July 3, 2001

Mr. William Banks
Foamex, L.P.
3005 Commercial Road
Fort Wayne, IN 46809

Re: 003-12873-00225
First Significant Source Modification to
Part 70 No.: T 003-7680-00225

Dear Mr. Banks:

Foamex, L.P. was issued a Part 70 operating permit on March 22, 1999 for a stationary plant that manufactures polyurethane foam. A letter requesting changes to this permit was received on January 30, 2001. Pursuant to the provisions of 326 IAC 2-7-12 a significant permit modification to this permit is hereby approved as described in the attached Technical Support Document.

The modification consists of the addition of a new thermal reticulation unit and a decrease in the limited throughput for the existing flame lamination unit as described below:

(a) One (1) Thermal Reticulation Unit, identified as TRU-02, with a maximum throughput of 150,000,000 board ft of polyurethane foam per year, and exhausting through seven (7) stacks (52-58); and

(b) Decrease the limited throughput for the existing flame lamination unit (FL-02) from 24,653,313 ft^2 per month to 5,000,000 ft^2 per month.

The following construction conditions are applicable to the proposed project:

General Construction Conditions

1. The data and information supplied with the application shall be considered part of this source modification approval. Prior to any proposed change in construction which may affect the potential to emit (PTE) of the proposed project, the change must be approved by the Office of Air Quality (OAQ).

2. This approval to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.

3. Effective Date of the Permit
Pursuant to IC 13-15-5-3, this approval becomes effective upon its issuance.

4. Pursuant to 326 IAC 2-1.1-9 and 326 IAC 2-7-10.5(i), the Commissioner may revoke this approval if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.

5. All requirements and conditions of this construction approval shall remain in effect unless modified in a manner consistent with procedures established pursuant to 326 IAC 2.

6. Pursuant to 326 IAC 2-7-10.5(l) the emission units constructed under this approval shall not be placed into operation prior to revision of the source's Part 70 Operating Permit to incorporate the required operation conditions.

The proposed operating conditions applicable to these emission units are attached. These proposed operating conditions shall be incorporated into the Part 70 operating permit as an administrative amendment in accordance with 326 IAC 2-7-10.5(l)(1) and 326 IAC 2-7-11.

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 Lisa M. Wasiowich, at (973) 575-2555, ext. 3206, or call (800) 451-6027, press 0 and ask for extension 3-6878.

Sincerely,

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

Attachments
LMW/EVP
cc: File - Allen County
U.S. EPA, Region V
Allen County Health Department
Air Compliance Section Inspector - Jennifer Schick
Compliance Data Section - Karen Nowak
Administrative and Development - Janet Mobley
Technical Support and Modeling - Michelle Boner

PART 70 OPERATING PERMIT
OFFICE OF AIR QUALITY

Foamex, L.P.
3005 Commercial Road
Fort Wayne, Indiana 46809

(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.

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 2-7 and 326 IAC 2-1-3.2 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.: T003-7680-00225	
Issued by: Janet G. McCabe, Assistant Commissioner Office of Air Quality	Issuance Date: March 22, 1999

First Minor Source Modification No.: 003-12178-00225, issued May 10, 2000
First Administrative Amendment No.: AA003-12211-00225, issued May 10, 2000

First Significant Source Modification No.: 003-12873-00225	Pages Affected: 4, 5, 6, 28, 39a - 39d, 44
Issued by: Original Signed by Paul Dubenetzky Paul Dubenetzky, Branch Chief Office of Air Quality	Issuance Date: July 3, 2001

D.4 FACILITY OPERATION CONDITIONS - Two (2) 12.6 MMBtu per hour Boilers

Emission Limitations and Standards [326 IAC 2-7-5(1)]
D.4.1 Particulate Matter Limitation (PM) [326 IAC 6-2-3]
D.4.2 Sulfur Dioxide (SO_2) [326 IAC 7-1.1-1]
D.4.3 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

Compliance Determination Requirements
D.4.4 Testing Requirements [326 IAC 2-7-6(1),(6)]
D.4.5 Sulfur Dioxide Emissions and Sulfur Content

Compliance Monitoring Requirements [326 IAC 2-7-6(1)] [326 IAC 2-7-5(1)]
D.4.6 Visible Emissions Notations

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]
D.4.7 Record Keeping Requirements

D.5 FACILITY OPERATION CONDITIONS - Two (2) Storage Tanks

Emission Limitations and Standards [326 IAC 2-7-5(1)]
D.5.1 Volatile Organic Compounds (VOC) [326 IAC 12] [40 CFR 60.110b, Subpart Kb]

Compliance Determination Requirements
D.5.2 Testing Requirements [326 IAC 2-7-6(1),(6)]

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]
D.5.3 Record Keeping Requirements

D.6 FACILITY OPERATION CONDITIONS - Two (2) Felt Presses

Emission Limitations and Standards [326 IAC 2-7-5(1)]
D.6.1 Volatile Organic Compounds (VOC) [326 IAC 2-1]
D.6.2 Particulate Matter (PM) [326 IAC 6-3-2(c)]

Compliance Determination Requirements
D.6.3 Testing Requirements [326 IAC 2-7-6(1),(6)]

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]
D.6.4 Record Keeping Requirements

D.7 FACILITY OPERATION CONDITIONS - One (1) Thermal Reticulation Unit

Emission Limitations and Standards [326 IAC 2-7-5(1)]
D.7.1 Particulate Matter (PM) [326 IAC 6-3-2(c)]
D.7.2 Volatile Organic Compounds [326 IAC 8-1-6]

Compliance Determination Requirements
D.7.3 Testing Requirements [326 IAC 2-7-6(1),(6)]
Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]
D.7.4 Record Keeping Requirements

Certification
Emergency/Deviation Occurrence Report
Natural Gas Fired Boiler Certification
Quarterly Report
Quarterly Compliance Monitoring Report

SECTION A SOURCE SUMMARY

This permit is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the source contained in conditions A.1 through A.3 is descriptive information and does not constitute enforceable conditions. However, the Permittee should be aware that a physical change or a change in the method of operation that may render this descriptive information obsolete or inaccurate may trigger requirements for the Permittee to obtain additional permits or seek modification of this permit pursuant to 326 IAC 2, or change other applicable requirements presented in the permit application.

A.1 General Information [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

The Permittee owns and operates a stationary polyurethane foam production and foam processing plant.

Responsible Official:	William Banks
Source Address:	3005 Commercial Road, Fort Wayne, Indiana 46809
Mailing Address:	3005 Commercial Road, Fort Wayne, Indiana 46809
SIC Code:	3086
County Location:	Allen
County Status:	Attainment for all criteria pollutants
Source Status:	Part 70 Permit Program Minor Source, under PSD Rules; Major Source, Section 112 of the Clean Air Act

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] [326 IAC 2-7-5(15)]

This stationary source consists of the following emission units and pollution control devices:

(1) one (1) natural gas flame laminator machine (ID No. FL-02), with a maximum capacity of 40,000 square feet per hour, and exhausting through one (1) stack (ID No. 02-002);

(2) one (1) polyurethane foam manufacturing process (ID No. PLC-01), producing a maximum of nine (9) million board feet per day of polyurethane foam, consisting of:
- (a) two (2) mix chambers;
- (b) one (1) periphlex pour line, exhausting through ten (10) stacks (ID Nos. 1-5, 9-12, and 19);
- (c) one (1) ester pour line, exhausting through six (6) stacks (ID Nos. 21-26);
- (d) three (3) foam bun storage areas (Carpet Underlay Mezzanine Bun Grabber Area, South Finishing Mezzanine Bun Grabber Area, and the Loaf Stacker Area), exhausting through fourteen (14) stacks (ID Nos. 13-15, 17, 18, 20, 27-33, and 49);

(3) one (1) thermal reticulation unit (ID No. TRU-01), processing a maximum of 10 cycles of polyurethane foam buns per hour, at a maximum volume of 244,296 cubic inches of foam per cycle, exhausting through ten (10) stacks (ID Nos. 35-44);

(4) two (2) natural gas fired boilers (ID Nos. IPB-01 and IPB-02), each rated at 12.6 million (MM) British thermal units (Btu) per hour, using No. 2 distillate fuel oil as back-up fuel, and each exhausting through one (1) stack (ID Nos. 45 and 46);

(5) one (1) 4 sheet felt press (ID No. FPA), pressing a maximum of 131,400 sheets per year, exhausting through one (1) stack (ID No. 47); and

(6) Increase in the foam processing rate of the existing one (1) 6 sheet felt press (ID No. FPC), from 211,000 sheets per year to 300,000 sheets per year, exhausting through one (1) stack (ID No. 48);

(7) The installation of one (1) new 6 sheet felt press D (IC NO. FPD), with a foam processing rate of 300,000 sheets per year, exhausting through one (1) stack (ID No. 49); and

(8) One (1) Thermal Reticulation Unit, identified as TRU-02, with a maximum throughput of 150,000,000 board ft per year, and exhausting through seven (7) stacks (52-58).

A.3 Specifically Regulated Insignificant Activities [326 IAC 2-7-1(21)] [326 IAC 2-7-4(c)] [326 IAC 2-7-5(15)]

This stationary source also includes the following insignificant activities which are specifically regulated, as defined in 326 IAC 2-7-1(21):

(1) polyol storage tanks with VOC emissions less than 3 pounds per hour or 15 pounds per day (one tank has a storage capacity of 30,000 gallons); and
(2) one (1) 20,000 gallon No. 2 fuel oil storage tank with VOC emissions less than 3 pounds per hour or 15 pounds per day.

A.4 Part 70 Permit Applicability [326 IAC 2-7-2]

This stationary source is required to have a Part 70 permit by 326 IAC 2-7-2 (Applicability) because:

(a) It is a major source, as defined in 326 IAC 2-7-1(22); and

(b) It is a source in a source category designated by the United States Environmental Protection Agency (U.S. EPA) under 40 CFR 70.3 (Part 70 - Applicability).

SECTION D.1 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]

(1) one (1) natural gas flame laminator machine (ID No. FL-02), with a maximum capacity of 40,000 square feet per hour, and exhausting through one (1) stack (ID No. 02-002).

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.1.1 Volatile Organic Compounds (VOC) [326 IAC 8-1-6]

The total emissions of VOC shall be limited to no more than a fixed monthly limit of 0.4 tons per month, which is equivalent to a laminated foam production rate of 5,000,000 square feet per month based on a stack test emission factor of 6.5 lbs VOC per hour at maximum capacity. This production limit is required to limit the potential to emit of VOC to less than 25 tons per 365 consecutive day period. Compliance with this limit makes 326 IAC 8-1-6 (New Facilities, General Reduction Requirements) not applicable. This limitation also renders the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) not applicable.

D.1.2 Particulate Matter (PM) [326 IAC 6-3-2(c)]

Pursuant to 326 IAC 6-3 (Process Operations), the total allowable PM emission rate from the natural gas flame laminator machine (ID No. FL-02) shall not exceed 4.1 pounds per hour when operating at a process weight rate of 2,000 pounds per hour.

The pounds per hour limitation was calculated with the following equation:

Interpolation and extrapolation of the data for the process weight rate up to 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

$E = 4.10\ (1)^{0.67}$
E = 4.1 pounds per hour = 18.0 tons per year

D.1.3 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for this facility and any control devices.

SECTION D.7 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)]
(8) One (1) Thermal Reticulation Unit, identified as TRU-02, with a maximum throughput of 150,000,000 board ft of polyurethane foam per year, and exhausting through seven (7) stacks (52-58).

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.7.1 Particulate Matter (PM) [326 IAC 6-3-2(c)]

Pursuant to 326 IAC 6-3 (Process Operations), the total allowable PM emission rate from the thermal reticulation unit (ID No. TRU-02) shall not exceed 12.1 pounds per hour when operating at a process weight rate of 10,000 pounds per hour. The pounds per hour limitation was calculated with the following equation:

Interpolation of the data for the process weight rate up to 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

$E = 4.10\ (5)^{0.67}$
E = 12.1 pounds per hour

D.7.2 Volatile Organic Compounds (VOCs) [326 IAC 2-4.1-1] [326 IAC 8-1-6]

Pursuant to the MACT determination under 326 IAC 2-4.1-1 and the BACT determination under 326 IAC 8-1-6, operating conditions for the thermal reticulation unit (TRU-02) shall be the following:

(a) Total VOC emissions from the thermal reticulation unit shall not exceed 34.6 tons per year based on a stack test emission factor of 4.62×10^{-4} pounds of VOC per board foot of foam produced. Emissions of any single HAP from the thermal reticulation unit shall not exceed 16.04 tons per year based on a worst case stack test emission factor of 2.13×10^{-4} pound of HAP per board foot of foam produced. Emissions of any combination of HAPs from the thermal reticulation unit shall not exceed 31.07 tons per year based on a total HAP stack test emission factor of 4.14×10^{-4} pound of total HAPs per board foot of foam produced. The maximum throughput of foam shall not exceed 150,000,000 board feet per year.

(b) maintain the thermal reticulation unit in good working order; and

(c) utilize best management work practices to minimize VOC emissions from this unit. The work practices to be performed on the thermal reticulation unit include the following inspection and preventive maintenance procedures:

(1) The following preventive maintenance procedures will be performed on the thermal reticulation unit door on a bi-weekly basis:
(A) Grease North & South gear boxes--5 grease fittings each box.
(B) Grease North & South Door linkages--4 fittings each side of each door.
(C) Lubricate shuttle table drive chains and idler bearings.
(D) Inspect oil level in hydraulic reservoir (added/ok).

(2) The following preventive maintenance procedures will be performed on the thermal reticulation unit on an annual basis:
(A) Replace the valves on the oxygen and hydrogen lines.
(B) Bring old units to the shop and rebuild.
(C) Tag the valves rebuilt and date.

(3) The following inspections will be done on the thermal reticulation unit cycle on a semi-annual basis:
(A) North and south door open and close action.
(B) Check vacuum time and adjust if necessary.
(C) Fuel fill--valve open and shut and proper times.
(D) Fuel pressures--during flow and static.
(E) Holding of plug purge after fuel fill up to ignition.
(F) Watch Erdco during fuel fill.

(4) The thermal reticulation unit pump will be lubricated on a semi-annual basis using the following procedures:
(A) Grease both ends of the Nash pump.
(B) Make sure extra grease does not plug up the water drains.

(5) The following preventive maintenance procedures will be performed on the thermal reticulation unit on a daily basis:
(A) Drain the condensed water from the exhaust line into the bucket.
(B) Check the oil level through the side sight glass.
(C) Check for oil flow (sight glass with white ball).
(D) Empty condensate bucket as needed.
(E) Check roots blower oil level and add as needed.
(F) Check the oil purifier as follows: Check gauge for proper pressure between (20-25 psi). When the purifier pressure exceeds 40 psi, service the unit. Refer to Task # 6110 in PM location book.
(G) Check Nash water supply for the proper operation.

(6) The following preventive maintenance procedures will be performed on the thermal reticulation unit every 1,500 hours:
(A) Drain oil, remove side cover.
(B) Remove baffle, remove valves.
(C) Wipe inside of chamber to remove residue.
(D) Install new or rebuilt valves.
(E) Clean baffle and reinstall.
(F) Install side cover with new gasket, if needed.
(G) Refill with oil.
(H) Check V -belts for wear and proper tension, replace if needed.
(I) Check gas ballast valves, replace if needed.
(J) Note the actual hours.

(7) The following preventive maintenance procedures will be performed on the thermal reticulation unit blower every 1,500 hours:
(A) Change air filter.
(B) Check oil purifier for proper operation.
(C) Check stokes for water leaks.
(D) Check V -belts.

(8) The following preventive maintenance procedures will be performed on the thermal reticulation unit manometer valve on a monthly basis:

(A) Remove manometer valve.
(B) Install new or rebuilt valve.
(C) Rebuild, tag and stock valve.

(9) The following preventive maintenance procedures will be performed on the thermal reticulation unit shot pin on a semi-annual basis:
(A) Check shot pin hydraulic cylinder mount for broken or loose bolts.
(B) Check shot pin hydraulic cylinder assembly plates for torque to chamber.
(C) Check shot pin limit switch mounting bolts for tightness.
(D) Inspect E.C.S. high temperature probes (3) for proper condition.
(E) Inspect oxygen and hydrogen gauges for zero calibration.
(F) Inspect Erdco 34 and check for any alarm condition.

(10) The following preventive maintenance procedures will be performed on the thermal reticulation unit on a quarterly basis:
(A) For water line heat exchanger, open and clean-out all tubes.

(11) The following preventive maintenance procedures will be performed on the thermal reticulation unit oil purifier on a weekly basis:
(A) When oil pressure goes above 40 psi, service as follows:
(i) Remove power.
(ii) Valve off hoses.
(iii) Drain oil from unit (dispose of properly).
(iv) Disassemble and remove filter.
(v) Clean-out then install new filter .
(vi) Reconnect hoses and open valves.
(vii) Bleed-off air.
(viii) Plug in unit and check for proper pressure (25psi).
(ix) Check oil level in stokes. Fill as needed.

(12) The following preventive maintenance procedures will be performed on the thermal reticulation unit roof valves on a semi-annual basis:
(A) Replace oxygen and hydrogen roof valves.
(B) Rebuild valves - date and stock.

(13) The following preventive maintenance procedures will be performed on the thermal reticulation unit blower on a quarterly basis:
(A) Change filter on the active unit.

(14) The following preventive maintenance procedures will be performed on the thermal reticulation unit manometer tube on a monthly basis:
(A) Disassemble White manometer tube valve. Clean or rebuild as needed.
(B) Check other valve between Whitey valve and the chamber for condition.

(15) The following preventive maintenance procedures will be performed on the thermal reticulation unit plug purge valve on a weekly basis:
(A) Replace the plug purge valve.
(B) Rebuild, tag and stock valve.

(17) The following preventive maintenance procedures will be performed on the thermal reticulation unit charge valve O-ring on a monthly basis:
(A) Replace the o-ring on the charge valve face inside the chamber.

(18) The following preventive maintenance procedures will be performed on the thermal reticulation unit charge valve on a monthly basis:
(A) Replace the o-ring on the stem of the charge valve.

(19) The following preventive maintenance procedures will be performed on the thermal reticulation unit control line filter on a weekly basis:
(A) Clean the vacuum control line filters.

(20) The following preventive maintenance procedures will be performed on the thermal reticulation unit pump shaft seals on a weekly basis:
(A) Check the drip from the shaft seals and make sure it is between one drop per second to five drops per second. Too much flow can cause problems at the effluent. Too little can destroy the pump.
(B) Check the seals when the vacuum relief valve is drawing air.

(21) The following preventive maintenance procedures will be performed on the thermal reticulation unit hydraulic system on a semi-annual basis:
(A) Remove and replace or remove, clean, and replace suction filter for the hydraulic pump.

(22) The fluid will be changed in the thermal reticulation unit hydraulic system on an annual basis using the following procedures:
(A) Drain all the fluid from the hydraulic system.
(B) Refill the system with new fluid.

Compliance Determination Requirements

D.7.3 Testing Requirements [326 IAC 2-7-6(1),(6)]

During the period between 24 and 36 months after issuance of this permit, the Permittee shall perform stack testing, to verify the emission factors used to determine the potential emissions from this unit, utilizing methods as approved by the Commissioner. This test shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. In addition to these requirements, IDEM may require compliance testing when necessary to determine if the facility is in compliance.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.7.4 Record Keeping Requirements

(a) The Permittee shall maintain records in accordance with (1) through (3) below for the thermal reticulation unit (ID No. TRU-02). Records maintained for (1) through (3) shall be taken monthly and shall be complete and sufficient to establish compliance with Condition D.7.2.

(1) The board feet of foam produced per month;

(2) A log of the dates of use; and

(3) The weight of VOCs and HAPs emitted for each compliance period.

(b) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE DATA SECTION

Part 70 Quarterly Report

Source Name: Foamex, L.P.
Source Address: 3005 Commercial Road, Fort Wayne, Indiana 46809
Mailing Address: 3005 Commercial Road, Fort Wayne, Indiana 46809
Part 70 Permit No.: T003-7680-00225
Facility: one (1) natural gas flame laminator machine (ID No. FL-02)
Parameter: VOC emissions
Limit: the total emissions of VOC shall be limited to no more than a fixed monthly limit of 0.4 tons per month, which is equivalent to a laminated foam production rate of 5,000,000 square feet per month.

YEAR: _______________

Month	Laminated Foam Production This Month (sq. feet)

9 No deviation occurred in this quarter.

9 Deviation/s occurred in this quarter.
Deviation has been reported on: ______________________

Submitted by: ____
Title / Position: ____
Signature: ____
Date: ____
Phone: ____

Indiana Department of Environmental Management
Office of Air Quality

Technical Support Document (TSD) for a Significant Source Modification to a Part 70 Operating Permit

Source Background and Description

Source Name:	**Foamex, LP**
Source Location:	**3005 Commercial Road, Fort Wayne, IN 46809**
County:	**Allen**
SIC Code:	**3086**
Operation Permit No.:	***T*003-7680-00225**
Operation Permit Issuance Date:	**March 22, 1999**
Source Modification No.:	**003-12873-00225**
Permit Reviewer:	**Lisa M. Wasiowich/EVP**

The Office of Air Quality (OAQ) has reviewed a modification application from Foamex, LP relating to the operation of a new thermal reticulation unit and the reduction of monthly throughput for an existing flame lamination unit.

History

On January 30, 2001, Foamex, LP submitted an application to the OAQ requesting to add one (1) additional thermal reticulation unit to their existing plant, and to change the limited monthly throughput for and existing flame lamination unit (FL-02) from 24,653,313 ft^2/month to 5,000,000 ft^2/month. Foamex, LP was issued a Part 70 permit on March 22, 1999. This source was also issued a Minor Source Modification and an Administrative Amendment on May 10, 2000.

New Emission Units and Pollution Control Equipment Receiving Prior Approval

The application includes information relating to the prior approval for the construction and operation of the following equipment pursuant to 326 IAC 2-7-5(16):

(a) One (1) Thermal Reticulation Unit, identified as TRU-02, with a maximum throughput of 150,000,000 board ft of polyurethane foam per year, and exhausting through seven (7) stacks (52-58).

Existing Approvals

The source was issued a Part 70 Operating Permit (T003-7680-00225) on March 22, 1999. The source has since received the following:

(a) First Administrative Amendment No.: 003-12211, issued on May 10, 2000; and

(b) First Minor Source Modification No.: 003-12178, issued on May 10, 2000.

Enforcement Issue

There are no enforcement actions pending.

Stack Summary

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (^0F)
52	thermal reticulation unit	26	12	2000	150
53	thermal reticulation unit	26	12	2000	150
54	thermal reticulation unit	26	12	2000	150
55	thermal reticulation unit	26	12	2000	150
56	thermal reticulation unit	32	6	1640	150
57	thermal reticulation unit	26	36	22000	150
58	thermal reticulation unit	26	36	22000	150

Recommendation

The staff recommends to the Commissioner that the Significant Source Modification 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 January 30, 2001.

Emission Calculations

See Appendix A of this document for detailed emissions calculations (Appendix A, pages 1 through 3.)

Potential To Emit Before Controls (Modification)

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.”

Pollutant	Potential To Emit (tons/year)
	new thermal reticulator unit
PM	0.00
PM-10	0.00
SO_2	0.00
VOC	34.64
CO	85.20
NO_x	0.00

HAP's	Potential To Emit (tons/year)
	new thermal reticulator unit
1,3 butadiene	0.53
2-butanone	0.15
2-propenenitrile	1.57
p- & — xylene	0.15
acetaldehyde	0.14
acetonitrile	0.57
benzene	16.04
ethyl benzene	0.19
HCN	0.46
hexane	0.56
methylene chloride	1.34
styrene	0.18
toluene	9.19
TOTAL	31.07

Justification for Modification

The Title V permit is being modified through a Significant Source Modification. This modification is being performed pursuant to 326 IAC 2-7-10.5(f)(6), because the potential to emit of VOC is greater than 25 tons per year, the potential to emit a single HAP is greater than 10 tons per year, and the potential to emit a combination of HAPs is greater than 25 tons per year. An Administrative Amendment will be issued and will incorporate the source modification into the Part 70 permit and give the source approval to operate the new emission units.

County Attainment Status

The source is located in Allen County.

Pollutant	Status
PM-10	attainment
SO_2	attainment
NO_2	attainment
Ozone	attainment
CO	attainment
Lead	not determined

(a) Volatile organic compounds (VOC) and oxides of nitrogen (NOx) are precursors for the formation of ozone. Therefore, VOC and NO_X emissions are considered when evaluating the rule applicability relating to the ozone standards. Allen County has been designated as attainment or unclassifiable for ozone.

Source Status

Existing Source PSD Definition:

Pollutant	Emissions (tons/year)
PM	15.4
PM-10	15.4
SO_2	56.0
VOC	222.9
CO	93.2
NOx	27.6

(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 the TSD for the Minor Source Modification, issued May 10, 2000.

Potential to Emit After Controls for the Modification

The table below summarizes the total potential to emit, reflecting all limits, of the significant emission units for the modification.

	Potential to Emit (tons/year)							
Process/facility	PM	PM-10	SO_2	VOC	CO	NO_X	Single HAP	HAPs
thermal reticulator unit	0.00	0.00	0.00	34.64	85.20	0.00	16.04	31.07
Total Emissions	0.00	0.00	0.00	34.64	85.20	0.00	16.04	31.07
PSD Significant Levels	250	250	250	250	250	250		

This modification to an existing minor stationary source is not major because the emissions increase is less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2 and 40 CFR 52.21, the PSD requirements do not apply.

Federal Rule Applicability

(a) There are no New Source Performance Standards (NSPS)(326 IAC 12 and 40 CFR Part 60) applicable to this modification.

(b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR Part 61) applicable to this modification.

(c) The proposed thermal reticulation unit is not subject to the requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAPs) (326 IAC 20 and 40 CFR Part 63, Subpart III). This provisions of this subpart apply to each new and existing flexible polyurethane foam or rebond foam process that meets the following criteria:

(1) produces flexible polyurethane or rebond foam;

(2) emits a HAP, except as provided in 40 CFR 63.1290(c)(2);

(3) is located at a plant site that is a major source, as defined in 40 CFR 63.2.

A process meeting one of the following criteria shall not be subject to the provisions of 40 CFR 63.1290:

(1) a process exclusively dedicated to the fabrication of flexible polyurethane foam;

(2) a research and development process; or

(3) a slabstock flexible polyurethane foam process at a plant site where the total amount of HAP, excluding diisocyanate reactants, used for slabstock foam production and foam fabrication is less than or equal to five tons per year .

The proposed thermal reticulation unit is a process exclusively dedicated to the fabrication of flexible polyurethane foam, therefore it is not subject to the provisions of 40 CFR 63.1290.

State Rule Applicability - Entire Source

326 IAC 2-6 (Emission Reporting)

This source is subject to 326 IAC 2-6 (Emission Reporting), because it has the potential to emit more than one hundred (100) tons per year of VOCs. Pursuant to this rule, the owner/operator of the source must annually submit an emission statement for the source. The annual statement must be received by July 1 of each year and contain the minimum requirement as specified in 326 IAC 2-6-4. The submittal should cover the period defined in 326 IAC 2-6-2(8)(Emission Statement Operating Year).

326 IAC 5-1 (Visible Emissions Limitations)

Pursuant to 326 IAC 5-1-2 (Opacity Limitations), except as provided in 326 IAC 5-1-3 (Temporary Alternative Opacity Limitations), opacity shall meet the following, unless otherwise stated in this permit:

(a) Opacity shall not exceed an average of forty percent (40%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.

(b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

326 IAC 6-4 (Fugitive Dust Emissions)

This source is subject to 326 IAC 6-4 for fugitive dust emissions. Pursuant to 326 IAC 6-4 (Fugitive Dust Emissions), fugitive dust shall not be visible crossing the boundary or property line of a source. Observances of visible emissions crossing property lines may be refuted by factual data expressed in 326 IAC 6-4-2(1), (2) or (3).

State Rule Applicability - Individual Facilities

326 IAC 2-4.1-1 (New Source Toxics Control)

Pursuant to 326 IAC 2-4.1-1 (New Source Toxics Control), any new process or production unit, which has the potential to emit (PTE) 10 tons per year of any single HAP or 25 tons per year of any combination of HAPs, must be controlled using technologies consistent with the Maximum Achievable Control Technology (MACT). The proposed thermal reticulation unit (TRU-02) has potential emissions of benzene of 16.04 tons per year and total HAP emissions of 31.07 tons per year, and is therefore subject to 326 IAC 2-4.1-1. Foamex has performed a Case-by-Case Maximum Achievable Control Technology (MACT) review for the thermal reticulation unit, researching State and Federal regulatory agency web sites and databases, trade associations as well as internal Foamex business resources, and found that there are only two thermal reticulation units operating in the United States with add-on controls. The two units, operating at Crest Foam Industries in Moonachie, New Jersey, operate with add-on scrubber technology that only controls HCN emissions. The scrubbers have a control efficiency of 53% and result in HCN emissions of 2.8 and 2.32 tons per year from the two units. The maximum potential HCN emissions at the Fort Wayne Foamex plant are equal to 0.46 tons per year. There have been no state or federal control technology determinations to limit benzene or total HAPS. Therefore, the BACT determination submitted with this application will also serve as MACT. The control options considered in the BACT analysis were:

1) Incineration/ Catalytic Incineration
2) Regenerative Thermal Oxidation
3) Flare
4) Activated Carbon Adsorption
5) Tray Type/Packed Gas Absorption Column
6) Condensation
7) Adsorption Concentrator with Thermal Oxidation

All options were considered to be technically feasible based on the following:

1) Based on vendor's information, this option would require an estimated 66 million standard cubic feet (scf) of natural gas as an auxiliary fuel. Using USEPA's AP-42 emission factors for natural gas combustion in small industrial boilers, this would result in additional NOx, CO, VOC, and PM10 emissions of 1.1, 2.8, 0.2, and 0.25 tons per year, respectively. Based on the worst-case natural gas usage and conservative AP-42 boiler emission factors, estimated collateral emissions of criteria pollutants does not make thermal oxidation/incineration an infeasible control option.
2) Low concentration and high exhaust stream flow is a disadvantage for regenerative thermal oxidation. This is the most energy efficient thermal destruction technology. Although less auxiliary fuel is necessary for regenerative thermal incineration, the low VOC concentration and high exhaust stream flow requires large regenerative thermal oxidation units and significant auxiliary fuel. Foamex considered this technology as technically feasible.
3) Low concentration and high exhaust stream flow is a disadvantage for a flare. Based on information obtained from USEPA's AP-42, waste gases to be flared must have a heating value of at least 200 British thermal units (Btu) per standard cubic foot (scf) for complete combustion. In order for the new thermal reticulation unit's exhaust stream to have a Btu content of 200 Btu/scf, auxiliary natural gas fuel must be added.

   In order to estimate the amount of auxiliary fuel required, the Btu content in the exhaust stream prior to adding auxiliary fuel must first be determined. The majority of the VOC in the exhaust stream is benzene (gross heating value of 3751 Btu/scf) and toluene (4484 Btu/scf). As a best-case estimation, Foamex assumed that 100% of the VOC will be toluene as it has a higher heating value than benzene (resulting in a higher Btu content for the exhaust gas, requiring less auxiliary fuel). Assuming that all 17.35 ppmv VOC is toluene, the exhaust stream will have a Btu content of:

Exhaust gas Btu content = (17.35 ppmv toluene/1 x 10^6) x 4484 Btu/scf = **0.078 Btu/scf**

The exhaust flowrate at 105E F and atmospheric pressure is 44,000 acfm. The exhaust flow at standard conditions becomes:

Flow rate (standard conditions) = (44,000 acfm) x (460EF)/(460EF+105EF) = **35,823 scfm.**

Assuming a typical Btu content of 1000 Btu/scf for natural gas, the equation for determining auxiliary fuel make-up becomes:

200 BTU/scf required gas heating value =

$$\frac{[(\text{exhaust flow, scfm}) \times (\text{exhaust Btu content, Btu/scf})] + [(\text{make-up gas flow, scfm}) \times (1000\ \text{Btu/scf})]}{[(\text{exhaust flow, scfm}) + \text{make-up gas flow, scfm})]}$$

inserting known values,

200 BTU/scf required gas heating value =

$$\frac{(35{,}823\ \text{scfm exhaust flow})(0.078\ \text{Btu/scf}) + (\mathbf{X}\ \text{scfm natural gas make-up})(1000\ \text{Btu/scfm})}{(35{,}823\ \text{scfm exhaust flow}) + (\mathbf{X}\ \text{scfm natural gas make-up})}$$

The unknown value **X**, is the flow in scfm of make-up natural gas (auxiliary fuel) needed to result in an exhaust stream with a minimum BTU content of 200 Btu/scf.

Solving for X, the auxiliary fuel make-up becomes: **8952 scfm natural gas added**

Annualized, the auxiliary fuel make-up becomes:

Annual auxiliary fuel make-up (scf/yr) = (8952 scfm) x (60 min/hr) x (8760 hr/yr)
= **4.7 x 10^9 scf natural gas added per year**

Total annual Btu burned in flare (Btu/yr) =

= [35,823 scfm x 0.078 Btu/scf) + (8952 scfm x 1000 Btu/scf)] x (60 min/hr) x (8760 hr/yr)
= **4.7 x 10^{12} Btu/yr burned in flare.**

Using USEPA's AP-42 emission factors for flares in section 13.5, Table 13.5-1, this would result in additional NOx, CO, and VOC emissions of 160, 869, and 329 tons per year, respectively. Although these collateral emissions are excessive, this option was considered technically feasible.

4) In order to maintain a low pressure drop across the carbon beds, excessively large carbon beds would be necessary for exhaust flow rate. Additionally, regenerated air stream would still require control. However, this option was considered technically feasible.

5) Low HAP concentration would require a large column for effective mass transfer from gas to liquid phase. Also, in order to maintain the necessary low pressure drop through the column, and excessively large diameter column would be required. This technology works best with single component air streams. Additionally, pollutants are transferred from air stream to a liquid stream creating a new waste stream that would still require treatment or disposal.

Foamex has determined that, although there are potentially impractical issues with using absorption to control this type of exhaust stream, there is a technically feasible absorption technology that could potentially be applied to the proposed thermal reticulator exhaust stream. According to the EPA document Survey of Control Technologies for Low Concentration Organic Vapor Gas Streams:

"The use of absorption as the primary control technique for organic vapors is subject to several limitations and problems. One problem is the availability of a suitable solvent ..

..Another consideration in the application of absorption as a control technique is the treatment or disposal of the material removed from the absorber. In stripping, in which the OV is desorbed from the absorbent liquid, typically at elevated temperatures and/or under vacuum; the OV is then recovered as a liquid by a condenser. In addition, the low outlet concentrations typically required in organic air pollutant control application often lead to impractically tall absorption towers, long contact times, and high liquid-gas ratios that may not be economically viable.

Only one commercial system was identified that is directly applicable to low concentration (i.e., less than 100 ppm) organic streams, although the use of absorption processes at higher organic concentrations and for organic removal coupled with sulfur dioxide and hydrochloric acid removal is reported."

According to this EPA document, the QVF (Weisbaden, Germany) has developed an absorption process specifically for low concentration OV removal. Therefore, this option is considered technically feasible.

6) Condensation, in general, is best applied to applications with low flow rates and high concentrations of VOCs. One vendor was contacted for cryogenic condensation technology. The maximum air flow for this technology is 500 scfm, and the minimum VOC concentration is 1000 ppmv. The proposed unit has an air flow rate of 44,000 acfm and a VOC concentration of 17.35 ppmv.

   Although Foamex did not find quantifiable vendor information defining what an effective flow rate range is for condensation (beyond the original vendor correspondence discussed above), Foamex did consider condensation to be technically feasible and completed a cost analysis using EPA's CO$T-AIR spreadsheet for condensers.

7) An adsorption step prior to oxidation increases VOC concentration and decreases stream flow. This is an advantage for this technology. Thermal oxidizer size and auxiliary fuel requirements are greatly reduced. It also results in lower amounts of products of combustion emissions of NOx and CO. Foamex considered this technology as technically feasible.

A cost analysis was performed to determine the economic feasibility of each of the control technologies. The cost analysis is based on potential single HAP emissions of 16.04 tons per year and total HAP emissions of 31.07 tons per year. The tables show the results of the cost analysis.

For the flare control option, the cost of the auxiliary natural gas usage was calculated based on a cost of $5.00 per MMBtu (from vendor correspondence). As discussed above, the total annual natural gas usage for the flare is estimated to be approximately 4.7 x 10^9 scf per year. Using a typical natural gas Btu content of 1000 Btu/scf, annual natural gas costs for the flare become:

Annual Natural Gas Costs ($/yr) = (4.7 x 10^9 scf per year) x (1000 Btu/scf) x (1 MMBtu/10^6 Btu) x $5.00/MMBtu

= **<u>$23.5 MM per year annual natural gas costs</u>**

Although technically feasible, this annual fuel cost makes the flare option economically infeasible. No further economic analysis for the flare is provided.

(A) Capital Cost

Option	Base Price	Direct Cost	Indirect Cost	Total
Incineration/Catalytic Incineration	1,125,000	337,500	348,750	1,811,250
Regenerative Thermal Oxidation	500,000	150,000	155,000	805,000
Activated Carbon Adsorption*	--	--	--	296,481
Tray Type/Packed Gas Absorption Column*	--	--	--	1,510,000
Condensation*	--	--	--	11,110,776
Adsorption Concentration w/ Thermal Oxidation	640,000	192,000	198,400	1,030,400

* Total capital cost for activated carbon adsorption, packed gas absorption, and condensation includes base price, direct cost, and indirect cost.

(B) Annual Operating, Maintenance & Recovery Cost

Option	Direct Cost	Indirect Cost	Capital Recovery Cost	Total
Incineration/Catalytic Incineration	323,314	86,439	257,881	667,634
Regenerative Thermal Oxidation	153,912	55,205	146,706	352,774
Activated Carbon Adsorption	521,587	24,811	29,648	576,047
Tray Type/Packed Gas Absorption Column	25,291	69,703	245,753	331,400
Condensation	27,585	460,982	1,581,925	2,064,666*
Adsorption Concentration w/ Thermal Oxidation	200,174	37,986	114,614	355,823

* Total annual cost for condensation includes $5,827 recovery credit.

(C) Evaluation

Option	Potential Emissions (tons/yr)		Emissions Removed (tons/yr)		Control Efficiency (%)	$/ton Removed	
	single HAP	total HAPs	single HAP	total HAPs		single HAP	total HAPs
Incineration/Catalytic Incineration	16.04	31.07	15.24	29.52	95	43,808	22,616
Regenerative Thermal Oxidation	16.04	31.07	15.24	29.52	95	23,148	11,950
Activated Carbon Adsorption	16.04	31.07	15.24	29.52	95	37,798	19,513
Tray Type/Packed Gas Absorption Column	16.04	31.07	15.24	29.52	95	21,745	11,226
Condensation	16.04	31.07	15.24	29.52	95	135,476	69,941
Adsorption Concentration w/ Thermal Oxidation	16.04	31.07	15.24	29.52	95	23,348	12,054

Methodology:
Emissions removed = (limited potential emissions from warehouse) * (control efficiency)
$/ton removed = total annual cost / emissions removed

The cost breakdown is as follows:

1. Capital Cost
   a) Base price: purchase price, auxiliary equipment, instruments, controls, taxes and freight.
   b) Direct installation cost: foundations/supports, erection/handling, electrical, piping, insulation, painting, site preparation and building/facility.
   c) Indirect installation cost: engineering, supervision, construction/filed expenses, construction fee, start up, performance test, model study and contingencies.

2. Annual Cost
   a) Direct operating cost: operating labor (operator, supervisor), labor and material maintenance, operating materials, utilities (electricity, gas).
   b) Indirect operating cost: overhead, property tax, insurance, administration and capital recovery cost (for 10 years life of the system at 10% interest rate).

Based on the cost estimates presented above, use of any of the add-on controls would be economically infeasible. Therefore, Foamex proposes as the MACT to maintain the thermal reticulation unit in good working order and utilize best management work practices to minimize HAP emissions from the proposed unit. The work practices to be performed on the thermal reticulation unit include the following inspection and preventive maintenance procedures:

1. The following preventive maintenance procedures will be performed on the thermal reticulation unit door on a bi-weekly basis:
   (a) Grease North & South gear boxes--5 grease fittings each box.
   (b) Grease North & South Door linkages--4 fittings each side of each door.
   (c) Lubricate shuttle table drive chains and idler bearings.

(d) Inspect oil level in hydraulic reservoir (added/ok).

2. The following preventive maintenance procedures will be performed on the thermal reticulation unit on an annual basis:
   (a) Replace the valves on the oxygen and hydrogen lines.
   (b) Bring old units to the shop and rebuild.
   (c) Tag the valves rebuilt and date.

3. The following inspections will be done on the thermal reticulation unit cycle on a semi-annual basis:
   (a) North and south door open and close action.
   (b) Check vacuum time and adjust if necessary.
   (c) Fuel fill--valve open and shut and proper times.
   (d) Fuel pressures--during flow and static.
   (e) Holding of plug purge after fuel fill up to ignition.
   (f) Watch Erdco during fuel fill.

4. The thermal reticulation unit pump will be lubricated on a semi-annual basis using the following procedures:
   (a) Grease both ends of the Nash pump.
   (b) Make sure extra grease does not plug up the water drains.

5. The following preventive maintenance procedures will be performed on the thermal reticulation unit on a daily basis:
   (a) Drain the condensed water from the exhaust line into the bucket.
   (b) Check the oil level through the side sight glass.
   (c) Check for oil flow (sight glass with white ball).
   (d) Empty condensate bucket as needed.
   (e) Check roots blower oil level and add as needed.
   (f) Check the oil purifier as follows: Check gauge for proper pressure between (20-25 psi). When the purifier pressure exceeds 40 psi, service the unit. Refer to Task # 6110 in PM location book.
   (g) Check Nash water supply for the proper operation.

6. The following preventive maintenance procedures will be performed on the thermal reticulation unit every 1,500 hours:
   (a) Drain oil, remove side cover.
   (b) Remove baffle, remove valves.
   (c) Wipe inside of chamber to remove residue.
   (d) Install new or rebuilt valves.
   (e) Clean baffle and reinstall.
   (f) Install side cover with new gasket, if needed.
   (g) Refill with oil.
   (h) Check V -belts for wear and proper tension, replace if needed.
   (i) Check gas ballast valves, replace if needed.
   (j) Note the actual hours.

7. The following preventive maintenance procedures will be performed on the thermal reticulation unit blower every 1,500 hours:
   (a) Change air filter.
   (b) Check oil purifier for proper operation.
   (c) Check stokes for water leaks.
   (d) Check V -belts.

8. The following preventive maintenance procedures will be performed on the thermal reticulation unit manometer valve on a monthly basis:
   (a) Remove manometer valve.

(b) Install new or rebuilt valve.
(c) Rebuild, tag and stock valve.

9. The following preventive maintenance procedures will be performed on the thermal reticulation unit shot pin on a semi-annual basis:
   (a) Check shot pin hydraulic cylinder mount for broken or loose bolts.
   (b) Check shot pin hydraulic cylinder assembly plates for torque to chamber.
   (c) Check shot pin limit switch mounting bolts for tightness.
   (d) Inspect E.C.S. high temperature probes (3) for proper condition.
   (e) Inspect oxygen and hydrogen gauges for zero calibration.
   (f) Inspect Erdco 34 and check for any alarm condition.

10. The following preventive maintenance procedures will be performed on the thermal reticulation unit on a quarterly basis:
   (a) For water line heat exchanger, open and clean-out all tubes.

11. The following preventive maintenance procedures will be performed on the thermal reticulation unit oil purifier on a weekly basis:
   (a) When oil pressure goes above 40 psi, service as follows:
      (i) Remove power.
      (ii) Valve off hoses.
      (iii) Drain oil from unit (dispose of properly).
      (iv) Disassemble and remove filter.
      (v) Clean-out then install new filter .
      (vi) Reconnect hoses and open valves.
      (vii) Bleed-off air.
      (viii) Plug in unit and check for proper pressure (25psi).
      (ix) Check oil level in stokes. Fill as needed.

12. The following preventive maintenance procedures will be performed on the thermal reticulation unit roof valves on a semi-annual basis:
   (a) Replace oxygen and hydrogen roof valves.
   (b) Rebuild valves - date and stock.

13. The following preventive maintenance procedures will be performed on the thermal reticulation unit blower on a quarterly basis:
   (a) Change filter on the active unit.

14. The following preventive maintenance procedures will be performed on the thermal reticulation unit manometer tube on a monthly basis:
   (a) Disassemble White manometer tube valve. Clean or rebuild as needed.
   (b) Check other valve between Whitey valve and the chamber for condition.

15. The following preventive maintenance procedures will be performed on the thermal reticulation unit plug purge valve on a weekly basis:
   (a) Replace the plug purge valve.
   (b) Rebuild, tag and stock valve.

17. The following preventive maintenance procedures will be performed on the thermal reticulation unit charge valve O-ring on a monthly basis:
   (a) Replace the o-ring on the charge valve face inside the chamber.

18. The following preventive maintenance procedures will be performed on the thermal reticulation unit charge valve on a monthly basis:
   (a) Replace the o-ring on the stem of the charge valve.

19. The following preventive maintenance procedures will be performed on the thermal reticulation unit control line filter on a weekly basis:
    (a) Clean the vacuum control line filters.

20. The following preventive maintenance procedures will be performed on the thermal reticulation unit pump shaft seals on a weekly basis:
    (a) Check the drip from the shaft seals and make sure it is between one drop per second to five drops per second. Too much flow can cause problems at the effluent. Too little can destroy the pump.
    (b) Check the seals when the vacuum relief valve is drawing air.

21. The following preventive maintenance procedures will be performed on the thermal reticulation unit hydraulic system on a semi-annual basis:
    (a) Remove and replace or remove, clean, and replace suction filter for the hydraulic pump.

22. The fluid will be changed in the thermal reticulation unit hydraulic system on an annual basis using the following procedures:
    (a) Drain all the fluid from the hydraulic system.
    (b) Refill the system with new fluid.

326 IAC 6-3-2 (Process Operations)

The particulate matter (PM) from the proposed thermal reticulation unit (TRU-02) shall be limited to 12.05 pounds per hour based on the following:

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

$E = 4.10\ (5)^{0.67}$

$E = 12.05$ lbs/hr

326 IAC 8-1-6 (New facilities, general reduction requirements)

This modification is subject to the provisions of 326 IAC 8-1-6. This rule requires all facilities constructed after January 1, 1980, which have potential VOC emission rates of greater than or equal to 25 tons per year, and which are not otherwise regulated by other provisions of 326 IAC 8, to reduce VOC emissions using Best Available Control Technology (BACT). Foamex, L.P. submitted a BACT analysis on January 30, 2001. A survey of State and Federal regulatory agency web sites and databases, trade associations, and internal Foamex business resources was performed and it was found that there are no other thermal reticulator units operating with control technology for VOC. Therefore, process exhaust stream VOC control technologies were analyzed for technical and economic feasibility. The control options considered in the BACT analysis were:

1) Incineration/ Catalytic Incineration
2) Regenerative Thermal Oxidation
3) Flare
4) Activated Carbon Adsorption
5) Tray Type/Packed Gas Absorption Column
6) Condensation
7) Adsorption Concentrator with Thermal Oxidation

All options were considered to be technically feasible based on the following:

1) Based on vendor's information, this option would require an estimated 66 million standard cubic feet (scf) of natural gas as an auxiliary fuel. Using USEPA's AP-42 emission factors for natural gas combustion in small industrial boilers, this would result in additional NOx, CO, VOC, and PM10 emissions of 1.1, 2.8, 0.2, and 0.25 tons per year, respectively. Based on the worst-case natural gas usage and conservative AP-42 boiler emission factors, estimated collateral emissions of criteria pollutants does not make thermal oxidation/incineration an infeasible control option.

2) Low concentration and high exhaust stream flow is a disadvantage for regenerative thermal oxidation. This is the most energy efficient thermal destruction technology. Although less auxiliary fuel is necessary for regenerative thermal incineration, the low VOC concentration and high exhaust stream flow requires large regenerative thermal oxidation units and significant auxiliary fuel. Foamex considered this technology as technically feasible.

3) Low concentration and high exhaust stream flow is a disadvantage for a flare. Based on information obtained from USEPA's AP-42, waste gases to be flared must have a heating value of at least 200 British thermal units (Btu) per standard cubic foot (scf) for complete combustion. In order for the new thermal reticulation unit's exhaust stream to have a Btu content of 200 Btu/scf, auxiliary natural gas fuel must be added.

   As shown in the calculations presented above under the MACT requirements pursuant to 326 IAC 2-4.1-1, the estimated amount of auxiliary fuel required is 4.7×10^9 scf natural gas added per year for a total of 4.7×10^{12} Btu/yr burned in flare. Using USEPA's AP-42 emission factors for flares in section 13.5, Table 13.5-1, this would result in additional NOx, CO, and VOC emissions of 160, 869, and 329 tons per year, respectively. Although these collateral emissions are excessive, this option was considered technically feasible.

4) In order to maintain a low pressure drop across the carbon beds, excessively large carbon beds would be necessary for exhaust flow rate. Additionally, regenerated air stream would still require control. However, this option was considered technically feasible.

5) Low HAP concentration would require a large column for effective mass transfer from gas to liquid phase. Also, in order to maintain the necessary low pressure drop through the column, and excessively large diameter column would be required. This technology works best with single component air streams. Additionally, pollutants are transferred from air stream to a liquid stream creating a new waste stream that would still require treatment or disposal.

   Foamex has determined that, although there are potentially impractical issues with using absorption to control this type of exhaust stream, there is a technically feasible absorption technology that could potentially be applied to the proposed thermal reticulator exhaust stream. According to the EPA document Survey of Control Technologies for Low Concentration Organic Vapor Gas Streams:

   "The use of absorption as the primary control technique for organic vapors is subject to several limitations and problems. One problem is the availability of a suitable solvent ..

   ..Another consideration in the application of absorption as a control technique is the treatment or disposal of the material removed from the absorber. In stripping, in which the OV is desorbed from the absorbent liquid, typically at elevated temperatures and/or under vacuum; the OV is then recovered as a liquid by a condenser. In addition, the low outlet concentrations typically required in organic air pollutant control application often lead to impractically tall absorption towers, long contact times, and high liquid-gas ratios that may not be economically viable.

Only one commercial system was identified that is directly applicable to low concentration (i.e., less than 100 ppm) organic streams, although the use of absorption processes at higher organic concentrations and for organic removal coupled with sulfur dioxide and hydrochloric acid removal is reported."

According to this EPA document, the QVF (Weisbaden, Germany) has developed an absorption process specifically for low concentration OV removal. Therefore, this option is considered technically feasible.

6) Condensation, in general, is best applied to applications with low flow rates and high concentrations of VOCs. One vendor was contacted for cryogenic condensation technology. The maximum air flow for this technology is 500 scfm, and the minimum VOC concentration is 1000 ppmv. The proposed unit has an air flow rate of 44,000 acfm and a VOC concentration of 17.35 ppmv.

Although Foamex did not find quantifiable vendor information defining what an effective flow rate range is for condensation (beyond the original vendor correspondence discussed above), Foamex did consider condensation to be technically feasible and completed a cost analysis using EPA's CO$T-AIR spreadsheet for condensers.

7) An adsorption step prior to oxidation increases VOC concentration and decreases stream flow. This is an advantage for this technology. Thermal oxidizer size and auxiliary fuel requirements are greatly reduced. It also results in lower amounts of products of combustion emissions of NOx and CO. Foamex considered this technology as technically feasible.

A cost analysis was performed to determine the economic feasibility of each of the control technologies. The cost analysis is based on potential VOC emissions of 34.6 tons per year. The tables show the results of the cost analysis.

For the flare control option, the cost of the auxiliary natural gas usage was calculated based on a cost of $5.00 per MMBtu (from vendor correspondence). As discussed above, the total annual natural gas usage for the flare is estimated to be approximately 4.7 x 10^9 scf per year. Using a typical natural gas Btu content of 1000 Btu/scf, annual natural gas costs for the flare become:

Annual Natural Gas Costs ($/yr) = (4.7 x 10^9 scf per year) x (1000 Btu/scf) x (1 MMBtu/10^6 Btu) x $5.00/MMBtu

= **<u>$23.5 MM per year annual natural gas costs</u>**

Although technically feasible, this annual fuel cost makes the flare option economically infeasible. No further economic analysis for the flare is provided.

(A) Capital Cost

Option	Base Price	Direct Cost	Indirect Cost	Total
Incineration/Catalytic Incineration	1,125,000	337,500	348,750	1,811,250
Regenerative Thermal Oxidation	500,000	150,000	155,000	805,000
Activated Carbon Adsorption*	--	--	--	296,481
Tray Type/Packed Gas Absorption Column*	--	--	--	1,510,000

Condensation*	--	--	--	11,110,776
Adsorption Concentration w/ Thermal Oxidation	640,000	192,000	198,400	1,030,400

* Total capital cost for activated carbon adsorption, packed gas absorption, and condensation includes base price, direct cost, and indirect cost.

(B) Annual Operating, Maintenance & Recovery Cost

Option	Direct Cost	Indirect Cost	Capital Recovery Cost	Total
Incineration/Catalytic Incineration	323,314	86,439	257,881	667,634
Regenerative Thermal Oxidation	153,912	55,205	146,706	352,774
Activated Carbon Adsorption	521,587	24,811	29,648	576,047
Tray Type/Packed Gas Absorption Column	25,291	69,703	245,753	331,400
Condensation	27,585	460,982	1,581,925	2,064,666*
Adsorption Concentration w/ Thermal Oxidation	200,174	37,986	114,614	355,823

* Total annual cost for condensation includes $5,827 recovery credit.

(C) Evaluation

Option	Potential Emissions (tons/yr)	Emissions Removed (tons/yr)	Control Efficiency (%)	$/ton Removed
Incineration/Catalytic Incineration	34.6	32.87	95	20,311
Regenerative Thermal Oxidation	34.6	32.87	95	10,732
Activated Carbon Adsorption	34.6	32.87	95	17,525
Tray Type/Packed Gas Absorption Column	34.6	32.87	95	10,082
Condensation	34.6	32.87	95	62,813
Adsorption Concentration w/ Thermal Oxidation	34.6	32.87	95	10,825

Methodology:
Emissions removed = (limited potential emissions from warehouse) * (control efficiency)
$/ton removed = total annual cost / emissions removed

The cost breakdown is as follows:

1. Capital Cost
   a) Base price: purchase price, auxiliary equipment, instruments, controls, taxes and freight.
   b) Direct installation cost: foundations/supports, erection/handling, electrical, piping, insulation, painting, site preparation and building/facility.
   c) Indirect installation cost: engineering, supervision, construction/filed expenses, construction fee, start up, performance test, model study and contingencies.

2. Annual Cost
   a) Direct operating cost: operating labor (operator, supervisor), labor and material maintenance, operating materials, utilities (electricity, gas).
   b) Indirect operating cost: overhead, property tax, insurance, administration and capital recovery cost (for 10 years life of the system at 10% interest rate).

Based on the cost estimates presented above, use of any of the add-on controls would be economically infeasible. Therefore, Foamex proposes to maintain the thermal reticulation unit in good working order and utilize best management work practices to minimize VOC emissions from the proposed unit. The work practices to be performed on the thermal reticulation unit include the following inspection and preventive maintenance procedures:

1. The following preventive maintenance procedures will be performed on the thermal reticulation unit door on a bi-weekly basis:
   (a) Grease North & South gear boxes--5 grease fittings each box.
   (b) Grease North & South Door linkages--4 fittings each side of each door.
   (c) Lubricate shuttle table drive chains and idler bearings.
   (d) Inspect oil level in hydraulic reservoir (added/ok).

2. The following preventive maintenance procedures will be performed on the thermal reticulation unit on an annual basis:
   (a) Replace the valves on the oxygen and hydrogen lines.
   (b) Bring old units to the shop and rebuild.
   (c) Tag the valves rebuilt and date.

3. The following inspections will be done on the thermal reticulation unit cycle on a semi-annual basis:
   (a) North and south door open and close action.
   (b) Check vacuum time and adjust if necessary.
   (c) Fuel fill--valve open and shut and proper times.
   (d) Fuel pressures--during flow and static.
   (e) Holding of plug purge after fuel fill up to ignition.
   (f) Watch Erdco during fuel fill.

4. The thermal reticulation unit pump will be lubricated on a semi-annual basis using the following procedures:
   (a) Grease both ends of the Nash pump.
   (b) Make sure extra grease does not plug up the water drains.

5. The following preventive maintenance procedures will be performed on the thermal reticulation unit on a daily basis:
   (a) Drain the condensed water from the exhaust line into the bucket.
   (b) Check the oil level through the side sight glass.

(c) Check for oil flow (sight glass with white ball).
(d) Empty condensate bucket as needed.
(e) Check roots blower oil level and add as needed.
(f) Check the oil purifier as follows: Check gauge for proper pressure between (20-25 psi). When the purifier pressure exceeds 40 psi, service the unit. Refer to Task # 6110 in PM location book.
(g) Check Nash water supply for the proper operation.

6. The following preventive maintenance procedures will be performed on the thermal reticulation unit every 1,500 hours:
   (a) Drain oil, remove side cover.
   (b) Remove baffle, remove valves.
   (c) Wipe inside of chamber to remove residue.
   (d) Install new or rebuilt valves.
   (e) Clean baffle and reinstall.
   (f) Install side cover with new gasket, if needed.
   (g) Refill with oil.
   (h) Check V -belts for wear and proper tension, replace if needed.
   (i) Check gas ballast valves, replace if needed.
   (j) Note the actual hours.

7. The following preventive maintenance procedures will be performed on the thermal reticulation unit blower every 1,500 hours:
   (a) Change air filter.
   (b) Check oil purifier for proper operation.
   (c) Check stokes for water leaks.
   (d) Check V -belts.

8. The following preventive maintenance procedures will be performed on the thermal reticulation unit manometer valve on a monthly basis:
   (a) Remove manometer valve.
   (b) Install new or rebuilt valve.
   (c) Rebuild, tag and stock valve.

9. The following preventive maintenance procedures will be performed on the thermal reticulation unit shot pin on a semi-annual basis:
   (a) Check shot pin hydraulic cylinder mount for broken or loose bolts.
   (b) Check shot pin hydraulic cylinder assembly plates for torque to chamber.
   (c) Check shot pin limit switch mounting bolts for tightness.
   (d) Inspect E.C.S. high temperature probes (3) for proper condition.
   (e) Inspect oxygen and hydrogen gauges for zero calibration.
   (f) Inspect Erdco 34 and check for any alarm condition.

10. The following preventive maintenance procedures will be performed on the thermal reticulation unit on a quarterly basis:
   (a) For water line heat exchanger, open and clean-out all tubes.

11. The following preventive maintenance procedures will be performed on the thermal reticulation unit oil purifier on a weekly basis:
   (a) When oil pressure goes above 40 psi, service as follows:
      (i) Remove power.
      (ii) Valve off hoses.
      (iii) Drain oil from unit (dispose of properly).
      (iv) Disassemble and remove filter.
      (v) Clean-out then install new filter .
      (vi) Reconnect hoses and open valves.
      (vii) Bleed-off air.

(viii) Plug in unit and check for proper pressure (25psi).
(ix) Check oil level in stokes. Fill as needed.

12. The following preventive maintenance procedures will be performed on the thermal reticulation unit roof valves on a semi-annual basis:
    (a) Replace oxygen and hydrogen roof valves.
    (b) Rebuild valves - date and stock.

13. The following preventive maintenance procedures will be performed on the thermal reticulation unit blower on a quarterly basis:
    (a) Change filter on the active unit.

14. The following preventive maintenance procedures will be performed on the thermal reticulation unit manometer tube on a monthly basis:
    (a) Disassemble White manometer tube valve. Clean or rebuild as needed.
    (b) Check other valve between Whitey valve and the chamber for condition.

15. The following preventive maintenance procedures will be performed on the thermal reticulation unit plug purge valve on a weekly basis:
    (a) Replace the plug purge valve.
    (b) Rebuild, tag and stock valve.

17. The following preventive maintenance procedures will be performed on the thermal reticulation unit charge valve O-ring on a monthly basis:
    (a) Replace the o-ring on the charge valve face inside the chamber.

18. The following preventive maintenance procedures will be performed on the thermal reticulation unit charge valve on a monthly basis:
    (a) Replace the o-ring on the stem of the charge valve.

19. The following preventive maintenance procedures will be performed on the thermal reticulation unit control line filter on a weekly basis:
    (a) Clean the vacuum control line filters.

20. The following preventive maintenance procedures will be performed on the thermal reticulation unit pump shaft seals on a weekly basis:
    (a) Check the drip from the shaft seals and make sure it is between one drop per second to five drops per second. Too much flow can cause problems at the effluent. Too little can destroy the pump.
    (b) Check the seals when the vacuum relief valve is drawing air.

21. The following preventive maintenance procedures will be performed on the thermal reticulation unit hydraulic system on a semi-annual basis:
    (a) Remove and replace or remove, clean, and replace suction filter for the hydraulic pump.

22. The fluid will be changed in the thermal reticulation unit hydraulic system on an annual basis using the following procedures:
    (a) Drain all the fluid from the hydraulic system.
    (b) Refill the system with new fluid.

Compliance Requirements

Permits issued under 326 IAC 2-7 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 2-7-5. 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 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 compliance requirements for the equipment covered under this approval.

Changes Proposed

All references to the Office of Air Management have been changed to the Office of Air Quality on all corrected permit pages.

The reference to Enhanced New Source Review has been removed form the cover page because this has been repealed.

The new thermal reticulation unit is being added to Section A.2 as follows:

A.2 Emission Units and Pollution Control Equipment Summary [326 IAC 2-7-4(c)(3)] [326 IAC 2-7-5(15)]

This stationary source consists of the following emission units and pollution control devices:

(1) one (1) natural gas flame laminator machine (ID No. FL-02), with a maximum capacity of 40,000 square feet per hour, and exhausting through one (1) stack (ID No. 02-002);

(2) one (1) polyurethane foam manufacturing process (ID No. PLC-01), producing a maximum of nine (9) million board feet per day of polyurethane foam, consisting of:
  (a) two (2) mix chambers;
  (b) one (1) periphlex pour line, exhausting through ten (10) stacks (ID Nos. 1-5, 9-12,and 19);
  (c) one (1) ester pour line, exhausting through six (6) stacks (ID Nos. 21-26);
  (d) three (3) foam bun storage areas (Carpet Underlay Mezzanine Bun Grabber Area, South Finishing Mezzanine Bun Grabber Area, and the Loaf Stacker Area), exhausting through fourteen (14) stacks (ID Nos. 13-15, 17, 18, 20, 27-33, and 49);

(3) one (1) thermal reticulation unit (ID No. TRU-01), processing a maximum of 10 cycles of polyurethane foam buns per hour, at a maximum volume of 244,296 cubic inches of foam per cycle, exhausting through ten (10) stacks (ID Nos. 35-44);

(4) two (2) natural gas fired boilers (ID Nos. IPB-01 and IPB-02), each rated at 12.6 million (MM) British thermal units (Btu) per hour, using No. 2 distillate fuel oil as back-up fuel, and each exhausting through one (1) stack (ID Nos. 45 and 46);

(5) one (1) 4 sheet felt press (ID No. FPA), pressing a maximum of 131,400 sheets per year, exhausting through one (1) stack (ID No. 47); and

(6) Increase in the foam processing rate of the existing one (1) 6 sheet felt press C (ID No. FPC), from 211,000 sheets per year to 300,000 sheets per year, exhausting through one (1) stack (ID No. 48).

(7) The installation of one (1) new 6 sheet felt press D (ID No. FPD), with a foam processing rate of 300,000 sheets per year, exhausting through one (1) stack (ID No. 49).

(8) One (1) Thermal Reticulation Unit, identified as TRU-02, with a maximum throughput of 150,000,000 board ft of polyurethane foam per year, and exhausting through seven (7) stacks (52-58).

Condition D.1.1 shall be modified to reflect the new emission limit for the existing flame lamination unit (FL-02) as follows:

D.1.1 Volatile Organic Compounds (VOC) [326 IAC 8-1-6]

~~Pursuant to CP 003-5815-00225, issued August 15, 1996,~~ the total emissions of VOC shall be limited to no more than a fixed monthly limit of ~~2.0~~ **0.4** tons per month, which is equivalent to a laminated foam production rate of ~~24,653,313~~ **5,000,000** square feet per month based on a stack test emission factor of 6.5 lbs VOC per hour at maximum capacity. This production limit is required to limit the potential to emit of VOC to ~~24~~ **less than 25** tons per 365 consecutive day period. Compliance with this limit makes 326 IAC 8-1-6 (New Facilities, General Reduction Requirements) not applicable. This limitation also renders the requirements of 326 IAC 2-2 (Prevention of Significant Deterioration) not applicable.

A new section D.7 shall be added as follows:

SECTION D.7 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-7-5(15)] **(8) One (1) Thermal Reticulation Unit, identified as TRU-02, with a maximum throughput of 150,000,000 board ft of polyurethane foam per year, and exhausting through seven (7) stacks (52-58).**

Emission Limitations and Standards [326 IAC 2-7-5(1)]

D.7.1 Particulate Matter (PM) [326 IAC 6-3-2(c)]

Pursuant to 326 IAC 6-3 (Process Operations), the total allowable PM emission rate from the thermal reticulation unit (ID No. TRU-02) shall not exceed 12.1 pounds per hour when operating at a process weight rate of 10,000 pounds per hour. The pounds per hour limitation was calculated with the following equation:

Interpolation of the data for the process weight rate up to 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

$$E = 4.10\ (5)^{0.67}$$
$$E = 12.1 \text{ pounds per hour}$$

D.7.2 Volatile Organic Compounds (VOCs) [326 IAC 2-4.1-1] [326 IAC 8-1-6]

Pursuant to the MACT determination under 326 IAC 2-4.1-1 and the BACT determination under 326 IAC 8-1-6, operating conditions for the thermal reticulation unit (TRU-02) shall be the following:

(a) Total VOC emissions from the thermal reticulation unit shall not exceed 34.6 tons per year based on a stack test emission factor of 4.62 x 10^{-4} pounds of VOC per board foot of foam produced. Emissions of any single HAP from the thermal reticulation unit shall not exceed 16.04 tons per year based on a worst case stack test emission factor of 2.13 x 10^{-4} pound of HAP per board foot of foam produced. Emissions of any combination of HAPs from the thermal reticulation unit shall not exceed 31.07 tons per year based on a total HAP stack test emission factor of 4.14 x 10^{-4} pound of total HAPs per board foot of foam produced. The maximum throughput of foam shall not exceed 150,000,000 board feet per year.

(b) maintain the thermal reticulation unit in good working order; and

(c) utilize best management work practices to minimize VOC emissions from this unit. The work practices to be performed on the thermal reticulation unit include the following inspection and preventive maintenance procedures:

(1) The following preventive maintenance procedures will be performed on the thermal reticulation unit door on a bi-weekly basis:
(A) Grease North & South gear boxes--5 grease fittings each box.
(B) Grease North & South Door linkages--4 fittings each side of each door.
(C) Lubricate shuttle table drive chains and idler bearings.
(D) Inspect oil level in hydraulic reservoir (added/ok).

(2) The following preventive maintenance procedures will be performed on the thermal reticulation unit on an annual basis:
(A) Replace the valves on the oxygen and hydrogen lines.
(B) Bring old units to the shop and rebuild.
(C) Tag the valves rebuilt and date.

(3) The following inspections will be done on the thermal reticulation unit cycle on a semi-annual basis:
(A) North and south door open and close action.
(B) Check vacuum time and adjust if necessary.
(C) Fuel fill--valve open and shut and proper times.
(D) Fuel pressures--during flow and static.
(E) Holding of plug purge after fuel fill up to ignition.
(F) Watch Erdco during fuel fill.

(4) The thermal reticulation unit pump will be lubricated on a semi-annual basis using the following procedures:
(A) Grease both ends of the Nash pump.
(B) Make sure extra grease does not plug up the water drains.

(5) The following preventive maintenance procedures will be performed on the thermal reticulation unit on a daily basis:
(A) Drain the condensed water from the exhaust line into the bucket.
(B) Check the oil level through the side sight glass.
(C) Check for oil flow (sight glass with white ball).
(D) Empty condensate bucket as needed.

(E) Check roots blower oil level and add as needed.
(F) Check the oil purifier as follows: Check gauge for proper pressure between (20-25 psi). When the purifier pressure exceeds 40 psi, service the unit. Refer to Task # 6110 in PM location book.
(G) Check Nash water supply for the proper operation.

(6) The following preventive maintenance procedures will be performed on the thermal reticulation unit every 1,500 hours:
(A) Drain oil, remove side cover.
(B) Remove baffle, remove valves.
(C) Wipe inside of chamber to remove residue.
(D) Install new or rebuilt valves.
(E) Clean baffle and reinstall.
(F) Install side cover with new gasket, if needed.
(G) Refill with oil.
(H) Check V -belts for wear and proper tension, replace if needed.
(I) Check gas ballast valves, replace if needed.
(J) Note the actual hours.

(7) The following preventive maintenance procedures will be performed on the thermal reticulation unit blower every 1,500 hours:
(A) Change air filter.
(B) Check oil purifier for proper operation.
(C) Check stokes for water leaks.
(D) Check V -belts.

(8) The following preventive maintenance procedures will be performed on the thermal reticulation unit manometer valve on a monthly basis:
(A) Remove manometer valve.
(B) Install new or rebuilt valve.
(C) Rebuild, tag and stock valve.

(9) The following preventive maintenance procedures will be performed on the thermal reticulation unit shot pin on a semi-annual basis:
(A) Check shot pin hydraulic cylinder mount for broken or loose bolts.
(B) Check shot pin hydraulic cylinder assembly plates for torque to chamber.
(C) Check shot pin limit switch mounting bolts for tightness.
(D) Inspect E.C.S. high temperature probes (3) for proper condition.
(E) Inspect oxygen and hydrogen gauges for zero calibration.
(F) Inspect Erdco 34 and check for any alarm condition.

(10) The following preventive maintenance procedures will be performed on the thermal reticulation unit on a quarterly basis:
(A) For water line heat exchanger, open and clean-out all tubes.

(11) The following preventive maintenance procedures will be performed on the thermal reticulation unit oil purifier on a weekly basis:
(A) When oil pressure goes above 40 psi, service as follows:
(i) Remove power.
(ii) Valve off hoses.
(iii) Drain oil from unit (dispose of properly).
(iv) Disassemble and remove filter.
(v) Clean-out then install new filter .
(vi) Reconnect hoses and open valves.

(vii) Bleed-off air.
(viii) Plug in unit and check for proper pressure (25psi).
(ix) Check oil level in stokes. Fill as needed.

(12) The following preventive maintenance procedures will be performed on the thermal reticulation unit roof valves on a semi-annual basis:
(A) Replace oxygen and hydrogen roof valves.
(B) Rebuild valves - date and stock.

(13) The following preventive maintenance procedures will be performed on the thermal reticulation unit blower on a quarterly basis:
(A) Change filter on the active unit.

(14) The following preventive maintenance procedures will be performed on the thermal reticulation unit manometer tube on a monthly basis:
(A) Disassemble White manometer tube valve. Clean or rebuild as needed.
(B) Check other valve between Whitey valve and the chamber for condition.

(15) The following preventive maintenance procedures will be performed on the thermal reticulation unit plug purge valve on a weekly basis:
(A) Replace the plug purge valve.
(B) Rebuild, tag and stock valve.

(17) The following preventive maintenance procedures will be performed on the thermal reticulation unit charge valve O-ring on a monthly basis:
(A) Replace the o-ring on the charge valve face inside the chamber.

(18) The following preventive maintenance procedures will be performed on the thermal reticulation unit charge valve on a monthly basis:
(A) Replace the o-ring on the stem of the charge valve.

(19) The following preventive maintenance procedures will be performed on the thermal reticulation unit control line filter on a weekly basis:
(A) Clean the vacuum control line filters.

(20) The following preventive maintenance procedures will be performed on the thermal reticulation unit pump shaft seals on a weekly basis:
(A) Check the drip from the shaft seals and make sure it is between one drop per second to five drops per second. Too much flow can cause problems at the effluent. Too little can destroy the pump.
(B) Check the seals when the vacuum relief valve is drawing air.

(21) The following preventive maintenance procedures will be performed on the thermal reticulation unit hydraulic system on a semi-annual basis:
(A) Remove and replace or remove, clean, and replace suction filter for the hydraulic pump.

(22) The fluid will be changed in the thermal reticulation unit hydraulic system on an annual basis using the following procedures:
(A) Drain all the fluid from the hydraulic system.
(B) Refill the system with new fluid.

Compliance Determination Requirements

D.7.3 Testing Requirements [326 IAC 2-7-6(1),(6)]

During the period between 24 and 36 months after issuance of this permit, the Permittee shall perform stack testing, to verify the emission factors used to determine the potential emissions from this unit, utilizing methods as approved by the Commissioner. This test shall be repeated at least once every five (5) years from the date of this valid compliance demonstration. In addition to these requirements, IDEM may require compliance testing when necessary to determine if the facility is in compliance.

Record Keeping and Reporting Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

D.7.4 Record Keeping Requirements

(a) The Permittee shall maintain records in accordance with (1) through (3) below for the thermal reticulation unit (ID No. TRU-02). Records maintained for (1) through (3) shall be taken monthly and shall be complete and sufficient to establish compliance with Condition D.7.2.

(1) The board feet of foam produced per month;

(2) A log of the dates of use; and

(3) The weight of VOCs and HAPs emitted for each compliance period.

(b) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

The quarterly reporting form for the flame laminator (FL-02) shall be revised to reflect the new throughput limitation as follows:

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR ~~MANAGEMENT~~ QUALITY
COMPLIANCE DATA SECTION

Part 70 Quarterly Report

Source Name:	Foamex, L.P.
Source Address:	3005 Commercial Road, Fort Wayne, Indiana 46809
Mailing Address:	3005 Commercial Road, Fort Wayne, Indiana 46809
Part 70 Permit No.:	T003-7680-00225
Facility:	one (1) natural gas flame laminator machine (ID No. FL-02)
Parameter:	VOC emissions
Limit:	the total emissions of VOC shall be limited to no more than a fixed monthly limit of ~~2.0~~ **0.4** tons per month, which is equivalent to a laminated foam production rate of ~~24,653,313~~ **5,000,000** square feet per month.

YEAR: _______________

Month	Laminated Foam Production This Month (sq. feet)

9 No deviation occurred in this quarter.

9 Deviation/s occurred in this quarter.
Deviation has been reported on: ______________________

Submitted by: ____
Title / Position: ____
Signature: ____
Date: ____
Phone: ____

Conclusion

The operation of this polyurethane foam production and foam processing plant shall be subject to the conditions of the attached proposed Significant Source Modification No. 003-12873-00225.

Appendix A: Emission Calculations

Company Name: Foamex, LP
Address City IN Zip: 3005 Commercial Road, Fort Wayne, IN 46809
CP: 003-12873
Plt ID: 003-00225
Reviewer: Lisa M. Wasiowich/EVP
Date: February 7, 2001

Uncontrolled Potential Emissions (tons/year)

	Emissions Generating Activity			
Pollutant	New Thermal Reticulation Unit (TRU-02)*	Existing Flame Laminator (FL-02) (24,653,313 square ft per month)**	Existing Flame Laminator (FL-02) (5,000,000 square ft per month)	**TOTAL**
PM	0.00	(6.75)	1.38	(5.4)
PM10	0.00	(6.75)	1.38	(5.4)
SO2	0.00	0.00	0.00	0.0
NOx	0.00	(5.90)	1.20	(4.7)
VOC	34.64	(24.00)	4.80	15.4
CO	85.20	(17.10)	3.60	71.7
total HAPs	31.07	(42.90)	9.66	(2.2)
worst case single HAP	16.04	(38.75)	8.70	
	benzene			

Total emissions based on rated capacity at 8,760 hours/year.
* Potential emissions are based on August 1995 stack test results for a similar unit at the Eddystone Foamex plant corrected for the increased production at this plant
** Potential emissions from the Flame Laminator (FL-02) based on OP 003-5819-00103 issued August 15, 1996

Controlled Potential Emissions (tons/year)

	Emissions Generating Activity			
Pollutant	New Thermal Reticulation Unit (TRU-02)*	Existing Flame Laminator (FL-02) (24,653,313 square ft per month)*	Existing Flame Laminator (FL-02) (5,000,000 square ft per month)	**TOTAL**
PM	0.00	(6.75)	1.38	(5.4)
PM10	0.00	(6.75)	1.38	(5.4)
SO2	0.00	0.00	0.00	0.0
NOx	0.00	(5.90)	1.20	(4.7)
VOC	34.64	(24.00)	4.80	15.4
CO	85.20	(17.10)	3.60	71.7
total HAPs	31.07	(42.90)	9.66	(2.2)
worst case single HAP	16.04	(38.75)	8.70	

Total emissions based on rated capacity at 8,760 hours/year, after control.
* Potential emissions are based on August 1995 stack test results for a similar unit at the Eddystone Foamex plant corrected for the increased production at this plant
** Potential emissions from the Flame Laminator (FL-02) based on OP 003-5819-00103 issued August 15, 1996

Appendix A: Emissions Calculations
Thermal Reticulation Unit

Company Name: Foamex, LP
Address City IN Zip: 3005 Commercial Road, Fort Wayne, IN 46809
CP: 003-12873
Plt ID: 003-00225
Reviewer: Lisa M. Wasiowich/EVP
Date: February 7, 2001

Pollutant	VOC	HAP	Stack Tested Eddystone Unit Emission Rate (lb/hr)	Stack Test Emission Factor (lb/bd. ft)	Maximum Ratioed Emission Rate (tpy)
methylene chloride		x	1.20E-01	1.78E-05	1.34
benzene	x	x	1.44E+00	2.14E-04	16.04
toluene	x	x	8.25E-01	1.23E-04	9.19
ethyl benzene	x	x	1.75E-02	2.60E-06	0.19
p- & m- xylenes	x	x	1.39E-02	2.06E-06	0.15
o- xylene	x	x	2.05E-05	3.04E-09	0.00
styrene	x	x	1.61E-02	2.39E-06	0.18
acetaldehyde	x	x	1.23E-02	1.83E-06	0.14
1-butene	x		2.52E-04	3.74E-08	0.00
1- propene, 2 methyl	x		1.53E-02	2.27E-06	0.17
1-buten-3-yne	x		8.01E-02	1.19E-05	0.89
1,2 butadiene	x	x	2.93E-05	4.35E-09	0.00
1,3 butadiene	x	x	4.72E-02	7.01E-06	0.53
1,3-pentadiene	x		4.81E-05	7.14E-09	0.00
propionitrile	x		5.95E-02	8.84E-06	0.66
2-butyne	x		4.66E-05	6.92E-09	0.00
2-propenal	x		1.07E-04	1.59E-08	0.00
isopropyl alcohol	x		7.89E-02	1.17E-05	0.88
acetone			3.25E-02	4.83E-06	0.36
1-penten-3yne	x		1.67E-05	2.48E-09	0.00
acetonitrile	x	x	5.13E-02	7.62E-06	0.57
2-propenenitrile	x	x	1.41E-01	2.09E-05	1.57
acetic acid ethenyl ester	x	x	6.99E-05	1.04E-08	0.00
2-butanone	x	x	1.36E-02	2.02E-06	0.15
propanenitrile	x		1.63E-05	2.42E-09	0.00
2-propaneitrile, 2-methyl	x		8.53E-05	1.27E-08	0.00
2-propenoic acid, methyl ester	x		9.75E-05	1.45E-08	0.00
methyl pyrrole	x		1.26E-02	1.87E-06	0.14
propenoic acid, ethenyl ester	x		1.98E-02	2.94E-06	0.22
chloropropanoic acid	x		3.97E-05	5.90E-09	0.00
cyclopentanone	x		1.08E-01	1.60E-05	1.20
phenlyethyne	x		3.96E-02	5.88E-06	0.44
hexane	x	x	5.04E-02	7.48E-06	0.56
2-butenenitrile	x		3.34E-02	4.96E-06	0.37
decane	x		1.80E-02	2.67E-06	0.20
1,3,5-trimethylbenzene	x		5.02E-03	7.45E-07	0.06
1,2,4-trimethylbenzene	x		6.16E-03	9.15E-07	0.07
hexane 2,2-dimethyl	x		7.01E-03	1.04E-06	0.08
HCN	x	x	4.16E-02	6.18E-06	0.46
NH3	x		9.79E-02	1.45E-05	1.09
CO			7.65E+00	1.14E-03	85.20
total VOC			3.11E+00	4.62E-04	34.64
total HAPs			2.79E+00	4.14E-04	31.07

Appendix A: Emissions Calculations
Thermal Reticulation Unit

Company Name: Foamex, LP
Address City IN Zip: 3005 Commercial Road, Fort Wayne, IN 46809
CP: 003-12873
Plt ID: 003-00225
Reviewer: Lisa M. Wasiowich/EVP
Date: February 7, 2001

Pollutant	Teresa Unit Emission Rate (lb/square ft)	AP-42 emission factor (lb/MMscf)	Maximum Hourly Emissions (lb/hr)	Potential Annual Emissions (tpy) based on 5,000,000 sq ft per month
NOx	4.0E-05		1.60	1.20
PM	4.6E-05		1.84	1.38
CO	1.2E-04		4.80	3.60
VOC	1.6E-04		6.40	4.80
SO2		6.0E-01	2.10E-04	9.21E-04
HCl	2.9E-04		11.60	8.70
HF	2.8E-08		0.00	0.00
HCN	2.6E-05		1.04	0.78
TDI	3.0E-06		0.12	0.09
MDI	3.0E-06		0.12	0.09
Total HAPs			12.88	9.66

Methodology:
Maximum natural gas usage = 3.07 MMscf/yr
Maximum hourly foam processed = 40,000 sq ft/hr
Maximum Hourly Emissions = emission factor (lb/sq ft) * hourly foam processed (sq ft/hr)
Potential Annual Emissions = emission factor (lb/sq ft) * 5,000,000 sq ft/month * 12 months/yr * 1/2000 lb/ton