



Joseph E. Kernan  
Governor

Lori F. Kaplan  
Commissioner

October 8, 2004

100 North Senate Avenue  
P.O. Box 6015  
Indianapolis, Indiana 46206-6015  
(317) 232-8603  
(800) 451-6027  
www.in.gov/idem

TO: Interested Parties / Applicant

RE: Four Winds International, Inc. / SPR 039-19330-00220

FROM: Paul Dubenetzky  
Chief, Permits Branch  
Office of Air Quality

### Notice of Decision: Approval - Effective Immediately

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 13-15-5-3, this permit is effective immediately, unless a petition for stay of effectiveness is filed and granted according to IC 13-15-6-3, and may be revoked or modified in accordance with the provisions of IC 13-15-7-1.

If you wish to challenge this decision, IC 4-21.5-3 and IC 13-15-6-1 require that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office of Environmental Adjudication, 100 North Senate Avenue, Government Center North, Room 1049, Indianapolis, IN 46204, **within eighteen (18) calendar days of the mailing of this notice**. The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

- (1) the date the document is delivered to the Office of Environmental Adjudication (OEA);
- (2) the date of the postmark on the envelope containing the document, if the document is mailed to OEA by U.S. mail; or
- (3) The date on which the document is deposited with a private carrier, as shown by receipt issued by the carrier, if the document is sent to the OEA by private carrier.

The petition must include facts demonstrating that you are either the applicant, a person aggrieved or adversely affected by the decision or otherwise entitled to review by law. Please identify the permit, decision, or other order for which you seek review by permit number, name of the applicant, location, date of this notice and all of the following:

- (1) the name and address of the person making the request;
- (2) the interest of the person making the request;
- (3) identification of any persons represented by the person making the request;
- (4) the reasons, with particularity, for the request;
- (5) the issues, with particularity, proposed for considerations at any hearing; and
- (6) identification of the terms and conditions which, in the judgment of the person making the request, would be appropriate in the case in question to satisfy the requirements of the law governing documents of the type issued by the Commissioner.

If you have technical questions regarding the enclosed documents, please contact the Office of Air Quality, Permits Branch at (317) 233-0178. Callers from within Indiana may call toll-free at 1-800-451-6027, ext. 3-0178.

Enclosures  
FNPER.dot 9/16/03



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

*We make Indiana a cleaner, healthier place to live.*

---

*Joseph E. Kernan*  
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October 8, 2004

Mr. Larry White  
Four Winds International  
P.O. Box 1486  
Elkhart, Indiana 46515

Re: 039-19330  
First Significant Revision to  
FESOP 039-19330-00220

Dear Mr. White:

Four Winds International was issued a permit on January 7, 2003 for a motor home/recreational vehicle manufacturing source. A letter requesting changes to this permit was received on June 6, 2004. Pursuant to the provisions of 326 IAC 2-8-11.1 a significant permit revision to this permit is hereby approved as described in the attached Technical Support Document.

The revision consists of approval to remove VOC usage restrictions that limits the emissions from each of the five (5) separate processes to less than twenty-five (25) tons per consecutive twelve (12) month period as required by Permit No. F039-14036-00220, issued on January 7, 2003. The VOC usage limit was imposed pursuant to 326 IAC 8-1-6, General Provisions Relating to VOC Rules; General Reduction Requirements for New Facilities. However, the Permittee shall maintain source wide VOC emission limit of less than 100 tons per year to stay as a FESOP source. The purpose of this review is to evaluate the level of control that constitutes BACT for this operation and the regulated facilities, by removing the facility specific limits in Permit No. 039-14036-00220 while maintaining the source wide limit.

Pursuant to 326 IAC 2-8-11.1, this permit shall be revised by incorporating the significant permit revision into the permit. All other conditions of the permit shall remain unchanged and in effect. Please attach a copy of this modification and the following revised permit pages to the front of the original permit.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter, please contact Gaurav Shil, c/o OAQ, 100 North Senate Avenue, P.O. Box 6015, Indianapolis, Indiana, 46206-6015, or call at (973) 575-2555, ext. 3259 or dial (800) 451-6027, and ask for extension 3-6878.

Sincerely,

Original signed by  
Paul Dubenetzky, Chief  
Permits Branch  
Office of Air Quality

Attachments  
GS/EVP

cc: File – Elkhart County  
U.S. EPA, Region V  
Elkhart County Health Department  
Air Compliance Section Inspector – Paul Karkiewicz  
Compliance Data Section  
Administrative and Development  
Technical Support and Modeling - Michelle Boner  
IDEM Northern Regional Office



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## FEDERALLY ENFORCEABLE STATE OPERATING PERMIT (FESOP) RENEWAL OFFICE OF AIR QUALITY

**Four Winds International, Inc.  
701 County Road 15  
Elkhart, Indiana 46515-1486**

(herein known as the Permittee) is hereby authorized to operate subject to the conditions contained herein, the source described in Section A (Source Summary) of this permit.

**The Permittee must comply with all conditions of this permit. Noncompliance with any provision of this permit is grounds for enforcement action; permit termination, revocation and reissuance, or modification; and denial of a permit renewal application. It shall not be a defense for the Permittee in an enforcement action that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with the conditions of this permit. An emergency does constitute an affirmative defense in an enforcement action provided the Permittee complies with the applicable requirements set forth in Section B, Emergency Provisions.**

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-8 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments), 40 CFR Part 70.6, IC 13-15 and IC 13-17.

Operation Permit No.: F039-14036-00220	
Issued by: Original signed by Paul Dubenetzky Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: January 7, 2003 Expiration Date: January 7, 2008
First Significant Permit Revision No.: 039-16264-00220	Issuance Date: March 11, 2003
Second Significant Permit Revision No.: 039-19330-00220	Pages Affected: 3, 4, 31, 33, 34 and 35 Page Deleted: 43
Issued by: Original signed by  Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: October 8, 2004

**Testing Requirements [326 IAC 2-8-4(3)]**

C.10 Performance Testing [326 IAC 3-6]

**Compliance Requirements [326 IAC 2-1.1-11]**

C.11 Compliance Requirements [326 IAC 2-1.1-11]

**Compliance Monitoring Requirements [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]**

C.12 Compliance Monitoring [326 IAC 2-8-4(3)] [326 IAC 2-8-5(a)(1)]

C.13 Monitoring Methods [326 IAC 3][40 CFR 60][40 CFR 63]

**Corrective Actions and Response Steps [326 IAC 2-8-4] [326 IAC 2-8-5]**

C.14 Risk Management Plan [326 IAC 2-8-4] [40 CFR 68.215]

C.15 Compliance Response Plan - Preparation, Implementation, Records, and Reports

C.16 Actions Related to Noncompliance Demonstrated by a Stack Test

**Record Keeping and Reporting Requirements [326 IAC 2-8-4(3)]**

C.17 Emission Statement [326 IAC 2-6] [326 IAC 2-8-4(3)]

C.18 General Record Keeping Requirements [326 IAC 2-8-4(3)][326 IAC 2-8-5]

C.19 General Reporting Requirements [326 IAC 2-8-4(3)(C)] [326 IAC 2-1.1-11]

**Stratospheric Ozone Protection**

C.20 Compliance with 40 CFR 82 and 326 IAC 22-1

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D.1.2 Volatile Organic Compounds (VOC) [326 IAC 8-1-6]

D.1.3 Volatile Organic Compounds (VOC) [326 IAC 8-2-9]

D.1.4 Volatile Organic Compounds (VOC) [326 IAC 8-2-12]

D.1.5 Hazardous Air Pollutants (HAPs) [326 IAC 2-8-4][326 IAC 2-4.1-1]

D.1.6 Particulate Matter (PM) [40 CFR 52 Subpart P]

D.1.7 Particulate [326 IAC 6-3-2(d)]

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D.1.8 Volatile Organic Compounds (VOC) [326 IAC 8-1-2][326 IAC 8-1-4]

D.1.9 VOC and HAP Emissions

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D.2.3 Preventive Maintenance Plan [326 IAC 2-8-4(9)]

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D.2.4 Particulate and PM-10 Control

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- D.2.5 Visible Emissions Notations
- D.2.6 Cyclone Inspections
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## **Emission Limitations and Standards [326 IAC 2-8-4(1)]**

### D.1.1 Volatile Organic Compounds (VOC) [326 IAC 2-8-4][326 IAC 2-2][326 IAC 2-1.1-5]

The total combined VOC input usage to the Class C, Class A - Line 1, and Class A - Line 2 product lines, including but not limited to the usage of sealants, bonding materials, adhesives, caulks, wood stains, paints and VOC solvents, minus used VOC in coating or cleanup solvents shipped off site, shall be limited to 99.5 tons per twelve (12) consecutive month period with compliance demonstrated at the end of each month. This usage limit is equivalent to 99.5 tons of VOC emitted per 12 consecutive month period.

Compliance with this limitation, including the potential to emit for insignificant activities, shall limit the source-wide potential to emit of VOC to less than 100 tons per year and make the requirements of 326 IAC 2-7 (Part 70) not applicable to the source. Compliance with this condition shall also make the requirements of 326 IAC 2-2 and nonattainment new source review not applicable to the source.

### D.1.2 Volatile Organic Compounds (VOC) [326 IAC 8-1-6]

Pursuant to the BACT determination under 326 IAC 8-1-6 (New Facilities, General Reduction Requirements), operation of facilities CSA-1, CFF, A1SA and A1FF without the use of add-on controls and with the following work practices will satisfy the BACT requirements:

- (a) When applying adhesives to plastic substrates, no coating shall be used with a VOC content of greater than 3.33 pounds of VOC per gallon of coating as applied.
- (b) When applying paints or primer coatings to plastic substrates, no coating shall be used with a VOC content of greater than 5.19 pounds of VOC per gallon of coating as applied.
- (c) All containers of solvents or solutions shall be kept closed when not in actual use except during product transfers to minimize evaporation.
- (d) All waste materials including spent wiping rags and spent solvents shall be stored in closed containers at all times except during product transfers to minimize solvent evaporation.
- (e) Unless prepackaged by the manufacturer and intended for use as an aerosol or atomized product, all solvents or solutions used shall be hand or manually applied. Hand or manual application shall include the use of cloths or wipes, including the use of handheld and hand actuated application spray bottles. No solvents or solutions shall be spray applied or applied in a manner that causes excessive atomization or promotes excessive evaporation.
- (f) Waste solvents or solutions shall not be disposed by allowing products to evaporate.
- (g) Solvent containing rags shall not be allowed to air dry to allow for reuse.

### D.1.3 Volatile Organic Compounds (VOC) [326 IAC 8-2-9]

Any change or modification which may increase actual VOC emissions for coating metals to greater than fifteen (15) pounds per day, before add-on controls, when coating metal parts at each of facilities CSA-1, CFF, CUA, A1SA, A1FF, A2SA and A2FF shall require OAQ's prior approval before such change can take place at any of these facilities.

D.1.6 Particulate Matter (PM) [40 CFR 52 Subpart P]

Pursuant to 40 CFR 52 Subpart P and FESOP 039-5814-00220 issued on December 9, 1996, the particulate matter from the spray coatings applied at the Class C, Class A - Line 1, and Class A - Line 2 sub-assembly and final finish areas CSA-1, CFF, CUA, A1SA, A1FF, A2SA, and A2FF each shall not exceed the pound per hour emission rate established as E in the following formula:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67} \quad \text{where } E = \text{rate of emission in pounds per hour; and} \\ P = \text{process weight rate in tons per hour}$$

D.1.7 Particulate [326 IAC 6-3-2(d)]

Any change or modification which may increase the coating application rate to greater than five (5) gallons per day from any of surface coating manufacturing processes CSA-1, CFF, CUA, A1SA, A1FF, A2SA, or A2FF shall require a control device, pursuant to 326 IAC 6-3-2(d). Compliance with this limitation shall include only surface coatings that emit or have the potential to emit particulate and does not include surface coatings applied using dip, roll, flow, or brush coatings; applications of aerosol coating products to repair minor surface damage and imperfections; or spray applied glues and adhesives at this source which have been determined by IDEM, OAQ not to have the potential to emit particulate.

**Compliance Determination Requirements**

D.1.8 Volatile Organic Compounds (VOC) [326 IAC 8-1-2][326 IAC 8-1-4]

- (a) Compliance with the VOC usage and emission limitations contained in Conditions D.1.1, D.1.2 and D.1.3 shall be determined pursuant to 326 IAC 8-1-4(a)(3) and 326 IAC 8-1-2(a) by preparing or obtaining from the manufacturer the copies of the "as supplied" and "as applied" VOC data sheets. IDEM, OAQ, reserves the authority to determine compliance using Method 24 in conjunction with the analytical procedures specified in 326 IAC 8-1-4.

Compliance with the VOC usage limitations contained in condition D.1.1 shall be based on the total volatile organic compound used for the previous month, minus the VOC in coating or cleanup solvents shipped out to be recycled, and adding it to previous 11 months total VOC usage, minus the VOC in coating or cleanup solvents shipped out to be recycled, so as to arrive at VOC emissions for the most recent twelve (12) consecutive month period.

- (1) For the limit in condition D.1.1, the VOC emissions for a month can be arrived at using the following equation:

$$VOC \text{ emitted} = SCL - SR$$

Where

SCL = The total amount of VOC, in tons, delivered to the coating applicators, including coatings, dilution solvents, and cleaning solvents, on the Spray Coating Line; and

SR = The total amount of VOC, in tons, shipped out to be recycled, including coatings, dilution solvents, and cleaning solvents, from the Spray Coating Line.

- (b) The Permittee shall determine the VOC content of the coating material and/or clean up solvents in a container shipped out to be recycled by one of the following:

- (1) The VOC content of cleanup solvent in a container shipped out to be recycled may be determined by the
  - (A) As applied VOC data sheet for the solvent, if the container consists of only one (1) cleanup solvent, or
  - (B) The weighted average of the as applied VOC data sheets for all the solvents in container, if the weight of each solvent in container is known.
- (2) The VOC content of the combined coating material and/or cleanup solvents in a container shipped out to be recycled shall be determined pursuant to 326 IAC 8-1-4(a)(3) and 326 IAC 8-1-2(a) by EPA Reference Method 24 and the sampling procedures in 326 IAC 8-1-4 or other methods as approved by IDEM, OAQ. The sampling methods must be conducted after the final addition to the container. Testing shall be conducted after the final addition to the container. Testing shall be conducted in accordance with Section C-Performance Testing, except for notifying IDEM of the test in paragraph (a), all of paragraph (b), and all of paragraph (c).

#### D.1.9 VOC and HAP Emissions

Compliance with Conditions D.1.1 for VOC emissions and D.1.5 for HAP emissions shall be demonstrated within 30 days of the end of each month based on the total volatile organic compound, single HAP and combined HAP usage for the most recent twelve (12) month period.

### **Record Keeping and Reporting Requirements [326 IAC 2-8-4(3)] [326 IAC 2-8-16]**

#### D.1.10 Record Keeping Requirements

- (a) To document compliance with Conditions D.1.1 through D.1.4, the Permittee shall maintain records in accordance with (1) through (10) below. Records maintained for (1) through (10) shall be taken monthly, except where noted, and shall be complete and sufficient to establish compliance with the VOC usage limits and emission limits established in Conditions D.1.1, D.1.3 and D.1.4, and the HAP usage limits established in Condition D.1.5. Records taken to demonstrate compliance with Conditions D.1.1 and D.1.5 shall be available to IDEM, OAQ, within 30 days of the end of each compliance period.
  - (1) The VOC and HAP content of each coating material and solvent used.
  - (2) The amount of coating material and solvent less water used on a monthly basis for the combined Class C, Class A – Line 1, and Class A – Line 2 production operations.
    - (A) Records shall include purchase orders, invoices, and material safety data sheets (MSDS) necessary to verify the type and amount used
    - (B) Solvent usage records shall differentiate between those added to coatings and those used as cleanup solvents. Records of used solvent sent off site as waste shall be maintained when such is included in a demonstration of compliance with D.1.1 through D.1.5.
  - (3) Method of application for all wood furniture coatings used;
  - (4) Daily VOC emitted at each of facilities CSA-1, CFF, CUA, A1SA, A1FF, A2SA and A2FF, when coating metal parts and a log of the dates of emissions;
  - (5) Monthly total combined VOC usage for Class C, Class A - Line 1, and Class A - Line 2 production operations;

- (6) Monthly individual and total HAP usage at Class C, Class A - Line 1, and Class A - Line 2 production combined;
  - (7) The weight of the total VOCs emitted from the three (3) combined product lines, for each compliance period. This shall exclude the weight of VOCs emitted due to wood furniture/cabinet coatings regulated at Condition D.1.4; and
  - (8) The weight of individual and total HAPs emitted from Class C, Class A - Line 1, and Class A - Line 2 production combined, for each compliance period.
  - (9) The amount of VOC in coating materials and cleanup solvents shipped out to be recycled each month.
    - (A) Records shall include weight of coating material or cleaning solvent in each container, VOC content test results, and "as supplied" sheets so necessary to verify the type and amount recycled.
    - (B) Cleaning solvent recycling records shall differentiate between those containers whose contents are just cleanup solvents and those containers with coating materials and cleanup solvents or various cleanup solvents of unknown individual amounts.
  - (10) The VOC usage, minus the VOC in coating or cleanup solvents shipped out to be recycled, for the three (3) combined product lines, for each compliance period.
- (b) To document compliance with Condition D.1.7, the Permittee shall maintain records of daily coating usage at each of facilities CSA-1, CFF, CUA, A1SA, A1FF, A2SA and A2FF when using coatings not specifically excluded in Condition D.1.9.
  - (c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

#### D.1.11 Reporting Requirements

A quarterly summary of the information to document compliance with Conditions D.1.1, D.1.2 and D.1.5 shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

**Indiana Department of Environmental Management  
Office of Air Quality**

Technical Support Document (TSD) for a Significant Permit Revision to a  
Federally Enforceable State Operating Permit

**Source Background and Description**

<b>Source Name:</b>	<b>Four Winds International, Inc.</b>
<b>Source Location:</b>	<b>701 CR 15, Elkhart, IN 46516</b>
<b>County:</b>	<b>Elkhart</b>
<b>SIC Code:</b>	<b>3716</b>
<b>Operation Permit No.:</b>	<b>F039-14026-00220</b>
<b>Operation Permit Issuance Date:</b>	<b>January 7, 2003</b>
<b>Permit Reviewer:</b>	<b>Gaurav Shil / EVP</b>

The Office of Air Quality (OAQ) has reviewed a revision application from Four Winds International, Inc. relating to BACT analysis of affected facilities and removal of facility specific VOC usage limits.

**Explanation of Revisions Requested**

On June 6, 2004, Four Winds International, Inc. submitted an application to the OAQ requesting approval to remove VOC usage restrictions that limits the emissions from each of the five (5) separate processes to less than twenty-five (25) tons per consecutive twelve (12) month period as required by Permit No. F039-14036-00220, issued on January 7, 2003. The VOC usage limit was imposed pursuant to 326 IAC 8-1-6, General Provisions Relating to VOC Rules; General Reduction Requirements for New Facilities. However, the source still wants to maintain source wide VOC emission limit of less than 100 tons per year to stay as a FESOP source. The purpose of this review is to evaluate the level of control that constitutes BACT for this operation and the regulated facilities, by removing the facility specific limits in Permit No. 039-14036-00220 while maintaining the source wide limit.

The BACT analysis focuses on the application of hand and aerosol applied adhesives, touchup paints, wiping solvents, and lubricants when they are applied to non-wood and non-metal substrates. The following facilities require evaluation in this BACT analysis:

- (a) One (1) Class C Line, producing a maximum of 2.5 units per hour, installed in January 1992, consisting of the following:
  - (1) Sub-assembly area coating operations, identified as CSA-1;
  - (2) Final finish area coating operations, identified as CFF;
  
- (b) One (1) Class A - Line 1, producing a maximum of 2 units per hour, installed in June 1999, consisting of the following:
  - (1) Sub-assembly area coating operations, identified as A1SA;
  - (2) Final finish area coating operations, identified as A1FF;

- (c) One (1) Class A - Line 2 (Diesel Pusher Production Line), producing a maximum of 0.375 units per hour, installed in 2002, consisting of the following:
  - (1) Sub-assembly area coating operations, identified as A2SA; and
  - (2) Final finish area coating operations, identified as A2FF

### **Existing Approvals**

The source was issued a FESOP Renewal No. F039-14036-00220 on January 7, 2003. The source has since received the following:

- (a) First Significant Permit Revision No. 039-16264, issued on March 11, 2003.

### **Enforcement Issue**

There are no enforcement actions pending.

### **Recommendation**

The staff recommends to the Commissioner that the Significant Permit Revision be approved. This recommendation is based on the following facts and conditions:

Unless otherwise stated, information used in this review was derived from the application and additional information submitted by the applicant.

An application for the purposes of this review was received on June 3, 2004.

### **Potential To Emit for the Revision**

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as "the maximum capacity of a stationary source to emit any air pollutant under its physical and operational design. Any physical or operational limitation on the capacity of a source to emit an air pollutant, including air pollution control equipment and restrictions on hours of operation or type or amount of material combusted, stored, or processed shall be treated as part of its design if the limitation is enforceable by the U. S. EPA."

There is no change in uncontrolled potential to emit at the source due to this revision.

### **Justification for Revision**

The FESOP is being revised through a Significant Permit Revision based on the following:

- (a) This revision is being performed pursuant to 326 IAC 2-8-11.1(g)(3) since the modification changes existing requirements for the units or processes under the cap.

### Actual Emissions

The following table shows the actual emissions from the source. This information reflects calendar year 2001 emissions, based upon the Indiana Air Emission Summary Data for criteria pollutants and the Toxic Release Report maintained by the IDEM Office of Pollution Prevention and Technical Assistance.

Pollutant	Emissions (ton/yr)
PM	7.04
PM10	7.04
SO <sub>2</sub>	0.01
VOC	35.62
CO	0.18
NO <sub>x</sub>	0.9
single HAP	3.0
total HAPs	3.0

### Existing Source Status

Existing Source PSD Definition (emissions after controls, based on 8,760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (ton/yr)
PM	19.9
PM10	20.6
SO <sub>2</sub>	0.1
VOC	< 100
CO	8.1
NO <sub>x</sub>	13.7
single HAP	<10
total HAPs	<25

- (a) This existing source is not a major stationary source because no attainment regulated pollutant is emitted at a rate of 250 tons per year or more, and it is not one of the 28 listed source categories.
- (b) These emissions are based upon FESOP Renewal No. F039-14036-00220, issued on January 7, 2003.

**Potential to Emit of Revision After Issuance**

The source, issued FESOP Renewal No. F039-14036-00220 on January 7, 2003, has opted to remain a FESOP source, rather than apply for a Part 70 Operating Permit. The table below summarizes the potential to emit, reflecting all limits, of the emission units. Any control equipment is considered enforceable only after issuance of this Federally Enforceable State Operating Permit and only to the extent that the effect of the control equipment is made practically enforceable in the permit.

Process/emission unit	Potential to Emit (PTE) After Issuance (tons/year)						
	PM	PM <sub>10</sub>	SO <sub>2</sub>	VOC	CO	NOx	HAPs
Class A - Line 1; Class A - Line 2; and Class C coating operations (Sub-assembly & Final Finish)	2.57	2.57	0.00	<99.2*	0.00	0.00	<10 (single) <25 (total)
Class A Lines 1 & 2 steel & aluminum ** tube welding	2.41	2.41	0.00	0.00	0.00	0.00	0.00
Class C Line 2 steel & aluminum tube ** welding	2.41	2.41	0.00	0.00	0.00	0.00	0.00
Natural gas combustion as an insignificant activity	0.25	0.99	0.05	0.74	8.13	13.68	0.26
Class A Lines 1 & 2 subassembly ** & final finish woodworking and machining operations	32.34	32.34	0.00	0.00	0.00	0.00	0.00
Class C subassembly & final ** finish woodworking operations	13.23	13.23	0.00	0.00	0.00	0.00	0.00
Total PTE for Source after Issuance	53.21	53.95	0.05	< 100	8.13	13.68	<10 (single) <25 (total)
PSD Threshold Level	250	250	250	250	250	250	N/A
Part 70 Threshold Level	100	100	100	100	100	100	10 (single) 25 (total)

\* Reflects revised source-wide VOC emission limitation taken from Condition D.1.1 of FESOP Renewal No. F039-14036-00220, whose final issuance date is pending.

\*\* Reflects 326 IAC 6-3-2(e) allowable emission rate (lb/hr) extrapolated on an equivalent annual basis assuming 8,760 hours of operation.

This modification to an existing minor stationary source is not major because there is no emission increase at the source. Therefore, pursuant to 326 IAC 2-2 the PSD requirements continue to not apply.

### County Attainment Status

The source is located in Elkhart County.

Pollutant	Status
PM-10	Attainment
SO <sub>2</sub>	Attainment
NO <sub>2</sub>	Attainment
1-hr Ozone	Attainment
8-hr Ozone	Nonattainment
CO	Attainment
Lead	Attainment

- (a) Volatile organic compounds (VOC) and Nitrogen Oxides (NOx) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC and NOx emissions are considered when evaluating the rule applicability relating to the ozone standards. Elkhart County has been designated as nonattainment for the 8-hour ozone standard. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for nonattainment new source review.
- (b) Elkhart County has been classified as attainment for all criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability for the source section.

### Federal Rule Applicability

There are no new requirements included in the permit due to this revision.

### State Rule Applicability

#### 326 IAC 8-1-6 (New Facilities, General Reduction Requirements)

This rule applies to facilities located anywhere in the state that were constructed on or after January 1, 1980, which have potential volatile organic compound (VOC) emissions of 25 tons per year or more, and which are not otherwise regulated by another provision of Article 8.

Pursuant to FESOP Renewal No. F039-14036-00220 and FESOP Significant Permit Revision No. 039-16264-00220, the Class A - Line 1 coating facilities A1SA and A1FF, the Class C Line coating facilities CSA-1 and CFF, and the Class A - Line 2 coating facility A2FF, each have a potential to emit of VOC greater than 25 tons per year. The Permittee limited the VOC input to each facility to less than 25 tons per year such that the requirements of 326 IAC 8-1-6 did not apply. This condition was required to render 326 IAC 8-1-6, General Provisions Relating to VOC Rules; General Reduction Requirements for New Facilities not applicable. With this revision the source requested to remove the facility specific VOC usage limits from the FESOP while maintaining source wide limit VOC limit of less than 100 tons per year, by performing a BACT analysis as required by 326 IAC 8-1-6. The purpose of this BACT Analysis is to evaluate the level of control that constitutes BACT for the affected facilities.

The operations conducted at the source facility begin with a vehicle chassis that contains a passenger cab with no vehicle body. Several processes are undertaken for the purpose of constructing the body of the vehicle that ultimately becomes the motor home. The processes include some woodworking operations to produce floor and roof frames and cabinets, a minor amount of metal coating in the form of touchup operations, wood flat panel coating to produce sidewalls, and a minor amount of wood surface coating for touchup. Each of the processes are regulated either by rules pertaining to the emissions of particulate matter (326 IAC 6) or are elsewhere regulated by other 326 IAC 8 rules. Therefore, these operations are not considered as a part of this analysis.

The remaining operations consist of sub-assembly and final finish stages. During the assembly process and the preparation stage for delivery of the motor homes to customers, small quantities of materials containing volatile organic compounds (VOC) are used. These materials consist of hand and aerosol applied adhesives, touchup paints, wiping solvents, and lubricants. The applications of these products, when applied to wood, are regulated under 326 IAC 8-2-12, Wood Furniture and Cabinet Coating. The applications of the products, when applied to metal, would be subject to 326 IAC 8-2-9, Miscellaneous Metal Coating Operations, except that the potential to emit (PTE) for the coating of metal is less than 15 pounds of VOC per day (specifically excluded).

Therefore, this analysis has focused on the application of the above mentioned materials when they are applied to non-wood and non-metal substrates. The remaining substrates consist predominantly of plastic and rubber. In the case where a product is used exclusively for wood or metal, this product has been excluded from the emissions estimates for control analysis. In the case where a material can be used on wood or metal but may also be used on any other substrate, the material was included in the estimation of emissions for the control analysis.

The specific facilities requiring evaluation in this analysis include:

1. Class C Motor Home Sub-Assembly Operations (CSA-1)
2. Class C Final Finish Operations (CFF)
3. Class A, Line 1 (Gasoline Powered) & Class A Line 2 (Diesel Powered) Sub-Assembly Operations (A1SA & A2SA Respectively)
4. Class A, Line 1 (Gasoline Powered) Final Finish Operations (A1FF)
5. Class A, Line 2, (Diesel Powered) Final Finish Operations (A2FF)

IDEM conducts BACT analyses in accordance with the *"Top-Down" Best Available Control Technology Guidance Document* outlined in the 1990 draft USEPA *New Source Review Workshop Manual*, which outlines the steps for conducting a top-down BACT analysis. The steps are discussed as follows:

#### **1. Identify all potentially available control options**

The first step in evaluating potential applicable control technologies involved a review of control technology determinations made for permitted motor home/recreational vehicle manufacturing sources. The USEPA's RACT /BACT /LAER clearinghouse (RBLC) database was searched for the purpose of identifying comparable sources that have implemented BACT for the affected facilities. This search was performed in the following steps:

- (1) A search was first conducted by the same SIC Code as for the Four Winds International (3716). Two (2) motor home manufacturing sources were identified in the RBLC database. Both of the sources that were identified performed a BACT Analysis for the purpose of analyzing their exterior painting operations. The two (2) sources each paint the exteriors of their motor homes utilizing automotive (OEM) coatings. Four Winds International (FWI) does not paint the exterior of its motor homes. Since this type of surface coating operation is not representative of the subject facilities at the FWI source, these two sources were excluded from the list of comparable sources. The two (2) sources were identified as CDI, LLC and the Monaco Coach Corporation. A further review of the Monaco Coach Corporation BACT Analysis revealed that this source had specifically excluded miscellaneous coatings in their analysis because of their inability to capture the resulting emissions. The miscellaneous coatings described in the Monaco BACT Analysis are the same type of coatings specifically addressed in this BACT Analysis for the FWI facility.
- (2) Utilizing EPA's Volume II, Chapter 14, Appendix D, Uncontrolled Emission Factor Listing for Criteria Air Pollutants, the SIC Code of 3716 was cross referenced to the listing of representative Source Classification Codes (SCC). The resulting list of SCC's that were identified was used as the search criteria for the RBLC database. As a result of the SCC search, three (3) of the SCC's yielded no facilities at all. These included 4-02-006, 4-02-003, and 4-02-900. One (1) source was identified under SCC 4-02-009 and two (2) sources were identified under SCC 4-002-001. The source identified under SCC 4-02-009 was Saturday Knight Ltd. in Hamilton, OH. This source performs silk screen printing of vinyl film. The sources identified under SCC 4-002-001 were Tri-Tech Graphics, Inc. and Up-right, Inc. in Fresno, CA. Tri-Tech Graphics, Inc. performs fabric screen printing and Up-right, Inc. does performance coating of metal air compressor tanks. Therefore, the above identified sources were determined not to be representative of the FWI source operations. The final SCC of 4-02-007 yielded a total of four (4) sources: Delta Plastics (San Joaquin, CA), Holtz Rubber Company, Inc. (San Joaquin, CA), Carpenter Co. (San Joaquin, CA), and Deckers Co. (Santa Barbara, CA). The pollutant of concern in the analysis of Deckers, Co. was reactive organic gas that is not representative of the pollutant of concern for FWI operations (VOC). The substrate in the analysis of Carpenter Co. was foam cushion that is not representative of the substrate for FWI operations. Delta Plastics and Holtz Rubber Company were selected for analysis since these two sources conducted similar operations.
- (3) Finally, a RBLC search was conducted specifically searching for assembly operations. Ultimately, of the sources identified, one of the same operations of two (2) General Motors assembly plants (purge, cleanup solvent, wiping solvent) and two (2) operations of a Cooper Tire plant (primer and adhesive application) were selected. The remaining sources were determined not to represent the FWI facility because either the materials used or the operations conducted and substrates were not similar. For example, several of the General Motors operations were excluded as they involved OEM surface coating.

**2. Eliminate technically infeasible control options**

The following table identifies the approved methods of achieving BACT:

<b>Data Search Criteria</b>	<b>Facility Name</b>	<b>Process or Facility</b>	<b>BACT Determination</b>	<b>Basis</b>
SCC 4-02-007	Delta Plastics	Spray Application of Contact Adhesives - Plastic	Low VOC Coating [4.5 Lb VOC/Gal]	BACT-Other
Assembly Operations	Cooper Tire & Rubber	Adhesive Usage, Facility - Spray - Rubber & Plastic	Low VOC Coating [7.13 Lb VOC/Gal]	BACT-PSD
SCC 4-02-007	Holtz Rubber Company, Inc.	Brush Application of Adhesives - Rubber & Plastic	Process Limit [Adhesive VOC Content <7.0 Lb VOC/gal]	LAER
Assembly Operations	Cooper Tire & Rubber	Primer Usage, Facility - Spray - Rubber & Plastic	Low VOC Coating [6.12 Lb VOC/Gal]	BACT-PSD
Assembly Operations	General Motors	Purge, Cleanup Solvents, Wipedown Solvents	Overall Emission Limitation [215.2 TPY VOC, 112 TPY Acetone, 20 TPY 7440-62-2] w/Process Capture	BACT-PSD
Assembly Operations	General Motors	Purge, Cleanup Solvents, Wipedown Solvents	Overall Emission Limitation w/Process Capture	BACT-PSD

Based on the information summarized above, only the use of low VOC Coatings and/or best management practices (BMP), without using any control device, were the determined methods of achieving BACT. In reviewing the VOC coating content of the subject materials used at the FWI facility, it was determined that the coatings used by FWI meet or have a lower VOC content than those used at other BACT sources. This comparison was done based on the material classification (adhesive, paint/primer or solvent cleaner). Adhesives used at FWI have VOC coating content lower than the VOC coating content of adhesives used at Delta Plastics (4.5 lb/gal). Paint/Primer used at FWI have VOC coating content lower than the VOC coating content of paint/primer used at Cooper Tire & Rubber (6.12 lb/gal). Also as a condition of its operating permit, FWI already utilizes BMP for the reduction of solvent emissions and has a source wide enforceable emissions limitation. Therefore, further investigation into material substitution was determined to be unnecessary.

Although no similar sources or sources with similar operations were identified as using any type of add-on control device, FWI explored utilizing the following two control methods of VOC abatement:

- (1) Rotary concentrator in combination with catalytic oxidation having 95% destruction efficiency.
- (2) Rotary concentrator in combination with regenerative/recuperative thermal oxidation system having 95% destruction efficiency.

The control devices would have to meet the following criteria:

- (1) Capture of the VOC for the purpose of efficient conveyance to the control device

The subject materials are used throughout all stages of the assembly and final finish operations or in other words at all stations. Some of the stations utilize overhead cranes for the purpose of lifting floors, walls, and roofs into place. Other stations must have access to large parts such as tubs, showers, and cabinets during the assembly stages. Because of the process interactions that take place, utilizing a booth for these assembly and final finish operations is technically infeasible. Further, a booth will not address the collection of VOC from materials used inside of units that are completely enclosed. Likewise, utilizing a control device for an entire building, while being technically feasible, is cost prohibitive based upon FWI's past experience. Additionally, an entire source control device would not guarantee efficient collection of VOC as vehicles are continuously entering and exiting the buildings through overhead doors.

Therefore, it was determined that portable collection devices should be considered to capture VOC. A fixed or stationary collection device was determined to be technically infeasible. This is because it would not address the inside of units that are completely enclosed and the size that would be required for each station would inhibit production. The motor homes range from 28 to 40 feet long and ten (10) to 12 feet high and therefore, any collection device would need to address the overall dimensions of the units.

Each building would need to be equipped with a central ventilation system to address the overall dimensions of the units. At each work station, flexible hoses mounted to electric retractable reels would need to be installed. Because of the flammability of the solvents used, the hose reels would need to be equipped with explosion proof motors. Additionally, the hoses would need to be chemically resistant as well. There are a total of 83 work stations throughout the production buildings that would need to be equipped with these devices. Each device would need to be equipped with a hose estimated to be at least 50 feet long considering the dimensions of the units and the height of the buildings. Typical capture efficiencies range from 75% to 85% for the above systems. For the purpose of this BACT Analysis, a capture efficiency of 80% was used.

- (2) Separate control devices for buildings

The distance between the production buildings is more than 300 feet. Therefore, two (2) separate control devices would be required. One control device would be required for Building 650 while a second control device would be shared for Buildings 654 and 656. Therefore, the detailed economic and environmental evaluation calculations represent the control of each operation or building.

### 3. Rank remaining control technologies by control effectiveness

There are two technically feasible approaches for controlling VOC emissions from the FWI operations:

Options for VOC Control	Overall VOC control efficiency
Rotary concentrator in combination with catalytic oxidation	76 %
Rotary concentrator in combination with regenerative/recuperative thermal oxidation	76 %

- (1) Regenerative/recuperative thermal oxidation is estimated to provide 80% capture efficiency and 95% destruction efficiency.
- (2) Catalytic oxidation is estimated to provide 80% capture efficiency and 95% destruction efficiency.

### 4. Evaluate the most effective controls and document results

FWI provided IDEM with a thorough economic analysis of the technically feasible control options. The analysis estimated the cost of the VOC control equipment, including the initial capital cost of the various components intrinsic to the complete system, and the estimated annual operating costs. The estimated total capital cost was calculated with the use of a factoring method of determining direct and indirect installation costs. The basic equipment costs were obtained from vendor's quoted prices. Annualized costs were developed based on information from the vendors and a literature review. The analysis assumed an interest rate of 5% and an equipment life of 7 years. The basis of cost effectiveness, used to evaluate the control options, is the ratio of the annualized cost to the amount of VOC (tons) removed per year. Note that the cost effectiveness of each option only accounts for the portion of VOC removed by the add-on controls. A summary of the cost figures determined in the analysis is provided in the table below:

Process	Total Capital Cost (\$)	Total Operating Cost (\$/yr)	Total Annualized Costs (\$/yr)	VOC removal from add-on control (tpy)	Cost Effectiveness (\$/ton VOC removed)
Class C-Building 650 Recuperative & Regenerative Oxidation	1,026,944	373,812	805,703	74.6	10,804
Class C-Building 650 Catalytic Oxidation	899,572	383,649	788,433	74.6	10,573
Class A-Building 654 & 656 Recuperative & Regenerative Oxidation	1,085,655	376,328	820,714	85.2	9,628
Class A-Building 654 & 656 Catalytic Oxidation	958,283	386,165	803,444	85.2	9,425

Based on the cost analysis, regenerative/recuperative oxidation and catalytic oxidation, with an annual cost of greater than \$9,400 per ton of VOC removed are economically infeasible. Moreover no similar sources or sources with similar operations were identified as using any type of add-on control device. Therefore, no control with the use of low VOC coatings and the following methods currently used by FWI to minimize VOC emissions shall be the best feasible BACT:

1. When applying adhesives to plastic substrates, no coating shall be used with a VOC content of greater than 4.50 pounds of VOC per gallon of coating as applied.
2. When applying paints or primer coatings to plastic substrates, no coating shall be used with a VOC content of greater than 6.12 pounds of VOC per gallon of coating as applied.
3. All containers of solvents or solutions shall be kept closed when not in actual use except during product transfers to minimize evaporation.
4. All waste materials including spent wiping rags and spent solvents shall be stored in closed containers at all times except during product transfers to minimize solvent evaporation.
5. Unless prepackaged by the manufacturer and intended for use as an aerosol or atomized product, all solvents or solutions used shall be hand or manually applied. Hand or manual application shall include the use of cloths or wipes, including the use of handheld and hand actuated application spray bottles. No solvents or solutions shall be spray applied or applied in a manner that causes excessive atomization or promotes excessive evaporation.
6. Waste solvents or solutions shall not be disposed by allowing products to evaporate.
7. Solvent containing rags shall not be allowed to air dry to allow for reuse.

### **Testing Requirements**

Compliance testing is not required of this source since the coating material usage and related VOC and volatile organic HAP emissions assume an emission factor of 2,000 pounds of pollutant emitted per ton of pollutant input to the coating operation, and the woodworking operations are controlled by baghouse and, along with other processes, have emissions below the relevant allowable particulate matter emission rates.

### **Compliance Requirements**

Permits issued under 326 IAC 2-8 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a more or less continuous demonstration. When this occurs IDEM, OAQ in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-8-4. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

Compliance Determination Requirements in Section D of the permit are those conditions that are found more or less directly within state and federal rules and the violation of which serves as grounds for enforcement action. If these conditions are not sufficient to demonstrate continuous compliance, they will be supplemented with Compliance Monitoring Requirements, also in Section

D of the permit. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring conditions would serve as a trigger for corrective actions and not grounds for enforcement action. However, a violation in relation to a compliance monitoring condition will arise through a source's failure to take the appropriate corrective actions within a specific time period.

There are no new compliance monitoring requirements applicable to this source revision.

### Changes to the Federally Enforceable State Operating Permit (FESOP) due to this Revision:

The following changes are made as the second Significant Permit Revision to FESOP Renewal No. 039-14036-00220 (new language is shown in **bold** and deleted language is shown with a ~~line through it~~):

1. Condition D.1.2 is deleted and replaced with new condition since the source requested to remove the facility specific VOC usage limits and replace the VOC usage limits with BACT for the affected facilities:

### Emission Limitations and Standards [326 IAC 2-8-4(1)]

#### D.1.1 Volatile Organic Compounds (VOC) [326 IAC 2-8-4][326 IAC 2-2]

The total combined VOC input usage to the Class C, Class A - Line 1, and Class A - Line 2 product lines, including but not limited to the usage of sealants, bonding materials, adhesives, caulks, wood stains, paints and VOC solvents, minus used VOC solvent shipped off site, shall be limited to 99.5 tons per twelve (12) consecutive month period with compliance demonstrated at the end of each month. This usage limit is equivalent to 99.5 tons of VOC emitted per 12 consecutive month period.

Compliance with this limitation, including the potential to emit for insignificant activities, shall limit the source-wide potential to emit of VOC to less than 100 tons per year and make the requirements of 326 IAC 2-7 (Part 70) not applicable to the source. Compliance with this condition shall also make the requirements of 326 IAC 2-2 not applicable to the source.

#### D.1.2 Volatile Organic Compounds (VOC) [326 IAC 8-1-6]

~~(a) The VOC input usage to each of facilities CSA-1, CFF, A1SA and A1FF, including but not limited to sealants, bonding materials, adhesives, caulks, wood stains, paints and VOC solvents, minus used VOC solvent shipped off site, shall be limited to less than 25 tons per twelve (12) consecutive month period with compliance demonstrated at the end of each month. This usage limit is equivalent to 25 tons of VOC emitted per 12 consecutive month period, per facility. The VOC usage for wood furniture/cabinet coating is not included in this determination since such usage is regulated at Condition D.1.4.~~

~~(b) Any change or modification which may increase potential VOC usage to twenty-five (25) tons per year at facilities A2SA or A2FF, minus used VOC solvent shipped off site, shall require OAQ's prior approval before such change can take place at either facility. The VOC usage for wood furniture/cabinet coating is not included in this determination since it is regulated at Condition D.1.4.~~

~~Compliance with this requirement shall make the best available control technology (BACT) requirement in 326 IAC 8-1-6 (New Facilities: General Reduction Requirements) not applicable to these facilities.~~

**Pursuant to the BACT determination under 326 IAC 8-1-6 (New Facilities, General Reduction Requirements), the Permittee shall comply with the following requirements for operation of facilities CSA-1, CFF, A1SA and A1FF:**

- (a) When applying adhesives to plastic substrates, no coating shall be used with a VOC content of greater than 4.50 pounds of VOC per gallon of coating as applied.**
- (b) When applying paints or primer coatings to plastic substrates, no coating shall be used with a VOC content of greater than 6.12 pounds of VOC per gallon of coating as applied.**
- (c) All containers of solvents or solutions shall be kept closed when not in actual use except during product transfers to minimize evaporation.**
- (d) All waste materials including spent wiping rags and spent solvents shall be stored in closed containers at all times except during product transfers to minimize solvent evaporation.**
- (e) Unless prepackaged by the manufacturer and intended for use as an aerosol or atomized product, all solvents or solutions used shall be hand or manually applied. Hand or manual application shall include the use of cloths or wipes, including the use of handheld and hand actuated application spray bottles. No solvents or solutions shall be spray applied or applied in a manner that causes excessive atomization or promotes excessive evaporation.**
- (f) Waste solvents or solutions shall not be disposed by allowing products to evaporate.**
- (g) Solvent containing rags shall not be allowed to air dry to allow for reuse.**

D.1.3 Volatile Organic Compounds (VOC) [326 IAC 8-2-9]

Any change or modification which may increase actual VOC emissions for coating metals to greater than fifteen (15) pounds per day, before add-on controls, when coating metal parts at each of facilities CSA-1, CFF, CUA, A1SA, A1FF, A2SA and A2FF shall require OAQ's prior approval before such change can take place at any of these facilities.

D.1.4 Volatile Organic Compounds (VOC) [326 IAC 8-2-12]

Pursuant to 326 IAC 8-2-12 (Wood Furniture and Cabinet Coating), surface coatings applied to wood furniture and cabinets at each of facilities CSA-1, CFF, A1SA, A1FF, A2SA or A2FF shall utilize one of the following application methods:

Airless Spray Application  
Air Assisted Airless Spray Application  
Electrostatic Spray Application  
Electrostatic Bell or Disc Application  
Heated Airless Spray Application  
Roller Coating  
Brush or Wipe Application  
Dip-and-Drain Application

High Volume Low Pressure (HVLP) Spray Application is an accepted alternative method of application for Air Assisted Airless Spray Application. HVLP spray is the technology used to apply coating to substrate by means of coating application equipment which operates between one-tenth (0.1) and ten (10) pounds per square inch gauge (psig) air pressure measured dynamically at the center of the air cap and at the air horns of the spray system.

D.1.5 Hazardous Air Pollutants (HAPs) [326 IAC 2-8-4][326 IAC 2-4.1-1]

- (a) The total combined input usage of any single hazardous air pollutant (HAP) to the Class C, Class A - Line 1, and Class A - Line 2 product lines, minus used HAP solvent shipped off site, shall be limited to less than 10 tons per twelve (12) consecutive month period with compliance demonstrated at the end of each month. This usage limit is equivalent to 10 tons of single HAP emitted per 12 consecutive month period. Compliance with this condition shall limit the source-wide potential to emit a single HAP to less than 10 tons per twelve (12) consecutive month period.
- (b) The total combined input usage of all hazardous air pollutants (HAPs) to the Class C, Class A - Line 1, and Class A - Line 2 product lines, minus used HAP solvent shipped off site, shall be limited to less than 24.8 tons per twelve (12) consecutive month period with compliance demonstrated at the end of each month. This usage limit is equivalent to 24.8 tons of total HAPs emitted per 12 consecutive month period. Compliance with this condition, including the potential to emit for insignificant activities, shall limit the source-wide potential to emit total HAPs to less than 25 tons per 12 consecutive month period.

D.1.6 Particulate Matter (PM) [40 CFR 52 Subpart P]

Pursuant to 40 CFR 52 Subpart P and FESOP 039-5814-00220 issued on December 9, 1996, the particulate matter from the spray coatings applied at the Class C, Class A - Line 1, and Class A - Line 2 sub-assembly and final finish areas CSA-1, CFF, CUA, A1SA, A1FF, A2SA, and A2FF each shall not exceed the pound per hour emission rate established as E in the following formula:

Interpolation of the data for the process weight rate up to sixty thousand (60,000) pounds per hour shall be accomplished by use of the equation:

$$E = 4.10 P^{0.67}$$

where E = rate of emission in pounds per hour; and  
P = process weight rate in tons per hour

**Compliance Determination Requirements**

D.1.7 Volatile Organic Compounds (VOC) [326 IAC 8-1-2][326 IAC 8-1-4]

Compliance with the VOC usage and emission limitations contained in Conditions D.1.1, D.1.2 and D.1.3 shall be determined pursuant to 326 IAC 8-1-4(a)(3) and 326 IAC 8-1-2(a) by preparing or obtaining from the manufacturer the copies of the "as supplied" and "as applied" VOC data sheets. IDEM, OAQ, reserves the authority to determine compliance using Method 24 in conjunction with the analytical procedures specified in 326 IAC 8-1-4.

D.1.8 VOC and HAP Emissions

Compliance with Conditions D.1.1 and ~~D.1.2(a)~~ for VOC emissions and D.1.5 for HAP emissions shall be demonstrated within 30 days of the end of each month based on the total volatile organic compound, single HAP and combined HAP usage for the most recent twelve (12) month period.

## Compliance Monitoring Requirements [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]

### D.1.9 Particulate [326 IAC 6-3-2(d)]

Any change or modification which may increase the coating application rate to greater than five (5) gallons per day from any of surface coating manufacturing processes CSA-1, CFF, CUA, A1SA, A1FF, A2SA, or A2FF shall require a control device, pursuant to 326 IAC 6-3-2(d). Compliance with this limitation shall include only surface coatings that emit or have the potential to emit particulate and does not include surface coatings applied using dip, roll, flow, or brush coatings; applications of aerosol coating products to repair minor surface damage and imperfections; or spray applied glues and adhesives at this source which have been determined by IDEM, OAQ not to have the potential to emit particulate.

## Record Keeping and Reporting Requirements [326 IAC 2-8-4(3)] [326 IAC 2-8-16]

### D.1.10 Record Keeping Requirements

- (a) To document compliance with Conditions D.1.1 through D.1.4, the Permittee shall maintain records in accordance with (1) through (8) below. Records maintained for (1) through (8) shall be taken monthly, except where noted, and shall be complete and sufficient to establish compliance with the VOC usage limits and emission limits established in Conditions D.1.1, ~~through D.1.3 and~~ D.1.4, and the HAP usage limits established in Condition D.1.5. Records taken to demonstrate compliance with Conditions D.1.1, ~~D.1.2(a)~~, and D.1.5 shall be available to IDEM, OAQ, within 30 days of the end of each compliance period.
- (1) The VOC and HAP content of each coating material and solvent used;
  - (2) The amount of coating material and solvent less water used on a monthly basis at ~~each of facilities CSA-1, CFF, CUA, A1SA, A1FF, A2SA or A2FF~~ **for the combined Class C, Class A – Line 1, and Class A – Line 2 production operations;**
    - (A) Records shall include purchase orders, invoices, and material safety data sheets (MSDS) necessary to verify the type and amount used;
    - (B) Solvent usage records shall differentiate between those added to coatings and those used as cleanup solvents. Records of used solvent sent off site as waste shall be maintained when such is included in a demonstration of compliance with D.1.1 through D.1.5;
  - (3) Method of application for all wood furniture coatings used;
  - (4) Daily VOC emitted at each of facilities CSA-1, CFF, CUA, A1SA, A1FF, A2SA and A2FF, when coating metal parts and a log of the dates of emissions;
  - (5) ~~Monthly VOC usage at each of the six (6) facilities CSA-1, CFF, A1SA, A1FF, A2SA and A2FF, and~~ total combined VOC usage to Class C, Class A - Line 1, and Class A - Line 2 production **operations;**
  - (6) Monthly individual and total HAP usage at Class C, Class A - Line 1, and Class A - Line 2 production combined;

- (7) The weight of ~~VOCs emitted from each of the six (6) facilities,~~ and the total VOC emitted for the three product lines, for each compliance period. This shall exclude the weight of VOCs emitted due to wood furniture/cabinet coatings regulated at Condition D.1.4; and
  - (8) The weight of individual and total HAPs emitted from Class C, Class A - Line 1, and Class A - Line 2 production combined, for each compliance period.
- (b) To document compliance with Condition D.1.9, the Permittee shall maintain records of daily coating usage at each of facilities CSA-1, CFF, CUA, A1SA, A1FF, A2SA and A2FF **when using coatings not specifically excluded in Condition D.1.9.**
  - (c) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

#### D.1.11 Reporting Requirements

A quarterly summary of the information to document compliance with Conditions D.1.1, D.1.2 and D.1.5 shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the "authorized individual" as defined by 326 IAC 2-1.1-1(1).

- 2. FESOP quarterly report form (Page 43 of 46) is deleted since this form was used to document compliance with 25 tpy VOC usage limit for Class C and Class A-Line 1 sub-assembly and final finish operations.

#### **Conclusion**

The operation of this motor home/recreational vehicle manufacturing source shall be subject to the conditions of the attached proposed Significant Permit Revision No. 039-19330-00220.

## Indiana Department of Environmental Management Office of Air Quality

### Addendum to the Technical Support Document (TSD) for a Significant Permit Revision to a Federally Enforceable State Operating Permit

#### Source Background and Description

<b>Source Name:</b>	<b>Four Winds International, Inc.</b>
<b>Source Location:</b>	<b>701 CR 15, Elkhart, IN 46516</b>
<b>County:</b>	<b>Elkhart</b>
<b>SIC Code:</b>	<b>3716</b>
<b>Operation Permit No.:</b>	<b>F039-14026-00220</b>
<b>Operating Permit Revision No.:</b>	<b>F039-19330-00220</b>
<b>Operation Permit Issuance Date:</b>	<b>January 7, 2003</b>
<b>Permit Reviewer:</b>	<b>Gaurav Shil / EVP</b>

On August 20, 2004, the Office of Air Quality (OAQ) had a notice published in the Elkhart Truth, Elkhart, IN stating that Four Winds International, Inc. had applied for a FESOP Significant Permit Revision for BACT analysis of affected facilities and removal of facility specific VOC usage limits. The notice also stated that OAQ proposed to issue a permit for this operation and provided information on how the public could review the proposed permit and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this permit should be issued as proposed.

No comments were received on the proposed permit. However, upon further consideration, IDEM, OAQ has decided to make changes to the permit as indicated below. Changes made to the permit are shown in bold and deleted permit language is shown with a line through it. Any permit changes affecting the permit's Table of Contents and formatting changes are also made without replication herein.

1. Conditions D.1.8 and D.1.10 are revised to document compliance with the VOC input usage limit for the Class C, Class A - Line 1, and Class A - Line 2 product lines:

#### Compliance Determination Requirements

##### D.1.8 Volatile Organic Compounds (VOC) [326 IAC 8-1-2][326 IAC 8-1-4]

- (a) Compliance with the VOC usage and emission limitations contained in Conditions D.1.1, D.1.2 and D.1.3 shall be determined pursuant to 326 IAC 8-1-4(a)(3) and 326 IAC 8-1-2(a) by preparing or obtaining from the manufacturer the copies of the "as supplied" and "as applied" VOC data sheets. IDEM, OAQ, reserves the authority to determine compliance using Method 24 in conjunction with the analytical procedures specified in 326 IAC 8-1-4.

**Compliance with the VOC usage limitations contained in condition D.1.1 shall be based on the total volatile organic compound used for the previous month, minus the VOC in coating or cleanup solvents shipped out to be recycled, and adding it to previous 11 months total VOC usage, minus the VOC in coating or cleanup solvents shipped out to be recycled, so as to arrive at VOC emissions for the most recent twelve (12) consecutive month period.**

- (1) For the limit in condition D.1.1, the VOC emissions for a month can be arrived at using the following equation:

$$\text{VOC emitted} = \text{SCL} - \text{SR}$$

Where

SCL = The total amount of VOC, in tons, delivered to the coating applicators, including coatings, dilution solvents, and cleaning solvents, on the Spray Coating Line; and

SR = The total amount of VOC, in tons, shipped out to be recycled, including coatings, dilution solvents, and cleaning solvents, from the Spray Coating Line.

- (b) The Permittee shall determine the VOC content of the coating material and/or clean up solvents in a container shipped out to be recycled by one of the following:
- (1) The VOC content of cleanup solvent in a container shipped out to be recycled may be determined by the
- (A) As applied VOC data sheet for the solvent, if the container consists of only one (1) cleanup solvent, or
- (B) The weighted average of the as applied VOC data sheets for all the solvents in container, if the weight of each solvent in container is known.
- (2) The VOC content of the combined coating material and/or cleanup solvents in a container shipped out to be recycled shall be determined pursuant to 326 IAC 8-1-4(a)(3) and 326 IAC 8-1-2(a) by EPA Reference Method 24 and the sampling procedures in 326 IAC 8-1-4 or other methods as approved by IDEM, OAQ. The sampling methods must be conducted after the final addition to the container. Testing shall be conducted after the final addition to the container. Testing shall be conducted in accordance with Section C-Performance Testing, except for notifying IDEM of the test in paragraph (a), all of paragraph (b), and all of paragraph (c).

#### Record Keeping and Reporting Requirements [326 IAC 2-8-4(3)] [326 IAC 2-8-16]

##### D.1.10 Record Keeping Requirements

- (a) To document compliance with Conditions D.1.1 through D.1.4, the Permittee shall maintain records in accordance with (1) through (§ 10) below. Records maintained for (1) through (§ 10) shall be taken monthly, except where noted, and shall be complete and sufficient to establish compliance with the VOC usage limits and emission limits established in Conditions D.1.1, D.1.3 and D.1.4, and the HAP usage limits established in Condition D.1.5. Records taken to demonstrate compliance with Conditions D.1.1 and D.1.5 shall be available to IDEM, OAQ, within 30 days of the end of each compliance period
- (1) The VOC and HAP content of each coating material and solvent used.
- (2) The amount of coating material and solvent less water used on a monthly basis for the combined Class C, Class A – Line 1, and Class A – Line 2 production operations.
- (A) Records shall include purchase orders, invoices, and material safety data sheets (MSDS) necessary to verify the type and amount used.

- (B) Solvent usage records shall differentiate between those added to coatings and those used as cleanup solvents. Records of used solvent sent off site as waste shall be maintained when such is included in a demonstration of compliance with D.1.1 through D.1.5.
- (3) Method of application for all wood furniture coatings used;
- (4) Daily VOC emitted at each of facilities CSA-1, CFF, CUA, A1SA, A1FF, A2SA and A2FF, when coating metal parts and a log of the dates of emissions;
- (5) Monthly total combined VOC usage for Class C, Class A - Line 1, and Class A - Line 2 production operations;
- (6) Monthly individual and total HAP usage at Class C, Class A - Line 1, and Class A - Line 2 production combined;
- (7) The weight of the total VOCs emitted from the three (3) combined product lines, for each compliance period. This shall exclude the weight of VOCs emitted due to wood furniture/cabinet coatings regulated at Condition D.1.4; and
- (8) The weight of individual and total HAPs emitted from Class C, Class A - Line 1, and Class A - Line 2 production combined, for each compliance period.
- (9) The amount of VOC in coating materials and cleanup solvents shipped out to be recycled each month.**
  - (A) Records shall include weight of coating material or cleaning solvent in each container, VOC content test results, and "as supplied" sheets so necessary to verify the type and amount recycled.**
  - (B) Cleaning solvent recycling records shall differentiate between those containers whose contents are just cleanup solvents and those containers with coating materials and cleanup solvents or various cleanup solvents of unknown individual amounts.**
- (10) The VOC usage, minus the VOC in coating or cleanup solvents shipped out to be recycled, for the three (3) combined product lines, for each compliance period.**

2. Condition D.1.1 is revised to address the nonapplicability of nonattainment new source review and descriptive changes are also made as follows:

#### **Emission Limitations and Standards [326 IAC 2-8-4(1)]**

##### **D.1.1 Volatile Organic Compounds (VOC) [326 IAC 2-8-4][326 IAC 2-2][326 IAC 2-1.1-5]**

The total combined VOC input usage to the Class C, Class A - Line 1, and Class A - Line 2 product lines, including but not limited to the usage of sealants, bonding materials, adhesives, caulks, wood stains, paints and VOC solvents, minus used VOC ~~solvent~~ **in coating or cleanup solvents** shipped off site, shall be limited to 99.5 tons per twelve (12) consecutive month period with compliance demonstrated at the end of each month. This usage limit is equivalent to 99.5 tons of VOC emitted per 12 consecutive month period.

Compliance with this limitation, including the potential to emit for insignificant activities, shall limit the source-wide potential to emit of VOC to less than 100 tons per year and make the requirements of 326 IAC 2-7 (Part 70) not applicable to the source. Compliance with this condition shall also make the requirements of 326 IAC 2-2 **and nonattainment new source review** not applicable to the source.

3. The source does not use any adhesive and paint/primer when applied to plastic substrates with VOC content greater than 3.33 lbs/gallon and 5.19 lbs/gallon, respectively. Therefore, the VOC content limits in Condition D.1.2 are revised as follows:

D.1.2 Volatile Organic Compounds (VOC) [326 IAC 8-1 -6]

Pursuant to the BACT determination under 326 IAC 8-1-6 (New Facilities, General Reduction Requirements), operation of facilities CSA-1, CFF, A1SA and A1FF without the use of add-on controls and with the following work practices will satisfy the BACT requirements:

- (a) When applying adhesives to plastic substrates, no coating shall be used with a VOC content of greater than ~~4.50~~ **3.33** pounds of VOC per gallon of coating as applied.
- (b) When applying paints or primer coatings to plastic substrates, no coating shall be used with a VOC content of greater than ~~6.42~~ **5.19** pounds of VOC per gallon of coating as applied.

Pages 8 and 11 of 16 of Technical Support Document are revised to include the above revised VOC content limits. The changes are made to the Technical Support Document with this addendum. However IDEM prefers that the Technical Support Document reflect the permit that was on public notice. Changes to the Technical Support Document that occur after the public notice are documented in this Addendum to the Technical Support Document. This accomplishes the desired result of ensuring that all comments and responses are documented and part of the records regarding this permit decision.

IDEM agrees that Page 8 of TSD should have read as follows:

**2. Eliminate technically infeasible control options**

Based on the information summarized above, only the use of low VOC Coatings and/or best management practices (BMP), without using any control device, were the determined methods of achieving BACT. In reviewing the VOC coating content of the subject materials used at the FWI facility, it was determined that the coatings used by FWI meet or have a lower VOC content than those used at other BACT sources. This comparison was done based on the material classification (adhesive, paint/primer or solvent cleaner). Adhesives used at FWI have VOC coating content (**< 3.33 lb/gal**) which is lower than the VOC coating content of adhesives used at Delta Plastics (4.5 lb/gal). Paint/Primer used at FWI have VOC coating content (**< 5.19 lb/gal**) which is lower than the VOC coating content of paint/primer used at Cooper Tire & Rubber (6.12 lb/gal). Also as a condition of its operating permit, FWI already utilizes BMP for the reduction of solvent emissions and has a source wide enforceable emissions limitation. Therefore, further investigation into material substitution was determined to be unnecessary.

Page 11 of 16 should be revised as follows:

Based on the cost analysis, regenerative/recuperative oxidation and catalytic oxidation, with an annual cost of greater than \$10,100 per ton of VOC removed are economically infeasible. Moreover no similar sources or sources with similar operations were identified as using any type of add-on control device. Therefore, no control with the use of low VOC coatings and the following methods currently used by FWI to minimize VOC emissions shall be the best feasible BACT:

1. When applying adhesives to plastic substrates, no coating shall be used with a VOC content of greater than ~~4.50~~ **3.33** pounds of VOC per gallon of coating as applied.
2. When applying paints or primer coatings to plastic substrates, no coating shall be used with a VOC content of greater than ~~6.42~~ **5.19** pounds of VOC per gallon of coating as applied.

4. Page 8 of 16 of Technical Support Document is revised to include the BACT limits for the production lines at the source in the table identifying the approved methods of achieving BACT. The changes are made to the Technical Support Document with this addendum.

IDEM agrees that TSD should have read as follows:

**2. Eliminate technically infeasible control options**

The following table identifies the approved methods of achieving BACT:

<b>Data Search Criteria</b>	<b>Facility Name</b>	<b>Process or Facility</b>	<b>BACT Determination</b>	<b>Basis</b>
SCC 4-02-007	Delta Plastics	Spray Application of Contact Adhesives - Plastic	Low VOC Coating [4.5 Lb VOC/Gal]	BACT-Other
Assembly Operations	Cooper Tire & Rubber	Adhesive Usage, Facility - Spray - Rubber & Plastic	Low VOC Coating [7.13 Lb VOC/Gal]	BACT-PSD
SCC 4-02-007	Holtz Rubber Company, Inc.	Brush Application of Adhesives - Rubber & Plastic	Process Limit [Adhesive VOC Content <7.0 Lb VOC/gal]	LAER
Assembly Operations	Cooper Tire & Rubber	Primer Usage, Facility - Spray - Rubber & Plastic	Low VOC Coating [6.12 Lb VOC/Gal]	BACT-PSD
Assembly Operations	General Motors	Purge, Cleanup Solvents, Wipedown Solvents	Overall Emission Limitation [215.2 TPY VOC, 112 TPY Acetone, 20 TPY 7440-62-2] w/Process Capture	BACT-PSD
Assembly Operations	General Motors	Purge, Cleanup Solvents, Wipedown Solvents	Overall Emission Limitation w/Process Capture	BACT-PSD
<b>Assembly Operations</b>	<b>Four Winds International</b>	<b>Adhesive usage - Plastic</b>	<b>Low VOC Coating [3.33 Lb VOC/Gal]</b>	<b>BACT-326 IAC 8-1-6</b>
<b>Assembly Operations</b>	<b>Four Winds International</b>	<b>Paint or primer coating usage - Plastic</b>	<b>Low VOC Coating [5.19 Lb VOC/Gal]</b>	<b>BACT-326 IAC 8-1-6</b>

5. Pages 10 and 11 of 16 of Technical Support Document are revised to change to basis of cost effectiveness calculations from an equipment life of 7 years to 10 years. Also the calculations are based on the VOC input usage limit of 99.5 tons per twelve (12) consecutive month period. The changes are made to the Technical Support Document with this addendum.

**4. Evaluate the most effective controls and document results**

FWI provided IDEM with a thorough economic analysis of the technically feasible control options. The analysis estimated the cost of the VOC control equipment, including the initial capital cost of the various components intrinsic to the complete system, and the estimated annual operating costs. The estimated total capital cost was calculated with the use of a factoring method of determining direct and indirect installation costs. The basic equipment costs were obtained from vendor's quoted prices. Annualized costs were developed based on information from the vendors and a literature review. The analysis assumed an interest rate of 5% and an equipment life of 7-10 years. The basis of cost effectiveness, used to evaluate the control options, is the ratio of the annualized cost to the amount of VOC (tons) removed per year. Note that the cost effectiveness of each option only accounts for the portion of VOC removed by the add-on controls. A summary of the cost figures determined in the analysis is provided in the table below:

Process	Total Capital Cost (\$)	Total Operating Cost (\$/yr)	Total Annualized Costs (\$/yr)	VOC removal from add-on control (tpy)	Cost Effectiveness (\$/ton VOC removed)
Class C-Building 650 Recuperative & Regenerative Oxidation	1,026,944	179,509	805,703 <b>448,555</b>	74.6 <b>31.7</b>	40,804 <b>14,171</b>
Class C-Building 650 Catalytic Oxidation	899,572	383,649	788,433 <b>436,803</b>	74.6 <b>31.7</b>	40,573 <b>13,799</b>
Class A-Building 654 & 656 Recuperative & Regenerative Oxidation	1,085,655	376,328	820,714 <b>459,627</b>	85.2 <b>44.0</b>	9,628 <b>10,456</b>
Class A-Building 654 & 656 Catalytic Oxidation	958,283	386,165	803,444 <b>447,875</b>	85.2 <b>44.0</b>	9,425 <b>10,189</b>

Based on the cost analysis, regenerative/recuperative oxidation and catalytic oxidation, with an annual cost of greater than \$9,400 **10,100** per ton of VOC removed are economically infeasible.

- Condition D.1.9 is moved from Compliance Monitoring Requirements section to the Emission Limitations and Standards section as Condition D.1.7 and changes are made to all the affected condition numbers. The permit is revised as follows:

**D.1.7 Particulate [326 IAC 6-3-2(d)]**

Any change or modification which may increase the coating application rate to greater than five (5) gallons per day from any of surface coating manufacturing processes CSA-1, CFF, CUA, A1SA, A1FF, A2SA, or A2FF shall require a control device, pursuant to 326 IAC 6-3-2(d). Compliance with this limitation shall include only surface coatings that emit or have the potential to emit particulate and does not include surface coatings applied using dip, roll, flow, or brush coatings; applications of aerosol coating products to repair minor surface damage and imperfections; or spray applied glues and adhesives at this source which have been determined by IDEM, OAQ not to have the potential to emit particulate.

**Compliance Monitoring Requirements [326 IAC 2-8-4] [326 IAC 2-8-5(a)(1)]**

**D.1.9 Particulate [326 IAC 6-3-2(d)]**

Any change or modification which may increase the coating application rate to greater than five (5) gallons per day from any of surface coating manufacturing processes CSA-1, CFF, CUA, A1SA, A1FF, A2SA, or A2FF shall require a control device, pursuant to 326 IAC 6-3-2(d). Compliance with this limitation shall include only surface coatings that emit or have the potential to emit particulate and does not include surface coatings applied using dip, roll, flow, or brush coatings; applications of aerosol coating products to repair minor surface damage and imperfections; or spray applied glues and adhesives at this source which have been determined by IDEM, OAQ not to have the potential to emit particulate.

Four Winds International, Inc.  
Summary of Economic and Environmental Impact Evaluations for Selected Control Devices

VENDOR	<u>MUNTERS - Building 650</u>		<u>MUNTERS - Buildings 654 &amp; 656</u>	
CAPITAL COSTS	Recuperative & Regenerative Oxidation	Catalytic Oxidation	Recuperative & Regenerative Oxidation	Catalytic Oxidation
1 Purchased Equipment				
a. Basic Equipment & Auxiliaries (A)	\$ 425,000	\$ 350,000	\$ 425,000	\$ 350,000
b. Instrumentation & Controls (In Proposal)	\$ -	\$ -	\$ -	\$ -
c. Taxes (0.06 A)	\$ 25,500	\$ 21,000	\$ 25,500	\$ 21,000
d. Freight (0.05 A)	\$ 21,250	\$ 17,500	\$ 21,250	\$ 17,500
<b><u>Total Purchased Equipment Cost (B)</u></b>	<b><u>\$ 471,750</u></b>	<b><u>\$ 388,500</u></b>	<b><u>\$ 471,750</u></b>	<b><u>\$ 388,500</u></b>
2 Direct Installation Costs				
a. Foundations & Supports (0.08 B)	\$ 37,740	\$ 31,080	\$ 37,740	\$ 31,080
b. Erection & Handling (0.14 B)	\$ 66,045	\$ 54,390	\$ 66,045	\$ 54,390
c. Electrical (0.04 B)	\$ 18,870	\$ 15,540	\$ 18,870	\$ 15,540
d. Piping in Excess of Capture System (0.02 B)	\$ 9,435	\$ 7,770	\$ 9,435	\$ 7,770
e. Insulation (0.01 B)	\$ 4,718	\$ 3,885	\$ 4,718	\$ 3,885
f. Painting (In Proposal)	\$ -	\$ -	\$ -	\$ -
g. Site Preparation - Exhaust Stack - Estimated	\$ 7,500	\$ 7,500	\$ 7,500	\$ 7,500
h. Building (Capture System Below)	\$ 172,667	\$ 172,667	\$ 231,378	\$ 231,378
<b>1 Ductwork to Convey VOC (\$22.50/Ft Installed) (\$5.00/Ft Premium for Height) 1,325' Building 650 1,925' Buildings 654 &amp; 656</b>	<b>\$ 29,813</b>	<b>\$ 29,813</b>	<b>\$ 43,313</b>	<b>\$ 43,313</b>
<b>2 Explosion Proof Hose Reels (\$3,140.71/Reel) (Includes Reel/Motor/Sales Tax) 36 Stations Building 650 47 Stations Buildings 654 &amp; 656</b>	<b>\$ 113,065</b>	<b>\$ 113,065</b>	<b>\$ 147,613</b>	<b>\$ 147,613</b>
<b>3 Chemical Resistant Hose - 50' Hose/Reel (\$113.21/20 Feet)</b>	<b>\$ 10,189</b>	<b>\$ 10,189</b>	<b>\$ 13,302</b>	<b>\$ 13,302</b>
<b>4 Electrical - Maint. Estimated - (\$250/Reel)</b>	<b>\$ 9,000</b>	<b>\$ 9,000</b>	<b>\$ 11,750</b>	<b>\$ 11,750</b>
<b>5 Sprinkler of Ducting (\$8.00/Ft Installed)</b>	<b>\$ 10,600</b>	<b>\$ 10,600</b>	<b>\$ 15,400</b>	<b>\$ 15,400</b>
i. Shut Down Cost (Loss of Production Estimated) For Collection Devices - Two (2) Weeks	\$ 125,000	\$ 125,000	\$ 125,000	\$ 125,000
<b><u>Total Direct Installation Costs</u></b>	<b><u>\$ 441,974</u></b>	<b><u>\$ 417,832</u></b>	<b><u>\$ 500,685</u></b>	<b><u>\$ 476,543</u></b>
<b><u>Total Direct Costs (TDC) (Purchased + Installation)</u></b>	<b><u>\$ 913,724</u></b>	<b><u>\$ 806,332</u></b>	<b><u>\$ 972,435</u></b>	<b><u>\$ 865,043</u></b>

Four Winds International, Inc.  
Summary of Economic and Environmental Impact Evaluations for Selected Control Devices

Indirect Costs

3 Engineering & Supervision (In Proposal)	\$	-	\$	-	\$	-	\$	-
4 Construction & Field Expenses (0.10 B)	\$	47,175	\$	38,850	\$	47,175	\$	38,850
5 Construction Fees (0.10 B)	\$	47,175	\$	38,850	\$	47,175	\$	38,850
6 Start Up Costs Above Proposal (In Proposal)	\$	-	\$	-	\$	-	\$	-
7 Performance Test (0.01 B)	\$	4,718	\$	3,885	\$	4,718	\$	3,885
8 Contingency (0.03 B)	\$	14,153	\$	11,655	\$	14,153	\$	11,655
<b><u>Total Indirect Costs</u></b>	<b>\$</b>	<b><u>113,220</u></b>	<b>\$</b>	<b><u>93,240</u></b>	<b>\$</b>	<b><u>113,220</u></b>	<b>\$</b>	<b><u>93,240</u></b>
<b><u>Total Installed Capital Cost</u></b>	<b>\$</b>	<b><u>1,026,944</u></b>	<b>\$</b>	<b><u>899,572</u></b>	<b>\$</b>	<b><u>1,085,655</u></b>	<b>\$</b>	<b><u>958,283</u></b>

**ANNUALIZED COSTS**

Direct Operating Costs

1 Operating Labor	\$	39,000	\$	39,000	\$	39,000	\$	39,000
a. <b>Number of Employees (Portion of Employee)</b>		<b>0.50</b>		<b>0.50</b>		<b>0.50</b>		<b>0.50</b>
b. <b>Cost/Employee/Hour w/Benefits</b>	\$	<b>20.00</b>	\$	<b>20.00</b>	\$	<b>20.00</b>	\$	<b>20.00</b>
c. <b>Operating Hours/Year</b>		<b>3,900.00</b>		<b>3,900.00</b>		<b>3,900.00</b>		<b>3,900.00</b>
2 Supervisory Labor (0.15 Operator Labor)	\$	5,850	\$	5,850	\$	5,850	\$	5,850
3 Maintenance Labor & Materials (2x Operator Labor)	\$	78,000	\$	78,000	\$	78,000	\$	78,000
4 Replacement Parts (5% of Basic Capital Costs)	\$	23,588	\$	19,425	\$	23,588	\$	19,425
5 Utilities								
a. Natural Gas - Vendor Quoted (\$/Hr x 3,900 hr)	\$	19,851	\$	19,851	\$	19,851	\$	19,851
b. Electricity - Control Device - Vendor Quoted	\$	9,555	\$	9,555	\$	9,555	\$	9,555
Electricity - Capture Devices - Hose Reels	\$	3,666	\$	3,666	\$	4,786	\$	4,786
<b>HP Requirements</b>		<b>36</b>		<b>36</b>		<b>47</b>		<b>47</b>
<b>KW Requirements/Hr</b>		<b>27</b>		<b>27</b>		<b>35</b>		<b>35</b>
<b>KWH/YR (50% Operating Time)</b>		<b>52,369</b>		<b>52,369</b>		<b>68,371</b>		<b>68,371</b>
<b>Cost/KWH</b>	\$	0.0700	\$	0.0700	\$	0.0700	\$	0.0700
c. Water	\$	-	\$	-	\$	-	\$	-
d. Air	\$	-	\$	-	\$	-	\$	-
e. Catalyst Replacement	\$	-	\$	14,000	\$	-	\$	14,000
(20% Basic Capital Cost/5 Year)								
<b><u>Total Direct Operating Costs</u></b>	<b>\$</b>	<b><u>179,509</u></b>	<b>\$</b>	<b><u>189,347</u></b>	<b>\$</b>	<b><u>180,629</u></b>	<b>\$</b>	<b><u>190,467</u></b>

Indirect Operating Costs

6 Overhead (80% of Oper., Maintenance, & Sup. Labor)	\$	98,280	\$	98,280	\$	98,280	\$	98,280
7 Property Tax (0.01 Capital Cost)	\$	10,269	\$	8,996	\$	10,857	\$	9,583
8 Insurance (0.01 Capital Cost)	\$	10,269	\$	8,996	\$	10,857	\$	9,583
9 Administrative Costs (0.02 Capital Cost)	\$	20,539	\$	17,991	\$	21,713	\$	19,166
10 Capital Cost Recovery Factor (5% INT, 10 Years)	\$	132,989	\$	116,495	\$	140,592	\$	124,098
=		0.1295						

Four Winds International, Inc.

Summary of Economic and Environmental Impact Evaluations for Selected Control Devices

<b><u>Total Indirect Operating Costs</u></b>	<b><u>\$ 272,347</u></b>	<b><u>\$ 250,757</u></b>	<b><u>\$ 282,299</u></b>	<b><u>\$ 260,709</u></b>
Heat Recovery Credit	\$ (3,301)	\$ (3,301)	\$ (3,301)	\$ (3,301)
a. <i>Heat Input - Annually - MMBTU/Yr</i>	\$ 2,145	\$ 2,145	\$ 2,145	\$ 2,145
b. <i>Unit Heat Efficiency - Heat Output of Control Device</i>	90%	90%	90%	90%
c. <i>Heat Available for Recovery</i>	1,930.50	1,930.50	1,930.50	1,930.50
d. <i>Heat Exchanger Efficiency for Heat Recovery</i>	45%	45%	45%	45%
e. <i>Percent Heat Recovery/Year (6 Months)</i>	50%	50%	50%	50%
f. <i>Heat Value Recovered - MMBTU/Yr</i>	434.36	434.36	434.36	434.36
g. <i>Cost/MMBTU - Provided by Facility</i>	\$ 7.6000	\$ 7.6000	\$ 7.6000	\$ 7.6000
<b><u>Total Annualized Costs</u></b>	<b><u>\$ 448,555</u></b>	<b><u>\$ 436,803</u></b>	<b><u>\$ 459,627</u></b>	<b><u>\$ 447,875</u></b>
Uncontrolled VOC Emissions (PTE - Requested Limit)	41.65	41.65	57.84	57.84
Average Capture Efficiency of Collection Equipment	80%	80%	80%	80%
Collected VOC Emissions to Control Device	33.32	33.32	46.27	46.27
Control Efficiency	95%	95%	95%	95%
TPY VOC Removed at Control Efficiency	31.7	31.7	44.0	44.0
Average Overall Capture & Control Efficiency	76.0%	76.0%	76.0%	76.0%
<b><u>Cost Effectiveness, \$/Ton VOC Removed</u></b>	<b><u>\$ 14,171</u></b>	<b><u>\$ 13,799</u></b>	<b><u>\$ 10,456</u></b>	<b><u>\$ 10,189</u></b>

**Environmental Impacts**

1 Additional Emissions - Tons per Year (TPY)

Estimated Fuel Consumption - MMCF Burned	2.15	2.15	2.15	2.15
Estimated CO Emissions - TPY	0.02	0.02	0.02	0.02
Estimated NOX Emissions - TPY	0.11	0.11	0.11	0.11
Estimate PT/PM10 - TPY	0.00	0.00	0.00	0.00
Uncontrolled Emissions	6.66	6.66	9.25	9.25
Emissions Before Controls	41.65	41.65	57.84	57.84

2 **Energy Requirements**

Natural Gas - MMCF/YR	2.15	2.15	2.15	2.15
Electricity - KWH/YR	188,869	188,869	204,871	204,871

Four Winds International, Inc.  
Summary of Economic and Environmental Impact Evaluations for Selected Control Devices

VENDOR	<u>MUNTERS - Building 650</u>		<u>MUNTERS - Buildings 654 &amp; 656</u>		
	Recuperative & Regenerative Oxidation	Catalytic Oxidation	Recuperative & Regenerative Oxidation	Catalytic Oxidation	
<b>CAPITAL COSTS</b>					
1 Purchased Equipment					
a.	Basic Equipment & Auxiliaries (A)	\$ 425,000	\$ 350,000	\$ 425,000	\$ 350,000
b.	Instrumentation & Controls (In Proposal)	\$ -	\$ -	\$ -	\$ -
c.	Taxes (0.06 A)	\$ 25,500	\$ 21,000	\$ 25,500	\$ 21,000
d.	Freight (0.05 A)	\$ 21,250	\$ 17,500	\$ 21,250	\$ 17,500
<b><u>Total Purchased Equipment Cost (B)</u></b>		<b><u>\$ 471,750</u></b>	<b><u>\$ 388,500</u></b>	<b><u>\$ 471,750</u></b>	<b><u>\$ 388,500</u></b>
2 Direct Installation Costs					
a.	Foundations & Supports (0.08 B)	\$ 37,740	\$ 31,080	\$ 37,740	\$ 31,080
b.	Erection & Handling (0.14 B)	\$ 66,045	\$ 54,390	\$ 66,045	\$ 54,390
c.	Electrical (0.04 B)	\$ 18,870	\$ 15,540	\$ 18,870	\$ 15,540
d.	Piping in Excess of Capture System (0.02 B)	\$ 9,435	\$ 7,770	\$ 9,435	\$ 7,770
e.	Insulation (0.01 B)	\$ 4,718	\$ 3,885	\$ 4,718	\$ 3,885
f.	Painting (In Proposal)	\$ -	\$ -	\$ -	\$ -
g.	Site Preparation - Exhaust Stack - Estimated	\$ 7,500	\$ 7,500	\$ 7,500	\$ 7,500
h.	Building (Capture System Below)	\$ 172,667	\$ 172,667	\$ 231,378	\$ 231,378
	<b>1 Ductwork to Convey VOC (\$22.50/Ft Installed)</b>	<b>\$ 29,813</b>	<b>\$ 29,813</b>	<b>\$ 43,313</b>	<b>\$ 43,313</b>
	<b>((\$5.00/Ft Premium for Height)</b>				
	<b>1,325' Building 650</b>				
	<b>1,925' Buildings 654 &amp; 656</b>				
	<b>2 Explosion Proof Hose Reels (\$3,140.71/Reel)</b>	<b>\$ 113,065</b>	<b>\$ 113,065</b>	<b>\$ 147,613</b>	<b>\$ 147,613</b>
	<b>(Includes Reel/Motor/Sales Tax)</b>				
	<b>36 Stations Building 650</b>				
	<b>47 Stations Buildings 654 &amp; 656</b>				
	<b>3 Chemical Resistant Hose - 50' Hose/Reel</b>	<b>\$ 10,189</b>	<b>\$ 10,189</b>	<b>\$ 13,302</b>	<b>\$ 13,302</b>
	<b>(\$113.21/20 Feet)</b>				
	<b>4 Electrical - Maint. Estimated - (\$250/Reel)</b>	<b>\$ 9,000</b>	<b>\$ 9,000</b>	<b>\$ 11,750</b>	<b>\$ 11,750</b>
	<b>5 Sprinkler of Ducting (\$8.00/Ft Installed)</b>	<b>\$ 10,600</b>	<b>\$ 10,600</b>	<b>\$ 15,400</b>	<b>\$ 15,400</b>
i.	Shut Down Cost (Loss of Production Estimated)	\$ 125,000	\$ 125,000	\$ 125,000	\$ 125,000
	For Collection Devices - Two (2) Weeks				
<b><u>Total Direct Installation Costs</u></b>		<b><u>\$ 441,974</u></b>	<b><u>\$ 417,832</u></b>	<b><u>\$ 500,685</u></b>	<b><u>\$ 476,543</u></b>
<b><u>Total Direct Costs (TDC) (Purchased + Installation)</u></b>		<b><u>\$ 913,724</u></b>	<b><u>\$ 806,332</u></b>	<b><u>\$ 972,435</u></b>	<b><u>\$ 865,043</u></b>

Four Winds International, Inc.  
Summary of Economic and Environmental Impact Evaluations for Selected Control Devices

Indirect Costs

3 Engineering & Supervision (In Proposal)	\$	-	\$	-	\$	-	\$	-
4 Construction & Field Expenses (0.10 B)	\$	47,175	\$	38,850	\$	47,175	\$	38,850
5 Construction Fees (0.10 B)	\$	47,175	\$	38,850	\$	47,175	\$	38,850
6 Start Up Costs Above Proposal (In Proposal)	\$	-	\$	-	\$	-	\$	-
7 Performance Test (0.01 B)	\$	4,718	\$	3,885	\$	4,718	\$	3,885
8 Contingency (0.03 B)	\$	14,153	\$	11,655	\$	14,153	\$	11,655
<b><u>Total Indirect Costs</u></b>	<b>\$</b>	<b>113,220</b>	<b>\$</b>	<b>93,240</b>	<b>\$</b>	<b>113,220</b>	<b>\$</b>	<b>93,240</b>
<b><u>Total Installed Capital Cost</u></b>	<b>\$</b>	<b>1,026,944</b>	<b>\$</b>	<b>899,572</b>	<b>\$</b>	<b>1,085,655</b>	<b>\$</b>	<b>958,283</b>

**ANNUALIZED COSTS**

Direct Operating Costs

1 Operating Labor	\$	87,600	\$	87,600	\$	87,600	\$	87,600
<i>a. Number of Employees (Portion of Employee)</i>		<i>0.50</i>		<i>0.50</i>		<i>0.50</i>		<i>0.50</i>
<i>b. Cost/Employee/Hour w/Benefits</i>	\$	<i>20.00</i>	\$	<i>20.00</i>	\$	<i>20.00</i>	\$	<i>20.00</i>
<i>c. Operating Hours/Year</i>		<i>8,760.00</i>		<i>8,760.00</i>		<i>8,760.00</i>		<i>8,760.00</i>
2 Supervisory Labor (0.15 Operator Labor)	\$	13,140	\$	13,140	\$	13,140	\$	13,140
3 Maintenance Labor & Materials (2x Operator Labor)	\$	175,200	\$	175,200	\$	175,200	\$	175,200
4 Replacement Parts (5% of Basic Capital Costs)	\$	23,588	\$	19,425	\$	23,588	\$	19,425
5 Utilities								
a. Natural Gas - Vendor Quoted (\$/Hr x 8,760 hr)	\$	44,588	\$	44,588	\$	44,588	\$	44,588
b. Electricity - Control Device - Vendor Quoted	\$	21,462	\$	21,462	\$	21,462	\$	21,462
Electricity - Capture Devices - Hose Reels	\$	8,234	\$	8,234	\$	10,750	\$	10,750
<i>HP Requirements</i>		<i>36</i>		<i>36</i>		<i>47</i>		<i>47</i>
<i>KW Requirements/Hr</i>		<i>27</i>		<i>27</i>		<i>35</i>		<i>35</i>
<i>KWH/YR (50% Operating Time)</i>		<i>117,629</i>		<i>117,629</i>		<i>153,572</i>		<i>153,572</i>
<i>Cost/KWH</i>	\$	0.0700	\$	0.0700	\$	0.0700	\$	0.0700
c. Water	\$	-	\$	-	\$	-	\$	-
d. Air	\$	-	\$	-	\$	-	\$	-
e. Catalyst Replacement (20% Basic Capital Cost/5 Year)	\$	-	\$	14,000	\$	-	\$	14,000
<b><u>Total Direct Operating Costs</u></b>	<b>\$</b>	<b>373,812</b>	<b>\$</b>	<b>383,649</b>	<b>\$</b>	<b>376,328</b>	<b>\$</b>	<b>386,165</b>

Indirect Operating Costs

6 Overhead (80% of Oper., Maintenance, & Sup. Labor)	\$	220,752	\$	220,752	\$	220,752	\$	220,752
7 Property Tax (0.01 Capital Cost)	\$	10,269	\$	8,996	\$	10,857	\$	9,583
8 Insurance (0.01 Capital Cost)	\$	10,269	\$	8,996	\$	10,857	\$	9,583
9 Administrative Costs (0.02 Capital Cost)	\$	20,539	\$	17,991	\$	21,713	\$	19,166
10 Capital Cost Recovery Factor (5% INT, 10 Years)	\$	132,989	\$	116,495	\$	140,592	\$	124,098

Four Winds International, Inc.  
Summary of Economic and Environmental Impact Evaluations for Selected Control Devices

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<b><u>Total Indirect Operating Costs</u></b>	<b>\$ 394,819</b>	<b>\$ 373,229</b>	<b>\$ 404,771</b>	<b>\$ 383,181</b>
Heat Recovery Credit	\$ (7,415)	\$ (7,415)	\$ (7,415)	\$ (7,415)
a. <b>Heat Input - Annually - MMBTU/Yr</b>	<b>\$ 4,818</b>	<b>\$ 4,818</b>	<b>\$ 4,818</b>	<b>\$ 4,818</b>
b. <b>Unit Heat Efficiency - Heat Output of Control Device</b>	<b>90%</b>	<b>90%</b>	<b>90%</b>	<b>90%</b>
c. <b>Heat Available for Recovery</b>	<b>4,336.20</b>	<b>4,336.20</b>	<b>4,336.20</b>	<b>4,336.20</b>
d. <b>Heat Exchanger Efficiency for Heat Recovery</b>	<b>45%</b>	<b>45%</b>	<b>45%</b>	<b>45%</b>
e. <b>Percent Heat Recovery/Year (6 Months)</b>	<b>50%</b>	<b>50%</b>	<b>50%</b>	<b>50%</b>
f. <b>Heat Value Recovered - MMBTU/Yr</b>	<b>975.65</b>	<b>975.65</b>	<b>975.65</b>	<b>975.65</b>
g. <b>Cost/MMBTU - Provided by Facility</b>	<b>\$ 7.6000</b>	<b>\$ 7.6000</b>	<b>\$ 7.6000</b>	<b>\$ 7.6000</b>
<b><u>Total Annualized Costs</u></b>	<b>\$ 761,216</b>	<b>\$ 749,464</b>	<b>\$ 773,684</b>	<b>\$ 761,931</b>
Uncontrolled VOC Emissions (PTE - Requested Limit)	98.12	98.12	112.16	112.16
Average Capture Efficiency of Collection Equipment	80%	80%	80%	80%
Collected VOC Emissions to Control Device	78.50	78.50	89.73	89.73
Control Efficiency	95%	95%	95%	95%
TPY VOC Removed at Control Efficiency	74.6	74.6	85.2	85.2
Average Overall Capture & Control Efficiency	76.0%	76.0%	76.0%	76.0%
<b><u>Cost Effectiveness, \$/Ton VOC Removed</u></b>	<b>\$ 10,208</b>	<b>\$ 10,050</b>	<b>\$ 9,076</b>	<b>\$ 8,938</b>

**Environmental Impacts**

1 Additional Emissions - Tons per Year (TPY)

Estimated Fuel Consumption - MMCF Burned	4.82	4.82	4.82	4.82
Estimated CO Emissions - TPY	0.05	0.05	0.05	0.05
Estimated NOX Emissions - TPY	0.24	0.24	0.24	0.24
Estimate PT/PM10 - TPY	0.01	0.01	0.01	0.01
Uncontrolled Emissions	15.70	15.70	17.95	17.95
Emissions Before Controls	98.12	98.12	112.16	112.16

2 **Energy Requirements**

Natural Gas - MMCF/YR	4.82	4.82	4.82	4.82
Electricity - KWH/YR	424,229	424,229	460,172	460,172