

VERMONT AGENCY OF NATURAL RESOURCES  
Department of Environmental Conservation  
Air Pollution Control Division

**TECHNICAL ANALYSIS OF AN AIR CONTAMINANT SOURCE  
FOR A PERMIT TO CONSTRUCT AND OPERATE**

**#AOP-95-110  
DEC# SJ96-0053**

November 6, 2001  
Revised: January 2, 2002

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**OWNER/OPERATOR:** Ethan Allen, Inc.  
Orleans Division  
27 Railroad Avenue  
Orleans, Vermont 05860-1315

**SOURCE:** Wood Furniture Manufacturing and Finishing  
Ethan Allen, Inc. - Orleans Division  
27 Railroad Avenue  
Orleans, Vermont 05860-1315

**RESPONSIBLE OFFICIAL:** Robert Arsenault, Plant Manager

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**COUNTY:** Orleans

**AREA DESIGNATION:** Attainment for PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>2</sub>, CO, & Pb, Unclassified for O<sub>3</sub>

**UTM COORDINATES:** 721<sup>113</sup> km E, 4965<sup>213</sup> km N; Zone 18 (Center of Office Building)

## 1.0 INTRODUCTION

Ethan Allen, Incorporated (hereinafter "Ethan Allen" and also referred to herein as "Owner/Operator") owns and operates a wood furniture manufacturing and finishing facility located off Railroad Avenue in Orleans, Vermont [hereinafter "Ethan Allen (Orleans)" and also referred to herein as "Facility"]. The Facility currently operates under the confines of an existing amended Air Pollution Control Permit to Construct (#AP-92-024e) issued by the Vermont Agency of Natural Resources, Department of Environmental Conservation, Air Pollution Control Division (hereinafter "Agency") on August 8, 2001. Based upon its allowable emissions as set forth in the above noted permit, Ethan Allen must apply for and receive an Air Pollution Control Permit to Operate ("Permit to Operate"). The purpose of this technical analysis is to summarize the Agency's review for the Permit to Operate.

During the public comment period on the draft Permit to Operate (on November 26, 2001), the Agency received plans and specifications from Ethan Allen detailing its plans to equip one of their Riley wood-fired boilers (#233) with an oil burner to provide the unit with the ability to burn residual oil. According to Ethan Allen, the conversion was prompted due to a significant reduction in the number of board feet of lumber being processed in the Rough Mill of the Orleans Division, and the consequent decline in waste wood available to feed the boiler. The Orleans Division has begun purchasing panel stock for its mill rather than producing it all on-site. Ethan Allen expects to burn approximately 155,000 gallons of No. 4 residual oil in this Riley boiler as a substitute for wood waste. In order to minimize the administrative burden of processing two separate permit applications for the same facility, the Agency is proposing to take action on the modification of the Riley boiler simultaneously with the issuance of a final Title V Permit to Operate. This action, which is consistent with the provisions of Title 10 *Vermont Statutes Annotated* ("10 V.S.A.") §556(e), is being taken to reduce the administrative burden of enforcing two separate permits for the same facility.

1.1 Administrative Milestones

**Table 1-1: Administrative Summary**

Administrative Item		Result or Date					
Date Application & Fee Received:		03/21/1996					
Date Administratively Complete:		03/30/1996					
Date & Location Receipt of Application Noticed:		04/25/1996 <i>Newport Daily Express</i>					
Date Affected States Notified of Application:		04/23/1996					
Date Technically Complete:		11/06/2001					
Date Draft Decision:		11/08/2001 Approved					
Date & Location Draft Decision/Comment Period Noticed:		11/08/2001 <i>Newport Daily Express</i>					
Date Affected States & U.S. EPA notified of Draft Permit:		11/08/2001					
Date & Location Public Meeting Noticed:		Not applicable, since no request received $\leq$ 12/03/2001					
Date & Location of Public Meeting:		Not applicable, since no request received $\leq$ 12/03/2001					
Deadline for Public Comments:		12/07/2001					
Classification of Source Under §5-401:		§5-401(4):Wood products industries; §5-401(6)(b): Wood fuel burning equip. >90 H.P. output; §5-401(9):Surface finishing & coating ops., including applic. of paints, lacquers, solvents & related materials.					
New Source Review Designation of Source:		Major Stationary Source					
Operating Permit Designation of Source:		Title V Subject Source					
Facility SIC Code(s):		2511					
Facility SIC Code Description(s):		Wood Household Furniture, Except Upholstered					
Allowable Air Contaminant Emissions (tons/year)*							
PM/PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOCs**	Acetone	Pb	Total HAP
432	231	99	780	313	113	<0.01	52

\* PMPM<sub>10</sub> - particulate matter, SO<sub>2</sub> - sulfur dioxide, NO<sub>x</sub> - oxides of nitrogen, CO - carbon monoxide, VOCs - volatile organic compounds, HAPs - hazardous air pollutants. Allowable emissions from boilers based upon worst case fuel usage under operational limitations.

\*\* VOCs as defined in §5-101(123) of the *Regulations* and 40 CFR 51.100(s).

1.2 Basis of Review

The Facility is classified as a stationary source of air contaminants under §5-401 of the *Vermont Air Pollution Control Regulations* (“*Regulations*”): §5-401(4):Wood products industries; §5-401(6)(b): Wood fuel burning equipment greater than 90 H.P. output; and §5-401(9):Surface finishing and coating operations, including application of paints, lacquers, solvents and related materials. In addition, §5-101 of the *Regulations* defines a

stationary source as any structure(s), equipment, installation(s), or operation(s), or combination thereof, which emit or may emit any air contaminant, which is located on one or more contiguous or adjacent properties and which is owned or operated under common control. Based on this definition, all of the equipment, operations, and structures at the Facility are grouped together by the Agency as one stationary air contaminant source for purposes of review under the *Regulations*.

The Facility was originally constructed prior to July 1, 1979, however, it has undergone several modifications since that date which were subject to Agency approval pursuant to the requirements of 10 V.S.A. §556 and Subchapter V of the *Regulations*. These amendments are summarized in the table below.

Date Approval Issued	Description of Approval/Amendment
July 7, 1985	Approval for conversion of the Wickes boiler to wood fuel and installation of multiple cyclones on existing two Riley wood-fired boilers.
January 13, 1993	#AP-92-024 - Approval for installation of two additional spray booths.
March 10, 1993	#AP-92-024a - Approval for installation of single spray booth for repair work.
April 19, 1993	#AP-92-024b - Approval for installation of three additional spray booths.
November 1, 1999	#AP-92-024c - Approval for the use of pre-catalyzed coatings.
August 14, 2000	#AP-92-024d - Approval for replacement of two fabric filters with three new units and an increase in the permitted discharge air flow rates.
August 8, 2001	#AP-92-024e - Approval for replacement of three fabric filters with two new units.

Based upon the limitations existing in its Air Pollution Control Permit to Construct ("Permit to Construct"), allowable emissions of all air contaminants from the Facility are estimated to be greater than ten (10) tons per year ("tpy"). Additionally, allowable emissions of particulate matter ("PM/PM<sub>10</sub>"), sulfur dioxide ("SO<sub>2</sub>"), oxides of nitrogen ("NO<sub>x</sub>"), and carbon monoxide (CO) are greater than 100 tpy, emissions of volatile organic compounds ("VOCs") are greater than fifty (50) tpy, and emissions of all federally regulated hazardous air pollutants ("HAPs") combined exceed twenty-five (25) tpy. Therefore, pursuant to §§5-1002, 5-1003, and 5-1005 of the *Regulations*, the Facility is classified as a "Title V Subject Source" and Ethan Allen must obtain an Air Pollution Control Permit to Operate ("Permit to Operate") consistent with the requirements of Subchapter X of the *Regulations* and Title 40 *Code of Federal Regulations* ("40 CFR") Part 70.

As was stated previously, Ethan Allen is proposing to equip one of its Riley boilers (#233) with oil-firing capability. Such alteration of the boiler satisfies the definition of the modification, and consequently is subject to Agency review and approval pursuant to 10 V.S.A. §556 and Subchapter V of the *Regulations*. The Agency proposes to take action regarding the modification and the Title V Permit to Operate simultaneously. This action is consistent with the authority provided the Agency under 10 V.S.A. §556(e).

## **2.0 FACILITY DESCRIPTION AND LOCATION**

### **2.1 Description of Plant Layout and Surrounding Area**

The Facility is located off Railroad Avenue in Orleans, Vermont. Figures 1 and 2 in Appendix A of this Technical Analysis depict the proposed location and layout of the Facility.

### **2.2 Explanation of Process**

The operations performed at the Facility are described using the Standard Industrial Classification Codes - 2511 (Wood Household Furniture, Except Upholstered).

The Facility was originally constructed in the late 1800's and covers approximately thirty-three (33) acres in the town of Orleans. The manufacturing area consists of several buildings which total 690,000 square feet of area. The site includes a log storage area, sawmill, drying kilns, a machining building, and finishing building.

Green lumber is received from suppliers and other Ethan Allen facilities and is unloaded in the lumber yard. The lumber is stored inside buildings to slowly reduce the moisture content of the wood until it is ready for the drying kilns. The Facility is equipped with nine (9) kilns which utilize steam heat produced by the main boilers on-site. Each kiln has a capacity for approximately 40,000 board feet and has a cycle time of approximately twenty-five (25) days on average. Drying time within the kilns is established based upon experience and depends upon the species of lumber, its thickness, and moisture content.

After kiln drying the lumber to approximately eight (8) percent moisture content, the lumber is conveyed to a Rough Mill and gluing operation which converts the rough dried lumber into rectangular shapes or "blanks". The Rough Mill includes cutting the rough lumber to length, rip cutting, planing, and rough sanding. Wood waste from the Rough Mill, such as imperfections in the wood, is belt conveyed to a wood hog to reduce the size of the waste to 2-3" chunks. Wood shavings, saw dust and sander dust are pneumatically conveyed to a cyclone and fabric filter for collection and eventual use as fuel for the boilers.

Exiting the Rough Mill, blanks are then forwarded to a Finish Mill where they are machined to length or shaped. The blanks may be lengthened by gluing the edges of blanks together. Glued pieces are cured under pressure or via radio frequency curing. The operating permit application identifies the following glue line operations at the Facility: one (1) electronic glue line in the Rough Mill, six (6) glue wheels in the Rough Mill, two (2) glue lines in the Assembly Department, and one (1) glue line in the Lamination Department.

The resulting pieces are further machined and sanded to form individual furniture components. These components are then assembled into furniture. Wood waste and dust generated by these activities is collected via fabric filter collectors.

Protective and/or decorative coatings are then applied to the assembled furniture. Coatings, such as stains, topcoats, etc. are applied to assembled wood items in spray booths using high volume low pressure (“HVLP”) spray guns. Ethan Allen operates a total of twenty-six (26) spray booths at the Facility. Three (3) steam heated drying ovens and a flash off tunnel are employed as part of the finishing activities to speed the drying time of coated furniture. The spray guns and spray booths are periodically cleaned using solvent based cleaning products.

Shipping and warehouse activities include finished product inventory control and material handling operations to move furniture inventory. Finished product is later shipped from the warehouse to distribution centers for sale.

There are a total of three (3) main boilers at the Facility which burn wood waste. The Wickes main boiler is also equipped with burners for residual oil (a.k.a., No. 6 fuel oil). The three (3) main boilers have heat input ratings of 27.8, 34, and 34 million British Thermal Units per hour (“MMBTU/hr”), respectively. The Facility is also equipped with small distillate oil (a.k.a., No. 2 fuel oil) boiler rated at 2.7 MMBTU/hr of heat input. It is served by a 275 gallon above ground storage tank.

A general process flow diagram, Figure 3, is attached in Appendix A of this Technical Analysis. Equipment and activities at the site which contribute to the generation of air contaminants from the Facility include: boilers, wood processing operations, and the finishing of wood products. Air contaminants produced at the site include: combustion contaminants, wood dust, and volatile organic compounds (“VOCs”) from the use of glues, stains, paints, solvents, and coatings. Refer to Appendix C for further specifications on fuel burning equipment, dust collection system, and a listing of stack and vent parameters at the Facility. Figures 4 and 5 in Appendix A depict the layout of the spray booths and wood waste handling systems at the Facility.

### **2.3 Description of the Proposed Modification**

During the comment period on the draft Title V Permit to Operate, the Agency received plans and specifications from Ethan Allen requesting Agency approval to modify one of the existing Riley boilers (#233) with an oil burner to provide the unit with the ability to burn No. 4 residual oil. According to Ethan Allen, the conversion was prompted due to a significant reduction in the number of board feet of lumber being processed in the Rough Mill of the Orleans Division, and the consequent decline in waste wood available to feed the boiler. The Orleans Division has begun purchasing panel stock for its mill rather than producing it all on-site. Ethan Allen has estimated that it will burn approximately 155,000 gallons of residual oil in the Riley boiler as a substitute for wood waste.

The oil burner is proposed to be a Model SDAF-16N manufactured by Coen Company, Inc. and will have maximum fuel firing rate of 2.9 gallons per minute (24.6 MMBTU/hr of heat input assuming a fuel BTU content of 0.143 MMBTU/gal).

## 2.4 Description of Air Pollution Control Devices and Methods

The three (3) main boilers at the Facility are equipped with multiple cyclone collectors to control emissions of particulate matter ("PM/PM<sub>10</sub>") from their operation. Additionally, Ethan Allen has equipped its wood processing activities and wood waste handling system with a combination of cyclones and fabric filter collectors. Emissions of VOCs from the finishing operations are managed in order to minimize the generation of hazardous air contaminants ("HACs") and hazardous air pollutants ("HAPs").

## 2.5 Description of Compliance Monitoring Devices

This Facility is not equipped with devices to continuously monitor the emission of air contaminants to the ambient air.

With the modification of the Riley (#233) boiler, the unit will be subject to federal new source performance standards in 40 *CFR* Part 60 Subpart Dc. Applicability of the standards and requirements in this federal new source performance standard ("NSPS") will be only when burning fuel oil in the boiler, since no changes are being made to the boilers wood firing capability and the unit was constructed prior to 1989. Pursuant to this standard, any new or modified facility burning coal, wood or residual oil which has a heat input of 30 MMBTU/hr or greater is obligated to install, calibrate, and operate a continuous opacity monitoring system to determine compliance with opacity limits specified in §60.43c. The Riley (#233) boiler is rated at 34 MMBTU/hr when firing wood fuel. However, Ethan Allen is proposing to equip the boiler with only one oil burner that can achieve a maximum of 24 MMBTU/hr when firing residual oil. Therefore, although the unit is rated greater than 30 MMBTU/hr, the heat input when burning oil (the fuel that triggered applicability to the NSPS) will be less than the federal threshold. The COMS does not apply since the unit is not modifying its ability to burn wood fuel, and the heat input when burning oil is below the threshold.

## 3.0 QUANTIFICATION OF POLLUTANTS

Emissions must be calculated for the Facility in order to establish the regulatory review process necessary for the operating permit application and to determine applicability of various air pollution control requirements. Under the Agency's operating permit program, a source is classified as a "Title V Subject Source" and subject to federal review of the Permit to Operate if the Facility satisfies any one of the following criteria:

1. The source has allowable emissions of oxides of nitrogen ("NO<sub>x</sub>"), sulfur dioxide ("SO<sub>2</sub>"), carbon monoxide ("CO"), particulate matter ("PM/PM<sub>10</sub>") or any other air contaminant, except volatile organic compounds ("VOCs"), of 100 tpy or greater;
2. The source has allowable emissions of VOCs of fifty (50) tpy or greater;
3. The source is subject to a federal emission standard pursuant to §111 of the *Clean Air Act* ("CAA") and promulgated in Title 40 *Code of Federal Regulations* ("40 *CFR*") Part 60 (Standards of Performance for New Stationary Sources);

4. The source is subject to a federal emission standard pursuant to §112 of the CAA and promulgated in 40 *CFR* Part 61 or 63 (National Emission Standards for Hazardous Air Pollutants); or
5. The source has allowable emissions of any one hazardous air pollutant ("HAP") regulated by the United States Environmental Protection Agency ("U.S. EPA ") of ten (10) tpy or greater, or allowable emissions of a combination of HAPs regulated by the U.S. EPA of twenty-five (25) tpy or greater. The HAPs regulated by the U.S. EPA are identified in §112 of the CAA.

*Note: Non-major stationary sources subject to a requirement in §111 or §112 of the CAA are currently not subject to the Title V operating permit program, since the U.S. EPA has deferred the requirement for a Title V operating permit for non-major sources pursuant to 40 CFR Part 70 §70.3(b)(1) and the fact that the U.S. EPA has not completed rulemaking establishing how the program should be structured for non-major sources.*

### 3.1 Emission Related Information

Allowable emission is defined as the emission rate calculated using the maximum rated capacity of the source and, if applicable, either: (a) the applicable emission standard contained in the *Regulations*, if any, or (b) the emission rate or design, operational or equipment standard specified in any order or agreement issued under the *Regulations* that is state and federally enforceable. Allowable emissions for the Facility have been estimated from all fuel burning equipment on-site, the use of adhesives and finishes, and wood waste handling system. Allowable emissions have been estimated based upon the restrictions which exist in the Permit to Construct issued on August 8, 2001, and the regulations themselves. Where no permit restriction or regulation exists, emissions have been estimated based upon potential operation or a proposed operational limitation.

Emissions produced from the combustion of fuels in the fuel burning equipment include: PM/PM<sub>10</sub>, SO<sub>2</sub>, NO<sub>x</sub>, CO, and VOCs. VOCs from fuel burning equipment are also commonly referred to as non-methane hydrocarbons ("NMHCs") or total organic compounds ("TOCs"). The use of adhesives and finishes in the manufacture of Ethan Allen's products results in the discharge of VOCs resulting from the volatilization of materials present in the adhesives and coatings. The handling, transporting and collection of wood waste materials at the Facility have the potential to be a source of particulate matter ("PM/PM<sub>10</sub>").

Note, the definition of VOCs under §5-101 of the *Regulations* references the federal definition which is found in 40 *CFR* Part 51.100(s). VOC means any compound of carbon, excluding carbon monoxide, carbon dioxide, carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions. This includes any such organic compound other than the following, which have been determined to have negligible photochemical reactivity:

methane;  
ethane;  
**methylene chloride (dichloromethane);**

1,1,1-trichloroethane (methyl chloroform);  
 1,1,2-trichloro-1,2,2-trifluoroethane (CFC-113);  
 trichlorofluoromethane (CFC-11);  
 dichlorodifluoromethane (CFC-12);  
 chlorodifluoromethane (HCFC-22);  
 trifluoromethane (HFC-23);  
 1,2-dichloro 1,1,2,2-tetrafluoroethane (CFC-114);  
 chloropentafluoroethane (CFC-115);  
 1,1,1-trifluoro 2,2-dichloroethane (HCFC-123);  
 1,1,1,2-tetrafluoroethane (HFC-134a);  
 1,1-dichloro 1-fluoroethane (HCFC-141b);  
 1-chloro 1,1-difluoroethane (HCFC-142b);  
 2-chloro-1,1,1,2-tetrafluoroethane (HCFC-124);  
 pentafluoroethane (HFC-125);  
 1,1,2,2-tetrafluoroethane (HFC-134);  
 1,1,1-trifluoroethane (HFC-143a);  
 1,1-difluoroethane (HFC-152a);  
 parachlorobenzotrifluoride (PCBTF);  
 cyclic, branched, or linear completely methylated siloxanes;

**acetone;**

perchloroethylene (tetrachloroethylene);  
 3,3-dichloro-1,1,1,2,2-pentafluoropropane (HCFC-225ca);  
 1,3-dichloro-1,1,2,2,3-pentafluoropropane (HCFC-225cb);  
 1,1,1,2,3,4,4,5,5,5-decafluoropentane (HFC 43-10mee);  
 difluoromethane (HFC-32);  
 ethylfluoride (HFC-161);  
 1,1,1,3,3,3-hexafluoropropane (HFC-236fa);  
 1,1,2,2,3-pentafluoropropane (HFC-245ca);  
 1,1,2,3,3-pentafluoropropane (HFC-245ea);  
 1,1,1,2,3-pentafluoropropane (HFC-245eb);  
 1,1,1,3,3-pentafluoropropane (HFC-245fa);  
 1,1,1,2,3,3-hexafluoropropane (HFC-236ea);  
 1,1,1,3,3-pentafluorobutane (HFC-365mfc);  
 chlorofluoromethane (HCFC-31);  
 1 chloro-1-fluoroethane (HCFC-151a);  
 1,2-dichloro-1,1,2-trifluoroethane (HCFC-123a);  
 1,1,1,2,2,3,3,4,4-nonafluoro-4-methoxy-butane (C4F9OCH3);  
 2-(difluoromethoxymethyl)-1,1,1,2,3,3,3-heptafluoropropane ((CF3)2CF2OC2H5);  
 1-ethoxy-1,1,2,2,3,3,4,4,4-nonafluorobutane (C4F9OC2H5);  
 2-(ethoxydifluoromethyl)-1,1,1,2,3,3,3-heptafluoropropane ((CF3)2CF2OC2H5);

**methyl acetate;** and

perfluorocarbon compounds which fall into these classes:

- (i) Cyclic, branched, or linear, completely fluorinated alkanes;
- (ii) Cyclic, branched, or linear, completely fluorinated ethers with no unsaturations;
- (iii) Cyclic, branched, or linear, completely fluorinated tertiary amines with no unsaturations; and
- (iv) Sulfur containing perfluorocarbons with no unsaturations and with sulfur

bonds only to carbon and fluorine.

Although the above list of chemicals are not included in the definition of VOCs, they are still regulated by the state of Vermont and must therefore be quantified for the purposes of determining emissions for other purposes, such as determining applicability to §5-261 of the *Regulations*.

Individual constituents which makeup the categories of PM/PM<sub>10</sub> and VOCs may also be regulated by state and federal regulations, and must therefore be quantified. These individual constituents are referred to as hazardous air contaminants ("HACs") and/or hazardous air pollutants ("HAPs"). HAPs are defined as those chemicals listed in the §112(b) of the federal *Clean Air Act*, of which there are 188 chemicals. HACs are defined as those chemicals which are listed in Appendix B of the *Regulations*. All of the 188 HAPs are included as HACs.

Further information concerning the derivation of allowable emissions is contained in Appendix B of this Technical Analysis.

### 3.2 Enforceable Operating Restrictions

The Facility presently operates under the limitations imposed by a Permit to Construct. Ethan Allen proposes to maintain these limitations. Below are summarized the limitations that affect the calculation of allowable emissions for the Facility as contained in the existing Permit to Construct.

- (1) Hourly wood fuel consumption in the Wickes boiler shall not exceed 4.0 tons, as-fired including moisture.
- (2) Ethan Allen is approved to use the Lilly Industries, Inc. Pre-Catalyzed Sealer #1421C00376 and Pre-Catalyzed Lacquer #1431C0098, or equivalent coatings if approved in writing by the Agency. The free formaldehyde content of the coatings shall not exceed 0.01% by weight, as applied.
- (3) Annual usage of the pre-catalyzed sealer and pre-catalyzed lacquer shall not exceed a combined 55,000 gallons per year.
- (4) Ethan Allen shall not discharge the exhausts from the its MAC fabric filter collectors to the ambient air in excess of 3,840 hours per year each.
- (5) Emissions of particulate matter from the Wickes and two Riley wood-fired boilers each shall not exceed 0.20 grains per dry standard cubic foot corrected to 12% CO<sub>2</sub>.
- (6) Emissions of PM from each of the MAC fabric filters shall at no time exceed limitations listed below.

Unit Identification	Emission Concentration (gr/dscf)	Mass Emission Rate Limit (lbs/hr)
MAC #1403 (Model 144MCF494)	0.020	8.6
MAC #1404 (Model 144MCF494)	0.020	12
MAC #1405 (Model 144MCF494)	0.020	8.6
Proposed MAC #4 (Model 144MCF361)	0.010	4.4
Proposed MAC #5 (Model 144MCF494)	0.010	5.1

Currently, there exists no operational limitation on the finishing operations at the Facility, and Ethan Allen has requested no restrictions as part of its Permit to Operate. Based upon projecting existing actual emissions to continuous operation, "potential" total VOC emissions would be over 1,200 tpy. This would equate to an increase of over 900 tpy from present actual emissions. **It is the Agency's opinion that the value of 1,200 tpy is not valid for setting the allowable emissions for this Facility.** An increase to this level from present actual emissions would constitute a modification under §5-101 of the *Regulations* and would require Ethan Allen to comply with the requirements in §5-502 of the *Regulations*. **Consequently, the Agency proposes to specify allowable emissions of federally regulated VOCs at 303 tpy.** This value was derived by adding 39 tpy above the present actual emissions of 264 tpy (1999 federally regulated VOC emissions from finishing activities and adhesive usage). The year 1999 was selected because it represents the highest level of emission achieved in the last two years. Any increase above this proposed allowable emission will constitute a major modification and will require Ethan Allen to comply with the requirements in §5-502 of the *Regulations*. The value of 39 tpy was chosen on the basis that any increase above this amount at an existing major stationary source is considered "significant" and would constitute a major modification. Similarly, emissions of acetone have been restricted to 49 tpy above existing actual emissions.

Furthermore, the Agency is proposing a restriction on total NO<sub>x</sub> emissions from the boilers. Based upon potential wood firing emissions, total NO<sub>x</sub> emissions from the Facility are less than 100 tpy. Ethan Allen has historically burned primarily wood fuel in its main boilers and has not been close to producing 100 tpy of NO<sub>x</sub>. In their operating permit application, Ethan Allen requested unlimited operation on residual oil. Assuming normal NO<sub>x</sub> emissions from residual oil and burning the fuel oil at the rated capacities for the year in the Wickes boiler results in emissions greater than 100 tpy for NO<sub>x</sub>. It is the Agency's opinion that such a switch in primary fuel and increase in emissions above 100 tpy would constitute a major modification and would necessitate a control technology review. Therefore, the Agency proposes a restriction on fuel oil usage so that emissions remain below 100 tpy when burning fuel oil in combination with wood. Additionally, this restriction avoids the reasonably available control technology requirement in §5-251(3) of the *Regulations*.

### 3.3 Identification of Insignificant and Exempt Activities

Activities which qualify as an "insignificant activity" pursuant to §5-1002(h) of the *Regulations* need not be considered when determining the applicability of Subchapter X of the *Regulations* and must only be listed as such within the operating permit application. Additionally, guidance provided by the U.S. EPA (entitled "White Paper for Streamlined Development of Part 70 Permit Applications") lists activities which are considered as "trivial" sources of air contaminants, and may be presumptively omitted from operating permit applications.

Although not required for determining applicability with Subchapter X, quantifiable emissions from "insignificant activities" must be included for the purposes of establishing whether or not a source is subject to other air pollution control requirements, including, but not limited to: reasonably available control technology, major source status, and Title V operating permit applicability.

In its application, Ethan Allen has not identified any equipment or activities as insignificant or trivial. However, the Agency is aware of the following activities or equipment at the Facility:

1. Forklifts;
2. Repair and maintenance shop activities;
3. Soldering and welding equipment;
4. Ventilating units used for human comfort;
5. Fuel oil storage tanks; and
6. Intermittent construction activities.

Emissions from the above activities are considered negligible or not quantifiable, and therefore have not been included for the purposes of establishing allowable emissions. The exclusion of emissions produced by the insignificant and trivial activities does not alter the applicability status of the Facility under Subchapter X of the *Regulations*.

### 3.4 Allowable Emissions from Each Emission Point, Including Quantifiable Fugitive Emissions, As Necessary to Determine Applicable Requirements

Summarized in Table 3-1 below are the allowable emissions for the Facility. Further information regarding the calculation of emission may be found in Appendix B.

**Table 3-1: Summary of Source Allowable Emissions**

Air Contaminant Source	Air Contaminant Emissions							
	PM/PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOCs	Other Non-VOCs**	Pb	Total HAPs
	tpy	tpy	tpy	tpy	tpy	tpy	tpy	tpy
Boilers	263*	231*	99*	780*	9*	---	<0.01*	1.5*
Wood Dust	169	---	---	---	---	---	---	---
Kilns	---	---	---	---	---	---	---	---
Fugitive Dust	N/Q	---	---	---	---	---	---	N/Q
Finishing/Gluing Activities	neg.	---	---	---	303	113	---	51
<b>TOTAL</b>	<b>432</b>	<b>231</b>	<b>99</b>	<b>780</b>	<b>313</b>	<b>113</b>	<b>&lt;0.01</b>	<b>52</b>

Notes: \* Based upon worst case fuel usage under operational limitations.

\*\* Acetone emissions.

Neg. - negligible.

N/Q - not quantified.

### 3.5 Emissions Increase Associated with Modification and Designation of the Modification

Ethan Allen has estimated that the Riley (#233) boiler will have to burn oil to make up roughly 1,050.5 MMBTU per week as a consequence of the reduction in wood waste produced by the Rough Mill. This equates to approximately 7,400 gallons per week or 155,000 gallons per 21 week heating season (mid November to mid April). As discussed in item 3.2 above, total NO<sub>x</sub> emissions will be restricted to less than 100 tpy for the Facility. Assuming wood and oil are both burned during the year would allow up to 1.4 million gallons of residual oil to be consumed under the 100 tpy cap on emissions of NO<sub>x</sub>. A greater amount of oil could be burned, but this would begin to cut into the available amount of wood that could be burned for the year. The Agency proposes to maintain this restriction on a tpy basis in order to provide Ethan Allen with the flexibility to burn the fuels it desires during the year. Prior to the modification of Riley #233 the only main boiler that was capable of firing residual oil was the Wickes boiler. Historically, this boiler has not burned greater than 398,000 gallons in a year. Therefore, the additional burning of residual oil on-site is not expected to pose a threat to the tpy limitation previously discussed.

Summarized in Table 3-2 is the difference in emissions associated with displacing wood fuel use in the Riley #233 boiler with residual oil. As can be determined from the emissions identified below, the proposed modification will not result in a significant emissions increase and is therefore considered a minor modification of the Facility.

**Table 3-2: Summary of Net Allowable Emissions due to Oil-firing in Riley #233 Boiler**

	Air Contaminant Emissions						
	PM/PM <sub>10</sub>	SO <sub>2</sub>	NO <sub>x</sub>	CO	VOCs	Pb	Total HAPs
	tpy	tpy	tpy	tpy	tpy	tpy	tpy
Displaced Wood-firing Emissions	10.8	0.2	2.1	36.3	0.4	<0.1	<0.1
Expected Oil Usage (155,000 gpy)	3.7	5.8	5.6	0.4	<0.1	<0.1	<0.1
Difference	-7.1	+5.6	+3.5	-35.9	-0.4	---	---

### 3.6 Aggregated Emissions Increase - Addition of prior minor modifications with proposed modification.

The aggregated emissions increase must be calculated in order to establish if any pollutants will be significantly increased as a consequence of prior minor modifications at Ethan Allen (Orleans). §5-502(1)(b) of the *Regulations* requires minor modifications be aggregated with prior minor modifications for the determining the applicability of major modification review requirements. The purpose of this calculation is to prevent the circumvention of major modification review through the continued processing of minor modifications. A brief discussion of the permitting activity associated with the Facility follows:

- (1) On July 3, 1985, Ethan Allen received approval from the Agency to convert an existing oil-fired boiler (Wickes) to burn wood fuel as well as retrofitting two existing wood-fired boilers (Riley) with multiple cyclone collectors. The modification was reviewed as major.
- (2) On January 13, 1993, the Agency's approval was amended to allow the installation of two spray booths to supplement the existing finishing operations.
- (3) The Agency's approval was again amended on March 10, 1993, to allow the installation of a third spray booth.
- (4) Three additional spray booths were approved on April 19, 1993.
- (5) The use of pre-catalyzed coatings at the Facility was approved on November 1, 1999.
- (6) The installation of three replacement fabric filter collectors was approved August 14, 2000.

With the exception of items (1) and (6) above, all the above noted modifications primarily affected emissions of VOCs from the Facility. Since the proposed modification does not involve an emissions increase in VOCs, these projects do not have to be considered for the aggregation calculation. Additionally, since the project in item (1) was reviewed as a major modification, its emissions need not be considered as part of the aggregation calculation. The project in item (6) above resulted in an increase of 20 tpy of total PM and 2 tpy of PM<sub>10</sub>. The addition of the present decrease in emissions with the previous project emissions does not alter the conclusion in item 3.5 above. Therefore, the project remains a non-major modification to an existing major stationary source.

#### 4.0 APPLICABLE REQUIREMENTS

##### 4.1 Citation and Description of all Applicable Requirements

§5-1006(e)(4) of the *Regulations* requires the owner/operator of a stationary air contaminant source to submit a complete application including, but not limited to a demonstration of compliance with all applicable air pollution control requirements. These requirements include state and federal regulations, and the requirements of any construction permit issued under 10 V.S.A. §556. Note that compliance relative to §5-261 and §5-1010 of the *Regulations* will be discussed separately under paragraphs 5.0 and 6.0 below.

*The compliance analyses and determinations in this technical analysis rely on data and representations provided by the Owner/Operator. Any statements and conclusions regarding the compliance status contained herein are not binding against the state of Vermont in any future legal or administrative proceedings.*

##### **Vermont Air Pollution Control Regulations**

**§5-201 and §5-202 - Open Burning Prohibited and Permissible Opening Burning.** Open burning of materials is regulated within these requirements.

Ethan Allen has stated that it complies with these requirements.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

**§5-211(1) - Prohibition of Visible Air Contaminants - Installations Constructed Prior to April 30, 1970.** This standard specifies that visible air contaminant emissions may not exceed forty (40) % opacity for a period of six (6) minutes or more in any hour, and at no time may they exceed sixty (60) % opacity. An exception from this standard exists in §5-211(3) of the *Regulations* for the wood -fired boilers when burning wood fuel during normal start-up and soot blowing. During normal start-up and soot blowing, visible emissions may not exceed 80% opacity. Primarily this standard affects any source of particulate matter emissions installed prior to April 30, 1970. Compliance with this standard is generally based upon the procedures contained in proposed Reference Method F-1 (51 *Federal Register*, page 31076, August 29, 1986). Note: The existing Permit to Construct specifies a more stringent visible emissions standard of twenty (20)

% opacity for the boiler manufactured by Wickes [see Condition (12)]. The more stringent permit opacity limits overrule the requirements of §5-211(1) of the *Regulations*.

Ethan Allen has stated that it complies with the standard based on their equipment maintenance.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

**§5-211(2) - Prohibition of Visible Air Contaminants - Installations Constructed Subsequent to April 30, 1970.** This standard applies to equipment installed after April 30, 1970, and specifies that visible air contaminant emissions may not exceed twenty (20) % opacity for a period of six (6) minutes or more in any hour, and at no time may they exceed sixty (60) % opacity. An exception from this standard exists in §5-211(3) of the *Regulations* for the wood -fired boilers when burning wood fuel during normal start-up and soot blowing. During normal start-up and soot blowing, visible emissions may not exceed 80% opacity. Compliance with this standard is generally based upon the procedures contained in proposed Reference Method F-1 (51 *Federal Register*, page 31076, August 29, 1986).

As a consequence of the modification to burn oil in the Riley (#233) boiler, the Agency will require the Ethan Allen comply with the above noted twenty (20) % requirement when burning fuel oil.

Ethan Allen has stated that it complies with the standard based on their equipment maintenance and proper operation.

The Agency will verify compliance with this standard in the future during any inspections of the Facility.

**§5-221(1)(a) - Prohibition of Potentially Polluting Materials in Fuel - Sulfur Limitation in Fuel.** This subsection prohibits the use of any fuel, in stationary fuel burning equipment, with a sulfur content more than 2.0% by weight. This prohibition applies to all stationary fuel burning equipment used on-site. Compliance with this standard is based on fuel analyses following the procedures prescribed by the American Society for Testing and Materials ("ASTM").

Ethan Allen has stated that it complies with this standard based on their contracts with fuel suppliers. Ethan Allen has stated that it will use fuel oil with a sulfur content not to exceed 0.5% by weight in the Riley (#233) boiler, since the unit will be subject to the requirements in 40 *CFR* Part 60 Subpart Dc.

The continued use of this method is sufficient to ensure compliance with this limitation in the future. As part of a compliance inspection, the Agency may require Ethan Allen to perform oil sampling and analyses to confirm compliance with the 2.0% limit.

**§5-231(1) - Prohibition of PM; Industrial Process Emissions.** This section limits the discharge of PM from industrial processes. An emission limit is derived based upon the

limitations established in Table 1 of the *Regulations*, or depending upon the circumstances, a concentration limit of 0.06 grains per dry standard cubic foot (“gr/dscf”) of undiluted exhaust gas. Table 1 of the *Regulations* specifies a maximum PM discharge rate based upon the maximum processing rate in units of pounds per hour (“lbs/hr”) for any given piece of process equipment. Where the processing rate is not considered an appropriate measure of pollution potential, such as wood processing equipment, Table 1 is substituted by the concentration standard. Compliance testing for comparison to this standard is based upon the high volume sampling method specified in §5-404 of *Regulations* for cyclones or the use of Reference Method 5 (40 *CFR* Part 60, Appendix A). Note that Condition (13) of Ethan Allen’s existing Permit to Construct limits the PM/PM<sub>10</sub> emission rate from the MAC filters installed in CY 2000 to a value of 0.02 gr/dscf of undiluted exhaust per device. The more stringent permit emission limits overrule the requirements of §5-231(1) of the *Regulations* for the MAC fabric filters.

Ethan Allen has stated that it complies with the standard based upon their estimates, equipment design, and results of emissions testing.

The Agency will assess compliance with this standard in the future as follows: (1) Ethan Allen will be required to properly operate and maintain its wood waste handling systems and associated dust control devices, (2) visual observations of each exhaust will be conducted during any Agency inspections of the Facility, and (3) if visible emissions are observed to be in excess of the limits specified in §5-211 of the *Regulations*, the Agency may require the performance of a stack test to verify compliance with the above referenced PM standard or that other corrective measures be taken.

**§5-231(3)(a)(i) - Prohibition of PM; Combustion Contaminants.** This standard applies to any fossil fuel burning equipment with a rated heat input of ten (10) MMBTU/hr or less. This standard specifies that PM emissions may not exceed 0.5 lbs/hr/MMBTU of heat input. Compliance with this standard is generally based on the use of Reference Method 5 (40 *CFR* Part 60, Appendix A). This requirements of this section would apply to the small distillate oil-fired boiler at the Facility.

Ethan Allen has stated that it complies with the standard based on their emission estimates and their scheduled maintenance of the fuel burning equipment.

The Agency will assess compliance with this standard in the future as follows: (1) Ethan Allen will be required to properly operate and maintain its fuel burning equipment, (2) visual observations of each exhaust will be conducted during any Agency inspections of the Facility, and (3) if visible emissions are observed to be in excess of the limits specified in §5-211 of the *Regulations*, the Agency may require the performance of a stack test to verify compliance with the above referenced PM standard or that other corrective measures be taken.

**§5-231(3)(a)(ii) - Prohibition of PM; Combustion Contaminants.** The PM standard in this section is applicable to fuel burning equipment with a heat input greater than ten (10) MMBTU/hr but equal to or less than 250 MMBTU/hr. The PM standard is in units of lbs/hr/MMBTU and varies based upon the heat input of the unit. The actual value of the standard is derived based upon the following formula:

$$E_{PM} = 10^{[-0.47039(\log_{10} HI) + 0.16936]}$$

Where HI is the maximum rated heat input of the unit in MMBTU/hr; and  $E_{PM}$  is the emission rate in lbs/hr/MMBTU.

The emission standard derived from the above formula would apply to the Wickes and Riley boilers when burning fossil fuel. Based upon its rated heat input, the Wickes boiler would be subject to a limitation of 0.31 lbs/MMBTU of heat input. The Riley (#233) boiler would be subject to a limitation of 0.33 lbs/MMBTU of heat input. Compliance testing for comparison to the standard in §5-231(3)(a)(ii) of the *Regulations* is generally based on the use of Reference Method 5 (40 *CFR* Part 60, Appendix A). The emission standards derived in this section are more stringent for the Wickes boiler and Riley (#233) boilers than the limitation contained in Condition (11) of Ethan Allen's existing Permit to Construct. The limitation in Condition (11) were intended for the use of wood fuel. Therefore the Agency will require that Ethan Allen comply with the requirements of this section when burning fuel oil in its Wickes and Riley (#233) boilers.

Ethan Allen has stated that it complies with the standard based on their emission estimates, and the scheduled maintenance of the boilers.

Emissions of PM/PM<sub>10</sub> will result from the burning of fuel in the boilers at the Facility. The quantity of these emissions produced will depend upon the quality of the operation and maintenance of the fuel burning equipment, and the quality of the fuel being burned. In an effort to maintain compliance with this requirement the Agency will require Ethan Allen to maintain and operate its equipment following the manufacturer's recommendations. The Agency will also assess visible emissions from the fuel burning equipment while on-site performing an inspection of the Facility, and if visible emissions are observed to be in excess of the limits specified in §5-211 of the *Regulations*, the Agency may require the performance of a stack test to verify compliance with the above referenced PM standards or that other corrective measures be taken.

**§5-231(3)(b)(i) - Prohibition of PM; Combustion Contaminants.** §5-231(3)(b)(i) prohibits the discharge of PM/PM<sub>10</sub> in excess of 0.45 grains per dry standard cubic foot ("gr/dscf") of exhaust gas corrected to twelve (12) percent carbon dioxide ("CO<sub>2</sub>") in any wood-fired combustion installation that has a rated output of greater than ninety (90) horsepower ("HP") which commenced operation prior to December 5, 1977. Compliance with the above standard is based upon the use of Reference Method 5 (40 *CFR* Part 60, Appendix A). The three main operated by Ethan Allen are subject to the requirements of this subsection when burning wood fuel. However, per Condition (11) of Ethan Allen's existing Permit to Construct, each of the main boilers must achieve compliance with a more stringent emission concentration of 0.20 gr/dscf corrected to 12% CO<sub>2</sub>. This condition overrules the restriction in §5-231(3)(b)(i) of the *Regulations*.

Ethan Allen has proposed to ensure continuing compliance with the PM emission standards based on the proper operation and maintenance of the fuel burning equipment.

The Agency will assess compliance with this standard in the future as follows: (1) Ethan

Allen will be required to properly operate and maintain its fuel burning equipment, (2) visual observations of the exhaust will be conducted during Agency inspections of the Facility, and (3) if visible emissions are determined to be in excess of the limits specified in §5-211(2) of the *Regulations*, the Agency may require the performance of a stack test to verify compliance with the above referenced PM standard or that other corrective measures be taken.

**§5-231(4) - Prohibition of PM; Fugitive PM.** This section requires the use of fugitive PM control equipment on all process operations and the application of reasonable precautions to prevent PM from becoming airborne during the handling, transportation, and storage of materials, or use of roads. This requirement applies to the entire Facility.

Ethan Allen has stated that it complies with this requirement based upon their dust control devices on their wood processing equipment.

Besides the use of cyclones and dust collectors, the Agency will require the use of reasonable precautions such as the application of water or surfactants to the haul roads and plant yard as necessary. Additionally, the Agency will assess compliance with this requirement during any inspections of the Facility, and will require the use of additional measures if found necessary during a compliance inspection.

**§5-241(1) & (2) - Prohibition of Nuisance and Odor.** This requirement applies to the entire Facility and prohibits the discharge of air contaminants that would be a nuisance to the public or be source of objectionable odors beyond the property-line of the Facility.

Ethan Allen has stated that it complies with this requirement due to their observation of dust and odors from the operations.

The Agency will verify compliance with this requirement in the future during any inspections of the Facility. Additionally, the Agency investigates all complaints that it receives in order to determine whether or not there is a violation of this requirement.

**§5-251(3) - Control of Nitrogen Oxides Emissions - Reasonably available control technology for large stationary sources.** Facilities which have allowable emissions of 100 tpy or more of NO<sub>x</sub> are required to install, maintain and use reasonably available control technology ("RACT") for reducing emissions of NO<sub>x</sub>. Based upon unrestricted use of residual oil as originally proposed by Ethan Allen in its application, the main boilers would trigger applicability with this section. However, since actual emissions have never approached the 100 tpy threshold, and Ethan Allen has traditionally not burned residual oil in its boilers, the Agency proposes to impose a limitation on fuel oil usage at the Facility in order to remain below the 100 tpy threshold. With the operational limitation, Ethan Allen will not be subject to the requirements of this section.

**§5-253.14 - Prohibition of VOCs; Solvent Metal Cleaning.** This subsection applies to all cold cleaning operations, open-top vapor degreasing operations with an open area of 10.8 square feet or greater, and conveyorized degreasing operations with an air/solvent interface of 21.5 square feet or greater. The cold cleaning standards require the units to be designed and equipped with a cover easily operated with one hand if the vapor

pressure of the solvent exceeds 0.3 psi and an internal drainage area and additional control measures if the vapor pressure of the solvent exceeds 0.6 psi. This section applies to a small parts degreaser located in the maintenance department at the Facility. Since the vapor pressure of the solvent used in the cleaning tank is about 0.03 psi, the degreaser is exempt from §§5-253.14(c)(1)(i) - (iii). However, the equipment is subject to the work practice standards set forth in §§5-253.14(c)(1)(iv) - (x):

- (iv) Provide a permanent, legible, conspicuous label, summarizing the operating requirements;
- (v) Store waste solvent in covered containers;
- (vi) Close the cover whenever parts are not being handled in the cleaner;
- (vii) Drain the cleaned parts until dripping ceases;
- (viii) Supply a solvent spray, if used, that ensures a solid fluid stream at a pressure that does not exceed 10 pounds per square inch gauge;
- (ix) Degrease only materials that are neither porous nor absorbent; and
- (x) Cease operation of the unit upon the detection of any visible solvent leak until such solvent leak is repaired.

The Safety-Kleen units are generally equipped with covers, labels and solvent sprays in compliance with this regulation.

The Agency will assess compliance with this regulation in the future during any inspections of the Facility. The inspections will include confirmation of the solvent used and the proper design and operation of the units.

**§5-402 - Written Reports When Required.** This section gives the Agency authority to require Ethan Allen to submit reports summarizing records required to be maintained by the Agency.

**§5-403 - Circumvention.** This section prohibits the dilution or concealing of an air discharge in order to avoid air pollution control requirements. The Agency will assess compliance with this regulation in the future during any inspections of the Facility.

**§5-701 - Maintenance and Removal of Control Devices.** This section prohibits the alteration or removal of a motor vehicles air pollution control system, as well as the proper maintenance of such systems. These requirements apply to any motor vehicles owned and operated by Ethan Allen.

Ethan Allen has stated that it complies with these requirements.

The Agency will verify compliance with this requirement in the future.

**§5-702 - Excessive Smoke Emissions from Motor Vehicles.** Prohibits the discharge of excessive visible air contaminants from a motor vehicle for longer than five (5) consecutive seconds. This requirement applies to any motor vehicle owned and operated by Ethan Allen.

Ethan Allen has stated that it complies with this requirement.

The Agency will verify compliance with this requirement in the future.

**Subchapter VIII - Registration of Air Contaminant Source.** This Subchapter requires the owner or operator of a stationary source register with the Agency if the source produces five (5) tons per year or greater of actual emissions during the preceding calendar year. The owner or operator of a source is required to submit information regarding their operations and pay a fee based upon the quantity of emissions they produce and the fuels that they use at the source.

Ethan Allen has stated that it complies with this requirement based on the information they have submitted and the fees they have paid in preceding years.

The Agency will ensure compliance with this requirement in the future during any inspections of the Facility.

**Air Pollution Control Permit to Construct**

Ethan Allen operates under the confines of an existing site-wide amended Permit to Construct issued on August 8, 2001. The conditions of this Permit to Construct are considered applicable requirements and will carry over into any operating permit granted to Ethan Allen for its Facility.

**Federal Air Pollution Control Regulations**

**Section 111 of the Clean Air Act - New Source Performance Standards (NSPS). 40 C.F.R. Part 60 Subpart Dc - Standards of Performance for Small Industrial-Commercial-Institutional Steam Generating Units.** The affected facility to which this Subpart applies is each steam generating unit for which construction, modification, or reconstruction is commenced after June 9, 1989 and that has a maximum design heat input capacity of 100 MMBTU/hr or less, but greater than or equal to 10 MMBTU/hr). Adding the ability to burn fuel oil in a boiler that does not have the ability to burn such fuels is considered a modification subject to 40 CFR Part 60 Subpart Dc. Subpart Dc specifies emission limitations for PM/PM<sub>10</sub>, SO<sub>2</sub>, and opacity, as well as monitoring, record keeping, notification and reporting requirements. Applicability to Subpart Dc also subjects Ethan Allen to the general notification, record keeping, and other requirements of 40 CFR Part 60 Subpart A. Primarily for the Ethan Allen the regulation limits fuel oil sulfur content to a maximum of 0.5 weight percent or an equivalent SO<sub>2</sub> emission limit of 0.5 lbs/MMBTU when burning fuel oil in the Riley (#233) boiler.

**Section 111 of the Clean Air Act - New Source Performance Standards (NSPS). 40 CFR Part 60 Subpart Kb. Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced after July 23, 1984.**

The installation of a new 15,000 gallon above ground storage tank for storage of residual fuel oil subjects the Facility to a record keeping requirement in §60.116b(a) and (b).

**Section 112 of the Clean Air Act - National Emission Standards for Hazardous Air Pollutants (NESHAPs)**

No promulgated NESHAPs in 40 *CFR* Part 61 currently apply to Ethan Allen.

However, Ethan Allen is subject to a NESHAP promulgated in 40 *CFR* Part 63 Subpart JJ - National Emission Standards for Wood Furniture Manufacturing Operations. Applicability to this NESHAP also subjects Ethan Allen to several provisions with 40 *CFR* Part 63 Subpart A - General Provisions. The NESHAPs in 40 *CFR* Part 63 identify the "maximum achievable control technology" ("MACT") standards for major sources of HAPs. The wood furniture NESHAP specifies: emission standards, work practice standards, monitoring, record keeping and reporting requirements for applicable sources. The Agency will incorporate any ongoing requirements within 40 *CFR* Part 63 Subparts A and JJ which apply to Ethan Allen within any Permit to Operate issued for the Facility.

**40 *CFR* Part 64 - Compliance Assurance Monitoring.** Pursuant to requirements concerning enhanced monitoring and compliance certification under the *Clean Air Act* ("CAA"), EPA promulgated new regulations and revised regulations on October 22, 1997. These new requirements implemented compliance assurance monitoring ("CAM") for major stationary sources of air pollution that are required to obtain operating permits under Title V of the CAA. Subject to certain exemptions, the new regulations require owners or operators of such sources to conduct monitoring that satisfies particular criteria established in the rule. The monitoring is intended to provide a reasonable assurance of compliance with applicable requirements under the CAA. Monitoring will focus on emissions units that rely on pollution control device equipment to achieve compliance with applicable standards. The regulations also provide procedures for coordinating these new requirements with the operating permit program regulations.

According to 40 *CFR* Part 64 §64.2, CAM applies to a "pollutant specific emissions unit" if it satisfies three criteria:

- (1) The unit is subject to an emission limitation or standard for the applicable regulated air pollutant;
- (2) The unit uses a control device to achieve compliance with any such emission limitation or standard; and
- (3) The unit has potential pre-control device emissions of the applicable regulated air pollutant that are equal to or greater than 100 percent of the amount, in tons per year, required for a source to be classified as a major source.

Based upon the language in 40 *CFR* Part 64 §64.2, Ethan Allen is subject to the requirements of CAM for the three wood-fired boilers at the Facility.

As a result of comments received during the rule making process and the lengthy delay in the adoption of the CAM rule, U.S. EPA has provided a extended implementation schedule for this rule. The deadlines are contained in 40 *CFR* Part 64 §64.5 and are as follows:

§64.5 Deadlines for submittals.

- (a) Large pollutant-specific emissions units. For all pollutant-specific emissions units with the potential to emit (taking into account control devices to the extent appropriate under the definition of this term in §64.1) the applicable regulated air pollutant in an amount equal to or greater than 100 percent of the amount, in tons per year, required

for a source to be classified as a major source, the owner or operator shall submit the information required under §64.4 at the following times:

- (1) On or after April 20, 1998, the owner or operator shall submit information as part of an application for an initial part 70 or 71 permit if, by that date, the application either:
    - (i) Has not been filed; or
    - (ii) Has not yet been determined to be complete by the permitting authority.
  - (2) On or after April 20, 1998, the owner or operator shall submit information as part of an application for a significant permit revision under part 70 or 71 of this chapter, but only with respect to those pollutant-specific emissions units for which the proposed permit revision is applicable.
  - (3) The owner or operator shall submit any information not submitted under the deadlines set forth in paragraphs (a)(1) and (2) of this section as part of the application for the renewal of a part 70 or 71 permit.
- (b) Other pollutant-specific emissions units. For all other pollutant-specific emissions units subject to this part and not subject to §64.5(a), the owner or operator shall submit the information required under §64.4 as part of an application for a renewal of a part 70 or 71 permit.
- (c) The effective date for the requirement to submit information under §64.4 shall be as specified pursuant to paragraphs (a)-(b) of this section and a permit reopening to require the submittal of information under this section shall not be required pursuant to §70.7(f)(1)(i) of this chapter, provided, however, that, if a part 70 or 71 permit is reopened for cause by EPA or the permitting authority pursuant to §70.7(f)(1)(iii) or (iv), or §71.7(f) or (g), the applicable agency may require the submittal of information under this section for those pollutant-specific emissions units that are subject to this part and that are affected by the permit reopening.
- (d) Prior to approval of monitoring that satisfies this part, the owner or operator is subject to the requirements of §70.6(a)(3)(i)(B).

Based upon the language in 40 *CFR* Part 64 §64.5, and the fact that Ethan Allen has submitted an administratively complete operating permit application prior to April 20, 1998, Ethan Allen will need to address CAM upon renewal of its Permit to Operate or if the boilers are modified and subject to construction permit review during the term of the Permit to Operate.

#### **4.2 Citation and Identification of Requirements For Which a Permit Shield Provision Has Been Requested**

Pursuant to §5-1015(a)(11) of the *Regulations*, an owner/operator may request to be shielded from specific state or federal requirements which do not apply to the subject source. If the applicability of a regulatory requirement is unclear to the applicant, when appropriate, the Agency may grant a permit shield stating that the requirement does not apply to the source. Once a permit shield is granted, the Agency may not initiate any enforcement action against the Facility based upon a regulation or standard covered by the permit shield. The Agency would be required to amend the Permit to Operate and incorporate the applicable requirement prior to initiating any enforcement action for non-compliance with the applicable requirement. The Agency's permit shield determinations are based upon the information submitted by the owner/operator in its operating permit application. The resulting permit shield shall be effective only with respect to activities disclosed in the application.

It is the Agency's procedure to grant permit shields only for those requirements or

standards which conceivably could apply to the Facility, and the Agency has made a determination that such requirement does not in fact apply. The Agency does not intend to grant permit shields for those requirements that clearly do not apply to the Facility. For example, an asphalt plant will not be granted a permit shield from a regulation applying to a dry cleaning operation. Additionally, the Agency and the U.S. EPA do not favor granting permit shields from broad requirements such as a section of the *Clean Air Act* or an entire Subpart of the federal regulations in 40 *CFR* Part 60, for example. In the words of the U.S. EPA, “. . . the intended purpose of a negative applicability determination is to memorialize a decision where applicability of a certain regulation is somewhat unclear without extensive knowledge of the regulations and investigation of the relevant facts.”

Ethan Allen has requested to be shielded from several potentially applicable requirements. These are identified in Section 5.0 of the operating permit application. For the reasons stated in the preceding paragraph, the Agency cannot grant a permit shield for each of the requirements requested in Ethan Allen’s application. The Agency will grant a permit shield for the state and federal regulations listed in Table 4-1 below. The permit shields shall be binding only with respect to the activities disclosed in Ethan Allen’s application. Where the Agency has denied a shield, the basis for the determination is explained below.

**Table 4-1: Permit Shield Determinations**

Requirement for Which a Permit Shield has been Requested	Description of Requirement	Agency’s Permit Shield Determination
§5-251(3) of <i>Regulations</i>	Control of Nitrogen Oxide Emissions - Reasonably Available Control Technology for Large Stationary Sources	Granted
§5-253.20 of <i>Regulations</i>	Control of VOCs - Other Sources That Emit Volatile Organic Compounds	Granted

As stated above, the Agency has not granted a permit shield from air pollution control requirements that clearly do not apply to Ethan Allen, including: §5-203, §5-231(2), §5-251(1) and (2), §5-252, §5-253.1, §5-253.2, §5-253.3, §5-253.4, §5-253.5, §5-253.6, §5-253.11, §5-253.12, §5-253.13, §5-253.15, §5-805, §5-806, and Title IV of the *Clean Air Act*. In addition, permit shields were not granted for the following items and reasons.

**§5-301 through §5-312:** These sections of the *Regulations* contain the state ambient air quality standards. No facility may ever be grant shield from compliance with these standards.

**§5-405:** This section grants the Agency with the authority to require a source to conduct air monitoring of stack emissions and/or ambient air quality. Generally this authority is invoked as part of reviewing an application for a new source or modification. However, the Agency may also require air monitoring if it suspects that a source is causing or significantly contributing to an exceedance of an ambient air quality standard. Therefore, depending upon the circumstances, this section may be a potential applicable

requirement for the Facility, and the Agency is denying a shield from this requirement.

**§5-406:** This section grants the Agency with the authority to require a source to conduct air modeling of its stack emissions. Generally this authority is invoked as part of reviewing an application for a new source or modification. However, the Agency may also require air modeling if it suspects that a source is causing or contributing to an exceedance of an ambient air quality standard. Therefore, depending upon the circumstances, this section may be a potential applicable requirement for the Facility, and the Agency is denying a shield from this requirement.

**§5-501, §5-502, and §5-503:** These sections of the *Regulations* contain the Agency's new source review requirements. A Facility may not be granted a shield from such requirements since they may be potential requirements in the future depending upon whether or not a owner or operator proposes a change at the Facility which satisfies the definition of "modification" under §5-101 of the *Regulations*.

**Subchapter VI:** §5-601 through §5-613 of the *Regulations* identify rules of practice that the Agency must follow concerning hearings, enforcement actions, air pollution emergencies, and declaratory rulings. Therefore, depending upon the circumstances, this sections within this Subchapter may contain potential applicable requirements for the Facility, and the Agency is denying a shield from these requirements.

**§5-901:** This section is the definitions portion of the Agency's regulation dealing with ozone depleting chemicals. Since this section does not detail any applicable requirement, it is not appropriate to request a shield from this section. Therefore, the Agency will deny Ethan Allen's request for a permit shield from this section.

**§5-1010:** This section gives the Agency authority to require sources to install and use reasonably available control technology to reduce air contaminant emissions. This is an applicable requirement for Ethan Allen and therefore, the Agency will deny Ethan Allen's request for a permit shield from this section.

**40 CFR Part 60:** The NSPS are contained within this part. A request to be shielded from this entire part is too broad a request, since the federal government may promulgate a standard in the future that would apply to Ethan Allen. Therefore, the Agency is denying this permit shield request.

**40 CFR Part 68:** The federal government's Accidental Release Program is contained within this part. A request to be shielded from this entire part is too broad a request, since the federal government may promulgate a standard in the future that would apply to Ethan Allen. Therefore, the Agency is denying this permit shield request.

**40 CFR Part 82:** The federal government's stratospheric ozone protection measures are contained in this part. A request to be shielded from this entire part is too broad a request.

**Section 123:** This section of the federal *Clean Air Act* includes requirements for stack heights and a prohibition against the use of dispersion techniques in specifying the

emission limitation for a pollutant. A request to be shielded from this entire section is too broad a request. Therefore, the Agency is denying this permit shield request.

**Sections 114(a)(3) and 504(b):** These sections of the federal *Clean Air Act* require the monitoring and analysis of pollutants regulated under the *Clean Air Act* for determining compliance. They are the basis for the Compliance Assurance Monitoring (“CAM”) requirements in 40 *CFR* Part 64. Since Ethan Allen is potentially subject to the CAM requirements, a request to be shielded from these sections of the *Clean Air Act* is inappropriate. Therefore, the Agency is denying this permit shield request.

**Section 183(a) & (b):** This section of the federal *Clean Air Act* specifies control techniques guidelines for sources of VOCs. A request to be shielded from this entire section is too broad a request, since the federal government may promulgate a standard in the future that would apply to Ethan Allen. Therefore, the Agency is denying this permit shield request.

**Section 183(c):** This section of the federal *Clean Air Act* specifies alternative control techniques for stationary sources of VOCs and NO<sub>x</sub>. A request to be shielded from this entire section is too broad a request, since the federal government may promulgate a standard in the future that would apply to Ethan Allen. Therefore, the Agency is denying this permit shield request.

#### 4.3 Description of Alternative Operating Scenarios and Related Applicable Requirements Not Previously Identified

Ethan Allen has not requested any alternative operating scenarios as part of its application for a Permit to Operate.

#### 4.4 Equivalency and Streamlining

##### Visible Air Contaminants

Condition (12) of the existing Permit to Construct specifies a more stringent visible emissions standard of twenty (20) % opacity for the boiler manufactured by Wickes. The more stringent permit opacity limits overrule the requirements of §5-211(1) of the *Regulations*.

##### Particulate Matter

Condition (13) of Ethan Allen’s existing Permit to Construct limits the PM/PM<sub>10</sub> emission rate from the MAC filters to a value of 0.020 gr/dscf or 0.010 gr/dscf of undiluted exhaust per device (depending on whether the unit was installed in 2000 or 2001). These more stringent permit emission limits overrule the requirements of §5-231(1) of the *Regulations* for the MAC fabric filters.

Condition (11) of Ethan Allen’s existing Permit to Construct specifies a PM/PM<sub>10</sub> emission concentration of 0.20 gr/dscf corrected to 12% CO<sub>2</sub> for each of the main boilers when burning wood fuel. This condition overrules the restriction in §5-231(3)(b)(i) of the *Regulations*.

The PM/PM<sub>10</sub> limitations in §5-231(3)(a)(ii) of the *Regulations* are more stringent than the requirements in Condition (11) of Ethan Allen's existing Permit to Construct when burning residual oil. Therefore, the requirements of §5-231(3)(a)(ii) of the *Regulations* overrule the restriction in Condition (11) of the Permit to Construct.

## 5.0 HAZARDOUS AIR CONTAMINANTS

§5-261 of the *Regulations* addresses the release of hazardous air contaminants ("HACs") into the ambient air. Unless specifically exempted from §5-261, the owner or operator of a source must quantify its emissions of HACs regulated by this rule. Any source whose actual emission rate of a HAC exceeds its respective Action Level ("AL") is subject to the rule for that HAC, and the owner or operator of the source must then demonstrate that emissions of the HAC are minimized to the greatest extent practicable. This process is termed the "Hazardous Most Stringent Emission Rate" or HMSER. An air quality impact evaluation may also be required to further assess the ambient impacts that may be attributable to the source. The evaluation of the air quality impacts is performed using the Hazardous Ambient Air Standards ("HAAS") or Stationary Source Hazardous Air Impact Standard ("SSHAIS") contained in the *Regulations*.

### 5.1 Quantification of Hazardous Air Contaminant ("HAC") Emissions

Solid fuel burning equipment (not including incinerators) installed or constructed prior to January 1, 1993, and all fuel burning equipment which combusts virgin liquid or gaseous fuel is exempted from review pursuant to §5-261(1)(b)(ii) of the *Regulations*. Consequently, no fuel burning equipment used at the Facility qualified for review of HAC emissions under §5-261 of the *Regulations*.

However, the finishing and gluing activities performed in the production of wood furniture do result in the discharge of HACs at the Facility. These emissions have been quantified and compared to their respective Action Levels in order to determine applicability to §5-261 of the *Regulations*.

Summarized in Table 5-1 are the estimated actual HAC emissions resulting from the furniture production process, as well as a comparison to the respective AL. These emission estimates were derived from the CY 2000 emission registration program specified in Subchapter VIII of the *Regulations*.

**Table 5-1: Comparison of HAC Emission Rates to Action Levels**

Constituent	CAS#	Emission Rate (lbs/8-hrs)	Action Level (lbs/8-hrs)
<b>Category I</b>			
<b>Formaldehyde</b>	<b>50-00-0</b>	<b>0.008*</b>	<b>0.0066</b>
<b>Category II</b>			
<i>Manganese Compounds</i>	0	0.020	9.9
<i>Xylene</i>	1330-20-7	9.1	86.3
Amorphous Silica	61790-53-2	0.012	19.9
<b>Crystalline Silica</b>	<b>14808-60-7</b>	<b>0.24</b>	<b>0.010</b>
Stoddard Solvent	8052-41-3	368.5	1,040
<i>Naphthalene</i>	91-20-3	0.14	10.0
<b>1,2,4-Trimethyl benzene</b>	<b>95-63-6</b>	<b>0.75</b>	<b>0.013 (24.7)</b>
<i>Cumene</i>	98-82-8	0.008	48.4
<b>Category III</b>			
<i>Ethyl Benzene</i>	100-41-4	1.8	1,830
2-Pentanone	107-87-9	0.008	87
1-Methoxy-2-Propanol	107-98-2	0.61	151
<i>Methyl Isobutyl Ketone</i>	108-10-1	0.024	25
Isopropyl Acetate	108-21-4	3.1	399
<i>Toluene</i>	108-88-3	20.5	464
N-Propyl Acetate	109-60-4	8.4	350
Methyl Isoamyl Ketone	110-12-3	0.036	100
<b>Isobutyl Acetate</b>	<b>110-19-0</b>	<b>294.9</b>	<b>294</b>
<b>Methyl Amyl Ketone</b>	<b>110-43-0</b>	<b>217.9</b>	<b>98</b>
2-Butoxyethanol	111-76-2	12.3	504
<i>Diethylene Glycol Ethyl Ether</i>	111-90-0	0.012	12.5
2-(2-Butoxyethoxy)-Ethanol	112-34-5	0.004	15.6
N-Butyl Acetate	123-86-4	189.3	298
Titanium Dioxide	13463-67-7	0.14	12
Ethyl Acetate	141-78-6	10.3	5,880
2-Propoxyethanol	2807-30-9	0.008	0.18
Zinc Compounds	0	0.11	0.62
<b>Butyl Propasol</b>	<b>5131-66-8</b>	<b>8.8</b>	<b>7.4</b>
N-Amyl Acetate	628-63-7	0.012	2,230
Ethyl Alcohol	64-17-5	175.5	2,330
<i>Methyl Alcohol</i>	67-56-1	9.2	322
Isopropyl Alcohol	67-63-0	246.5	4,120
Acetone	67-64-1	365.3	7,480
N-Propyl Alcohol	71-23-8	0.24	2,100
N-Butyl Alcohol	71-36-3	3.9	18.7
Ammonia	7664-41-7	0.028	75.6
Isobutanol	78-83-1	58.5	63.0

Constituent	CAS#	Emission Rate (lbs/8-hrs)	Action Level (lbs/8-hrs)
<i>Methyl Ethyl Ketone</i>	78-93-3	13.5	248
Kerosene	8008-20-6	2.0	2,650
<i>Dibutyl Phthalate</i>	8032-32-4	0.25	21.0
O-Methoxyphenol	84-74-2	0.10	2.4
Isobutyl Ester Isobutyric Acid	90-05-1	38.4	30,200
V M & P Naphtha	97-85-8	26.1	167
Iron Oxide (listed under Iron Compounds)	0	0.068	1.2

\* Excludes any contribution of formaldehyde emissions produced by the wood-fired boilers and oil-fired boiler. Note, under §5-261 of the Regulations, such emissions from fuel burning are only considered as part of an air quality impact evaluation.

( ) - Values in parenthesis are proposed Action Levels as recommended by the Toxicological Advisory Committee in its document entitled "Air Toxics Report, February 1998."

*Constituents identified in italics font are listed as a federally regulated HAP in §112b of the CAA.*

Based upon the information in Table 5-1 above, Ethan Allen is subject to §5-261 of the *Regulations* for six (6) HACs; formaldehyde, crystalline silica, 1,2,4-trimethylbenzene, isobutyl acetate, methyl amyl ketone, and butyl proposal. The Agency previously identified these exceedances of the AL in an inspection report dated March 14, 2001. To date, Ethan Allen has not been notified of its exceedance of the AL for the above six contaminants.

It should be noted that the Action Level for 1,2,4-trimethylbenzene is based upon old data. The Agency is currently in the process of reviewing its procedures for developing its Hazardous Ambient Air Standards and Action Levels as required by §5-261(6)(c) of the *Regulations*. The Toxicological Advisory Committee, a committee created to review the standards, published a report entitled "*Air Toxics Report*" dated February, 1998, which identified recommended changes in the methods for deriving ambient standards for HAC chemicals. As published in this report, the Toxicological Advisory Committee has recommended a revision to the HAAS and Action Level for 1,2,4-trimethylbenzene. The proposed change would increase the Action Level above the current value. Based upon the recommended Action Level, Ethan Allen would not exceed the Action Level for 1,2,4-trimethylbenzene. Given the projected increase in the Action Level for this contaminant, the Agency will not take action at this time requiring Ethan Allen to achieve a lower emission rate for 1,2,4-trimethylbenzene.

## 5.2 Hazardous Most Stringent Emission Rate

HMSER is defined in §5-101 of the *Regulations* as:

"... a rate of emissions, including a visible emission standard, which the Secretary, on a case-by-case basis, determines is achievable for a stationary source based on the lowest emission rate achieved in practice by such category of source. If a source demonstrates that due to economic impacts and costs, it cannot achieve the lowest emission rate achieved in practice by such source category, HMSER shall be the lowest emission rate which the Secretary determines said source is capable of achieving. HMSER may be achieved through the application of pollution control equipment, production processes or techniques, equipment design, work practices, chemical

substitution, or innovative pollution control techniques. In no event shall application of HMSEER permit a stationary source to emit any contaminants in excess of any federal emission standard or any emission standard in these regulations."

### **5.2.1 Formaldehyde**

Ethan Allen has been reviewed with respect to HMSEER for formaldehyde as part of the Agency's construction permit review for emissions of formaldehyde associated with the use of pre-catalyzed coatings. As part of the Agency's approval for the use of such coatings, the Agency determined HMSEER for formaldehyde to be the use of pre-catalyzed coatings containing a maximum of 0.01% free formaldehyde by weight, as applied, and an emission rate of 0.043 lbs/8hours on an "annual average" basis (calculated assuming 100% of the free formaldehyde in the coatings is emitted). Emissions of formaldehyde during any single eight hour period were not restricted, provided the annual average emission rate complied with the HMSEER limitation. The rate identified in Table 5-1 complies with this HMSEER value.

The Agency proposes to maintain this requirement in any permit granted to Ethan Allen for the operation of the Facility.

### **5.2.2 Crystalline Silica**

Crystalline silica is emitted in a particulate form from the spray finishing operation and is due to the overspray of coatings. Emissions of crystalline silica assume a coating transfer efficiency of 65% and a particulate control efficiency of 95% due to the presence of overspray collection filters within the spray booths.

According to the records provided by Ethan Allen, the form of crystalline silica generated by Ethan Allen does not consist of the cristobalite form (the most hazardous form of crystalline silica and which was used to derive the AL for crystalline silica). In 1989, the Agency developed an AL of 0.02 lbs/8-hrs of the quartz variety of crystalline silica. Regardless of which form of crystalline silica is considered, estimated emissions from Ethan Allen still exceed the AL. Consequently, the Agency will require as a condition of any Permit to Operate that Ethan Allen reformulate its coatings to fall below the AL or investigate the feasibility of more effective particulate control filters on the spray booths.

### **5.2.3 Isobutyl Acetate, Methyl Amyl Ketone, and Butyl Proposal**

Historically, Ethan Allen has from time to time generated emissions of HACs above an AL. Subsequently Ethan Allen has reformulated its coatings to reduce emissions below the AL. In response to the exceedance of the above identified ALs, Ethan Allen will be required, as a condition of any Permit to Operate for the Facility, to reformulate its coatings to fall below the AL or investigate the feasibility of more effective VOC type controls on its spray finishing activities.

### 5.3 Air Quality Impact Analysis

If the emission rate of any HAC exceeds its respective AL after achieving HMSE, the Agency may require an ambient air quality impact evaluation to demonstrate compliance with the Hazardous Ambient Air Standards ("HAAS") or Stationary Source Hazardous Air Impact Standard ("SSHAIS") listed in Appendix C of the *Regulations*. In determining whether such an evaluation is warranted, the Agency considers the following criteria:

- (1) the degree of toxicity of the HAC and the associated emission rate;
- (2) the proximity of the source to residences, population centers, and other sensitive human receptors; and
- (3) the dispersion characteristics near the source.

The Agency will not require, at this time, a demonstration of compliance with the HAAS or SSHAIS for the HACs exceeding the ALs. It is the Agency's opinion that Ethan Allen will be able to reformulate its coatings to drop below the ALs for these contaminants (Exception: formaldehyde for which the Agency has determined HMSE and Ethan Allen cannot reformulate below the AL).

### 5.4 Federal Hazardous Air Pollutants

See item 4.1 of this Technical Analysis regarding NESHAPs applicability.

## 6.0 REASONABLY AVAILABLE CONTROL TECHNOLOGY

At this time, the Agency has not established a Reasonably Available Control Technology ("RACT") requirement applicable to this Facility under §5-1010 of the *Regulations*. Therefore, the Facility is currently in compliance with this requirement. The Agency will notify Ethan Allen if any applicable RACT requirement applies to this Facility in the future. If such RACT should apply to the source in the future, the Agency will ensure that Ethan Allen complies with such requirement at that time.

## 7.0 MOST STRINGENT EMISSION RATE

Pursuant to §5-502 of the *Regulations* each new major source and major modification must apply control technology adequate to achieve the most stringent emission rate ("MSE") with respect to those air contaminants for which there would be a major or significant emission increase, respectively. The proposed alteration of the Riley (#233) boiler to burn fuel oil is designated as a non-major modification (see items 3.5 and 3.6 above for more information) and therefore is not subject to MSE review under §5-502 of the *Regulations*.

## **8.0 AIR QUALITY IMPACT EVALUATION (Criteria Pollutants)**

The Agency's implementation procedures concerning the need for an ambient air quality impact evaluation under §5-501 of the *Regulations* specifies that such analyses shall be performed when projects result in allowable emissions increase of ten (10) tpy or more of any air contaminant, excluding VOCs. Air quality impact evaluations are not required by the Agency for individual sources of VOCs. The proposed modification is estimated to produce an estimated net emissions increase of less than 10 tpy for each air contaminant. Therefore, an impact evaluation was not required to demonstrate compliance with the ambient air quality standards. The Agency has previously established that increases in emissions of less than 10 tpy do not pose a threat to the ambient air quality standards, nor are they expected to significantly deteriorate existing air quality.

## **9.0 COMPLIANCE PLAN**

### **9.1 Description of the Compliance Status for Each Applicable Requirement**

See paragraph 4.0 above.

### **9.2 Compliance Schedule For Each Applicable Requirement for Which the Source is Not in Compliance**

As a consequence of exceeding ALs, the Agency will require Ethan Allen to reformulate or investigate control devices to reduce emissions below the AL within twelve (12) months.

## **10.0 PUBLIC PARTICIPATION**

The Facility operated by Ethan Allen is classified as a "Title V Subject Source," and consequently, any application for a Permit to Operate is subject to the public participation requirements of §5-1007 of the *Regulations*. As required by this section, receipt of an administratively complete application was published in the *Newport Daily Express* on April 25, 1996. The affected states of New York, Massachusetts, and New Hampshire were notified of the receipt of this application on April 23, 1996. On November 6, 2001, the Agency determined it received sufficient information from Ethan Allen to declare the application technically complete.

On November 8, 2001, the Agency published a notice in the *Newport Daily Express* informing the public of the Agency's plans to issue a draft Air Pollution Control Permit to Operate. The notice solicited comments on the application, Agency review, and the proposed decision. The public was also given an opportunity to request an informational meeting on the matter if requested in writing on or before December 3, 2001. The comment period closed on December 7, 2001, without the Agency receiving comments or a request for a public meeting. The affected states and U.S. EPA were notified of the

draft decision and public comment period on November 8, 2001.

Since the Facility is a Title V subject source, the proposed permit will be forwarded to U.S. EPA for a forty-five (45) day review period mandated in Title V of the Clean Air Act and the regulations promulgated thereunder.

Note, the proposed modification of the Riley (#233) boiler to burn fuel oil is not subject to the public participation requirements in Subchapter V or X of the Regulations, since the emissions increase resulting from the modification will be less than ten (10) tpy for all air contaminants. Consequently, the Agency has proposed to combined the issuance of the Permit to Construct approving the modification simultaneously with the issuance of a final Permit to Operate.

## **11.0 CONCLUSIONS**

- 11.1 Ethan Allen has demonstrated that the Facility is in compliance with all applicable air pollution control requirements or is under an acceptable schedule for compliance.

# APPENDICES

## **Appendix A**

Figure 1: Plant Location (USGS Map)

Figure 2: Plant Layout

Figures 3: Process Flow Diagram

## **Appendix B**

Emissions Calculations

## **Appendix C**

Equipment Specifications

## APPENDIX C - EQUIPMENT SPECIFICATIONS

### Table 2-1: Boiler Information

PARAMETER		#1	#2	#3	#4
Year Installed/Modified		1965 Modified 1981	Manuf - 1940 Install - 1965 Modified 2001	Manuf - 1945 Install - 1965	May 1973
Boiler Manufacturer:		Wickes Boiler Co.	Riley Stoker Corp.	Riley Stoker Corp.	Bryan Steam Corp.
Model No.:		400-3K-4E	ROH-20	RO	L-40WT-FDO
Purpose of boiler:		Process & space heat	Process & space heat	Process & space heat	Process & space heat
Boiler Type:		Water tube	Water tube	Water tube	Water tube
Boiler Max. Rated Heat Input (MMBTU/hr):		27.8	34 (wood) 24.6 (oil)	34	2.7
Boiler Maximum Rated Heat Output: (HP):		661	809	810	65.5
Boiler Design Heat Transfer Efficiency:		80%	80%	80%	80%
Max. & Design Operating Pressures (psig):		200/125	250/125	250/125	125
Max./Design steam production (lbs/hr):		40,000/25,000	20,000	20,000	2,160
Fuel Type:	Primary:	Wood/Bark	Wood	Wood	No. 2 Fuel Oil
	Secondary:	No. 6 Fuel Oil	No. 4 Fuel Oil	---	---
Assumed Fuel Higher Heating Values:	Primary:	5,300 BTU/lb	8,200 BTU/lb	8,200 BTU/lb	0.14 mmbtu/gal
	Secondary:	0.15 mmbtu/gal	0.14 mmbtu/gal	---	---
Fuel Sulfur (% wt):	Primary:	<0.1	<0.1	<0.1	0.5
	Secondary:	2.0	0.5	---	---
Fuel Nitrogen (% wt):	Primary:	Unk.	Unk.	Unk.	Unk.
	Secondary:	0.5	0.5	---	---
Number of Burners:	Primary:	1	1	1	2
	Secondary:	2	1	---	---
Burner Manufacturer:		Wickes Boiler Co.	Peabody-wood Coen - fuel oil	Peabody	Gordon & Piatt
Model No.:		N/A	M-18 (wood) SDAF-16 (oil)	M-18	R10.9-0-10-R4150AR-F4H
Burner Type or Fuel Feeding Mechanism:	Primary:	Screw conveyor	Pneumatic feed	Pneumatic feed	Mechanical atomization
	Secondary:	Steam atomization	Steam atomization	---	---
Maximum Fuel Firing Rate:	Primary:	4 tons/hr	3.2 tons/hr	3.2 tons/hr	20 gals/hr
	Secondary:	190.3 gals/hr	174 gals/hr	---	---
Forced draft or atmospheric boiler:		Forced draft	Forced draft	Forced draft	Forced draft
Combustion air blower capacity (ACFM):		19,000	23,000	23,000	12,000
% Excess Air		50-80%	50-80%	50-80%	50-80%
CO <sub>2</sub> of Flue Gas (% by volume, wet):		13.4%	13.4%	13.4%	13.4%
Moisture of Flue Gas (% by volume):		6.3% (Oil) 15% (Wood)	15% (Wood)	15% (Wood)	6.3%

PARAMETER	#1	#2	#3	#4
Sootblowing frequency and duration:	2/shift - 15 sec./event	2/shift - 15 sec./event	2/shift - 15 sec./event	2/shift - 15 sec./event
Flyash collection/Reinjection?	Yes	Yes	Yes	No

**Table 2-2: Boiler Air Pollution Control Equipment Information**

PARAMETER	#1	#2	#3	#4
Type of Device:	Multiple Cyclone	Multiple Cyclone	Multiple Cyclone	N/A
Device Manufacturer:	Zurn Corp.	Zurn Corp.	Zurn Corp.	N/A
Device Model No.:	MTSA-35-9CYTA	MTSA-35-9CYT-A	MTSA-35-9CYT-A	N/A
Size:	25,000 acfm	25,000 acfm	25,000 acfm	N/A
No. of Tubes:	35	35	35	N/A
Year Installed:	1985	1985	1985	N/A

**Table 2-3: Boiler Stack Information**

PARAMETER	Stack #1	Stack #2
Equipment Served:	Wickes & Two Riley Stoker boilers	Bryan boiler
Stack height above base, feet:	72 (Stack Base Elev.: 233 ft)	11.8 (Stack Base Elev.: 233 ft)
Internal Diameter of Stack, feet:	5.9	0.67
Exit Flow Rate, acfm:	N/A	N/A
Exhaust Temperature, °F:	199	239
Exhaust Moisture Content, % by vol.:	N/A	N/A
Exhaust Static Pressure, inches of water:	N/A	N/A
Lack or presence of rain cap:	No rain cap	No rain cap
Orientation of stack:	Vertical	Vertical

## Wood Waste Handling &amp; Dust Collection:

- (1) Equipment Lines 1 & 2 to MAC Dust Collector #1403 (Model #144MCF494)
  - Line 1 - (21) sanders from Sanding Dept. & Finish Mill
  - Line 2 - (10) sanders from Sanding Dept. & Cabinet Room
- (2) Equipment Lines 3 & 4 to MAC Dust Collector #1404 (Model#144MCF494)
  - Line 3 - (5) sanders & (2) dovetail machines from Finish Mill
  - Line 4 - (8) sanders from Sanding Dept.
- (3) Equipment Line 5 to MAC Dust Collector #1405 (Model#144MCF494)
  - Line 5 - (40) machines consisting of miscellaneous saws, shapers, routers, lathes, & sanders from Finish Mill, Chair Dept., Cabinet Room & Sanding Dept.
- (4) Equipment Lines 6 through 10 to proposed MAC Dust Collector (Model#144MCF494)
  - Line 6 - (1) planer/moulder from Finish Mill
  - Line 7 - (2) tenoner machines & (1) moulder from Finish Mill
  - Line 8 - (3) saws, (2) routers, (1) hauncher & (1) auto trim, bore & dowel machine from Maintenance Dept. & Finish Mill
  - Line 9 - (2) sanders, (1) tenoner, & (1) CMS from Finish Mill & Cabinet Room
  - Line 10 - (3) saws, (2) profilers, & (1) sander from Finish Mill & Pattern Shop
- (5) Equipment Lines 11 through 13 and Rough Mill Hog to proposed MAC Dust Collector (Model# 144MCF361) and then directed to Carter Day Dust Collector #999 (Model#232RF10) along with Equipment Lines 14 through 19
  - Line 11 - (1) saw, (1) sander, & (1) adzer machine from Rough Mill
  - Line 12 - (9) saws from Rough Mill
  - Line 13 - (11) saws from Rough Mill
  - Line 14 - (3) saws & (1) scoring machine from Laminated Panel Div. & Rough Mill
  - Line 15 - (1) panel cleaner from Laminated Panel Div.
  - Line 16 - (1) Straitoplane from Rough Mill
  - Line 17 - (2) saws, (1) planer, (1) tenoner & (1) corner block machine from R.M.
  - Line 18 - (2) planers from Rough Mill
  - Line 19 - (1) chipper from Rough Mill
- (6) Wood waste collected in dust collectors directed to Receiving Silo, Cyclone RS & (2) AVT Dust Filters (Model#100S)
- (7) Wood waste in Receiving Silo combined with material collected by (2) AVT Dust Filters and directed to Boiler Feed Silo & Cyclone FS. Conveying air from Cyclone FS returned to (2) AVT Dust Filters.
- (8) Wood chip feed directed to Boiler Feed Silo or Chip Silo & Cyclone CS

**Table 2-4: Wood Waste and Dust Air Pollution Control Equipment**

<p><b>Chip Fee Cyclone CS:</b></p>	<p><b>Manuf.:</b> N/A  <b>Estimated Collection Efficiency:</b> 90% &gt; 10 um, 50% &lt; 10 um  <b>Pressure Drop:</b> N/A  <b>Dimensions:</b> N/A  <b>Air Flow Rate:</b> N/A</p>
<p><b>Cyclone RM: (Vents to Shaker Dust Collector)</b></p>	<p><b>Manuf.:</b> N/A  <b>Estimated Collection Efficiency:</b> 90% &gt; 10 um, 90% &lt; 10 um  <b>Pressure Drop:</b> 6.1 inches H<sub>2</sub>O  <b>Dimensions:</b> Diameter - 6.67'; Body Height - 3.33'; Cone Height - 10.0'  <b>Air Flow Rate:</b> N/A</p>
<p><b>Cyclone RS: (Vents to AVT Dust Collectors)</b></p>	<p><b>Manuf.:</b> N/A  <b>Estimated Collection Efficiency:</b> 98.9% &gt; 10 um, 82% &lt; 10 um  <b>Estimated Pressure Drop:</b> 89.5 inches H<sub>2</sub>O  <b>Dimensions:</b> Diameter - 9.17'; Body Height - 4.33'; Cone Height - 9.33'  <b>Air Flow Rate:</b> 20,000 ACFM</p>
<p><b>Cyclone FS: (Vents to AVT Dust Collectors)</b></p>	<p><b>Manuf.:</b> N/A  <b>Estimated Collection Efficiency:</b> 97.7% &gt; 10 um, 50% &lt; 10 um  <b>Pressure Drop:</b> 11 inches H<sub>2</sub>O  <b>Dimensions:</b> Diameter - 5.83'; Body Height - 3.42'; Cone Height - 6.42'  <b>Air Flow Rate:</b> N/A</p>
<p><b>Moldow Unit: (Vents Inside Manuf. Bldg.)</b></p>	<p><b>Manuf.:</b> N/A  <b>Pressure Drop:</b> N/A  <b>Dimensions:</b> N/A  <b>Air Flow Rate:</b> N/A</p>
<p><b>Rough Mill Fabric Filter #999</b></p>	<p><b>Manuf.:</b> Carter Day  <b>Model No.:</b> 232RF10  <b>No. of Filter Bags:</b> 232  <b>Dimensions of Filter Bags:</b> Diameter - 5 5/8", Length - 10'  <b>Fabric Type:</b> Polyester  <b>Fabric Weight:</b> 16 oz./sf  <b>Total Cloth Area:</b> 2,960 ft<sup>2</sup>  <b>Max. Rated Air Flow:</b> 30,000 ACFM  <b>Design Air to Cloth Ratio:</b> 6:1  <b>Method of Cleaning Filter Bags:</b> pulse jet @ 90 psi  <b>Operating Pressure Drop:</b> 6 inches of H<sub>2</sub>O  <b>Inlet Temperature:</b> 70 °F  <b>Maintenance Access:</b> Sealed side doors  <b>Fluorescent Powder Testing Capability?</b> Yes  <b>Airlock Equipped?</b> Yes</p>
<p><b>Rough Mill Fabric Filter (Proposed)</b></p>	<p><b>Manuf.:</b> MAC  <b>Model No.:</b> 144MCF361  <b>No. of Filter Bags:</b> 361  <b>Dimensions of Filter Bags:</b> Diameter - 4.6", Length - 12'  <b>Fabric Type:</b> Dacron Polyester  <b>Fabric Weight:</b> 16 oz./sf  <b>Total Cloth Area:</b> 5,202 ft<sup>2</sup>  <b>Max. Rated Air Flow:</b> 50,980 ACFM  <b>Design Air to Cloth Ratio:</b> 9.8:1  <b>Method of Cleaning Filter Bags:</b> pulse jet  <b>Airlock Equipped?</b> Yes</p>
<p><b>Finish Mill Fabric Filter (Proposed)</b></p>	<p><b>Manuf.:</b> MAC  <b>Model No.:</b> 144MCF494  <b>No. of Filter Bags:</b> 494  <b>Dimensions of Filter Bags:</b> Diameter - 4.6", Length - 12'  <b>Fabric Type:</b> Dacron Polyester  <b>Fabric Weight:</b> 16 oz./sf  <b>Total Cloth Area:</b> 7,118 ft<sup>2</sup>  <b>Max. Rated Air Flow:</b> 60,000 ACFM  <b>Design Air to Cloth Ratio:</b> 8.4:1  <b>Method of Cleaning Filter Bags:</b> pulse jet  <b>Airlock Equipped?</b> Yes</p>
<p><b>Finish Mill Fabric Filters (2)</b></p>	<p><b>Manuf.:</b> AVT  <b>Model No.:</b> 100S  <b>No. of Filter Bags:</b> 1008  <b>Dimensions of Filter Bags:</b> Diameter - 5 5/8", Length - 10'  <b>Fabric Type:</b> Nomex  <b>Fabric Weight:</b> 16 oz./sf  <b>Max. Rated Air Flow:</b> 6,000 ACFM  <b>Design Air to Cloth Ratio:</b> 6:1  <b>Method of Cleaning Filter Bags:</b> pulse jet @ 90 psi  <b>Operating Pressure Drop:</b> 6 inches of H<sub>2</sub>O  <b>Inlet Temperature:</b> 70 °F  <b>Maintenance Access:</b> Sealed side and top doors  <b>Fluorescent Powder Testing Capability?</b> Yes  <b>Airlock Equipped?</b> Yes</p>

Finish Mill/Sanding Fabric Filter #1403 Finish Mill/Sanding Fabric Filter #1404 Rough Mill Fabric Filter #1405	Manuf.: MAC Model No.: 144MCF494 No. of Filter Bags: 494 Dimensions of Filter Bags: Diameter - 5 7/8", Length - 10' Fabric Type: Polyester Fabric Weight: 16 oz./sf Total Cloth Area: 7,163 ft <sup>2</sup> Max. Rated Air Flow: 70,000 ACFM Design Air to Cloth Ratio: 7:1 Method of Cleaning Filter Bags: pulse jet Airlock Equipped? Yes
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**Spray Booths** - Two finishing lines with several off-line booths. Maximum line speed 12 feet per minute.

**Line #1 - Rhodes Tow Line (Finishing Dept.)**

<u>Booth #</u>	<u>Booth Manuf.</u>	<u>Booth Type</u>	<u>Application</u>	<u>Frontal Area</u>
1	Binks	Dry Filter	Toner	16' w x 9.5' h
2	Binks	Dry Filter	Toner	16' w x 9.5' h
3	Binks	Dry Filter	Toner	16' w x 9.5' h
4	Binks	Dry Filter	Washcoat	16' w x 9.5' h
5	Binks	Dry Filter	Wipe Stain	20' w x 9.5' h
6	Binks	Dry Filter	Shade Stain	16' w x 9.5' h
1265	Rhodes**	Dry Filter	Sealer	27' w x 10' h
8	Binks	Dry Filter	Not in Use	16' w x 9.5' h
9	Binks	Dry Filter	Glaze Stain	20' w x 9.5' h
10	Rhodes	Dry Filter	Topcoat	34' w x 10' h

**Line #2 - Chair Overhead Line (Finishing Dept.)**

<u>Booth #</u>	<u>Booth Manuf.</u>	<u>Booth Type</u>	<u>Application</u>	<u>Frontal Area</u>
205	Binks	Dry Filter	Shade Stain	8' w x 7.5' h
1287	JBI, Inc.**	Dry Filter	Sealer	20' w x 10' h
1286	JBI, Inc.**	Dry Filter	Topcoat	20' w x 10' h

**Off-Line Booths**

<u>Booth #</u>	<u>Booth Manuf.</u>	<u>Booth Type</u>	<u>Application</u>	<u>Frontal Area</u>
<b>Assembly Dept.</b>				
881 -Chair Off Line	Binks	Dry Filter	Toner	8' w x 8' h
1176 -Chair Off Line	Binks	Dry Filter	Toner	12' w x 10' h

**Finishing Dept.**

326 -Chair Off Line	Binks	Dry Filter	Wipe Stain	12' w x 7' h
206 -Off Line	Binks	Dry Filter	Minor Repair	10.5' w x 7' h
207 -Parts Off Line	Binks	Dry Filter	Varies	10.5' w x 6.5' h
212 -Parts Off Line	Binks**	Dry Filter	Stain	8' w x 8' h
1067 -Parts Off Line	DeVilbiss	Dry Filter	Varies	10' w x 10' h
1158 -Chair Off Line	Binks	Dry Filter	Glaze Stain	12' w x 10' h
1164 -Off Line	Binks*	Dry Filter	Varies	12' w x 10' h
1165 -Off Line	Binks*	Dry Filter	Varies	12' w x 10' h
1342 -Off Line	DeVilbiss	Dry Filter	Varies	12' w x 10' h

**Rubbing & Packing Dept.**

834 -Chair Off Line	Binks	Dry Filter	Touchup	8' w x 7.5' h
1124 -Case Off Line	Binks	Dry Filter	Touchup	9.5' w x 8' h

\* Approved in 1992

\*\* Approved in 1993

**Drying Ovens - Line #1 Rhodes Tow Line (Finishing Dept.) - All steam heated.**

Drying Oven

Drying Oven

Flash Off Tunnel

Drying Oven