



Mitchell E. Daniels, Jr.  
Governor

Thomas W. Easterly  
Commissioner

100 North Senate Avenue  
Indianapolis, Indiana 46204  
(317) 232-8603  
(800) 451-6027  
www.IN.gov/idem

TO: Interested Parties / Applicant  
DATE: September 5, 2007  
RE: Plymouth Foundry, Inc. / 099-24954-00003  
FROM: Nisha Sizemore  
Chief, Permits Branch  
Office of Air Quality

### Notice of Decision: Approval - Effective Immediately

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 13-17-3-4 and 326 IAC 2, this approval is effective immediately, unless a petition for stay of effectiveness is filed and granted, and may be revoked or modified in accordance with the provisions of IC 13-15-7-1.

If you wish to challenge this decision, IC 4-21.5-3-7 and IC 13-15-7-3 require that you file a petition for administrative review. This petition may include a request for stay of effectiveness and must be submitted to the Office Environmental Adjudication, 100 North Senate Avenue, Government Center North, Room 1049, Indianapolis, IN 46204, **within eighteen (18) calendar days of the mailing of this notice.** The filing of a petition for administrative review is complete on the earliest of the following dates that apply to the filing:

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

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

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

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

Enclosures  
FNPER-MOD.dot 03/23/06



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100 North Senate Avenue  
MC 61-53 IGCN 1003  
Indianapolis, Indiana 46204-2251  
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Mr. Jim Bopp  
Plymouth Foundry, Inc.  
523 West Harrison Street  
Plymouth, IN 46563-0537

September 5, 2007

Re: 099-24954-00003  
Minor Source Modification to:  
Part 70 permit No.: T099-7366-00003

Dear Mr. Bopp:

Plymouth Foundry, Inc. was issued Part 70 operating permit T099-7366-00003 on July 21, 1999 for a stationary gray iron foundry. An application to modify the source was received on June 21, 2007. Pursuant to 326 IAC 2-7-10.5, the following emission units are approved for construction at the source:

- (a) Two (2) core sand mixers, identified as M-1 and M-2, approved for construction in 2007, using the existing baghouse dust collector that was installed in 1997 for particulate control which exhausts inside the building, capacity: 3.0 and 0.0375 tons of sand per hour, respectively.
- (b) One (1) electric sand heater, approved for construction in 2007, capacity: 3.0 tons of sand per hour.
- (c) Two (2) core sand handling operations associated with the core sand mixers, identified as SH-1 and SH-2, approved for construction in 2007, consisting of conveyors and hoppers, using the existing baghouse dust collector that was installed in 1997 for particulate control which exhausts inside the building, capacity: 3.0 and 0.0375 tons of sand per hour, respectively.
- (d) One (1) core making operation, consisting of two (2) Isocure core machines, identified as CM 1 and CM 2, approved for construction in 2007, capacity 3.0 tons of cores per hour combined, 0.015 pound of resin per pound of sand and 0.0007 pound of DMIPA catalyst per pound of sand. DMIPA catalyst emissions from both core machines are controlled by an acid scrubber exhausting to stack 5.
- (e) One (1) No Bake core machine, identified as CM 3, approved for construction in 2007, capacity: 0.0375 tons of cores per hour, 0.015 pound of resin per pound of sand and 0.0007 pound of catalyst per pound of sand.

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 source may begin construction when the minor source modification has been issued. Operating conditions shall be incorporated into the Part 70 operating permit as a significant permit modification in accordance with 326 IAC 2-7-10.5(l)(2) and 326 IAC 2-7-12. Operation is not approved until the significant permit modification has been issued.

Pursuant to Contract No. A305-5-65, IDEM, OAQ has assigned the processing of this application to Eastern Research Group, Inc., (ERG). Therefore, questions should be directed to Ms. Trish Earls, ERG, 1600 Perimeter Park Drive, Morrisville, North Carolina 27560, or call (201) 722-1460 to speak directly to Ms. Earls. Questions may also be directed to Duane Van Laningham at IDEM, OAQ, 100 North Senate Avenue, MC 61-53 IGCN 1003, Indianapolis, Indiana, 46204-2251, or call (800) 451-6027 and ask for Duane Van Laningham or extension 3-6878, or dial (317) 233-6878.

Original signed by,

Nisha Sizemore, Chief  
Permits Branch  
Office of Air Quality

Attachments

ERG/TE

cc: File – Marshall County  
Marshall County Health Department  
IDEM Northern Regional Office  
Air Compliance Section Inspector- Rick Reynolds  
Compliance Data Section  
Administrative and Development  
Technical Support and Modeling  
Billing, Licensing, and Training - Dan Stamatkin



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## PART 70 MINOR SOURCE MODIFICATION OFFICE OF AIR QUALITY

**Plymouth Foundry, Incorporated  
523 West Harrison Street  
Plymouth, Indiana 46563-0537**

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

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

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 Appendix A and contains the conditions and provisions specified in 326 IAC 2-7 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.

1st Minor Source Modification No.: 099-24954-00003	
Original signed by:  Nisha Sizemore, Chief Permits Branch Office of Air Quality	Issuance Date: September 5, 2007

## 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)]

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The Permittee owns and operates a stationary gray iron foundry.

Source Address:	523 West Harrison Street, Plymouth, Indiana 46563-0537
Mailing Address:	523 West Harrison Street, Plymouth, Indiana 46563-0537
General Source Phone Number:	574-936-2106
SIC Code:	3321
County Location:	Marshall
Source Location Status:	Attainment for all criteria pollutants
Source Status:	Part 70 Permit Program Major Source, under PSD Rules; Minor 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)]

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

- (a) Two (2) electric induction furnaces (iron), installed in 1986, capacity: 1.5 tons of iron per hour, each.
- (b) One (1) pouring and cooling operation, installed prior to 1976, capacity: 1.5 tons of iron per hour and a maximum of 10 tons of sand per hour.
- (c) One (1) manual shakeout operation, installed prior to 1976, capacity: 1.5 tons of iron per hour and 4.4 tons of sand per hour.
- (d) One (1) cleaning and finishing operation, consisting of a tumble and shot blast unit and two (2) baghouses for particulate matter control, exhausting through stacks 2-A and 2-B, installed in 1987 and 1993, capacity: 1.5 tons of iron per hour, total.
- (e) One (1) sand handling operation consisting of one (1) muller, one (1) power screen, one (1) skip bucket, one (1) wet sand conveyor, one (1) sand and clay addition system, six (6) overhead wet sand transfer belt conveyors, six (6) mold machine feed hoppers and a baghouse for particulate matter control, exhausting through stack 4, installed in 1992, capacity: 10.0 tons of sand per hour, total.
- (f) One (1) core making operation, consisting of two (2) core making machines, capacity 0.25 tons of cores per hour each and five (5) mold making machines, capacity: one (1) at 10 tons of sand per hour and four (4) at 3 tons of sand per hour each, installed prior to 1976, capacity: 4.61 pounds of resins per hour.
- (g) One (1) surface coating operation, consisting of an airless spray applicator and dip tank system, equipped with an 11,000 actual cubic feet per minute exhaust fan, installed in 1976, capacity: 120 iron parts per hour.
- (h) One (1) shakeout machine, installed in 1997, capacity: 1.5 tons of iron per hour and 20 tons of sand per hour.

- (i) One (1) baghouse dust collector controlling particulate matter emissions inside the foundry installed in 1997.
- (j) Two (2) core sand mixers, identified as M-1 and M-2, approved for construction in 2007, using the existing baghouse dust collector that was installed in 1997 for particulate control which exhausts inside the building, capacity: 3.0 and 0.0375 tons of sand per hour, respectively.
- (k) One (1) electric sand heater, approved for construction in 2007, capacity: 3.0 tons of sand per hour.
- (l) Two (2) core sand handling operations associated with the core sand mixers, identified as SH-1 and SH-2, approved for construction in 2007, consisting of conveyors and hoppers, using the existing baghouse dust collector that was installed in 1997 for particulate control which exhausts inside the building, capacity: 3.0 and 0.0375 tons of sand per hour, respectively.
- (m) One (1) core making operation, consisting of two (2) Isocure core machines, identified as CM 1 and CM 2, approved for construction in 2007, capacity 3.0 tons of cores per hour combined, 0.015 pound of resin per pound of sand and 0.0007 pound of DMIPA catalyst per pound of sand. DMIPA catalyst emissions from both core machines are controlled by an acid scrubber exhausting to stack 5.
- (n) One (1) No Bake core machine, identified as CM 3, approved for construction in 2007, capacity: 0.0375 tons of cores per hour, 0.015 pound of resin per pound of sand and 0.0007 pound of catalyst per pound of sand.

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

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

- (a) Degreasing operations that do not exceed 145 gallons per 12 months, except if subject to 326 IAC 20-6.
- (b) Charge Handling - Putting raw materials into furnaces and associated material handling - PM = 21.6 pounds per day, PM<sub>10</sub> = 21.6 pounds per day

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

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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);
- (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.10

## EMISSIONS UNIT OPERATION CONDITIONS

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

- (j) Two (2) core sand mixers, identified as M-1 and M-2, approved for construction in 2007, using the existing baghouse dust collector that was installed in 1997 for particulate control which exhausts inside the building, capacity: 3.0 and 0.0375 tons of sand per hour, respectively.
- (k) One (1) electric sand heater, approved for construction in 2007, capacity: 3.0 tons of sand per hour.
- (l) Two (2) core sand handling operations associated with the core sand mixers, identified as SH-1 and SH-2, approved for construction in 2007, consisting of conveyors and hoppers, using the existing baghouse dust collector that was installed in 1997 for particulate control which exhausts inside the building, capacity: 3.0 and 0.0375 tons of sand per hour, respectively.
- (m) One (1) core making operation, consisting of two (2) Isocure core machines, identified as CM 1 and CM 2, approved for construction in 2007, capacity 3.0 tons of cores per hour combined, 0.015 pound of resin per pound of sand and 0.0007 pound of DMIPA catalyst per pound of sand. DMIPA catalyst emissions from both core machines are controlled by an acid scrubber exhausting to stack 5.
- (n) One (1) No Bake core machine, identified as CM 3, approved for construction in 2007, capacity: 0.0375 tons of cores per hour, 0.015 pound of resin per pound of sand and 0.0007 pound of catalyst per pound of sand.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

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

#### D.10.1 Particulate Matter (PM) [326 IAC 2-2][326 IAC 2-7-10.5(d)(4)(E)]

The source shall limit PM emissions from raw material usage and sand handling as follows:

- (a) The throughput of sand to the one (1) core sand handling operation, identified as SH-1, shall not exceed 13,505 tons per twelve (12) consecutive month period, with compliance determined at the end of each month; and
- (b) PM emissions from the one (1) core sand handling operation, identified as SH-1, shall not exceed 3.6 pounds per ton of sand throughput.

Compliance with raw material usage limit and PM emission limit will limit the potential to emit from the modification in 2007 to less than twenty-five (25) tons of PM per year and therefore will render the requirements of 326 IAC 2-2 not applicable. Compliance with this limit will also satisfy the requirements for a minor source modification pursuant to 326 IAC 2-7-10.5(d)(4)(E).

#### D.10.2 Volatile Organic Compounds (VOC) [326 IAC 8-1-6] [326 IAC 2-7-10.5(d)(6)]

The source shall limit VOC emissions from the core machines as follows:

- (a) Resin Usage
  - (1) The total resin usage for the two (2) Isocure core machines combined shall not exceed 505,317 pounds of resin per twelve (12) consecutive month period, with compliance determined at the end of each month.
  - (2) The VOC emissions from resin usage in the two (2) Isocure core machines shall not exceed 0.05 pound per pound of resin.

(b) Catalyst Usage

Catalyst usage for the two (2) Isocure core machines combined shall not exceed 23,581 pounds of VOC catalyst per twelve (12) consecutive month period, with compliance determined at the end of each month.

Compliance with the usage limits and VOC emission limit will limit VOC emissions from the two (2) Isocure core machines (CM 1 and CM 2) to less than twenty-five (25) tons per year and therefore will render the requirements of 326 IAC 8-1-6 (New Facilities, General Reduction Requirements) not applicable. Compliance with this limit will also satisfy the requirements for a minor source modification pursuant to 326 IAC 2-7-10.5(d)(6).

D.10.3 Particulate [326 IAC 6-3-2]

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Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), the allowable particulate emission rate from the Core Sand Mixer M1 and Core Sand Handling SH-1 shall not exceed 8.56 pounds per hour when operating at a process weight rate of 3.0 tons per hour. The pounds per hour limitation was calculated using the following equation:

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

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

D.10.4 Preventive Maintenance Plan [326 IAC 2-7-5(13)]

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A Preventive Maintenance Plan, in accordance with Section B - Preventive Maintenance Plan, of this permit, is required for the core sand mixers and core sand handling operations and their control device.

**Compliance Determination Requirements [326 IAC 2-7-6(1)][326 IAC 2-7-5(1)]**

D.10.5 Particulate Control

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- (a) In order to comply with Condition D.10.3, the baghouse dust collector for particulate control shall be in operation and control emissions from the core sand mixer M1 and core sand handling SH-1 at all times that the core sand mixer M1 and core sand handling SH-1 are in operation.
- (b) In the event that bag failure is observed in a multi-compartment baghouse, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

**Compliance Monitoring Requirements [326 IAC 2-5.1-3(e)(2)] [326 IAC 2-6.1-5(a)(2)]**

D.10.6 Visible Emissions Notations

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- (a) Visible emission notations of the stack exhaust for the baghouse controlling the core sand mixer M1 and the sand handling operations SH-1 shall be performed once per day during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.

- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

#### D.10.7 Parametric Monitoring

The Permittee shall record the pressure drop across the baghouse used in conjunction with the core sand mixer M1 and core sand handling operation SH-1, at least once per day when the process is in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of 1.0 and 7.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

The instrument used for determining the pressure shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

#### D.10.8 Broken or Failed Bag Detection

- (a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).
- (b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

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

#### D.10.9 Record Keeping Requirements

- (a) To document compliance with Condition D.10.1, the Permittee shall maintain monthly records of the throughput of sand to the one (1) core sand handling operation, identified as SH-1.

- (b) To document compliance with Condition D.10.2, the Permittee shall maintain monthly records of the resin and catalyst usage in the two (2) Isocure core machines (CM 1 and CM 2).
- (c) To document compliance with Condition D.10.6, the Permittee shall maintain records of visible emission notations of the stack exhaust for the baghouse controlling the core sand mixer M1 and the sand handling operations SH-1 once per day. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation (e.g. the process did not operate that day or did not exhaust to the atmosphere).
- (d) To document compliance with Condition D.10.7, the Permittee shall maintain records once per day of the pressure drop. The Permittee shall include in its daily record when a pressure drop reading is not taken and the reason for the lack of a pressure drop reading (e.g. the process did not operate that day).
- (e) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

#### D.10.10 Reporting Requirements

A quarterly summary of the information to document compliance with Conditions D.10.1 and D.10.2 shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

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

## Part 70 Quarterly Report

Source Name: Plymouth Foundry, Incorporated  
Source Address: 523 West Harrison Street, Plymouth, Indiana 46563-0537  
Mailing Address: 523 West Harrison Street, Plymouth, Indiana 46563-0537  
Part 70 Permit No.: T099-7366-00003  
Facility: core sand handling operation, identified as SH-1  
Parameter: PM emissions  
Limit: The throughput of sand to the one (1) core sand handling operation, identified as SH-1, shall not exceed 13,505 tons per twelve (12) consecutive month period, with compliance determined at the end of each month.

YEAR:

Month	Column 1	Column 2	Column 1 + Column 2
	Sand Throughput This Month (tons)	Sand Throughput Previous 11 Months (tons)	12 Month Total Sand Throughput (tons)
Month 1			
Month 2			
Month 3			

No deviation occurred in this quarter.

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

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

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

### Part 70 Quarterly Report

Source Name: Plymouth Foundry, Incorporated  
 Source Address: 523 West Harrison Street, Plymouth, Indiana 46563-0537  
 Mailing Address: 523 West Harrison Street, Plymouth, Indiana 46563-0537  
 Part 70 Permit No.: T099-7366-00003  
 Facility: two (2) Isocure core machines (CM 1 and CM 2)  
 Parameter: VOC emissions  
 Limit: (a) The total resin usage for the two (2) Isocure core machines (CM 1 and CM 2) combined shall not exceed 505,317 pounds of resin per twelve (12) consecutive month period, with compliance determined at the end of each month.  
 (b) Catalyst usage for the two (2) Isocure core machines (CM 1 and CM 2) combined shall not exceed 23,581 pounds of VOC catalyst per twelve (12) consecutive month period, with compliance determined at the end of each month.

YEAR:

Month	Column 1		Column 2		Column 1 + Column 2	
	Resin Usage This Month (pounds)	Catalyst Usage This Month (pounds)	Resin Usage Previous 11 Months (pounds)	Catalyst Usage Previous 11 Months (pounds)	12 Month Total Resin Usage (pounds)	12 Month Total Catalyst Usage (pounds)
Month 1						
Month 2						
Month 3						

No deviation occurred in this quarter.

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

Submitted by: \_\_\_\_\_  
 Title / Position: \_\_\_\_\_  
 Signature: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

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

**Technical Support Document (TSD) for a Part 70 Minor Source  
Modification and Significant Permit Modification.**

**Source Description and Location**

Source Name:	Plymouth Foundry, Inc.
Source Location:	523 West Harrison Street, Plymouth, IN 46563
County:	Marshall
SIC Code:	3321
Operation Permit No.:	T099-7366-00003
Operation Permit Issuance Date:	July 21, 1999
Minor Source Modification No.:	099-24954-00003
Significant Permit Modification No.:	099-25002-00003
Permit Reviewer:	ERG/TE

**Existing Approvals**

The source was issued Part 70 Operating Permit No. T099-7366-00003 on July 21, 1999. The source has since received the following approvals:

- (a) Significant Permit Modification No. 099-11440-00003, issued on April 20, 2000;
- (b) First Reopening to a Part 70 Operating Permit No. 099-13417-00003, issued on January 7, 2002; and
- (c) Administrative Amendment No. 099-20415-00003, issued on May 31, 2005.

The source submitted an application for a Part 70 Operating Permit Renewal on September 18, 2003. At this time, this application is still under review.

**County Attainment Status**

The source is located in Marshall County.

<b>Pollutant</b>	<b>Status</b>
PM10	Attainment
PM2.5	Attainment
SO <sub>2</sub>	Attainment
NO <sub>2</sub>	Attainment
8-hour Ozone	Attainment
CO	Attainment
Lead	Attainment

- (a) Volatile organic compounds (VOC) and nitrogen oxides (NOx) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC and NOx emissions are considered when evaluating the rule applicability relating to ozone. Marshall County has been designated as attainment or unclassifiable for ozone. Therefore, VOC and NOx emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.

- (b) Marshall County has been classified as attainment for PM2.5. U.S. EPA has not yet established the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 for PM2.5 emissions. Therefore, until the U.S. EPA adopts specific provisions for PSD review for PM2.5 emissions, it has directed states to regulate PM10 emissions as a surrogate for PM2.5 emissions.
- (c) Marshall County has been classified as attainment or unclassifiable for all other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.
- (d) On October 25, 2006, the Indiana Air Pollution Control Board finalized a rule revision to 326 IAC 1-4-1 revoking the one-hour ozone standard in Indiana.
- (e) Since this source is classified as a secondary metal production plant, it is considered one of the twenty-eight (28) listed source categories, as specified in 326 IAC 2-2-1(gg)(1).
- (f) Fugitive Emissions  
 Since this type of operation is in one of the twenty-eight (28) listed source categories under 326 IAC 2-2 or 326 IAC 2-3, fugitive emissions are counted toward the determination of PSD and Emission Offset applicability.

<b>Source Status</b>
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The table below summarizes the potential to emit of the entire source, prior to the proposed modification, after consideration of all enforceable limits established in the effective permits:

Pollutant	Emissions (tons/year)
PM	200.5
PM10	253.6
SO <sub>2</sub>	1.0
VOC	34.3
CO	1.0
NO <sub>x</sub>	3.0

- (a) This existing source is a major stationary source, under PSD (326 IAC 2-2), because a regulated pollutant is emitted at a rate of 100 tons per year or more, and it is one of the twenty-eight (28) listed source categories, as specified in 326 IAC 2-2-1(gg)(1).
- (b) These emissions are based upon Part 70 Operating Permit No. T099-7366-00003, issued July 21, 1999.

The table below summarizes the potential to emit HAPs for the entire source, prior to the proposed modification, after consideration of all enforceable limits established in the effective permits:

HAPs	Potential To Emit (tons/year)
Methanol	Less than 10
Toluene	Less than 10
Xylene	Less than 10
Ethylbenzene	Less than 10
Lead	Less than 10
Nickel	Less than 10
Chromium	Less than 10
Manganese	Less than 10
TOTAL	2.40

This existing source is not a major source of HAPs, as defined in 40 CFR 63.41, because HAPs emissions are less than ten (10) tons per year for any single HAP and less than twenty-five (25) tons per year of a combination of HAPs. Therefore, this source is an area source under Section 112 of the Clean Air Act (CAA).

### Actual Emissions

The following table shows the actual emissions from the source. This information reflects the 2003 OAQ emission data.

Pollutant	Actual Emissions (tons/year)
PM2.5	4.0
PM10	5.0
SO <sub>2</sub>	Not reported
VOC	0.0
CO	Not reported
NO <sub>x</sub>	Not reported
HAP	Not reported

### Description of Proposed Modification

The Office of Air Quality (OAQ) has reviewed a modification application, submitted by Plymouth Foundry, Inc. on June 21, 2007, relating to the installation of one (1) electric sand heater, two (2) sand mixers and sand handling operations, one (1) no bake core machine, and two (2) Isocure core machines equipped with a new acid scrubber for control of VOC emissions at the existing gray iron foundry. VOC emissions from the core machines are generated from the use of a DMIPA catalyst. The following is a list of the proposed emission units and pollution control devices:

- (a) Two (2) core sand mixers, identified as M-1 and M-2, approved for construction in 2007, using the existing baghouse dust collector that was installed in 1997 for particulate control which exhausts inside the building, capacity: 3.0 and 0.0375 tons of sand per hour, respectively;
- (b) One (1) electric sand heater, approved for construction in 2007, capacity: 3.0 tons of sand per hour;
- (c) Two (2) core sand handling operations associated with the core sand mixers, identified as SH-1 and SH-2, approved for construction in 2007, consisting of conveyors and hoppers, using the existing baghouse dust collector that was installed in 1997 for particulate control which exhausts inside the building, capacity: 3.0 and 0.0375 tons of sand per hour, respectively;
- (d) One (1) core making operation, consisting of two (2) Isocure core machines, identified as CM 1 and CM 2, approved for construction in 2007, capacity 3.0 tons of cores per hour combined, 0.015 pound of resin per pound of sand and 0.0007 pound of DMIPA catalyst per pound of sand. DMIPA catalyst emissions from both core machines are controlled by an acid scrubber exhausting to stack 5; and
- (e) One (1) No Bake core machine, identified as CM 3, approved for construction in 2007, capacity: 0.0375 tons of cores per hour, 0.015 pound of resin per pound of sand and 0.0007 pound of catalyst per pound of sand.

There will not be an increase in metal throughput or sand throughput to any of the existing melting, pouring, cooling, shakeout, cleaning, finishing, sand handling, or surface coating operations because the cores that will be produced are to replace those that have been purchased in the past. Plymouth wishes to produce more of their own cores in the future rather than relying on outside suppliers.

The source has requested a limit on VOC emissions from the three (3) core machines to render the requirements of 326 IAC 8-1-6 (New Facilities, General Reduction Requirements) not applicable.

**Enforcement Issues**

There are no pending enforcement actions related to this modification.

**Stack Summary**

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
5	New Acid Scrubber	10.0	1.65	2900	70

**Emission Calculations**

See Appendix A of this document for detailed emission calculations.

**Permit Level Determination – Part 70**

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit is defined as “the maximum capacity of a stationary source or emission unit 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, IDEM, or the appropriate local air pollution control agency.”

The following table is used to determine the appropriate permit level under 326 IAC 2-7-10.5. This table reflects the PTE before controls. Control equipment is not considered federally enforceable until it has been required in a federally enforceable permit.

Pollutant	Potential To Emit Before Limits (tons/year)	Potential To Emit After Limits (tons/year)
PM	47.89	<25
PM10	7.19	<15
SO <sub>2</sub>	0.00	0.00
VOC	38.58	<25
CO	0.00	0.00
NO <sub>x</sub>	0.00	0.00

HAPs	Potential To Emit (tons/year)
Formaldehyde	0.001
Naphthalene	0.01
Glycol ethers	4.99
Methanol	0.02
Xylene	0.005
Cumene	0.002
TOTAL	5.03

This source modification is considered a minor source modification because:

- (a) Pursuant to 326 IAC 2-7-10.5(d)(4)(E), the source will limit raw material usage to the sand mixers and sand handling so that PM emissions are limited to less than 25 tons per year.
- (b) Pursuant to 326 IAC 2-7-10.5(d)(6), the source will accept a VOC emission limit for the core machines of less than 25 tons per year to render the requirements of 326 IAC 8-1-6 not applicable.

Additionally, the modification will be incorporated into the Part 70 Operating Permit through a significant permit modification issued pursuant to 326 IAC 2-7-12(d) because additional compliance monitoring, record keeping and reporting requirements are being added to the permit which are considered significant.

**Permit Level Determination – PSD**

The table below summarizes the potential to emit, reflecting all limits, of the emission units. Any control equipment is considered federally enforceable only after issuance of this Part 70 source modification and permit modification, and only to the extent that the effect of the control equipment is made practically enforceable in the permit.

Process/Emission Unit	Potential to Emit (tons/year)							
	PM	PM10	SO <sub>2</sub>	VOC	CO	NO <sub>x</sub>	Single HAP	Total HAPs
<b>Two (2) core sand mixers (M-1 and M-2) and core sand handling operations (SH-1 and SH-2)<sup>(1)</sup></b>	24.90	7.19	0.00	0.00	0.00	0.00	0.00	0.00
<b>Isocure core machines (CM 1 and CM 2)<sup>(2)</sup></b>	0.00	0.00	0.00	24.42	0.00	0.00	2.563 (Glycol Ethers)	2.568
<b>No Bake core machine (CM 3)</b>	0.00	0.00	0.00	0.48	0.00	0.00	0.023 (Methanol)	0.031
<b>Electric sand heater</b>	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
<b>Total for Modification</b>	24.9	7.19	0.00	24.90	0.00	0.00	2.563	2.599
<b>Significant Level or Major Source Threshold</b>	25	15	40	40	100	40	NA	NA

Notes:

- (1) Limited PM emissions from core sand handling operations are based on a sand throughput limit for SH-1 of 13,505 tons per twelve (12) consecutive month period and 3.6 pounds of PM per ton of sand, with compliance determined at the end of each month, such that 326 IAC 2-2 does not apply. VOC emissions from the resin and catalyst added to the mixers are accounted for in the VOC emissions from core making.
- (2) Limited VOC emissions from the Isocure core machines are based on resin and catalyst throughput limits of 505,317 and 23,581 pounds per twelve (12) consecutive month period, respectively, and 0.05 pound of VOC per pound of resin, with compliance determined at the end of each month, such that 326 IAC 8-1-6 does not apply. Please refer to Appendix A for details.

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

Since this source is considered a major PSD source and the unrestricted potential to emit of this modification is greater than twenty-five (25) tons of PM per year, this source has elected to limit the potential to emit of this modification as follows:

- (a) The throughput of sand to the one (1) core sand handling operation, identified as SH-1, shall not exceed 13,505 tons per twelve (12) consecutive month period, with compliance determined at the end of each month; and

- (b) PM emissions from the one (1) core sand handling operation, identified as SH-1, shall not exceed 3.6 pounds per ton of sand throughput.

Compliance with these emission limits will ensure that the potential to emit from this modification is less than twenty-five (25) tons of PM per year and therefore will render the requirements of 326 IAC 2-2 not applicable.

Note: The baghouse controlling PM emissions from the core sand handling operation SH-1 is not required to comply with this limit.

<b>Federal Rule Applicability Determination</b>
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- (a) There are no New Source Performance Standards (NSPS)(326 IAC 12 and 40 CFR Part 60) applicable to this proposed modification.
- (b) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs) (326 IAC 14, 326 IAC 20 and 40 CFR Part 63) applicable to this proposed modification since this source is a minor source for HAPs.
- (c) Pursuant to 40 CFR 64.2, Compliance Assurance Monitoring (CAM) is applicable to new or modified emission units that involve a pollutant-specific emission unit and meet the following criteria:
- (1) has a potential to emit before controls equal to or greater than the major source threshold for the pollutant involved;
  - (2) is subject to an emission limitation or standard for that pollutant; and
  - (3) uses a control device, as defined in 40 CFR 64.1, to comply with that emission limitation or standard.

The following table is used to identify the applicability of each of the criteria, under 40 CFR 64.1, to each new or modified emission unit involved:

Emission Unit	Control Device Used	Emission Limitation (Y/N)	Uncontrolled PTE (tons/year)	Controlled PTE (tons/year)	Major Source Threshold (tons/year)	CAM Applicable (Y/N)	Large Unit (Y/N)
Core Sand Handling SH-1 – PM10	Baghouse	N	7.10	0.77	100	N	N
Core Sand Handling SH-2 – PM10	Baghouse	N	0.09	0.03	100	N	N
Isocure Core Machines CM 1 and CM 2 - VOC	Scrubber	Y	38.11	12.89	100	N	N
No Bake Core Machine CM 3 - VOC	None	N	0.48	0.48	100	N	N

Based on this evaluation, the requirements of 40 CFR Part 64, CAM are not applicable to any of the new units as part of this modification.

<b>State Rule Applicability Determination</b>
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The following state rules are applicable to the source due to the modification:

326 IAC 2-2 and 2-3 (PSD and Emission Offset)

PSD and Emission Offset applicability is discussed under the Permit Level Determination - PSD and Emission Offset section.

326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))

The operation of the three (3) core machines, two (2) sand mixers, and sand handling operations will emit less than ten (10) tons per year for a single HAP and less than twenty-five (25) tons per year for a combination of HAPs. Therefore, 326 IAC 2-4.1 does not apply.

#### 326 IAC 2-6 (Emission Reporting)

Since this source is required to have an operating permit under 326 IAC 2-7, Part 70 Permit Program, this source is subject to 326 IAC 2-6 (Emission Reporting). In accordance with the compliance schedule in 326 IAC 2-6-3, an emission statement must be submitted triennially. The first report was due no later than July 1, 2004, and subsequent reports are due every three (3) years thereafter. The emission statement shall contain, at a minimum, the information specified in 326 IAC 2-6-4.

#### 326 IAC 5-1 (Opacity 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).

#### 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes)

Pursuant to 326 IAC 6-3-2, the particulate matter (PM) from the Core Sand Mixer M1 and Core Sand Handling SH-1 shall not exceed 8.56 pounds per hour when operating at a process weight rate of 3.0 tons per hour. The pound per hour limitation was calculated with the following equation:

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

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

The baghouse controlling the core sand mixer M1 and core sand handling SH-1 shall be in operation at all times the core sand mixer M1 and core sand handling SH-1 are in operation, in order to comply with this limit.

Pursuant to 326 IAC 6-3-1(b)(14), manufacturing processes with potential emissions less than five hundred fifty-one thousandths (0.551) pound per hour are exempt from this rule. Therefore, since the core sand mixer M2 and core sand handling SH-2 have potential PM emissions of less than 0.551 pound per hour, they are not subject to this rule.

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

This rule applies to facilities located anywhere in the state that were constructed on or after January 1, 1980, which have potential volatile organic compounds (VOC) emissions of 25 tons per year or more, and which are not otherwise regulated by other provisions of 326 IAC 8, and requires the reduction of VOC emissions using Best Available Control Technology (BACT). The unlimited VOC emissions from the two (2) Isocure core machines are greater than 25 tons per year; however, the source will limit uncontrolled VOC emissions from the two (2) Isocure core machines to less than 25 tons per year as follows:

- (a) Resin Usage
  - (1) The total resin usage for the two (2) Isocure core machines combined shall not exceed 505,317 pounds of resin per twelve (12) consecutive month period, with compliance determined at the end of each month.
  - (2) The VOC emissions from resin usage in the two (2) Isocure core machines shall not exceed 0.05 pound per pound of resin.
- (b) Catalyst Usage
  - Catalyst usage for the two (2) Isocure core machines combined shall not exceed 23,581 pounds of VOC catalyst per twelve (12) consecutive month period, with compliance determined at the end of each month.

The acid scrubber is not required to comply with the above VOC emission limit.

The potential to emit of VOC from the No Bake core machine is less than 25 tons per year, therefore, this rule does not apply to the No Bake core machine.

### **Compliance Determination and Monitoring Requirements**

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with all applicable state and federal rules on a continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill the requirement for a 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 Determination Requirements are included in the permit. The Compliance Determination Requirements in Section D of the permit are those conditions that are found directly within state and federal rules and the violation of which serves as grounds for enforcement action.

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

There are no Compliance Determination Requirements applicable to this modification.

- (a) PM testing is not required to demonstrate compliance with the PSD minor limit for PM for the core sand handling operation because the baghouse is not required to comply with the limit, which is based on the uncontrolled PM emission factor for sand handling from U.S. EPA's AP-42.
- (b) There are no testing requirements for the acid scrubber controlling the Isocure core machines because the scrubber is not required for compliance with any applicable emission limits.

The compliance monitoring requirements applicable to this modification are as follows:

- (c) The baghouse controlling emissions from the core sand mixer M1 and core sand handling operation SH-1, which exhausts inside the building, has applicable compliance monitoring conditions as specified below:
  - (1) Visible emission notations of the stack exhaust for the baghouse controlling the core sand mixer M1 and the sand handling operations SH-1 shall be performed once per day during normal daylight operations when exhausting to the

atmosphere. A trained employee shall record whether emissions are normal or abnormal.

- (2) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (3) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (4) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (5) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.
- (6) The Permittee shall record the pressure drop across the baghouse used in conjunction with the core sand mixer M1 and core sand handling operation SH-1, at least once per day when the process is in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of 1.0 and 7.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

The instrument used for determining the pressure shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

- (7) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).
- (8) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

These monitoring conditions are necessary because the baghouse for the core sand mixer M1 and core sand handling operation SH-1 must operate properly to ensure compliance with 326 IAC 6-3 (Particulate Emission Limitations for Manufacturing Processes) and 326 IAC 2-7 (Part 70)).

- (d) There are no applicable compliance monitoring requirements for the acid scrubber controlling DMIPA emissions from the Isocure core machines because the control device is not required to be in operation to comply with the VOC limits for the core machines.

**Proposed Changes**

The changes listed below have been made to Part 70 Operating Permit No. T099-7366-00003, issued on July 21, 1999. Deleted language appears as ~~strike~~throughs and new language appears in **bold**:

1. The identification of the responsible official has been removed from Condition A.1 because it has been determined by IDEM that this information is not necessary to include in the permit and will reduce the need for administrative amendments resulting from changes in the responsible official. Also, the phone number for the source has been added. Therefore, Condition A.1 is revised as follows:

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

The Permittee owns and operates a stationary ~~grey~~ **gray** iron foundry.

<del>Responsible Official:</del>	<del>Samuel Schlosser</del>
Source Address:	523 West Harrison Street, Plymouth, Indiana 46563-0537
Mailing Address:	523 West Harrison Street, Plymouth, Indiana 46563-0537
<b>General Source Phone Number:</b>	<b>574-936-2106</b>
SIC Code:	3321
County Location:	Marshall
<del>County</del> <b>Source Location Status:</b>	Attainment for all criteria pollutants
Source Status:	Part 70 Permit Program Major Source, under PSD Rules; Minor Source, Section 112 of the Clean Air Act

2. Condition A.2 is revised to include the new emission units 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:

- (a) Two (2) electric induction furnaces (iron), installed in 1986, capacity: 1.5 tons of iron per hour, each.
- (b) One (1) pouring and cooling operation, installed prior to 1976, capacity: 1.5 tons of iron per hour and a maximum of 10 tons of sand per hour.
- (c) One (1) manual shakeout operation, installed prior to 1976, capacity: 1.5 tons of iron per hour and 4.4 tons of sand per hour.
- (d) One (1) cleaning and finishing operation, consisting of a tumble and shot blast unit and two (2) baghouses for particulate matter control, exhausting through stacks 2-A and 2-B, installed in 1987 and 1993, capacity: 1.5 tons of iron per hour, total.
- (e) One (1) sand handling operation consisting of one (1) muller, one (1) power screen, one (1) skip bucket, one (1) wet sand conveyor, one (1) sand and clay addition system, six (6) overhead wet sand transfer belt conveyors, six (6) mold machine feed hoppers and a baghouse for particulate matter control, exhausting through stack 4, installed in 1992, capacity: 10.0 tons of sand per hour, total.
- (f) One (1) core making operation, consisting of two (2) core making machines, capacity 0.25 tons of cores per hour each and five (5) mold making machines, capacity: one (1) at 10 tons of sand per hour and four (4) at 3 tons of sand per hour each, installed prior to 1976, capacity: 4.61 pounds of resins per hour.

- (g) One (1) surface coating operation, consisting of an airless spray applicator and dip tank system, equipped with an 11,000 actual cubic feet per minute exhaust fan, installed in 1976, capacity: 120 iron parts per hour.
- (h) One (1) shakeout machine, installed in 1997, capacity: 1.5 tons of iron per hour and 20 tons of sand per hour.
- (i) One (1) baghouse dust collector controlling particulate matter emissions inside the foundry (~~does not have to be operated at all times~~) installed in 1997.
- (j) Two (2) core sand mixers, identified as M-1 and M-2, approved for construction in 2007, using the existing baghouse dust collector that was installed in 1997 for particulate control which exhausts inside the building, capacity: 3.0 and 0.0375 tons of sand per hour, respectively.**
- (k) One (1) electric sand heater, approved for construction in 2007, capacity: 3.0 tons of sand per hour.**
- (l) Two (2) core sand handling operations associated with the core sand mixers, identified as SH-1 and SH-2, approved for construction in 2007, consisting of conveyors and hoppers, using the existing baghouse dust collector that was installed in 1997 for particulate control which exhausts inside the building, capacity: 3.0 and 0.0375 tons of sand per hour, respectively.**
- (m) One (1) core making operation, consisting of two (2) Isocure core machines, identified as CM 1 and CM 2, approved for construction in 2007, capacity 3.0 tons of cores per hour combined, 0.015 pound of resin per pound of sand and 0.0007 pound of DMIPA catalyst per pound of sand. DMIPA catalyst emissions from both core machines are controlled by an acid scrubber exhausting to stack 5.**
- (n) One (1) No Bake core machine, identified as CM 3, approved for construction in 2007, capacity: 0.0375 tons of cores per hour, 0.015 pound of resin per pound of sand and 0.0007 pound of catalyst per pound of sand.**

3. A new section D.10 has been added to the Part 70 permit for the new units as follows:

### **SECTION D.10 EMISSIONS UNIT OPERATION CONDITIONS**

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

- (j) Two (2) core sand mixers, identified as M-1 and M-2, approved for construction in 2007, using the existing baghouse dust collector that was installed in 1997 for particulate control which exhausts inside the building, capacity: 3.0 and 0.0375 tons of sand per hour, respectively.
- (k) One (1) electric sand heater, approved for construction in 2007, capacity: 3.0 tons of sand per hour.
- (l) Two (2) core sand handling operations associated with the core sand mixers, identified as SH-1 and SH-2, approved for construction in 2007, consisting of conveyors and hoppers, using the existing baghouse dust collector that was installed in 1997 for particulate control which exhausts inside the building, capacity: 3.0 and 0.0375 tons of sand per hour, respectively.
- (m) One (1) core making operation, consisting of two (2) Isocure core machines, identified as CM 1 and CM 2, approved for construction in 2007, capacity 3.0 tons of cores per hour combined, 0.015 pound of resin per pound of sand and 0.0007 pound of DMIPA catalyst per pound of sand. DMIPA catalyst emissions from both core machines are controlled by an acid scrubber exhausting to stack 5.
- (n) One (1) No Bake core machine, identified as CM 3, approved for construction in 2007, capacity: 0.0375 tons of cores per hour, 0.015 pound of resin per pound of sand and 0.0007 pound of catalyst per pound of sand.

(The information describing the process contained in this facility description box is descriptive information and does not constitute enforceable conditions.)

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

##### **D.10.1 Particulate Matter (PM) [326 IAC 2-2][326 IAC 2-7-10.5(d)(4)(E)]**

The source shall limit PM emissions from raw material usage and sand handling as follows:

- (a) The throughput of sand to the one (1) core sand handling operation, identified as SH-1, shall not exceed 13,505 tons per twelve (12) consecutive month period, with compliance determined at the end of each month; and
- (b) PM emissions from the one (1) core sand handling operation, identified as SH-1, shall not exceed 3.6 pounds per ton of sand throughput.

Compliance with raw material usage limit and PM emission limit will limit the potential to emit from the modification in 2007 to less than twenty-five (25) tons of PM per year and therefore will render the requirements of 326 IAC 2-2 not applicable. Compliance with this limit will also satisfy the requirements for a minor source modification pursuant to 326 IAC 2-7-10.5(d)(4)(E).

##### **D.10.2 Volatile Organic Compounds (VOC) [326 IAC 8-1-6] [326 IAC 2-7-10.5(d)(6)]**

The source shall limit VOC emissions from the core machines as follows:

- (a) Resin Usage

- (1) The total resin usage for the two (2) Isocure core machines combined shall not exceed 505,317 pounds of resin per twelve (12) consecutive month period, with compliance determined at the end of each month.
  - (2) The VOC emissions from resin usage in the two (2) Isocure core machines shall not exceed 0.05 pound per pound of resin.
- (b) **Catalyst Usage**  
Catalyst usage for the two (2) Isocure core machines combined shall not exceed 23,581 pounds of VOC catalyst per twelve (12) consecutive month period, with compliance determined at the end of each month.

Compliance with the usage limits and VOC emission limit will limit VOC emissions from the two (2) Isocure core machines (CM 1 and CM 2) to less than twenty-five (25) tons per year and therefore will render the requirements of 326 IAC 8-1-6 (New Facilities, General Reduction Requirements) not applicable. Compliance with this limit will also satisfy the requirements for a minor source modification pursuant to 326 IAC 2-7-10.5(d)(6).

#### D.10.3 Particulate [326 IAC 6-3-2]

Pursuant to 326 IAC 6-3-2 (Particulate Emission Limitations for Manufacturing Processes), the allowable particulate emission rate from the Core Sand Mixer M1 and Core Sand Handling SH-1 shall not exceed 8.56 pounds per hour when operating at a process weight rate of 3.0 tons per hour. The pounds per hour limitation was calculated using the following equation:

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

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

#### D.10.4 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 the core sand mixers and core sand handling operations and their control device.

#### Compliance Determination Requirements [326 IAC 2-7-6(1)][326 IAC 2-7-5(1)]

#### D.10.5 Particulate Control

- (a) In order to comply with Condition D.10.3, the baghouse dust collector for particulate control shall be in operation and control emissions from the core sand mixer M1 and core sand handling SH-1 at all times that the core sand mixer M1 and core sand handling SH-1 are in operation.
- (b) In the event that bag failure is observed in a multi-compartment baghouse, if operations will continue for ten (10) days or more after the failure is observed before the failed units will be repaired or replaced, the Permittee shall promptly notify the IDEM, OAQ of the expected date the failed units will be repaired or replaced. The notification shall also include the status of the applicable compliance monitoring parameters with respect to normal, and the results of any response actions taken up to the time of notification.

#### Compliance Monitoring Requirements [326 IAC 2-5.1-3(e)(2)] [326 IAC 2-6.1-5(a)(2)]

#### D.10.6 Visible Emissions Notations

- (a) Visible emission notations of the stack exhaust for the baghouse controlling the core sand mixer M1 and the sand handling operations SH-1 shall be performed once

per day during normal daylight operations when exhausting to the atmosphere. A trained employee shall record whether emissions are normal or abnormal.

- (b) For processes operated continuously, "normal" means those conditions prevailing, or expected to prevail, eighty percent (80%) of the time the process is in operation, not counting startup or shut down time.
- (c) In the case of batch or discontinuous operations, readings shall be taken during that part of the operation that would normally be expected to cause the greatest emissions.
- (d) A trained employee is an employee who has worked at the plant at least one (1) month and has been trained in the appearance and characteristics of normal visible emissions for that specific process.
- (e) If abnormal emissions are observed, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

#### **D.10.7 Parametric Monitoring**

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The Permittee shall record the pressure drop across the baghouse used in conjunction with the core sand mixer M1 and core sand handling operation SH-1, at least once per day when the process is in operation. When for any one reading, the pressure drop across the baghouse is outside the normal range of 1.0 and 7.0 inches of water or a range established during the latest stack test, the Permittee shall take reasonable response steps in accordance with Section C- Response to Excursions or Exceedances. A pressure reading that is outside the above mentioned range is not a deviation from this permit. Failure to take response steps in accordance with Section C - Response to Excursions or Exceedances shall be considered a deviation from this permit.

The instrument used for determining the pressure shall comply with Section C - Instrument Specifications, of this permit, shall be subject to approval by IDEM, OAQ, and shall be calibrated at least once every six (6) months.

#### **D.10.8 Broken or Failed Bag Detection**

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- (a) For a single compartment baghouse controlling emissions from a process operated continuously, a failed unit and the associated process shall be shut down immediately until the failed unit has been repaired or replaced. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).
- (b) For a single compartment baghouse controlling emissions from a batch process, the feed to the process shall be shut down immediately until the failed unit has been repaired or replaced. The emissions unit shall be shut down no later than the completion of the processing of the material in the line. Operations may continue only if the event qualifies as an emergency and the Permittee satisfies the requirements of the emergency provisions of this permit (Section B - Emergency Provisions).

Bag failure can be indicated by a significant drop in the baghouse's pressure reading with abnormal visible emissions, by an opacity violation, or by other means such as gas temperature, flow rate, air infiltration, leaks, dust traces or triboflows.

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

#### **D.10.9 Record Keeping Requirements**

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- (a) To document compliance with Condition D.10.1, the Permittee shall maintain monthly records of the throughput of sand to the one (1) core sand handling operation, identified as SH-1.
- (b) To document compliance with Condition D.10.2, the Permittee shall maintain monthly records of the resin and catalyst usage in the two (2) Isocure core machines (CM 1 and CM 2).
- (c) To document compliance with Condition D.10.6, the Permittee shall maintain records of visible emission notations of the stack exhaust for the baghouse controlling the core sand mixer M1 and the sand handling operations SH-1 once per day. The Permittee shall include in its daily record when a visible emission notation is not taken and the reason for the lack of visible emission notation (e.g. the process did not operate that day or did not exhaust to the atmosphere).
- (d) To document compliance with Condition D.10.7, the Permittee shall maintain records once per day of the pressure drop. The Permittee shall include in its daily record when a pressure drop reading is not taken and the reason for the lack of a pressure drop reading (e.g. the process did not operate that day).
- (e) All records shall be maintained in accordance with Section C - General Record Keeping Requirements, of this permit.

#### **D.10.10 Reporting Requirements**

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A quarterly summary of the information to document compliance with Conditions D.10.1 and D.10.2 shall be submitted to the address listed in Section C - General Reporting Requirements, of this permit, using the reporting forms located at the end of this permit, or their equivalent, within thirty (30) days after the end of the quarter being reported. The report submitted by the Permittee does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- 4. The following report forms have been added to the Part 70 permit:

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

## Part 70 Quarterly Report

**Source Name:** Plymouth Foundry, Incorporated  
**Source Address:** 523 West Harrison Street, Plymouth, Indiana 46563-0537  
**Mailing Address:** 523 West Harrison Street, Plymouth, Indiana 46563-0537  
**Part 70 Permit No.:** T099-7366-00003  
**Facility:** core sand handling operation, identified as SH-1  
**Parameter:** PM emissions  
**Limit:** The throughput of sand to the one (1) core sand handling operation, identified as SH-1, shall not exceed 13,505 tons per twelve (12) consecutive month period, with compliance determined at the end of each month.

YEAR:

Month	Column 1	Column 2	Column 1 + Column 2
	Sand Throughput This Month (tons)	Sand Throughput Previous 11 Months (tons)	12 Month Total Sand Throughput (tons)
Month 1			
Month 2			
Month 3			

No deviation occurred in this quarter.

Deviation/s occurred in this quarter.

Deviation has been reported on:

Submitted by: \_\_\_\_\_  
Title / Position: \_\_\_\_\_  
Signature: \_\_\_\_\_  
Date: \_\_\_\_\_  
Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

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

### Part 70 Quarterly Report

**Source Name:** Plymouth Foundry, Incorporated  
**Source Address:** 523 West Harrison Street, Plymouth, Indiana 46563-0537  
**Mailing Address:** 523 West Harrison Street, Plymouth, Indiana 46563-0537  
**Part 70 Permit No.:** T099-7366-00003  
**Facility:** two (2) Isocure core machines (CM 1 and CM 2)  
**Parameter:** VOC emissions  
**Limit:** (a) The total resin usage for the two (2) Isocure core machines (CM 1 and CM 2) combined shall not exceed 505,317 pounds of resin per twelve (12) consecutive month period, with compliance determined at the end of each month.  
 (b) Catalyst usage for the two (2) Isocure core machines (CM 1 and CM 2) combined shall not exceed 23,581 pounds of VOC catalyst per twelve (12) consecutive month period, with compliance determined at the end of each month.

YEAR:

Month	Column 1		Column 2		Column 1 + Column 2	
	Resin Usage This Month (pounds)	Catalyst Usage This Month (pounds)	Resin Usage Previous 11 Months (pounds)	Catalyst Usage Previous 11 Months (pounds)	12 Month Total Resin Usage (pounds)	12 Month Total Catalyst Usage (pounds)
Month 1						
Month 2						
Month 3						

No deviation occurred in this quarter.

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

Submitted by: \_\_\_\_\_  
 Title / Position: \_\_\_\_\_  
 Signature: \_\_\_\_\_  
 Date: \_\_\_\_\_  
 Phone: \_\_\_\_\_

Attach a signed certification to complete this report.

Upon further review, IDEM, OAQ has decided to make the following changes to the permit:

1. The address for IDEM, OAQ has been updated and mail codes have been added to improve mail delivery. In addition, the phone numbers have been corrected:

Telephone No.: 317-233-~~5674~~ **0178**  
Facsimile No.: 317-233-~~5967~~ **6865**

Indiana Department of Environmental Management  
Permits Branch, Office of Air Quality  
100 North Senate Avenue  
Indianapolis, Indiana ~~46206-6015~~ **46204-2251**

Permits Branch: **MC 61-53 IGCN 1003**  
Compliance Branch: **MC 61-53 IGCN 1003**  
Air Compliance Section: **MC 61-53 IGCN 1003**  
Compliance Data Section: **MC 61-53 IGCN 1003**  
Asbestos Section: **MC 61-52 IGCN 1003**  
Technical Support and Modeling: **MC 61-50 IGCN 1003**

### Conclusion and Recommendation

The construction of this proposed modification shall be subject to the conditions of the attached proposed Part 70 Minor Source Modification No. 099-24954-00003 and Significant Permit Modification No. 099-25002-00003. The staff recommends to the Commissioner that this Part 70 Minor Source Modification and Significant Permit Modification be approved.

**Appendix A: Emission Calculations Summary**

**Company Name:** Plymouth Foundry, Inc.  
**Plant Location:** 523 West Harrison Street, Plymouth, Indiana 46563-0537  
**Source Modification No.:** 099-24954-00003  
**Pit. ID #:** 099-00003  
**Reviewer:** ERG/TE  
**Date:** August 6, 2007

<b>Total Unlimited Potential To Emit (tons/year)</b>			
Emissions Generating Activity			
Pollutant	Sand Mixers and Sand Handling	Core Making	TOTAL
PM*	47.9	0.0	47.9
PM10*	7.19	0.0	7.2
SO2	0.0	0.0	0.0
NOx	0.0	0.0	0.0
VOC**	0.0	38.6	38.6
CO	0.0	0.0	0.0
total HAPs	0.0	5.0	5.0
worst case single HAP	0.0	(Glycol ethers) 4.99	(Glycol ethers) 4.99
Total emissions based on rated capacities at 8,760 hours/year.			
*For the purposes of determining Title V applicability, PM10 (not PM) is the regulated pollutant in consideration			
**Any VOC emissions from the sand mixers are accounted for in the core making emissions.			
<b>Total Limited Potential To Emit (tons/year)</b>			
Emissions Generating Activity			
Pollutant	Sand Mixers and Sand Handling	Core Making	TOTAL
PM*	24.9	0.0	24.9
PM10*	3.7	0.0	3.7
SO2	0.0	0.0	0.0
NOx	0.0	0.0	0.0
VOC**	0.0	24.9	24.9
CO	0.0	0.0	0.0
total HAPs	0.0	2.6	2.6
worst case single HAP	0.0	(Glycol ethers) 2.56	(Glycol ethers) 2.56
Total emissions based on rated capacities at 8,760 hours/year.			
*For the purposes of determining Title V applicability, PM10 (not PM) is the regulated pollutant in consideration			
**Any VOC emissions from the sand mixers are accounted for in the core making emissions.			
<b>Total Limited Potential To Emit After Control (tons/year)</b>			
Emissions Generating Activity			
Pollutant	Sand Mixers and Sand Handling	Core Making	TOTAL
PM*	1.4	0.0	1.4
PM10*	1.4	0.0	1.4
SO2	0.0	0.0	0.0
NOx	0.0	0.0	0.0
VOC	0.0	13.4	13.4
CO	0.0	0.0	0.0
total HAPs	0.0	2.6	2.6
worst case single HAP	0.0	(Glycol ethers) 2.56	(Glycol ethers) 2.56
Total emissions based on rated capacities at 8,760 hours/year.			
*For the purposes of determining Title V applicability, PM10 (not PM) is the regulated pollutant in consideration			

## Appendix A: Grey Iron Foundry Operations

Company Name: Plymouth Foundry, Inc.  
 Plant Location: 523 West Harrison Street, Plymouth, Indiana 46563-0537  
 Source Modification No.: 099-24954-00003  
 PIt. ID #: 099-00003  
 Reviewer: ERG/TE  
 Date: August 6, 2007

SCC# 3-04-003-50 Core Sand Handling (SH-1) - Uncontrolled Emissions							
TYPE OF MATERIAL		Maximum Throughput		Control Device: Baghouse			
		LBS/HR	TON/HR				
Sand		6000	3	Limited Throughput*			
		LBS/HR	TON/HR				
		3083	1.54				
Pollutant Units	PM lbs/ton sand handled	PM10 lbs/ton sand handled	SOx lbs/ton sand handled	NOx lbs/ton sand handled	VOC lbs/ton sand handled	CO lbs/ton sand handled	Lead lbs/ton sand handled
Emission Factor	3.6	0.54	0.0	0.0	0.0	0.0	0.0
Potential Uncontrolled Emissions lbs/hr	10.80	1.62	0.00	0.00	0.00	0.00	0.00
<b>Potential Uncontrolled Emissions tons/year</b>	<b>47.30</b>	<b>7.10</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>
Limited Uncontrolled Emissions lbs/hr	5.55	0.83	0.00	0.00	0.00	0.00	0.00
<b>Limited Uncontrolled Emissions tons/year</b>	<b>24.31</b>	<b>3.65</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Note: Emission factors from USEPA's Factor Information Retrieval (FIRE) Data System, version 6.24.

\* The source will accept a sand throughput limit of 1.54 tons per hour as a raw material usage limit to limit PM emissions to less than 25 tons per year so that this is a minor source modification pursuant to 326 IAC 2-7-10.5(d)(4)(E).

SCC# 3-04-003-50 Core Sand Handling (SH-1) - Controlled Limited Emissions							
TYPE OF MATERIAL		Limited Throughput		Control Device: Baghouse			
		LBS/HR	TON/HR				
Sand		3083	1.54				
		LBS/HR	TON/HR				
		3083	1.54				
Pollutant Units	PM lbs/ton sand handled	PM10 lbs/ton sand handled	SOx lbs/ton sand handled	NOx lbs/ton sand handled	VOC lbs/ton sand handled	CO lbs/ton sand handled	Lead lbs/ton sand handled
Emission Factor	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Limited Controlled Emissions lbs/hr	0.31	0.31	0.00	0.00	0.00	0.00	0.00
<b>Limited Controlled Emissions tons/year</b>	<b>1.35</b>	<b>1.35</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Note: Emission factors from USEPA's Factor Information Retrieval (FIRE) Data System, version 6.24, using a baghouse for control.

SCC# 3-04-003-50 Core Sand Handling (SH-2) - Uncontrolled Emissions							
TYPE OF MATERIAL		Maximum Throughput		Control Device: Baghouse			
		LBS/HR	TON/HR				
Sand		75	0.0375				
		LBS/HR	TON/HR				
		75	0.0375				
Pollutant Units	PM lbs/ton sand handled	PM10 lbs/ton sand handled	SOx lbs/ton sand handled	NOx lbs/ton sand handled	VOC lbs/ton sand handled	CO lbs/ton sand handled	Lead lbs/ton sand handled
Emission Factor	3.6	0.54	0.0	0.0	0.0	0.0	0.0
Potential Uncontrolled Emissions lbs/hr	0.14	0.02	0.00	0.00	0.00	0.00	0.00
<b>Potential Uncontrolled Emissions tons/year</b>	<b>0.59</b>	<b>0.09</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Note: Emission factors from USEPA's Factor Information Retrieval (FIRE) Data System, version 6.24.

SCC# 3-04-003-50 Core Sand Handling (SH-2) - Controlled Limited Emissions							
TYPE OF MATERIAL		Limited Throughput		Control Device: Baghouse			
		LBS/HR	TON/HR				
Sand		75	0.0375				
		LBS/HR	TON/HR				
		75	0.0375				
Pollutant Units	PM lbs/ton sand handled	PM10 lbs/ton sand handled	SOx lbs/ton sand handled	NOx lbs/ton sand handled	VOC lbs/ton sand handled	CO lbs/ton sand handled	Lead lbs/ton sand handled
Emission Factor	0.2	0.2	0.0	0.0	0.0	0.0	0.0
Potential Controlled Emissions lbs/hr	0.01	0.01	0.00	0.00	0.00	0.00	0.00
<b>Potential Controlled Emissions tons/year</b>	<b>0.03</b>	<b>0.03</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>	<b>0.00</b>

Note: Emission factors from USEPA's Factor Information Retrieval (FIRE) Data System, version 6.24, using a baghouse for control.

**Appendix A: Emission Calculation:**

**Company Name:** Plymouth Foundry, Inc.  
**Plant Location:** 523 West Harrison Street, Plymouth, Indiana 46563-0537  
**Source Modification No.:** 099-24954-00003  
**Plt. ID #:** 099-00003  
**Reviewer:** ERG/TE  
**Date:** August 6, 2007

**Core Making Process**

Machine	Date of Construction	Capacity (tons cores/hr)	Maximum Resin Content (%)	VOC Emission Factor from Resin Evaporation (lb/ton cores)	Max. Catalyst Usage (lb/ton cores)	Potential VOC Emissions from resin evap (tons/yr)	Potential VOC Emissions from Catalyst Usage (tons/yr)	Total Potential VOC Emissions (tons/yr)
Isocure Core Machines	2007	3	1.5%	1.5	1.4	19.71	18.40	38.11
Pepset No Bake Core Machine	2007	0.0375	1.5%	1.5	1.4	0.25	0.23	0.48
<b>Total</b>						<b>19.96</b>	<b>18.63</b>	<b>38.58</b>

The Isocure catalyst is 100% DMIPA by weight which is not a HAP.

**Limits Necessary to comply with 326 IAC 2-7-10.5(d)(4) and to render 326 IAC 2-2 (PSD) not applicable**

Core Machines	VOC limit (tons/yr)	VOC EF for resin evaporation (lb/ton cores)	VOC EF for resin evaporation (lb VOC/lb resin)	Catalyst EF (lb VOC/ton cores)	Core production* (tons cores/yr)	Catalyst usage limit (lbs/yr)	Resin usage limit (lbs/yr)
Isocure Core Machines	24.42	1.5	0.05	1.4	16,844	23,581	505,317
Pepset No Bake Core Machine	NA	1.5	0.05	1.4	329	NA	NA

Core Machines	Catalyst Limited VOC Emissions (tons/yr)	Resin Limited VOC Emissions (tons/yr)	Total Limited VOC Emissions (tons/yr)
Isocure Core Machines	11.79	12.63	24.42
Pepset No Bake Core Machine	0.23	0.25	0.48
<b>TOTAL</b>	<b>12.02</b>	<b>12.88</b>	<b>24.90</b>

Core Machines	DMIPA Control Efficiency	Catalyst Limited VOC Emissions After Control (tons/yr)	Resin Limited VOC Emissions (tons/yr)	Total Controlled/Limited VOC Emissions (tons/yr)
Core	97.86%	0.25	12.63	12.89
Pepset No Bake Core Machine	NA	0.23	0.25	0.48
<b>TOTAL</b>		<b>0.48</b>	<b>12.88</b>	<b>13.36</b>

Note: The acid scrubber for DMIPA control is not required to comply with the VOC emission limit of less than 25 tons per year.

**Appendix A: Emission Calculations**  
**HAP Emission Calculations - Core Making**

**Company Name:** Plymouth Foundry, Inc.  
**Plant Location:** 523 West Harrison Street, Plymouth, Indiana 46563-0537  
**Source Modification No.:** 099-24954-00003  
**Plt. ID #:** 099-00003  
**Reviewer:** ERG/TE  
**Date:** August 6, 2007

**Limited Uncontrolled Emissions****Isocure Core Making Emissions**

Unlimited Process Rate (tons/year) = 26280  
 Limited Process Rate (tons/year)\* = 13505

	Emission Factor (lb/ton core sand)				
	Formaldehyde <sup>1</sup>	Phenol <sup>1</sup>	Naphthalene <sup>1</sup>	Glycol Ethers <sup>2</sup>	MDI <sup>3</sup>
Core Mixing	0.0001	0.003	0		
Core Making	0.0028	0.0108	0.0131		
Core Storage	0.0005	0	0.009		
<b>Total</b>	<b>0.0034</b>	<b>0.0138</b>	<b>0.0221</b>	<b>0.38</b>	<b>0.88</b>

	Emissions (tons/yr)					
	Formaldehyde <sup>1</sup>	Phenol <sup>1</sup>	Naphthalene <sup>1</sup>	Glycol Ethers <sup>2</sup>	MDI <sup>3</sup>	Combined HAPs
Total Unlimited Emissions	8.94E-04	0.000	0.009	4.987	0.000	4.998
Total Limited Emissions	4.59E-04	0.000	0.005	2.563	0.000	2.568

**Methodology**

<sup>1</sup> Emission factors from Technikon, LLC report, "Core Room Baseline" prepared for Casting Emission Reduction

<sup>2</sup> Emission factor based on 25% VOC EF because Glycol Ethers make up 25% of VOC content in Resin

<sup>3</sup> Emission factor based on 40% VOC EF because MDI makes up 40% of VOC content in Resin

PTE (tons/yr) = Process Rate (tons / year) \* EF (lb/ton) \* 1 ton/2000lbs \* Form R Reduction Factor

\* Limited Process Rate (tons/yr) = 1.54 tons/hr \* 8760 hrs/year

**No Bake Core Making Emissions**

Maximum Process Rate (tons / year) = 328.5

Emission Factor (lb/ton core sand)						
Formaldehyde <sup>1</sup>	Phenol <sup>1</sup>	Naphthalene <sup>1</sup>	MDI <sup>1</sup>	Methanol <sup>2</sup>	Xylene <sup>2</sup>	Cumene <sup>2</sup>
0.024	0.194	0.138	0.894	0.14	0.028	0.014

  

Emissions (tons/yr)							
Formaldehyde <sup>1</sup>	Phenol <sup>1</sup>	Naphthalene <sup>1</sup>	MDI <sup>1</sup>	Methanol <sup>2</sup>	Xylene <sup>2</sup>	Cumene <sup>2</sup>	Combined HAPs
7.99E-05	0.000	0.001	0.000	0.023	0.005	0.002	0.031

**Methodology**

<sup>1</sup> Emission factors based on VOC emission factor and percentage of resin made up by specific HAP as indicated by MSDSs for resin

<sup>2</sup> Emission factor based on MSDSs for catalyst and 100% emissions of each HAP at 0.0007 lbs catalyst/lb sand

PTE (tons/yr) = Maximum Process Rate (tons / year) \* EF (lb/ton) \* 1 ton/2000lbs \* Form R Reduction Factor

**Reduction Factors for Core Making**

Pollutant	Phenolic Urethane Coldbox Part I Binder Reduction Factors	Phenolic Urethane Coldbox Part II Binder Reduction Factors	Phenolic Urethane No Bake Part I Binder Reduction Factors	Phenolic Urethane No Bake Part II Binder Reduction Factors
Phenol	0.00%	N/A	0.00%	N/A
MDI	N/A	0.00%	N/A	0.00%
Formaldehyde	2.00%	N/A	2.00%	N/A
Naphthalene	3.25%	3.25%	5.85%	5.85%
Glycol Ethers	N/A	N/A	N/A	N/A
Methanol	N/A	N/A	N/A	N/A
Xylene	3.25%	3.25%	5.85%	5.85%
Cumene	3.25%	N/A	5.85%	5.85%

Reduction factors obtained from the American Foundrymen's Society Publication entitled "Form R Reporting of Binder Chemicals used in