL-271)

Dear Mr. Halliday:

In response to your telephone request, please find enclosed: (a) a graphic showing the fence line receptors and emission points (Attachment I), (b) graphics and data concerning receptor terrain elevations (Attachment II), and (c) explanation of volume source model input data (Attachment III).

Please feel free to contact me at (352) 332-6230, Ext. 351 if there are any further questions.

Sincerely,

ENVIRONMENTAL CONSULTING & TECHNOLOGY, INC.

Thomas W. Davis

Thomas W. Davis, P.E.
Principal Engineer

Attachments

cc: Mr. Dave Stevens, Champion
Mr. John Barone, Champion
Mr. Terry Kassabaum, Champion
Mr. Ed Middleswart, FDEP – NWD

3701 Northwest
98TH Street
Gainesville, FL
32606

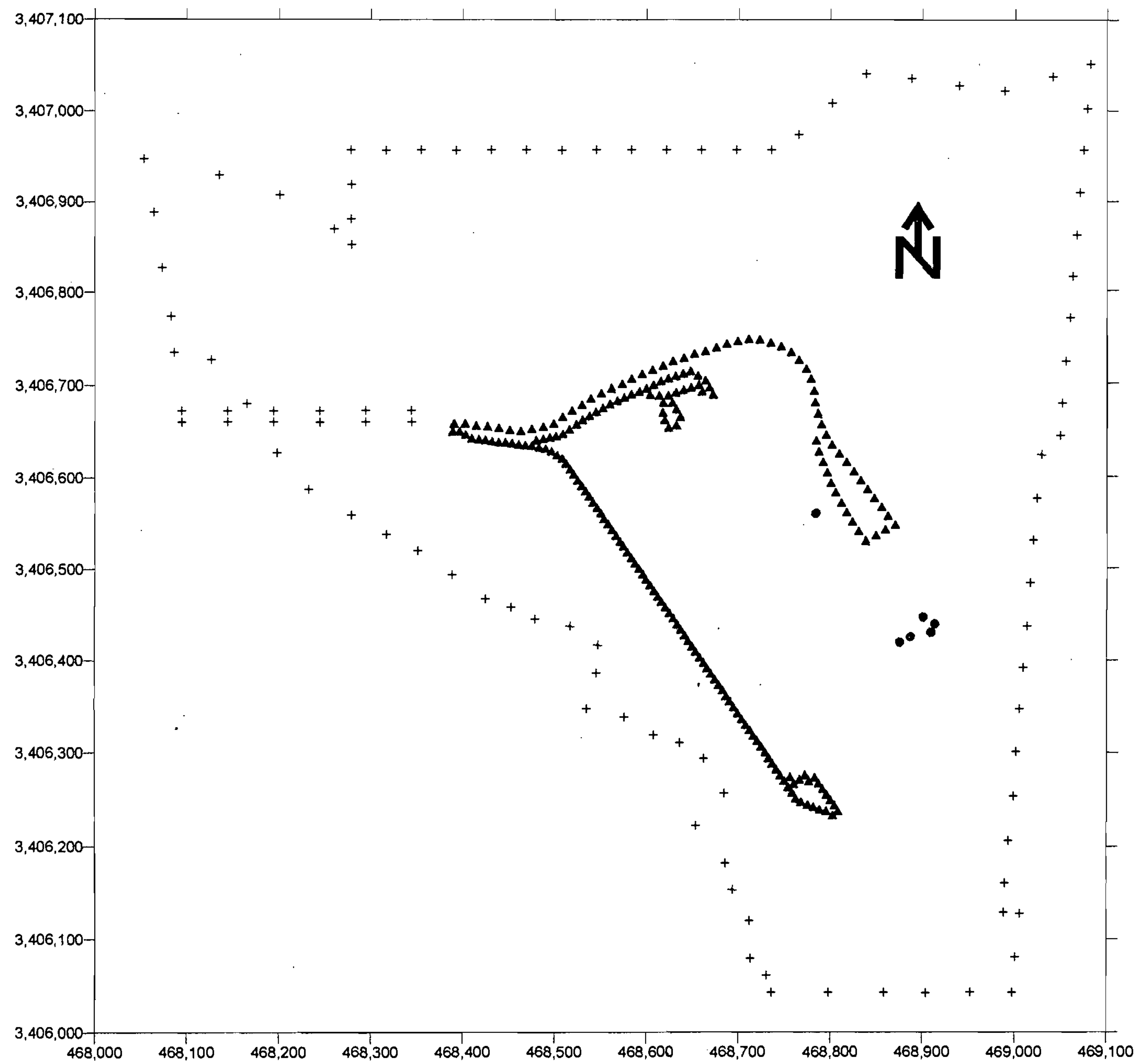
(352)
332-0444

FAX (352)
332-6722

ATTACHMENT I

FENCE LINE RECEPTORS
AND EMISSION POINTS

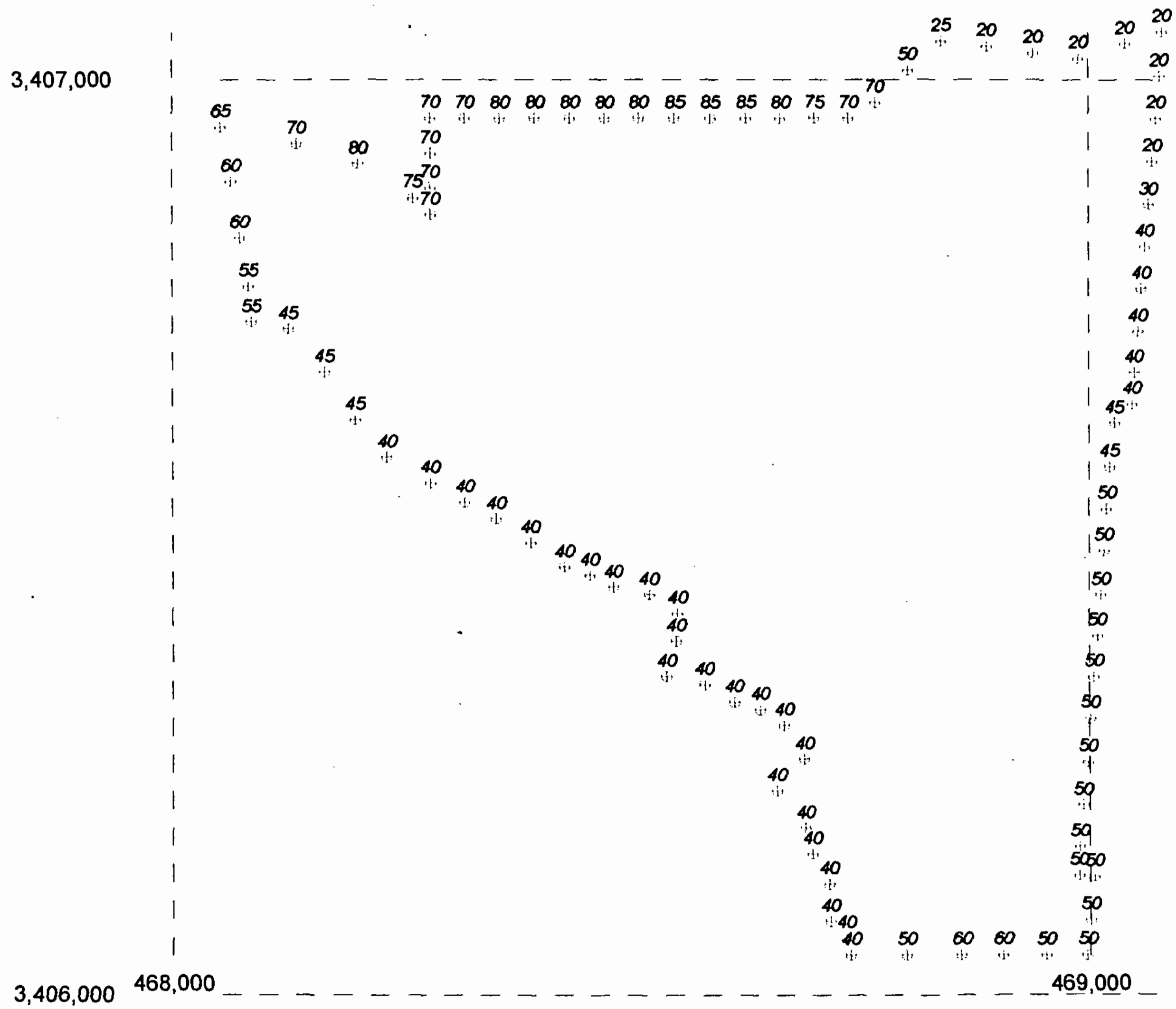
McDavid Sawmill
Fence Line Receptors and Emission Points



ATTACHMENT II

RECEPTOR ELEVATIONS

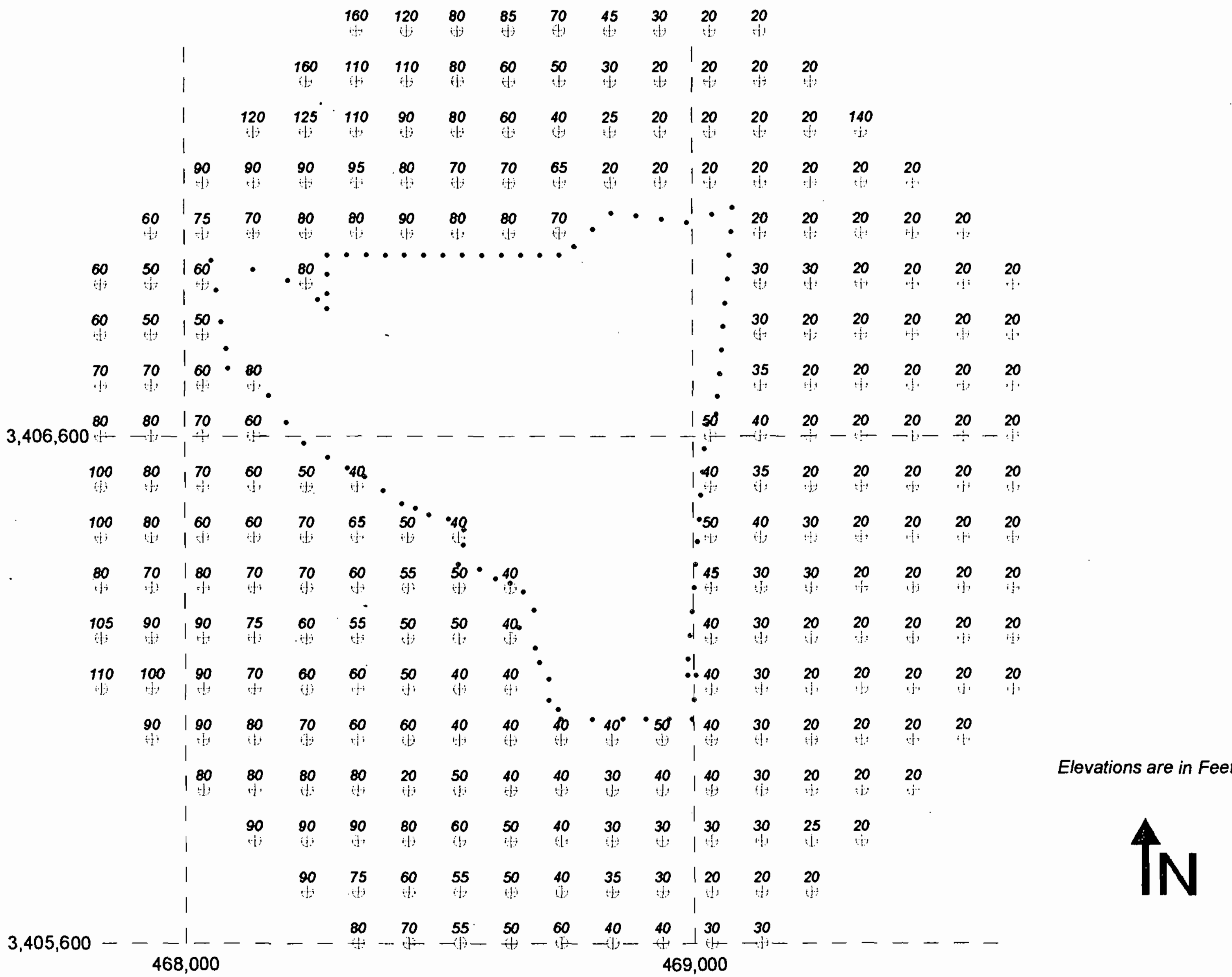
Champion International, McDavid Sawmill
Property Boundary Receptor Locations with Elevation



Elevations are in Feet

N

Champion International, McDavid Sawmill
Discrete Receptor Locations with Elevation



Champion 10° Grid Elevations

7/28/99

Direction (°)	Elevations (feet) at These Distances (meters) from Grid Center :- 1,250	1,750	2,250	2,750	3,250	3,750	4,250	4,750	5,500	6,500	7,500	8,500	9,500
10	60	30	30	30	30	30	30	30	25	35	30	30	30
20	25	25	30	30	30	30	30	30	30	30	30	30	30
30	20	20	25	25	25	30	30	30	30	30	40	40	60
40	20	20	20	20	20	30	30	30	30	40	40	70	70
50	20	20	20	20	20	30	30	30	60	60	70	80	110
60	20	20	20	20	20	30	30	60	60	60	70	120	170
70	20	20	20	20	20	30	30	40	60	60	70	120	150
80	20	20	20	20	20	25	30	50	50	60	80	130	210
90	20	20	20	20	20	30	50	50	55	70	95	140	130
100	20	20	20	20	20	30	30	50	55	60	140	210	210
110	20	20	20	20	20	20	25	50	50	50	60	175	210
120	20	20	20	20	20	20	20	20	20	50	100	170	60
130	20	20	20	20	20	20	20	20	20	20	20	80	50
140	20	20	20	20	20	20	20	20	10	10	10	10	20
150	25	20	20	20	20	20	20	15	10	10	10	10	10
160	25	20	20	20	20	20	20	20	20	10	10	10	10
170	50	20	20	20	20	20	20	20	10	10	30	30	45
180	90	20	30	40	50	70	95	80	55	30	90	110	110
190	70	30	20	80	140	80	140	60	100	110	180	170	170
200	80	40	20	106	120	175	185	200	170	200	200	180	190
210	60	40	30	50	110	120	130	180	190	210	200	200	175
220	60	50	30	50	60	50	120	180	190	200	210	200	180
230	70	60	30	70	155	120	110	100	150	190	190	130	160
240	105	90	30	60	80	110	160	215	190	210	150	170	130
250	130	40	50	30	80	110	190	190	150	210	185	140	200
260	100	60	60	45	35	120	180	90	200	190	185	180	210
270	120	80	80	55	40	50	120	50	70	100	190	210	190
280	120	90	100	60	65	50	50	70	140	80	130	180	220
290	80	120	70	70	110	75	90	60	150	210	160	140	210
300	70	150	100	90	150	85	80	106	50	100	160	210	170
310	70	95	150	160	150	115	100	170	110	100	70	100	130
320	140	80	160	150	120	140	210	215	130	160	120	120	85
330	160	160	100	140	130	170	210	210	230	250	250	210	210
340	90	90	130	200	120	110	190	200	220	160	220	130	190
350	70	60	60	80	80	80	120	90	110	80	70	200	140
360	7055	30	40	30	35	90	50	80	70	80	70	70	80

Champion 5° Grid Elevations

7/28/99

Direction	Elevations (feet) at These Distances (meters) from Grid Center :-											
(°)	1,000	1,500	2,000	2,500	3,000	3,500	4,000	4,500	5,000	6,000	7,000	8,000
5	55	30	40	30	30	40	40	50	35	50	50	30
15	30	30	30	30	30	30	30	30	30	30	30	30
25	20	25	30	30	30	30	25	30	30	30	30	30
35	20	20	25	25	25	30	20	30	30	30	60	60
45	20	20	20	20	20	25	20	30	40	35	50	70
55	20	20	20	20	20	20	20	30	60	60	60	100
65	20	20	20	20	20	20	30	40	50	60	50	90
75	20	20	20	20	20	20	30	30	40	60	60	115
85	20	20	20	20	20	20	30	50	50	60	80	100
95	20	20	20	20	20	20	50	50	55	60	90	200
105	20	20	20	20	20	20	30	30	50	50	75	140
115	20	20	20	20	20	20	20	30	40	50	70	90
125	20	20	20	20	20	20	20	20	20	20	40	60
135	20	20	20	20	20	20	20	20	20	20	15	20
145	20	20	20	20	20	20	20	20	20	20	10	10
155	20	20	20	20	20	20	20	20	20	20	20	10
165	40	20	20	20	20	20	20	20	20	20	20	20
175	50	35	20	30	20	30	40	40	40	30	40	95
185	60	85	20	50	20	110	100	80	50	90	100	190
195	60	45	20	50	130	130	130	135	140	190	200	190
205	80	65	30	40	70	100	160	210	210	210	200	200
215	80	60	30	30	130	90	100	135	190	210	210	200
225	70	80	40	30	40	110	70	110	160	205	210	180
235	90	105	40	40	70	130	190	175	170	180	195	140
245	110	80	30	30	70	100	150	195	170	190	200	180
255	120	90	85	40	50	70	160	175	100	190	190	200
265	120	80	75	50	30	50	170	110	140	100	210	190
275	80	100	80	70	50	40	40	70	95	70	120	200
285	60	100	120	50	60	70	50	60	70	190	130	180
295	60	120	100	90	90	115	70	70	50	90	190	170
305	75	110	140	155	115	160	140	100	110	80	60	110
315	110	70	130	185	115	160	165	180	210	170	105	110
325	160	140	90	170	160	190	160	210	200	240	210	180
335	160	160	160	150	170	175	200	170	210	230	220	200
345	100	80	100	90	140	80	110	160	130	210	160	80
355	80	50	50	50	50	60	110	70	120	80	55	150

Direction (°)	9,000	10,000
5	40	60
15	30	30
25	40	40
35	50	70
45	80	110
55	125	150
65	140	220
75	180	160
85	160	190
95	200	195
105	100	210
115	100	180
125	65	110
135	40	30
145	10	10
155	10	10
165	10	10
175	120	80
185	160	155
195	160	170
205	185	190
215	190	140
225	180	170
235	160	150
245	120	140
255	210	190
265	160	150
275	210	160
285	210	240
295	130	230
305	190	215
315	70	100
325	180	210
335	220	230
345	150	230
355	155	60

ATTACHMENT III

VOLUME SOURCE
MODEL INPUT DATA

Attachment III
Volume Source Model Input Data

PM_{10} emissions due to truck traffic on paved roadways for the McDavid Sawmill were modeled as volume sources using guidance provided in the ISC3 User's Guide.

There are three types of truck traffic and roadways planned for the McDavid Sawmill: (1) by-product trucks [V1-V64], (2) log trucks [V95-V137], and (3) product lumber trucks [V138-V234].

Emission rates for volume for each of the three roadways was calculated by dividing the PM_{10} emissions associated with the roadway. These rates are shown on the revised Table 2-3 included in the 7/16/99 response package submitted to the Department. As an example, hourly PM_{10} emissions for the by-product truck roadway segment is 0.6263 lb/hr. For 64 volumes (V1-V64), each volume has a PM_{10} emission rate of 0.0098 lb/hr or 1.2×10^{-3} g/s. Similar calculations were made for the other roadway segments.

Additional volume source model input parameters include release height, initial lateral dimension (sigma-y), and initial vertical dimension (sigma – z). Guidance for estimating sigma-y and sigma-z are provided in Table 3-1 of the ISC3 User's Guide. The release height for all truck roadway segments was assumed to be 50% of the estimated turbulence-induced truck vertical dimension height of 20 feet or 10 feet (3.05 m). For all truck roadway segments, sigma-z, per the EPA guidance, was set equal to the vertical dimension divided by 2.15 or 9.3 feet (2.84 m). Sigma-y, per the EPA guidance, was set equal to the roadway width divided by 2.15. Roadway widths are 40 feet for the by-product trucks (V1-V64), 24 ft (V95-V98) and 28 ft (V99-V137) for the log trucks, and 24 ft for the product lumber trucks (V138-V234).

All material handling fugitives (F9, F10, F13-F19, F22-F24, F27, and F31-F35) were modeled as one volume source V235. Release height was estimated at 15 ft [4.57 m] (50% of the vertical dimension of 30 ft), sigma-z at 30 ft divided by 2.15 or 13.9 ft (4.25 m), and sigma-y at the volume width of 151 ft divided by 4.3 or 35 ft (10.7 m). The PM_{10} emissions from these fugitive sources are small (totaling only 0.007 lb/hr or 0.0009 g/s) and had little contribution to maximum impacts.

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JUL 26 1999

BUREAU OF AIR REGULATION

July 24, 1999

SENT BY OVERNIGHT MAIL ON 7/24/99

Mr. Joseph Kahn, P.E.
New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road, Mail Station #5505
Tallahassee, Florida 32399-2400

Re: Champion International Corporation
McDavid Sawmill – Air Construction Permit Application
DEP File No. 0330260-001-AC (PSD-FL-271)

Dear Mr. Kahn:

On behalf of Champion International Corporation (Champion), four copies of additional responses to the items raised in your July 8th correspondence to Champion regarding the proposed McDavid Sawmill are provided as follows:

Item 1:

An air quality analysis for PM_{10} is attached; referenced revised Section 6.0 (Ambient Impact Analysis Methodology) and a new Section 9.0 (Ambient Impact Analysis Results). The model results demonstrate that the proposed McDavid Sawmill will not cause nor contribute to an exceedance of any National Ambient Air Quality Standard or PSD increment. Diskettes containing the dispersion modeling input and output files is included with one set of submittals.

Item 4.

Copies of vendor emissions data for the package boilers and planermill dust collector were previously provided to you on July 16th. As requested, a revised emissions statement from the package boiler vendor indicating that the emission rate specifications are on a lower heating value (LHV) basis is attached.

3701 Northwest
98TH Street
Gainesville, FL
32606

(352)
332-0444

FAX (352)
332-6722

6.0 AMBIENT IMPACT ANALYSIS METHODOLOGY

6.1 GENERAL APPROACH

The approach used to analyze the potential impacts of the proposed facility, as described in detail in the following sections, was developed in accordance with accepted regulatory agency practice. Guidance contained in EPA manuals and users' guides was sought and followed. The modeling procedures used were discussed and approved by the FDEP.

6.2 POLLUTANTS EVALUATED

Based on an evaluation of anticipated worst-case annual operating scenarios, the McDavid Sawmill will have the potential to emit 39 tpy NO_x; 70.1 tpy of CO; 31.1 tpy of PM (including fugitives), 17.8 tpy of PM_{10} (including fugitives); 0.3 tpy of SO_2, and 325.7 tpy of VOCs. Based on these potential emission rates, PM, PM_{10}, and VOCs are subject to the PSD NSR air quality impact analysis requirements of Rule 62-212. 400(5)(d), F.A.C.

The ambient impact analysis addresses PM and PM_{10}. Because VOCs contribute to the formation of ground-level ozone and because ozone modeling is conducted on a regional scale, modeling of VOC emissions resulting from operation of the McDavid Sawmill is not required. The biogenic VOC emissions projected for the McDavid Sawmill are small relative to area VOC emissions and will not affect the ozone attainment status for the area.

6.3 MODEL SELECTION AND USE

The most recent regulatory version of the Industrial Source Complex (ISC) models (EPA, 1998) is recommended and was used in this analysis for refined modeling. The ISC3 models are steady-state Gaussian plume models that can be used to assess air quality impacts over simple terrain from a wide variety of sources. The ISC3 models are capable of calculating concentrations for averaging times ranging from 1 hour to annual. For this study, the ISC3 short-term (ISCST3, Version 99155) model was used to calculate short-term ambient impacts with averaging times between 1 and 24 hours as well as long-term annual averages.

Procedures applicable to the ISCST3 dispersion model specified in EPA's *Guideline for Air Quality Models* (GAQM) were followed in conducting the refined dispersion modeling. The GAQM is codified in Appendix W of 40 CFR Part 51. In particular, the ISCST3 model control pathway MODELOPT keyword parameters DFAULT, CONC, RURAL, and TERRHGTS were selected. Selection of the parameter DFAULT, which specifies use of the regulatory default options, is recommended by the GAQM. The CONC, RURAL, and TERRHGTS parameters specify calculation of concentrations, use of rural dispersion, and elevated terrain receptors, respectively. As previously mentioned, the ISCST3 model was also used to determine annual average impact predictions, in addition to short-term averages, by using the PERIOD parameter for the AVERTIME keyword. Conservatively, no consideration was given to pollutant exponential decay.

6.4 DISPERSION OPTION SELECTION

Area characteristics in the vicinity of proposed emission sources are important in determining model selection and use. One important consideration is whether the area is rural or urban, since dispersion rates differ between these two classifications. In general, urban areas cause greater rates of dispersion because of increased turbulent mixing and buoyancy-induced mixing. This is due to the combination of greater surface roughness caused by more buildings and structures and greater amount of heat released from concrete and similar surfaces. EPA guidance provides two procedures to determine whether the character of an area is predominantly urban or rural. One procedure is based on land use typing and the other is based on population density. The land use typing method utilizes the work of Auer (Auer, 1978) and is preferred by EPA and FDEP because it is meteorologically oriented. In other words, the land use factors employed in making a rural/urban designation are also factors that have a direct effect on atmospheric dispersion. These factors include building types, extent of vegetated surface area and water surface area, types of industry and commerce, etc. Auer recommends that these land use factors be considered within 3 km of the source to be modeled to determine urban or rural classifications. The Auer land use typing method was used for the ambient impact analysis.

The Auer technique recognizes four primary land use types: industrial (I), commercial (C), residential (R), and agricultural (A). Practically all industrial and commercial areas come under the heading of urban while the agricultural areas are considered rural. However, those portions of generally industrial and commercial areas that are heavily vegetated can be considered rural in character. In the case of residential areas, the delineation between urban and rural is not as clear. For residential areas, Auer subdivides this land use type into four groupings based on building structures and associated vegetation. Accurate classification of the residential areas into proper groupings is important to determine the most appropriate land use classification for the study area.

USGS 7.5-minute series topographic maps for the area were used to identify the land use types within a 3-km radius area of the proposed site. Based on this analysis, well over 50 percent of the land use surrounding the plant (i.e., primarily forests) was determined to be rural under the Auer land use classification technique. Therefore, rural dispersion coefficients and mixing heights were used for the Ambient Impact Analysis.

6.5 TERRAIN CONSIDERATION

The GAQM defines *flat terrain* as terrain equal to the elevation of the stack base, *simple terrain* as terrain lower than the height of the stack top, and *complex terrain* as terrain above the height of the plume center line (for screening modeling, *complex terrain* is terrain above the height of the stack top). Terrain above the height of the stack top but below the height of the plume center line is defined as *intermediate terrain*.

USGS 7.5-minute series topographic maps were examined for terrain features in the vicinity of the proposed McDavid Sawmill (i.e., within an approximate 10-km radius). Base elevation of the site is approximately 70 feet above mean sea level (ft-msl). Highest elevations in the vicinity of the site are approximately 250 ft-msl. Site base elevation plus the shortest project stack height (i.e., Planermill dust collector stack height of 23 + 70) is 93 ft-msl. Accordingly, terrain in the vicinity of the site would be classified as ranging from *flat* to *complex terrain*. Due to the significant amount of terrain elevation differences in the vicinity, assignment of receptor terrain elevations was conducted; i.e., elevations obtained from the USGS 7.5-minute series topographic maps were assigned to each receptor.

6.6 GOOD ENGINEERING PRACTICE STACK HEIGHT/BUILDING WAKE EFFECTS

The CAA Amendments of 1990 require the degree of emission limitation required for control of any pollutant not be affected by a stack height that exceeds good engineering practice (GEP) or any other dispersion technique. On July 8, 1985, EPA promulgated final stack height regulations (40 CFR 51). GEP stack height is defined as the highest of 65 meters, or a height established by applying the formula:

$$Hg = H + 1.5\ L$$

where: Hg = GEP stack height.

H = height of the structure or nearby structure.

L = lesser dimension (height or projected width) of the nearby structure.

Nearby is defined as a distance up to five times the lesser of the height or width dimension of a structure or terrain feature, but not greater than 800 meters. While GEP stack height regulations require that stack height used in modeling for determining compliance with NAAQS and PSD increments not exceed the GEP stack height, the actual stack height may be greater. Guidelines for determining GEP stack height have been issued by EPA (1985).

The stack heights proposed for the McDavid Sawmill (e.g., package boilers, lumber kilns, and Planermill dust collector) are all less than the *de minimis* GEP height of 65 meters (213 ft) and, therefore, comply with the EPA promulgated final stack height regulations (40 CFR 51).

While the GEP stack height rules address the maximum stack height which can be employed in a dispersion model analysis, stacks having heights lower than GEP stack height can potentially result in higher downwind concentrations due to building downwash effects. The ISC dispersion models contain two algorithms that assess the effect of building downwash; these algorithms are referred to as the Huber-Snyder and Schulman-Scire methods. The following steps are employed in determining the effects of building downwash:

- A determination is made as to whether a particular stack is located in the area of influence of a building (i.e., within five times the lesser of the building's height or projected width). If the stack is not within this area, it will not be subject to downwash from that building.
- If a stack is within a building's area of influence, a determination is made as to whether it will be subject to downwash based on the heights of the stack and building. If the stack height to building height ratio is equal to or greater than 2.5, the stack will not be subject to downwash from that building.
- If both conditions in Items 1 and 2 are satisfied (a stack is within the area of influence of a building and has a stack height to building height ratio of less than 2.5), the stack will be subject to building downwash. The determination is then made as to whether the Huber-Snyder or Schulman-Scire downwash method applies. If the stack height is less than or equal to the building height plus one-half the lesser of the building height or width, the Schulman-Scire method is used. Conversely, if the stack height is greater than this criterion, the Huber-Snyder method is employed.
- The ISCST3 downwash input data consists of an array of 36 wind direction-specific building heights and projected widths for each stack. LB is defined as the lesser of the height and projected width of the building. For directionally dependent building downwash, wake effects are assumed to occur if a stack is situated within a rectangle composed of two lines perpendicular to the wind direction, one line at 5 LB downwind of the building and the other at 2 LB upwind of the building, and by two lines parallel to the wind, each at 0.5 LB away from the side of the building.

For the ambient impact analysis, the complex downwash analysis described above was performed using the current version of EPA's Building Profile Input Program (BPIP—Version 95086). The EPA BPIP program was used to determine the area of influence for each building, whether a particular stack is subject to building downwash, the area of influence for directionally dependent building downwash, and finally to generate the specific building dimension data required by the model. Dimensions of the build-

Table 6-1. Building/Structure Dimensions

Building/Structure	Dimensions Width (meter)	Length (meter)	Height (meter)
Bark Bin	4.3	12.6	14.8
Sawdust (Fines) Bin	4.3	6.4	14.8
Chips Bin	4.3	12.6	14.8
Planermill Cyclone	4.9	6.1	23.2
Planermill Baghouse	5.0	5.0	15.5
Lumber Kilns (each)	10.4	30.5	8.0
Trimmer Building	46.6	55.8	11.2
Sawmill Building	48.2	99.1	13.2
Planermill Building	61.0	213.4	12.3
Rough Green Storage Area	14.6	56.4	9.1
Rough Dry Storage Shed	30.5	53.3	9.1

Sources: ECT, 1999.
Champion, 1999.

-ing/structures evaluated for wake effects are shown in Table 6-1; the locations of these buildings/structures were previously provided on Figure 2-2. BPIP output consists of an array of 36 direction-specific (10 to 360°) building heights and projected building widths for each stack suitable for use as input to the ISCST3 model.

6.7 RECEPTOR GRIDS

Receptors were placed at locations considered to be *ambient air*, which is defined as "that portion of the atmosphere, external to buildings, to which the general public has access." The entire perimeter of the plant site, excluding natural barriers, will be fenced; therefore, the nearest locations of general public access are at the facility property lines.

Consistent with GAQM recommendations, the ambient impact analysis utilized the following receptor grids:

- Fence Line Receptors: Receptors placed on the site boundary spaced 50 meters apart.
- Near-Field Discrete Receptors: Cartesian receptors placed at 100-meter spacings from the site fence line to the first mid-field polar receptor ring located 1 km from the center of the project site.
- Mid-Field Polar Receptors: Receptor rings (with 36 receptors per ring at 10° intervals) starting 1 km from the center of the project site and extending to 5 km at 250-meter spacings.
- Far-Field Polar Receptors: Receptor rings (with 36 receptors per ring at 10° intervals) starting 5.5 km from the site and extending to 10 km at 500-meter spacings.

Each polar receptor ring was offset 5° from the previous ring to improve the spatial distribution.

A depiction of the receptor grids out to distances of 2 and 10 km are shown in Figures 6-1 and 6-2, respectively.

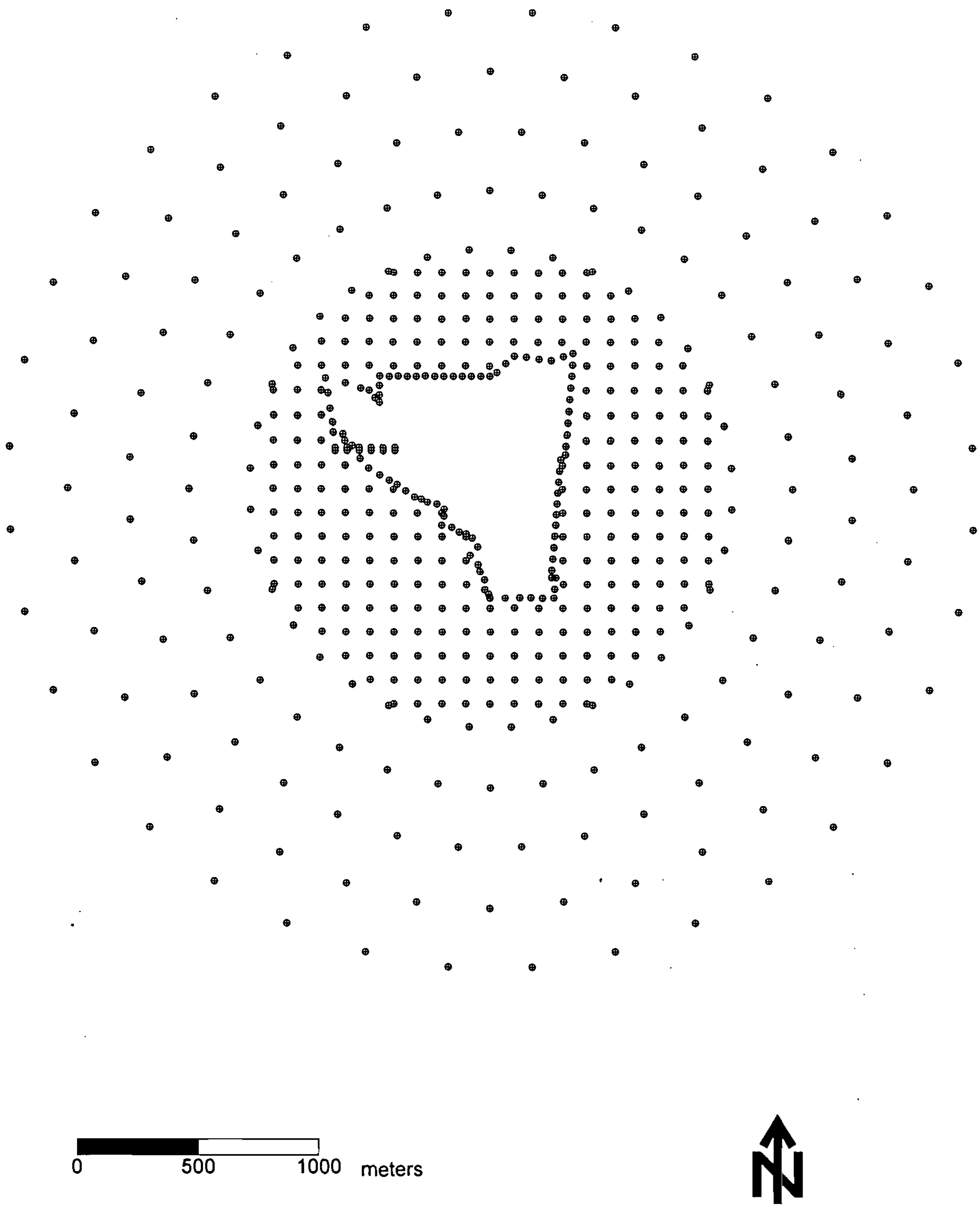

FIGURE 6-1.

RECEPTOR LOCATIONS (WITHIN 2 KM)

Source: ECT, 1999.

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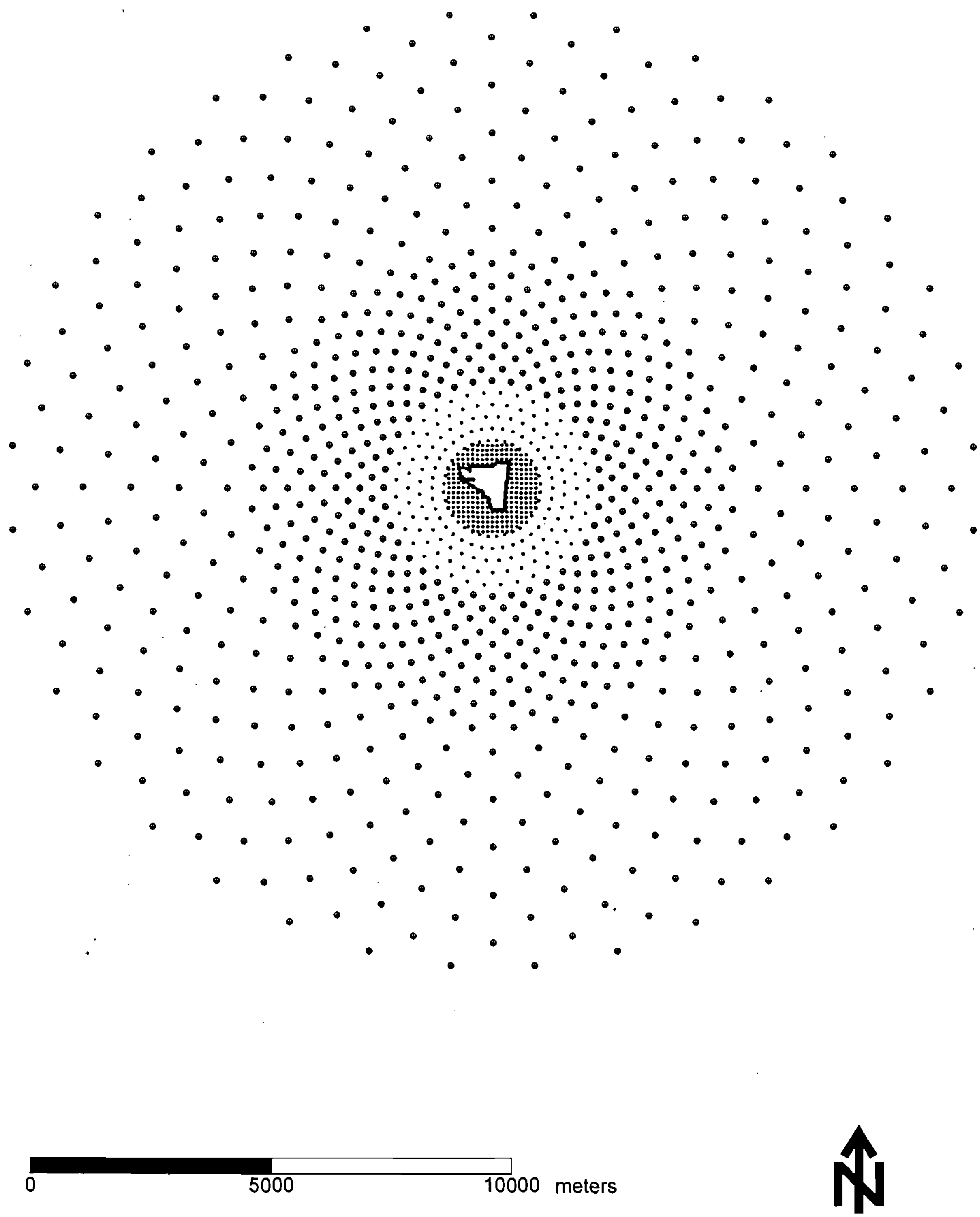

FIGURE 6-2.

RECEPTOR LOCATIONS (FROM 2 TO 10 KM)

Source: ECT, 1999.

ECT
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6.8 METEOROLOGICAL DATA

Detailed meteorological data are needed for modeling with the ISC dispersion models. The ISCST3 model requires a preprocessed data file compiled from hourly surface observations and concurrent twice-daily rawinsonde soundings (i.e., mixing height data).

There are no onsite surface or upper meteorological stations. The nearest offsite surface meteorological station is located at the Pensacola Regional Airport approximately 37 km (23 miles) south, southeast of the McDavid Sawmill site. The nearest offsite upper air meteorological station is located at the Apalachicola Municipal Airport approximately 241 km (150 miles) southeast of the McDavid Sawmill site.

Short-Term Meteorological Data

Consistent with the GAQM and FDEP guidance, 5 consecutive years of the most recent, readily available, representative meteorological data were processed for the ambient impact analysis. For Escambia County, FDEP recommends use of Pensacola surface and Apalachicola upper air meteorological data in conducting the air quality analyses. As recommended by FDEP, 1986 through 1990 Pensacola surface (Pensacola Regional Airport—Station No. 13899) and Apalachicola upper air meteorological data were used in the Ambient Impact Analysis.

The surface and mixing height data for each of the 5 years were processed using the current version of EPA's PCRAMMET (Version 95300) meteorological preprocessing program to generate the meteorological data files in the format required by the ISCST3 dispersion model. PCRAMMET input files consist of the surface and mixing height files as obtained from the EPA SCRAM website. The mixing height file for each year must include mixing height records for December 31 of the year preceding the year of record and for January 1 of the year following the year of record. If records for these 2 days are unavailable, duplicate mixing height records are used with the year, month, and day changed appropriately.

In addition to the surface and mixing height meteorological data files, PCRAMMET requires input with respect to: (a) the use of dry or wet deposition calculations; (b) output filename; (c) output file type (UNFORM or ASCII); (d) surface data format (CD144, SAMSON, or SCRAM); and (e) latitude, longitude, and time zone of the surface meteorological station. In processing the Apalachicola and Pensacola meteorological data, the NONE deposition option was selected, ASCII output file chosen, and the SCRAM surface data format utilized. As obtained from the EPA SCRAM web site, Apalachicola surface station latitude and longitude coordinates (in decimal degrees) are 29.733 and 85.033, respectively. The Pensacola surface station latitude and longitude coordinates (in decimal degrees) are 30.467 and 87.200, respectively. The Pensacola surface station is located in time zone 6.

Actual anemometer height for the Pensacola surface station, obtained from the National Climatic Data Center (NCDC), is 22 ft (6.7 meters) for the time period of interest (i.e., 1986 through 1990).

Processing of the Apalachicola and Pensacola station meteorological data did not require any data replacement or substitution.

6.9 MODELED EMISSION INVENTORY

6.9.1 ON-PROPERTY SOURCES

On-property emission sources addressed in the ambient impact analysis consisted of the two package boilers, three lumber kilns, Planermill dust collector, and fugitive PM/PM_{10} emissions sources (i.e., material handling and storage, outdoor storage piles, and truck traffic on paved roadways.

Emission rates and stack parameters for the McDavid Sawmill point were provided in Table 2-4 of the June 1999 permit application. Facility fugitive emission sources were modeled as volume sources in accordance with recommendations contained in the ISC3 User's Guide. Specifically, the facility paved roadways were modeled as multiple, square volume sources. The facility material handling and storage fugitive emission sources were grouped into one volume source situated at the approximate center of these activities.

6.9.2 OFF-PROPERTY SOURCES

As will be discussed in Section 9.0, maximum air quality impacts are projected to be above the PSD significant impact level for PM/PM_{10}. Accordingly, a full, multi-source interactive assessment of PM_{10} NAAQS attainment and PSD Class II increment consumption was required for the proposed sawmill.

An inventory of PM/PM_{10} emission sources within approximately 75 km of the proposed sawmill was obtained from FDEP. A summary of the FDEP off-property PM_{10} emission sources is provided on Table 6-2. A request for modeling data for PM/PM_{10} sources located in Escambia and Baldwin Counties, Alabama was also requested from the Alabama Department of Environmental Management (ADEM). However, ADEM indicated that it may take several weeks to provide the requested inventory. Due to time constraints, the modeling analysis was conducted using only Florida off-site emissions data. As will be further discussed in Section 9.0, Ambient Impact Analysis Results, contributions to maximum McDavid Sawmill impacts from emission sources located in Alabama are expected to be insignificant.

Off-property PM/PM_{10} emission sources included in the dispersion modeling analysis for the McDavid Sawmill consisted of all emission sources listed on Table 6-2 located within approximately 52 km of the project site; i.e., within the 1.3-km area of impact (AOI) distance plus 50 km, having potential/allowable emissions satisfying the "20D" rule. The "20D" rule allows for the screening of small, distant emission sources by means of the following algorithm:

$$E = 20 \times D$$

where,

E = Potential/allowable emission rate in tons per year
D = distance from the proposed sawmill in km

Off-site emission sources having emissions greater than E were included in the dispersion modeling inventory. Modeled off-property PM/PM_{10} emission sources are highlighted on Table 6-2.

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	3	12	2.7	76	26,004	75	PM	17.8	77.92	17.8	77.92
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	3	12	2.7	76	26,004	75	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	6	35	0.4	70	352	46	PM	6.15	5.6		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	6	35	0.4	70	352	46	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	9	30	6.8	70	28,200	12	PM	4	16.2		16.1
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	9	30	6.8	70	28,200	12	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	10	32	5.5	70	4,007	2	PM	4.9			21.5
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	10	32	5.5	70	4,007	2	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	11	12	3.3	70	49,813	97	PM	11.2			49.1
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	11	12	3.3	70	49,813	97	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	12	31	5.5	70	49,300	34	PM	5.9			25.9
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	12	31	5.5	70	49,300	34	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	14	30	6.8	70	30,000	13	PM	3.5			14.1
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	14	30	8.8	70	30,000	13	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	15	32	1.7	117	2,903	21	PM	0.2958	1.29		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	15	32	1.7	117	2,903	21	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	21	35	5.7	150	43,021	28	PM		7.19		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	21	35	5.7	150	43,021	28	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	25	26	7.3	135	71,015	28	PM		4.84		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	25	28	7.3	135	71,015	28	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	28	28	1.5	70	2,737	25	PM				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	28	28	1.5	70	2,737	25	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	29	35	3.4	177	10,568	19	PM	0.63	2.7594		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	29	35	3.4	177	10,568	19	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	31	35	8.4	242	57,900	29	PM		1.13		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	31	35	6.4	242	57,900	29	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	42	40	2	77			PM	9.33	40.86		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	42	40	2	77			PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	48	40	0.5	86	900	76	PM	8.97	39.29	8.97	
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	48	40	0.5	86	900	76	PM10	7.5	33		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	50	57	6.3	437	123,242	65	PM	18.1			79.3
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	50	57	6.3	437	123,242	65	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	54	32	5.5	82	35,911	25	PM	13.9			60.9
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	54	32	5.5	82	35,911	25	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	55	50	3.5	144	20,175	34	PM	9		9	39.4
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	55	50	3.5	144	20,175	34	PM10	7.46	32.7		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	56	32	5.5	70	30,000	21	PM	7.3			32
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	56	32	5.5	70	30,000	21	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	60	10	0.5		950	80	PM	0.037	0.0062		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	60	10	0.5		950	80	PM10	0.0019	0.0085		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	65	19	3.4	96	37,500	68	PM	2.4			10.5
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	65	19	3.4	96	37,500	68	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	66	19	3.4	96	37,500	68	PM				10.5
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	66	19	3.4	96	37,500	68	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	68	35	0.5	179	8,000	679	PM				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	68	35	0.5	179	8,000	679	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	70	35	2.3	70	15,000	60	PM				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	70	35	2.3	70	15,000	60	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	71	35	2.3	70	15,000	60	PM				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	71	35	2.3	70	15,000	60	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	72	35	1.5	500	4,000	37	PM		0.007		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	72	35	1.5	500	4,000	37	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	73	35	1.5	500	4,000	37	PM		0.007		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	73	35	1.5	500	4,000	37	PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	74	18	1.2	77			PM	0	0		
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	74	18	1.2	77			PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	76						PM				

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	76						PM10				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	76						PM				
0330006	ARMSTRONG WORLD INDUSTRIES	475.9	3,363.5	43.6	78						PM10				
0330024	APAC-FLORIDA INC., E.M. CHADBOURN	454.5	3,414.6	16.4	1	31	5	250	45,000	38	PM		21.25		
0330024	APAC-FLORIDA INC., E.M. CHADBOURN	454.5	3,414.6	16.4	1	31	5	250	45,000	38	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	1	20	0.8	1400	169	5	PM	0.145	0.64		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	1	20	0.8	1400	169	5	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	2	60	4	435	71,000	94	PM	2.8	12.28		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	2	60	4	435	71,000	94	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	3	125	12	230	236,943	34	PM	0.63	2.75		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	3	125	12	230	236,943	34	PM10	0.63	2.75		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	4	125	12	230	236,943	34	PM	0.63	2.75		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	4	125	12	230	236,943	34	PM10	0.63	2.75		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	5	125	2.7	311	6,318	18	PM				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	5	125	2.7	311	6,318	18	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	7	125	2.7	311	7,198	20	PM	0.17	0.745		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	7	125	2.7	311	7,198	20	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	8	125	2.7	311	7,198	20	PM				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	8	125	2.7	311	7,198	20	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	9	125	2.7	311	7,198	20	PM	0.17	0.745		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	9	125	2.7	311	7,198	20	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	10	125	2.7	311	7,198	20	PM	0.17	0.745		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	10	125	2.7	311	7,198	20	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	11	125	2.7	311	7,198	20	PM	0.17	0.745		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	11	125	2.7	311	7,198	20	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	12	70	0.8	1400	169	5	PM	0.005	0.01		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	12	70	0.8	1400	169	5	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	13	125	2.7	311	9,798	28	PM	0.4	1.752		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	13	125	2.7	311	9,798	28	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	14	150	10	360	168,664	35	PM	9.2	40.3		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	14	150	10	360	168,664	35	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	15	150	10	360	166,664	35	PM	0.37			
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	15	150	10	360	168,664	35	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	16	150	10	360	168,664	35	PM	0.3			
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	16	150	10	360	168,664	35	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	28	60	1	70	3,530	74	PM	0.91	3.9	0.91	3.9
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	28	60	1	70	3,530	74	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	30	70	0.8	1400	169	5	PM	0.005	0.01		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	30	70	0.8	1400	169	5	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	31	70	0.8	1400	169	5	PM	0.005	2.1	0.005	2.1
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	31	70	0.8	1400	169	5	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	32	100	15	300	799	75	PM	3.9	17.1		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	32	100	15	300	799	75	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	38	33	0.3	200	100	23	PM				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	38	33	0.3	200	100	23	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	44	35	0.3	435	20	4	PM	2.4	10.512		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	44	35	0.3	435	20	4	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	45	115	0.9	77	2,100	55	PM	8.48		8.48	37
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	45	115	0.9	77	2,100	55	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	47	64	1	120	2,500	53	PM	4.73	20.72	4.73	
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	47	64	1	120	2,500	53	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	49	90	4.8	393	50,257	46	PM				7.9
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	49	90	4.8	393	50,257	46	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	50	60	1	86	12,000	254	PM	14.97			
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	50	60	1	86	12,000	254	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	51	60	1	77	2,000	42	PM	19.24	84.2712		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	51	60	1	77	2,000	42	PM10				

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	52	120	0.3		330	77	PM	0.08	0.35		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	52	120	0.3		330	77	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	53	60	3.3	1600	2,289	4	PM				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	53	60	3.3	1600	2,289	4	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	54	60	3	1500	9,100	21	PM				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	54	60	3	1500	9,100	21	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	59	20	0.8	1400	350	11	PM	0.61	0.22		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	59	20	0.6	1400	350	11	PM10	0.0325	0.154		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	60	54	1	136	7,000	148	PM	1.34	5.87		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	60	54	1	136	7,000	148	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	61	25	1.4	80	9,000	97	PM	9.5		9.5	42
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	61	25	1.4	80	9,000	97	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	62	25	1.4	80	9,000	97	PM	9.5		9.5	42
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	62	25	1.4	80	9,000	97	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	63	25	1.4	80	9,000	97	PM	9.5		9.5	
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	63	25	1.4	60	9,000	97	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	64	25	1.4	80	9,000	97	PM	9.5		9.5	41
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	64	25	1.4	80	9,000	97	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	65	115	1.5	110	9,000	84	PM	9.5	41.61	9.5	
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	65	115	1.5	110	9,000	84	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	66	25	1.4	80	9,000	97	PM	10.9	47.742	10.9	47.742
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	66	25	1.4	80	9,000	97	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	67	30	1	1500	630	13	PM	0.01			
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	67	30	1	1500	630	13	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	68	50	0.5	2930	380	32	PM				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	68	50	0.5	2930	380	32	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	69	70	0.8	1400	169	5	PM	0.005	0.01		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	69	70	0.8	1400	169	5	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	70						PM				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	70						PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	71						PM	4.73	20.72	4.73	
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	71						PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	72						PM	4.73	20.72	4.73	
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	72						PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	73	25	3	72	19,080	44	PM	27	118	4.9	21.5
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	73	25	3	72	19,080	44	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	75	125	2.7	311	9,798	28	PM				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	75	125	2.7	311	9,798	28	PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	76	125	3.5	158			PM	1.19	5.21		
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	76	125	3.5	158			PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	79	54	1	136			PM	1.35	5.91	1.35	5.91
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	79	54	1	136			PM10				
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	80	50	0.3	80			PM	0.21	0.92	0.21	0.92
0330040	SOLUTIA, INC.	476.0	3,385.0	22.7	80	50	0.3	80			PM10				
0330041	SACRED HEART HEALTH SYSTEM	480.0	3,372.0	36.3	3	73	3	300	3,280	7	PM	0.26	1.23		
0330041	SACRED HEART HEALTH SYSTEM	480.0	3,372.0	36.3	3	73	3	300	3,280	7	PM10				
0330041	SACRED HEART HEALTH SYSTEM	480.0	3,372.0	36.3	4	36	3	1800	16,041	37	PM	0.592	2.59		
0330041	SACRED HEART HEALTH SYSTEM	480.0	3,372.0	36.3	4	36	3	1800	16,041	37	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	2	47	4	500	65,000	86	PM				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	2	47	4	500	65,000	86	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	3	125	8.5	350	161,000	47	PM	2.67	11.7	2.67	11.7
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	3	125	8.5	350	161,000	47	PM10	2.67	11.7	2.67	11.7
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	28	136	6.5	157	57,208	28	PM	10.9	47.7	10.9	47.7
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	28	136	6.5	157	57,208	28	PM10	10.9	47.7		
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	29	182	9	418	274,172	71	PM	111	486.16	111	486.18
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	29	182	9	418	274,172	71	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	30	182	9	430	252,670	68	PM	111	486.18	111	

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	UTM Coordinates NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	30	182	9	430	252,670	66	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	32	172	4	160	17,200	22	PM	26.4	104	26.4	
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	32	172	4	160	17,200	22	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	33	148	8	146	110,300	36	PM	26.6	118.3		118.3
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	33	148	8	146	110,300	36	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	36	88	4	153	23,600	31	PM	7.61			
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	36	88	4	153	23,600	31	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	37	221	11	144	229,000	40	PM	766	3355.1		240.9
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	37	221	11	144	229,000	40	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	38	172	4	160	17,200	22	PM	28.4	115.63	26.4	115.63
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	38	172	4	160	17,200	22	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	39	75	2	77	9,500	50	PM				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	39	75	2	77	9,500	50	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	40						PM				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	40						PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	44	80	0.7	77	794	34	PM				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	44	80	0.7	77	794	34	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	45	35	1	1000	2,700	57	PM				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	45	35	1	1000	2,700	57	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	46	90	2.3	190	12,500	50	PM	1.59	6.96	1.59	6.96
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	46	90	2.3	190	12,500	50	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	47	60	0.3	50	146	34	PM				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	47	60	0.3	50	146	34	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	48	60	0.3	50	146	34	PM				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	48	60	0.3	50	146	34	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	49	60	0.3	50	146	34	PM				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	49	60	0.3	50	146	34	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	51	67	1.5	158	8,227	77	PM				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	51	67	1.5	158	8,227	77	PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	52			77			PM	44.846	196.4		
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	52			77			PM10				
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	58	38	1.5	77	5,500	51	PM	0.846	2.21		
0330042	CHAMPION INTERNATIONAL CORPORA	469.0	3,385.8	20.8	58	38	1.5	77	5,500	51	PM10	0.312	0.786		
0330043	REICHHOLD, INC.	478.6	3,364.8	42.9	16	25	2.1	285	7,546	36	PM	0.1	0.438		
0330043	REICHHOLD, INC.	478.6	3,364.8	42.9	16	25	2.1	285	7,546	36	PM10				
0330043	REICHHOLD, INC.	478.6	3,364.8	42.9	17	25	2.1	285	10,733	51	PM	0.13	0.57		
0330043	REICHHOLD, INC.	478.6	3,364.8	42.9	17	25	2.1	285	10,733	51	PM10				
0330045	GULF POWER CO	478.3	3,381.4	26.9	1	450	18	290	802,500	52	PM	0.32	1.4		
0330045	GULF POWER CO	478.3	3,381.4	26.9	1	450	18	290	802,500	52	PM10				
0330045	GULF POWER CO	478.3	3,381.4	26.9	2	450	18	290	802,500	52	PM	32.009	140.2		
0330045	GULF POWER CO	478.3	3,381.4	26.9	2	450	18	290	802,500	52	PM10				
0330045	GULF POWER CO	478.3	3,381.4	26.9	3	450	18	290	802,500	52	PM	55	240.9		
0330045	GULF POWER CO	478.3	3,381.4	26.9	3	450	18	290	802,500	52	PM10	55	240.9		
0330045	GULF POWER CO	478.3	3,381.4	26.9	4	450	18	290	802,500	52	PM	1.02	4.49		
0330045	GULF POWER CO	478.3	3,381.4	26.9	4	450	18	290	802,500	52	PM	1.02	4.49		
0330045	GULF POWER CO	478.3	3,381.4	26.9	4	450	18	290	802,500	52	PM10				
0330045	GULF POWER CO	478.3	3,381.4	26.9	5	450	18	290	802,500	52	PM	47.64	208.7		
0330045	GULF POWER CO	478.3	3,381.4	26.9	5	450	18	290	802,500	52	PM	47.64	208.7		
0330045	GULF POWER CO	476.3	3,381.4	26.9	5	450	18	290	602,500	52	PM10	2.2	9.64		
0330045	GULF POWER CO	478.3	3,381.4	26.9	6	450	23.2	320	2,462,700	97	PM	313.64	1152		
0330045	GULF POWER CO	478.3	3,381.4	28.9	8	450	23.2	320	2,462,700	97	PM	313.84	1152		
0330045	GULF POWER CO	478.3	3,381.4	26.9	6	450	23.2	320	2,462,700	97	PM10				
0330045	GULF POWER CO	478.3	3,381.4	26.9	7	450	23.2	270	2,462,700	97	PM	450.8	1975		
0330045	GULF POWER CO	478.3	3,381.4	26.9	7	450	23.2	270	2,462,700	97	PM	450.8	1975		
0330045	GULF POWER CO	478.3	3,381.4	28.9	7	450	23.2	270	2,462,700	97	PM10				
0330045	GULF POWER CO	478.3	3,381.4	26.9	8	125	2.8	100	5,452	14	PM				
0330045	GULF POWER CO	478.3	3,381.4	26.9	8	125	2.8	100	5,452	14	PM10				

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	UTM Coordinates NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
0330054	FUNERAL SERVICES ACOUISITION GRC	478.7	3,368.0	39.8	1	16	1.7	700	5,220	38	PM				
0330054	FUNERAL SERVICES ACOUISITION GRC	478.7	3,368.0	39.8	1	16	1.7	700	5,220	36	PM10				
0330055	SOUTHERN PRESTRESSED, INC.	478.4	3,372.7	35.2	1	30	3.9	70	500		PM				
0330055	SOUTHERN PRESTRESSED, INC.	478.4	3,372.7	35.2	1	30	3.9	70	500		PM10				
0330060	COASTAL FUELS MARKETING, INC.	479.6	3,363.4	44.5	4	30	2.5	665	4,640	15	PM	0.151	0.663		
0330060	COASTAL FUELS MARKETING, INC.	479.8	3,363.4	44.5	4	30	2.5	665	4,640	15	PM10				
0330060	COASTAL FUELS MARKETING, INC.	479.6	3,363.4	44.5	5	30	2.5	665	4,640	15	PM	0.151	0.663		
0330060	COASTAL FUELS MARKETING, INC.	479.6	3,363.4	44.5	5	30	2.5	665	4,640	15	PM10				
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	28.9	3	60	0.6	90			PM				
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	3	80	0.8	90			PM10				
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	4	80	0.8	90			PM				
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	4	80	0.8	90			PM10				
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	5	60	0.7	75	800	34	PM	0.0025	0.0033		
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	5	60	0.7	75	800	34	PM10				
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	6	80	0.7	75	800	34	PM	0.0007	0.0009		
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	28.9	6	60	0.7	75	800	34	PM10				
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	7	50	0.4	70			PM	0.0025	0.0033		
0330063	SHEAR CONCRETE PRODUCTS, INC.	474.2	3,380.2	26.9	7	50	0.4	70			PM10				
0330064	UNIVERSITY OF WEST FLORIDA	479.8	3,379.5	29.2	1	50	6	320	2,600	1	PM				
0330064	UNIVERSITY OF WEST FLORIDA	479.8	3,379.5	29.2	1	50	8	320	2,600	1	PM10				
0330064	UNIVERSITY OF WEST FLORIDA	479.8	3,379.5	29.2	2	50	6	320	2,600	1	PM				
0330064	UNIVERSITY OF WEST FLORIDA	479.8	3,379.5	29.2	2	50	6	320	2,600	1	PM10				
0330064	UNIVERSITY OF WEST FLORIDA	479.8	3,379.5	29.2	3						PM				
0330064	UNIVERSITY OF WEST FLORIDA	479.8	3,379.5	29.2	3						PM10				
0330067	ESCAMBIA COUNTY UTILITIES AUTHOR	478.9	3,363.7	44.0	1	86	4.5	110	95,000	99	PM	2.28	9.96	2.28	9.96
0330067	ESCAMBIA COUNTY UTILITIES AUTHOR	478.9	3,363.7	44.0	1	86	4.5	110	95,000	99	PM10				
0330067	ESCAMBIA COUNTY UTILITIES AUTHOR	478.9	3,363.7	44.0	2	86	4.5	110	95,000	99	PM	2.28	9.96	2.28	9.96
0330067	ESCAMBIA COUNTY UTILITIES AUTHOR	478.9	3,363.7	44.0	2	86	4.5	110	95,000	99	PM10				
0330070	FLORIDA MINING & MATERIALS (W FL (	476.0	3,375.3	32.1	1	20	0.5	70	100	8	PM				
0330070	FLORIDA MINING & MATERIALS (W FL (	476.0	3,375.3	32.1	1	20	0.5	70	100	8	PM10				
0330070	FLORIDA MINING & MATERIALS (W FL (	476.0	3,375.3	32.1	2	20	0.5	86	100	8	PM				
0330070	FLORIDA MINING & MATERIALS (W FL (	476.0	3,375.3	32.1	2	20	0.5	86	100	8	PM10				
0330071	BUILDERS READY MIX CONCRETE COM	473.9	3,380.4	26.7	1	40	0.5	70	100	8	PM				
0330071	BUILDERS READY MIX CONCRETE COM	473.9	3,380.4	26.7	1	40	0.5	70	100	8	PM10				
0330071	BUILDERS READY MIX CONCRETE COM	473.9	3,380.4	26.7	2	40	0.5	86	750	63	PM				
0330071	BUILDERS READY MIX CONCRETE COM	473.9	3,380.4	26.7	2	40	0.5	86	750	63	PM10				
0330071	BUILDERS READY MIX CONCRETE COM	473.9	3,380.4	26.7	3	40	0.5	86	750	63	PM				
0330071	BUILDERS READY MIX CONCRETE COM	473.9	3,380.4	26.7	3	40	0.5	86	750	63	PM10				
0330071	BUILDERS READY MIX CONCRETE COM	473.9	3,380.4	26.7	4	60	0.5	86	750	63	PM				
0330071	BUILDERS READY MIX CONCRETE COM	473.9	3,380.4	26.7	4	60	0.5	86	750	63	PM10				
0330080	G.S.I. RECYCLING, INC.	475.0	3,366.5	40.5	1	32	2	2200	5,445	28	PM	2.878	2.94		
0330080	G.S.I. RECYCLING, INC.	475.0	3,366.5	40.5	1	32	2	2200	5,445	28	PM10				
0330081	SOUTHERN SCRAP COMPANY, INC.	478.2	3,367.7	40.0	1	32	2	1335	5,445	28	PM				
0330081	SOUTHERN SCRAP COMPANY, INC.	478.2	3,367.7	40.0	1	32	2	1335	5,445	28	PM10				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	15	27	2	500	6,073	32	PM	0.14	0.48		
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	15	27	2	500	6,073	32	PM10				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	16	27	2	500	6,073	32.2	PM				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	16	27	2	500	6,073	32.2	PM10				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	24	24	1.5	340	655	6	PM	0.029	0.126		
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	24	24	1.5	340	655	6	PM10	0.0288	0.126		
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	27	62	3	500	11,928	28	PM	0.231	1.0118		
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	27	62	3	500	11,928	28	PM10	0.231	1.0118		
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	39						PM				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	39						PM10				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	40						PM				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	40						PM10				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	42						PM				

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	UTM Coordinates NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	42						PM10				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	44						PM				
0330082	UNITED STATES NAVY	472.3	3,358.3	48.4	44						PM10				
0330086	NAVAL HOSPITAL	471.2	3,362.3	44.3	2	27	1	1800	895	18	PM	0.13	0.56		
0330086	NAVAL HOSPITAL	471.2	3,362.3	44.3	2	27	1	1800	895	18	PM10	0.13	0.56		
0330086	NAVAL HOSPITAL	471.2	3,362.3	44.3	3	12	1.2	360	8,268	121	PM	0.37	1.6		
0330086	NAVAL HOSPITAL	471.2	3,362.3	44.3	3	12	1.2	360	8,268	121	PM10	0.6	2.63		
0330086	NAVAL HOSPITAL	471.2	3,362.3	44.3	4	12	1.6	360	8,268	68	PM	0.37	1.6		
0330086	NAVAL HOSPITAL	471.2	3,362.3	44.3	4	12	1.6	360	8,268	68	PM10	0.6	2.63		
0330086	NAVAL HOSPITAL	471.2	3,362.3	44.3	5	12	1.6	360	8,268	68	PM	0.36	1.6		
0330086	NAVAL HOSPITAL	471.2	3,362.3	44.3	5	12	1.6	360	8,268	68	PM10	0.6	2.63		
0330091	SCI OF FL/GUARDIAN CHAPELS/D.B.A.	473.5	3,364.2	42.6	1	18	2.6	588	2,092	6	PM				
0330091	SCI OF FL/GUARDIAN CHAPELS/D.B.A.	473.5	3,364.2	42.6	1	18	2.6	588	2,092	6	PM10				
0330091	SCI OF FL/GUARDIAN CHAPELS/D.B.A.	473.5	3,364.2	42.6	2	18	1.7	1200	2,200	16.2	PM	0.43	1.9		
0330091	SCI OF FL/GUARDIAN CHAPELS/D.B.A.	473.5	3,364.2	42.6	2	18	1.7	1200	2,200	16.2	PM10				
0330093	SOUTHDOWN INCORPORATED	475.5	3,374.9	32.4	1	40	1.7	86	2,300	16	PM	0.887	0.059		
0330093	SOUTHDOWN INCORPORATED	475.5	3,374.9	32.4	1	40	1.7	86	2,300	16	PM10				
0330096	NAVY PUBLIC WORKS CENTER	467.0	3,370.0	36.6	2	60	2	400			PM	0.04	0.12		
0330096	NAVY PUBLIC WORKS CENTER	467.0	3,370.0	36.6	2	60	2	400			PM10				
0330096	NAVY PUBLIC WORKS CENTER	467.0	3,370.0	36.6	3	60	2	400			PM	0.92	2.76		
0330096	NAVY PUBLIC WORKS CENTER	467.0	3,370.0	36.6	3	60	2	400			PM10				
0330096	NAVY PUBLIC WORKS CENTER	467.0	3,370.0	36.6	4	60	2	400			PM	0.92	2.76		
0330096	NAVY PUBLIC WORKS CENTER	467.0	3,370.0	36.6	4	60	2	400			PM10				
0330097	NAVY PUBLIC WORKS CENTER	472.2	3,363.8	42.9	3	30	2	500	5,000	26	PM	0.05	0.1		
0330097	NAVY PUBLIC WORKS CENTER	472.2	3,363.8	42.9	3	30	2	500	5,000	26	PM10				
0330097	NAVY PUBLIC WORKS CENTER	472.2	3,363.8	42.9	4	30	2	500	5,000	26	PM	0.99	1.98		
0330097	NAVY PUBLIC WORKS CENTER	472.2	3,363.8	42.9	4	30	2	500	5,000	26	PM10				
0330097	NAVY PUBLIC WORKS CENTER	472.2	3,363.8	42.9	5	30	2	500	5,000	26	PM				
0330097	NAVY PUBLIC WORKS CENTER	472.2	3,363.8	42.9	5	30	2	500	5,000	26	PM10				
0330097	NAVY PUBLIC WORKS CENTER	472.2	3,363.8	42.9	6	38	2.3	582	9,151	36	PM		1.37		
0330097	NAVY PUBLIC WORKS CENTER	472.2	3,363.8	42.9	6	38	2.3	582	9,151	36	PM10		1.37		
0330098	SHEAR CONCRETE PRODUCTS COMPA	462.0	3,361.2	45.9	1	40	0.5	86	1,000	84	PM				
0330098	SHEAR CONCRETE PRODUCTS COMPA	462.0	3,361.2	45.9	1	40	0.5	86	1,000	64	PM10				
0330100	SIKES CONCRETE PIPE COMPANY	475.1	3,374.8	32.6	1	40	0.5	86	750	63	PM				
0330100	SIKES CONCRETE PIPE COMPANY	475.1	3,374.6	32.6	1	40	0.5	88	750	63	PM10				
0330105	ABB SERVICES COMPANY	472.6	3,377.0	29.8	1	26	1.7	1400	2,383	17	PM	0.141	0.618		
0330105	ABB SERVICES COMPANY	472.6	3,377.0	29.8	1	26	1.7	1400	2,383	17	PM10				
0330110	COUCH, INC.	478.8	3,367.5	40.3	1	65	0.5	86	400	33	PM				
0330110	COUCH, INC.	478.6	3,367.5	40.3	1	65	0.5	86	400	33	PM10				
0330112	APAC-FLORIDA INC., E.M. CHADBOURN	472.7	3,361.1	45.6	1	29	2.5	325	38,500	130	PM	6.19	27.11		
0330112	APAC-FLORIDA INC., E.M. CHADBOURN	472.7	3,361.1	45.6	1	29	2.5	325	38,500	130	PM10				
0330114	PENSACOLA CHRISTIAN COLLEGE, INC	477.8	3,371.0	36.7	3	37	1.3	1000	7,500	94.2	PM	0.0033	0.015		
0330114	PENSACOLA CHRISTIAN COLLEGE, INC	477.8	3,371.0	36.7	3	37	1.3	1000	7,500	94.2	PM10		0.57		
0330114	PENSACOLA CHRISTIAN COLLEGE, INC	477.8	3,371.0	36.7	5	37	1.1	1000	7,500	131.5	PM	0.0066	0.029		
0330114	PENSACOLA CHRISTIAN COLLEGE, INC	477.8	3,371.0	38.7	5	37	1.1	1000	7,500	131.5	PM10	0.26	1.13		
0330114	PENSACOLA CHRISTIAN COLLEGE, INC	477.8	3,371.0	36.7	6						PM				
0330114	PENSACOLA CHRISTIAN COLLEGE, INC	477.8	3,371.0	36.7	6						PM10				
0330114	PENSACOLA CHRISTIAN COLLEGE, INC	477.8	3,371.0	36.7	7						PM10				
0330118	HARRIS CONCRETE AND PATIO CENTE	470.7	3,362.5	44.1	1	35	0.9	90	468	12	PM	0.3	0.54		
0330118	HARRIS CONCRETE AND PATIO CENTE	470.7	3,362.5	44.1	1	35	0.9	90	468	12	PM10	3	5.4		
0330119	WESTINGHOUSE ELECTRIC COMPANY	463.9	3,375.6	34.5	1	34	2.8	86			PM	2.25	9.86	2.25	9.86
0330119	WESTINGHOUSE ELECTRIC COMPANY	483.9	3,375.6	34.5	1	34	2.8	86			PM10	2.25	9.86		
0330119	WESTINGHOUSE ELECTRIC COMPANY	463.9	3,375.6	34.5	3						PM10		8.69		8.69
0330121	AUTOSHRED RECYCLING, L.L.C.	475.8	3,363.4	43.7	1	65	5	90	1,500	1	PM	4.1	8.81		
0330121	AUTOSHRED RECYCLING, L.L.C.	475.8	3,363.4	43.7	1	65	5	90	1,500	1	PM10				
0330122	HUDSCO, INC.	480.8	3,375.8	33.0	1	26	2	400	18,000	95	PM	3.8	3.8		
0330122	HUDSCO, INC.	480.8	3,375.8	33.0	1	26	2	400	18,000	95	PM10				

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
0330123	MAACO AUTO PAINTING & BODYWORK:	475.2	3,373.2	34.0	1	20	2.8	90	1,500	4	PM	1	1		
0330123	MAACO AUTO PAINTING & BODYWORK:	475.2	3,373.2	34.0	1	20	2.8	90	1,500	4	PM10				
0330126	ARIZONA CHEMICAL - DIV OF IPCO	476.6	3,363.9	43.4	1	60	0.5	90			PM				
0330126	ARIZONA CHEMICAL - DIV OF IPCO	476.6	3,363.9	43.4	1	60	0.5	90			PM10				
0330126	ARIZONA CHEMICAL - DIV OF IPCO	476.6	3,363.9	43.4	12	11	1.1	70	4,500	76	PM	4.2			
0330126	ARIZONA CHEMICAL - DIV OF IPCO	476.6	3,363.9	43.4	12	11	1.1	70	4,500	76	PM10		1.63		
0330126	ARIZONA CHEMICAL - DIV OF IPCO	476.6	3,363.9	43.4	24			77			PM				
0330126	ARIZONA CHEMICAL - DIV OF IPCO	476.6	3,363.9	43.4	24			77			PM10				
0330126	ARIZONA CHEMICAL - DIV OF IPCO	476.6	3,363.9	43.4	25	16	0.5	120	500	42	PM	4.6			
0330126	ARIZONA CHEMICAL - DIV OF IPCO	476.6	3,363.9	43.4	25	16	0.5	120	500	42	PM10		2		
0330127	PALL MEMBRANE TECHNOLOGY CENTI	480.3	3,376.4	32.3	9	17	1	77	2,800	59.4	PM		0.14		
0330127	PALL MEMBRANE TECHNOLOGY CENTI	480.3	3,376.4	32.3	9	17	1	77	2,800	59.4	PM10				
0330129	ENVIRO-MATES, INCORPORATED	474.6	3,363.0	44.0	1						PM	14.97	65.57	14.97	65.57
0330132	FREEPORT-MCMORAN SULPHUR LLC	480.0	3,363.2	44.8	1	30	2.5	76	1,455	4	PM	3.92	16.97		
0330132	FREEPORT-MCMORAN SULPHUR LLC	480.0	3,363.2	44.8	1	30	2.5	76	1,455	4	PM10	3.46	14.98		
0330132	FREEPORT-MCMORAN SULPHUR LLC	480.0	3,363.2	44.8	2	15	2.5	76	1,455	4	PM	0.68	0.85		
0330132	FREEPORT-MCMORAN SULPHUR LLC	480.0	3,363.2	44.6	2	15	2.5	76	1,455	4	PM10	0.6	0.75		
0330132	FREEPORT-MCMORAN SULPHUR LLC	480.0	3,363.2	44.8	3	15	2.5	76	1,455	4	PM	0.68	2.98		
0330132	FREEPORT-MCMORAN SULPHUR LLC	480.0	3,363.2	44.8	3	15	2.5	76	1,455	4	PM10	0.6	0.3942		
0330133	ADVANCED ELASTOMER SYSTEMS, L.P	476.5	3,384.6	23.3	6						PM	7.3	4.6	7.3	4.6
0330133	ADVANCED ELASTOMER SYSTEMS, L.P	476.5	3,384.6	23.3	6						PM10				
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	1	30	3	90	6,000	14	PM	7.68	9.6		
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	1	30	3	90	6,000	14	PM10				
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	2	30	1.5	90	12,000	113	PM	4.32	5.4		
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	2	30	1.5	90	12,000	113	PM10				
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	3	30	2	90	8,000	42	PM	2.4	3		
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	3	30	2	90	8,000	42	PM10				
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	4	30	3.6	90	12,000	17	PM	14.4	18		
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	4	30	3.6	90	12,000	17	PM10				
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	5	40	3	90	2,000	4	PM	1.92	2.4		
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	5	40	3	90	2,000	4	PM10				
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	6	35	3.6	90	2,000	2	PM	19.44	24.3		
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	6	35	3.6	90	2,000	2	PM10				
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	7	25	1.7	90	2,000	14	PM	12.24	15.3		
0330136	WEST FLORIDA COTTON GIN	453.4	3,427.9	26.3	7	25	1.7	90	2,000	14	PM10				
0330141	ECONO AUTOPAINTING OF PENSACOL/	477.8	3,369.4	38.2	1	30	2	70	9,100	48	PM	0.43	0.67		
0330141	ECONO AUTOPAINTING OF PENSACOL/	477.6	3,369.4	38.2	1	30	2	70	9,100	46	PM10				
0330144	FACT-O-BAKE OF PENSACOLA, INC.	476.5	3,371.0	36.4	1	18	2.7	70	16,755	46	PM	0.23	0.44		
0330144	FACT-O-BAKE OF PENSACOLA, INC.	476.5	3,371.0	36.4	1	18	2.7	70	16,755	46	PM10				
0330248	SPECIALTY MINERALS, INC.	469.6	3,374.6	31.9	1	9	0.67				PM	0.43	1.9		
0330248	SPECIALTY MINERALS, INC.	469.6	3,374.6	31.9	1	9	0.67				PM10	0.43	1.9		
0330248	SPECIALTY MINERALS, INC.	469.6	3,374.6	31.9	2	65	2	125	8,600	45.6	PM	1.53	6.4		
0330248	SPECIALTY MINERALS, INC.	469.6	3,374.6	31.9	2	65	2	125	8,600	45.6	PM10	1.53	6.4		
0330250	BORAL MATERIAL TECHNOLOGIES INC.	478.4	3,381.6	26.7	1						PM		0.011		
0330256	HENRY CHAMBERLAIN	480.3	3,363.5	44.6	1	25	3.5	220			PM				
0330256	HENRY CHAMBERLAIN	480.3	3,363.5	44.6	1	25	3.5	220			PM10				
0910016	CRESTVIEW READY MIX	541.9	3,407.5	73.1	2	50	0.5	86	1,000	84	PM				
0910016	CRESTVIEW READY MIX	541.9	3,407.5	73.1	2	50	0.5	86	1,000	84	PM10				
0910016	CRESTVIEW READY MIX	541.9	3,407.5	73.1	3	50	0.5	86	1,000	84	PM				
0910016	CRESTVIEW READY MIX	541.9	3,407.5	73.1	3	50	0.5	86	1,000	84	PM10				
0910025	FLORIDA MINING & MATERIALS	548.5	3,384.3	90.2	1	50	0.2	77	100	53	PM		3.47		
0910025	FLORIDA MINING & MATERIALS	548.5	3,384.3	90.2	1	50	0.2	77	100	53	PM10		3.47		
0910027	FLORIDA MINING & MATERIALS	536.0	3,368.5	77.2	2	5	0.2	77	100	53	PM	0.5	0.65		
0910027	FLORIDA MINING & MATERIALS	536.0	3,368.5	77.2	2	5	0.2	77	100	53	PM10				
0910027	FLORIDA MINING & MATERIALS	536.0	3,368.5	77.2	3	5	0.2	77	100	53	PM	0.5	0.65		
0910027	FLORIDA MINING & MATERIALS	536.0	3,368.5	77.2	3	5	0.2	77	100	53	PM10				
0910031	UNITED STATES AIR FORCE	542.6	3,369.6	82.8	2	25	3.5	147	14,370	24	PM	31.23	15.61	31.23	15.61

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	UTM Coordinates NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
0910031	UNITED STATES AIR FORCE	542.6	3,369.6	62.6	2	25	3.5	147	14,370	24	PM10				
0910031	UNITED STATES AIR FORCE	542.6	3,369.6	82.6	6	59	2	77			PM	0.4	1.76		
0910031	UNITED STATES AIR FORCE	542.6	3,369.6	82.6	6	59	2	77			PM10	0.4	1.76		
0910033	FLEMING LUMBER CO	534.7	3,402.5	66.0	1	36	1.8	425	7,478	48	PM		2		
0910033	FLEMING LUMBER CO	534.7	3,402.5	66.0	1	36	1.8	425	7,478	48	PM10		1.5		
0910042	FUNERAL SERVICES ACQUISITION GRC	541.7	3,403.6	73.0	1	18	1.7	588	2,092	15	PM		5		
0910042	FUNERAL SERVICES ACQUISITION GRC	541.7	3,403.6	73.0	1	18	1.7	588	2,092	15	PM10				
0910050	PANHANDLE ANIMAL WELFARE SOCIET	530.4	3,365.5	74.0	1						PM	0.81	0.84		
0910050	PANHANDLE ANIMAL WELFARE SOCIET	530.4	3,365.5	74.0	1						PM10				
0910061	COX BUILDING CORPORATION	532.8	3,365.4	76.1	1	30		70	680	720	PM	26.4	33	26.4	33
0910061	COX BUILDING CORPORATION	532.8	3,365.4	76.1	1	30		70	680	720	PM10				
0910063	MARBLE WORKS	532.0	3,364.3	76.0	1	40	2	70	700	3.7	PM	0.0003	0.0004		
0910063	MARBLE WORKS	532.0	3,364.3	76.0	1	40	2	70	700	3.7	PM10				
0910063	MARBLE WORKS	532.0	3,364.3	76.0	2	20	2	70	5,000	26.5	PM	1.58	2.22		
0910063	MARBLE WORKS	532.0	3,364.3	76.0	2	20	2	70	5,000	26.5	PM10				
0910063	MARBLE WORKS	532.0	3,364.3	76.0	3			77			PM	0.13	0.18		
0910063	MARBLE WORKS	532.0	3,364.3	76.0	3			77			PM10				
0910064	HURLBURT FIELD, USAF	529.7	3,364.7	73.9	3						PM				
0910064	HURLBURT FIELD, USAF	529.7	3,364.7	73.9	3						PM10				
0910064	HURLBURT FIELD, USAF	529.7	3,364.7	73.9	4			400			PM				
0910064	HURLBURT FIELD, USAF	529.7	3,364.7	73.9	4			400			PM10				
0910064	HURLBURT FIELD, USAF	529.7	3,364.7	73.9	6			900			PM				
0910064	HURLBURT FIELD, USAF	529.7	3,364.7	73.9	6			900			PM10				
0910064	HURLBURT FIELD, USAF	529.7	3,364.7	73.9	7			400			PM	4.14	2.78		
0910064	HURLBURT FIELD, USAF	529.7	3,364.7	73.9	7			400			PM10				
0910065	CHROMALLOY-FLORIDA	553.4	3,366.4	93.6	1						PM	0.056	0.24		
0910065	CHROMALLOY-FLORIDA	553.4	3,366.4	93.6	1						PM10	0.056	0.24		
0910065	CHROMALLOY-FLORIDA	553.4	3,366.4	93.6	5						PM	0.2	0.7		
0910065	CHROMALLOY-FLORIDA	553.4	3,366.4	93.6	5						PM10				
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	4	50	4.8	325	52,100	47	PM	28.66	81.7308		
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	4	50	4.8	325	52,100	47	PM10				
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	5	50	4.8	325	52,100	47	PM	18.66	81.7308		
1130003	STERLING FIBERS, INC.	469.2	3,380.2	33.3	5	50	4.8	325	52,100	47	PM10				
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	6	30	6	76	2,200	1	PM				
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	6	30	6	76	2,200	1	PM10				
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	9	50	6.3	350	63,200	33	PM	24.11	105.6		
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	9	50	6.3	350	63,200	33	PM10				
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	65			77			PM				
1130003	STERLING FIBERS, INC.	489.2	3,380.2	33.3	65			77			PM10				
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	1	41	6.2	250	48,100	26	PM	0.864	3.827		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	1	41	6.2	250	48,100	26	PM10	0.6517	2.854		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	3	40	5	750	42,000	35	PM	1.592	6.974		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	3	40	5	750	42,000	35	PM10	1.59	6.97		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	5	36	0.8	700	1,963	65.1	PM		0.159		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	5	36	0.8	700	1,963	65.1	PM10	0.35	1.55		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	6	25	0.8	557	90	2	PM		0.27		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	6	25	0.8	557	90	2	PM10		0.27		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	7	25	2.8	1300	745	2	PM	0.09	0.394		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	7	25	2.8	1300	745	2	PM10				
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	8	82	3.7	450	62,750	97	PM	1.849315	8.1		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,363.4	29.5	8	82	3.7	450	62,750	97	PM10		8.1		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	10	90	7.5	325	344,003	129	PM	2.553	11.182		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	10	90	7.5	325	344,003	129	PM10				
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	11	25	2.5	350	18,400	62	PM	0.5644	2.472		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	11	25	2.5	350	18,400	62	PM10				
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,363.4	29.5	14	52	2.5	224	7,800	26	PM	0.4539	1.988	137.4	801.812
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	14	52	2.5	224	7,800	26	PM10	0.4539	1.988		

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	UTM Coordinates NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	15	55	5	102	43,000	38	PM	3.04	13.3152		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	15	55	5	102	43,000	38	PM10	3.04	13.3152		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	18	55	5	102	48,000	40	PM	31	135.78	31	135.78
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	16	55	5	102	48,000	40	PM10	25.73	112.6974		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	22	71	3	350	41,612	98	PM	0.28	1.13		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	22	71	3	350	41,612	98	PM10				
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	23	94	2.5	340	29,797	101	PM	0.22	0.97		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	23	94	2.5	340	29,797	101	PM10		0.97		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	28	20	1.7	900	18,400	135	PM		1.732		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	26	20	1.7	900	18,400	135	PM10		1.732		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	27	15	0.25	100	50	17	PM		0.047		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	27	15	0.25	100	50	17	PM10		0.018		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	41			90			PM10	2.8	12.5		
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	42						PM				
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	42						PM10				
1130004	AIR PRODUCTS AND CHEMICALS, INC.	467.0	3,383.4	29.5	43	60	4	325	41,056	54.5	PM				
1130004	AIR PRODUCTS AND CHEMICALS, INC.	487.0	3,383.4	29.5	43	60	4	325	41,058	54.5	PM10	1.21	5.29		
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.8	38	35	2.5	800	6,465	22	PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	36	35	2.5	800	8,465	22	PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	37	35	2.5	800	17,333	58.9	PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.8	37	35	2.5	800	17,333	58.9	PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	38	30	1	800	3,726	79.1	PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	38	30	1	800	3,726	79.1	PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	40						PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	40						PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	41						PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	41						PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	42						PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	42						PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.6	3,425.6	23.6	43						PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	43						PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.6	3,425.6	23.6	44						PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.8	23.6	44						PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.8	23.6	45						PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.8	23.6	45						PM10				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	46						PM				
1130005	EXXON CO., USA (A DIV. OF EXXON COI	482.8	3,425.6	23.6	46						PM10				
1130014	PETRO OPERATING COMPANY	488.8	3,412.7	20.9	1	160	1.5	500	1,912	18	PM				
1130014	PETRO OPERATING COMPANY	488.8	3,412.7	20.9	1	160	1.5	500	1,912	18	PM10				
1130014	PETRO OPERATING COMPANY	488.6	3,412.7	20.9	11	20	2.5	500			PM				
1130014	PETRO OPERATING COMPANY	488.8	3,412.7	20.9	11	20	2.5	500			PM10				
1130015	GULF COAST PAVING & GRADING	493.8	3,384.0	33.7	2	31	3	200	42,592	100	PM	1.2	1.5		
1130015	GULF COAST PAVING & GRADING	493.8	3,384.0	33.7	2	31	3	200	42,592	100	PM10				
1130017	SANTA ROSA CONCRETE CO	496.8	3,386.5	34.5	2	60	0.5	77	900	78	PM	0.808	1.26		
1130017	SANTA ROSA CONCRETE CO	496.8	3,386.5	34.5	2	60	0.5	77	900	76	PM10				
1130017	SANTA ROSA CONCRETE CO	496.6	3,386.5	34.5	3	50	14	100	11		PM	0.16	0.25		
1130017	SANTA ROSA CONCRETE CO	496.8	3,386.5	34.5	3	50	14	100	11		PM10				
1130022	U.S. NAVY	497.6	3,398.2	30.2	1	44	4	430	82,190	109	PM	0.24	1.05		
1130022	U.S. NAVY	497.8	3,398.2	30.2	1	44	4	430	82,190	109	PM10				
1130022	U.S. NAVY	497.8	3,398.2	30.2	2	44	4	430	82,190	109	PM	0.24	1.05		
1130022	U.S. NAVY	497.8	3,398.2	30.2	2	44	4	430	82,190	109	PM10				
1130026	GOLDEN GIN & WAREHOUSE	484.8	3,426.1	25.3	1	20	2.8	86	1,000	2	PM	13.075	14.71		
1130026	GOLDEN GIN & WAREHOUSE	484.8	3,426.1	25.3	1	20	2.8	86	1,000	2	PM10				
1130026	GOLDEN GIN & WAREHOUSE	484.8	3,426.1	25.3	2	35	3	76			PM	13.075	14.71		
1130026	GOLDEN GIN & WAREHOUSE	484.6	3,426.1	25.3	2	35	3	76			PM10				
1130026	GOLDEN GIN & WAREHOUSE	484.6	3,426.1	25.3	3	35	3	78			PM	13.075	14.71		
1130026	GOLDEN GIN & WAREHOUSE	484.8	3,426.1	25.3	3	35	3	76			PM10				

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
1130026	GOLDEN GIN & WAREHOUSE	484.8	3,426.1	25.3	4	35	3	76			PM	13.075	14.71		
1130026	GOLDEN GIN & WAREHOUSE	484.8	3,426.1	25.3	4	35	3	76			PM10				
1130027	BURKHEAD GIN	485.3	3,425.8	25.4	1	20	1	86	1,000	21	PM	12.032	12.13		
1130027	BURKHEAD GIN	485.3	3,425.8	25.4	1	20	1	86	1,000	21	PM10				
1130027	BURKHEAD GIN	485.3	3,425.8	25.4	2	20	1	86	1,000	21	PM	10.53	10.61		
1130027	BURKHEAD GIN	485.3	3,425.8	25.4	2	20	1	86	1,000	21	PM10				
1130027	BURKHEAD GIN	485.3	3,425.8	25.4	3	20	1	86	1,000	21	PM	43.24	43.581		
1130027	BURKHEAD GIN	485.3	3,425.8	25.4	3	20	1	86	1,000	21	PM10				
1130027	BURKHEAD GIN	485.3	3,425.8	25.4	4	20	1	86	1,000	21	PM	6.392	6.443		
1130027	BURKHEAD GIN	485.3	3,425.8	25.4	4	20	1	86	1,000	21	PM10				
1130028	SHEAR CONCRETE PRODUCTS COMPA	496.4	3,362.4	52.1	1	40	9.5	86	999		PM				
1130028	SHEAR CONCRETE PRODUCTS COMPA	496.4	3,362.4	52.1	1	40	9.5	86	999		PM10				
1130028	SHEAR CONCRETE PRODUCTS COMPA	496.4	3,362.4	52.1	2	40	9.5	86	999		PM				
1130028	SHEAR CONCRETE PRODUCTS COMPA	496.4	3,362.4	52.1	2	40	9.5	86	999		PM10				
1130030	SOUTHDOWN, INC.			3,438.7	2	30	2	100	800	4	PM		6.98		
1130030	SOUTHDOWN, INC.			3,438.7	2	30	2	100	800	4	PM10		6.98		
1130030	SOUTHDOWN, INC.			3,438.7	3						PM		0.9		
1130030	SOUTHDOWN, INC.			3,438.7	3						PM10		0.9		
1130031	THE QUIKRETE COMPANIES	497.1	3,383.5	36.5	1				9		PM	26.7333	40.1	32.87	49.3
1130031	THE QUIKRETE COMPANIES	497.1	3,383.5	36.5	1				9		PM10	4.93	21.6		
1130031	THE QUIKRETE COMPANIES	497.1	3,383.5	36.5	2				9		PM	0	8.8		
1130031	THE QUIKRETE COMPANIES	497.1	3,383.5	36.5	2				9		PM10		8.8		
1130032	PETRO OPERATING COMPANY	515.2	3,427.8	51.0	1	10	0.3	1010	480	113	PM				
1130032	PETRO OPERATING COMPANY	515.2	3,427.8	51.0	1	10	0.3	1010	480	113	PM10				
1130032	PETRO OPERATING COMPANY	515.2	3,427.8	51.0	2	10	0.3	1010	480	113	PM				
1130032	PETRO OPERATING COMPANY	515.2	3,427.8	51.0	2	10	0.3	1010	480	113	PM10				
1130032	PETRO OPERATING COMPANY	515.2	3,427.8	51.0	7	25	0.7	1200	300	12	PM	0.002	0.0089		
1130032	PETRO OPERATING COMPANY	515.2	3,427.8	51.0	7	25	0.7	1200	300	12	PM10				
1130032	PETRO OPERATING COMPANY	515.2	3,427.8	51.0	8		0.2	1300	559	296	PM				
1130032	PETRO OPERATING COMPANY	515.2	3,427.8	51.0	8		0.2	1300	559	296	PM10				
1130033	SANTA ROSA CO. B. OF COMMISSIONEI	493.1	3,384.7	32.7	1	4	9	800			PM	39	60.84		
1130033	SANTA ROSA CO. B. OF COMMISSIONEI	493.1	3,384.7	32.7	1	4	9	800			PM10				
1130037	FLORIDA GAS TRANSMISSION COMPAN	510.8	3,419.6	44.0	6	35	2.1	495	35,820	172	PM	0.14	0.61	0.14	0.61
1130037	FLORIDA GAS TRANSMISSION COMPAN	510.8	3,419.6	44.0	6	35	2.1	495	35,820	172	PM10	0.14	0.61	0.14	0.61
1130037	FLORIDA GAS TRANSMISSION COMPAN	510.8	3,419.6	44.0	7						PM				
1130037	FLORIDA GAS TRANSMISSION COMPAN	510.8	3,419.6	44.0	7						PM10				
1130038	MOLD-EX RUBBER CO.,INC.	501.2	3,389.7	36.5	1						PM				
1130038	MOLD-EX RUBBER CO.,INC.	501.2	3,389.7	36.5	1						PM10				
1130038	MOLD-EX RUBBER CO.,INC.	501.2	3,389.7	36.5	7						PM				
1130038	MOLD-EX RUBBER CO.,INC.	501.2	3,389.7	36.5	7						PM10				
1130038	MOLD-EX RUBBER CO.,INC.	501.2	3,389.7	36.5	8	4	0.5	77	1,560	132	PM	0.0008	0.0037		
1130038	MOLD-EX RUBBER CO.,INC.	501.2	3,389.7	36.5	8	4	0.5	77	1,560	132	PM10				
1130039	COUCH, INC.	492.2	3,382.2	33.8	1	65	0.5	86	300	25	PM	0.065	0.2838		
1130039	COUCH, INC.	492.2	3,382.2	33.8	1	65	0.5	86	300	25	PM10	3.24	14.19		
1130040	ODOM FIBERGLASS, INCORPORATED	472.7	3,378.8	28.1	1	18	3	70	15,000	35	PM		0.2		
1130040	ODOM FIBERGLASS, INCORPORATED	472.7	3,378.8	28.1	1	18	3	70	15,000	35	PM10				
1130168	SANTA ROSA ENERGY LLC	489.1	3,381.3	32.4	1						PM				
1130169	LONE STAR INDUSTRIES, INC.	494.2	3,383.5	34.3	1						PM		0.77		
1130172	SANTA ROSA CO BOARD OF CO COMMI	494.3	3,382.7	34.9	1						PM		5		
1130172	SANTA ROSA CO BOARD OF CO COMMI	494.3	3,382.7	34.9	1						PM10				
1130173	GULF POWER COMPANY	485.6	3,381.6	30.1	1	80	4	325	41,058	54.5	PM				
1130173	GULF POWER COMPANY	485.6	3,381.6	30.1	1	80	4	325	41,056	54.5	PM10		4.64		
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	1	50	0.2	86	100	53	PM				
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	1	50	0.2	86	100	53	PM10				
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	2	60		70	750	0	PM	0.0006	0.0009		
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	2	60		70	750	0	PM10				
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	3	60		70	750	0	PM	0.0001	0.0002		

Table 6-2. FDEP PM/PM_{10} Emission Inventory

AIRS_ID	OWNER/COMPANY	UTM Coordinates EAST (km)	UTM Coordinates NORTH (km)	Distance From McDavid (km)	EU ID	STACK HT (ft)	DIAM (ft)	EXIT TEMP (°F)	FLOW (acfm)	VEL (ft/sec)	POLLUTANT	Pot (lb/hr)	Pot (tpy)	Allow. (lb/hr)	Allow. (tpy)
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	3	60		70	750	0	PM10				
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	4	30		70	108	432	PM	4.28	6.45		
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	4	30		70	108	432	PM10				
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	5						PM				
7770024	JOSEPH CONCRETE COMPANY	496.1	3,387.9	33.1	5						PM10				
7770032	FORT WALTON CONCRETE COMPANY	538.3	3,364.4	81.3	1	25	0.5	86	999	84	PM				
7770032	FORT WALTON CONCRETE COMPANY	538.3	3,364.4	81.3	1	25	0.5	86	999	84	PM10				
7770032	FORT WALTON CONCRETE COMPANY	538.3	3,364.4	81.3	3	60	0.5	86	700	59	PM				
7770032	FORT WALTON CONCRETE COMPANY	538.3	3,364.4	81.3	3	60	0.5	86	700	59	PM10				
7770043	EWELL INDUSTRIES, INC.	533.4	3,370.5	74.0	1	30	1	76			PM				
7770043	EWELL INDUSTRIES, INC.	533.4	3,370.5	74.0	1	30	1	76			PM10				
7770058	NWF CONTRACTORS, INC.	482.6	3,370.3	36.8	1	64	0.4	90	900	119	PM	27.06	1.407	27.06	1.407
7770058	NWF CONTRACTORS, INC.	482.6	3,370.3	38.8	1	64	0.4	90	900	119	PM10				
7770058	NWF CONTRACTORS, INC.	482.6	3,370.3	38.8	2	64	0.4	90	900	119	PM	27.06	0.704	27.06	0.704
7770058	NWF CONTRACTORS, INC.	482.6	3,370.3	38.8	2	84	0.4	90	900	119	PM10				
7770058	NWF CONTRACTORS, INC.	482.6	3,370.3	38.8	3	22	0.2	90	140	74	PM	41.88	16.33	41.88	16.33
7770058	NWF CONTRACTORS, INC.	482.6	3,370.3	38.8	3	22	0.2	90	140	74	PM10				
7770147	ANDERSON COLUMBIA COMPANY, INC.	502.0	3,388.9	37.6	1	19	1.7	241	42,212	309	PM	5.33	8		
7770147	ANDERSON COLUMBIA COMPANY, INC.	502.0	3,388.9	37.6	1	19	1.7	241	42,212	309	PM10				
7774802	COUCH CONSTRUCTION, L.P.	540.6	3,370.6	80.3	1	42	10	130	76,400	18	PM	33.7	52.572	33.7	52.572
7774802	COUCH CONSTRUCTION, L.P.	540.6	3,370.6	80.3	1	42	10	130	76,400	16	PM10				
7774803	FT WALTON CONCRETE	546.2	3,375.6	83.4	1	40	1	86	900	19	PM				
7774803	FT WALTON CONCRETE	546.2	3,375.6	83.4	1	40	1	86	900	19	PM10				
7774803	FT WALTON CONCRETE	546.2	3,375.6	83.4	2						PM				
7774803	FT WALTON CONCRETE	546.2	3,375.6	83.4	2						PM10				
7774806	COUCH CONSTRUCTION, L.P.	493.7	3,385.1	32.9	1	20	2	130	27,000	143	PM	7.88	8.2		
7774806	COUCH CONSTRUCTION, L.P.	493.7	3,385.1	32.9	1	20	2	130	27,000	143	PM10	7.88	6.2		
7774806	COUCH CONSTRUCTION, L.P.	493.7	3,385.1	32.9	2						PM				
7774806	COUCH CONSTRUCTION, L.P.	493.7	3,385.1	32.9	2						PM10				
7774809	FLORIDA MINING & MATERIALS	476.9	3,427.1	22.1	1						PM				
7774809	FLORIDA MINING & MATERIALS	476.9	3,427.1	22.1	1						PM10				
7774809	FLORIDA MINING & MATERIALS	476.9	3,427.1	22.1	2						PM				
7774809	FLORIDA MINING & MATERIALS	476.9	3,427.1	22.1	2						PM10				
7774810	GROUP III ASPHALT, INC.	469.8	3,375.9	30.7	1	30	7	77			PM	3.2	2		
7774810	GROUP III ASPHALT, INC.	469.8	3,375.9	30.7	1	30	7	77			PM10	3.2	2		
7775008	GROUP III ASPHALT,INC.	469.9	3,375.9	30.7	1	41	4	300	50,025	66.4	PM	10.724	46.971	10.724	16.086
7775008	GROUP III ASPHALT,INC.	469.9	3,375.9	30.7	1	41	4	300	50,025	66.4	PM10				
7775030	COMPRESSION COAT, INC.	476.1	3,363.4	43.8	1	1	0.5		400	34	PM		5		
7775030	COMPRESSION COAT, INC.	476.1	3,363.4	43.8	1	1	0.5		400	34	PM10		5		
7775043	SHEAR CONCRETE PRODUCTS, INC.	494.3	3,383.7	34.3	1	60	0.5	77	550	46.7	PM		5		
7775073	COUCH CONSTRUCTION L.P.	469.8	3,390.9	15.7	1						PM	13.72	20.58		
7775073	COUCH CONSTRUCTION L.P.	469.8	3,390.9	15.7	1						PM10				
7775074	PANHANDLE LAND & TIMBER	470.4	3,386.4	20.2	1						PM	14.57	8.09		
7775074	PANHANDLE LAND & TIMBER	470.4	3,386.4	20.2	1						PM10				

Source: FDEP, 1999.

9.0 AMBIENT IMPACT ANALYSIS RESULTS

MAXIMUM FACILITY IMPACTS AND SIGNIFICANT IMPACT AREAS

The refined ISCST3 model was used to model the proposed McDavid point and fugitive PM_{10} emission sources. ISCST3 model results for each year of meteorology evaluated (1986—1990) are summarized on Table 9-1 (annual PM_{10} impacts) and Table 9-2 (24-hour PM_{10} impacts).

Tables 9-1 and 9-2 indicate that McDavid Sawmill PM_{10} impacts will exceed the PSD significant impact levels previously shown in Table 4-2. A summary of maximum McDavid Sawmill impacts and PSD significant impact levels is provided on Table 9-3.

NAAQS ANALYSIS

An assessment of McDavid Sawmill emission source impacts, together with other major sources within approximately 52 km, was performed for comparison to the annual and 24-hour average PM_{10} NAAQS. The modeled emission inventory included the McDavid Sawmill point and fugitive PM_{10} emission sources, and all other sources contained in the FDEP PM emission inventory retrieval that are located within 52 km of the McDavid Sawmill site and that satisfied the "20D" rule. Conservatively, the PM emission rates provided by FDEP were assumed to be equal to PM_{10} emission rates.

The receptor grids for the refined NAAQS analysis consisted of the fence line, near-field discrete, and mid-field polar receptors extending to 1.5 km consistent with the approximate 1.3 km AOI; i.e., the grid extended from the sawmill site out to 1.5 km.

The results of the annual and 24-hour average PM_{10} NAAQS modeling are provided on Tables 9-4 and 9-5, respectively. These tables demonstrates that McDavid Sawmill emission source impacts, together with all other off-property PM emission sources and including background, are well below the annual and 24-hour average PM_{10} NAAQS.

Table 9-1. ISCST3 Model Results - Maximum Annual Average PM/PM_{10} Impacts

Maximum Annual Impacts	1986	1987	1988	1989	1990
ISCST3 Impact ($\mu g/m^3$)	1.89	1.87	2.12	1.85	2.48
PSD Significant Impact ($\mu g/m^3$)	1.0	1.0	1.0	1.0	1.0
Exceed PSD Significant Impact (Y/N)	Y	Y	Y	Y	Y
Percent of PSD Significant Impact (%)	189.3	187.3	211.7	185.3	247.7
Receptor UTM Easting (m)	468,545.8	468,343.1	468,343.4	468,545.8	468,343.4
Receptor UTM Northing (m)	3,406,416.0	3,406,672.5	3,406,672.5	3,406,416.0	3,406,672.5
Receptor Elevation (m)	12.2	15.2	15.2	12.2	15.2
Distance From DC1 (m)	277	453	453	277	453
Direction From DC1 (Vector °)	239	284	284	239	284

Source: ECT, 1999.

Table 9-2. ISCST3 Model Results - Maximum 24-Hour Average PM/PM_{10} Impacts

Maximum 24-Hour Impacts	1986	1987	1988	1989	1990
ISCST3 Impact ($\mu g/m^3$)	12.85	15.52	15.50	11.86	18.64
PSD Significant Impact ($\mu g/m^3$)	5.0	5.0	5.0	5.0	5.0
Exceed PSD Significant Impact (Y/N)	Y	Y	Y	Y	Y
Percent of PSD Significant Impact (%)	257.0	310.4	310.0	237.2	372.8
PSD *de minimis* Ambient Impact Threshold ($\mu g/m^3$)	10.0	10.0	10.0	10.0	10.0
Exceed PSD *de minimis* Ambient Impact (Y/N)	Y	Y	Y	Y	Y
Percent of PSD *de minimis* Ambient Impact (%)	128.5	155.2	155.0	118.6	186.4
Receptor UTM Easting (m)	468,343.4	468,343.4	468,343.4	469,004.3	468,343.4
Receptor UTM Northing (m)	3,406,660.3	3,406,660.3	3,406,660.3	3,406,347.5	3,406,672.5
Receptor Elevation (m)	15.2	15.2	15.2	15.2	15.2
Distance From DC1 (m)	450	450	450	308	453
Direction From DC1 (Vector °)	283	283	283	134	284
Date of Maximum Impact	2/1/86	11/25/87	12/15/88	12/9/89	1/5/90
Julian Date of Maximum Impact	32	329	350	343	5

Source: ECT, 1999.

Table 9-3. McDavid Sawmill Emission Sources—Maximum PM_{10} Impacts

Pollutant	Averaging Time	Maximum Impact ($\mu g/m^3$)	Significant Impact ($\mu g/m^3$)
PM/PM_{10}	Annual	2.5	1.0
	24-hour	18.6	5.0

Source: ECT, 1999.

Table 9-4. ISCST3 Model Results - Maximum Annual Average PM_{10} Impacts; NAAQS Analysis

Maximum Annual Impacts	1986	1987	1988	1989	1990
ISCST3 Impact ($\mu g/m^3$)	2.60	2.46	2.93	2.61	**3.17**
Background ($\mu g/m^3$)	24.0	24.0	24.0	24.0	**24.0**
Total Impact ($\mu g/m^3$)	26.6	26.46	26.93	26.61	**27.17**
NAAQS ($\mu g/m^3$)	50.0	50.0	50.0	50.0	**50.0**
Exceed NAAQS (Y/N)	N	N	N	N	**N**
Percent of NAAQS (%)	53.2	52.9	53.9	53.2	**54.3**
Receptor UTM Easting (m)	468,545.8	468,343.4	468,343.4	468,545.8	**468,343.4**
Receptor UTM Northing (m)	3,406,416.0	3,406,672.5	3,406,672.5	3,406,416.0	**3,406,672.5**
Distance From Grid Origin (m)	277	453	453	277	**453**
Direction From Grid Origin (Vector °)	239	284	284	239	**284**

Source: ECT, 1999.

Background ($\mu g/m^3$)	67.0	67.0	**67.0**	67.0	67.0
Total Impact ($\mu g/m^3$)	84.2	81.26	**85.86**	82.37	83.54
NAAQS ($\mu g/m^3$)	150.0	150.0	**150.0**	150.0	150.0
Exceed NAAQS (Y/N)	N	N	**N**	N	N
Percent of NAAQS (%)	56.1	54.2	**57.2**	54.9	55.7
Receptor UTM Easting (m)	468,763.9	468,506.4	**468,582.6**	468,763.9	468,343.4
Receptor UTM Northing (m)	3,406,974.3	3,406,957.3	**3,406,957.3**	3,406,974.3	3,406,672.5
Distance From DC1 (m)	415	483	**444**	415	453
Direction From DC1 (Vector °)	357	325	**333**	357	284
Date of Maximum Impact	10/1/86	12/26/87	**2/2/88**	6/4/89	1/16/90
Julian Date of Maximum Impact	274	360	**33**	155	16

Source: ECT, 1999.

The dispersion model results show that impacts from Florida off-site PM/PM_{10} sources at receptors located within the McDavid Sawmill area of influence are insignificant. For example, the maximum 24-hour impact of the Gulf Power PM/PM_{10} emission sources (totaling 3,524 tons per year) was less than 1.0 $\mu g/m^3$. Because the Alabama PM/PM_{10} emission sources are located at greater distances than the Florida off-site sources (and are expected to have lower emission rates), impacts from Alabama PM/PM_{10} emission sources would also be expected to be insignificant in the vicinity of the McDavid Sawmill.

The NAAQS impact analyses was conducted using conservative premises for background PM_{10} levels and off-property source PM_{10} emission rates. The *highest* 24-hour and annual average PM_{10} value obtained from the FDEP PM_{10} monitoring site located in Cantonment, Escambia for 1997 and 1998 was used as background. This approach results in an over-estimation of total impacts due to "double-counting"; i.e., a portion of the FDEP monitored ambient PM_{10} data would be expected to have been caused by the same PM_{10} emission sources which are also included in the modeled emission inventory. As noted above, all PM emission rates provided by FDEP for the off-property sources were conservatively assumed to be equal to PM_{10} emission rates.

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Because of the conservative approach used in conducting the air quality analysis for PM_{10} NAAQS impacts, there is reasonable assurance that the proposed McDavid Sawmill will not cause nor contribute to an exceedance of the PM_{10} NAAQS.

PSD CLASS II INCREMENT ANALYSIS

An assessment of McDavid Sawmill impacts, together with other sources within 52 km, was performed for comparison to the annual and 24-hour average PSD Class II PM_{10} increments. The modeled emission inventory included the McDavid Sawmill point and fugitive PM_{10} emission sources, and all other sources contained in the FDEP PM emission inventory retrieval that are located within 52 km of McDavid Sawmill site and that satisfied the "20D" rule. The FDEP PM_{10} emission inventory did not identify the specific emission sources which consume PSD PM_{10} increment. Conservatively, *all* off-property PM_{10} emission sources located within 52 km of McDavid Sawmill site were assumed to consume PSD increment. In addition, the PM emission rates provided by FDEP were conservatively assumed to be equal to PM_{10} emission rates.

The receptor grids for the refined PSD Class II PM_{10} increment analysis consisted of the same receptors used for the NAAQS analysis; i.e., the grid extended from the McDavid Sawmill site out to 1.5 km. The results of the 24-hour and annual average PSD Class II PM_{10} increment modeling are provided in Table 9-6 and 9-7, respectively. These tables demonstrate that maximum McDavid Sawmill impacts, together with all other PSD PM_{10} increment consuming emission sources, are below the 24-hour and annual average PSD Class II PM_{10} increments.

Similar to the NAAQS air quality analysis, the assessment of PSD Class II PM_{10} increment consumption was conducted using conservative premises. As noted above, *all* off-property PM emission sources were assumed to consume PSD PM_{10} increment. In addition, the PM emission rates provided by FDEP for the off-property sources were assumed to be equal to PM_{10} emission rates.

Because of the conservative approach used in conducting the air quality analysis for PM_{10} PSD Class II increment consumption, there is reasonable assurance that McDavid Sawmill will not cause nor contribute to an exceedance of the PSD Class II PM_{10} increments.

CONCLUSIONS

Comprehensive dispersion modeling, using the refined ISCST3 model, demonstrates that McDavid Sawmill emission sources, together with all off-property PM/PM_{10} emission sources located within 52 km of sawmill site and including background concentrations, will result in ambient air quality impacts that are:

- Below the NAAQS for PM_{10}; and
- Below the PSD Class II increment for PM_{10}.

Table 9-6. ISCST3 Model Results - Maximum Annual PM_{10} Impacts; PSD Class II Increment Analysis

Maximum Annual Impacts	1986	1987	1988	1989	1990
ISCST3 Impact ($\mu g/m^3$)	2.60	2.46	2.93	2.61	3.17
PSD Class II Increment ($\mu g/m^3$)	17.0	17.0	17.0	17.0	17.0
Exceed PSD Class II Increment (Y/N)	N	N	N	N	N
Percent of PSD Class II Increment (%)	15.3	14.5	17.2	15.4	18.6
Receptor UTM Easting (m)	468,545.8	468,343.4	468,343.4	468,545.8	468,343.4
Receptor UTM Northing (m)	3,406,416.0	3,406,672.5	3,406,672.5	3,406,416.0	3,406,672.5
Distance From Grid Origin (m)	277	453	453	277	453
Direction From Grid Origin (Vector °)	239	284	284	239	284

Source: ECT, 1999.

Table 9-7. ISCST3 Model Results - High, Second Highest 24-Hour Average PM_{10} Impacts; PSD Class II Increment Analysis

High, Second Highest 24-Hour Impacts	1986	1987	**1988**	1989	1990
ISCST3 Impact ($\mu g/m^3$)	17.2	14.3	**18.9**	15.4	16.5
PSD Class II Increment ($\mu g/m^3$)	30.0	30.0	**30.0**	30.0	30.0
Exceed PSD Class II Increment (Y/N)	N	N	**N**	N	N
Percent of PSD Class II Increment (%)	57.2	47.5	**62.9**	51.2	55.1
Receptor UTM Easting (m)	468,763.9	468,506.4	**468,582.6**	468,763.9	468,343.4
Receptor UTM Northing (m)	3,406,974.3	3,406,957.3	**3,406,957.3**	3,406,974.3	3,406,672.5
Distance From DC1 (m)	415	483	**444**	415	453
Direction From DC1 (Vector °)	357	325	**333**	357	284
Date of Maximum Impact	10/1/86	12/26/87	**2/2/88**	6/4/89	1/16/90
Julian Date of Maximum Impact	274	360	**33**	155	16

Source: ECT, 1999.

Based on the conservative nature of the air quality analysis, there is reasonable assurance that McDavid Sawmill will:

- Not cause nor contribute to an exceedance of any NAAQS or Florida AAQS.
- Not cause nor contribute to an exceedance of any PSD Class I or Class II increment.

A summary of the NAAQS and PSD Class II Increment model results is provided in Table 9-8.

Table 9-8. McDavid Sawmill—NAAQS and PSD Class II Increment PM_{10} Impacts

Pollutant	Averaging Time	Maximum Impact ($\mu g/m^3$)	Standard ($\mu g/m^3$)
NAAQS			
PM/PM_{10}	Annual	27.7	50.0
	24-hour (HSH)	85.9	150.0
PSD Class II			
PM/PM_{10}	Annual	3.2	17.0
	24-hour (HSH)	18.9	30.0

Source: ECT, 1999.

BOILER VENDOR
EMISSIONS DATA

McBurney
4274 Shackleford Rd., Norcross, GA 30093 USA
P.O. Box 1827, Norcross, GA 30091-1827 USA
TEL: (770) 925-7100 / FAX: (770) 925-7400

FAX / MEMO

DATE: 7/21/99 **Page:** 1 of 2

TO: Mark Culpepper
Mid-South Engineering

PHONE: **FAX:** 501-624-4214

FROM: Dave Heinzmann

REFERENCE: Champion New Mill

This will confirm emission data given to you over the phone earlier. For a 55,000 PPH natural gas fired boiler, the following emission levels are achievable.

NOx – 0.1 #/MMBtu
CO – 0.1 #/MMBtu
VOC – 0.05 #/MMBtu
Particulate – 0.0035 #/MMBtu
SOx – 0.0006 #/MMBtu

Notes:

1) Particulate Matter is based on:
   A. TSP level is based on conducting the first portion of EPA test method #5, which measures "filterable" or "non-condensable" particulate.
   B. TSP level is based on the Natural Gas analysis outlined in Item B-05 of the project specifications.
   C. TSP level is to exclude PM/PM10 contributions from the ambient combustion air.
2) SOx is based on maximum sulfur content in natural gas of 0.20 grains per 100 SCF of fuel gas.
3) Emissions based on 15% excess air and no flue gas recirculation (FGR).
4) Based on use of a Nebraska Model NS-E-58 or similarly sized boiler equipped with a feedwater economizer.
5) The above emission rates are applicable on the LHV basis of natural gas.

Hope this helps. We look forward to working with you on this project.

Dave Heinzmann

~~Attachment – Coen~~ letter of July 10, 1999
cc: Tom Davis
~~ECT~~ – Fax 352-332-6722
Ed Mockridge
Mike Cantrell

PROFESSIONAL ENGINEER CERTIFICATION

4. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [✔], if so), I further certify that the engineering features of each such emissions unit described in this application have been ~~designed or~~ examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Thomas W. Dunn — 7/24/99

Signature — Date

(seal)

* Attach any exception to certification statement.

This certification is applicable to the July 16th and July 24th submittals to the Department regarding Champion International Corporation's McDavid Sawmill project.

Forest Resources
Western Florida Region
117 Pace Parkway
P.O. Box 875
Cantonment, Florida 32533
850 968-3010

RECEIVED

JUN 15 1999

BUREAU OF
AIR REGULATION

Champion
Champion International Corporation

June 14, 1999

Mr. A. A. Linero, P.E.
Administrator, New Source Review Section
Bureau of Air Regulation
Florida Department of Environmental Protection
2600 Blair Stone Road, Mail Station #5505
Tallahassee, Florida 32399-2400

0330260-001-AC

Re: Champion International Corporation
McDavid Sawmill – Air Construction Permit Application PSD-FI-~~270~~ 271

Dear Mr. Linero:

Champion International Corporation (Champion) is planning to construct and operate a new lumber sawmill in Escambia County, Florida, approximately 30 kilometers (km) (19 miles) north of Pensacola. The McDavid Sawmill will process southern yellow pine (SYP) logs and produce up to 225 million board feet per year (MMBF/yr) of lumber.

A permit for the new lumber sawmill is required prior to the beginning of facility construction, per Rule 62-212.300(1)(a), Florida Administrative Code (F.A.C.). Four copies of a permit application package, including the required permit application forms and supporting documentation included in the attachments, are enclosed for your review. A check, payable to the State of Florida, in the amount of $7,500 is also enclosed as payment of the required permit application processing fee per Rule 62-4.050(4)(a)1.

Champion would like to commence construction of the new sawmill by August 15, 1999. Accordingly, your expeditious processing of this permit application will be greatly appreciated. Please contact me at (850) 937-4849 or Tom Davis of Environmental Consulting & Technology, Inc. (ECT) at (352) 332-6230, Ext. 351 if there are any questions regarding the enclosed application.

Sincerely,

Dave Stevens

Dave Stevens
Manager of Special Projects (Project Director), Forest Products

Enclosures

cc: Mr. Andy Allen, FDEP, Pensacola - NWD
Mr. Tom Davis, ECT
EPA
NPS
Joe Kahn, BAR
Cleve Holladay, BAR

BEST AVAILABLE COPY

THE FACE OF THIS DOCUMENT HAS A COLORED BACKGROUND ON WHITE PAPER

Champion
Champion International Corporation

Knightsbridge Hamilton

50-945
213

No. 033096

Pay to the Order of

State of Florida
Dept of Environmental Protection
Twin Towers Office Building - MS 5505
2600 Blair Stone Road
Tallahassee, FL 32399

Date 6-11-99

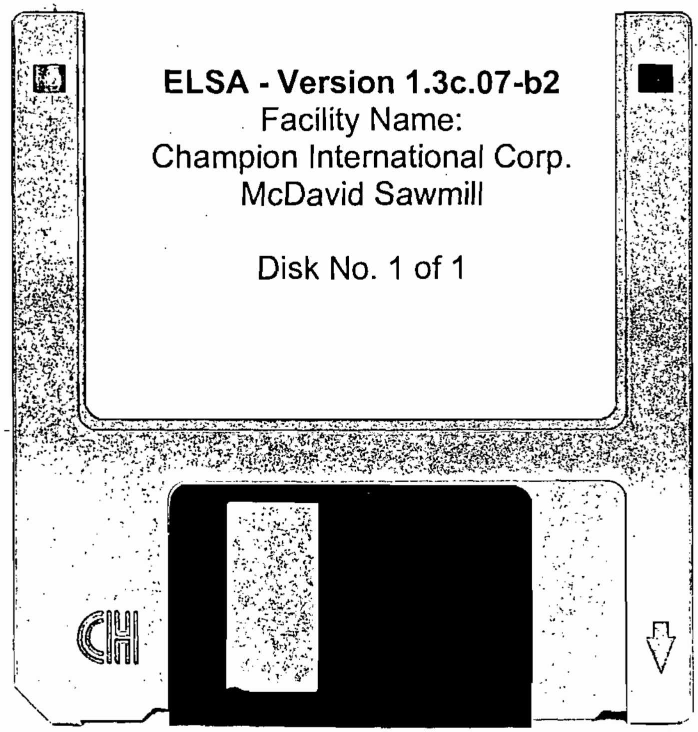
Pay the amount of ***********7,500.00

THE SUM 7500 DOLS 00 CTS

CHEMICAL BANK
90 Presidential Plaza
Syracuse, NY 13202

Susan V. Rouse
Wanda Dunlap

[redacted]


ELSA - Version 1.3c.07-b2
Facility Name:
Champion International Corp.
McDavid Sawmill
Disk No. 1 of 1
CH

RECEIVED
JUN 15 1999
BUREAU OF
AIR REGULATION

McDAVID SAWMILL
AIR CONSTRUCTION PERMIT APPLICATION

Prepared for:

Champion

Cantonment, Florida

Prepared by:

ECT

Environmental Consulting & Technology, Inc.

3701 Northwest 98th Street
Gainesville, Florida 32606

ECT No. 990294-0100

June 1999

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1.0 INTRODUCTION AND SUMMARY

1.1 INTRODUCTION

Champion International Corporation (Champion) is planning to construct and operate a new lumber sawmill in Escambia County, Florida, approximately 30 kilometers (km) (19 miles) north of Pensacola. The McDavid Sawmill will process southern yellow pine (SYP) logs and produce up to 225 million board feet per year (MMBF/yr) of lumber.

A permit is required prior to the beginning of facility construction, per Rule 62-212.300(1)(a), Florida Administrative Code (F.A.C.). This report, including the required permit application forms and supporting documentation included in the attachments, constitutes Champion's application for authorization to commence construction in accordance with the Florida Department of Environmental Protection (FDEP) permitting rules contained in Chapters 62-4 and 62-212, F.A.C.

The McDavid Sawmill will be located in an attainment area and will have potential emissions of a regulated pollutant in excess of 250 tons per year (tpy). Consequently, the proposed sawmill qualifies as a new major facility and is subject to the prevention of significant deterioration (PSD) new source review (NSR) requirements of Section 62-212.400, F.A.C. Therefore, this report and application are also submitted to satisfy the permitting requirements contained in the FDEP PSD rules and regulations.

This report is organized as follows:

- Section 1.2 provides an overview and a summary of the key regulatory determinations.
- Section 2.0 describes the proposed facility and associated air emissions.
- Section 3.0 describes national and state air quality standards and discusses applicability of NSR procedures to the proposed project.
- Section 4.0 describes the PSD NSR review procedures.

- Section 5.0 provides an analysis of best available control technology (BACT).
- Sections 6.0 addresses ambient air quality impacts.
- Section 7.0 discusses current ambient air quality in the vicinity of the proposed sawmill and preconstruction ambient air quality monitoring.
- Section 8.0 addresses other potential air quality impact analyses.

Attachments A through C provide the FDEP Application for Air Permit—Title V Source, emission rate calculations, and control device vendor information, respectively.

1.2 SUMMARY

Principal McDavid Sawmill processes will include SYP log storage and processing (debarking and sawing); log chipping and sawing; green lumber drying using indirect, steam heated kilns; dried lumber finishing (planermill); and sorting, storage, and shipping of the final lumber product. Ancillary operations and equipment will include the storage and handling of wood by-products including bark, sawdust, chips, and planermill shavings and two natural gas-fired package boilers to provide steam for the lumber kilns.

The planned construction start date for the McDavid Sawmill is August 15, 1999. The proposed sawmill is scheduled to complete construction and commence operation in October 2000.

Based on an evaluation of anticipated worst-case annual operating scenarios, the McDavid Sawmill point (stack) emission sources will have the potential to emit 39 tpy of nitrogen oxides (NO_x), 70 tpy of carbon monoxide (CO), 14.5 tpy of particulate matter and particulate matter less than or equal to 10 micrometers aerodynamic diameter (PM/PM_{10}), 0.3 tpy of sulfur dioxide (SO_2), 326 tpy of volatile organic compounds (VOCs), and trace amounts of lead. Based on these annual emission rate potentials, VOC emissions are subject to PSD review.

Regarding noncriteria pollutants, the McDavid Sawmill will potentially emit less than 5.0 tpy of methanol and less than 1.0 tpy of all other organic and metallic hazardous air pollutants (HAPs). Therefore, the facility will not be a major source under Title III and would not be subject to a case-by-case maximum achievable control technology (MACT) review.

As presented in this report, the analyses required for this permit application resulted in the following conclusions:

- Advanced burner design and good operating practices to minimize incomplete combustion are proposed as BACT for VOC for the two package boilers. Good operating practice and maintenance are proposed as BACT for VOCs for the indirect, steam heated lumber drying kilns. Due to the complexity of the kiln drying cycle, installation of exhaust control systems to reduce VOC emissions presents many technical challenges. There are no lumber kilns in the United States that are equipped with VOC controls. BACT for VOCs for two recent (1997 and 1998) lumber kiln installations in Texas and North Carolina was determined to be no add-on controls. Cost effectiveness of VOC regenerative thermal oxidation (RTO) and regenerative catalytic oxidizer (RCO) control systems was determined to be \$8,351 and \$7,051 per ton of VOC, respectively. Accordingly, the installation of either an RTO or an RCO control system to control VOC emissions is considered to be economically in-feasible.
- Use of low-NO_x burners with an emission rate of no more than 0.10 pound NO_x per million British thermal units (lb/MMBtu) heat input and a federally enforceable annual heat input limitation of 779,640 million British thermal units (MMBtu), lower heating value (LHV), for both package boilers combined are proposed to limit facility NO_x emissions to less than 40 tpy.
- Federally enforceable PM_{10} emissions of 0.0035 lb/MMBtu and 2.1 pounds per hour (lb/hr) for the two package boilers and planermill cyclone/baghouse control system, respectively, are proposed to limit facility PM_{10} emissions to less than 15 tpy.

- The McDavid Sawmill is projected to emit VOCs in greater than significant amounts. Representative, current quality-assured ambient ozone data collected by FDEP at monitoring sites located in the Pensacola area were used to satisfy the PSD preconstruction ambient air monitoring requirements for VOCs.
- Project impacts will be well below levels that are detrimental to soils and vegetation and will not impair visibility.
- The nearest PSD Class I area (Breton National Wildlife Refuge) is located approximately 155 km southwest of the McDavid Sawmill site. Air quality and visibility impacts on this Class I area will be negligible.

2.0 DESCRIPTION OF THE PROPOSED FACILITY

2.1 PROJECT LOCATION

The proposed McDavid Sawmill will be located in rural Escambia County approximately 22 km (14 miles) and 30 km (19 miles) north of Cantonment and Pensacola, respectively. Fenced access to the plant site will be from U.S. Highway (U.S.) 29 on the west side of the plant property. The plant entrance will have security gates to control site access. The entire site perimeter will be fenced.

The approximate 32-acre plant site is bordered on the north and south by undeveloped property owned by Champion. The Louisville and Nashville (CSX) railroad line runs north/south and borders the east side of the plant site. East of the railroad line is State owned swampland. West of U.S. 29 is additional undeveloped property owned by Champion. McDavid, Florida, located approximately 8 km (5 miles) north of the plant site, is the nearest town to the proposed sawmill. The closest residential housing is located approximately 2 km (1.2 miles) south of the plant site. Figure 2-1 shows the project site location relative to local landmarks.

2.2 PROCESS DESCRIPTION

Principal McDavid Sawmill processes will include:

1. Log storage and processing (debarking and sawing).
2. Sawmill operations (chipping and sawing).
3. Drying of green lumber using indirect steam-heated kilns.
4. Product lumber finishing, sorting, and shipping.

Ancillary equipment will include wood by-product (bark, chips, sawdust, and shavings) screening, handling, and storage; and two 55-MMBtu/hr heat input natural gas-fired package boilers that will provide steam for the lumber kilns. The McDavid Sawmill will

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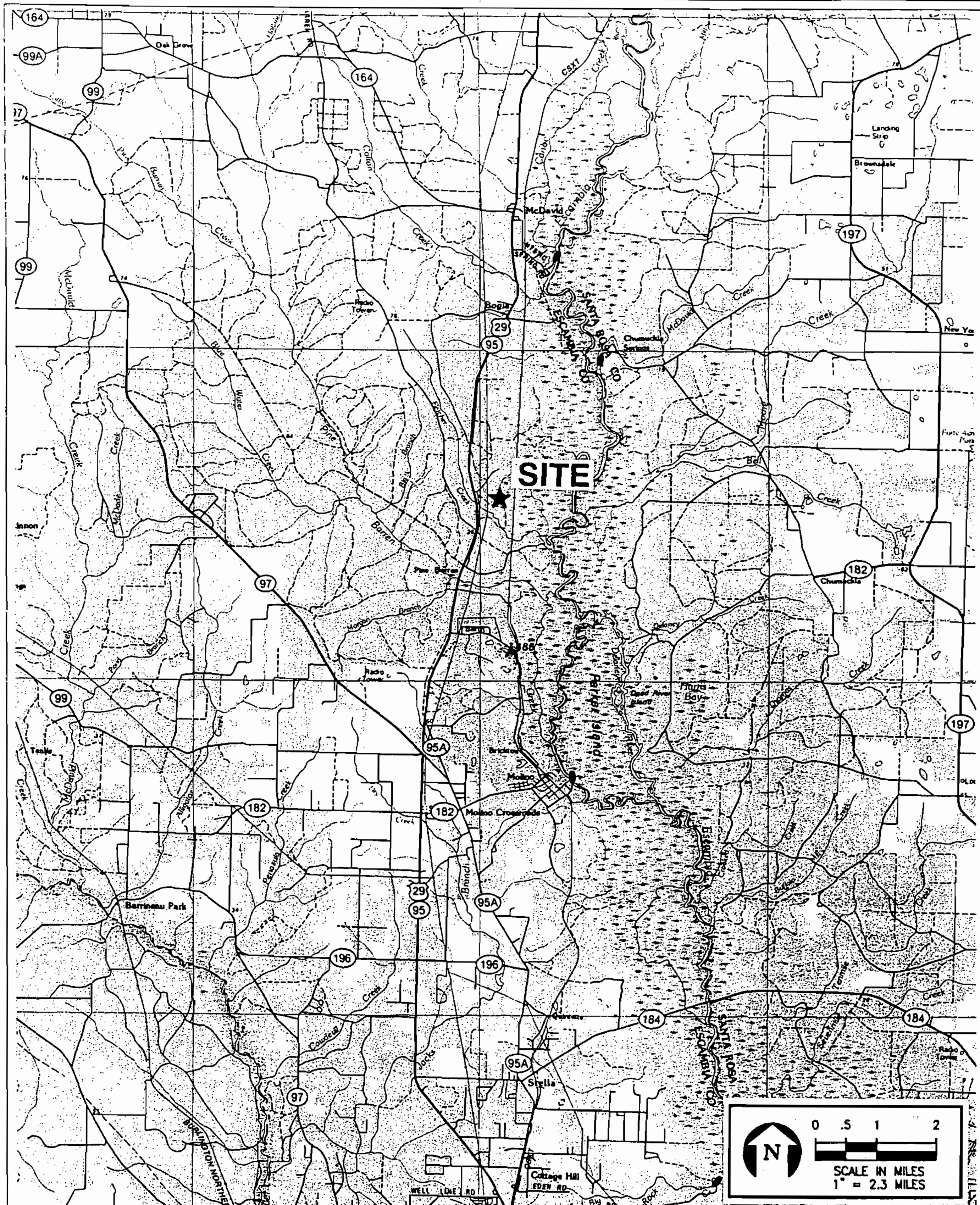

FIGURE 2-1.
SITE LOCATION RELATIVE TO LOCAL LANDMARKS

Source: DeLorme, 1997.

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Environmental Consulting & Technology, Inc.

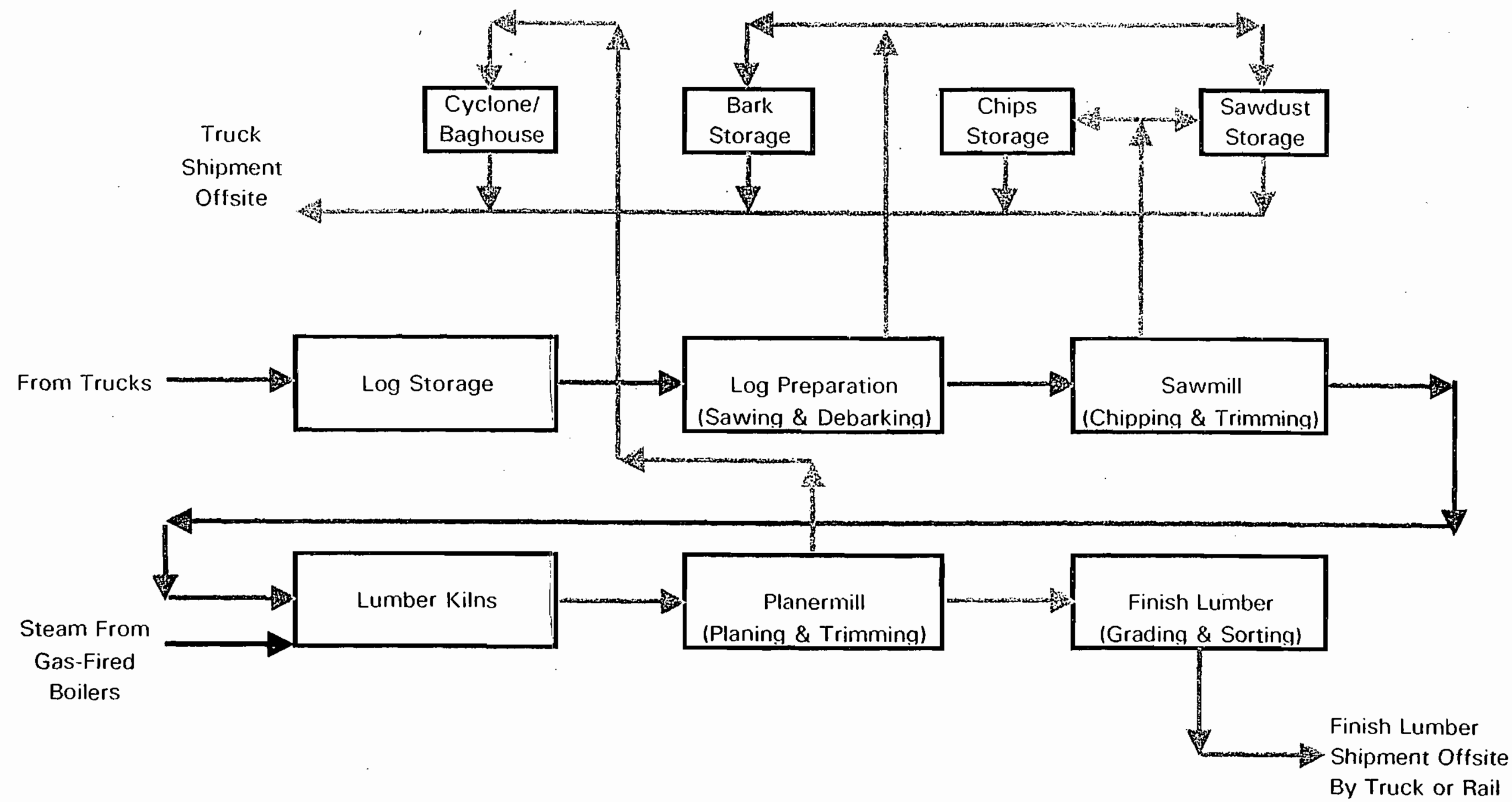
produce up to 225 MMBF/yr of lumber and will be capable of continuous operation; i.e., 8,760 hours per year (hr/yr).

Two parallel process lines will be used to process and size the SYP logs. A process flow diagram of the McDavid Sawmill is presented in Figure 2-2.

SYP logs will be transported to the plant site by truck, unloaded by one of two log cranes, and stored in two semi-circular piles prior to processing. The log cranes will also be utilized to transfer the logs from storage to the two process lines. Excessively crooked logs are initially cut using chain saws, if necessary. Ring debarkers will then be used to remove bark from the logs. Bark removed from the logs by the debarkers will drop to a conveyor which transfers the bark to a disc screen and hog. The hog (grinder) reduces the bark to a consistent size. From the hog, the bark will be transferred by conveyor to the bark storage bin and then loaded into trucks for shipment offsite.

Following debarking, the SYP logs will be cut into optimal lengths by high-speed cut-up rotary saws (two saws per processing line). Optical scanners precede the cut-up saws to determine the optimal lengths for each individual log; i.e., the scanners determine the precise log lengths needed to maximize the amount of lumber product per log. Sawdust (fines) generated by the cut-up saws will drop to conveyors for transfer to the fines storage bin, and then loaded into trucks for shipment offsite.

The cut SYP logs will then be processed in the sawmill for sizing into the appropriate lumber board dimensions. The sawmill will use machines to square the log by chipping and to cut and trim the resulting pieces to the desired board dimensions. Sawmill operations will take place in an essentially enclosed area; i.e., the sawmill building will be a roofed, two-level structure with metal side walls extending to approximately 15 feet above grade to allow for building ventilation. The sawmill equipment will be located in the enclosed, second level of the sawmill building. Sawdust (fines) generated by the



PROCESS FLOW DIAGRAM

Source: ECT, 1999.

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8

sawing operations will drop to conveyors, subsequently combined with the fines generated by the high-speed cut-up saws, transferred to the fines storage bin, and then loaded into trucks for shipment offsite. The sawmill will also include a separate chipper to process edger strips; chips generated by this chipper will be routed to a chip conveyor. The wood chips produced by the main log chipping operations will also drop to the chip conveyors and subsequently transferred to a screen for separation of oversize chips. The oversize chips will be conveyed to a rechipper for size reduction. The chips will then be screened to separate fines and then conveyed to the chips storage bin; the separated fines will be conveyed to the fines storage bin. From the chips storage bin, the chips will be loaded into trucks and shipped offsite.

The green, sized lumber (i.e., boards) will then be sorted, stacked, and stored in the green lumber storage shed prior to being dried in the indirect, steam-heated kilns. The drying kilns will be used to reduce lumber moisture content from approximately 50 to 20 percent under carefully controlled temperature and relative humidity conditions. Lumber drying will be achieved by circulating heated air over the stacked green lumber using bi-directional fans located near the ceiling of the kilns. The circulated air used for drying will be heated indirectly by means of heat transfer from steam coils located within the kilns. A series of five evenly spaced, rectangular vents will be located on each side of the V-shaped kiln roof for a total of ten vents per kiln. These kiln vents operate such that, at any given time in the drying cycle, one set of five vents will serve as air intakes for fresh air supply to the kiln while the remaining set of five vents will serve as kiln exhausts to release moisture-laden air. Approximately every 2 hours, the bi-directional fans will reverse direction to promote uniform drying of the lumber. When the circulating air fans change direction, kiln dampers will be employed to also reverse the duty of the kiln vents; i.e., the fresh air intake vents become kiln wet-air exhausts and vice versa. This air circulation reversing process will occur throughout the duration of the approximate 18-hour kiln drying cycle. Steam used to heat the circulating kiln air will be supplied by two natural gas-fired package boilers each rated at 55 MMBtu/hr heat input.

The dried lumber will then be removed from the kilns, allowed to air cool, and stored in the rough dried lumber shed. The stacked lumber will then be broken down into individual boards and planed and trimmed in the planermill. The planermill planing and trimming operations will be equipped with local exhaust ventilation systems to collect shavings generated by these processes. The planing and trimming shavings will then be transferred pneumatically to a cyclone/baghouse control system located adjacent to the wood by-product storage bins. Shavings removed by the cyclone collector will be stored in the shavings bin and then loaded into trucks for shipment offsite. Shavings removed by the baghouse will be routed by screw conveyor and loaded into trucks for shipment offsite. The planermill will also include a small hog/shaver for reducing the size of trimmed wood material; fines generated by this hog/shaver will be routed to the planermill cyclone/baghouse ventilation system. The final lumber board products will then be graded, sorted by length, packaged, and stored in the finish lumber storage area. From the finish lumber storage area, the lumber products will be shipped offsite by truck and rail.

2.3 PROJECT EMISSIONS AND CONTROL SYSTEMS

Combustion of natural gas in the package boilers will result in emissions of particulate matter (PM/PM_{10}), SO_2, NO_x, CO, and VOCs. The lumber kilns will emit PM/PM_{10} and VOC emissions primarily due to losses of naturally occurring, biogenic organic compounds contained in the SYP logs; e.g., terpenes. Planermill operations and wood by-product screening, handling, and storage will result in emissions of PM/PM_{10}.

Emission control systems proposed for the McDavid Sawmill include the use of a cyclone/baghouse system to control PM/PM_{10} emissions from planermill operations, implementation of reasonable precautions to abate fugitive PM/PM_{10} emissions, and low-NO_x burners for control of NO_x from the package boilers. Emissions of SO_2 will be minimal (less than 1 tpy) due to the exclusive use of pipeline-quality natural gas in the package boilers.

Upstream of the planermill, potential emissions of fugitive PM/PM_{10} emissions are considered to be low due to the high moisture content of the wood materials being processed. Observations of log debarking and sawing, wood by-product screening, handling, and storage, sawmill operations, and truck traffic on paved facility roadways at a similar lumber mill indicate that these processes generate little, if any, visible emissions. To further reduce the potential for fugitive PM/PM_{10} emissions, reasonable precautions to abate such emissions will be implemented. These precautions include enclosing wood by-product transfer points and periodic sweeping and/or watering of paved facility roadways, as necessary.

The one area of the McDavid Sawmill which could have the potential to generate significant amounts of fugitive PM/PM_{10} emissions, the planermill, will be enclosed and equipped with local exhaust ventilation systems to collect shavings produced by the high-speed planing and trimming machine centers. The collected shavings will be transferred pneumatically to a cyclone collector and baghouse control system for removal of PM/PM_{10} prior to exhausting the conveying air stream to the atmosphere.

The two package boilers will utilize low-NO_x burner technology to control NO_x emissions. The exclusive use of pipeline-quality natural gas and good combustion practice will result in low VOC, CO, PM/PM_{10} and SO_2 emissions from the package boilers.

A plot plan showing the major process equipment and structures, and all point (stack) emission sources is presented in Figure 2-3. Locations of the various fugitive PM/PM_{10} emission sources are shown in Figure 2-4.

2.4 EMISSION AND STACK PARAMETERS

Table 2-1 provides maximum hourly and annual criteria pollutant emission rates for the McDavid Sawmill point (stack) emission sources. Maximum hourly and annual noncriteria pollutant (i.e., HAPs) emission rates are summarized in Table 2-2 for the proposed

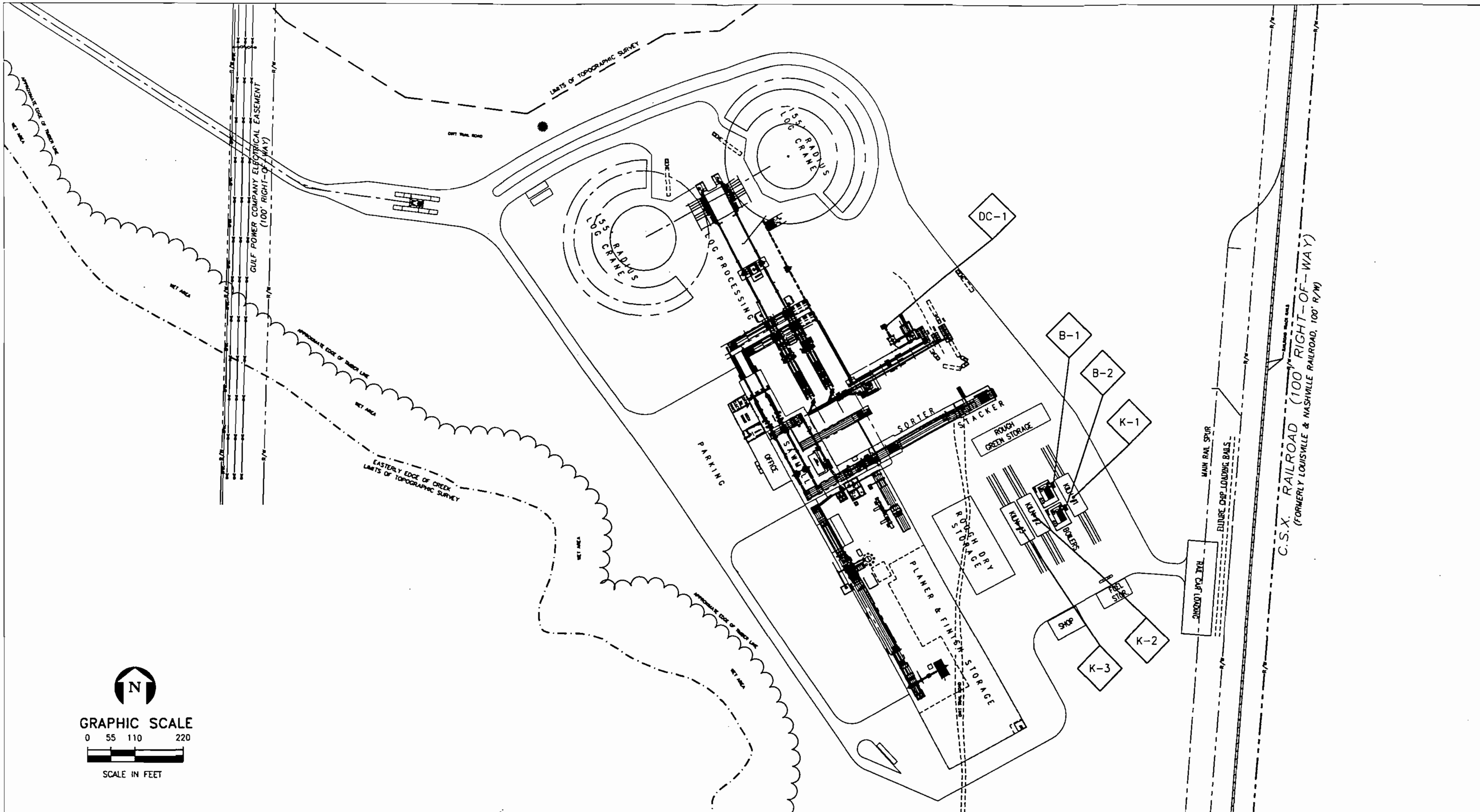

FIGURE 2-3.

FACILITY PLOT PLAN - POINT EMISSION SOURCES

Sources: Mid-South Engineering, 1999; ECT, 1999.

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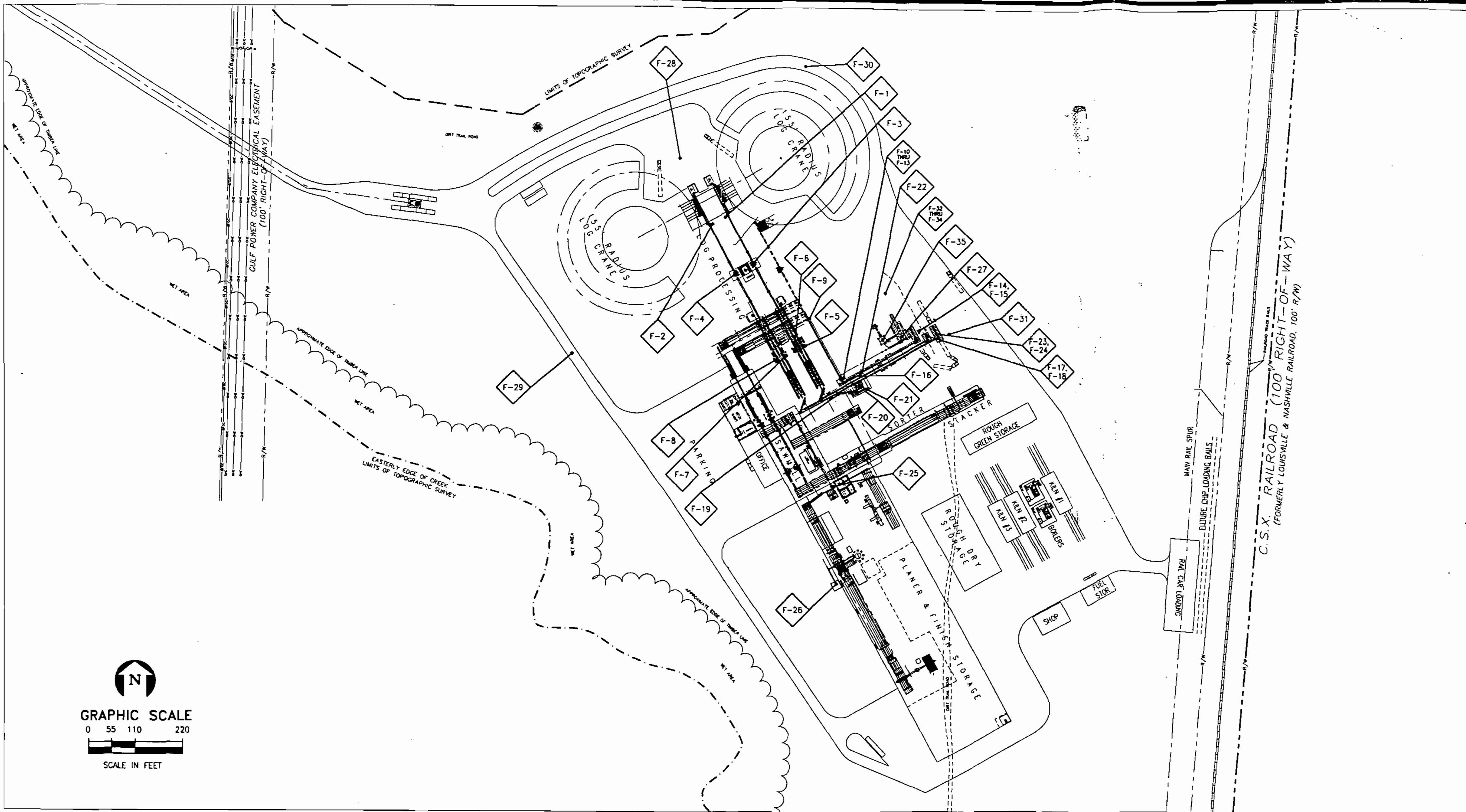

FIGURE 2-4.

FACILITY PLOT PLAN - FUGITIVE EMISSION SOURCES

Sources: Mid-South Engineering, 1999; ECT, 1999.

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Environmental Consulting & Technology, Inc.

Table 2-1. Maximum Criteria Pollutant Emission Rates - Point Sources

Emission Source Description	Emission Source ID	Emission Rates									
		PM/PM_{10}		NO_x		SO_2		CO		VOCs	
		(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Package Boiler 1	B-1	0.19	0.68	5.50	19.49	0.03	0.12	9.90	35.08	0.88	3.12
Package Boiler 2	B-2	0.19	0.68	5.50	19.49	0.03	0.12	9.90	35.08	0.88	3.12
Kilns 1-3	K1-K3	0.95	4.16	N/A	N/A	N/A	N/A	N/A	N/A	85.27	319.50
Planermill Dust Collector	DC-1	2.06	9.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Totals		**3.39**	**14.54**	**11.00**	**38.98**	**0.07**	**0.25**	**19.80**	**70.17**	**87.03**	**325.74**

Sources: Champion, 1999.
ECT, 1999.

Table 2-2. Maximum Noncriteria Pollutant Emission Rates - Point Sources

Hazardous Air Pollutant	Emission Source							
	Boiler 1		Boiler 1		Kilns 1-3		Facility Totals	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Arsenic	1.16E-05	4.10E-05	1.16E-05	4.10E-05	N/A	N/A	2.32E-05	0.00008
Benzene	1.22E-04	4.31E-04	1.22E-04	4.31E-04	N/A	N/A	2.43E-04	0.00086
Beryllium	6.95E-07	6.82E-01	6.95E-07	2.46E-06	N/A	N/A	1.39E-06	0.68219
Cadmium	6.37E-05	2.26E-04	6.37E-05	2.26E-04	N/A	N/A	1.27E-04	0.00045
Chromium VI	8.11E-05	2.87E-04	8.11E-05	2.87E-04	N/A	N/A	1.62E-04	0.00057
Cobalt	4.86E-06	1.72E-05	4.86E-06	1.72E-05	N/A	N/A	9.73E-06	0.00003
Dichlorobenzene	6.95E-05	2.46E-04	6.95E-05	2.46E-04	N/A	N/A	1.39E-04	0.00049
Formaldehyde	4.34E-03	1.54E-02	4.34E-03	1.54E-02	7.36E-02	3.23E-01	8.23E-02	0.35331
Hexane	1.04E-01	3.69E-01	1.04E-01	3.69E-01	N/A	N/A	2.08E-01	0.73861
Manganese	2.20E-05	7.80E-05	2.20E-05	7.80E-05	N/A	N/A	4.40E-05	0.00016
Methanol	N/A	N/A	N/A	N/A	9.52E-01	4.17E+00	9.52E-01	4.17004
Mercury	1.51E-05	5.33E-05	1.51E-05	5.33E-05	N/A	N/A	3.01E-05	0.00011
Naphthalene	3.53E-05	1.25E-04	3.53E-05	1.25E-04	N/A	N/A	7.06E-05	0.00025
Nickel	1.22E-04	4.31E-04	1.22E-04	4.31E-04	N/A	N/A	2.43E-04	0.00086
Selenium	1.39E-06	4.92E-06	1.39E-06	4.92E-06	N/A	N/A	2.78E-06	0.00001
Toluene	1.97E-04	6.98E-04	1.97E-04	6.98E-04	N/A	N/A	3.94E-04	0.00140
Totals	**0.11**	**1.07**	**0.11**	**0.39**	**1.03**	**4.49**	**1.24**	**5.95**

Sources: Champion, 1999.
ECT, 1999.

sawmill point sources. A summary of estimated maximum hourly and annual fugitive PM/PM_{10} emissions is provided in Table 2-3.

Emission rates due to operation of the McDavid Sawmill were estimated using the best available data. These data consisted of equipment vendor emission guarantees for the package boilers (for PM/PM_{10}, CO, NO_x, and VOC) and planermill cyclone/baghouse control system (for PM/PM_{10}). Estimates of SO_2 and HAP emission rates due to natural gas combustion in the package boilers were developed using U.S. Environmental Protection Agency (EPA) AP-42 emission factors. Emissions of VOCs and PM/PM_{10} from the lumber kilns were estimated using test data obtained from the National Council of the Paper Industry for Air and Stream Improvement (NCASI). Estimates of fugitive PM/PM_{10} were made using EPA emission factors and procedures. The bases for the emission rate estimates are provided in Attachment B.

The emission rates estimated for the McDavid Sawmill are considered to be conservative; i.e., to over-estimate actual emission rates. For example, all emission sources, excluding the two package boilers, were assumed to operate continuously (i.e., 8,760 hr/yr) at peak production rates. The EPA procedures used to estimate fugitive PM/PM_{10} emissions are considered to be particularly conservative. As noted previously, observations of log debarking and sawing; wood by-product screening, handling, and storage; sawmill operations; and truck traffic on paved facility roadways at a similar lumber mill indicate that these processes generate little, if any, visible emissions.

Stack parameters for the McDavid Sawmill point emission sources are provided in Table 2-4.

Table 2-3. Maximum PM/PM_{10} Pollutant Emission Rates - Fugitive Sources

Emission Source Description	Emission Source ID	Emission Rates PM (lb/hr)	PM (tpy)	PM_{10} (lb/hr)	PM_{10} (tpy)
Log Preparation					
Chain Saw - North Line	F-1	0.0889	0.2334	0.0142	0.0373
Chain Saw - South Line	F-2	0.0889	0.2334	0.0142	0.0373
Log Debarking - North Line	F-3	0.9146	2.4010	0.1463	0.3842
Log Debarking - South Line	F-4	0.9146	2.4010	0.1463	0.3842
Barking Saw 1	F-5	1.9816	5.2018	0.3171	0.8323
Barking Saw 2	F-6	1.9816	5.2018	0.3171	0.8323
Barking Saw 3	F-7	1.9816	5.2018	0.3171	0.8323
Barking Saw 4	F-8	1.9816	5.2018	0.3171	0.8323
Bark Processing/Handling					
Conveyor Transfer; Main Conveyor to Disc Screen/Hog Conveyor	F-9	0.0004	0.0011	0.0002	0.0005
Conveyor Transfer; Disc Screen/Hog Conveyor to Disc Screen/Hog	F-10	0.0004	0.0011	0.0002	0.0005
Bark Disc Screen	F-11	0.2312	0.6069	0.2312	0.6069
Bark Disc Hog	F-12	0.0008	0.0020	0.0008	0.0020
Conveyor Transfer; Disc Screen/Hog to Bark Bin Conveyor	F-13	0.0004	0.0011	0.0002	0.0005
Conveyor Transfer; Bark Bin Conveyor to Bark Bin	F-14	0.0004	0.0011	0.0002	0.0005
Bark Bin Truck Loading	F-15	0.0014	0.0036	0.0007	0.0017
Fines (Sawdust) Processing/Handling					
Conveyor Transfer; Fines Chip Screen Conveyor to Fines Bin Conveyor	F-16	0.0002	0.0006	0.0001	0.0003
Conveyor Transfer; Fines Bin Conveyor to Fines Bin	F-17	0.0002	0.0006	0.0001	0.0003
Fines Bin Truck Loading	F-18	0.0007	0.0018	0.0003	0.0009
Baghouse Fines Truck Loading	F-35	0.0001	0.0003	0.0001	0.0001
Chips Processing/Handling					
Conveyor Transfer; Oversize Chips Conveyor to Rechipper Conveyor	F-19	0.0002	0.0004	0.0001	0.0002
Rechipper	F-20	0.0003	0.0008	0.0003	0.0008
Chips Screen	F-21	0.9700	2.5464	0.9700	2.5464
Conveyor Transfer; Chips Screen to Chips Bin Conveyor	F-22	0.0018	0.0046	0.0008	0.0022
Conveyor Transfer; Chips Bin Conveyor to Chips Bin	F-23	0.0018	0.0046	0.0008	0.0022
Chips Bin Truck Loading	F-24	0.0058	0.0153	0.0028	0.0072
Sawmill Chipper	F-25	0.0003	0.0008	0.0003	0.0008
Planermill Shavings					
Hog	F-26	0.0001	0.0002	0.0001	0.0002
Cyclone Bin Truck Loading	F-27	0.0006	0.0016	0.0003	0.0007
Truck Traffic on Paved Roadways					
Raw Material Wood Trucks	F-28	3.9202	5.8100	0.7649	1.1337
Product Lumber Trucks	F-29	2.4536	2.8151	0.4787	0.5493
Wood By-Product Trucks	F-30	3.2094	7.9196	0.6262	1.5453
Outdoor Storage Piles					
Chip Storage	F-31	0.1271	0.0153	0.0607	0.0073
Bark Storage	F-32	0.0370	0.0044	0.0176	0.0021
Sawdust Storage	F-33	0.0330	0.0040	0.0158	0.0019
Shavings Storage	F-34	0.0259	0.0016	0.0123	0.0007
Totals		**20.9570**	**45.8408**	**4.7752**	**10.5874**

Sources: Champion, 1999.
ECT, 1999.

Table 2-4. Stack Parameters - Point Sources

Emission Source Description	Emission Source ID	UTM Cordinates		Stack Data											
		Easting	Northing	Height		Equiv. Diameter		Area		Actual Flow Rate		Velocity		Temperature	
		(m)	(m)	(ft)	(m)	(ft)	(m)	(ft^2)	(m^2)	(ft^3/min)	(m^3/min)	(ft/sec)	(m/s)	(°F)	(K)
Package Boiler 1	B-1	468,899.0	3,406,446.8	35.0	10.67	3.50	1.07	9.62	0.89	75,984	2,152	131.63	40.12	320	433
Package Boiler 2	B-2	468,907.6	3,406,430.5	35.0	10.67	3.50	1.07	9.62	0.89	75,984	2,152	131.63	40.12	320	433
Kiln No. 1[1,2]	K1	468,911.8	3,406,439.6	25.3	7.70	5.89	1.79	27.22	2.53	34,502	977	21.12	6.44	209	372
Kiln No. 2[1,2]	K2	468,885.4	3,406,425.3	25.3	7.70	5.89	1.79	27.22	2.53	34,502	977	21.12	6.44	209	372
Kiln No. 3[1,2]	K3	468,874.2	3,406,419.2	25.3	7.70	5.89	1.79	27.22	2.53	34,502	977	21.12	6.44	209	372
Planermill Dust Collector	DC-1	468,782.0	3,406,560.0	23.0	7.01	3.17	0.97	7.88	0.73	60,000	1,699	126.97	38.70	68	293

[1] Each kiln has five (5) square (28 inches x 28 inches) vents open at any one time.
[2] Kiln exhaust flow rate, velocity, and temperature are averages for 18 hour drying cycle.

Sources: Champion, 1999.
ECT, 1999.

3.0 AIR QUALITY STANDARDS AND NEW SOURCE REVIEW APPLICABILITY

3.1 NATIONAL AND STATE AAQS

As a result of the 1977 Clean Air Act (CAA) Amendments, EPA has enacted primary and secondary national ambient air quality standards (NAAQS) for six air pollutants (40 CFR 50). Primary NAAQS are intended to protect the public health, and secondary NAAQS are intended to protect the public welfare from any known or anticipated adverse effects associated with the presence of pollutants in the ambient air. Florida has also adopted ambient air quality standards (AAQS); reference Section 62-204.240, F.A.C. Table 3-1 presents the current national and Florida AAQS.

Areas of the country in violation of AAQS are designated as nonattainment areas, and new sources to be located in or near these areas may be subject to more stringent air permitting requirements. The proposed McDavid Sawmill is located in Escambia County approximately 30 km north of Pensacola. Escambia County is presently designated in 40 CFR §81.310 as better than national standards (for total suspended particulates [TSPs]), unclassifiable for SO_2, unclassifiable/attainment (for CO), unclassifiable or better than national standards (for nitrogen dioxide [NO_2]), and not designated (for lead). 40 CFR §81.310 also indicates that the 1-hour ozone standard is not applicable. Escambia County is designated attainment (for ozone, CO, and NO_2) and unclassifiable (for SO_2, PM_{10} and lead) by Section 62-204.340, F.A.C.

3.2 NONATTAINMENT NSR APPLICABILITY

The McDavid Sawmill will be located in Escambia County. As noted above, Escambia County is presently designated as either better than national standards or unclassifiable/attainment for all criteria pollutants. Accordingly, the proposed McDavid Sawmill is not subject to the nonattainment NSR requirements of Section 62-212.500, F.A.C.

Table 3-1. National and Florida Air Quality Standards

Pollutant (units)	Averaging Periods	National Standards Primary	National Standards Secondary	Florida Standards
SO_2 (ppmv)	3-hour[1]		0.5	0.5
	24-hour[1]	0.14		0.1
	Annual[2]	0.030		0.02
SO_2 ($\mu g/m^3$)	3-hour[1]			1,300
	24-hour[1]			260
	Annual[2]			60
PM_{10}[13] ($\mu g/m^3$)	24-hour[3]	150	150	
	Annual[4]	50	50	
PM_{10} ($\mu g/m^3$)	24-hour[5]			150
	Annual[6]			50
$PM_{2.5}$[11,12] ($\mu g/m^3$)	24-hour[7]	65	65	
	Annual[8]	15	15	
CO (ppmv)	1-hour[1]	35		35
	8-hour[1]	9		9
CO ($\mu g/m^3$)	1-hour[1]			40,000
	8-hour[1]			10,000
Ozone (ppmv)	1-hour[9]			0.12
	8-hour[10, 11]	0.08	0.08	
NO_2 (ppmv)	Annual[2]	0.053	0.053	0.05
NO_2 ($\mu g/m^3$)	Annual[2]			100
Lead ($\mu g/m^3$)	Calendar Quarter Arithmetic Mean	1.5	1.5	1.5

1 Not to be exceeded more than once per calendar year.
2 Arithmetic mean.
3 Standard attained when the 99th percentile is less than or equal to the standard, as determined by 40 CFR 50, Appendix N.
4 Arithmetic mean, as determined by 40 CFR 50, Appendix N.
5 Not to be exceeded more than once per year, as determined by 40 CFR 50, Appendix K.
6 Standard attained when the expected annual arithmetic mean is less than or equal to the standard, as determined by 40 CFR 50, Appendix K.
7 Standard attained when the 98th percentile is less than or equal to the standard, as determined by 40 CFR 50, Appendix N.
8 Arithmetic mean, as determined by 40 CFR 50, Appendix N.
9 Standard attained when the expected number of days per calendar year with maximum hourly average concentrations above the standard is equal to or less than 1, as determined by 40 CFR 50, Appendix H.
10 Standard attained when the average of the annual 4th highest daily maximum 8-hour average concentration is less than or equal to the standard, as determined by 40 CFR 50, Appendix I.
11 The U.S. Court of Appeals for the District of Columbia Circuit (Circuit Court) held that these standards are not enforceable. American Trucking Association v. U.S.E.P.A., 1999 WL300618 (Circuit Court)
12 The Circuit Court may vacate standards following briefing. Id.
13 The Circuit Court held PM_{10} standards vacated upon promulgation of effective $PM_{2.5}$ standards.

3.3 PSD NSR APPLICABILITY

The proposed McDavid Sawmill is not one of the industrial categories listed in Section 62-212.400, Table 212.400-1, F.A.C. Accordingly, the proposed sawmill would be classified as a *new major facility* subject to PSD NSR if located in an attainment area and if potential emissions from the project equal or exceed 250 tpy (excluding fugitive emissions) of any regulated pollutant.

The proposed McDavid Sawmill will be located in an attainment area and will have potential emissions of a regulated pollutant in excess of 250 tpy. Therefore, the McDavid Sawmill qualifies as a new major facility and is subject to the PSD NSR requirements of Section 62-212.400, F.A.C., for those pollutants which are emitted at or above the specified PSD significant emission rate levels. Comparisons of estimated potential annual emission rates for the McDavid Sawmill and the PSD significant emission rate thresholds are provided in Table 3-2. As shown in this table, potential emissions of VOCs are projected to exceed the applicable PSD significant emission rate level. This pollutant is, therefore, subject to the PSD NSR requirements of Section 62-212.400, F.A.C. Detailed emission rate estimates for the McDavid Sawmill are provided in Attachment B.

Table 3-2. Projected Emissions Compared to PSD Significant Emission Rates

Pollutant	Projected Maximum Annual Emissions (tpy)	PSD Significant Emission Rate (tpy)	PSD Applicability
NO_x	39.0	40	No
CO	70.1	100	No
PM	14.5	25	No
PM_{10}	14.5	15	No
SO_2	0.3	40	No
Ozone/VOC	325.7	40	Yes
Lead	Negligible	0.6	No
Mercury	Negligible	0.1	No
Total fluorides	Not Present	3	No
H_2SO_4 mist	Negligible	7	No
Total reduced sulfur (including hydrogen sulfide)	Not Present	10	No
Reduced sulfur compounds (including hydrogen sulfide)	Not Present	10	No
Municipal waste combustor acid gases (measured as SO_2 and hydrogen chloride)	Not Present	40	No
Municipal waste combustor metals (measured as PM)	Not Present	15	No
Municipal waste combustor organics (measured as total tetra- through octa-chlorinated dibenzo-p-dioxins and dibenzofurans)	Not Present	3.5×10^{-6}	No

Sources: Section 62-212.400, Table 212.400-2, F.A.C.
ECT, 1999.

4.0 PSD NSR REQUIREMENTS

4.1 CONTROL TECHNOLOGY REVIEW

Pursuant to Rule 62-212.400(5)(c), F.A.C., an analysis of BACT is required for each pollutant which is emitted by the proposed McDavid Sawmill in amounts equal to or greater than the PSD significant emission rate levels. As defined by Rule 62-210.200(42), F.A.C., BACT is:

> "an emission limitation, including a visible emission standard, based on the maximum degree of reduction of each pollutant emitted which the Department, on a case by case basis, taking into account energy, environmental, and economic impacts, and other costs, determines is achievable through application of production processes and available methods, systems and techniques (including fuel cleaning or treatment or innovative fuel combustion techniques) for control of each such pollutant. If the Department determines that technological or economic limitations on the application of measurement methodology to a particular part of an emissions unit or facility would make the imposition of an emission standard infeasible, a design, equipment, work practice, operational standard or combination thereof, may be prescribed instead to satisfy the requirement for the application of BACT. Such standard shall, to the degree possible, set forth the emissions reductions achievable by implementation of such design, equipment, work practice or operation. Each BACT determination shall include applicable test methods or shall provide for determining compliance with the standard(s) by means which achieve equivalent results."

BACT determinations are made on a case-by-case basis as part of the FDEP NSR process and apply to each pollutant which exceeds the PSD significant emission rate thresholds shown in Table 3-2. All emission units involved in a major modification or a new major source that emit or increase emissions of the applicable pollutants must undergo BACT analysis. Because each applicable pollutant must be analyzed, particular emission units may undergo BACT analysis for more than one pollutant.

BACT is defined in terms of a numerical emissions limit unless determined to be infeasible. This numerical emissions limit can be based on the application of air pollution control equipment; specific production processes, methods, systems, or techniques; fuel cleaning; or combustion techniques. BACT limitations may not exceed any applicable federal new source performance standard (NSPS) or national emission standard for hazardous air pollutants (NESHAP), or any other emission limitation established by state regulations.

BACT analyses are conducted using the *top-down* analysis approach, which was outlined in a December 1, 1987, memorandum from Craig Potter, EPA Assistant Administrator, to EPA Regional Administrators on the subject of "Improving New Source Review (NSR) Implementation." Using the top-down methodology, available control technology alternatives are identified based on knowledge of the particular industry of the applicant and previous control technology permitting decisions for other identical or similar sources. These alternatives are rank ordered by stringency into a control technology hierarchy. The hierarchy is evaluated starting with the *top*, or most stringent alternative, to determine economic, environmental, and energy impacts, and to assess the feasibility or appropriateness of each alternative as BACT based on site-specific factors. If the top control alternative is not applicable, or is technically or economically infeasible, it is rejected as BACT, and the next most stringent alternative is then considered. This evaluation process continues until an applicable control alternative is determined to be both technologically and economically feasible, thereby defining the emission level corresponding to BACT for the pollutant in question emitted from the particular facility under consideration.

4.2 AMBIENT AIR QUALITY MONITORING

In accordance with the PSD requirements of Rule 62-212.400(5)(f), F.A.C., any application for a PSD permit must contain, for each pollutant subject to review, an analysis of ambient air quality data in the area affected by the proposed major stationary source or major modification. The affected pollutants are those that the source would potentially emit in significant amounts; i.e., those that exceed the PSD significant emission rate thresholds shown in Table 3-2.

Preconstruction ambient air monitoring for a period of up to 1 year generally is appropriate to complete the PSD requirements. Existing data from the vicinity of the proposed source may be used if the data meet certain quality assurance requirements; otherwise, additional data may need to be gathered. Guidance in designing a PSD monitoring network is provided by EPA's *Ambient Monitoring Guidelines for Prevention of Significant Deterioration* (1987).

Rule 62-212.400(2)(e), F.A.C., provides an exemption that excludes or limits the pollutants for which an air quality monitoring analysis is conducted. This exemption states that a proposed facility shall be exempt from the monitoring requirements of Rule 62-212.400(5)(f) and (g), F.A.C., with respect to a particular pollutant if the emissions increase of the pollution from the source or modification would cause, in any area, air quality impacts less than the PSD *de minimis* ambient impact levels presented in Section 62-212.400, Table 212.400-3, F.A.C. (see Table 4-1). In addition, an exemption may be granted if the air quality impacts due to existing sources in the area of concern are less than the PSD *de minimis* ambient impact levels.

Applicability of the PSD preconstruction ambient monitoring requirements to the proposed McDavid Sawmill is discussed in Section 7.0.

4.3 AMBIENT IMPACT ANALYSIS

An air quality or source impact analysis must be performed for a proposed major source subject to PSD for each pollutant for which the increase in emissions exceeds the significant emission rates (see Table 3-2). The FDEP rules specifically require the use of applicable EPA atmospheric dispersion models in determining estimates of ambient concentrations (refer to Rule 62-204.220[4], F.A.C.). Guidance for the use and application of dispersion models is presented in the EPA *Guideline on Air Quality Models* as published in Appendix W to 40 CFR Part 51. Criteria pollutants may be exempt from the full source impact analysis if the net increase in impacts due to the new source or modification is

Table 4-1. PSD *De Minimis* Ambient Impact Levels

Averaging Time	Pollutant	Significance Level ($\mu g/m^3$)
Annual	NO_2	14
Quarterly	Lead	0.1
24-Hour	PM_{10}	10
	SO_2	13
	Mercury	0.25
	Fluorides	0.25
8-Hour	CO	575
1-Hour	Hydrogen sulfide	0.2
NA	Ozone	100 tpy of VOC emissions

Note: $\mu g/m^3$ = micrograms per cubic meter.

Source: Section 62-212.400, Table 212.400-3, F.A.C.

below the appropriate Rule 62-210.200(259), F.A.C., significant impact level, as presented in Table 4-2.

Ozone is one pollutant for which a source impact analysis is not normally required. Ozone is formed in the atmosphere as a result of complex photochemical reactions. Models for ozone generally are applied to entire urban areas. Various lengths of record for meteorological data can be used for impact analyses.

A 5-year period can be used with corresponding evaluation of the highest of the second-highest short-term concentrations for comparison to AAQS or PSD increments. The term *highest, second-highest* (HSH) refers to the highest of the second-highest concentrations at all receptors (i.e., the highest concentration at each receptor is discarded). The second-highest concentration is significant because short-term PSD increments specify that the standard should not be exceeded at any location more than once per year. If less than 5 years of meteorological data are used, the highest concentration at each receptor must be used.

In promulgating the 1977 CAA Amendments, Congress specified that certain increases above an air quality *baseline concentration* level for SO_2 and TSP would constitute significant deterioration. The magnitude of the increment that cannot be exceeded depends on the classification of the area in which a new source (or modification) will have an impact. Three classifications were designated based on criteria established in the CAA Amendments. Initially, Congress promulgated areas as Class I (international parks, national wilderness areas, and memorial parks larger than 2,024 hectares [ha] (5,000 acres), and national parks larger than 2,428 ha (6,000 acres) or Class II (all other areas not designated as Class I). No Class III areas, which would be allowed greater deterioration than Class II areas, were designated. However, the states were given the authority to redesignate any Class II area to Class III status, provided certain requirements were met. EPA then promulgated, as regulations, the requirements for classifications and area designations.

Table 4-2. Significant Impact Levels

Pollutant	Averaging Period	Concentration (μg/m^3)
SO_2	Annual	1
	24-Hour	5
	3-Hour	25
PM_{10}	Annual	1
	24-Hour	5
NO_2	Annual	1
CO	8-Hour	500
	1-Hour	2,000
Lead	Quarterly	0.03

Source: Rule 62-210.200(260), F.A.C.

On October 17, 1988, EPA promulgated PSD increments for NO_2; the effective date of the new regulation was October 17, 1989. However, the baseline date for NO_2 increment consumption was set at March 28, 1988, for Florida; new major sources or modifications constructed after this date will consume NO_2 increment.

On June 3, 1993, EPA promulgated PSD increments for PM_{10}; the effective date of the new regulation was June 3, 1994. The increments for PM_{10} replace the original PM increments which were based on TSP. Baseline dates and areas that were previously established for the original TSP increments remain in effect for the new PM_{10} increments. Revised NAAQS for PM, which includes a revised NAAQS for PM_{10} and a new NAAQS for particulate matter less than or equal to 2.5 micrometers ($PM_{2.5}$) became effective on September 16, 1997. The new NAAQS for $PM_{2.5}$ was recently remanded to EPA and is not currently enforceable. In addition, due to the significant technical difficulties that exist with respect to $PM_{2.5}$ monitoring, emissions estimation, and modeling, EPA has determined that implementation of PSD permitting for $PM_{2.5}$ is administratively impracticable at this time for State permitting authorities. Accordingly, EPA has advised that PM_{10} may be used as a surrogate for $PM_{2.5}$ in meeting NSR requirements until these difficulties are resolved.

Current Florida PSD allowable increments are specified in Section 62-204.260, F.A.C., and shown on Table 4-3.

The term *baseline concentration* evolved from federal and state PSD regulations and denotes a concentration level corresponding to a specified baseline date and certain additional baseline sources. By definition in the PSD regulations, as amended, *baseline concentration* means the ambient concentration level that exists in the baseline area at the time of the applicable minor source baseline date. A baseline concentration is determined for each pollutant for which a baseline date is established based on:

1. The actual emissions representative of sources in existence on the applicable minor source baseline date.

Table 4-3. PSD Allowable Increments ($\mu g/m^3$)

Pollutant	Averaging Time	Class I	Class II	Class III
PM_{10}	Annual arithmetic mean	4	17	34
	24-Hour maximum*	8	30	60
SO_2	Annual arithmetic mean	2	20	40
	24-Hour maximum*	5	91	182
	3-Hour maximum*	25	512	700
NO_2	Annual arithmetic mean	2.5	25	50

*Maximum concentration not to be exceeded more than once per year at any one location.

Source: Section 62-204.260, F.A.C.

2. The allowable emissions of major stationary sources which commenced construction before the major source baseline date but were not in operation by the applicable minor source baseline date.

The following will not be included in the baseline concentration and will affect the applicable maximum allowable increase(s); i.e., allowed increment consumption:

1. Actual emissions from any major stationary source on which construction commenced after the major source baseline date.
2. Actual emissions increases and decreases at any stationary source occurring after the minor source baseline date.

It is not necessary to make a determination of the baseline concentration to determine the amount of PSD increment consumed. Instead, increment consumption calculations need only reflect the ambient pollutant concentration *change* attributable to emission sources that affect increment. *Major source baseline date* means January 6, 1975, for PM (TSP/PM_{10}) and SO_2 and February 8, 1988, for NO_2. *Minor source baseline date* means the earliest date after the trigger date, on which the first complete application (in Florida, December 27, 1977, for PM/PM_{10} and SO_2 and March 28, 1988, for NO_x) was submitted by a major stationary source or major modification subject to the requirements of 40 CFR §52.21 or Section 62-212.400, F.A.C. The trigger dates are August 7, 1977, for PM (TSP/PM_{10}) and SO_2 and February 8, 1988, for NO_2.

The ambient impact analysis for the McDavid Sawmill is provided in Section 6.0.

4.4 ADDITIONAL IMPACT ANALYSES

Rule 62-212.400(5)(e), F.A.C., requires additional impact analyses for three areas: (1) associated growth, (2) soils and vegetation impact, and (3) visibility impairment. The level of analysis for each area should be commensurate with the scope of the proposed project under consideration. A more extensive analysis would be conducted for projects having large emission increases than those that will cause a small increase in emissions.

The growth analysis generally includes:

1. A projection of the associated industrial, commercial, and residential growth that will occur in the area.
2. An estimate of the air pollution emissions generated by the permanent associated growth.
3. An air quality analysis based on the associated growth emission estimates and the emissions expected to be generated directly by the new source or modification.

The soils and vegetation analysis is typically conducted by comparing projected ambient concentrations for the pollutants of concern with applicable susceptibility data from the air pollution literature. For most types of soils and vegetation, ambient air concentrations of criteria pollutants below the NAAQS will not result in harmful effects. Sensitive vegetation and emissions of toxic air pollutants could necessitate a more extensive assessment of potential adverse effects on soils and vegetation.

The visibility impairment analysis pertains particularly to Class I area impacts and other areas where good visibility is of special concern. A quantitative estimate of visibility impairment is conducted, if warranted by the scope of the proposed project.

The additional impact analyses for the McDavid Sawmill is provided in Section 8.0.

5.0 BEST AVAILABLE CONTROL TECHNOLOGY ANALYSIS

5.1 METHODOLOGY

BACT analyses were performed in accordance with the EPA top-down method as previously described in Section 4.1. The first step in the top-down BACT procedure is the identification of all available control technologies. Alternatives considered included process designs and operating practices that reduce the formation of emissions, post-process stack controls that reduce emissions after they are formed, and combinations of these two control categories. Sources of information which were used to identify control alternatives include:

- EPA reasonably available control technology (RACT)/BACT/lowest achievable emission rate (LAER) Clearinghouse (RBLC) via the RBLC Information System database.
- EPA NSR web site.
- EPA Control Technology Center (CTC) web site.
- Recent State BACT determinations for similar facilities.
- Process equipment and control system vendor information.
- Discussions with NCASI personnel familiar with sawmill operations.

Following the identification of available control technologies, the next step in the analysis is to determine which technologies are feasible for the processes under review. Technical feasibility was evaluated using the criteria contained in Chapter B of the draft *EPA NSR Workshop Manual* (EPA, 1990). The third step in the top-down BACT process is the ranking of the remaining technically feasible control technologies from high to low in order of control effectiveness.

An assessment of energy, environmental, and economic impacts is then performed. The economic analysis employed the procedures found in the Office of Air Quality Planning and Standards (OAQPS) *Control Cost Manual* (EPA, 1996). Specific factors used in estimating capital and annual operating costs are summarized in Table 5-1.

Table 5-1. Capital and Annual Operating Cost Factors

Cost Item	Factor
Direct Capital Costs	
Sales tax	0.06 x purchased equipment cost
Freight	0.05 x purchased equipment cost
Foundations and supports	0.08 x purchased equipment cost
Handling and erection	0.14 x purchased equipment cost
Electrical	0.04 x purchased equipment cost
Piping	0.02 x purchased equipment cost
Insulation	0.01 x purchased equipment cost
Painting	0.01 x purchased equipment cost
Indirect Capital Costs	
Engineering	0.10 x purchased equipment cost
Construction and field expenses	0.05 x purchased equipment cost
Contractor fees	0.10 x purchased equipment cost
Start-up	0.02 x purchased equipment cost
Performance testing	0.01 x purchased equipment cost
Contingencies	0.03 x purchased equipment cost
Direct Annual Operating Costs	
Supervisor labor	0.15 x total operator labor cost
Maintenance labor	1.10 x operator labor direct wage
Maintenance materials	1.00 x total maintenance labor cost
Indirect Annual Operating Costs	
Overhead	0.60 x total of operating, supervisory, and maintenance labor and maintenance materials
Administrative charges	0.02 x total capital investment
Property taxes	0.01 x total capital investment
Insurance	0.01 x total capital investment

Source: EPA, 1996.

The fifth and final step is the selection of a BACT emission limitation or a design, equipment, work practice, operational standard or combination thereof, corresponding to the most stringent, technically feasible control technology that was not eliminated based on adverse energy, environmental, or economic grounds.

As indicated in Section 3.3, Table 3-2, projected annual emission rates of VOC for the McDavid Sawmill exceed the PSD significance rate and, therefore, is subject to BACT analysis. VOC control technology analysis using the five-step top-down BACT method is provided in Section 5.3.

5.2 FEDERAL AND FLORIDA EMISSION STANDARDS

Pursuant to Rule 62-212.400(5)(b), F.A.C., BACT emission limitations must be no less stringent than any applicable NSPS (40 CFR Part 60), NESHAP (40 CFR Parts 61 and 63), and FDEP emission standards (Chapter 62-296, F.A.C., *Stationary Sources—Emission Standards*.

On the federal level, the two package boilers each have a rated heat input greater than 10 MMBtu/hr and less than 100 MMBtu/hr and, therefore, are subject to the requirements of NSPS Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units*. However, Subpart Dc does not contain any emission limitations or monitoring requirements which are applicable to natural gas-fired boilers. Applicable reporting and recordkeeping requirements are contained in CFR §60.48c(a)(1) and (3) and §60.48c(i).

There are no other NSPS or NESHAPs which are applicable to any other McDavid Sawmill processes.

FDEP emission standards for stationary sources are contained in Chapters 62-296, F.A.C., *Stationary Sources—Emission Standards*. Chapter 62-296, F.A.C., contains general emission standards for sources emitting VOCs (Rule 62-296.320[1], F.A.C.) and PM (Rules 62-296.320[4][b] and [c], F.A.C.) which may be applicable to the McDavid Sawmill. Rule 62-

296.320[4][b] and [c], F.A.C.) which may be applicable to the McDavid Sawmill. Rule 62-296.320(1), F.A.C. states that "No person shall store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered by the Department." With respect to PM emissions, visible emissions are limited to a maximum of 20 percent opacity pursuant to Rule 62-296.320(4)(b), F.A.C. Reasonable precautions are required to be taken to prevent the emissions of unconfined PM pursuant to Rule 62-296.320(c), F.A.C. Unconfined emissions are defined by Rule 62-210.200(300), F.A.C. as "Emissions which escape and become airborne from unenclosed operations or which are emitted into the atmosphere without being conducted through a stack."

Sections 62-296.401 through 62-296.417, F.A.C., specify emission standards for 17 categories of sources. Section 62-296.406, F.A.C., contains emission limitations for visible emissions, PM, and SO_2, and is applicable to new and existing fossil fuel steam generators with less than 250 MMBtu/hr heat input. This rule would, therefore, be applicable to the two natural gas-fired boilers. Rule 62-296.406(1), F.A.C., limits visible emissions to no more than 20 percent opacity except for either one 6-minute period per hour during which opacity shall not exceed 27 percent, or one 2-minute period per hour during which opacity shall not exceed 40 percent. Rules 62-296.406(2) and (3), F.A.C., require BACT for PM and SO_2. None of the remaining categorical emission standards contained in Sections 62-296.401 through 62-296.417, F.A.C., are applicable to the McDavid Sawmill emission sources.

Emission standards applicable to sources located in nonattainment and maintenance areas are contained in Sections 62-296.500 (for ozone nonattainment and maintenance areas) and 62-296.700, F.A.C. (for PM nonattainment and maintenance areas). Because the McDavid Sawmill will be located in Escambia County, Florida, and because this county is designated attainment for all criteria pollutants and is not a maintenance area, these emission standards are not applicable. Finally, Section 62-204.800, F.A.C., adopts federal NSPS and

NESHAP, respectively, by reference. As noted previously, NSPS Subpart Dc, *Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units* is applicable to the two package steam boilers. There are no applicable NESHAP requirements.

Applicable federal and state emission standards are summarized in Tables 5-2 and 5-3, respectively. BACT emission limitations proposed for the McDavid Sawmill emission sources are all more stringent than the applicable federal and state standards cited in these tables.

5.3 <u>BACT ANALYSIS FOR VOC</u>

5.3.1 PACKAGE BOILERS

For the two package boilers, VOC emissions result from the incomplete combustion of carbon and organic compounds. Factors affecting VOC emissions include firing temperatures, residence time in the combustion zone, and combustion chamber mixing characteristics.

5.3.1.1 <u>Potential Control Technologies</u>

Available technologies for controlling VOCs from gas-fired boilers include combustion process design and use of oxidation catalyst. Each of these technologies is discussed in the following sections.

<u>Combustion Process Design</u>

Combustion process controls involve burner designs and operation practices that improve the oxidation process and minimize incomplete combustion. Due to the high combustion efficiency of natural gas-fired boilers, VOC emissions are inherently low.

<u>Oxidation Catalyst</u>

Noble metal (commonly platinum or palladium) oxidation catalysts are used to promote oxidation of VOCs to carbon dioxide (CO_2) and water at temperatures lower than would

Table 5-2. Federal Emission Limitations

NSPS Subpart Dc, Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.

§ 60.48c Reporting and recordkeeping requirements:

(a) The owner or operator of each affected facility shall submit notification of the date of construction or reconstruction, anticipated startup, and actual startup, as provided by §60.7 of this part. This notification shall include:

> (1) The design heat input capacity of the affected facility and identification of fuels to be combusted in the affected facility.
>
> (3) The annual capacity factor at which the owner or operator anticipates operating the affected facility based on all fuels fired and based on each individual fuel fired.

(i) All records required under this section shall be maintained by the owner or operator of the affected facility for a period of 2 years following the date of such record.

Sources: 40 CFR 60, Subpart Dc.

Table 5-3. Florida Emission Limitations

Pollutant	Emission Limitation
General Volatile Organic Compound Emission Standard Rule 62-296.320(1)(a), F.A.C.	
• VOC	No person shall store, pump, handle, process, load, unload or use in any process or installation, volatile organic compounds or organic solvents without applying known and existing vapor emission control devices or systems deemed necessary and ordered the Department.
General PM Emission Standards Rules 62-296.320(4)(b) and 62-296.320(4)(c), F.A.C.	
• Visible emissions	< 20 percent opacity (averaged over a 6-minute period)
• Unconfined PM	No person shall cause, let, permit, suffer or allow the emissions of unconfined particulate matter from any activity, including vehicular movement; transportation of materials; construction, alteration, demolition or wrecking; or industrially related activities such as loading, unloading, storing or handling; without taking reasonable precautions to prevent such emissions.
Fossil Fuel Steam Generators Less Than 250 MMBtu/hr Heat Input Rule 62-296.406, F.A.C. (Package Boilers)	
• PM	BACT
• Visible emissions	< 20 percent opacity (averaged over a 6-minute period)
• SO_2	BACT

Source: Chapter 62-296, F.A.C.

be necessary for oxidation without a catalyst. The operating temperature range for oxidation catalysts is between 650 and 1,150 degrees Fahrenheit (°F).

Efficiency of VOC oxidation varies with inlet temperature. Control efficiency will increase with increasing temperature for VOCs up to a temperature of approximately 1,100°F; further temperature increases will have little effect on control efficiency. Temperatures on the order of 900°F are needed to oxidize VOCs. Inlet temperature must also be maintained below 1,350 to 1,400°F to prevent thermal aging of the catalyst which will reduce catalyst activity and pollutant removal efficiencies. Removal efficiency will also vary with gas residence time which is a function of catalyst bed depth. Increasing bed depth will increase removal efficiencies but will also cause an increase in pressure drop across the catalyst bed. VOC removal efficiency will vary with the species of hydrocarbon. In general, unsaturated hydrocarbons, such as ethylene, are more reactive with oxidation catalysts than saturated species such as ethane. A typical VOC control efficiency using oxidation catalyst is 50 percent.

Oxidation catalysts are susceptible to deactivation due to impurities present in the exhaust gas stream. Arsenic, iron, sodium, phosphorous, and silica will all act as catalyst poisons causing a reduction in catalyst activity and pollutant removal efficiencies.

Oxidation catalysts are nonselective and will oxidize other compounds in addition to CO and VOCs. The nonselectivity of oxidation catalysts is important in assessing applicability to exhaust streams containing sulfur compounds. Sulfur compounds that have been oxidized to SO_2 in the combustion process will be further oxidized by the catalyst to sulfur trioxide (SO_3). SO_3 will, in turn, combine with moisture in the gas stream to form sulfuric acid (H_2SO_4) mist. Due to the oxidation of sulfur compounds and excessive formation of H_2SO_4 mist emissions, oxidation catalysts are not considered to be technically feasible for combustion devices that are fired with fuels containing appreciable amounts of sulfur.

5.3.1.2 Technical Feasibility

Due to efficient combustion and use of natural gas, VOC emissions from the two package boilers are relatively low. Based on boiler vendor emission estimates, maximum VOC emissions are projected to be no more 0.88 pound per hour (lb/hr) based on an emission factor of 0.016 lb/MMBtu. This emission rate equates to 3.9 tpy per boiler assuming continuous operation. Such low levels of VOC emissions are not amenable to the application of oxidation catalysts or post-combustion thermal oxidation control systems because removal efficiencies would be low and control costs excessive. The relatively small size of the package boilers would also present technical difficulties with respect to the installation of an oxidation catalyst system; such a system would need to be located within the boiler at the proper process temperature to be effective. Champion is not aware of any small, natural gas-fired package boilers which are equipped with post-combustion VOC control systems. Accordingly, proper and efficient combustion is considered to be the only technically feasible approach for controlling VOCs from the two small, natural-gas fired package boilers.

5.3.2 LUMBER KILNS

VOC emissions from the lumber drying kilns are primarily due to losses of naturally occurring organic compounds, primarily terpenes, contained in the SYP logs.

5.3.2.1 Potential Control Technologies

VOC control technologies potentially available for the lumber kilns include:

- RTO.
- RCO.
- Biofiltration.

Each of these technologies is discussed in the following sections.

Thermal Oxidation Systems

Thermal oxidation control systems are employed to control a wide variety of continuous emission streams containing VOCs. The basic process involved in thermal oxidation is the chemical combustion of the VOC containing waste gas stream at a sufficient temperature and residence time to oxidize the VOCs to CO_2 and water (H_2O). The percent conversion of VOC to CO_2 and H_2O depends on the oxidizer design; i.e., specific design combustion temperature, residence time, and extent of gas stream mixing within the oxidizer.

Thermal oxidation is typically applied to exhaust streams containing dilute mixtures of VOC and air. To satisfy insurance requirements, waste gas stream VOC concentrations are normally no more than 25 percent of the lower explosive limit (LEV). Due to the dilute nature of the waste gas stream, these streams also have a low heat content. Accordingly, thermal oxidizers usually require the addition of supplemental fuel to sustain the combustion process.

The main component of a thermal oxidation system is the combustion chamber in which the VOC-containing waste stream is burned. Within the combustion chamber, a nozzle-stabilized flame is maintained by a combination of waste gas VOC compounds, auxiliary fuel, and supplemental air if necessary. The waste gas stream is heated from its inlet temperature to its ignition temperature. The ignition temperature varies depending on the VOC species being combusted and normally is determined empirically. Ignition will occur for any concentration of VOCs providing the combustion chamber temperature is sufficiently elevated. The extent of VOC destruction depends on the three "Ts" of combustion; time, temperature, and turbulence. The waste gas stream must be oxidized at a sufficiently high temperature, an adequate residence time, and with proper mixing in order to achieve acceptable VOC destruction efficiencies. The shorter the residence time, the higher the combustion reactor temperature must be and vice versa. Most thermal oxidation units are designed to provide no more than one second of residence time within a temperature range of 1,200 to 2,000 °F.

A number of heat recovery schemes are utilized to reduce the amount of supplemental fuel required; these heat recovery designs serve to define the various types of thermal oxidation systems. A thermal recuperative oxidizer uses a conventional heat exchanger to preheat the inlet VOC waste gas stream using the hot, outlet oxidizer gas stream as the heat exchange medium. Additional heat recovery and fuel savings can be achieved by using direct contact heat exchangers composed of ceramic material in a regenerative type oxidation system. In a regenerative system, the inlet waste gas stream first passes through a hot ceramic bed, thereby increasing the gas stream temperature and cooling the ceramic bed. The heated gas stream then flows to a combustion chamber where supplemental fuel is added to bring the gas stream to its ignition temperature. Following oxidation in the combustion chamber (with the appropriate residence time), the hot combustion gases flow through a second ceramic bed to raise the second bed to the outlet gas temperature prior to discharging to the atmosphere. The process flows are then switched by means of a damper system such that the inlet waste gas stream first passes through the hot ceramic bed, to the combustion chamber, and then to the cooled ceramic bed before exiting to the atmosphere. Thus, the two ceramic heat exchanger beds switch duty depending on the oxidizer cycle; i.e., first to transfer heat to the incoming gas stream and then to recover heat from the hot, combustion chamber outlet exhaust stream. Ceramic media is used in the oxidizer heat exchangers due to its ability to tolerate high temperatures. Thermal energy efficiencies up to 95 percent can be achieved with regenerative thermal oxidizer systems.

RCOs function in a similar fashion to RTOs; i.e., use ceramic heat exchange media in a cycling mode of operation. To further reduce operating costs, RCOs include a catalyst bed located within the combustion chamber. The catalyst bed serves to increase the reaction rate allowing for combustion to occur at a lower temperature than a conventional RTO. The savings in combustion chamber supplemental fuel costs is somewhat offset by the increased capital cost of a RCO system.

Biofiltration

Biofiltration utilizes microorganisms to naturally biodegrade VOC exhaust streams to CO_2 and H_2O. The VOC-containing gas stream is passed through one or more beds of biomedia containing microorganisms selected to biodegrade the specific VOC compounds present in the waste gas stream. The VOCs are degraded to lower level compounds and eventually to CO_2 and H_2O as the exhaust stream passes through the biofilter beds. In turn, the microorganisms receive energy and nutrients from the biodegradation process. Accordingly, the biofilter must be designed to have an adequate exhaust gas residence time and be populated with microorganisms which can be acclimated to effectively biodegrade a specific VOC waste stream. Waste VOC exhaust gas streams typically require conditioning, principally for temperature, prior to being treated by a biofilter.

5.3.2.2 Technical Feasibility

The nature of lumber kiln operation presents a number of technical challenges with respect to add-on thermal oxidation control systems. Each kiln employs ten separate vents to supply fresh inlet air and to exhaust moisture-laden air. As previously described in Section 2.2, these vents periodically switch service (approximately every 2 hours) such that the fresh air intake vents become wet-air exhausts and vice versa. The lumber kilns are operated under carefully controlled temperature and humidity conditions to properly dry the green lumber. Any control system design would need to be able to function in conjunction with this complex intake/exhaust kiln ventilation system and, at the same time, not adversely affect proper operation of the kilns.

The lumber kiln drying cycle is also highly variable with respect to exhaust flow rates and exhaust stream VOC content. The quantity of exhaust gas generated at any time during the drying cycle will depend on the various kiln operating parameters including internal kiln temperature and desired moisture removal rates. Advanced instrumentation and automatic controls are employed to operate the kiln vents to achieve the required drying cycle. Accordingly, routine operation of the kilns will result in a variable exhaust stream, both with respect to flow rates as well as VOC concentrations. Variations in exhaust gas temperatures and moisture contents will also occur. Varying flow rates and VOC concentration presents design challenges to RTO and RCO vendors; e.g., specifying the appropriate oxidizer combustion chamber volume to achieve the required temperature and residence time.

As noted previously, the VOCs present in the lumber kiln exhaust are primarily due to naturally occurring (i.e., biogenic) organic compounds, principally terpenes, that are contained in the SYP logs. Condensation of these viscous, resinous compounds in any downstream control system will, over time, result in accumulation of "sticky" deposits which will adversely affect control system operations; e.g., ductwork and oxidizer dampers and controls. For this reason, maintenance requirements would be expected to be significantly higher for a lumber kiln control system than for a control system without the potential for such condensation. Exhaust stream condensation and deposition of solids will particularly affect the operation of RCOs and biofilters because these control technologies are susceptible to plugging.

There are no known applications of biolfiltration to lumber kiln exhaust streams. There would, therefore, need to be a considerable amount of research and "up front" engineering necessary to properly design a biofiltration system to treat a lumber kiln exhaust stream. This effort would include fully characterizing the exhaust stream (i.e., range of flow rates, temperatures, VOC species and concentrations, etc.), identify potential microorganisms capable of biodegrading the specific VOCs present, and determining exhaust stream conditioning requirements (e.g., lowering the exhaust stream temperature). The volume of kiln exhaust requiring treatment, approximately 138,000 actual cubic feet per minute (acfm) for the three kilns, would require a relatively long biofilter contact period for effective biodegradation. This, in turn, would result in a large biofilter volume to obtain a suitable velocity and residence time in the biofilter media bed. As noted above, condensation of the kiln exhaust stream raises the issue of potential plugging of the biofilter media and resulting operational problems; i.e., excessive back-pressure would adversely affect proper kiln operation.

Due to these many technical problems, there are no lumber kilns operating with VOC thermal oxidation or biofiltration control systems. For two recent lumber kiln installations subject to PSD permitting review (one in North Carolina in mid 1997 and another in Texas in late 1998), the State regulatory agencies concluded in each case that "no controls" represents BACT for VOC for lumber kilns. Biofiltration is not considered to be a technically feasible control technology due to the many uncertainties regarding the design of such a system for a lumber kiln exhaust stream and the fact that it has not been demonstrated in practice for application to lumber kilns. Although unproven for lumber kilns, the RTO and RCO technologies were further evaluated for energy, environmental, and economic impacts.

5.3.3 ENERGY AND ENVIRONMENTAL IMPACTS

Application of RTO or RCO control technology will result in an energy penalty due to the use of supplemental fuel in the oxidizer combustion chamber. For RTO technology, the energy penalty is 18.0 MMBtu/hr; equivalent to the use of 150.2 million cubic feet (ft^3) of natural gas annually based on a natural gas heating value of 1,050 British thermal units per cubic foot (Btu/ft^3). For RCO technology, the energy penalty is 3.6 MMBtu/hr, equivalent to the use of 30.0 million ft^3 of natural gas annually based on a natural gas heating value of 1,050 Btu/ft^3. In addition, both control technologies will impose additional electricity demand due to the power needed to run the control system exhaust gas fans. For RTO technology, this electrical energy penalty is 5,479,380 kilowatt-hours per year (kW-hr/yr). The electrical energy penalty for RCO technology is 2,838,240 kW-hr/yr.

With respect to environmental impacts, the use of supplemental fuel in the RTO and RCO control systems will result in additional air emissions due to the combustion of natural gas. The following table summarizes the estimated additional emissions, based on EPA AP-42 emission factors for natural gas combustion, resulting from application of the RTO and RCO control technologies:

Pollutant	Annual Emissions (tpy)	
	RTO	RCO
NO_x	7.5	1.5
CO	6.3	1.3
VOC	0.4	0.1
PM	0.1	0.03

The additional electricity demands of the RTO and RCO control technologies will cause secondary air emissions; i.e., due to additional fuel combustion at the least-cost dispatch power plant (typically coal-fired).

5.3.4 ECONOMIC IMPACTS

An economic evaluation of RTO and RCO control technologies was performed using the OAQPS factors previously summarized in Table 5-1 and project-specific economic factors provided in Table 5-4. Specific capital and annual operating costs for RTO control technology are summarized in Tables 5-5 and 5-6. Specific capital and annual operating costs for RCO control technology are summarized in Tables 5-7 and 5-8.

The base case (i.e., uncontrolled rate for all three lumber kilns) annual VOC emission rate is 319.3 tpy. For both RTO and RCO technologies, the controlled annual VOC emission rate was based on a capture efficiency of 85 percent and a VOC destruction efficiency of 95 percent (for an overall VOC removal of 80.8 percent) resulting in a controlled annual VOC emission rate of 61.3 tpy. Base case and controlled VOC emission rates are summarized in Table 5-9.

The cost effectiveness of RTO and RCO control technologies for VOC emissions was determined to be $8,351 and $7,051 per ton of VOC removed, respectively. Based on these high control costs, use of RTO or RCO control technology to control VOC emissions is not

Table 5-4. Economic Cost Factors

Factor	Units	Value
Interest rate	%	8.0
Control system life	Years	10
RCO Catalyst life	Years	2
Electricity cost	$/kWh	0.045
Natural Gas Cost	$MMBtu	2.58
Labor costs (base rates)	$/hour	
Operator		10.55
Maintenance		13.12

Sources: Champion, 1999.
ECT, 1999.

Table 5-5. Capital Costs for RTO Control System (Three Oxidizers)

Item	Dollars	OAQPS Factor	Comments
Direct Costs			
Purchased Equipment			
RTO Control System	2,050,000		
Ductwork	501,000		
Total Control System	2,551,000	A	
Instrumentation	0	0.01 x A	Included in A
Sales Tax	123,000	0.06 x A	
Freight	25,050	0.05 x A	Ductwork Only
Total Purchased Equipment	**2,699,050**	B	
Installation			
Foundations & Supports	175,844	0.08 x B	Excluding Ductwork
Handling & Erection	307,727	0.14 x B	Excluding Ductwork
Electrical	87,922	0.04 x B	Excluding Ductwork
Piping	53,981	0.02 x B	
Insulation For Ductwork	26,991	0.01 x B	
Painting	0	0.01 x B	Included in A
Subtotal Installation Cost	**652,465**		
Subtotal Direct Costs	**3,351,515**	TDC	
Indirect Costs			
Engineering	539,810	0.10 x B	x 2, Custom Built
Construction & Field Expenses	134,953	0.05 x B	
Contractor Fees	269,905	0.10 x B	
Start-up	53,981	0.02 x B	
Performance Test	107,962	0.01 x B	x 4, Multiple Tests
Contingency	1,349,525	0.03 x B	50%, First Application on Kilns
Total Indirect Cost	**2,456,136**	TIC	
TOTAL CAPITAL INVESTMENT	**5,807,650**	TCI	

Sources: ECT, 1999.
Eisenmann Corp., 1999.

Table 5-6. Annual Operating Costs for RTO Control System (Three Oxidizers)

Item	Dollars	OAQPS Factor	Comments
Direct Costs			
Labor & Material Costs			
Operator	69,314	6.0 hr/shift (A)	Operator Labor @ $10.55/hr
Supervisor	10,397	0.15 x A	(3 Oxidizers, Complex System)
Maintenance			
Labor	86,198	6.0 hr/shift (B)	Operator Labor @ $13.12/hr
Material	86,198	1.0 x B	(3 Oxidizers, Complex System)
Subtotal Labor & Material Costs	**252,107**	C	
Utilities			
Natural Gas	406,814	18.0 MMBtu/hr	Natural Gas @ $2.58/MMBtu
Electricity	246,572	625.5 kW	Electricity @ $0.045/kWh
Subtotal Utilities	**653,387**		
Subtotal Direct Costs	**905,494**	TDC	
Indirect Costs			
Overhead	151,264	0.60 * C	
Administrative Charges	116,153	0.02 * TCI	
Property Taxes	58,077	0.01 * TCI	
Insurance	58,077	0.01 * TCI	
Capital Recovery	865,511		10 Years @ 8.0%
Subtotal Indirect Costs	**1,249,082**		
TOTAL ANNUAL COST	**2,154,575**		

Sources: Champion, 1999.
ECT, 1999.

Table 5-7. Capital Costs for RCO Control System (Three Oxidizers)

Item	Dollars	OAQPS Factor	Comments
Direct Costs			
Purchased Equipment			
RCO Control System	2,055,000		
Ductwork	501,000		
Total Control System	2,556,000	A	
Instrumentation	0	0.01 x A	Included in A
Sales Tax	123,300	0.06 x A	
Freight	0	0.05 x A	Included in A
Total Purchased Equipment	**2,679,300**	B	
Installation			
Foundations & Supports	174,264	0.08 x B	Excluding Ductwork
Handling & Erection	304,962	0.14 x B	Excluding Ductwork
Electrical	87,132	0.04 x B	Excluding Ductwork
Piping	53,586	0.02 x B	
Insulation For Ductwork	26,793	0.01 x B	
Painting	0	0.01 x B	Included in A
Subtotal Installation Cost	**646,737**		
Subtotal Direct Costs	**3,326,037**	TDC	
Indirect Costs			
Engineering	535,860	0.10 x B	x 2, Custom Built
Construction & Field Expenses	133,965	0.05 x B	
Contractor Fees	267,930	0.10 x B	
Start-up	53,586	0.02 x B	
Performance Test	107,172	0.01 x B	x 4, Multiple Tests
Contingency	1,339,650	0.03 x B	50%, First Application on Kilns
Total Indirect Cost	**2,438,163**	TIC	
TOTAL CAPITAL INVESTMENT	**5,764,200**	TCI	

Sources: ECT, 1999.
Geoenergy, 1999.

Table 5-8. Annual Operating Costs for RCO Control System (Three Oxidizers)

Item	Dollars	OAQPS Factor	Comments
Direct Costs			
Labor & Material Costs			
Operator	69,314	6.0 hr/shift (A)	Operator Labor @ $10.55/hr
Supervisor	10,397	0.15 x A	(3 Oxidizers, Complex System)
Maintenance			
Labor	86,198	6.0 hr/shift (B)	Operator Labor @ $13.12/hr
Material	86,198	1.0 x B	(3 Oxidizers, Complex System)
Subtotal Labor & Material Costs	**252,107**	C	
Catalyst Costs			
Replacement (materials + labor)	285,000		
Annualized Catalyst Cost	159,819		2 Years @ 8.0%
Subtotal Catalyst Costs	**159,819**		
Utilities			
Natural Gas	81,363	3.6 MMBtu/hr	Natural Gas @ $2.58/MMBtu
Electricity	130,086	330 kW	Electricity @ $0.045/kWh
Subtotal Utilities	**211,449**		
Subtotal Direct Costs	**623,375**	TDC	
Indirect Costs			
Overhead	151,264	0.60 * C	
Administrative Charges	115,284	0.02 * TCI	
Property Taxes	57,642	0.01 * TCI	
Insurance	57,642	0.01 * TCI	
Capital Recovery	814,014		10 Years @ 8.0%
Subtotal Indirect Costs	**1,195,846**		
TOTAL ANNUAL COST	**1,819,222**		

Sources: Champion, 1999.
ECT, 1999.

considered to be economically feasible. Results of the RTO and RCO economic analyses are summarized in Table 5-9.

5.3.5 PROPOSED BACT DESIGN/OPERATIONAL STANDARDS

Use of state-of-the-art burner design and good operating practices to minimize incomplete combustion are proposed as BACT for VOCs for the two package boilers. This is consistent with prior BACT determinations for gas-fired boilers. Recent RBLC NO_x BACT determinations for natural gas-fired boilers are provided in Table 5-10.

For the lumber kilns, BACT for VOCs is considered to be the proper installation, operation, and maintenance of the kilns. As noted previously, there are no known installations of VOC controls on existing lumber kilns. Recent (mid 1997 and late 1998) regulatory agency BACT determinations for new lumber kilns located in Texas and North Carolina concluded that "no controls" represents BACT for VOCs. The unique and complex manner in which lumber kilns are operated (e.g., use of a series of vents which periodically switch mode from inlet to outlet service, wide variation in exhaust flow rates and VOC concentrations, and potential for condensation of viscous substances and concomitant fouling and plugging of control system components) presents daunting technical challenges for RTO and RCO control technologies. Table 5-11 summarizes the VOC BACT design/operational standards proposed for the McDavid Sawmill.

Table 5-9. Summary of VOC BACT Analysis

	Emission Impacts			Economic Impacts			Energy Impacts	Environmental Impacts	
Control Option	Emission Rates[1] (lb/hr)	Emission Rates[1] (tpy)	Emission Reduction (tpy)	Installed Capital Cost ($)	Total Annualized Cost ($/yr)	Cost Effectiveness Over Baseline ($/ton)	Increase Over Baseline (MMBtu/yr) [kWh/yr]	Toxic Impact (Y/N)	Adverse Envir. Impact (Y/N)
RTO	14.0	61.3	258.0	5,807,650	2,154,575	8,351	157,680 5,479,380	N	N
RCO	14.0	61.3	258.0	5,764,200	1,819,222	7,051	31,536 2,890,800	N	N
Baseline	72.9	319.3	N/A	N/A	N/A	N/A	N/A	N/A	N/A

[1] RTO and RCO emission rates based on 85% capture efficiency and 95% VOC destruction efficiency.

Source: ECT, 1999.

Table 5-10. RBLC VOC Summary - Natural Gas-Fired Boilers

RBLCID	Facility Name	City	Permit Dates Issue	Permit Dates Last Update	Process Description	Throughput Rates	Emission Limits	Control Description	BASIS
AL-0125	ALABAMA POWER PLANT BARRY	BUCKS	8/7/98	4/15/99	BOILERS, NATURAL GAS COMBUSTION	510 MW(TOTAL)	0.015 LB/MMBTU	EFFICIENT COMBUSTION	BACT-PSD
AR-0017	STAFFORD RAILSTEEL CORPORATION	WEST MEMPHIS	8/17/93	3/24/95	BOILER, VTD	46.5 MMBTU/H	0.8 TPY	FUEL SPEC: USE OF NATURAL GAS	OTHER
GA-0063	MID-GEORGIA COGEN.	KATHLEEN	4/3/96	8/19/96	BOILER, NATURAL GAS	60 MMBTU/HR	0.005 LB/MMBTU	COMPLETE COMBUSTION	BACT-PSD
IN-0068	WAUPACA FOUNDRY - PLANT 5	TELL CITY	1/19/96	5/31/96	BOILERS, NATURAL GAS	93.9 MMBTU/HR	0.55 LBS/HR		BACT-PSD
KY-0052	TOYOTA MOTOR MANUFACTURING U.S.A. INC.	GEORGETOWN	7/17/86	12/22/92	COMBUSTION, NATURAL GAS		0.0026 LB/MMBTU		BACT-PSD
LA-0085	TRANSAMERICAN REFINING CORPORATION (TARC)	NEW SARPY	1/15/93	3/24/95	BOILER	1.2 MMBTU/HR	0.01 LB/HR	GOOD COMBUSTION PRACTICES	LAER
LA-0090	TRANSAMERICAN REFINING CORPORATION	NORCO	2/10/95	4/17/95	BOILER, NATURAL GAS/RFG FIRED	244 MM BTU/HR	0.34 LB/HR	COMBUSTION CONTROL	BACT-PSD
MI-0202	JAMES RIVER CORP	KALAMAZOO	9/17/91	10/30/91	BOILER	226.7 MMBTU/H NAT GAS	0.025 LB/MMBTU		BACT-PSD
MS-0029	WEYERHAEUSER COMPANY	COLUMBUS	9/10/96	12/30/96	BOILER, NATURAL GAS	400 MMBTU/HR	0.0013 LB/MMBTU	EFFICIENT OPERATION	BACT-PSD
NJ-0013	LAKEWOOD COGENERATION, L.P.	LAKEWOOD TOWNSHIP	4/1/91	5/29/95	BOILER (NATURAL GAS)	131 MMBTU/HR	0.0017 LB/MMBTU	BOILER DESIGN	OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEWARK	6/9/93	5/29/95	BOILER, AUXILIARY, NATURAL GAS-FIRED	200 MMBTU/HR	0.005 LB/MMBTU	BOILER DESIGN	OTHER
NY-0046	SARANAC ENERGY COMPANY	PLATTSBURGH	7/31/92	9/13/94	BOILER, AUXILIARY (GAS OR LPG)	249 MMBTU/HR	0.0045 LB/MMBTU	COMBUSTION CONTROLS	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	SOLVAY	12/10/94	4/27/95	(3) UTILITY BOILER (EP #S 00002-4)	33 MMBTU/HR	0.003 LB/MMBTU, 0.11 LB/HR	NO CONTROLS	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	SOLVAY	12/10/94	4/27/95	HEAT & STEAM BOILER (EP #00006)	2.5 MMBTU/HR	0.004 LB/MMBTU, 0.01 LB/HR	NO CONTROLS	BACT-OTHER
WA-0279	BOISE CASCADE CORPORATION - YAKIMA COMPLEX	YAKIMA	11/16/96	8/22/97	NATURAL GAS FIRED BOILERS	800 HP	50.7 LBS/DAY	FUEL SPEC: NATURAL GAS	BACT-PSD
WV-0011	CNG TRANSMISSION CORPORATION		5/3/93	3/2/94	BOILER, WATER	10 MMBTU/HR	2.8 LB/MIL. CU. FT		BACT-OTHER
WY-0043	SF PHOSPHATE LIMITED COMPANY	4.5 MILES E-SE OF ROCK SPRINGS	7/2/93	4/15/99	BOILER, NATURAL GAS FIRED	350 MMBTU/H	0.45 LB/H		BACT-PSD

Source: RBLC, 1999.

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Table 5-10. RBLC VOC Summary for Natural Gas Fired CTGs

RBLC ID	Facility Name	City	Permit Dates Issuance	Permit Dates Update	Process Description	Thruput Rate	Emission Limit	Control System Description	Control Efficiency	Basis
CA-0768	NORTHERN CALIFORNIA POWER AGENCY	LODI	10/2/97	3/16/98	GE FRAME 5 GAS TURBINE	325 MMBTU/HR	8 LB/HR	NATURAL GAS AS PRIMARY FUEL		LAER
CO-0017	THERMO INDUSTRIES, LTO.	FT. LUPTON	2/19/92	3/24/95	TURBINE, GAS FIREO, 5 EACH	246 MMBTU/H	16.7 LB/H			OTHER
CO-0018	BRUSH COGENERATION PARTNERSHIP	BRUSH		7/20/94	TURBINE	350 MMBTU/H	26.7 T/YR			OTHER
CO-0019	COLORADO POWER PARTNERSHIP	BRUSH		7/20/94	TURBINES, 2 NAT GAS & 2 DUCT BURNERS	385 MMBTU/H EACH TURBINE	35.2 T/YR			OTHER
FL-0052	FLORIDA POWER AND LIGHT	NORTH PALM BEACH	8/5/91	3/24/95	TURBINE, GAS, 4 EACH	400 MW	1.6 PPM @ 15% O2	COMBUSTION CONTROL		BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	LAVOGROME REPOWE	3/14/91	3/24/95	TURBINE, GAS, 4 EACH	240 MW	1 PPM @ 15% O2	COMBUSTION CONTROL		BACT-PSO
FL-0056	ORLANDO UTILITIES COMMISSION	TITUSVILLE	11/5/91	5/14/93	TURBINE, GAS, 4 EACH	35 MW	7 PPM @ 15% O2	COMBUSTION CONTROL		BACT-PSD
FL-0068	ORANGE COGENERATION LP	BARTOW	12/30/93	1/13/95	TURBINE, NATURAL GAS, 2	368.3 MMBTU/H	10 PPMVD	GOOD COMBUSTION		BACT-PSO
FL-0080	AUBURNDALE POWER PARTNERS, LP	AUBURNDALE	12/14/92	1/13/95	TURBINE,GAS	1214 MMBTU/H	6 LB/H	GOOD COMBUSTION PRACTICES		BACT-PSD
FL-0082	FLORIOA POWER CORPORATION POLK COUNTY SITE	BARTOW	2/25/94	1/13/95	TURBINE, NATURAL GAS (2)	1510 MMBTU/H	7 PPMVW	GOOD COMBUSTION PRACTICES		BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.		2/12/92	3/24/95	TURBINES, 8	1032 MMBTU/H, NAT GAS	0.003 LB/MMBTU	FUEL SPEC: LOW SULFUR FUEL OIL		BACT-PSD
GA-0063	MID-GEORGIA COGEN.	KATHLEEN	4/3/96	8/19/96	COMBUSTION TURBINE (2), NATURAL GAS	116 MW	6 PPMVD	COMPLETE COMBUSTION		BACT-PSD
LA-0086	INTERNATIONAL PAPER	MANSFIELD	2/24/94	4/17/95	TURBINE/HRSG, GAS COGEN	338 MM BTU/HR TURBINE	3.6 LB/HR COMBINED	COMBUSTION CONTROLS, FUEL SELECTION		BACT
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	LOWESVILLE	12/20/91	3/24/95	TURBINE, COMBUSTION	1313 MM BTU/HR	2 LB/HR	COMBUSTION CONTROL		BACT-PSD
NJ-0013	LAKEWOOD COGENERATION, L.P.	LAKEWOOD TOWNSHI	4/1/91	5/29/95	TURBINES (NATURAL GAS) (2)	1190 MMBTU/HR (EACH)	0.0046 LB/MMBTU	TURBINE DESIGN		OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	NEWARK	6/9/93	5/29/95	TURBINES, COMBUSTION, NATURAL GAS-FIRED (2)	617 MMBTU/HR (EACH)	4 PPMDV	TURBINE DESIGN		BACT-PSD
NM-0021	WILLIAMS FIELD SERVICES CO. - EL CEDRO COMPRESSOR	BLANCO	10/29/93	3/2/94	TURBINE, GAS-FIRED	11257 HP	25 PPM @ 15% O2	COMBUSTION CONTROL		BACT-PSO
NM-0028	SOUTHWESTERN PUBLIC SERVICE CO/CUNNINGHAM STATION	HOBBS	11/4/96	12/30/96	COMBUSTION TURBINE, NATURAL GAS	100 MW	SEE P2	GOOO COMBUSTION PRACTICES		BACT-PSD
NM-0029	SOUTHWESTERN PUBLIC SERVICE COMPANY/CUNNINGHAM STA	HOBBS	2/15/97	3/31/97	COMBUSTION TURBINE, NATURAL GAS	100 MW				BACT-PSD
NY-0046	SARANAC ENERGY COMPANY	PLATTSBURGH	33816	9/13/94	TURBINES, COMBUSTION (2) (NATURAL GAS)	1123 MMBTU/HR (EACH)	0.0045 LB/MMBTU	OXIDATION CATALYST		BACT-OTHER
OH-0218	CNG TRANSMISSION	WASHINGTON COURT	8/12/92	4/5/95	TURBINE (NATURAL GAS) (3)	5500 HP (EACH)	0.1 G/HP-HR	FUEL SPEC: USE OF NATURAL GAS		OTHER
PA-0083	NORTHERN CONSOLIDATED POWER	NORTH EAST	5/3/91	7/20/94	TURBINES, GAS, 2	34.6 KW EACH	105 PPM @ 15% O2	OXIDATION CATALYST	50	OTHER
PA-0099	FLEETWOOD COGENERATION ASSOCIATES	FLEETWOOD	4/22/94	11/22/94	NG TURBINE (GE LM6000) WITH WASTE HEAT BOILER	360 MMBTU/HR	4.4 LB/HR	GOOD COMBUSTION PRACTICES		BACT-OTHER
PA-0148	BLUE MOUNTAIN POWER, LP	RICHLAND	7/31/96	9/23/96	COMBUSTION TURBINE WITH HEAT RECOVERY BOILER	153 MW	4 PPM @ 15% O2	OXIDATION CATALYST WHEN FIRING NO. 2 OIL EMISSION LI	12	LAER
PA-0149	BUCKNELL UNIVERSITY	LEWISBURG	11/26/97	11/30/97	NG FIRED TURBINE, SOLAR TAURUS T-7300S	5 MW	25 PPMV@15%O2	GOOD COMBUSTION		BACT-OTHER
RI-0010	NARRAGANSETT ELECTRIC/NEW ENGLAND POWER CO.	PROVIDENCE	4/13/92	5/31/92	TURBINE, GAS AND DUCT BURNER	1360 MMBTU/H EACH	5 PPM @ 15% O2			BACT-PSD
RI-0012	ALGONQUIN GAS TRANSMISSION CO.	BURRILLVILLE	7/31/91	5/31/92	TURBINE, GAS, 2	49 MMBTU/H	0.016 LB/MMBTU	GOOD COMBUSTION PRACTICES		BACT-OTHER
SC-0029	SC ELECTRIC AND GAS COMPANY - HAGOOD STATION	CHARLESTON	12/11/89	3/24/95	INTERNAL COMBUSTION TURBINE	110 MEGAWATTS	10 LBS/HR	GOOD COMBUSTION PRACTICES		BACT-PSD
SC-0031	BMW MANUFACTURING CORPORATION	GREER	1/7/94	8/12/96	TURBINE, NAT.GAS FIRED (3 -1 SPARE) AND 2 BOILERS	54.5 MM BTU/HR TURBINES	77.86 LBS/DAY	EACH OF THE 2 BOILER-TURBINE USE A COMMON STACK		LAER
TX-0231	WEST CAMPUS COGENERATION COMPANY	COLLEGE STATION	5/2/94	10/31/94	GAS TURBINES	75.3 MW (TOTAL POWER)	38 TPY	INTERNAL COMBUSTION CONTROLS		BACT
PR-0004	ECOELECTRICA, L.P.	PENUELAS	10/1/96	5/6/98	TURBINES, COMBINED-CYCLE COGENERATION	461 MW	5 PPMDV	COMBUSTION CONTROLS.		BACT-PSD
PR-0004	ECOELECTRICA, L.P.	PENUELAS	10/1/96	5/6/98	TURBINES, COMBINED-CYCLE COGENERATION	461 MW	8 PPMDV	COMBUSTION CONTROL.		BACT-PSD

Source: RBLC 1999.

Table 5-10. RBLC VOC Summary - Natural Gas-Fired Boilers

RBLCID	Facility Name	ts	Control Description	BASIS
AL-0125	ALABAMA POWER PLANT BARRY		EFFICIENT COMBUSTION	BACT-PSD
AR-0017	STAFFORD RAILSTEEL CORPORATION		FUEL SPEC: USE OF NATURAL GAS	OTHER
GA-0063	MID-GEORGIA COGEN.		COMPLETE COMBUSTION	BACT-PSD
IN-0068	WAUPACA FOUNDRY - PLANT 5			BACT-PSD
KY-0052	TOYOTA MOTOR MANUFACTURING U.S.A. INC.			BACT-PSD
LA-0085	TRANSAMERICAN REFINING CORPORATION (TARC)		GOOD COMBUSTION PRACTICES	LAER
LA-0090	TRANSAMERICAN REFINING CORPORATION		COMBUSTION CONTROL	BACT-PSD
MI-0202	JAMES RIVER CORP			BACT-PSD
MS-0029	WEYERHAEUSER COMPANY		EFFICIENT OPERATION	BACT-PSD
NJ-0013	LAKEWOOD COGENERATION, L.P.		BOILER DESIGN	OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.		BOILER DESIGN	OTHER
NY-0046	SARANAC ENERGY COMPANY		COMBUSTION CONTROLS	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	11 LB/HR	NO CONTROLS	BACT-OTHER
NY-0072	KAMINE/BESICORP SYRACUSE LP	01 LB/HR	NO CONTROLS	BACT-OTHER
WA-0279	BOISE CASCADE CORPORATION - YAKIMA COMPLEX		FUEL SPEC: NATURAL GAS	BACT-PSD
WV-0011	CNG TRANSMISSION CORPORATION			BACT-OTHER
WY-0043	SF PHOSPHATE LIMITED COMPANY			BACT-PSD

Source: RBLC, 1999.

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Table 5-10. RBLC VOC Summary for Natural Gas Fired CTGs

RBLC ID	Facility Name	Control System Description	Control Efficiency	Basis
CA-0768	NORTHERN CALIFORNIA POWER AGENCY	AS PRIMARY FUEL		LAER
CO-0017	THERMO INDUSTRIES, LTD.			OTHER
CO-0018	BRUSH COGENERATION PARTNERSHIP			OTHER
CO-0019	COLORADO POWER PARTNERSHIP			OTHER
FL-0052	FLORIDA POWER AND LIGHT	CONTROL		BACT-PSD
FL-0053	FLORIDA POWER AND LIGHT	CONTROL		BACT-PSD
FL-0056	ORLANDO UTILITIES COMMISSION	CONTROL		BACT-PSD
FL-0068	ORANGE COGENERATION LP	STION		BACT-PSD
FL-0080	AUBURNDALE POWER PARTNERS, LP	STION PRACTICES		BACT-PSD
FL-0082	FLORIDA POWER CORPORATION POLK COUNTY SITE	STION PRACTICES		BACT-PSD
GA-0052	SAVANNAH ELECTRIC AND POWER CO.	OW SULFUR FUEL OIL		BACT-PSD
GA-0063	MID-GEORGIA COGEN.	MBUSTION		BACT-PSD
LA-0086	INTERNATIONAL PAPER	CONTROLS, FUEL SELECTION		BACT
NC-0055	DUKE POWER CO. LINCOLN COMBUSTION TURBINE STATION	CONTROL		BACT-PSD
NJ-0013	LAKEWOOD COGENERATION, L.P.	GN		OTHER
NJ-0017	NEWARK BAY COGENERATION PARTNERSHIP, L.P.	GN		BACT-PSD
NM-0021	WILLIAMS FIELD SERVICES CO. - EL CEDRO COMPRESSOR	CONTROL		BACT-PSD
NM-0028	SOUTHWESTERN PUBLIC SERVICE CO/CUNNINGHAM STATION	STIDN PRACTICES		BACT-PSD
NM-0029	SOUTHWESTERN PUBLIC SERVICE COMPANY/CUNNINGHAM STA			BACT-PSD
NY-0046	SARANAC ENERGY COMPANY	ATALYST		BACT-OTHER
OH-0218	CNG TRANSMISSION	SE OF NATURAL GAS		OTHER
PA-0083	NORTHERN CONSOLIDATED POWER	ATALYST	50	OTHER
PA-0099	FLEETWOOD COGENERATION ASSOCIATES	ISTION PRACTICES		BACT-OTHER
PA-0148	BLUE MOUNTAIN POWER, LP	ATALYST WHEN FIRING NO. 2 OIL EMISSION LI	12	LAER
PA-0149	BUCKNELL UNIVERSITY	ISTION		BACT-OTHER
RI-0010	NARRAGANSETT ELECTRIC/NEW ENGLAND POWER CO.			BACT-PSD
RI-0012	ALGONQUIN GAS TRANSMISSION CO.	ISTION PRACTICES		BACT-OTHER
SC-0029	SC ELECTRIC AND GAS COMPANY - HAGOOD STATION	ISTION PRACTICES		BACT-PSD
SC-0031	BMW MANUFACTURING CORPORATION	2 BOILER-TURBINE USE A COMMON STACK		LAER
TX-0231	WEST CAMPUS COGENERATION COMPANY	MBUSTION CONTROLS		BACT
PR-0004	ECOELECTRICA, L.P.	CONTROLS.		BACT-PSD
PR-0004	ECOELECTRICA, L.P.	CONTROL.		BACT-PSD

Source: RBLC 1999.

Table 5-11. Proposed VOC BACT Design/Operational Standards

Emission Source	Proposed VOC BACT Design/Operational Standards
Package Boilers	Proper operation and efficient combustion
Lumber Kilns	Proper installation, operation, and maintenance

Sources: Champion, 1999.
ECT, 1999.

6.0 AMBIENT IMPACT ANALYSIS

Based on an evaluation of anticipated worst-case annual operating scenarios, the McDavid Sawmill will have the potential to emit 39 tpy NO_x, 70 tpy of CO, 14.5 tpy of PM/PM_{10}, 0.3 tpy of SO_2, and 326 tpy of VOCs, excluding fugitive emissions. A comparison of estimated potential annual emission rates for the McDavid Sawmill and the PSD significant emission rate thresholds was previously provided in Table 3-2. As shown in that table, potential emissions of VOC are projected to exceed the applicable PSD significant emission rate level. This pollutant is, therefore, subject to the PSD NSR air quality impact analysis requirements of Rule 62-212.400 (5) (d), F.A.C.

Because VOCs contribute to the formation of ground-level ozone and because ozone modeling is conducted on a regional scale, modeling of VOC emissions resulting from operation of the McDavid Sawmill is not required. The biogenic VOC emissions projected for the McDavid Sawmill are small relative to area VOC emissions and will not affect the ozone attainment status for the area.

7.0 AMBIENT AIR QUALITY MONITORING AND ANALYSIS

7.1 EXISTING AMBIENT AIR QUALITY MONITORING DATA

The nearest FDEP ambient air monitoring station is located in Cantonment, Escambia County, approximately 22 km south of the McDavid Sawmill site. The FDEP monitoring station at Cantonment monitors PM_{10}. The nearest FDEP stations that monitor ozone, SO_2 and NO_x are located in Pensacola, Escambia County, approximately 30 km south of the McDavid Sawmill site. The nearest FDEP stations monitoring for CO and lead are situated in Jacksonville, Duval County, approximately 560 km east of the McDavid Sawmill site. A summary of 1997 and 1998 ambient air quality data for these FDEP monitoring stations is provided in Tables 7-1 and 7-2.

7.2 PRECONSTRUCTION AMBIENT AIR QUALITY MONITORING EXEMPTION APPLICABILITY

As previously discussed in Section 4.2, PSD review may require continuous ambient air monitoring data to be collected in the area of the proposed source for pollutants emitted in significant amounts. Because VOCs will be emitted from the McDavid Sawmill in excess of its significant emission rate, preconstruction monitoring is required. FDEP Rule 62-212.400(2)(e), F.A.C. provides for an exemption from the preconstruction monitoring requirement for sources with *de minimis* air quality impacts. The *de minimis* ambient impact levels were previously presented in Table 4-1.

In accordance with EPA guidance (EPA, 1992), representative, current (1997 and 1998) quality-assured ambient ozone data collected at the FDEP's ozone monitoring sites located in Pensacola, Escambia County were used to satisfy the PSD pre-construction ambient air monitoring requirements for VOCs. Ambient ozone levels at the McDavid Sawmill site in rural Escambia County would be expected to be lower than the concentrations measured in metropolitan Pensacola. A summary of the FDEP monitored ozone ambient air quality data is provided on Tables 7-1 and 7-2.

Table 7-1. Summary of 1997 FDEP Ambient Air Quality Data

Pollutant	Site Location County	Site Location City	Site No.	Averaging Period	Sampling Period	No. of Observations	Ambient Concentration (ug/m^3) 1st High	2nd High	99th Percentile	Arithmetic Mean	Standard
PM_{10}	Escambia	Cantonment	0468-003-F02	24-Hr	Jan-Dec	55	53	52	53		150[1]
				Annual						24	50[2]
	Escambia	Pensacola	3540-004-F01	24-Hr	Jan-Dec	56	57	56	57		150[1]
				Annual						24	50[2]
	Escambia	Pensacola	3540-004-F09	24-Hr	Jan-Dec	57	56	55	56		150[1]
				Annual						23	50[2]
SO_2	Escambia	Pensacola	3540-004-F01	1-Hr	Jan-Dec	8,715	291	254			
				3-Hr			233	191			1,300[3]
				24-Hr			98	76			260[3]
				Annual						11	60[2]
	Escambia	Pensacola	3540-022-F02	1-Hr	Jan-Dec	8,657	432	403			
				3-Hr			333	322			1,300[3]
				24-Hr			114	86			260[3]
				Annual						12	60[2]
NO_2	Escambia	Pensacola	3540-004-F01	1-Hr	Jan-Sep	6,161	105	98			
				Annual						16	100[2]
CO	Duval	Jacksonville	1960-080-H01	1-Hr	Jan-Dec	8,519	3,420	3,420			40,000[3]
				8-Hr			2,280	2,280			10,000[3]
CO	Duval	Jacksonville	1960-083-H01	1-Hr	Jan-Dec	8,544	7,980	5,700			40,000[3]
				8-Hr			3,420	3,420			10,000[3]
CO	Duval	Jacksonville	1960-084-H01	1-Hr	Jan-Dec	8,576	6,840	6,840			40,000[3]
				8-Hr			4,560	3,420			10,000[3]
CO	Duval	Jacksonville	1960-095-H01	1-Hr	Jan-Dec	8,074	7,980	5,700			40,000[3]
				8-Hr			3,420	3,420			10,000[3]
O_3	Escambia	Pensacola	3540-004-F01	1-Hr	Jan-Dec	8,711	217	214			235[4]
	Escambia	Pensacola	3540-018-F01	1-Hr	Jan-Dec	8,705	221	216			235[4]
	Escambia	Pensacola	3540-024-F01	1-Hr	Sep-Dec	2,912	202	200			235[4]
Lead	Duval	Jacksonville	1960-032-H01	24-Hr							
					Jan-Mar	15				0.0	1.5[2]
					Apr-Jun	15				0.0	
					Jul-Sep	15				0.0	
					Oct-Dec	13				0.0	
Lead	Duval	Jacksonville	1960-084-H01	24-Hr							
					Jan-Mar	15				0.0	1.5[2]
					Apr-Jun	15				0.0	
					Jul-Sep	14				0.0	
					Oct-Dec	14				0.0	

[1] 99th percentile

[2] Arithmetic mean

[3] 2nd high

[4] 4th highest day with hourly value exceeding standard over a 3-year period

Source: FDEP, 1998 and 1999.
ECT, 1999.

Table 7-2. Summary of 1998 FDEP Ambient Air Quality Data

Pollutant	Site Location: County	Site Location: City	Site No.	Averaging Period	Sampling Period	No. of Observations	Ambient Concentration (ug/m^3): 1st High	2nd High	99th Percentile	Arithmetic Mean	Standard
PM_{10}	Escambia	Pensacola	12-033-0003	24-Hr	Jan-Dec	59	62	60	62		150[1]
				Annual						23	50[2]
	Escambia	Pensacola	12-033-0004	24-Hr	Jan-Dec	56	67	62	67		150[1]
				Annual						24	50[2]
SO_2	Escambia	Pensacola	12-033-0004	1-Hr	Jan-Dec	8,707	334	310			
				3-Hr			253	214			1,300[3]
				24-Hr			60	57			260[3]
				Annual						10	60[2]
	Escambia	Pensacola	12-033-0022	1-Hr	Jan-Dec	8,595	477	360			
				3-Hr			264	211			1,300[3]
				24-Hr			63	63			260[3]
				Annual						10	60[2]
NO_2	Duval	Jacksonville	12-031-0032	1-Hr	Jan-Dec	8,204	124	124			
				Annual						28	100[2]
CO	Duval	Jacksonville	12-031-0080	1-Hr	Jan-Dec	8,311	9,576	7,296			40,000[3]
				8-Hr			5,130	3,306			10,000[3]
CO	Duval	Jacksonville	12-031-0083	1-Hr	Jan-Dec	8,013	5,586	5,472			40,000[3]
				8-Hr			3,534	3,306			10,000[3]
CO	Duval	Jacksonville	12-031-0084	1-Hr	Jan-Dec	8,417	6,954	6,270			40,000[3]
				8-Hr			3,762	3,762			10,000[3]
CO	Duval	Jacksonville	12-031-0095	1-Hr	Jan-Dec	2,111	5,016	4,218			40,000[3]
				8-Hr			2,280	2166			10,000[3]
O_3	Escambia	Pensacola	12-033-0004	1-Hr	Jan-Dec	364	249	223			235[4]
	Escambia	Pensacola	12-033-0018	1-Hr	Jan-Dec	361	257	251			235[4]
Lead	Duval	Jacksonville	12-031-0032	24-Hr		50					
					Jan-Mar					0.01	1.5[2]
					Apr-Jun					0.02	
					Jul-Sep					0.01	
					Oct-Dec					0.02	
Lead	Duval	Jacksonville	12-031-0084	24-Hr		62					
					Jan-Mar					0.01	1.5[2]
					Apr-Jun					0.01	
					Jul-Sep					0.01	
					Oct-Dec					0.02	

[1] 99th percentile
[2] Arithmetic mean
[3] 2nd high
[4] 4th highest day with hourly value exceeding standard over a 3-year period

Source: FDEP, 1998 and 1999.
ECT, 1999.

8.0 ADDITIONAL IMPACT ANALYSES

The additional impacts analysis, required for projects subject to PSD review, evaluates project impacts pertaining to: (a) associated growth, (b) soils, vegetation, and wildlife, and (c) visibility impairment. Each of these topics is discussed in the following sections.

8.1 GROWTH IMPACT ANALYSIS

The purpose of the growth impact analysis is to quantify growth resulting from the construction and operation of the proposed project and to assess air quality impacts that would result from that growth.

Impacts associated with construction of the McDavid Sawmill will be minor and temporary. While not readily quantifiable, the temporary increase in vehicle miles traveled in the area would be insignificant, as would any temporary increase in vehicular emissions.

The McDavid Sawmill is being constructed to meet general national/regional demands for lumber and, therefore, no significant secondary growth effects due to operation of the facility are anticipated. When operational, the McDavid Sawmill is projected to generate approximately 125 new jobs; this number of new personnel will not significantly affect growth in the area. The increase in natural gas fuel demand due to operation of the two, small package boilers will have no major impact on local fuel markets. No significant air quality impacts due to associated industrial/commercial growth are expected.

8.2 IMPACTS ON SOILS, VEGETATION, AND WILDLIFE

8.2.1 IMPACTS ON SOILS

The primary air pollutants of concern with respect to soil impacts are SO_2 and NO_x. Deposition of SO_2 and NO_x and adsorption by soils has the potential to lower soil pH. Low soil pH will have an influence on most chemical and biological reactions in the soil including the level and availability of most plant nutrients in the soil.

Projected maximum annual emissions of PM/PM_{10}, SO_2, and NO_x due to McDavid Sawmill operations are all less than the PSD significant emission rate thresholds. Potential emissions of SO_2 and NO_x due to operation of the McDavid Sawmill are less than 1 and 39 tpy, respectively. It is unlikely that these low levels of SO_2 and NO_x emissions will have any measurable affect on the pH of rainfall in the area. Emissions of VOCs are not anticipated to result in any adverse effects on soils. No significant adverse effects on soils due to deposition of PM/PM_{10} generated by the McDavid Sawmill are expected due the relatively low rate of PM/PM_{10} emissions. Based on the low level of facility emissions, no significant adverse impacts to soils are expected due to McDavid Sawmill operations.

8.2.2 IMPACTS ON VEGETATION

Vegetation in the vicinity of the proposed McDavid Sawmill consists primarily of pine plantation and cypress swamp. Dose response curves have been developed for various plant species and their sensitivity to specific air pollutants. Vegetation damages are described as impacts which result in foliar damage. Less apparent vegetation damage is described as a reduction in growth and/or productivity without visible damage as well as changes in secondary metabolites such as tannin and phenolic compounds. Vegetation damage often results from acute exposure to pollution (i.e., relatively high doses over relatively short time periods). Injury is also associated with prolonged exposures of vegetation to relatively low doses (chronic exposure). Acute damages are usually manifested by internal damage to foliar tissues which have both functional and visible consequences. Chronic injuries are typically more associated with changes in physiological processes.

As noted previously, projected maximum annual emissions of PM/PM_{10}, SO_2, and NO_x due to McDavid Sawmill operations are all less than the PSD significant emission rate thresholds. Accordingly, maximum ambient air concentrations of these pollutants will be well below the levels that cause damage to vegetation. VOC emissions from the McDavid Sawmill processes consist primarily of naturally occurring organics contained in the SYP logs. These VOC emissions will be a small fraction of the similar biogenic VOC compounds presently generated by the surrounding pine plantations. Accordingly, no adverse impacts on vegetation are expected due to McDavid Sawmill operations.

8.2.3 IMPACTS ON WILDLIFE

Air pollution impacts to wildlife have been reported in the literature although many of the incidents involved acute exposures to pollutants usually caused by unusual or highly concentrated releases or unique weather conditions. Generally, there are three ways pollutants may affect wildlife: through inhalation, through exposure with skin, and through ingestion. Ingestion is the most common means and can occur through eating or drinking of high concentrations of pollutants. Bioaccumulation is the process of animals collecting and accumulating pollutant levels in their bodies over time. Other animal that prey on these animals would then be ingesting concentrated pollutant levels.

Based on a review of the limited literature on air pollutant effects on wildlife, the levels of pollutants generated by the proposed McDavid Sawmill will not cause injury or death to wildlife. Concentrations of pollutants in the ambient air will be low, emissions dispersed over a large area, and the mobility of wildlife will minimize their exposure to any unusual concentrations caused by unique weather patterns.

In conclusion, it is unlikely that the projected air emissions from the proposed McDavid Sawmill will have any measurable direct or indirect effects on wildlife using the site or vicinity.

8.3 VISIBILITY IMPAIRMENT POTENTIAL

No visibility impairment at the local level is expected due to the types and quantities of emissions projected for the McDavid Sawmill. Stack opacities from the two, package boilers, lumber kilns, and planermill cyclone/baghouse are all expected to be 10 percent or less, excluding water. Emissions of primary sulfur oxides from the two, package boilers will be low due to the exclusive use of pipeline quality natural gas. The McDavid Sawmill will comply with all applicable FDEP requirements pertaining to visible emissions.

ATTACHMENT A—

APPLICATION FOR AIR PERMIT – TITLE V SOURCE

Department of
Environmental Protection

Division of Air Resources Management

APPLICATION FOR AIR PERMIT - TITLE V SOURCE

See Instructions for Form No. 62-210.900(1)

I. APPLICATION INFORMATION

Identification of Facility

1. Facility Owner/Company Name: **Champion International Corporation**	
2. Site Name: **McDavid Sawmill**	
3. Facility Identification Number: [✔] Unknown	
4. Facility Location: Street Address or Other Locator: **U.S. Highway 29** City: **Pine Barren** County: **Escambia** Zip Code: **32568**	
5. Relocatable Facility? [ ] Yes [✔] No	6. Existing Permitted Facility? [ ] Yes [✔] No

Application Contact

1. Name and Title of Application Contact: **Terry Kassabaum** **Environmental, Health and Safety Manager** **Wood Products Manufacturing**
2. Application Contact Mailing Address: Organization/Firm: **Champion International Corporation** Street Address: **Highway 59 North** City: **Corrigan** State: **TX** Zip Code: **75939**
3. Application Contact Telephone Numbers: Telephone: **(409)398 – 2511** Fax: **(409) 398 – 7226**

Application Processing Information (DEP Use)

1. Date of Receipt of Application:	June 15, 1999
2. Permit Number:	0330260-001-AC
3. PSD Number (if applicable):	PSD-FL-~~[illegible]~~ 271
4. Siting Number (if applicable):	

Purpose of Application

Air Operation Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

[ ] Initial Title V air operation permit for an existing facility which is classified as a Title V source.

[ ] Initial Title V air operation permit for a facility which, upon start up of one or more newly constructed or modified emissions units addressed in this application, would become classified as a Title V source.

Current construction permit number:________________________________

[ ] Title V air operation permit revision to address one or more newly constructed or modified emissions units addressed in this application.

Current construction permit number:________________________________

Operation permit number to be revised:______________________________

[ ] Title V air operation permit revision or administrative correction to address one or more proposed new or modified emissions units and to be processed concurrently with the air construction permit application. (Also check Air Construction Permit Application below.)

Operation permit number to be revised/corrected:_______________________

[ ] Title V air operation permit revision for reasons other than construction or modification of an emissions unit. Give reason for the revision; e.g., to comply with a new applicable requirement or to request approval of an "Early Reductions" proposal.

Operation permit number to be revised:______________________________

Reason for revision:____

Air Construction Permit Application

This Application for Air Permit is submitted to obtain: (Check one)

[✔] Air construction permit to construct or modify one or more emissions units.

[ ] Air construction permit to make federally enforceable an assumed restriction on the potential emissions of one or more existing, permitted emissions units.

[ ] Air construction permit for one or more existing, but unpermitted, emissions units.

Owner/Authorized Representative or Responsible Official

1.	Name and Title of Owner/Authorized Representative or Responsible Official: **Dave Stevens – Manager of Special Products, Forest Products**
2.	Application Contact Mailing Address: Organization/Firm: **Champion International Corporation** Street Address: **117 Pace Parkway** City: **Cantonment** State: **FL** Zip Code: **32533**
3.	Owner/Authorized Representative or Responsible Official Telephone Numbers: Telephone: **(850) 937-4849** Fax: **(850) 968-3027**
4.	Owner/Authorized Representative or Responsible Official Statement: *I, the undersigned, am the owner or authorized representative*(check here [ ] if so) or the responsible official (check here [✓], if so) of the Title V source addressed in this application, whichever is applicable. I hereby certify, based on information and belief formed after reasonable inquiry, that the statements made in this application are true, accurate and complete and that, to the best of my knowledge, any estimates of emissions reported in this application are based upon reasonable techniques for calculating emissions. The air pollutant emissions units and air pollution control equipment described in this application will be operated and maintained so as to comply with all applicable standards for control of air pollutant emissions found in the statutes of the State of Florida and rules of the Department of Environmental Protection and revisions thereof. I understand that a permit, if granted by the Department, cannot be transferred without authorization from the Department, and I will promptly notify the Department upon sale or legal transfer of any permitted emissions unit.* David A. Stevens — 6/14/99 Signature — Date

* Attach letter of authorization if not currently on file.

Professional Engineer Certification

1.	Professional Engineer Name: **Thomas W. Davis** Registration Number: **36777**
2.	Professional Engineer Mailing Address: Organization/Firm: **Environmental Consulting & Technology, Inc.** Street Address: **3701 Northwest 98th Street** City: **Gainesville** State: **FL** Zip Code: **32606**
3.	Professional Engineer Telephone Numbers: Telephone: **(352) 332-0444** Fax: **(352) 332-6722**

4. Professional Engineer Statement:

I, the undersigned, hereby certify, except as particularly noted herein, that:*

(1) To the best of my knowledge, there is reasonable assurance that the air pollutant emissions unit(s) and the air pollution control equipment described in this Application for Air Permit, when properly operated and maintained, will comply with all applicable standards for control of air pollutant emissions found in the Florida Statutes and rules of the Department of Environmental Protection; and

(2) To the best of my knowledge, any emission estimates reported or relied on in this application are true, accurate, and complete and are either based upon reasonable techniques available for calculating emissions or, for emission estimates of hazardous air pollutants not regulated for an emissions unit addressed in this application, based solely upon the materials, information and calculations submitted with this application.

If the purpose of this application is to obtain a Title V source air operation permit (check here [ ], if so), I further certify that each emissions unit described in this Application for Air Permit, when properly operated and maintained, will comply with the applicable requirements identified in this application to which the unit is subject, except those emissions units for which a compliance schedule is submitted with this application.

If the purpose of this application is to obtain an air construction permit for one or more proposed new or modified emissions units (check here [✔], if so), I further certify that the engineering features of each such emissions unit described in this application have been designed or examined by me or individuals under my direct supervision and found to be in conformity with sound engineering principles applicable to the control of emissions of the air pollutants characterized in this application.

If the purpose of this application is to obtain an initial air operation permit or operation permit revision for one or more newly constructed or modified emissions units (check here [ ], if so), I further certify that, with the exception of any changes detailed as part of this application, each such emissions unit has been constructed or modified in substantial accordance with the information given in the corresponding application for air construction permit and with all provisions contained in such permit.

Thomas F. Davis
Signature

6/12/99
Date

(seal)

* Attach any exception to certification statement.

Scope of Application

Emissions Unit ID	Description of Emissions Unit	Permit Type	Processing Fee
001	Natural Gas-Fired Package Boiler No. 1	AC1A	PSD
002	Natural Gas-Fired Package Boiler No. 2	AC1A	PSD
003	Lumber Drying Kilns Nos. 1 – 3	AC1A	PSD
004	Planermill Operations	AC1A	PSD
005	Facility Fugitive Emissions	AC1A	PSD

Application Processing Fee

Check one: [✔] Attached - Amount: **$ 7,500** [ ] Not Applicable

Construction/Modification Information

1. Description of Proposed Project or Alterations: **Champion International Corporation (Champion) is planning to construct and operate a new lumber sawmill in Escambia County, Florida approximately 30 kilometers (km) [19 miles (mi)] north of Pensacola. The McDavid Sawmill will process southern yellow pine (SYP) logs and produce up to 225 million board feet per year (MMBF/yr) of lumber. Principal McDavid Sawmill processes include:** **1. Log storage and processing (debarking and sawing);** **2. Sawmill operations (chipping and sawing);** **3. Drying of green lumber using indirect steam-heated kilns; and** **4. Product lumber finishing, sorting, and shipping.** **Ancillary equipment includes wood by-product (bark, chips, sawdust, and shavings) screening, handling, and storage and two, 55 MMBtu/hr heat input natural gas-fired package boilers that provide steam for the lumber kilns.**
2. Projected or Actual Date of Commencement of Construction: **August 15, 1999**
3. Projected Date of Completion of Construction: **October 2000**

Application Comment

II. FACILITY INFORMATION

A. GENERAL FACILITY INFORMATION

Facility Location and Type

1. Facility UTM Coordinates: Zone: **16**	East (km): **468.74**		North (km): **3,406.5**
2. Facility Latitude/Longitude: Latitude (DD/MM/SS):		Longitude (DD/MM/SS):	
3. Governmental Facility Code: **0**	4. Facility Status Code: **C**	5. Facility Major Group SIC Code: **24**	6. Facility SIC(s): **2421**
7. Facility Comment (limit to 500 characters):			

Facility Contact

1. Name and Title of Facility Contact: **Dave Stevens – Manager of Special Products, Forest Products**
2. Facility Contact Mailing Address: Organization/Firm: **Champion International Corporation** Street Address: **117 Pace Parkway** City: **Cantonment** State: **FL** Zip Code: **32533**
3. Facility Contact Telephone Numbers: Telephone: **(850) 937-4849** Fax: **(850) 968-3027**

Facility Regulatory Classifications

Check all that apply:

1. [ ] Small Business Stationary Source?	[ ] Unknown
2. [✔] Major Source of Pollutants Other than Hazardous Air Pollutants (HAPs)?	
3. [ ] Synthetic Minor Source of Pollutants Other than HAPs?	
4. [ ] Major Source of Hazardous Air Pollutants (HAPs)?	
5. [ ] Synthetic Minor Source of HAPs?	
6. [✔] One or More Emissions Units Subject to NSPS?	
7. [ ] One or More Emission Units Subject to NESHAP?	
8. [ ] Title V Source by EPA Designation?	
9. Facility Regulatory Classifications Comment (limit to 200 characters):	

List of Applicable Regulations

See Attachment A-1	

B. FACILITY POLLUTANTS

List of Pollutants Emitted

1. Pollutant Emitted	2. Pollutant Classif.	3. Requested Emissions Cap lb/hour	tons/year	4. Basis for Emissions Cap	5. Pollutant Comment
VOC	**A**	**N/A**	**N/A**	**N/A**	

C. FACILITY SUPPLEMENTAL INFORMATION

Supplemental Requirements

1. Area Map Showing Facility Location: [✔] Attached, Document ID: **Fig. 2-1** [ ] Not Applicable [ ] Waiver Requested	
2. Facility Plot Plan: [✔] Attached, Document ID: **Fig. 2-3** [ ] Not Applicable [ ] Waiver Requested	
3. Process Flow Diagram(s): [✔] Attached, Document ID: **Fig. 2-2** [ ] Not Applicable [ ] Waiver Requested	
4. Precautions to Prevent Emissions of Unconfined Particulate Matter: [✔] Attached, Document ID: **Att. A-2** [ ] Not Applicable [ ] Waiver Requested	
5. Fugitive Emissions Identification: [✔] Attached, Document ID: **Table 2-3** [ ] Not Applicable [ ] Waiver Requested	
6. Supplemental Information for Construction Permit Application: [✔] Attached, Document ID: **PSD App.** [ ] Not Applicable	
7. Supplemental Requirements Comment:	

Additional Supplemental Requirements for Title V Air Operation Permit Applications

8. List of Proposed Insignificant Activities: [ ] Attached, Document ID:________ [ ] Not Applicable	
9. List of Equipment/Activities Regulated under Title VI: [ ] Attached, Document ID:________ [ ] Equipment/Activities On site but Not Required to be Individually Listed [ ] Not Applicable	
10. Alternative Methods of Operation: [ ] Attached, Document ID:________ [ ] Not Applicable	
11. Alternative Modes of Operation (Emissions Trading): [ ] Attached, Document ID:________ [ ] Not Applicable	
12. Identification of Additional Applicable Requirements: [ ] Attached, Document ID:________ [ ] Not Applicable	
13. Risk Management Plan Verification: [ ] Plan previously submitted to Chemical Emergency Preparedness and Prevention Office (CEPPO). Verification of submittal attached (Document ID:________) or previously submitted to DEP (Date and DEP Office:________________________) [ ] Plan to be submitted to CEPPO (Date required:____________________________) [ ] Not Applicable	
14. Compliance Report and Plan: [ ] Attached, Document ID:________ [ ] Not Applicable	
15. Compliance Certification (Hard-copy Required): [ ] Attached, Document ID:________ [ ] Not Applicable	

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in This Section: (Check one)

[✔] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Regulated or Unregulated Emissions Unit? (Check one)

[✔] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Emission unit consists of a natural gas-fired boiler with a heat input of 55 MMBtu/hr.

4. Emissions Unit Identification Number: [ ] No ID
ID: **001 (B-1)** [ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
C		**24**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method): **NO_x Controls** **Low-NO_x burner**
2. Control Device or Method Code(s): **24 (Modified Furnace or Burner Design)**

Emissions Unit Details

1. Package Unit: **(Or Equivalent)** Manufacturer: **Cleaver Brooks**	Model Number: **DL-68**
2. Generator Nameplate Rating: MW	
3. Incinerator Information: Dwell Temperature: Dwell Time: Incinerator Afterburner Temperature:	 °F seconds °F

B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:	**55** mmBtu/hr			
2. Maximum Incineration Rate:		lb/hr		tons/day
3. Maximum Process or Throughput Rate:				
4. Maximum Production Rate:				
5. Requested Maximum Operating Schedule:	**24**	hours/day	**7**	days/week
	52	weeks/year	**8,760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters): **Applicant requests a federally enforceable annual heat input limitation of 779,640 MMBtu (LHV) for both package boilers (B-1 and B-2) combined.**				

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

See Attachment A-1	

D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **B-1**	2. Emission Point Type Code: **1**	
3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **N/A**		
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**		
5. Discharge Type Code: **V**	6. Stack Height: **35** feet	7. Exit Diameter: **3.5** feet
8. Exit Temperature: **320** °F	9. Actual Volumetric Flow Rate: **75,984** acfm	10. Water Vapor: %
11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet	
13. Emission Point UTM Coordinates: Zone: East (km): North (km):		
14. Emission Point Comment (limit to 200 characters):		

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Package steam boiler fired with pipeline quality natural gas.**		
2. Source Classification Code (SCC): **10200602**	3. SCC Units: **Million Cubic Feet Burned**	
4. Maximum Hourly Rate: **0.058**	5. Maximum Annual Rate: **820.7***	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: **950 (LHV)**
10. Segment Comment (limit to 200 characters): *** Combined natural gas consumption for package boilers 1 and 2 will not exceed 820.7 MM ft^3 per year.**		

Segment Description and Rate: Segment ___ of ___

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 – NOX	**024**		**EL**
2 – CO			**NS**
3 – PM			**EL**
4 – PM10			**EL**

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **5.5** lb/hour **39.0*** tons/year	4. Synthetically Limited? [✔]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/year	
6. Emission Factor: **0.10 lb/MMBtu** Reference: **Vendor data**	7. Emissions Method Code: **5**

8. Calculation of Emissions (limit to 600 characters):

Hourly emission rate = 0.10 lb/MMBtu x 55 MMBtu/hr = 5.5 lb/hr

***Annual emission rate = 0.10 lb/MMBtu x 779,640 MMBtu/yr x (1 ton / 2,000 lb) = 39.0 tpy (for package boilers 1 and 2 combined)**

9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):

Package boilers 1 and 2 will be limited to 39 tpy combined.

Allowable Emissions Allowable Emissions __1__ of __1__

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **0.10 lb/MMBtu**	4. Equivalent Allowable Emissions: **5.5** lb/hour **39.0*** tons/year

5. Method of Compliance (limit to 60 characters):
EPA Reference Method 7E (Initial Only)

6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):
An annual heat input cap of 779,640 MMBtu (LHV) is requested for Boilers Nos. 1 and 2 combined.

*** Combined annual NO_x emission rate for package boilers 1 and 2 will not exceed 39.0 tpy.**

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **9.9** lb/hour **70.2*** tons/year	4. Synthetically Limited? [✔]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/year	
6. Emission Factor: **0.18 lb/MMBtu** Reference: **Vendor data**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **Hourly emission rate = 0.18 lb/MMBtu x 55 MMBtu/hr = 9.9 lb/hr** ***Annual emission rate = 0.18 lb/MMBtu x 779,640 MMBtu/yr x (1 ton / 2,000 lb) = 70.2 tpy (for package boilers 1 and 2 combined)**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions ____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
4. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.19** lb/hour **1.4*** tons/year	4. Synthetically Limited? [✔]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/year	
6. Emission Factor: **0.0035 lb/MMBtu** Reference: **Vendor data**	7. Emissions Method Code: **5**

8. Calculation of Emissions (limit to 600 characters):

Hourly emission rate = 0.0035 lb/MMBtu x 55 MMBtu/hr = 0.19 lb/hr

***Annual emission rate = 0.0035 lb/MMBtu x 779,640 MMBtu/yr x (1 ton / 2,000 lb) = 1.4 tpy (for package boilers 1 and 2 combined)**

9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **0.19 lb/hr**	4. Equivalent Allowable Emissions: **0.19** lb/hour **1.4*** tons/year

5. Method of Compliance (limit to 60 characters):
EPA Reference Method 5, 5B, or 17 (Initial Only)
(Including adjustment for boiler inlet air PM concentration)

6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):
An annual heat input cap of 779,640 MMBtu (LHV) is requested for Boilers Nos. 1 and 2 combined.

*** Combined annual PM emission rate for package boilers 1 and 2 will not exceed 1.4 tpy.**

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **20 % Opacity**	4. Equivalent Allowable Emissions: **0.19** lb/hour **1.4*** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Method 9 (Annual)**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Rule 62-296.406(1), F.A.C.** *** Combined annual PM emission rate for package boilers 1 and 2 will not exceed 1.4 tpy.**	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **PM10**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.19** lb/hour **1.4*** tons/year	4. Synthetically Limited? [✔]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/year	
6. Emission Factor: **0.0035 lb/MMBtu** Reference: **Vendor data**	7. Emissions Method Code: **5**

8. Calculation of Emissions (limit to 600 characters):

Hourly emission rate = 0.0035 lb/MMBtu x 55 MMBtu/hr = 0.19 lb/hr

***Annual emission rate = 0.0035 lb/MMBtu x 779,640 MMBtu/yr x (1 ton / 2,000 lb) = 1.4 tpy (for package boilers 1 and 2 combined)**

9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **0.19 lb/hr**	4. Equivalent Allowable Emissions: **0.19** lb/hour **1.4*** tons/year

5. Method of Compliance (limit to 60 characters):
EPA Reference Method 5, 5B, or 17 (Initial Only)
(Including adjustment for boiler inlet air PM concentration)

6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):
An annual heat input cap of 779,640 MMBtu (LHV) is requested for Boilers Nos. 1 and 2 combined.

*** Combined annual PM_{10} emission rate for package boilers 1 and 2 will not exceed 1.4 tpy.**

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **20% Opacity**	4. Equivalent Allowable Emissions: **0.19** lb/hour **1.4*** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Method 9 (Annual)**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Rule 62-296.406(1), F.A.C.** *** Combined annual PM_{10} emission rate for package boilers 1 and 2 will not exceed 1.4 tpy.**	

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation 1 of 2

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [✔] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: **20** % Exceptional Conditions: **27** % Maximum Period of Excess Opacity Allowed: **6** min/hour	
4. Method of Compliance: **EPA Reference Method 9 (Annual)**	
5. Visible Emissions Comment (limit to 200 characters): **Rule 62-296.406(1), F.A.C.**	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: **VE100**	2. Basis for Allowable Opacity: [✔] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Reference Method 9 (every 5 years)**	
5. Visible Emissions Comment (limit to 200 characters): **Excess emissions resulting from startup, shutdown, or malfunction not-to-exceed 2 hours in any 24 hour period unless authorized by FDEP for a longer duration. Rule 62-210.700(1), F.A.C.**	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements

1. Process Flow Diagram [✓] Attached, Document ID: **Fig. 2-2** [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [✓] Attached, Document ID: **Att. A-3** [ ] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [✓] Attached, Document ID: **Sect. 5.0** [ ] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities **To be provided** [ ] Attached, Document ID:________ [ ] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:________ [ ] Previously submitted, Date:________________ [✓] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:________ [✓] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:________ [✓] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application **See PSD application** [ ] Attached, Document ID:________ [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:________ [✓] Not Applicable
10. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation [ ] Attached, Document ID: ________ [ ] Not Applicable
12. Alternative Modes of Operation (Emissions Trading) [ ] Attached, Document ID:________ [ ] Not Applicable
13. Identification of Additional Applicable Requirements [ ] Attached, Document ID:________ [ ] Not Applicable
14. Compliance Assurance Monitoring Plan [ ] Attached, Document ID:________ [ ] Not Applicable
15. Acid Rain Part Application (Hard-copy Required) [ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID:________ [ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID:________ [ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID:________ [ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID:________ [ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID:________ [ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID:________ [ ] Not Applicable

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in This Section: (Check one)

[✓] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Regulated or Unregulated Emissions Unit? (Check one)

[✓] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Emission unit consists of a natural gas-fired boiler with a heat input of 55 MMBtu/hr.

4. Emissions Unit Identification Number: [ ] No ID
ID: **002 (B-2)** [ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
C		**24**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):

   NO$_x$ Controls

   Low-NO$_x$ burner

2. Control Device or Method Code(s): **24 (Modified Furnace or Burner Design)**

Emissions Unit Details

1. Package Unit: **(Or Equivalent)** Manufacturer: **Cleaver Brooks**	Model Number: **DL-68**
2. Generator Nameplate Rating: MW	
3. Incinerator Information: Dwell Temperature: Dwell Time: Incinerator Afterburner Temperature:	 °F seconds °F

B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:	**55** mmBtu/hr			
2. Maximum Incineration Rate:		lb/hr		tons/day
3. Maximum Process or Throughput Rate:				
4. Maximum Production Rate:				
5. Requested Maximum Operating Schedule:				
	24	hours/day	**7**	days/week
	52	weeks/year	**8,760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters): **Applicant requests a federally enforceable annual heat input limitation of 779,640 MMBtu (LHV) for both package boilers (B-1 and B-2) combined.**				

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

See Attachment A-1	

D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **B-2**	2. Emission Point Type Code: **1**

3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):

N/A

4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:

N/A

5. Discharge Type Code: **V**	6. Stack Height: **35** feet	7. Exit Diameter: **3.5** feet
8. Exit Temperature: **320** °F	9. Actual Volumetric Flow Rate: **75,984** acfm	10. Water Vapor: %

11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet

13. Emission Point UTM Coordinates:

Zone: East (km): North (km):

14. Emission Point Comment (limit to 200 characters):

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Package steam boiler fired with pipeline quality natural gas.**		
2. Source Classification Code (SCC): **10200602**	3. SCC Units: **Million Cubic Feet Burned**	
4. Maximum Hourly Rate: **0.058**	5. Maximum Annual Rate: **820.7***	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit: **950**
10. Segment Comment (limit to 200 characters): *** Combined natural gas consumption for package boilers 1 and 2 will not exceed 820.7 MM ft^3 per year.**		

Segment Description and Rate: Segment ___ of ___

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
3. Source Classification Code (SCC):	3. SCC Units:	
6. Maximum Hourly Rate:	7. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
11. Maximum % Sulfur:	12. Maximum % Ash:	13. Million Btu per SCC Unit:
14. Segment Comment (limit to 200 characters):		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 – NOX	**024**		**EL**
2 – CO			**NS**
3 – PM			**EL**
4 – PM10			**EL**

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

<u>Potential/Fugitive Emissions</u>

1. Pollutant Emitted: **NOX**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **5.5** lb/hour **39.0*** tons/year	4. Synthetically Limited? [✔]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/year	
6. Emission Factor: **0.10 lb/MMBtu** Reference: **Vendor data**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **Hourly emission rate = 0.10 lb/MMBtu x 55 MMBtu/hr = 5.5 lb/hr** ***Annual emission rate = 0.10 lb/MMBtu x 779,640 MMBtu/yr x (1 ton / 2,000 lb) = 39.0 tpy (for package boilers 1 and 2 combined)**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters): **Package boilers 1 and 2 will be limited to 39 tpy combined.**	

<u>Allowable Emissions</u> Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions:
4. Requested Allowable Emissions and Units: **0.10 lb/MMBtu**	4. Equivalent Allowable Emissions: **5.5** lb/hour **39.0*** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Method 7E (Initial Only)**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **An annual heat input cap of 779,640 MMBtu (LHV) is requested for Boilers Nos. 1 and 2 combined.** *** Combined annual NO_x emission rate for package boilers 1 and 2 will not exceed 39.0 tpy.**	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
4. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

<u>Potential/Fugitive Emissions</u>

1. Pollutant Emitted: **CO**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **9.9** lb/hour **70.2*** tons/year	4. Synthetically Limited? [✔]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/year	
6. Emission Factor: **0.18 lb/MMBtu** Reference: **Vendor data**	7. Emissions Method Code: **5**

8. Calculation of Emissions (limit to 600 characters):

Hourly emission rate = 0.18 lb/MMBtu x 55 MMBtu/hr = 9.9 lb/hr

***Annual emission rate = 0.18 lb/MMBtu x 779,640 MMBtu/yr x (1 ton / 2,000 lb) = 70.2 tpy (for package boilers 1 and 2 combined)**

9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):

<u>Allowable Emissions</u> Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
4. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year

5. Method of Compliance (limit to 60 characters):

6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):

Allowable Emissions Allowable Emissions ___ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
5. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

Allowable Emissions Allowable Emissions ___ of ___

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
6. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.19** lb/hour **1.4*** tons/year	4. Synthetically Limited? [✔]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/year	
6. Emission Factor: **0.0035 lb/MMBtu** Reference: **Vendor data**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **Hourly emission rate = 0.0035 lb/MMBtu x 55 MMBtu/hr = 0.19 lb/hr** ***Annual emission rate = 0.0035 lb/MMBtu x 779,640 MMBtu/yr x (1 ton / 2,000 lb) = 1.4 tpy (for package boilers 1 and 2 combined)**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions:
4. Requested Allowable Emissions and Units: **0.19 lb/hr**	4. Equivalent Allowable Emissions: **0.19** lb/hour **1.4*** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Method 5, 5B, or 17 (Initial Only) (Including adjustment for boiler inlet air PM concentration)**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **An annual heat input cap of 779,640 MMBtu (LHV) is requested for Boilers Nos. 1 and 2 combined.** *** Combined annual PM emission rate for package boilers 1 and 2 will not exceed 1.4 tpy.**	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
4. Requested Allowable Emissions and Units: **20 % Opacity**	4. Equivalent Allowable Emissions: **0.19** lb/hour **1.4*** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Method 9 (Annual)**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Rule 62-296.406(1), F.A.C.** *** Combined annual PM emission rate for package boilers 1 and 2 will not exceed 1.4 tpy.**	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **PM10**	2. Total Percent Efficiency of Control:	
3. Potential Emissions: **0.19** lb/hour **1.4*** tons/year		4. Synthetically Limited? [✔]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/year		
6. Emission Factor: **0.0035 lb/MMBtu** Reference: **Vendor data**		7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **Hourly emission rate = 0.0035 lb/MMBtu x 55 MMBtu/hr = 0.19 lb/hr** ***Annual emission rate = 0.0035 lb/MMBtu x 779,640 MMBtu/yr x (1 ton / 2,000 lb) = 1.4 tpy (for package boilers 1 and 2 combined)**		
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):		

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions:
4. Requested Allowable Emissions and Units: **0.19 lb/hr**	4. Equivalent Allowable Emissions: **0.19** lb/hour **1.4*** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Method 5, 5B, or 17 (Initial Only) (Including adjustment for boiler inlet air PM concentration)**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **An annual heat input cap of 779,640 MMBtu (LHV) is requested for Boilers Nos. 1 and 2 combined.** *** Combined annual PM_{10} emission rate for package boilers 1 and 2 will not exceed 1.4 tpy.**	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: **RULE**	2. Future Effective Date of Allowable Emissions:
4. Requested Allowable Emissions and Units: **20% Opacity**	4. Equivalent Allowable Emissions: **0.19** lb/hour **1.4*** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Method 9 (Annual)**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters): **Rule 62-296.406(1), F.A.C.** *** Combined annual PM_{10} emission rate for package boilers 1 and 2 will not exceed 1.4 tpy.**	

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation 1 of 2

1. Visible Emissions Subtype: **VE20**	2. Basis for Allowable Opacity: [✔] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: 20 % Exceptional Conditions: 27 % Maximum Period of Excess Opacity Allowed: 6 min/hour	
4. Method of Compliance: **EPA Reference Method 9 (Annual)**	
5. Visible Emissions Comment (limit to 200 characters): **Rule 62-296.406(1), F.A.C.**	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: **VE100**	2. Basis for Allowable Opacity: [✔] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: 100 % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Reference Method 9 (every 5 years)**	
5. Visible Emissions Comment (limit to 200 characters): **Excess emissions resulting from startup, shutdown, or malfunction not-to-exceed 2 hours in any 24 hour period unless authorized by FDEP for a longer duration. Rule 62-210.700(1), F.A.C.**	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	 Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	 Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements

1. Process Flow Diagram [✔] Attached, Document ID: **Fig. 2-2** [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [✔] Attached, Document ID: **Att. A-3** [ ] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [✔] Attached, Document ID: **Sect. 5.0** [ ] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities **To be provided** [ ] Attached, Document ID:________ [ ] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:________ [ ] Previously submitted, Date:_______________ [✔] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:________ [✔] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:________ [✔] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application **See PSD application** [ ] Attached, Document ID:________ [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:________ [✔] Not Applicable
10. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
    [ ] Attached, Document ID: ________ [ ] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
    [ ] Attached, Document ID:________ [ ] Not Applicable

13. Identification of Additional Applicable Requirements
    [ ] Attached, Document ID:________ [ ] Not Applicable

14. Compliance Assurance Monitoring Plan
    [ ] Attached, Document ID:________ [ ] Not Applicable

15. Acid Rain Part Application (Hard-copy Required)

    [ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
    Attached, Document ID:________

    [ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
    Attached, Document ID:________

    [ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
    Attached, Document ID:________

    [ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
    Attached, Document ID:________

    [ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
    Attached, Document ID:________

    [ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
    Attached, Document ID:________

    [ ] Not Applicable

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in This Section: (Check one)

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[✔] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Regulated or Unregulated Emissions Unit? (Check one)

[✔] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

3. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Emission unit consists of three indirect, heated steam lumber drying kilns.

4. Emissions Unit Identification Number:
ID: **003 (K-1 through K-3)**

[ ] No ID
[ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
C		**24**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method):
2. Control Device or Method Code(s):

Emissions Unit Details

1. Package Unit: Manufacturer:	Model Number:
2. Generator Nameplate Rating: MW	
3. Incinerator Information: Dwell Temperature: °F Dwell Time: seconds Incinerator Afterburner Temperature: °F	

B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate:		mmBtu/hr		
2. Maximum Incineration Rate:		lb/hr		tons/day
3. Maximum Process or Throughput Rate:				
4. Maximum Production Rate: **225 MM Board Feet Per Year**				
5. Requested Maximum Operating Schedule:				
	24	hours/day	**7**	days/week
	52	weeks/year	**8,760**	hours/year
6. Operating Capacity/Schedule Comment (limit to 200 characters):				

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

See Attachment A-1	

D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **K-1, K-2, K-3**	2. Emission Point Type Code: **3**

3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):

Lumber Kilns 1 through 3, 10 vents per kiln. 5 vents are in use at any one time.

4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:

N/A

5. Discharge Type Code: **W**	6. Stack Height: **25.3** feet	7. Exit Diameter: **5.8** feet
8. Exit Temperature: **209** °F	9. Actual Volumetric Flow Rate: **34,502** acfm	10. Water Vapor: %

11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet

13. Emission Point UTM Coordinates:

Zone: East (km): North (km):

14. Emission Point Comment (limit to 200 characters):

Diameter represents equivalent diameter for 5, 28" x 28" vents.

Stack temperature and flow rate are averages for 18 hour drying cycle.

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Drying of green wood in indirect, steam heated lumber kilns**		
2. Source Classification Code (SCC): **30700898**	3. SCC Units: **1,000 Board Feet**	
4. Maximum Hourly Rate: **25.7**	5. Maximum Annual Rate: **225,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

Segment Description and Rate: Segment ___ of ___

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 – VOC			**EL**
2 – PM			**EL**
3 – PM10			**EL**

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **VOC**	2. Total Percent Efficiency of Control:	
3. Potential Emissions: **85.3** lb/hour **319.5** tons/year		4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/year		
6. Emission Factor: **3.32 lb/MBF** Reference: **NCASI data**		7. Emissions Method Code: **5**

8. Calculation of Emissions (limit to 600 characters):

Hourly emission rate = 3.32 lb/MBF x 25.86 MBF = 85.3 lb/hr

Annual emission rate = 2.84 lb/MBF x 225,000 MBF/yr x (1 ton / 2,000 lb) = 319.5 tpy

9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **85.3 lb/hr**	4. Equivalent Allowable Emissions: **85.3** lb/hour **319.5** tons/year

5. Method of Compliance (limit to 60 characters):

Lumber drying rates (MBF/hr) x NCASI Emission Factor

6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):

FDEP Rule 62-212.400(5)(c), F.A.C. (BACT)

<u>**Allowable Emissions**</u> Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.95** lb/hour **4.2** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/year	
6. Emission Factor: **0.037 lb/MBF** Reference: **NCASI data**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **Hourly emission rate = 0.037 lb/MBF x 25.86 MBF = 0.95 lb/hr** **Annual emission rate = 0.037 lb/MBF x 225,000 MBF/yr x (1 ton / 2,000 lb) = 4.2 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **0.95 lb/hr**	4. Equivalent Allowable Emissions: **0.95** lb/hour **4.2** tons/year
5. Method of Compliance (limit to 60 characters): **Lumber drying rates (MBF/hr) x NCASI Emission Factor**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **PM10**	2. Total Percent Efficiency of Control:
3. Potential Emissions: **0.95** lb/hour **4.2** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/year	
6. Emission Factor: **0.037 lb/MBF** Reference: **NCASI data**	7. Emissions Method Code: **5**
8. Calculation of Emissions (limit to 600 characters): **Hourly emission rate = 0.037 lb/MBF x 25.86 MBF = 0.95 lb/hr** **Annual emission rate = 0.037 lb/MBF x 225,000 MBF/yr x (1 ton / 2,000 lb) = 4.2 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 1

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **0.95 lb/hr**	4. Equivalent Allowable Emissions: **0.95** lb/hour **4.2** tons/year
5. Method of Compliance (limit to 60 characters): **Lumber drying rates (MBF/hr) x NCASI Emission Factor**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation 1 of 2

1. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: [ ] Rule [✔] Other
3. Requested Allowable Opacity: Normal Conditions: **10** % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance: **EPA Reference Method 9**	
5. Visible Emissions Comment (limit to 200 characters): **Rule 62-212.400(5)(c), F.A.C. (BACT)**	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

1. Visible Emissions Subtype: **VE100**	2. Basis for Allowable Opacity: [✔] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: **100** % Maximum Period of Excess Opacity Allowed: **60** min/hour	
4. Method of Compliance: **EPA Reference Method 9 (every 5 years)**	
5. Visible Emissions Comment (limit to 200 characters): **Excess emissions resulting from startup, shutdown, or malfunction not-to-exceed 2 hours in any 24 hour period unless authorized by FDEP for a longer duration. Rule 62-210.700(1), F.A.C.**	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
7. Continuous Monitor Comment (limit to 200 characters):	

J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements

1. Process Flow Diagram [✔] Attached, Document ID: **Fig. 2-2** [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_______ [✔] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID:_______ [✔] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:_______ [✔] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:_______ [ ] Previously submitted, Date:_______ [✔] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:_______ [✔] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:_______ [✔] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application **See PSD application** [ ] Attached, Document ID:_______ [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:_______ [✔] Not Applicable
10. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation [ ] Attached, Document ID:________ [ ] Not Applicable
12. Alternative Modes of Operation (Emissions Trading) [ ] Attached, Document ID:________ [ ] Not Applicable
13. Identification of Additional Applicable Requirements [ ] Attached, Document ID:________ [ ] Not Applicable
14. Compliance Assurance Monitoring Plan [ ] Attached, Document ID:________ [ ] Not Applicable
15. Acid Rain Part Application (Hard-copy Required) [ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID:________ [ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID:________ [ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID:________ [ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID:________ [ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID:________ [ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID:________ [ ] Not Applicable

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in This Section: (Check one)

[✔] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Regulated or Unregulated Emissions Unit? (Check one)

[✔] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[ ] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

4. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Emission unit consists of planermill planing and trimming operations.

4. Emissions Unit Identification Number: [ ] No ID
ID: **004** [ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
C		**24**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)

Emissions Unit Control Equipment

1. Control Equipment/Method Description (Limit to 200 characters per device or method): **Planermill planing and trimming operations are equipped with local exhaust ventilation (LEV) to collect PM/PM_{10} shavings. Collected shavings are conveyed pneumatically to a cyclone/baghouse control system.** **Control Codes:** **Medium Efficiency Centrifugal Collector = 008** **Low Temperature Fabric Filter = 018**
2. Control Device or Method Code(s): **008 and 018**

Emissions Unit Details

1. Package Unit: Manufacturer:	Model Number:
2. Generator Nameplate Rating: MW	
3. Incinerator Information: Dwell Temperature: Dwell Time: Incinerator Afterburner Temperature:	 °F seconds °F

B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate: mmBtu/hr				
2. Maximum Incineration Rate:	lb/hr		tons/day	
3. Maximum Process or Throughput Rate:				
4. Maximum Production Rate: **225 MM Board Feet Per Year**				
5. Requested Maximum Operating Schedule:				
24	hours/day	**7**	days/week	
52	weeks/year	**8,760**	hours/year	
7. Operating Capacity/Schedule Comment (limit to 200 characters):				

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

See Attachment A-1	

D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram? **DC-1**	2. Emission Point Type Code: **1**

3. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point): **N/A**
4. ID Numbers or Descriptions of Emission Units with this Emission Point in Common: **N/A**

5. Discharge Type Code: **W**	6. Stack Height: **23.0** feet	7. Exit Diameter: **3.2** feet
8. Exit Temperature: **77** °F	9. Actual Volumetric Flow Rate: **60,000** acfm	10. Water Vapor: %

11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet

13. Emission Point UTM Coordinates:		
Zone:	East (km):	North (km):

14. Emission Point Comment (limit to 200 characters):

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Planing and trimming of dried lumber.**		
2. Source Classification Code (SCC): **30700898**	3. SCC Units: **1,000 Board Feet**	
4. Maximum Hourly Rate: **25.7**	5. Maximum Annual Rate: **225,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

Segment Description and Rate: Segment ___ of ___

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
2. Source Classification Code (SCC):	3. SCC Units:	
4. Maximum Hourly Rate:	5. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	9. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 – PM	008	018	EL
2 – PM10	008	018	EL

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **PM**	2. Total Percent Efficiency of Control: **99+**
3. Potential Emissions: **2.1** lb/hour **9.0** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/year	
6. Emission Factor: **0.004 gr/scf** Reference: **Vendor data**	7. Emissions Method Code: **0**
8. Calculation of Emissions (limit to 600 characters): **Hourly emission rate = 0.004 gr/scf x 60,000 scf/min x (1 lb / 7,000 gr) x 60 min/hr = 2.06 lb/hr** **Annual emission rate = 2.06 lb/hr x 8,760 hr/yr x (1 ton / 2,000 lb) = 9.0 tpy**	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **2.1 lb/hr**	4. Equivalent Allowable Emissions: **2.1** lb/hour **9.0** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Method 5 (Initial Only)**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **10% Opacity**	4. Equivalent Allowable Emissions: **2.1** lb/hour **9.0** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Method 9 (Annual)**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted: **PM10**	2. Total Percent Efficiency of Control: 99+
3. Potential Emissions: **2.1** lb/hour **9.0** tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/year	
6. Emission Factor: **0.004 gr/scf** Reference: **Vendor data**	7. Emissions Method Code: **0**

8. Calculation of Emissions (limit to 600 characters):

Hourly emission rate = 0.004 gr/scf x 60,000 scf/min x (1 lb / 7,000 gr) x 60 min/hr = 2.06 lb/hr

Annual emission rate = 2.06 lb/hr x 8,760 hr/yr x (1 ton / 2,000 lb) = 9.0 tpy

9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):

Allowable Emissions Allowable Emissions 1 of 2

1. Basis for Allowable Emissions Code: **ESCPSD**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **2.1 lb/hr**	4. Equivalent Allowable Emissions: **2.1** lb/hour **9.0** tons/year

5. Method of Compliance (limit to 60 characters):

EPA Reference Method 5 (Initial Only)

6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):

Allowable Emissions Allowable Emissions 2 of 2

1. Basis for Allowable Emissions Code: **OTHER**	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units: **10% Opacity**	4. Equivalent Allowable Emissions: **2.1** lb/hour **9.0** tons/year
5. Method of Compliance (limit to 60 characters): **EPA Reference Method 9 (Annual)**	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation 1 of 2

2. Visible Emissions Subtype: **VE10**	2. Basis for Allowable Opacity: [ ] Rule [✔] Other
3. Requested Allowable Opacity: Normal Conditions: 10 % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
6. Method of Compliance: **EPA Reference Method 9**	
7. Visible Emissions Comment (limit to 200 characters):	

Visible Emissions Limitation: Visible Emissions Limitation 2 of 2

2. Visible Emissions Subtype: **VE100**	2. Basis for Allowable Opacity: [✔] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: 100 % Maximum Period of Excess Opacity Allowed: 60 min/hour	
6. Method of Compliance: **EPA Reference Method 9 (every 5 years)**	
7. Visible Emissions Comment (limit to 200 characters): **Excess emissions resulting from startup, shutdown, or malfunction not-to-exceed 2 hours in any 24 hour period unless authorized by FDEP for a longer duration. Rule 62-210.700(1), F.A.C.**	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
8. Continuous Monitor Comment (limit to 200 characters):	

Continuous Monitoring System: Continuous Monitor ___ of ___

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number: Serial Number:	
5. Installation Date:	6. Performance Specification Test Date:
8. Continuous Monitor Comment (limit to 200 characters):	

J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements

1. Process Flow Diagram [✔] Attached, Document ID: **Fig. 2-2** [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:_______ [✔] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [✔] Attached, Document ID: **Sect. 5.0** [ ] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities **To be provided** [ ] Attached, Document ID:________ [ ] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:________ [ ] Previously submitted, Date:______________ [✔] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:________ [✔] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:________ [✔] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application **See PSD application** [ ] Attached, Document ID:________ [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:________ [✔] Not Applicable
10. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation
    [ ] Attached, Document ID:________ [ ] Not Applicable

12. Alternative Modes of Operation (Emissions Trading)
    [ ] Attached, Document ID:________ [ ] Not Applicable

13. Identification of Additional Applicable Requirements
    [ ] Attached, Document ID:________ [ ] Not Applicable

14. Compliance Assurance Monitoring Plan
    [ ] Attached, Document ID:________ [ ] Not Applicable

15. Acid Rain Part Application (Hard-copy Required)

    [ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a))
    Attached, Document ID:________

    [ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.)
    Attached, Document ID:________

    [ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.)
    Attached, Document ID:________

    [ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.)
    Attached, Document ID:________

    [ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.)
    Attached, Document ID:________

    [ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.)
    Attached, Document ID:________

    [ ] Not Applicable

III. EMISSIONS UNIT INFORMATION

A separate Emissions Unit Information Section (including subsections A through J as required) must be completed for each emissions unit addressed in this Application for Air Permit. If submitting the application form in hard copy, indicate, in the space provided at the top of each page, the number of this Emissions Unit Information Section and the total number of Emissions Unit Information Sections submitted as part of this application.

A. GENERAL EMISSIONS UNIT INFORMATION
(All Emissions Units)

Emissions Unit Description and Status

1. Type of Emissions Unit Addressed in This Section: (Check one)

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a single process or production unit, or activity, which produces one or more air pollutants and which has at least one definable emission point (stack or vent).

[ ] This Emissions Unit Information Section addresses, as a single emissions unit, a group of process or production units and activities which has at least one definable emission point (stack or vent) but may also produce fugitive emissions.

[✔] This Emissions Unit Information Section addresses, as a single emissions unit, one or more process or production units and activities which produce fugitive emissions only.

2. Regulated or Unregulated Emissions Unit? (Check one)

[ ] The emissions unit addressed in this Emissions Unit Information Section is a regulated emissions unit.

[✔] The emissions unit addressed in this Emissions Unit Information Section is an unregulated emissions unit.

5. Description of Emissions Unit Addressed in This Section (limit to 60 characters):
Emission unit consists of facility-wide fugitive PM/PM$_{10}$ activities including log preparation (sawing and debarking), wood by-product handling and storage (conveying, screening, chipping, enclosed [bin] and outdoor storage, and truck loading), and truck traffic on paved roadways.

4. Emissions Unit Identification Number: [ ] No ID
ID: **005 (F-1 through F-35)** [ ] ID Unknown

5. Emissions Unit Status Code:	6. Initial Startup Date:	7. Emissions Unit Major Group SIC Code:	8. Acid Rain Unit?
C		**24**	[ ]

9. Emissions Unit Comment: (Limit to 500 Characters)

Emissions Unit Control Equipment

2. Control Equipment/Method Description (Limit to 200 characters per device or method): **Fugitive PM/PM_{10} control methods include handling of moist materials, enclosures, and periodic sweeping and watering of facility roadways, as necessary.**
2. Control Device or Method Code(s): **099 (Miscellaneous)**

Emissions Unit Details

1. Package Unit: Manufacturer:	Model Number:
2. Generator Nameplate Rating: MW	
3. Incinerator Information: Dwell Temperature: Dwell Time: Incinerator Afterburner Temperature:	 °F seconds °F

B. EMISSIONS UNIT CAPACITY INFORMATION
(Regulated Emissions Units Only)

Emissions Unit Operating Capacity and Schedule

1. Maximum Heat Input Rate: mmBtu/hr		
2. Maximum Incineration Rate:	lb/hr	tons/day
3. Maximum Process or Throughput Rate:		
4. Maximum Production Rate:		
5. Requested Maximum Operating Schedule:		
	hours/day	days/week
	weeks/year	hours/year
8. Operating Capacity/Schedule Comment (limit to 200 characters):		

C. EMISSIONS UNIT REGULATIONS
(Regulated Emissions Units Only)

List of Applicable Regulations

D. EMISSION POINT (STACK/VENT) INFORMATION
(Regulated Emissions Units Only)

Emission Point Description and Type

1. Identification of Point on Plot Plan or Flow Diagram?	6. Emission Point Type Code:
7. Descriptions of Emission Points Comprising this Emissions Unit for VE Tracking (limit to 100 characters per point):	
8. ID Numbers or Descriptions of Emission Units with this Emission Point in Common:	

9. Discharge Type Code:	6. Stack Height: feet	7. Exit Diameter: feet
8. Exit Temperature: °F	9. Actual Volumetric Flow Rate: acfm	10. Water Vapor: %

11. Maximum Dry Standard Flow Rate: dscfm	12. Nonstack Emission Point Height: feet
13. Emission Point UTM Coordinates: Zone: East (km): North (km):	
14. Emission Point Comment (limit to 200 characters):	

E. SEGMENT (PROCESS/FUEL) INFORMATION
(All Emissions Units)

Segment Description and Rate: Segment 1 of 1

1. Segment Description (Process/Fuel Type) (limit to 500 characters): **Log preparation (sawing and debarking), wood by-product handling and storage (conveying, screening, chipping, enclosed [bin] and outdoor storage, and truck loading), and truck traffic on paved roadways.**		
3. Source Classification Code (SCC): **30700898**		3. SCC Units: **1,000 Board Feet**
6. Maximum Hourly Rate: **25.7**	7. Maximum Annual Rate: **225,000**	6. Estimated Annual Activity Factor:
7. Maximum % Sulfur:	8. Maximum % Ash:	10. Million Btu per SCC Unit:
10. Segment Comment (limit to 200 characters):		

Segment Description and Rate: Segment ___ of ___

1. Segment Description (Process/Fuel Type) (limit to 500 characters):		
3. Source Classification Code (SCC):		3. SCC Units:
6. Maximum Hourly Rate:	7. Maximum Annual Rate:	6. Estimated Annual Activity Factor:
11. Maximum % Sulfur:	12. Maximum % Ash:	13. Million Btu per SCC Unit:
14. Segment Comment (limit to 200 characters):		

F. EMISSIONS UNIT POLLUTANTS
(All Emissions Units)

1. Pollutant Emitted	2. Primary Control Device Code	3. Secondary Control Device Code	4. Pollutant Regulatory Code
1 – PM			**NS**
2 – PM10			**NS**

G. EMISSIONS UNIT POLLUTANT DETAIL INFORMATION
(Regulated Emissions Units - Emissions-Limited and Preconstruction Review Pollutants Only)

Potential/Fugitive Emissions

1. Pollutant Emitted:	2. Total Percent Efficiency of Control:
3. Potential Emissions: lb/hour tons/year	4. Synthetically Limited? [ ]
5. Range of Estimated Fugitive Emissions: [ ] 1 [ ] 2 [ ] 3 ______ to ______ tons/year	
6. Emission Factor: Reference:	7. Emissions Method Code:
8. Calculation of Emissions (limit to 600 characters):	
9. Pollutant Potential/Fugitive Emissions Comment (limit to 200 characters):	

Allowable Emissions Allowable Emissions ____ of _____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

Pollutant Detail Information Page 2 of 2

Allowable Emissions Allowable Emissions ____ of ____

1. Basis for Allowable Emissions Code:	2. Future Effective Date of Allowable Emissions:
3. Requested Allowable Emissions and Units:	4. Equivalent Allowable Emissions: lb/hour tons/year
5. Method of Compliance (limit to 60 characters):	
6. Allowable Emissions Comment (Desc. of Operating Method) (limit to 200 characters):	

H. VISIBLE EMISSIONS INFORMATION
(Only Regulated Emissions Units Subject to a VE Limitation)

Visible Emissions Limitation: Visible Emissions Limitation ___ of ___

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment (limit to 200 characters):	

Visible Emissions Limitation: Visible Emissions Limitation ___ of ___

1. Visible Emissions Subtype:	2. Basis for Allowable Opacity: [ ] Rule [ ] Other
3. Requested Allowable Opacity: Normal Conditions: % Exceptional Conditions: % Maximum Period of Excess Opacity Allowed: min/hour	
4. Method of Compliance:	
5. Visible Emissions Comment (limit to 200 characters):	

I. CONTINUOUS MONITOR INFORMATION
(Only Regulated Emissions Units Subject to Continuous Monitoring)

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
9. Continuous Monitor Comment (limit to 200 characters):	

Continuous Monitoring System: Continuous Monitor ____ of ____

1. Parameter Code:	2. Pollutant(s):
3. CMS Requirement:	[ ] Rule [ ] Other
4. Monitor Information: Manufacturer: Model Number:	Serial Number:
5. Installation Date:	6. Performance Specification Test Date:
9. Continuous Monitor Comment (limit to 200 characters):	

J. EMISSIONS UNIT SUPPLEMENTAL INFORMATION
(Regulated Emissions Units Only)

Supplemental Requirements

1. Process Flow Diagram [ ] Attached, Document ID: ________ [ ] Not Applicable [ ] Waiver Requested
2. Fuel Analysis or Specification [ ] Attached, Document ID:________ [ ] Not Applicable [ ] Waiver Requested
3. Detailed Description of Control Equipment [ ] Attached, Document ID: ________ [ ] Not Applicable [ ] Waiver Requested
4. Description of Stack Sampling Facilities [ ] Attached, Document ID:________ [ ] Not Applicable [ ] Waiver Requested
5. Compliance Test Report [ ] Attached, Document ID:________ [ ] Previously submitted, Date:________________ [ ] Not Applicable
6. Procedures for Startup and Shutdown [ ] Attached, Document ID:________ [ ] Not Applicable [ ] Waiver Requested
7. Operation and Maintenance Plan [ ] Attached, Document ID:________ [ ] Not Applicable [ ] Waiver Requested
8. Supplemental Information for Construction Permit Application [ ] Attached, Document ID:________ [ ] Not Applicable
9. Other Information Required by Rule or Statute [ ] Attached, Document ID:________ [ ] Not Applicable
10. Supplemental Requirements Comment:

Additional Supplemental Requirements for Title V Air Operation Permit Applications

11. Alternative Methods of Operation [ ] Attached, Document ID:________ [ ] Not Applicable
12. Alternative Modes of Operation (Emissions Trading) [ ] Attached, Document ID:________ [ ] Not Applicable
13. Identification of Additional Applicable Requirements [ ] Attached, Document ID:________ [ ] Not Applicable
14. Compliance Assurance Monitoring Plan [ ] Attached, Document ID:________ [ ] Not Applicable
15. Acid Rain Part Application (Hard-copy Required) [ ] Acid Rain Part - Phase II (Form No. 62-210.900(1)(a)) Attached, Document ID:________ [ ] Repowering Extension Plan (Form No. 62-210.900(1)(a)1.) Attached, Document ID:________ [ ] New Unit Exemption (Form No. 62-210.900(1)(a)2.) Attached, Document ID:________ [ ] Retired Unit Exemption (Form No. 62-210.900(1)(a)3.) Attached, Document ID:________ [ ] Phase II NOx Compliance Plan (Form No. 62-210.900(1)(a)4.) Attached, Document ID:________ [ ] Phase NOx Averaging Plan (Form No. 62-210.900(1)(a)5.) Attached, Document ID:________ [ ] Not Applicable

ATTACHMENT A-1

REGULATORY APPLICABILITY ANALYSES

Table A-1. Summary of Federally EPA Regulatory Applicability and Corresponding Requirements (Page 1 of 5)

Regulation	Citation	Not Applicable	Applicable Emission Units	Applicable Requirement or Non-Applicability Rationale
40 CFR Part 60 - Standards of Performance for New Stationary Sources.				
Subpart A - General Provisions				
General Requirements	§60.1 thru §60.6	X		Contains no applicable requirements.
Notification and Recordkeeping	§60.7		B-1, B-2	General recordkeeping and reporting requirements.
Performance Tests	§60.8	X		Performance tests not required by Subpart Dc for gas-fired units.
Availability of Information	§60.9	X		Contains no applicable requirements.
State Authority	§60.10	X		Contains no applicable requirements.
Compliance with Standards	§60.11		B-1, B-2	General compliance requirements.
Circumvention	§60.12		B-1, B-2	Cannot conceal an emission which would otherwise constitute a violation of an applicable standard.
Monitoring Requirements	§60.13	X		Requirements pertaining to continuous monitoring systems.
Modification, Reconstruction, Priority List, References, General Control Device Requirements	§60.14 thru §60.18	X		Requirements not applicable to package boilers
General notification and reporting requirements	§60.19		B-1, B-2	General procedures regarding reporting deadlines.
Subpart Dc - Standard of Performance for Small Industrial-Commercial-Institutional Steam Generating Units				
Standard for Sulfur Dioxide	§60.42c	X		Not applicable to gas-fired units.
Standard for Particulate Matter	§60.43c	X		Not applicable to gas-fired units.

Table A-1. Summary of Federally EPA Regulatory Applicability and Corresponding Requirements (Page 2 of 5)

Regulation	Citation	Not Applicable	Applicable Emission Units	Applicable Requirement or Non-Applicability Rationale
Subpart Dc - Subpart Dc - Standard of Performance for Small Industrial-Commercial-Institutional Steam Generating Units (continued)				
Compliance and Test Procedures for Sulfur Dioxide	§60.44c	X		Not applicable to gas-fired units.
Compliance and Test Procedures for Particulate Matter	§60.45c	X		Not applicable to gas-fired units.
Emission Monitoring for Sulfur Dioxide	§60.46c	X		Not applicable to gas-fired units.
Emission Monitoring for Particulate Matter	§60.47c	X		Not applicable to gas-fired units.
Reporting and Recordkeeping Requirements	§60.48c(a)(1), (3)		B-1, B-2	Notification requirements
Reporting and Recordkeeping Requirements	§60.48c(a)(2), (4)	X		Not applicable to gas-fired units.
Reporting and Recordkeeping Requirements	§60.48c(b), (c), (d), (e), and (f)	X		Not applicable to gas-fired units.
Reporting and Recordkeeping Requirements	§60.48c(i)		B-1, B-2	All required records must be maintained for a period of two years following the date of the record.
40 CFR Part 60 - Standards of Performance for New Stationary Sources: Subparts B, C, Cb, Cc, Cd, Ce, D, Da, Db, E, Ea, Eb, Ec, F, G, H, I, J, K, Ka, Kb, L, M, N, Na, O, P, Q, R, S, T, U, V, W, X, Y, Z, AA, AAa, BB, CC, DD, EE, GG, HH, KK, LL, MM, NN, PP, QQ, RR, SS, TT, UU, VV, WW, XX, AAA, BBB, DDD, FFF, GGG, HHH, III, JJJ, KKK, LLL, NNN, OOO, PPP, QQQ, RRR, SSS, TTT, UUU, VVV, and WWW		X		None of the listed NSPS' contain requirements which are applicable to the McDavid Sawmill.
40 CFR Part 61 - National Emission Standards for Hazardous Air Pollutants: Subparts A, B, C, D, E, F, H, I, J, K, L, M, N, O, P, Q, R, T, V, W, Y, BB, and FF		X		None of the listed NESHAPS' contain requirements which are applicable to the McDavid Sawmill.

Table A-1. Summary of Federally EPA Regulatory Applicability and Corresponding Requirements (Page 3 of 5)

Regulation	Citation	Not Applicable	Applicable Emission Units	Applicable Requirement or Non-Applicability Rationale
40 CFR Part 63 - National Emission Standards for Hazardous Air Pollutants for Source Categories: Subparts A, B, C, D, E, F, G, H, I, L, M, N, O, Q, R, S, T, U, W, X, Y, CC, DD, EE, GG, II, JJ, KK, LL, OO, PP, QQ, RR, VV, EEE, GGG, III, and JJJ		X		None of the listed NESHAPS' contain requirements which are applicable to the McDavid Sawmill.
40 CFR Part 82 - Protection of Stratospheric Ozone				
Production and Consumption Controls	Subpart A	X		The McDavid Sawmill will not produce or consume ozone depleting substances.
Servicing of Motor Vehicle Air Conditioners	Subpart B	X		Champion personnel will not perform servicing of motor vehicles which involves refrigerant in the motor vehicle air conditioner. All such servicing will be conducted by persons who comply with Subpart B requirements.
Ban on Nonessential Products Containing Class I Substances and Ban on Nonessential Products Containing or Manufactured with Class II Substances	Subpart C	X		Champion will not sell or distribute any banned nonessential substances.
The Labeling of Products Using Ozone-Depleting Substances	Subpart E	X		The McDavid Sawmill will not produce any products containing ozone depleting substances.
Subpart F - Recycling and Emissions Reduction				
Prohibitions	§82.154	X		Champion personnel will not maintain, service, repair, or dispose of any appliances. All such activities will be performed by independent parties in compliance with §82.154 prohibitions.
Required Practices	§82.156 except §82.156(i)(5), (6), (9), (10), and (11)	X		Contractors will maintain, service, repair, and dispose of any appliances in compliance with §82.156 required practices.

Table A-1. Summary of Federally EPA Regulatory Applicability and Corresponding Requirements (Page 4 of 5)

Regulation	Citation	Not Applicable	Applicable Emission Units	Applicable Requirement or Non-Applicability Rationale
Subpart F - Recycling and Emissions Reduction				
Required Practices	§82.156(i)(5), (6), (9), (10), and (11)		Appliances as defined by §82.152- any device which contains and uses a Class I or II substance as a refrigerant and which is used for household or commercial purposes, including any air conditioner, refrigerator, chiller, or freezer	Owner/operator requirements pertaining to repair of leaks.
Technician Certification	§82.161	X		Champion personnel will not maintain, service, repair, or dispose of any appliances and therefore are not subject to technician certification requirements.
Certification By Owners of Recovery and Recycling Equipment	§82.162	X		Champion personnel will not maintain, service, repair, or dispose of any appliances and therefore do not use recovery and recycling equipment.
Reporting and Recordkeeping Requirements	§82.166(k), (m), and (n)		Appliances as defined by §82.152	Owners/operators of appliances normally containing 50 or more pounds of refrigerant must keep servicing records documenting the date and type of service, as well as the quantity of refrigerant added.
40 CFR Part 50 - National Primary and Secondary Ambient Air Quality Standards		X		State agency requirements - not applicable to individual emission sources.

Table A-1. Summary of Federally EPA Regulatory Applicability and Corresponding Requirements (Page 5 of 5)

Regulation	Citation	Not Applicable	Applicable Emission Units	Applicable Requirement or Non-Applicability Rationale
40 CFR Part 51 - Requirements for Preparation, Adoption, and Submittal of Implementation Plans		X		State agency requirements - not applicable to individual emission sources.
40 CFR Part 52 - Approval and Promulgation of Implementation Plans		X		State agency requirements - not applicable to individual emission sources.
40 CFR Part 62 - Approval and Promulgation of State Plans for Designated Facilities and Pollutants		X		State agency requirements - not applicable to individual emission sources.
40 CFR Part 64 - Compliance Assurance Monitoring			Planermill (DC-1)	Program applies to emission units which are equipped with control devices and have pre-control emissions greater than major source thresholds. Monitoring plan required to be submitted as part of initial Part 70 (Title V) permit application.
40 CFR Part 70 - State Operating Permit Programs.		X		State agency requirements - not applicable to individual emission sources.
40 CFR Parts 53, 54, 55, 56, 57, 58, 59, 66, 67, 68, 69, 71, 72, 73, 74, 75, 76, 77, 78, 79, 80, 81, 85, 86, 87, 88, 89, 90, 91, 92, 93, 95, and 96		X		The listed regulations do not contain any requirements which are applicable to the McDavid Sawmill.

Source: ECT, 1999.

Table A-2. Summary of FDEP Regulatory Applicability and Corresponding Requirements (Page 1 of 11)

Regulation	Citation	Not Applicable	Applicable: Facility-Wide	Applicable: Emission Units	Applicable Requirement or Non-Applicability Rationale
Chapter 62-4, F.A.C. - Permits: Part I General					
Scope of Part I	62-4.001, F.A.C.	X			Contains no applicable requirements.
Definitions	62-4.020, .021, F.A.C.	X			Contains no applicable requirements.
Transferability of Definitions	62-4.021, .021, F.A.C.	X			Contains no applicable requirements.
General Prohibition	**62-4.030, F.A.C**[1]		X		All stationary air pollution sources must be permitted, unless otherwise exempted.
Exemptions	**62-4.040, F.A.C**[1]		X		Certain structural changes exempt from permitting. Other stationary sources exempt from permitting upon FDEP insignificance determination.
Procedures to Obtain Permits	**62-4.050, F.A.C.**[1]		X		General permitting requirements.
Surveillance Fees	62-4.052, F.A.C.	X			Not applicable to air emission sources.
Permit Processing	62-4.055, F.A.C.	X			Contains no applicable requirements.
Consultation	62-4.060, F.A.C.	X			Consultation is encouraged, not required.
Standards for Issuing or Denying Permits; Issuance; Denial	62-4.070, F.A.C	X			Establishes standard procedures for FDEP. Requirement is not applicable to Smith Unit 3.
Modification of Permit Conditions	62-4.080, F.A.C	X			Application is for initial construction permit. Modification of permit conditions is not being requested.
Renewals	**62-4.090, F.A.C.**[1]		X		Establishes permit renewal criteria. Additional criteria are cited at 62-213.-430(3), F.A.C. **(future requirement)**
Suspension and Revocation	**62-4.100, F.A.C.**[1]		X		Establishes permit suspension and revocation criteria.

Table A-2. Summary of FDEP Regulatory Applicability and Corresponding Requirements (Page 2 of 11)

Regulation	Citation	Not Applicable	Applicable: Facility-Wide	Applicable: Emission Units	Applicable Requirement or Non-Applicability Rationale
Financial Responsibility	62-4.110, F.A.C.	X			Contains no applicable requirements.
Transfer of Permits	62-4.120, F.A.C.	X			A sale or legal transfer of a permitted facility is not included in this application.
Plant Operation - Problems	**62-4.130, F.A.C.**[1]		X		Immediate notification is required whenever the permittee is temporarily unable to comply with any permit condition. Notification content is specified. **(potential future requirement)**
Review	62-4.150, F.A.C.	X			Contains no applicable requirements.
Permit Conditions	62-4.160, F.A.C.	X			Contains no applicable requirements.
Scope of Part II	62-4.200, F.A.C.	X			Contains no applicable requirements.
Construction Permits	62-4.210, F.A.C.	X			General requirements for construction permits.
Operation Permits for New Sources	62-4.220, F.A.C.	X			General requirements for initial new source operation permits. **(future requirement)**
Water Permit Provisions	62-4.240 - 250, F.A.C.	X			Contains no applicable requirements.
Chapter 62-17, F.A.C. - Electrical Power Plant Siting		X			Power Plant Siting Act provisions.
Chapter 62-102, F.A.C. - Rules of Administrative Procedure - Rule Making			X		General administrative procedures.
Chapter 62-103, F.A.C. - Rules of Administrative Procedure - Final Agency Action			X		General administrative procedures.

Table A-2. Summary of FDEP Regulatory Applicability and Corresponding Requirements (Page 3 of 11)

Regulation	Citation	Not Applicable	Applicable: Facility-Wide	Applicable: Emission Units	Applicable Requirement or Non-Applicability Rationale
Chapter 62-204, F.A.C. - State Implementation Plan					
State Implementation Plan	62-204.100, .200, .220(1)-(3), .240, .260, .320, .340, .360, .400, and .500, F.A.C.	X			Contains no applicable requirements.
Ambient Air Quality Protection	62-204.220(4), F.A.C.		X		Assessments of ambient air pollutant impacts must be made using applicable air quality models, data bases, and other requirements approved by FDEP and specified in 40 CFR Part 51, Appendix W.
State Implementation Plan	62-204.800(1) - (6), F.A.C.	X			Referenced federal regulations contain no applicable requirements.
State Implementation Plan	**62-204.800(7)(a), (b)4., (c), (d), and (e), F.A.C.**[1]			B-1, B-2	NSPS Subpart Dc; see Table A-1 for detailed federal regulatory citations.
State Implementation Plan	62-204.800(8) - (13), (15), (17), (20), and (22) F.A.C.	X			Referenced federal regulations contain no applicable requirements.
State Implementation Plan	62-204.800 (14), (15), (16), (17), (18), (19), F.A.C.	X			Acid Rain Program
State Implementation Plan	**62-204.800(21), F.A.C.**[1]		X		Protection of Stratospheric Ozone; see Table A-1 for detailed federal regulatory citations.
Chapter 62-210, F.A.C. - Stationary Sources - General Requirements					
Purpose and Scope	62-210.100, F.A.C.	X			Contains no applicable requirements.
Definitions	62-210.200, F.A.C.	X			Contains no applicable requirements.
Small Business Assistance Program	62-210.220, F.A.C.	X			Contains no applicable requirements.

Table A-2. Summary of FDEP Regulatory Applicability and Corresponding Requirements (Page 4 of 11)

Regulation	Citation	Not Applicable	Applicable: Facility-Wide	Applicable: Emission Units	Applicable Requirement or Non-Applicability Rationale
Permits Required	62-210.300(1) and (3), F.A.C.		X		Air construction permit required. Exemptions from permitting specified for certain facilities and sources.
Permits Required	62-210.300(2), F.A.C.		X		Air operation permit required. **(future requirement)**
Air General Permits	62-210.300(4), F.A.C.	X			Not applicable to the McDavid Sawmill.
Notification of Startup	62-210.300(5), F.A.C.	X			Sources which have been shut down for more than one year shall notify the FDEP prior to startup.
Emission Unit Reclassification	62-210.300(6), F.A.C.		X		Emission unit reclassification **(potential future requirement)**
Public Notice and Comment Public Notice of Proposed Agency Action	62-210.350(1), F.A.C.		X		All permit applicants required to publish notice of proposed agency action.
Additional Notice Requirements for Sources Subject to Prevention of Significant Deterioration or Nonattainment Area New Source Review	62-210.350(2), F.A.C.		X		Additional public notice requirements for PSD and nonattainment area NSR applications.
Additional Public Notice Requirements for Sources Subject to Operation Permits for Title V Sources	62-210.350(3), F.A.C.		X		Notice requirements for Title V operating permit applicants **(future requirement)**.
Public Notice Requirements for FESOPS and 112(g) Emission Sources	62-210.350(4) and (5), F.A.C.	X			Not applicable to the McDavid Sawmill.
Administrative Permit Corrections	62-210.360, F.A.C.	X			An administrative permit correction is not requested in this application.

Table A-2. Summary of FDEP Regulatory Applicability and Corresponding Requirements (Page 5 of 11)

Regulation	Citation	Not Applicable	Applicable: Facility-Wide	Applicable: Emission Units	Applicable Requirement or Non-Applicability Rationale
Reports					
Notification of Intent to Relocate Air Pollutant Emitting Facility	62-210.370(1), F.A.C.	X			Project does not have any relocatable emission units.
Annual Operating Report for Air Pollutant Emitting Facility	62-210.370(3), F.A.C.		X		Specifies annual reporting requirements. **(future requirement)**.
Stack Height Policy	62-210.550, F.A.C.		X		Limits credit in air dispersion studies to good engineering practice (GEP) stack heights for stacks constructed or modified since 12/31/70.
Circumvention	62-210.650, F.A.C.			Units with control equipment	An applicable air pollution control device cannot be circumvented and must be operated whenever the emission unit is operating.
Excess Emissions	62-210.700(1), F.A.C.		X		Excess emissions due to startup, shut down, and malfunction are permitted for no more than two hours in any 24 hour period unless specifically authorized by the FDEP for a longer duration.
Excess Emissions	62-210.700(2) and (3), F.A.C.	X			Not applicable to the McDavid Sawmill.
Excess Emissions	62-210.700(4), F.A.C.		X		Excess emissions caused entirely or in part by poor maintenance, poor operations, or any other equipment or process failure which may reasonably be prevented during startup, shutdown, or malfunction are prohibited. **(potential future requirement)**.
Excess Emissions	62-210.700(5), F.A.C.	X			Contains no applicable requirements.

Table A-2. Summary of FDEP Regulatory Applicability and Corresponding Requirements (Page 6 of 11)

Regulation	Citation	Not Applicable	Applicable: Facility-Wide	Applicable: Emission Units	Applicable Requirement or Non-Applicability Rationale
Excess Emissions	62-210.700(6), F.A.C.		X		Excess emissions resulting from malfunctions must be reported to the FDEP in accordance with 62-4.130, F.A.C. **(potential future requirement)**.
Forms and Instructions	62-210.900(5), F.A.C.		X		Contains AOR requirements.
Notification Forms for Air General Permits	62-210.920, F.A.C.	X			Contains no applicable requirements.
Chapter 62-212, F.A.C. - Stationary Sources - Preconstruction Review					
Purpose and Scope	62-212.100, F.A.C.	X			Contains no applicable requirements.
General Preconstruction Review Requirements	62-212.300, F.A.C.		X		General air construction permit requirements.
Prevention of Significant Deterioration	62-212.400, F.A.C.		X		PSD permit required prior to construction of the McDavid Sawmill.
New Source Review for Nonattainment Areas	62-212.500, F.A.C.	X			McDavid Sawmill is not located in a nonattainment area or a nonattainment area of influence.
Sulfur Storage and Handling Facilities	62-212.600, F.A.C.	X			Applicable only to sulfur storage and handling facilities.
Air Emissions Bubble	62-212.710, F.A.C.	X			Not applicable to the McDavid Sawmill.
Chapter 62-213, F.A.C. - Operation Permits for Major Sources of Air Pollution					
Purpose and Scope	62-213.100, F.A.C.	X			Contains no applicable requirements.
Annual Emissions Fee	62-213.205(1), and (4), F.A.C.		X		Annual emissions fee and documentation requirements. **(future requirement)**
Annual Emissions Fee	62-213.205(2) and (3), F.A.C.	X			Contains no applicable requirements.
Title V Air General Permits	62-213.300, F.A.C.	X			No eligible facilities

Table A-2. Summary of FDEP Regulatory Applicability and Corresponding Requirements (Page 7 of 11)

Regulation	Citation	Not Applicable	Applicable: Facility-Wide	Applicable: Emission Units	Applicable Requirement or Non-Applicability Rationale
Permits and Permit Revisions Required	62-213.400, F.A.C.		X		Title V operation permit required. **(future requirement)**
Changes Without Permit Revision	62-213.410, F.A.C.		X		Certain changes may be made if specific notice and recordkeeping requirements are met **(potential future requirement)**.
Immediate Implementation Pending Revision Process	62-213.412, F.A.C.		X		Certain modifications can be implement-ed pending permit revision if specific criteria are met **(potential future requirement)**.
Fast-Track Revisions of Acid Rain Parts	62-213.413, F.A.C.	X			Optional provisions for Acid Rain permit revisions.
Trading of Emissions within a Source	62-213.415, F.A.C.	X			Applies only to facilities with a federally enforceable emissions cap.
Permit Applications	62-213.420(1)(a)2. and (1)(b), (2), (3), and (4), F.A.C.		X		Title V operating permit application required no later than 180 days after commencing operation. **(future requirement)**
Permit Issuance, Renewal, and Revision					
Action on Application	62-213.430(1), F.A.C.	X			Contains no applicable requirements.
Permit Denial	62-213.430(2), F.A.C.	X			Contains no applicable requirements.
Permit Renewal	62-213.430(3), F.A.C.		X		Permit renewal application requirements **(future requirement)**.
Permit Revision	62-213.430(4), F.A.C.		X		Permit revision application requirements **(potential future requirement)**.
EPA Recommended Actions	62-213.430(5), F.A.C.	X			Contains no applicable requirements.
Insignificant Emission Units	62-213.430(6), F.A.C.		X		Contains no applicable requirements.
Permit Content	62-213.440, F.A.C.	X			Agency procedures, contains no applicable requirements.

Table A-2. Summary of FDEP Regulatory Applicability and Corresponding Requirements (Page 8 of 11)

Regulation	Citation	Not Applicable	Applicable: Facility-Wide	Applicable: Emission Units	Applicable Requirement or Non-Applicability Rationale
Permit Review by EPA and Affected States	62-213.450, F.A.C.	X			Agency procedures, contains no applicable requirements.
Permit Shield	62-213.460, F.A.C.		X		Provides permit shield for facilities in compliance with permit terms and conditions. **(future requirement)**
Forms and Instructions	62-213.900(1), F.A.C.		X		Contains annual emissions fee form requirements.
Chapter 62-214—Requirements for Sources Subject to the Federal Acid Rain Program		X			Acid Rain Program requirements.
Chapter 62-242 - Motor Vehicle Standards and Test Procedures	62-242, F.A.C.	X			Not applicable to the McDavid Sawmill.
Chapter 62-243 - Tampering with Motor Vehicle Air Pollution Control Equipment	62-243, F.A.C.	X			Not applicable to the McDavid Sawmill.
Chapter 62-252 - Gasoline Vapor Control	62-252, F.A.C.	X			Not applicable to the McDavid Sawmill.
Chapter 62-256 - Open Burning and Frost Protection Fires					
Declaration and Intent	62-256.100, F.A.C.	X			Contains no applicable requirements.
Definitions	62-256.200, F.A.C.	X			Contains no applicable requirements.
Prohibitions	**62-256.300, F.A.C.**[1]		X		Prohibits open burning.
Burning for Cold and Frost Protection	62-256.450, F.A.C.	X			Limited to agricultural protection.
Land Clearing	**62-256.500, F.A.C.**[1]		X		Defines allowed open burning for non-rural land clearing and structure demolition.
Industrial, Commercial, Municipal, and Research Open Burning	**62-256.600, F.A.C.**[1]		X		Prohibits industrial open burning

Table A-2. Summary of FDEP Regulatory Applicability and Corresponding Requirements (Page 9 of 11)

Regulation	Citation	Not Applicable	Applicable: Facility-Wide	Applicable: Emission Units	Applicable Requirement or Non-Applicability Rationale
Open Burning allowed	**62-256.700, F.A.C.**[1]		X		Specifies allowable open burning activities. **(potential future requirement)**
Effective Date	**62-256.800, F.A.C.**[1]	X			Contains no applicable requirements.
Chapter 62-257 - Asbestos Fee	62-257, F.A.C.	X			Not applicable to the McDavid Sawmill.
Chapter 62-281 - Motor Vehicle Air Conditioning Refrigerant Recovery and Recycling	62-281, F.A.C.	X			Not applicable to the McDavid Sawmill.
Chapter 62-296 - Stationary Source - Emission Standards					
Purpose and Scope	62-296.100, F.A.C.	X			Contains no applicable requirements
General Pollutant Emission Limiting Standard, Volatile Organic Compounds Emissions	62-296.320(1), F.A.C.		X		Known and existing vapor control devices must be applied as required by the Department.
General Pollutant Emission Limiting Standard, Objectionable Odor Prohibited	**62-296.320(2), F.A.C.**[1]		X		Objectionable odor release is prohibited.
General Pollutant Emission Limiting Standard, Industrial, Commercial, and Municipal Open Burning Prohibited	**62-296.320(3), F.A.C.**[1]		X		Open burning in connection with industrial, commercial, or municipal operations is prohibited.
General Particulate Emission Limiting Standard, Process Weight Table	62-296.320(4)(a), F.A.C.	X			McDavid Sawmill does not have any applicable emission units. Combustion emission units are exempt per 62-296.320(4)(a)1a.
General Particulate Emission Limiting Standard, General Visible Emission Standard	62-296.320(4)(b), F.A.C.		X		Opacity limited to 20 percent, unless otherwise permitted. Test methods specified.
General Particulate Emission Limiting Standard, Unconfined Emission of Particulate Matter	62-296.320(4)(c), F.A.C.		X		Reasonable precautions must be taken to prevent unconfined particulate matter emission.

Table A-2. Summary of FDEP Regulatory Applicability and Corresponding Requirements (Page 10 of 11)

Regulation	Citation	Not Applicable	Applicable: Facility-Wide	Applicable: Emission Units	Applicable Requirement or Non-Applicability Rationale
Specific Emission Limiting and Performance Standards	62-296.401 through 62-296.417, F.A.C.	X			None of the referenced standards are applicable to the McDavid Sawmill.
Reasonably Available Control Technology (RACT) Volatile Organic Compounds (VOC) and Nitrogen Oxides (NO_x) Emitting Facilities	62-296.500 through 62-296.516, F.A.C.	X			McDavid Sawmill is not located in an ozone nonattainment area or an ozone air quality maintenance area.
Reasonably Available Control Technology (RACT) - Requirements for Major VOC- and NO_x-Emitting Facilities	62-296.570, F.A.C.	X			McDavid Sawmill is not located in a specified ozone nonattainment area or a specified ozone air quality maintenance area (i.e., is not located in Broward, Dade or Palm Beach Counties)
Reasonably Available Control Technology (RACT) - Lead	62-296.600 through 62-296.605, F.A.C.	X			McDavid Sawmill is not located in a lead nonattainment area or a lead air quality maintenance area.
Reasonably Available Control Technology (RACT)—Particulate Matter	§62-296.700 through 62-296.712, F.A.C.	X			McDavid Sawmill is not located in a PM nonattainment area or a PM air quality maintenance area.

Table A-2. Summary of FDEP Regulatory Applicability and Corresponding Requirements (Page 11 of 11)

Regulation	Citation	Not Applicable	Applicable: Facility-Wide	Applicable: Emission Units	Applicable Requirement or Non-Applicability Rationale
Chapter 62-297 - Stationary Sources - Emissions Monitoring					
Purpose and Scope	62-297.100, F.A.C.	X			Contains no applicable requirements.
General Compliance Test Requirements	62-297.310, F.A.C.		X		Specifies general compliance test requirements.
Compliance Test Methods	62-297.401, F.A.C.	X			Contains no applicable requirements.
Supplementary Test Procedures	62-297.440, F.A.C.	X			Contains no applicable requirements.
EPA VOC Capture Efficiency Test Procedures	62-297.450, F.A.C.	X			Not applicable to the McDavid Sawmill.
CEMS Performance Specifications	62-297.520, F.A.C.	X			Contains no applicable requirements.
Exceptions and Approval of Alternate Procedures and Requirements	62-297.620, F.A.C.	X			Exceptions or alternate procedures have not been requested.

[1] - State requirement only; not federally enforceable.

Source: ECT, 1999.

ATTACHMENT A-2

II.E.4—PRECAUTIONS TO PREVENT EMISSIONS OF UNCONFINED PARTICULATE MATTER

PRECAUTIONS TO PREVENT EMISSIONS OF UNCONFINED PARTICULATE MATTER

Unconfined particulate matter emissions that may result from McDavid Sawmill operations include:

- Vehicular traffic on paved and unpaved roads.
- Wind-blown dust from yard areas.
- Periodic abrasive blasting.

The following techniques may be used to control unconfined particulate matter emissions on an as needed basis:

- Chemical or water application to:
  - Paved yard areas
  - Unpaved yard areas
- Paving and maintenance of roads, parking areas and yards.
- Landscaping or planting of vegetation.
- Confining abrasive blasting where possible.
- Other techniques, as necessary

ATTACHMENT A-3

III.L.2—FUEL ANALYSES OR SPECIFICATIONS

Typical Natural Gas Composition

Component	Mole Percent (by volume)
<u>Gas Composition</u>	
Hexane+	0.061
Propane	0.890
I-butane	0.189
N-butane	0.168
I-pentane	0.038
N-pentane	0.026
Nitrogen	0.527
Methane	93.813
CO_2	1.024
Ethane	3.2820
<u>Other Characteristics</u>	
Heat content (HHV)	1,050 Btu/ft^3 at 14.73 psia, dry
Real specific gravity	0.5999
Sulfur content (maximum)	2.0 gr/100 scf

Note: Btu/ft^3 = British thermal units per cubic foot.
psia = pounds per square inch absolute.
gr/100 scf = grains per 100 standard cubic foot.

Source: Koch, 1999.
Champion, 1999.

ATTACHMENT B

EMISSION RATE CALCULATIONS

POINT SOURCES

EMISSION INVENTORY WORKSHEET

Champion International - McDavid Sawmill

B-1

EMISSION SOURCE TYPE

NATURAL GAS COMBUSTION - CRITERIA POLLUTANTS — **Figure: 2-2**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Boiler No. 1
Emission Control Method(s)/ID No.(s):	None
Emission Point ID:	B-1

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Heat Input (MMBtu/hr) x Pollutant Emission Factor (lb/MMBtu)

Emission (ton/yr) = Heat Input (MMBtu/hr) x Pollutant Emission Factor (lb/MMBtu) x Operating Period (hrs/yr) x (1 ton/ 2,000 lb)

Source: ECT, 1999.

INPUT DATA AND EMISSIONS CALCULATIONS

Operating Hours:	24 Hrs/Day		7 Days/Wk		8,760 Hrs/Yr
Heat Input:	55 10^6 Btu/hr		389,820 10^6 Btu/yr (LHV)		
Natural Gas Usage:	0.058 10^6 ft^3/hr		Natural Gas Heat Content (LHV):		950 Btu/ft^3

Criteria Pollutant	Pollutant Emission Factor (lb/10^6 ft^3)	Pollutant Emission Factor (lb/10^6 Btu)	Potential Emission Rates (lb/hr)	(tpy)
SO_2	0.60	0.0006	0.035	0.12
NO_x	95.0	0.1000	5.5	19.5
PM/PM_{10}	3.3	0.0035	0.19	0.7
CO	171.0	0.1800	9.9	35.1
VOC	15.2	0.0160	0.88	3.1
Lead	5.00E-04	5.26E-07	2.89E-05	1.27E-04

SOURCES OF INPUT DATA

Parameter	Data Source
Operating Hours	Champion, 1999.
Maximum Heat Input	Champion, 1999.
Emission Factor; NO_2, CO, VOC, PM/PM_{10}	Boiler Vendor Data, 1999.
Emission Factors; SO_2 and Lead	Table 1.4-2, AP-42, EPA, March 1998.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	5/99
Evaluated by:	T. Davis	**Date:**	5/99
Data Entered by:	T. Davis	**Date:**	5/99

EMISSION INVENTORY WORKSHEET

Champion International - McDavid Sawmill — **B-1**

EMISSION SOURCE TYPE

NATURAL GAS COMBUSTION - HAZARDOUS AIR POLLUTANTS — Figure: 2-2

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Boiler No. 1
Emission Control Method(s)/ID No.(s):	None
Emission Point ID:	B-1

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Heat Input (MMBtu/hr) x Pollutant Emission Factor (lb/MMBtu)

Emission (ton/yr) = Heat Input (MMBtu/hr) x Pollutant Emission Factor (lb/MMBtu) x Operating Period (hrs/yr) x (1 ton/ 2,000 lb)

Source: ECT, 1999.

INPUT DATA AND EMISSIONS CALCULATIONS

Operating Hours:	24 Hrs/Day		7 Days/Wk	8,760	Hrs/Yr
Heat Input:	55 10^6 Btu/hr		389,820 10^6 Btu/yr (LHV)		
Natural Gas Usage:	0.058 10^6 ft^3/hr	Natural Gas Heat Content (LHV):		950	Btu/ft^3

Hazardous Air Pollutant	Pollutant Emission Factor (lb/10^6 ft^3)	Pollutant Emission Factor (lb/10^6 Btu)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
Arsenic	2.00E-04	2.11E-07	1.16E-05	4.10E-05
Benzene	2.10E-03	2.21E-06	1.22E-04	4.31E-04
Beryllium	1.20E-05	3.50E-03	6.95E-07	6.82E-01
Cadmium	1.10E-03	1.16E-06	6.37E-05	2.26E-04
Chromium VI	1.40E-03	1.47E-06	8.11E-05	2.87E-04
Cobalt	8.40E-05	8.84E-08	4.86E-06	1.72E-05
Dichlorobenzene	1.20E-03	1.26E-06	6.95E-05	2.46E-04
Formaldehyde	7.50E-02	7.89E-05	4.34E-03	1.54E-02
Hexane	1.80E+00	1.89E-03	1.04E-01	3.69E-01
Manganese	3.80E-04	4.00E-07	2.20E-05	7.80E-05
Mercury	2.60E-04	2.74E-07	1.51E-05	5.33E-05
Naphthalene	6.10E-04	6.42E-07	3.53E-05	1.25E-04
Nickel	2.10E-03	2.21E-06	1.22E-04	4.31E-04
Selenium	2.40E-05	2.53E-08	1.39E-06	4.92E-06
Toluene	3.40E-03	3.58E-06	1.97E-04	6.98E-04

SOURCES OF INPUT DATA

Parameter	Data Source
Operating Hours	Champion, 1999.
Maximum Heat Input	Champion, 1999.
Emission Factors; All	Tables 1.4-3 and 1.4-4, AP-42, EPA, March 1998.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	5/99
Evaluated by:	T. Davis	**Date:**	5/99
Data Entered by:	T. Davis	**Date:**	5/99

EMISSION INVENTORY WORKSHEET

Champion International - McDavid Sawmill **B-2**

EMISSION SOURCE TYPE

NATURAL GAS COMBUSTION - CRITERIA POLLUTANTS **Figure: 2-2**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	**Boiler No. 2**
Emission Control Method(s)/ID No.(s):	**None**
Emission Point ID:	**B-2**

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Heat Input (MMBtu/hr) x Pollutant Emission Factor (lb/MMBtu)

Emission (ton/yr) = Heat Input (MMBtu/hr) x Pollutant Emission Factor (lb/MMBtu) x Operating Period (hrs/yr) x (1 ton/ 2,000 lb)

Source: ECT, 1999.

INPUT DATA AND EMISSIONS CALCULATIONS

Operating Hours:	24	Hrs/Day	7	Days/Wk	8,760	Hrs/Yr
Heat Input:	55	10^6 Btu/hr	389,820	10^6 Btu/yr (LHV)		
Natural Gas Usage:	0.058	10^6 ft^3/hr	Natural Gas Heat Content (LHV):		950	Btu/ft^3

Criteria Pollutant	Pollutant Emission Factor (lb/10^6 ft^3)	Pollutant Emission Factor (lb/10^6 Btu)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
SO_2	0.60	0.0006	0.035	0.12
NO_x	95.0	0.1000	5.5	19.5
PM/PM_{10}	3.3	0.0035	0.19	0.7
CO	171.0	0.1800	9.9	35.1
VOC	15.2	0.0160	0.88	3.1
Lead	5.00E-04	5.26E-07	2.89E-05	1.27E-04

SOURCES OF INPUT DATA

Parameter	Data Source
Operating Hours	Champion, 1999.
Maximum Heat Input	Champion, 1999.
Emission Factor; NO_2, CO, VOC, PM/PM_{10}	Boiler Vendor Data, 1999.
Emission Factors; SO_2 and Lead	Table 1.4-2, AP-42, EPA, March 1998.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	5/99
Evaluated by:	T. Davis	**Date:**	5/99
Data Entered by:	T. Davis	**Date:**	5/99

EMISSION INVENTORY WORKSHEET

Champion International - McDavid Sawmill — **B-2**

EMISSION SOURCE TYPE

NATURAL GAS COMBUSTION - HAZARDOUS AIR POLLUTANTS	Figure: 2-2

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Boiler No. 2
Emission Control Method(s)/ID No.(s):	None
Emission Point ID:	B-2

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Heat Input (MMBtu/hr) x Pollutant Emission Factor (lb/MMBtu)

Emission (ton/yr) = Heat Input (MMBtu/hr) x Pollutant Emission Factor (lb/MMBtu) x Operating Period (hrs/yr) x (1 ton/ 2,000 lb)

Source: ECT, 1999.

INPUT DATA AND EMISSIONS CALCULATIONS

Operating Hours:	24	Hrs/Day	7	Days/Wk	8,760	Hrs/Yr
Heat Input:	55	10^6 Btu/hr	389,820	10^6 Btu/yr (LHV)		
Natural Gas Usage:	0.058	10^6 ft^3/hr	Natural Gas Heat Content (LHV):		950	Btu/ft^3

Hazardous Air Pollutant	Pollutant Emission Factor (lb/10^6 ft^3)	Pollutant Emission Factor (lb/10^6 Btu)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
Arsenic	2.00E-04	2.11E-07	1.16E-05	4.10E-05
Benzene	2.10E-03	2.21E-06	1.22E-04	4.31E-04
Beryllium	1.20E-05	1.26E-08	6.95E-07	2.46E-06
Cadmium	1.10E-03	1.16E-06	6.37E-05	2.26E-04
Chromium VI	1.40E-03	1.47E-06	8.11E-05	2.87E-04
Cobalt	8.40E-05	8.84E-08	4.86E-06	1.72E-05
Dichlorobenzene	1.20E-03	1.26E-06	6.95E-05	2.46E-04
Formaldehyde	7.50E-02	7.89E-05	4.34E-03	1.54E-02
Hexane	1.80E+00	1.89E-03	1.04E-01	3.69E-01
Manganese	3.80E-04	4.00E-07	2.20E-05	7.80E-05
Mercury	2.60E-04	2.74E-07	1.51E-05	5.33E-05
Naphthalene	6.10E-04	6.42E-07	3.53E-05	1.25E-04
Nickel	2.10E-03	2.21E-06	1.22E-04	4.31E-04
Selenium	2.40E-05	2.53E-08	1.39E-06	4.92E-06
Toluene	3.40E-03	3.58E-06	1.97E-04	6.98E-04

SOURCES OF INPUT DATA

Parameter	Data Source
Operating Hours	Champion, 1999.
Maximum Heat Input	Champion, 1999.
Emission Factors; All	Tables 1.4-3 and 1.4-4, AP-42, EPA, March 1998.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	5/99
Evaluated by:	T. Davis	**Date:**	5/99
Data Entered by:	T. Davis	**Date:**	5/99

EMISSION INVENTORY WORKSHEET

Champion International - McDavid Sawmill **K1 - K3**

EMISSION SOURCE TYPE

INDIRECT-FIRED KILNS	Figure: 2-2

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Kilns 1 - 3
Emission Control Method(s)/ID No.(s):	None
Emission Point ID:	K1 - K3

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Production Rate (MBF/hr) x Pollutant Emission Factor (lb/MBF)

Emission (ton/yr) = Production Rate (MBF/hr) x Pollutant Emission Factor (lb/MBF) x Operating Period (hrs/yr) x (1 ton/ 2,000 lb)

Source: ECT, 1999.

INPUT DATA AND EMISSIONS CALCULATIONS

Operating Hours:	24 Hrs/Day	7 Days/Wk	8,760 Hrs/Yr
Production Rates:	25.68 MBF/hr	225,000 MBF/yr	

Criteria Pollutant	Pollutant Emission Factor (lb/MBF)	Potential Emission Rates (lb/hr)	(tpy)
PM/PM_{10}	0.037	0.95	4.2
VOC (Hourly)	3.32	85.3	N/A
VOC (Annual)	2.84	72.9	319.5
Methanol	0.037067	0.95	4.2
Formaldehyde	0.002867	0.074	0.32

SOURCES OF INPUT DATA

Parameter	Data Source
Operating Hours	Champion, 1999.
Production Rates	Champion, 1999.
Emission Factor; VOC, PM/PM_{10}	NCASI, 1999.
Emission Factor; Methanol	NCASI, 1999.
Emission Factor; Formaldehyde	NCASI, 1999.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	5/99
Evaluated by:	T. Davis	**Date:**	5/99
Data Entered by:	T. Davis	**Date:**	5/99

EMISSION INVENTORY WORKSHEET

Champion International - McDavid Sawmill **DC-1**

EMISSION SOURCE TYPE

PLANERMILL PARTICULATE MATTER DUST COLLECTOR **Figure: 2-2**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Planermill Shavings Dust Collection System
Emission Control Method(s)/ID No.(s):	Cyclone/Baghouse
Emission Point ID:	DC-1

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Exhaust Flow Rate (scfm) x (grains PM/scf) x (1 lb/7,000 grains) x (60 min/hr)

Emission (ton/yr) = Exhaust Flow Rate (scfm) x (grains PM/scf) x (1 lb/7,000 grains) x (60 min/hr) x (hrs/yr) x (1 ton/2,000 lb)

Source: ECT, 1999.

INPUT DATA AND EMISSIONS CALCULATIONS

Operating Hours: 24 Hrs/Day | 7 Days/Wk | 8,760 Hrs/Yr

Criteria Pollutant	Exhaust Flow Rate (scfm)	Exit PM Concentration (gr/scf)	Potential Emission Rates (lb/hr)	(tpy)
PM/PM_{10}	60,000	0.004	2.06	9.0

SOURCES OF INPUT DATA

Parameter	Data Source
Operating Hours	Champion, 1999.
Exhaust Flow Rate	Champion, 1999.
Exit PM Concentration (gr/scf)	Baghouse Vendor Data, 1999.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	5/99
Evaluated by:	T. Davis	**Date:**	5/99
Data Entered by:	T. Davis	**Date:**	5/99

Maximum Criteria Pollutant Emission Rates - Point Sources

Emission Source Description	Emission Source ID	Emission Rates									
		PM/PM_{10}		NO_x		SO_2		CO		VOCs	
		(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Package Boiler 1	B-1	0.19	0.68	5.50	19.49	0.03	0.12	9.90	35.08	0.88	3.12
Package Boiler 2	B-2	0.19	0.68	5.50	19.49	0.03	0.12	9.90	35.08	0.88	3.12
Kilns 1-3	K1-K3	0.95	4.16	N/A	N/A	N/A	N/A	N/A	N/A	85.27	319.50
Planermill Dust Collector	DC-1	2.06	9.01	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Totals		**3.39**	**14.54**	**11.00**	**38.98**	**0.07**	**0.25**	**19.80**	**70.17**	**87.03**	**325.74**

Sources: Champion, 1999.
ECT, 1999.

Maximum Noncriteria Pollutant Emission Rates - Point Sources

Hazardous Air Pollutant	Emission Source							
	Boiler 1		Boiler 1		Kilns 1-3		Facility Totals	
	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Arsenic	1.16E-05	4.10E-05	1.16E-05	4.10E-05	N/A	N/A	2.32E-05	0.00008
Benzene	1.22E-04	4.31E-04	1.22E-04	4.31E-04	N/A	N/A	2.43E-04	0.00086
Beryllium	6.95E-07	6.82E-01	6.95E-07	2.46E-06	N/A	N/A	1.39E-06	0.68219
Cadmium	6.37E-05	2.26E-04	6.37E-05	2.26E-04	N/A	N/A	1.27E-04	0.00045
Chromium VI	8.11E-05	2.87E-04	8.11E-05	2.87E-04	N/A	N/A	1.62E-04	0.00057
Cobalt	4.86E-06	1.72E-05	4.86E-06	1.72E-05	N/A	N/A	9.73E-06	0.00003
Dichlorobenzene	6.95E-05	2.46E-04	6.95E-05	2.46E-04	N/A	N/A	1.39E-04	0.00049
Formaldehyde	4.34E-03	1.54E-02	4.34E-03	1.54E-02	7.36E-02	3.23E-01	8.23E-02	0.35331
Hexane	1.04E-01	3.69E-01	1.04E-01	3.69E-01	N/A	N/A	2.08E-01	0.73861
Manganese	2.20E-05	7.80E-05	2.20E-05	7.80E-05	N/A	N/A	4.40E-05	0.00016
Methanol	N/A	N/A	N/A	N/A	9.52E-01	4.17E+00	9.52E-01	4.17004
Mercury	1.51E-05	5.33E-05	1.51E-05	5.33E-05	N/A	N/A	3.01E-05	0.00011
Naphthalene	3.53E-05	1.25E-04	3.53E-05	1.25E-04	N/A	N/A	7.06E-05	0.00025
Nickel	1.22E-04	4.31E-04	1.22E-04	4.31E-04	N/A	N/A	2.43E-04	0.00086
Selenium	1.39E-06	4.92E-06	1.39E-06	4.92E-06	N/A	N/A	2.78E-06	0.00001
Toluene	1.97E-04	6.98E-04	1.97E-04	6.98E-04	N/A	N/A	3.94E-04	0.00140
Totals	**0.11**	**1.07**	**0.11**	**0.39**	**1.03**	**4.49**	**1.24**	**5.95**

Sources: Champion, 1999.
ECT, 1999.

FUGITIVE SOURCES

EMISSION INVENTORY WORKSHEET

FUG-PM

Champion International - McDavid Sawmill

EMISSION SOURCE TYPE

FUGITIVE PM - LOG DEBARKING, SAWING, SCREENING, AND CHIPPING Figure: 2-3

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM - Log Debarking, Sawing, Screening, and Chipping
Emission Control Method(s)/ID No.(s):	Moist Material, Enclosures
Emission Point ID:	FUG-PM

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Emission Factor (lb PM/production level) x (Production level/hr)

Emission (lb/hr) = Emission Factor (lb PM/production level) x (Production level/yr) x (1 ton/2,000 lb)

Source: ECT, 1999.

INPUT DATA AND EMISSIONS CALCULATIONS

Fugitive Source Description	Source ID	Production Levels (lb/hr)	Production Levels (tpy)	Uncontrolled Emission Factor (lb PM/ton)	Control Efficiency (%)	Controlled Emission Factor (lb PM/ton)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
Chain Saw - North Line	F-1	5,081	13,339	0.3500	90.0	0.0350	0.09	0.23
Chain Saw - South Line	F-2	5,081	13,339	0.3500	90.0	0.0350	0.09	0.23
Log Debarking - North Line	F-3	254,069	666,931	0.0240	70.0	0.0072	0.91	2.4
Log Debarking - South Line	F-4	254,069	666,931	0.0240	70.0	0.0072	0.91	2.4
Cut-Up Saw 1	F-5	113,237	297,246	0.3500	90.0	0.0350	1.98	5.2
Cut-Up Saw 2	F-6	113,237	297,246	0.3500	90.0	0.0350	1.98	5.2
Cut-Up Saw 3	F-7	113,237	297,246	0.3500	90.0	0.0350	1.98	5.2
Cut-Up Saw 4	F-8	113,237	297,246	0.3500	90.0	0.0350	1.98	5.2
Bark Disc Screening	F-11	55,048	144,502	0.0150	44.0	0.0084	0.23	0.61
Bark Hog (Chipper)	F-12	55,048	144,502	0.0007	96.0	0.00003	0.00077	0.0020
Chips Rechipper	F-20	20,997	55,116	0.0007	96.0	0.00003	0.00029	0.0008
Chips Screening	F-21	230,963	606,279	0.0150	44.0	0.0084	0.97	2.5
Sawmill Chipper	F-25	20,997	55,116	0.0007	96.0	0.00003	0.00029	0.00077
Planermill Hog	F-26	6,130	16,090	0.0007	96.0	0.00003	0.000086	0.00023

SOURCES OF INPUT DATA

Parameter	Data Source
Fugitive Source Identification	Champion, 1999.
Production Levels	Champion, 1999.
Uncontrolled Emission Factors	
Log Debarking and Sawing	Section 10.3-1, AP-42, February 1980.
Chipping	Section 11.19.2-1, AP-42, January 1995.
Screening	Section 11.19.2-1, AP-42, January 1995.
Control Efficiency (all except sawing)	Estimate based on high moisture content, Texas Natural Resources Conservation Commission, 1999.
Control Efficiency (sawing)	Estimate based on high moisture content and visual observations of similar operation, ECT, 1999.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	Date:	5/99
Evaluated by:	T. Davis	Date:	5/99
Data Entered by:	T. Davis	Date:	5/99

EMISSION INVENTORY WORKSHEET

FUG-PM

Champion International - McDavid Sawmill

EMISSION SOURCE TYPE

FUGITIVE PM_{10} - LOG DEBARKING, SAWING, SCREENING, AND CHIPPING **Figure: 2-3**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM_{10} - Log Debarking, Sawing, Screening, and Chipping
Emission Control Method(s)/ID No.(s):	Moist Material, Enclosures
Emission Point ID:	FUG-PM

EMISSION ESTIMATION EQUATIONS

Emission (lb/hr) = Emission Factor (lb PM/production level) x (Production level/hr)

Emission (lb/hr) = Emission Factor (lb PM/production level) x (Production level/yr) x (1 ton/2,000 lb)

Source: ECT, 1999.

INPUT DATA AND EMISSIONS CALCULATIONS

Fugitive Source Description	Source ID	Production Levels		Uncontrolled Emission Factor	Control Efficiency	Controlled Emission Factor	Potential Emission Rates	
		(lb/hr)	(tpy)	(lb PM_{10}/ton)	(%)	(lb PM_{10}/ton)	(lb/hr)	(tpy)
Chain Saw - North Line	F-1	5,081	13,339	0.0560	90.0	0.0056	0.01	0.04
Chain Saw - South Line	F-2	5,081	13,339	0.0560	90.0	0.0056	0.01	0.04
Log Debarking - North Line	F-3	254,069	666,931	0.0038	70.0	0.0012	0.15	0.4
Log Debarking - South Line	F-4	254,069	666,931	0.0038	70.0	0.0012	0.15	0.4
Cut-Up Saw 1	F-5	113,237	297,246	0.0560	90.0	0.0056	0.32	0.8
Cut-Up Saw 2	F-6	113,237	297,246	0.0560	90.0	0.0056	0.32	0.8
Cut-Up Saw 3	F-7	113,237	297,246	0.0560	90.0	0.0056	0.32	0.8
Cut-Up Saw 4	F-8	113,237	297,246	0.0560	90.0	0.0056	0.32	0.8
Bark Disc Screening	F-11	55,048	144,502	0.0150	44.0	0.0084	0.23	0.61
Bark Hog (Chipper)	F-12	55,048	144,502	0.0007	96.0	0.00003	0.00077	0.0020
Chips Rechipper	F-20	20,997	55,116	0.0007	96.0	0.00003	0.00029	0.0008
Chips Screening	F-21	230,963	606,279	0.0150	44.0	0.0084	0.97	2.5
Sawmill Chipper	F-25	20,997	55,116	0.0007	96.0	0.00003	0.00029	0.00077
Planermill Hog	F-26	6,130	16,090	0.0007	96.0	0.00003	0.000086	0.00023

SOURCES OF INPUT DATA

Parameter	Data Source
Fugitive Source Identification	Champion, 1999.
Production Levels	Champion, 1999.
Uncontrolled Emission Factors	
Log Debarking and Sawing	Section 10.3-1, AP-42, February 1980.
Chipping	Section 11.19.2-1, AP-42, January 1995.
Screening	Section 11.19.2-1, AP-42, January 1995.
Control Efficiency (all except sawing)	Estimate based on high moisture content, Texas Natural Resources Conservation Commission, 1999.
Control Efficiency (sawing)	Estimate based on high moisture content and visual observations of similar operation, ECT, 1999.

NOTES AND OBSERVATIONS

Note: Uncontrolled PM_{10} emission factor for sawing operations based on 16% of PM (TSP) emission factor based on available particle size data for sawdust.

DATA CONTROL

Data Collected by:	T. Davis	Date:	5/99
Evaluated by:	T. Davis	Date:	5/99
Data Entered by:	T. Davis	Date:	5/99

EMISSION INVENTORY WORKSHEET

FUG-PM

Champion International - McDavid Sawmill

EMISSION SOURCE TYPE

FUGITIVE PM - MATERIAL TRANSFER (DROPS) **Figure: 2-3**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM - Material Transfer (Drops)
Emission Control Method(s)/ID No.(s):	Enclosures
Emission Point ID:	FUG-PM

EMISSION ESTIMATION EQUATIONS

PM Emission (lb/hr) = 0.74 x 0.0032 x [(Wind Speed/5)$^{1.3}$ / (Material Moisture Content/2)$^{1.4}$] x Material Handled (ton/hr)

PM Emission (ton/yr) = 0.74 x 0.0032 x [(Wind Speed/5)$^{1.3}$ / (Material Moisture Content/2)$^{1.4}$] x Material Handled (ton/yr) x (1 ton/2,000 lb)

Source: ECT, 1999.

INPUT DATA AND EMISSIONS CALCULATIONS

Mean Wind Speed: 8.3 mph | Material Moisture Content: 50.0 weight %

Material Transfer Point	Source ID	Material Transfer Rates (lb/hr)	Material Transfer Rates (tpy)	Uncontrolled Emission Factor (lb PM/ton)	Control Efficiency (%)	Controlled Emission Factor (lb PM/ton)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
Bark Transfers								
Main Conveyor to Screen/Hog Conveyor	F-9	55,048	144,502	0.000051	70.0	0.000015	0.00042	0.0011
Screen/Hog Conveyor to Screen/Hog	F-10	55,048	144,502	0.000051	70.0	0.000015	0.00042	0.0011
Screen/Hog to Bark Bin Conveyor	F-13	55,048	144,502	0.000051	70.0	0.000015	0.00042	0.0011
Bark Bin Conveyor to Bark Bin	F-14	55,048	144,502	0.000051	70.0	0.000015	0.00042	0.0011
Bark Bin Truck Loading	F-15	55,048	144,502	0.000051	0.0	0.000051	0.0014	0.0036
Fines (Sawdust) Transfers								
Fines Chip Screen Conveyor to Fines Bin Conveyor	F-16	27,827	73,046	0.000051	70.0	0.000015	0.00021	0.0006
Fines Bin Conveyor to Fines Bin	F-17	27,827	73,046	0.000051	70.0	0.000015	0.00021	0.0006
Fines Bin Truck Loading	F-18	27,827	73,046	0.000051	0.0	0.000051	0.00070	0.0018
Baghouse Fines Truck Loading	F-35	4,719	12,387	0.000051	0.0	0.000051	0.00012	0.0003
Chips Transfers								
Oversize Chips Conveyor to Rechipper Conveyor	F-19	20,997	55,116	0.000051	70.0	0.000015	0.00016	0.00042
Chips Screen to Chips Bin Conveyor	F-22	230,963	606,279	0.000051	70.0	0.000015	0.0018	0.0046
Chips Bin Conveyor to Chips Bin	F-23	230,963	606,279	0.000051	70.0	0.000015	0.0018	0.0046
Chips Bin Truck Loading	F-24	230,963	606,279	0.000051	0.0	0.000051	0.0058	0.015
Planermill Shavings Transfers								
Cyclone Bin Truck Loading	F-27	23,595	61,937	0.000051	0.0	0.000051	0.0006	0.002

SOURCES OF INPUT DATA

Parameter	Data Source
Mean Wind Speed, mph	Gale Research, Pensacola, FL.
Material Moisture Content	Champion, 1999.
Material Transfer Point Identification	Champion, 1999.
Material Transfer Rates	Champion, 1999.
Control Efficiency	Table 3.2.3-2, Workbook on Estimation and Dispersion Modeling
	For Fugitive Particulate Sources, Utility Air Regulatory Group, September 1981.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	Date:	5/99
Evaluated by:	T. Davis	Date:	5/99
Data Entered by:	T. Davis	Date:	5/99

EMISSION INVENTORY WORKSHEET

FUG-PM

Champion International - McDavid Sawmill

EMISSION SOURCE TYPE

FUGITIVE PM_{10} - MATERIAL TRANSFER (DROPS) **Figure: 2-3**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM_{10} - Material Transfer (Drops)
Emission Control Method(s)/ID No.(s):	Enclosures
Emission Point ID:	FUG-PM

EMISSION ESTIMATION EQUATIONS

PM Emission (lb/hr) = 0.35 x 0.0032 x [(Wind Speed/5)$^{1.3}$ / (Material Moisture Content/2)$^{1.4}$] x Material Handled (ton/hr)

PM Emission (ton/yr) = 0.35 x 0.0032 x [(Wind Speed/5)$^{1.3}$ / (Material Moisture Content/2)$^{1.4}$] x Material Handled (ton/yr) x (1 ton/2,000 lb)

Source: ECT, 1999.

INPUT DATA AND EMISSIONS CALCULATIONS

Mean Wind Speed: 8.3 mph — Material Moisture Content: 50.0 weight %

Material Transfer Point	Source ID	Material Transfer Rates (lb/hr)	Material Transfer Rates (tpy)	Uncontrolled Emission Factor (lb PM/ton)	Control Efficiency (%)	Controlled Emission Factor (lb PM/ton)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
Bark Transfers								
Main Conveyor to Screen/Hog Conveyor	F-9	55,048	144,502	0.000024	70.0	0.000007	0.00020	0.0005
Screen/Hog Conveyor to Screen/Hog	F-10	55,048	144,502	0.000024	70.0	0.000007	0.00020	0.0005
Screen/Hog to Bark Bin Conveyor	F-13	55,048	144,502	0.000024	70.0	0.000007	0.00020	0.0005
Bark Bin Conveyor to Bark Bin	F-14	55,048	144,502	0.000024	70.0	0.000007	0.00020	0.0005
Bark Bin Truck Loading	F-15	55,048	144,502	0.000024	0.0	0.000024	0.0007	0.0017
Fines (Sawdust) Transfers								
Fines Chip Screen Conveyor to Fines Bin Conveyor	F-16	27,827	73,046	0.000024	70.0	0.000007	0.00010	0.0003
Fines Bin Conveyor to Fines Bin	F-17	27,827	73,046	0.000024	70.0	0.000007	0.00010	0.0003
Fines Bin Truck Loading	F-18	27,827	73,046	0.000024	0.0	0.000024	0.00033	0.0009
Baghouse Fines Truck Loading	F-35	4,719	12,387	0.000024	0.0	0.000024	0.00006	0.0001
Chips Transfers								
Oversize Chips Conveyor to Rechipper Conveyor	F-19	20,997	55,116	0.000024	70.0	0.000007	0.00008	0.00020
Chips Screen to Chips Bin Conveyor	F-22	230,963	606,279	0.000024	70.0	0.000007	0.0008	0.0022
Chips Bin Conveyor to Chips Bin	F-23	230,963	606,279	0.000024	70.0	0.000007	0.0008	0.0022
Chips Bin Truck Loading	F-24	230,963	606,279	0.000024	0.0	0.000024	0.0028	0.007
Planermill Shavings Transfers								
Cyclone Bin Truck Loading	F-27	23,595	61,937	0.000024	0.0	0.000024	0.0003	0.001

SOURCES OF INPUT DATA

Parameter	Data Source
Mean Wind Speed, mph	Gale Research, Pensacola, FL.
Material Moisture Content	Champion, 1999.
Material Transfer Point Identification	Champion, 1999.
Control Efficiency	Table 3.2.3-2, Workbook on Estimation and Dispersion Modeling
	For Fugitive Particulate Sources, Utility Air Regulatory Group, September 1981.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	Date:	5/99
Evaluated by:	T. Davis	Date:	5/99
Data Entered by:	T. Davis	Date:	5/99

EMISSION INVENTORY WORKSHEET

FUG-PM

Champion International - McDavid Sawmill

EMISSION SOURCE TYPE

FUGITIVE PM - TRUCK TRAFFIC ON PAVED ROADS — **Figure: 2-3**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM - Truck Traffic on Paved Roads
Emission Control Method(s)/ID No.(s):	Periodic Sweeping and Watering, As Necessary
Emission Point ID:	FUG-PM

EMISSION ESTIMATION EQUATIONS

PM Emission (lb/hr) = 0.082 x [(Silt Loading Factor/2)$^{0.65}$] x (Truck Weight/3)$^{1.5}$ x Vehicle Miles Traveled (VMT)/hr

PM Emission (ton/yr) = 0.082 x [(Silt Loading Factor/2)$^{0.65}$] x (Truck Weight/3)$^{1.5}$ x Vehicle Miles Traveled (VMT)/yr x (1 ton/2,000 lb)

Source: Section 13.2-1, AP-42, January 1996.

INPUT DATA AND EMISSIONS CALCULATIONS

Silt Loading Factor: 8

Truck Traffic Type	Source ID	Vehicle Miles Traveled (VMT/hr)	Vehicle Miles Traveled (VMT/yr)	Vehicle Weight (ton)	Control Efficiency (%)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
Raw Material Wood Trucks (Empty)	F-28	3.213	9,524	15.5	90.0	0.76	1.13
Raw Material Wood Trucks (Full)	F-28	3.213	9,524	40.0	90.0	3.16	4.68
Product Lumber Trucks (Empty)	F-29	2.011	4,614	15.5	90.0	0.48	0.55
Product Lumber Trucks (Full)	F-29	2.011	4,614	40.0	90.0	1.98	2.27
Wood By-Product Trucks (Empty)	F-30	2.630	12,981	15.5	90.0	0.62	1.54
Wood By-Product Trucks (Full)	F-30	2.630	12,981	40.0	90.0	2.59	6.38

SOURCES OF INPUT DATA

Parameter	Data Source
Silt Loading Factor	Champion, 1999.
Vehicle Miles Traveled, VMT	Champion, 1999.
Truck Weights, ton	Champion, 1999.
Control Efficiency	Estimated, ECT 1999.

NOTES AND OBSERVATIONS

Truck travel distances (one-way) are 950 ft (log), 2,055 ft (lumber), and 1,970 ft (bark, chips, sawdust, and shavings).

Maximum daily truck counts are 250 (log), 62 (lumber), and 141 (wood by-products).

Maximum hourly VMT based on 14 hrs/dy (log), 12 hrs/dy (lumber), and 20 hrs/dy (wood by-products).

Average annual truck counts are 52,931 (log), 11,856 (lumber), and 34,793 (wood by-products).

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	5/99
Evaluated by:	T. Davis	**Date:**	5/99
Data Entered by:	T. Davis	**Date:**	5/99

EMISSION INVENTORY WORKSHEET — FUG-PM

Champion International - McDavid Sawmill

EMISSION SOURCE TYPE

FUGITIVE PM_{10} - TRUCK TRAFFIC ON PAVED ROADS — **Figure: 2-3**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM_{10} - Truck Traffic on Paved Roads
Emission Control Method(s)/ID No.(s):	Periodic Sweeping and Watering, As Necessary
Emission Point ID:	FUG-PM

EMISSION ESTIMATION EQUATIONS

PM_{10} Emission (lb/hr) = 0.016 x [(Silt Loading Factor/2)$^{0.65}$] x (Truck Weight/3)$^{1.5}$ x Vehicle Miles Traveled (VMT)/hr

PM_{10} Emission (ton/yr) = 0.016 x [(Silt Loading Factor/2)$^{0.65}$] x (Truck Weight/3)$^{1.5}$ x Vehicle Miles Traveled (VMT)/yr x (1 ton/2,000 lb)

Source: Section 13.2-1, AP-42, January 1996.

INPUT DATA AND EMISSIONS CALCULATIONS

Silt Loading Factor: 8

Truck Traffic Type	Source ID	Vehicle Miles Traveled (VMT/hr)	Vehicle Miles Traveled (VMT/yr)	Vehicle Weight (ton)	Control Efficiency (%)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
Raw Material Wood Trucks (Empty)	F-28	3.213	9,524	15.5	90.0	0.15	0.22
Raw Material Wood Trucks (Full)	F-28	3.213	9,524	40.0	90.0	0.62	0.91
Product Lumber Trucks (Empty)	F-29	2.011	4,614	15.5	90.0	0.09	0.11
Product Lumber Trucks (Full)	F-29	2.011	4,614	40.0	90.0	0.39	0.44
Wood By-Product Trucks (Empty)	F-30	2.630	12,981	15.5	90.0	0.12	0.30
Wood By-Product Trucks (Full)	F-30	2.630	12,981	40.0	90.0	0.50	1.24

SOURCES OF INPUT DATA

Parameter	Data Source
Silt Loading Factor	Champion, 1999.
Vehicle Miles Traveled, VMT	Champion, 1999.
Truck Weights, ton	Champion, 1999.
Control Efficiency	Estimated, ECT 1999.

NOTES AND OBSERVATIONS

Truck travel distances (one-way) are 950 ft (log), 2,055 ft (lumber), and 1,970 ft (bark, chips, sawdust, and shavings).

Maximum daily truck counts are 250 (log), 62 (lumber), and 141 (wood by-products).

Maximum hourly VMT based on 14 hrs/dy (log), 12 hrs/dy (lumber), and 20 hrs/dy (wood by-products).

Average annual truck counts are 52,931 (log), 11,856 (lumber), and 34,793 (wood by-products).

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	5/99
Evaluated by:	T. Davis	**Date:**	5/99
Data Entered by:	T. Davis	**Date:**	5/99

EMISSION INVENTORY WORKSHEET

FUG-PM

Champion International - McDavid Sawmill

EMISSION SOURCE TYPE

FUGITIVE PM - ACTIVE OUTDOOR STORAGE — **Figure: 2-3**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM - Active Outdoor Storage Piles
Emission Control Method(s)/ID No.(s):	Moist Material
Emission Point ID:	FUG-PM

EMISSION ESTIMATION EQUATIONS

PM Emission (lb/hr) = Emission Factor (lb PM/acre/day) x Storage Pile Area (acres) x (1 day/24 hrs)

PM Emission (ton/yr) = Emission Factor (lb PM/acre/day) x Storage Pile Area (acres) x Storage Period (dys/yr) x (1 ton/2,000 lb)

Source: ECT, 1999.

INPUT DATA AND EMISSIONS CALCULATIONS

Storage Pile Material Type	Source ID	Period of Storage (dys/yr)	Pile Area (acre)	Uncontrolled Emission Factor (lb PM/acre/dy)	Control Efficiency (%)	Controlled Emission Factor (lb PM/acre/dy)	Potential Emission Rates (lb/hr)	Potential Emission Rates (tpy)
Chip Storage	F-31	10	0.770	13.2	70.0	3.96	0.127	0.015
Bark Storage	F-32	10	0.224	13.2	70.0	3.96	0.037	0.004
Sawdust Storage	F-33	10	0.200	13.2	70.0	3.96	0.033	0.004
Shavings Storage	F-34	5	0.157	13.2	70.0	3.96	0.026	0.002

SOURCES OF INPUT DATA

Parameter	Data Source
Storage Pile Identification	Champion, 1999.
Uncontrolled Emission Factors	Section 8.19.1-1, AP-42, September 1991.
Control Efficiency	Based on high moisture content, Texas Natural Resources Conservation Commission, 1999.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	5/99
Evaluated by:	T. Davis	**Date:**	5/99
Data Entered by:	T. Davis	**Date:**	5/99

EMISSION INVENTORY WORKSHEET

FUG-PM

Champion International - McDavid Sawmill

EMISSION SOURCE TYPE

FUGITIVE PM_{10} - ACTIVE OUTDOOR STORAGE **Figure: 2-3**

FACILITY AND SOURCE DESCRIPTION

Emission Source Description:	Fugitive PM_{10} - Active Outdoor Storage Piles
Emission Control Method(s)/ID No.(s):	Moist Material
Emission Point ID:	FUG-PM

EMISSION ESTIMATION EQUATIONS

PM_{10} Emission (lb/hr) = Emission Factor (lb PM/acre/day) x Storage Pile Area (acres) x (1 day/24 hrs)

PM_{10} Emission (ton/yr) = Emission Factor (lb PM/acre/day) x Storage Pile Area (acres) x Storage Period (dys/yr) x (1 ton/2,000 lb)

Source: ECT, 1999.

INPUT DATA AND EMISSIONS CALCULATIONS

Storage Pile Material Type	Source ID	Period of Storage (dys/yr)	Pile Area (acre)	Uncontrolled Emission Factor (lb PM/acre/dy)	Control Efficiency (%)	Controlled Emission Factor (lb PM/acre/dy)	Potential Emission Rates (lb/hr)	(tpy)
Chip Storage	F-31	10	0.770	6.3	70.0	1.89	0.061	0.007
Bark Storage	F-32	10	0.224	6.3	70.0	1.89	0.018	0.002
Sawdust Storage	F-33	10	0.200	6.3	70.0	1.89	0.016	0.002
Shavings Storage	F-34	5	0.157	6.3	70.0	1.89	0.012	0.001

SOURCES OF INPUT DATA

Parameter	Data Source
Storage Pile Identification	Champion, 1999.
Uncontrolled Emission Factors	Section 8.19.1-1, AP-42, September 1991.
Control Efficiency	Based on high moisture content, Texas Natural Resources Conservation Commission, 1999.

NOTES AND OBSERVATIONS

DATA CONTROL

Data Collected by:	T. Davis	**Date:**	5/99
Evaluated by:	T. Davis	**Date:**	5/99
Data Entered by:	T. Davis	**Date:**	5/99

Champion International
McDavid Sawmill
Storage Pile Dimensions

For 30° angle of repose, pile height/pile diameter ratio = 0.289

Pile Dimension Calculations:

Pile	Pile Dia. (ft)	Pile Height (ft)	Pile Radius (ft)	Pile Base Area (ft^2)	Pile Base Area (acre)	Pile Volume (ft^3)	Pile Surface Area (ft^2)	Pile Slope Length (ft)	Angle of Repose (o)
Chips	206.7	59.7	103.3	33,553	0.770	661,396	38,754	119.4	30.028
Bark	111.5	32.2	55.7	9,759	0.224	103,745	11,272	64.4	30.028
Sawdust	105.4	30.5	52.7	8,722	0.200	87,655	10,074	60.9	30.028
Shavings	93.2	26.9	46.6	6,827	0.157	60,699	7,885	53.8	30.028

Sources: Champion, 1999.
ECT, 1999.

Maximum PM/PM_{10} Pollutant Emission Rates - Fugitive Sources

Emission Source Description	Emission Source ID	Emission Rates PM (lb/hr)	PM (tpy)	PM_{10} (lb/hr)	PM_{10} (tpy)
Log Preparation					
Chain Saw - North Line	F-1	0.0889	0.2334	0.0142	0.0373
Chain Saw - South Line	F-2	0.0889	0.2334	0.0142	0.0373
Log Debarking - North Line	F-3	0.9146	2.4010	0.1463	0.3842
Log Debarking - South Line	F-4	0.9146	2.4010	0.1463	0.3842
Barking Saw 1	F-5	1.9816	5.2018	0.3171	0.8323
Barking Saw 2	F-6	1.9816	5.2018	0.3171	0.8323
Barking Saw 3	F-7	1.9816	5.2018	0.3171	0.8323
Barking Saw 4	F-8	1.9816	5.2018	0.3171	0.8323
Bark Processing/Handling					
Conveyor Transfer; Main Conveyor to Disc Screen/Hog Conveyor	F-9	0.0004	0.0011	0.0002	0.0005
Conveyor Transfer; Disc Screen/Hog Conveyor to Disc Screen/Hog	F-10	0.0004	0.0011	0.0002	0.0005
Bark Disc Screen	F-11	0.2312	0.6069	0.2312	0.6069
Bark Disc Hog	F-12	0.0008	0.0020	0.0008	0.0020
Conveyor Transfer; Disc Screen/Hog to Bark Bin Conveyor	F-13	0.0004	0.0011	0.0002	0.0005
Conveyor Transfer; Bark Bin Conveyor to Bark Bin	F-14	0.0004	0.0011	0.0002	0.0005
Bark Bin Truck Loading	F-15	0.0014	0.0036	0.0007	0.0017
Fines (Sawdust) Processing/Handling					
Conveyor Transfer; Fines Chip Screen Conveyor to Fines Bin Conveyor	F-16	0.0002	0.0006	0.0001	0.0003
Conveyor Transfer; Fines Bin Conveyor to Fines Bin	F-17	0.0002	0.0006	0.0001	0.0003
Fines Bin Truck Loading	F-18	0.0007	0.0018	0.0003	0.0009
Baghouse Fines Truck Loading	F-35	0.0001	0.0003	0.0001	0.0001
Chips Processing/Handling					
Conveyor Transfer; Oversize Chips Conveyor to Rechipper Conveyor	F-19	0.0002	0.0004	0.0001	0.0002
Rechipper	F-20	0.0003	0.0008	0.0003	0.0008
Chips Screen	F-21	0.9700	2.5464	0.9700	2.5464
Conveyor Transfer; Chips Screen to Chips Bin Conveyor	F-22	0.0018	0.0046	0.0008	0.0022
Conveyor Transfer; Chips Bin Conveyor to Chips Bin	F-23	0.0018	0.0046	0.0008	0.0022
Chips Bin Truck Loading	F-24	0.0058	0.0153	0.0028	0.0072
Sawmill Chipper	F-25	0.0003	0.0008	0.0003	0.0008
Planermill Shavings					
Hog	F-26	0.0001	0.0002	0.0001	0.0002
Cyclone Bin Truck Loading	F-27	0.0006	0.0016	0.0003	0.0007
Truck Traffic on Paved Roadways					
Raw Material Wood Trucks	F-28	3.9202	5.8100	0.7649	1.1337
Product Lumber Trucks	F-29	2.4536	2.8151	0.4787	0.5493
Wood By-Product Trucks	F-30	3.2094	7.9196	0.6262	1.5453
Outdoor Storage Piles					
Chip Storage	F-31	0.1271	0.0153	0.0607	0.0073
Bark Storage	F-32	0.0370	0.0044	0.0176	0.0021
Sawdust Storage	F-33	0.0330	0.0040	0.0158	0.0019
Shavings Storage	F-34	0.0259	0.0016	0.0123	0.0007
Totals		**20.9570**	**45.8408**	**4.7752**	**10.5874**

Sources: Champion, 1999.
ECT, 1999.

ATTACHMENT C

CONTROL DEVICE VENDOR INFORMATION

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May 11, 1999

Mr. Terry Kassabaum
Champion
P.O. Box 200
Camden, TX 75934

SENT VIA FAX

RE: Budget Price Proposal A80-796, R1 for Lumber kiln exhaust

Dear Mr. Kassabaum:

Thank you for the opportunity to provide a budgetary quote for your lumber kiln exhausts. The following proposal provides a complete equipment proposal for an Eisenmann Valveless Regenerative Thermal Oxidizer system. Key advantages of the VRTO include:

1. Only one moving part and a system with two failure points,
2. Very low maintenance requirements leading to high uptime reliability,
3. High destruction efficiency with constant purge,
4. Small footprint with treatment provided in a single vessel.

Mr. Kassabaum if you have any questions before your meeting tomorrow you can reach Charles Reich at 281.852.7206. If you have any questions or comments that Charles is unable to answer please do not hesitate to contact me at 630.681.9604 or call Eisenmann direct for information.

Thank you for the opportunity to be of service to Champion-Camden.

Sincerely,

Howard Hohl
Sales Manager
Eisenmann Corporation

Cc: Mark West EN, Charles Reich, The Reich Co.

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BUDGET PROPOSAL NO. A80-796, REVISION 1

FOR

VALVELESS
REGENERATIVE THERMAL OXIDATION SYSTEM

CHAMPION
CAMDEN, TX

MAY 11, 1999

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VRTO SYSTEM TECHNICAL DATA

Exhaust Flow Rate	:	3 vessels at 46,000 acfm each
Solvent Loading	:	85.3 lb./hr average each
Exhaust Inlet Temperature	:	150 to 180°F range
Combustion Temperature	:	1500°F min.
Clean Air Outlet Temperature	:	120°F above inlet
System Thermal Efficiency	:	93%
Burner Installed	:	3 at 9.0 mmbtu/hr each
Burner Operating	:	3 at 6.0 mmbtu/hr
Fan Motor Operating (at max. flow and includes -2.0" duct drop)	:	3 at 254 bhp
Fan Motor Installed	:	3 at 300 hp
Foundation Size	:	100 X 28 ft. (L X W)
Equipment Weight	:	100 tons each
Vessel Diameter	:	Approx. 25 ft.

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DESIGN DESCRIPTION

The exhaust flow from the process is directed to a central duct header that is located at the inlet of the abatement system fan. After exiting the abatement system fan, the exhaust air is propelled to the Valveless Regenerative Thermal Oxidizer (VRTO).

Once within the VRTO unit, the exhaust is directed by the rotating distributor to the appropriate sections of hot ceramic heat exchanger media. The exhaust will then pass vertically upward through this media taking on the heat and raising the air temperature close to the combustion temperature.

In the combustion area, the burner will provide additional energy to reach the combustion temperature of approximately 1500°F. At this temperature, the solvents are oxidized and purified. Then the clean hot air passes down through separate sections of the exchanger media returning its heat back to the system. This air exits the VRTO at approximately 120°F above the inlet exhaust temperature depending on the application.

A third section of the VRTO between the effluent and clean sides is utilized for purging. This is accomplished by taking clean air from the VRTO combustion area it through the purge zone and recirculating it into the fan inlet. The EISENMANN rotating distributor continuously turns shifting which section of the media is in the upward, downward or purge cycles. In this manner, a constant thermal efficiency and pressure drop is maintained.

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SCOPE OF DELIVERY

By EISENMANN:

Three (3) Valveless Regenerative Thermal Oxidizers - complete with burner, gas train, combustion air blower, purge system, system finish paint, ceramic media, rotary exhaust distributor, platform & ladder, insulation as described in technical data.

Three (3) 300 H.P. Process Blower with TEFC Motor, Direct Drive and OSHA Guards.

Three (3) Blower Motor with VFD (Variable Frequency Drive).

Interconnecting ductwork between Eisenmann supplied components

Flexible connectors to allow for thermal expansion as required

Insulation and cladding to maintain OSHA standards

One Turnkey control panel with Allen Bradley PLC and graphic interface

Optional on-line, clean bake out for each vessel

Field services, start-up and operator training

Freight from the Factory to Camden, TX

By Others:

Concrete pad

Utility drops to system tie-in points

Duct from the process equipment to the system inlet

All permits as required to meet local requirements

Mechanical and electrical installation

Clean Air stack

Inlet air filter, if necessary

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ADVANTAGES OVER OTHER RTO SYSTEMS

- EISENMANN's design is the only damperless, single vessel unit proven in the market. A rotating distributor shifts the exhaust through the heat exchanger eliminating the pressure shocks associated with dampers.
- The high maintenance associated with damper type RTOs is eliminated. The Eisenmann system replaces the pneumatics, actuators, dampers, linkage and lubricants with a simple rotating distributor that is driven by one exterior mounted 0.75 hp motor and gearbox.
- A simpler design with fewer moving parts results in higher uptime reliability.
- The damperless design enables the fan to be located at the inlet to the oxidizer which reduces the cost of the fan and lowers the motor sizing by 15%.

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BUDGETARY PRICING

Budgetary pricing is for the Regenerative Thermal Oxidation System as described in this document.

- Regenerative Thermal Oxidizer
- Freight to site is included
- Full package of start up services and operator training classes is included

Base Price

Lumber Kiln Exhaust
Budget for equipment, freight, plus field services ....$ 1,900,000.00

Optional on-line, clean bake-out feature ....$ 150,000.00

Schedule

Time to delivery	:	22 weeks
Installation	:	6 weeks
Start up and Testing	:	2 weeks
Total Duration	:	30 weeks

EISENMANN CORPORATION

Howard Hohl
Sales Manager
Clean Air Technology

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GEOENERGY International Corporation

101 North Virginia Street
Suite 210
Crystal Lake, IL 60014 USA
(815) 477-9173
FAX (815) 477-9174

June 7,1999

Champion
PO Box 200
Camden, TX 75941

Attn: Mr. Terry Kassabaum

Subject: VOC Emission Control Equipment

Reference: Geoenergy Proposal Number 9999-05-259-RCO

Dear Mr. Kassabaum:

Geoenergy International Corporation is pleased to provide you with our revised budgetary proposal as referenced above. This revision is for a GeoTherm® Regenerative Catalytic Oxidizer (RCO) system to control VOC emissions from your wood drying kilns in Camden, TX.

The RCO system is the same design as the RTO with the addition of catalyst as the top layer of heat exchange media. The design will allow the unit to operate under a full range of combustion chamber temperature (800-1500°F). This is important for the long-term operation of the RCO. As the catalyst degrades the combustion chamber temperature can be increased to maintain destruction efficiency, and should the removal and/or replacement become necessary the system can then operate as an RTO with a combustion chamber temperature of 1500°F.

Based on your process requirements we have designed the RCO with 95% thermal efficiency to minimized fuel consumption during normal operation.

The following is a brief summary of our recommendations for a GeoTherm RCO system to treat the gas stream that you have described. Included are a description of the recommended scope-of-supply, the estimated operating costs, a suggested project schedule and a budget price estimate.

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DESIGN CONDITIONS

Our proposal and design is based on preliminary information supplied for this project as follows:

GeoTherm Design Volume (ACFM)	138,000
Oxidizer Thermal Efficiency (%)	95
Oxidation Temperature (°F)	800
Process Exhaust Temperature (°F)	205
Moisture content (% by volume)	56
VOC Loading (#/hr)	85
VOC Gross Heating Value (BTU/#)	12,500
VOC Destruction Requirements (%)	95

Note: The process exhaust air stream is assumed not to contain acids, caustic or halogenated hydrocarbons.

SYSTEM OPERATING COST

RCO SYSTEM

	THREE SYSTEMS @ 46,000 ACFM ea.
Process Exhaust Volume (ACFM)	46,000/unit
Oxidizer Inlet Temperature (°F)	205°F
Oxidation Temperature (°F)	800°F
Oxidizer Outlet Temperature (°F)	235°F
Heat Load Requirement @ 28.4 #/hr VOC	1,203,000 BTU/hr
Heat Load Requirement @ 0 #/hr VOC	1,611,000 BTU/hr
Oxidizer Force Draft Fan (Bhp)	134
Power Requirement (kW)	110
Fuel Cost @ $3.50/MMBTU (@ 28.4#/hr)	$4.21/hr
Fuel Cost @ $3.50/MMBTU (@ 0 #/hr)	$5.64/hr
Power Cost @ $0.037/kW-hr	$4.07/hr

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SCOPE OF SUPPLY

	Included	Excluded	N/A	Option
• RCO housing including transition, recovery and combustion chambers	X			
• Oxidizer ceramic blanket internal insulation	X			
• Heat recovery media for 95% T.E.	X			
• Catalyst	X			
• Burner system with fuel train	X			
• Two-way fast action poppet valves with pneumatic actuators	X			
• Forced draft supply fan and motor	X			
• Variable frequency drive	X			
• Inlet and outlet manifold	X			
• External manifold insulation		X		
• Main exhaust stack 50'-0" high	X			
• Burner access platform and ladder	X			
• Main control panel pre-wired and shop tested (A-B PLC supplied)	X			
• All motor starters	X			
• Local disconnects		X		
• Process exhaust ductwork to RCO		X		
• Foundations		X		
• Mechanical and electrical installation	X			
• Start-up and operator training	X			
• Freight to job site	X			
• O&M manuals (3)	X			
• Compliance testing		X		

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BUDGETARY PRICING

Geoenergy will supply one (1) 46,000 ACFM GeoTherm Regenerative Catalytic Oxidizer System per the attached scope of supply for the budgetary price of..............**$685,000.00/system**

Cost for replacement catalyst for the RCO systems...............................**$90,000.00/system**

PROPOSAL SCHEDULE

The following is Geoenergy's standard schedule and may be modified to meet specific project requirements.

TASK	# OF WEEKS	WEEK(s) AFTER P.O.
Contract Review	1	1
Design Engineering	3	4
Engineering Approval	1	5
Fabrication and Equipment Procurement	12-16	14-18
Deliver	1	15-19
Installation	3	18-22
Start-Up	1	19-23

We hope you find our offering to be of interest and look forward to supplying you with a more detailed proposal once your specific design criteria has been established. In the meantime, if you should have any questions regarding this proposal or require additional information please call me at (815) 477-9173.

Best regards,

Ray Elsman

Ray Elsman
Manager of Applications Engineering

CC: Ronald Lansing, Geoenergy International Corporation