



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: March 20, 2006
RE: Innovene USA LLC / 089-22011-00076
FROM: Paul Dubenetzky
Chief, Permits Branch
Office of Air Quality

Notice of Decision: Approval - Effective Immediately

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

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

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

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

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

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

Enclosures
FNPER.dot 1/10/05



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
We make Indiana a cleaner, healthier place to live.

Mitchell E. Daniels, Jr.
Governor

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Mr. Geoffrey Gilman
Innovene USA LLC
4225 Naperville Road, Suite 600
Lisle, IL 60532

March 20, 2006

Re: **Significant Source Modification**
089-22011-00076

Dear Mr. Gilman:

On November 8, 2005, the Office of Air Quality (OAQ) received an application Innovene USA LLC relating to the construction and operation of a new rail loading/unloading rack system and the associated piping for butane/butene (BB) feed stock and spent BB. This new rail loading/unloading rack system, identified as EU-7, has a maximum capacity of 300 gallons per minute per car or a total of 2,084 cars per year and consists of six (6) rail loading/unloading locations on two (2) new rail sidings. This new rail loading/unloading rack system will enable Innovene USA LLC to receive BB feed stock from other sources and to load spent BB to the railcars.

The source may begin construction when the significant source modification has been issued. Operating conditions shall be incorporated into the pending Part 70 operating permit.

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter call (800) 451-6027, and ask for Iryn Calilung or extension 3-5692, or dial (317) 233-5692

Sincerely,

Paul Dubenetzky
Assistant Commissioner
Office of Air Quality

cc: File - Lake County
Lake County Health Department
Air Compliance Section Inspector - RCS
NWRO - RGM and RGT
Compliance Data Section
Permit Administrative and Development
BP Products North America Inc.
2815 Indianapolis Blvd., Whiting, Indiana 46394
Trinity Consultants
2311 W 22nd St., Suite 315, Oak Brook, IL 60523





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PART 70 SIGNIFICANT SOURCE MODIFICATION

OFFICE OF AIR QUALITY

Innovene USA LLC
2357 Standard Avenue
Whiting, IN 46394

(herein known as the Permittee) is hereby authorized to construct and operate subject to the conditions contained herein, the emission units described in Section A (Source Summary) of this approval.

This approval 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.

Significant Source Modification No.: 089-22011-00076	
Issued by: Original signed by Paul Dubenetzky, Assistant Commissioner Office of Air Quality	Issuance Date: March 20, 2006



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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 thru 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)] [326 IAC 2-7-1(22)]

The Permittee owns and operates a chemical plant that manufactures polybutene from butane/butene mixture by a catalytic polymerization reaction using aluminum chloride as a catalyst.

Responsible Officials:	General Manager
Source Address:	2357 Standard Avenue, Whiting, IN 46394
SIC Code:	2821
County Location:	Lake
Source Location Status:	Severe Nonattainment for 1-Hour Ozone Standard Nonattainment for 8-Hour Ozone Standard Nonattainment for PM2.5 Attainment or unclassifiable for all other criteria pollutants
Source Status:	Part 70 Permit Program Major Source, under PSD Rules Major Source, under Emission Offset Rules 1 of 28 Listed Source Categories

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

This modification to a stationary source is approved to construct the following:

A rail loading/unloading rack system and the associated piping for butane/butene (BB) feed stock and spent BB. This rail loading/unloading rack system, identified as EU-7, has a maximum capacity of 300 gallons per minute per car or a total of 2,084 cars per year and consists of six (6) rail loading/unloading locations on two (2) new rail sidings. This rail loading/unloading rack system will enable Innovene to receive BB feedstock from other sources and to load spent BB to the railcars.

VOC emissions from the rail loading/unloading rack system will be controlled by the existing flare, identified as PIB Flare. This PIB Flare has a maximum capacity of 540,000 pounds per hour of fuel and natural gas. Controlled emissions exhaust through the existing stack SV 2.

The following are the sources of fugitive equipment leaks:

- (a) pumps equipped with double-mechanical seals;
- (b) piping manifold(s) for the loading/unloading rack;
- (c) receiver drum(s) to provide surge capacity;

- (d) various valves;
- (e) condenser(s);
- (f) G-L separator(s) for the condenser;
- (g) two (2) compressors with closed vent systems;
- (h) lines of piping; and
- (i) associated valves and flanges to connect the BB feed system and to the spent BB pipe system downstream of the vapor recovery unit.

The following table summarizes the estimated equipment leaks:

Type of Component	Number of Components in Light Liquid Service	Number of Components in Gas/Vapor Service
Pumps	2	--
Valves	83	54
Flanges	231	154
Compressors	--	2

The maximum capacity of the chemical plant (250 million pounds per year) will not change due to this proposed modification.

There will be no new building constructed for this proposed modification.

A.3 Part 70 Permit Applicability [326 IAC 2-7-2]

This chemical plant 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 B GENERAL CONSTRUCTION CONDITIONS

B.1 Advanced Source Modification Approval [326 IAC 2-7-5(16)] [326 IAC 2-7-10.5]

Pursuant to 326 IAC 2-7-10.5(f)(4), the activities involved in the rail loading/unloading rack system (EU-7) and PIB Flare, as specified in Section A.2 of this permit, are hereby approved for construction.

B.2 Permit No Defense [IC 13-11 through 13-20][IC 13-22 through 13-25]

This permit 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.

B.3 Effective Date of the Permit [IC 13-15-5-3]

Pursuant to IC 13-15-5-3, this permit becomes effective upon its issuance.

B.4 Revocation of Permits [326 IAC 2-1.1-9(5)][326 IAC 2-7-10.5(i)]

Pursuant to 326 IAC 2-1.1-9(5)(Revocation of Permits), 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.

B.5 Modification to Construction Conditions [326 IAC 2]

All requirements of these construction conditions shall remain in effect unless modified in a manner consistent with procedures established for revisions pursuant to 326 IAC 2.

B.6 Significant Source Modification [326 IAC 2-7-10.5(h)]

This document shall also become the approval to operate pursuant to 326 IAC 2-7-10.5(h) when, prior to start of operation, the following requirements are met:

- (a) The attached Affidavit of Construction shall be submitted to the Office of Air Quality (OAQ), verifying that the emission units were constructed or modified as proposed in the application or the permit. The emission units covered in this permit may begin operating on the date the affidavit of construction is postmarked or hand delivered to IDEM if constructed as proposed.

If construction is completed in phases: (i.e., the entire construction is not done continuously) a separate affidavit must be submitted for each phase of construction.

- (b) If actual construction of the emission units differs from the construction proposed in the application or the permit in a manner that is not regulated under the provisions of 326 IAC 2-2, the Permittee may not begin operation until the source modification has been revised pursuant to the provisions of that rule and the provisions of 326 IAC 2-7-11 or 326 IAC 2-7-12 and an Operation Permit Validation Letter is issued.
- (c) The Permittee shall attach the Operation Permit Validation Letter received from the OAQ to this permit.
- (d) The changes covered by this Significant Source Modification will be included in the Part 70 Operating Permit.

- (e) In the event that the Part 70 application is being processed at the same time as this application, the following additional procedures shall be followed for obtaining the right to operate:
- (1) If the Part 70 draft permit has not gone on public notice, then the project covered by the Significant Source Modification will be included in the Part 70 draft.
 - (2) If the Part 70 permit has gone through final EPA proposal and would be issued ahead of the Significant Source Modification, the Significant Source Modification will go through a concurrent 45 day EPA review. Then the Significant Source Modification will be incorporated into the final Part 70 permit at the time of issuance.
 - (3) If the Part 70 permit has gone through public notice, but has not gone through final EPA review and would be issued after the Significant Source Modification is issued, then the Modification would be added to the proposed Part 70 permit, and the Part 70 Operating permit will issued after EPA review

SECTION C GENERAL OPERATION CONDITIONS

C.1 Certification [326 IAC 2-7-4(f)][326 IAC 2-7-6(1)][326 IAC 2-7-5(3)(C)]

- (a) Where specifically designated by this permit or required by an applicable requirement, any application form, report, or compliance certification submitted shall contain certification by a responsible official of truth, accuracy, and completeness. This certification shall state that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.
- (b) One (1) certification shall be included, using the attached Certification Form, with each submittal requiring certification.
- (c) A responsible official is defined at 326 IAC 2-7-1(34).

C.2 Preventive Maintenance Plan [326 IAC 2-7-5(1),(3) and (13)] [326 IAC 2-7-6(1) and (6)] [326 IAC 1-6-3]

- (a) If required by specific condition(s) in Section D of this permit, the Permittee shall prepare and maintain Preventive Maintenance Plans (PMPs) upon initial start up, including the following information on each facility:
 - (1) Identification of the individual(s) responsible for inspecting, maintaining, and repairing emission control devices;
 - (2) A description of the items or conditions that will be inspected and the inspection schedule for said items or conditions; and
 - (3) Identification and quantification of the replacement parts that will be maintained in inventory for quick replacement.
- (b) A copy of the PMPs shall be submitted to IDEM, OAQ, upon request and within a reasonable time, and shall be subject to review and approval by IDEM, OAQ. IDEM, OAQ, may require the Permittee to revise its PMPs whenever lack of proper maintenance causes or is the primary contributor to an exceedance of any limitation on emissions or potential to emit. The PMPs do not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).
- (c) To the extent the Permittee is required by 40 CFR Part 60 or 40 CFR Part 63 to have an Operation Maintenance, and Monitoring (OMM) Plan for a unit, such Plan is deemed to satisfy the PMP requirements of 326 IAC 1-6-3 for that unit.

C.3 Deviations from Permit Requirements and Conditions [326 IAC 2-7-5(3)(C)(ii)]

- (a) Deviations from any permit requirements (for emergencies see Section C - Emergency Provisions), the probable cause of such deviations, and any response steps or preventive measures taken shall be reported to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

using the attached Quarterly Deviation and Compliance Monitoring Report, or its equivalent.

A deviation required to be reported pursuant to an applicable requirement that exists independent of this permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report.

The Quarterly Deviation and Compliance Monitoring Report does require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (b) A deviation is an exceedance of a permit limitation or a failure to comply with a requirement of the permit.

C.4 Inspection and Entry [326 IAC 2-7-6][IC 13-14-2-2][IC 13-30-3-1]

Upon presentation of proper identification cards, credentials, and other documents as may be required by law, and subject to the Permittee's right under all applicable laws and regulations to assert that the information collected by the agency is confidential and entitled to be treated as such, the Permittee shall allow IDEM, OAQ, U.S. EPA, or an authorized representative to perform the following:

- (a) Enter upon the Permittee's premises where a permitted source is located, or emissions related activity is conducted, or where records must be kept under the conditions of this permit;
- (b) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, have access to and copy, at reasonable times, any records that must be kept under this title or the conditions of this permit or any operating permit revisions;
- (c) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, inspect at reasonable times, any processes, emission units (including monitoring and air pollution control equipment), practices, or operations regulated or required under this permit or any operating permit revisions;
- (d) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, sample or monitor, at reasonable times, substances or parameters for the purpose of assuring compliance with this permit or applicable requirements; and
- (e) As authorized by the Clean Air Act, IC 13-14-2-2, IC 13-17-3-2, and IC 13-30-3-1, utilize any photographic, recording, testing, monitoring, or other equipment for the purpose of assuring compliance with this permit or applicable requirements.

C.5 Opacity [326 IAC 5-1]

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 twenty percent (20%) in 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 Part 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.

C.6 Fugitive Dust Emissions [326 IAC 6-4]

The Permittee shall not allow fugitive dust to escape beyond the property line or boundaries of the property, right-of-way, or easement on which the source is located, in a manner that would violate 326 IAC 6-4 (Fugitive Dust Emissions).

326 IAC 6-4-2(4) is not federally enforceable.

Testing Requirements [326 IAC 2-7-6(1)]

C.7 Performance Testing [326 IAC 3-6][326 IAC 2-1.1-11]

- (a) Compliance testing on new emission units shall be conducted within 60 days after achieving maximum production rate, but no later than 180 days after initial start-up. All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this approval, utilizing any applicable procedures and analysis methods specified in 40 CFR Part 51, 40 CFR Part 60, 40 CFR Part 61, 40 CFR Part 63, 40 CFR Part 75, or other procedures approved by IDEM, OAQ.

A test protocol, except as provided elsewhere in this approval, shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

no later than thirty-five (35) days prior to the intended test date. The protocol submitted by the Permittee does not require certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (b) The Permittee shall notify IDEM, OAQ of the actual test date at least fourteen (14) days prior to the actual test date. The notification submitted by the Permittee does not require certification by the "responsible official" as defined by 326 IAC 2-7-1(34).
- (c) Pursuant to 326 IAC 3-6-4(b), all test reports must be received by IDEM, OAQ within forty-five (45) days after the completion of the testing. An extension may be granted by IDEM, OAQ, if the source submits to IDEM, OAQ, a reasonable written explanation within five (5) days prior to the end of the initial forty-five (45) day period.

Compliance Requirements [326 IAC 2-1.1-11]

C.8 Compliance Requirements [326 IAC 2-1.1-11]

The commissioner may require stack testing, monitoring, or reporting at any time to assure compliance with all applicable requirements by issuing an order under 326 IAC 2-1.1-11. Any monitoring or testing shall be performed in accordance with 326 IAC 3 or other methods approved by the commissioner or the U. S. EPA.

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

C.9 Compliance Monitoring [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]

All monitoring and record keeping requirements shall be implemented upon initial startup of the operation. The Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment.

C.10 Monitoring Methods [326 IAC 3] [40 CFR Part 60] [40 CFR Part 63]

Any monitoring or testing of this permit shall be performed according to the provisions of 326 IAC 3, 40 CFR Part 60, Appendix A; 40 CFR Part 60, Appendix B; 40 CFR Part 63, or other approved methods as specified in this permit.

Corrective Actions and Response Steps [326 IAC 2-7-5] [326 IAC 2-7-6]

C.11 Response to Excursions or Exceedances [326 IAC 2-7-5] [326 IAC 2-7-6]

- (a) Upon detecting an excursion or exceedance, the Permittee shall restore operation of the emissions unit (including any control device and associated capture system) to its normal or usual manner of operation as expeditiously as practicable in accordance with good air pollution control practices for minimizing emissions.
- (b) The response shall include minimizing the period of any startup, shutdown or malfunction and taking any necessary corrective actions to restore normal operation and prevent the likely recurrence of the cause of an excursion or exceedance (other than those caused by excused startup or shutdown conditions). Corrective actions may include, but are not limited to, the following:
 - (1) initial inspection and evaluation;
 - (2) recording that operations returned to normal without operator action (such as through response by a computerized distribution control system); or
 - (3) any necessary follow-up actions to return operation to within the indicator range, designated condition, or below the applicable emission limitation or standard, as applicable.
- (c) A determination of whether the Permittee has used acceptable procedures in response to an excursion or exceedance will be based on information available, which may include, but is not limited to, the following:
 - (1) monitoring results;
 - (2) review of operation and maintenance procedures and records;
 - (3) inspection of the control device, associated capture system, and the process.
- (d) Failure to take reasonable response steps shall be considered a deviation from the permit.
- (e) The Permittee shall maintain the following records:

- (1) monitoring data;
- (2) monitor performance data, if applicable; and
- (3) corrective actions taken.

C.12 Emergency Provisions [326 IAC 2-7-16]

- (a) An emergency, as defined in 326 IAC 2-7-1(12), is not an affirmative defense for an action brought for noncompliance with a federal or state health-based emission limitation.
- (b) An emergency, as defined in 326 IAC 2-7-1(12), constitutes an affirmative defense to an action brought for noncompliance with a technology-based emission limitation if the affirmative defense of an emergency is demonstrated through properly-signed, contemporaneous operating logs or other relevant evidence that describe the following:

- (1) An emergency occurred, and the Permittee can, to the extent possible, identify the causes of the emergency.
- (2) The permitted facility was at the time being properly operated.
- (3) During the period of an emergency, the Permittee took all reasonable steps to minimize levels of emissions that exceeded the emission standards or other requirements in this permit.
- (4) For each emergency lasting one (1) hour or more, the Permittee notified IDEM, OAQ and Northwest Regional Office within four (4) daytime business hours after the beginning of the emergency, or after the emergency was discovered or reasonably should have been discovered.

Telephone Number: 1-800-451-6027
(ask for Office of Air Quality, Compliance Section), or
Telephone Number: 317-233-5674 (ask for Compliance Section)
Facsimile Number: 317-233-5967

Northwest Regional Office
Telephone Number: 219-881-6712
Facsimile Number: 219-881-6745

- (5) For each emergency lasting one (1) hour or more, the Permittee submitted the attached Emergency Occurrence Report Form or its equivalent, either by mail or facsimile, to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

within two (2) working days of the time when emission limitations were exceeded due to the emergency.

The notice fulfills the requirement of 326 IAC 2-7-5(3)(C)(ii) and must contain the following:

- (A) A description of the emergency;
- (B) Any steps taken to mitigate the emissions; and,
- (C) Corrective actions taken.

The notification which shall be submitted by the Permittee does not require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (6) The Permittee immediately took all reasonable steps to correct the emergency.
- (c) In any enforcement proceeding, the Permittee seeking to establish the occurrence of an emergency has the burden of proof.
- (d) This emergency provision supersedes 326 IAC 1-6 (Malfunctions). This permit condition is in addition to any emergency or upset provision contained in any applicable requirement.
- (e) The Permittee seeking to establish the occurrence of an emergency shall make records available upon request to ensure that failure to implement a PMP did not cause or contribute to an exceedance of any limitations on emissions. However, IDEM, OAQ may require that the Preventive Maintenance Plans required under 326 IAC 2-7-4-(c)(10) be revised in response to an emergency.
- (f) Failure to notify IDEM, OAQ by telephone or facsimile of an emergency lasting more than one (1) hour in accordance with (b)(4) and (5) of this condition shall constitute a violation of 326 IAC 2-7 and any other applicable rules.
- (g) If the emergency situation causes a deviation from a technology-based limit, the Permittee may continue to operate the affected emitting facilities during the emergency provided the Permittee immediately takes all reasonable steps to correct the emergency and minimize emissions.

C.13 Actions Related to Noncompliance Demonstrated by a Stack Test [326 IAC 2-7-5] [326 IAC 2-7-6]

- (a) When the results of a stack test performed in conformance with Section C - Performance Testing, of this permit exceed the level specified in any condition of this permit, the Permittee shall take appropriate response actions. The Permittee shall submit a description of these response actions to IDEM, OAQ, within thirty (30) days of receipt of the test results. The Permittee shall take appropriate action to minimize excess emissions from the affected facility while the response actions are being implemented.
- (b) A retest to demonstrate compliance shall be performed within one hundred twenty (120) days of receipt of the original test results. Should the Permittee demonstrate to IDEM, OAQ that retesting in one hundred and twenty (120) days is not practicable, IDEM, OAQ may extend the retesting deadline.
- (c) IDEM, OAQ reserves the authority to take any actions allowed under law in response to non-compliant stack tests.

The response action documents submitted pursuant to this condition require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).

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

C.14 General Record Keeping Requirements [326 IAC 2-7-5(3)][326 IAC 2-7-6]

- (a) Records of all required monitoring data, reports and support information required by this Permit shall be retained for a period of at least five (5) years from the date of monitoring sample, measurement, report, or application. These records shall be physically present or electronically accessible at the source location for a minimum of three (3) years. The records may be stored elsewhere for the remaining two (2) years as long as they are available upon request. If the Commissioner makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner within a reasonable time.
- (b) Unless otherwise specified in this permit, all record keeping requirements not already legally required shall be implemented when the new or modified equipment begins normal operation.
- (c) If there is a reasonable possibility that a "project" (as defined in 326 IAC 2-2-1(qq)) at an existing emission unit, other than projects at a Clean Unit, which is not part of a "major modification" 326 IAC 2-2-1(ee) may result in a significant emissions increase and the Permittee elects to utilize the "projected actual emissions" (as defined in 326 IAC 2-2-1(rr)), the Permittee shall comply with the following:
 - (1) Before beginning actual construction of the "project" (as defined in 326 IAC 2-2-1(qq)) at an existing emission unit, document and maintain the following records:
 - (A) A description of the project;
 - (B) Identification of any emission unit whose emissions of a regulated new source review pollutant could be affected by the project;
 - (C) A description of the applicability test used to determine that the project is not a major modification for any regulated NSR pollutant, including:
 - (i) Baseline actual emissions;
 - (ii) Projected actual emissions;
 - (iii) Amount of emissions excluded under section 326 IAC 2-2-1(rr)(2)(A)(iii); and
 - (iv) An explanation for why the amount was excluded, and any netting calculations, if applicable.
 - (2) Monitor the emissions of any regulated NSR pollutant that could increase as a result of the project and that is emitted by any existing emission unit identified in (1)(B) above; and

- (3) Calculate and maintain a record of the annual emissions, in tons per year on a calendar year basis, for a period of five (5) years following resumption of regular operations after the change, or for a period of ten (10) years following resumption of regular operations after the change if the project increases the design capacity or the potential to emit that regulated NSR pollutant at the emission unit.

C.15 General Reporting Requirements [326 IAC 2-7-5(3)(C)]

- (a) The source shall submit the attached Quarterly Deviation and Compliance Monitoring Report or its equivalent. Any deviation from permit requirements, the date(s) of each deviation, the cause of the deviation, and the response steps taken must be reported. This report shall be submitted within thirty (30) days of the end of the reporting period.

The Quarterly Deviation and Compliance Monitoring Report shall include the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).
- (b) The report required in (a) of this Condition of this permit shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204
- (c) Unless otherwise specified in this permit, any notice, report, or other submission required by this permit shall be considered timely if the date postmarked on the envelope or certified mail receipt, or affixed by the shipper on the private shipping receipt, is on or before the date it is due. If the document is submitted by any other means, it shall be considered timely if received by IDEM, OAQ on or before the date it is due.
- (d) Unless otherwise specified in this permit, all reports of this permit shall be submitted within thirty (30) days of the end of the reporting period.

All reports require the certification by the "responsible official" as defined by 326 IAC 2-7-1(34).
- (e) The first report shall cover the period commencing on the date that the proposed rail loading/unloading rack commences operation. Reporting periods are based on calendar years, unless otherwise specified in this permit. For the purpose of this permit "calendar year" means the twelve (12) month period from January 1 to December 31 inclusive.
- (f) If the Permittee is required to comply with the recordkeeping provisions of (c) in Section C – General Record Keeping Requirements for any "project" (as defined in 326 IAC 2-2-1(qq)), at an existing emission unit other than an Electric Utility Steam Generating Unit, and the project meets the following criteria, then the Permittee shall submit a report to IDEM, OAQ:
 - (1) The annual emissions, in tons per year, from the project identified in (c)(1) in Section C – General Record Keeping Requirements exceed the baseline actual emissions, as documented and maintained under Section C – General Record Keeping Requirements (c)(1)(C)(i), by a significant amount, as defined in 326 IAC 2-2-1(xx), for that regulated pollutant, and

- (2) The emissions differ from the preconstruction projection as documented and maintained under Section C – General Record Keeping Requirements (c)(1)(C)(ii).
- (3) The report for a project at an existing emission unit shall be submitted within sixty (60) days after the end of the year and contain the following:
 - (A) The name, address, and telephone number of the major stationary source.
 - (B) The annual emissions calculated in accordance with (c)(2) in Section C – General Record Keeping Requirements.
 - (C) The emissions calculated under the actual-to-projected-actual test stated in 326 IAC 2-2-2(d)(3).
 - (D) Any other information that the Permittee deems fit to include in this report.

Reports required in this part shall be submitted to:

Indiana Department of Environmental Management
Air Compliance Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204

- (g) The Permittee shall make the information required to be documented and maintained in accordance with (c) in Section C – General Record Keeping Requirements available for review upon request for inspection by IDEM, OAQ. The general public may request this information from the IDEM, OAQ under 326 IAC 17.1

SECTION D.1 FACILITY OPERATION CONDITIONS

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

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

A rail loading/unloading rack system and the associated piping for butane/butene (BB) feedstock and spent BB. This rail loading/unloading rack system, identified as EU-7, has a maximum capacity of 300 gallons per minute per car or a total of 2,084 cars per year and consists of six (6) rail loading/unloading locations on two (2) new rail sidings. This rail loading/unloading rack system will enable Innovene to receive BB feedstock from other sources and to load spent BB to the railcars.

VOC emissions from the rail loading/unloading rack system will be controlled by the existing flare, identified as PIB Flare. This PIB Flare has a maximum capacity of 540,000 pounds per hour of fuel and natural gas. Controlled emissions exhaust through the existing stack SV 2.

The maximum capacity of the chemical plant (250 million pounds per year) will not change due to this proposed modification.

There will be no new building constructed for this proposed modification.

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

D.1.1 VOC BACT Requirements [326 IAC 8-1-6]

Pursuant to 326 IAC 8-1-6, the Permittee shall comply with the following VOC best available control technology (BACT) standards and limitations:

- (a) The existing flare (PIB Flare) shall be utilized to control the VOC emissions from the rail loading/unloading rack system (EU-7).
- (b) The overall control efficiency of PIB Flare shall be at least 99% when controlling the VOC emissions from the rail loading/unloading rack system (EU-7).

Compliance with these requirements will also make the Emission Offset requirements under 326 IAC 2-3 not applicable for VOC emissions.

D.1.2 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 PIB Flare.

Compliance Determination Requirement

D.1.3 VOC Control (Flare) Operation [326 IAC 8-1-6]

Pursuant to 326 IAC 8-1-6, the existing flare (PIB Flare) shall operate and control the VOC emissions from the rail loading/unloading rack system (EU-7) at all times when this rail loading/unloading rack system is in operation.

D.1.4 Flare Control Device Requirements [326 IAC 2-7-6(1),(6)] [326 IAC 2-1.1-11]

Within 60 days after achieving maximum production rate, but no later than 180 days after the initial startup of the rail loading/unloading rack system, the Permittee shall verify the control device design specifications of the PIB Flare, to verify the VOC control efficiency as per condition D.1.1 - VOC BACT Requirements, by utilizing the approved methods specified in 40 CFR 60.18.

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

D.1.5 Flare Operating Parameters

- (a) The PIB Flare shall be designed for and operated with no visible emissions as determined by Method 22, except for periods not to exceed a total of 5 minutes during any two (2) consecutive hours.
- (b) The PIB Flare shall be operated with a flame present at all times. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

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

D.1.6 Record Keeping Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-19]

- (a) The Permittee shall maintain records required under 326 IAC 3-5-6 at the source in a manner that they may be inspected by the IDEM, OAQ, or the US EPA, if so requested or required.
- (b) The Permittee shall maintain records of the design specifications the flare, and make such records available upon request to IDEM, OAQ and the US EPA.
- (c) Records necessary to demonstrate compliance shall be available within 30 days of the end of each compliance period.
- (d) All records shall be maintained in accordance with Section C - General Record Keeping Requirements of this permit.

SECTION D.2 FACILITY OPERATION CONDITIONS

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

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

The following are the sources of fugitive equipment leaks:

- (a) pumps equipped with double-mechanical seals;
- (b) piping manifold(s) for the loading/unloading rack;
- (c) receiver drum(s) to provide surge capacity;
- (d) various valves;
- (e) condenser(s);
- (f) G-L separator(s) for the condenser;
- (g) two (2) compressors with closed vent systems;
- (h) lines of piping; and
- (i) associated valves and flanges to connect the BB feed system and to the spent BB pipe system downstream of the vapor recovery unit.

The following table summarizes the estimated equipment leaks:

Type of Component	Number of Components in Light Liquid Service	Number of Components in Gas/Vapor Service
Pumps	2	--
Valves	83	54
Flanges	231	154
Compressors	--	2

New Stationary Sources Performance Standards (NSPS) Requirements

D.2.1 General Provisions Relating to NSPS [326 IAC 12-1] [40 CFR Part 60, Subpart A]

The provisions of 40 CFR Part 60, Subpart A - General Provisions, which are incorporated by reference in 326 IAC 12-1, apply to the equipment leaks specified in Section D.2 of this permit, except when otherwise specified in 40 CFR Part 60, Subpart VV (Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry).

D.2.2 NSPS Reporting Requirements [40 CFR Part 60.7a]

Pursuant to the New Source Performance Standards (NSPS), 40 CFR 60.7a, the Permittee shall report the following at the appropriate times:

- (a) Commencement of construction date (no later than 30 days after such date) of the affected units [40 CFR 60.7a(1)].
- (b) Actual start-up date (within 15 days after such date) of the affected units [40 CFR 60.7a(3)].
- (c) Date of performance testing (at least 30 days prior to such date), when required by a condition elsewhere in this permit.

Reports are to be sent to:

Indiana Department of Environmental Management
Compliance Branch, Office of Air Quality
100 North Senate Avenue, Indianapolis, IN 46204

The application and enforcement of these standards have been delegated to the IDEM, OAQ.

The requirements of 40 CFR Part 60 are also federally enforceable.

D.2.3 NSPS for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry [40 CFR Part 60, Subpart VV]

Pursuant to 40 CFR Part 60, Subpart VV, the Permittee shall comply with the provisions of 40 CFR Part 60.480 for the equipment leaks specified in Section D.2 of this permit, as follows:

§ 60.480 Applicability and designation of affected facility.

- (a)
 - (1) The provisions of this subpart apply to affected facilities in the synthetic organic chemicals manufacturing industry.
 - (2) The group of all equipment (defined in §60.481) within a process unit is an affected facility.
- (b) Any affected facility under paragraph (a) of this section that commences construction or modification after January 5, 1981, shall be subject to the requirements of this subpart.
- (c) Addition or replacement of equipment for the purpose of process improvement which is accomplished without a capital expenditure shall not by itself be considered a modification under this subpart.
- (d)
 - (1) If an owner or operator applies for one or more of the exemptions in this paragraph, then the owner or operator shall maintain records as required in §60.486(i).
 - (2) Any affected facility that has the design capacity to produce less than 1,000 Mg/yr (1,102 ton/yr) is exempt from §60.482.

- (3) If an affected facility produces heavy liquid chemicals only from heavy liquid feed or raw materials, then it is exempt from §60.482.
 - (4) Any affected facility that produces beverage alcohol is exempt from §60.482.
 - (5) Any affected facility that has no equipment in VOC service is exempt from §60.482.
- (e) *Alternative means of compliance—*
- (1) *Option to comply with part 65.*
Owners or operators may choose to comply with the provisions of 40 CFR part 65, subpart F, to satisfy the requirements of §§60.482 through 60.487 for an affected facility. When choosing to comply with 40 CFR part 65, subpart F, the requirements of §60.485(d), (e), and (f), and §60.486(i) and (j) still apply. Other provisions applying to an owner or operator who chooses to comply with 40 CFR part 65 are provided in 40 CFR 65.1.
 - (2) *Part 60, subpart A.*
Owners or operators who choose to comply with 40 CFR part 65, subpart F must also comply with §§60.1, 60.2, 60.5, 60.6, 60.7(a)(1) and (4), 60.14, 60.15, and 60.16 for that equipment. All sections and paragraphs of subpart A of this part that are not mentioned in this paragraph (e)(2) do not apply to owners or operators of equipment subject to this subpart complying with 40 CFR part 65, subpart F, except that provisions required to be met prior to implementing 40 CFR part 65 still apply. Owners and operators who choose to comply with 40 CFR part 65, subpart F, must comply with 40 CFR part 65, subpart A.

§ 60.481 Definitions.

As used in this subpart, all terms not defined herein shall have the meaning given them in the Act or in subpart A of part 60, and the following terms shall have the specific meanings given them.

Capital expenditure means, in addition to the definition in 40 CFR 60.2, an expenditure for a physical or operational change to an existing facility that:

- (a) Exceeds P, the product of the facility's replacement cost, R, and an adjusted annual asset guideline repair allowance, A, as reflected by the following equation:

$$P = R \times A$$

where:

- (1) The adjusted annual asset guideline repair allowance, A, is the product of the percent of the replacement cost, Y, and the applicable basic annual asset guideline repair allowance, B, divided by 100 as reflected by the following equation:

$$A = Y \times (B \div 100);$$

- (2) The percent Y is determined from the following equation: $Y = 1.0 - 0.575 \log X$, where X is 1982 minus the year of construction; and
- (3) The applicable basic annual asset guideline repair allowance, B, is selected from the following table consistent with the applicable subpart:

Table for Determining Applicable for B

Subpart applicable to facility	Value of B to be used in equation
VV	12.5
DDD	12.5
GGG	7.0
KKK	4.5

Closed vent system means a system that is not open to the atmosphere and that is composed of hard-piping, ductwork, connections, and, if necessary, flow-inducing devices that transport gas or vapor from a piece or pieces of equipment to a control device or back to a process.

Connector means flanged, screwed, welded, or other joined fittings used to connect two pipe lines or a pipe line and a piece of process equipment.

Control device means an enclosed combustion device, vapor recovery system, or flare.
Distance piece means an open or enclosed casing through which the piston rod travels, separating the compressor cylinder from the crankcase.

Double block and bleed system means two block valves connected in series with a bleed valve or line that can vent the line between the two block valves.

Duct work means a conveyance system such as those commonly used for heating and ventilation systems. It is often made of sheet metal and often has sections connected by screws or crimping. Hard-piping is not ductwork.

Equipment means each pump, compressor, pressure relief device, sampling connection system, open-ended valve or line, valve, and flange or other connector in VOC service and any devices or systems required by this subpart.

First attempt at repair means to take rapid action for the purpose of stopping or reducing leakage of organic material to atmosphere using best practices.

Fuel gas means gases that are combusted to derive useful work or heat.

Fuel gas system means the offsite and onsite piping and flow and pressure control system that gathers gaseous stream(s) generated by onsite operations, may blend them with other sources of gas, and transports the gaseous stream for use as fuel gas in combustion devices or in-process combustion equipment, such as furnaces and gas turbines, either singly or in combination.

Hard-piping means pipe or tubing that is manufactured and properly installed using good engineering judgement and standards such as ASME B31.3, Process Piping (available from the American Society of Mechanical Engineers, PO Box 2900, Fairfield, NJ 07007-2900).

In gas/vapor service means that the piece of equipment contains process fluid that is in the gaseous state at operating conditions.

In heavy liquid service means that the piece of equipment is not in gas/vapor service or in light liquid service.

In light liquid service means that the piece of equipment contains a liquid that meets the conditions specified in §60.485(e).

In-situ sampling systems means nonextractive samplers or in-line samplers.

In vacuum service means that equipment is operating at an internal pressure which is at least 5 kilopascals (kPa)(0.7 psia) below ambient pressure.

In VOC service means that the piece of equipment contains or contacts a process fluid that is at least 10 percent VOC by weight. (The provisions of §60.485(d) specify how to determine that a piece of equipment is not in VOC service.)

Liquids dripping means any visible leakage from the seal including spraying, misting, clouding, and ice formation.

Open-ended valve or line means any valve, except safety relief valves, having one side of the valve seat in contact with process fluid and one side open to the atmosphere, either directly or through open piping.

Pressure release means the emission of materials resulting from system pressure being greater than set pressure of the pressure relief device.

Process improvement means routine changes made for safety and occupational health requirements, for energy savings, for better utility, for ease of maintenance and operation, for correction of design deficiencies, for bottleneck removal, for changing product requirements, or for environmental control.

Process unit means components assembled to produce, as intermediate or final products, one or more of the chemicals listed in §60.489 of this part. A process unit can operate independently if supplied with sufficient feed or raw materials and sufficient storage facilities for the product.

Process unit shutdown means a work practice or operational procedure that stops production from a process unit or part of a process unit. An unscheduled work practice or operational procedure that stops production from a process unit or part of a process unit for less than 24 hours is not a process unit shutdown. The use of spare equipment and technically feasible bypassing of equipment without stopping production are not process unit shutdowns.

Quarter means a 3-month period; the first quarter concludes on the last day of the last full month during the 180 days following initial startup.

Repaired means that equipment is adjusted, or otherwise altered, in order to eliminate a leak as indicated by one of the following: an instrument reading of 10,000 ppm or greater, indication of liquids dripping, or indication by a sensor that a seal or barrier fluid system has failed.

Replacement cost means the capital needed to purchase all the depreciable components in a facility.

Sampling connection system means an assembly of equipment within a process unit used during periods of representative operation to take samples of the process fluid. Equipment used to take nonroutine grab samples is not considered a sampling connection system.

Sensor means a device that measures a physical quantity or the change in a physical quantity such as temperature, pressure, flow rate, pH, or liquid level.

Synthetic organic chemicals manufacturing industry means the industry that produces, as intermediates or final products, one or more of the chemicals listed in §60.489.

Volatile organic compounds or VOC means, for the purposes of this subpart, any reactive organic compounds as defined in §60.2 Definitions.

§ 60.482-1 Standards: General.

- (a) Each owner or operator subject to the provisions of this subpart shall demonstrate compliance with the requirements of §§60.482–1 through 60.482–10 or §60.480(e) for all equipment within 180 days of initial startup.
- (b) Compliance with §§60.482–1 to 60.482–10 will be determined by review of records and reports, review of performance test results, and inspection using the methods and procedures specified in §60.485.
- (c)
 - (1) An owner or operator may request a determination of equivalence of a means of emission limitation to the requirements of §§60.482–2, 60.482–3, 60.482–5, 60.482–6, 60.482–7, 60.482–8, and 60.482–10 as provided in §60.484.
 - (2) If the Administrator makes a determination that a means of emission limitation is at least equivalent to the requirements of §§60.482–2, 60.482–3, 60.482–5, 60.482–6, 60.482–7, 60.482–8, or 60.482–10, an owner or operator shall comply with the requirements of that determination.
- (d) Equipment that is in vacuum service is excluded from the requirements of §§60.482–2 to 60.482–10 if it is identified as required in §60.486(e)(5).

§ 60.482-2 Standards: Pumps in light liquid service.

- (a)
 - (1) Each pump in light liquid service shall be monitored monthly to detect leaks by the methods specified in §60.485(b), except as provided in §60.482–1(c) and paragraphs (d), (e), and (f) of this section.
 - (2) Each pump in light liquid service shall be checked by visual inspection each calendar week for indications of liquids dripping from the pump seal.
- (b)
 - (1) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.

- (2) If there are indications of liquids dripping from the pump seal, a leak is detected.
- (c) (1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in §60.482–9.
- (2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
- (d) Each pump equipped with a dual mechanical seal system that includes a barrier fluid system is exempt from the requirements of paragraph (a), Provided the following requirements are met:
 - (1) Each dual mechanical seal system is—
 - (i) Operated with the barrier fluid at a pressure that is at all times greater than the pump stuffing box pressure; or
 - (ii) Equipment with a barrier fluid degassing reservoir that is routed to a process or fuel gas system or connected by a closed vent system to a control device that complies with the requirements of §60.482–10; or
 - (iii) Equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the atmosphere.
 - (2) The barrier fluid system is in heavy liquid service or is not in VOC service.
 - (3) Each barrier fluid system is equipped with a sensor that will detect failure of the seal system, the barrier fluid system, or both.
 - (4) Each pump is checked by visual inspection, each calendar week, for indications of liquids dripping from the pump seals.
 - (5) (i) Each sensor as described in paragraph (d)(3) is checked daily or is equipped with an audible alarm, and
 - (ii) The owner or operator determines, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.
 - (6) (i) If there are indications of liquids dripping from the pump seal or the sensor indicates failure of the seal system, the barrier fluid system, or both based on the criterion determined in paragraph (d)(5)(ii), a leak is detected.
 - (ii) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in §60.482–9.
 - (iii) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
- (e) Any pump that is designated, as described in §60.486(e)(1) and (2), for no detectable emission, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraphs (a), (c), and (d) of this section if the pump:

- (1) Has no externally actuated shaft penetrating the pump housing,
 - (2) Is demonstrated to be operating with no detectable emissions as indicated by an instrument reading of less than 500 ppm above background as measured by the methods specified in §60.485(c), and
 - (3) Is tested for compliance with paragraph (e)(2) of this section initially upon designation, annually, and at other times requested by the Administrator.
- (f) If any pump is equipped with a closed vent system capable of capturing and transporting any leakage from the seal or seals to a process or to a fuel gas system or to a control device that complies with the requirements of §60.482–10, it is exempt from paragraphs (a) through (e) of this section.
- (g) Any pump that is designated, as described in §60.486(f)(1), as an unsafe-to-monitor pump is exempt from the monitoring and inspection requirements of paragraphs (a) and (d)(4) through (6) of this section if:
- (1) The owner or operator of the pump demonstrates that the pump is unsafe-to-monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with paragraph (a) of this section; and
 - (2) The owner or operator of the pump has a written plan that requires monitoring of the pump as frequently as practicable during safe-to-monitor times but not more frequently than the periodic monitoring schedule otherwise applicable, and repair of the equipment according to the procedures in paragraph (c) of this section if a leak is detected.
- (h) Any pump that is located within the boundary of an unmanned plant site is exempt from the weekly visual inspection requirement of paragraphs (a)(2) and (d)(4) of this section, and the daily requirements of paragraph (d)(5) of this section, provided that each pump is visually inspected as often as practicable and at least monthly.

§ 60.482-3 Standards: Compressors.

- (a) Each compressor shall be equipped with a seal system that includes a barrier fluid system and that prevents leakage of VOC to the atmosphere, except as provided in §60.482–1(c) and paragraph (h) and (i) of this section.
- (b) Each compressor seal system as required in paragraph (a) shall be:
- (1) Operated with the barrier fluid at a pressure that is greater than the compressor stuffing box pressure; or
 - (2) Equipped with a barrier fluid system degassing reservoir that is routed to a process or fuel gas system or connected by a closed vent system to a control device that complies with the requirements of §60.482–10; or
 - (3) Equipped with a system that purges the barrier fluid into a process stream with zero VOC emissions to the atmosphere.

- (c) The barrier fluid system shall be in heavy liquid service or shall not be in VOC service.
- (d) Each barrier fluid system as described in paragraph (a) shall be equipped with a sensor that will detect failure of the seal system, barrier fluid system, or both.
- (e)
 - (1) Each sensor as required in paragraph (d) shall be checked daily or shall be equipped with an audible alarm.
 - (2) The owner or operator shall determine, based on design considerations and operating experience, a criterion that indicates failure of the seal system, the barrier fluid system, or both.
- (f) If the sensor indicates failure of the seal system, the barrier system, or both based on the criterion determined under paragraph (e)(2), a leak is detected.
- (g)
 - (1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in §60.482–9.
 - (2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
- (h) A compressor is exempt from the requirements of paragraphs (a) and (b) of this section, if it is equipped with a closed vent system to capture and transport leakage from the compressor drive shaft back to a process or fuel gas system or to a control device that complies with the requirements of §60.482–10, except as provided in paragraph (i) of this section.
- (i) Any compressor that is designated, as described in §60.486(e) (1) and (2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraphs (a)–(h) if the compressor:
 - (1) Is demonstrated to be operating with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as measured by the methods specified in §60.485(c); and
 - (2) Is tested for compliance with paragraph (i)(1) of this section initially upon designation, annually, and at other times requested by the Administrator.
- (j) Any existing reciprocating compressor in a process unit which becomes an affected facility under provisions of §60.14 or §60.15 is exempt from §60.482(a), (b), (c), (d), (e), and (h), provided the owner or operator demonstrates that recasting the distance piece or replacing the compressor are the only options available to bring the compressor into compliance with the provisions of paragraphs (a) through (e) and (h) of this section.

§ 60.482-4 Standards: Pressure relief devices in gas/vapor service.

- (a) Except during pressure releases, each pressure relief device in gas/vapor service shall be operated with no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, as determined by the methods specified in §60.485(c).
- (b)
 - (1) After each pressure release, the pressure relief device shall be returned to a condition of no detectable emissions, as indicated by an instrument reading of less than 500 ppm

above background, as soon as practicable, but no later than 5 calendar days after the pressure release, except as provided in §60.482–9.

- (2) No later than 5 calendar days after the pressure release, the pressure relief device shall be monitored to confirm the conditions of no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, by the methods specified in §60.485(c).
- (c) Any pressure relief device that is routed to a process or fuel gas system or equipped with a closed vent system capable of capturing and transporting leakage through the pressure relief device to a control device as described in §60.482–10 is exempted from the requirements of paragraphs (a) and (b) of this section.
- (d)
 - (1) Any pressure relief device that is equipped with a rupture disk upstream of the pressure relief device is exempt from the requirements of paragraphs (a) and (b) of this section, provided the owner or operator complies with the requirements in paragraph (d)(2) of this section.
 - (2) After each pressure release, a new rupture disk shall be installed upstream of the pressure relief device as soon as practicable, but no later than 5 calendar days after each pressure release, except as provided in §60.482–9.

§ 60.482-5 Standards: Sampling connection systems.

- (a) Each sampling connection system shall be equipped with a closed-purged, closed-loop, or closed-vent system, except as provided in §60.482–1(c). Gases displaced during filling of the sample container are not required to be collected or captured.
- (b) Each closed-purge, closed-loop, or closed-vent system as required in paragraph (a) of this section shall comply with the requirements specified in paragraphs (b)(1) through (4) of this section:
 - (1) Return the purged process fluid directly to the process line; or
 - (2) Collect and recycle the purged process fluid to a process; or
 - (3) Be designed and operated to capture and transport all the purged process fluid to a control device that complies with the requirements of §60.482–10; or
 - (4) Collect, store, and transport the purged process fluid to any of the following systems or facilities:
 - (i) A waste management unit as defined in 40 CFR 63.111, if the waste management unit is subject to, and operated in compliance with the provisions of 40 CFR part 63, subpart G, applicable to Group 1 wastewater streams;
 - (ii) A treatment, storage, or disposal facility subject to regulation under 40 CFR part 262, 264, 265, or 266; or

- (iii) A facility permitted, licensed, or registered by a State to manage municipal or industrial solid waste, if the process fluids are not hazardous waste as defined in 40 CFR part 261.
- (c) In situ sampling systems and sampling systems without purges are exempt from the requirements of paragraphs (a) and (b) of this section.

§ 60.482-6 Standards: Open-ended valves or lines.

- (a) (1) Each open-ended valve or line shall be equipped with a cap, blind flange, plug, or a second valve, except as provided in §60.482–1(c).
- (2) The cap, blind flange, plug, or second valve shall seal the open end at all times except during operations requiring process fluid flow through the open-ended valve or line.
- (b) Each open-ended valve or line equipped with a second valve shall be operated in a manner such that the valve on the process fluid end is closed before the second valve is closed.
- (c) When a double block-and-bleed system is being used, the bleed valve or line may remain open during operations that require venting the line between the block valves but shall comply with paragraph (a) at all other times.
- (d) Open-ended valves or lines in an emergency shutdown system which are designed to open automatically in the event of a process upset are exempt from the requirements of paragraphs (a), (b) and (c) of this section.
- (e) Open-ended valves or lines containing materials which would autocatalytically polymerize or would present an explosion, serious overpressure, or other safety hazard if capped or equipped with a double block and bleed system as specified in paragraphs (a) through (c) of this section are exempt from the requirements of paragraphs (a) through (c) of this section.

§ 60.482-7 Standards: Valves in gas/vapor service and in light liquid service.

- (a) Each valve shall be monitored monthly to detect leaks by the methods specified in §60.485(b) and shall comply with paragraphs (b) through (e), except as provided in paragraphs (f), (g), and (h), §60.483–1, 2, and §60.482–1(c).
- (b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
- (c) (1) Any valve for which a leak is not detected for 2 successive months may be monitored the first month of every quarter, beginning with the next quarter, until a leak is detected.
- (2) If a leak is detected, the valve shall be monitored monthly until a leak is not detected for 2 successive months.
- (d) (1) When a leak is detected, it shall be repaired as soon as practicable, but no later than 15 calendar days after the leak is detected, except as provided in §60.482–9.
- (2) A first attempt at repair shall be made no later than 5 calendar days after each leak is detected.

- (e) First attempts at repair include, but are not limited to, the following best practices where practicable:
 - (1) Tightening of bonnet bolts;
 - (2) Replacement of bonnet bolts;
 - (3) Tightening of packing gland nuts;
 - (4) Injection of lubricant into lubricated packing.
- (f) Any valve that is designated, as described in §60.486(e)(2), for no detectable emissions, as indicated by an instrument reading of less than 500 ppm above background, is exempt from the requirements of paragraph (a) if the valve:
 - (1) Has no external actuating mechanism in contact with the process fluid,
 - (2) Is operated with emissions less than 500 ppm above background as determined by the method specified in §60.485(c), and
 - (3) Is tested for compliance with paragraph (f)(2) of this section initially upon designation, annually, and at other times requested by the Administrator.
- (g) Any valve that is designated, as described in §60.486(f)(1), as an unsafe-to-monitor valve is exempt from the requirements of paragraph (a) if:
 - (1) The owner or operator of the valve demonstrates that the valve is unsafe to monitor because monitoring personnel would be exposed to an immediate danger as a consequence of complying with paragraph (a), and
 - (2) The owner or operator of the valve adheres to a written plan that requires monitoring of the valve as frequently as practicable during safe-to-monitor times.
- (h) Any valve that is designated, as described in §60.486(f)(2), as a difficult-to-monitor valve is exempt from the requirements of paragraph (a) if:
 - (1) The owner or operator of the valve demonstrates that the valve cannot be monitored without elevating the monitoring personnel more than 2 meters above a support surface.
 - (2) The process unit within which the valve is located either becomes an affected facility through §60.14 or §60.15 or the owner or operator designates less than 3.0 percent of the total number of valves as difficult-to-monitor, and
 - (3) The owner or operator of the valve follows a written plan that requires monitoring of the valve at least once per calendar year.

§ 60.482-8 Standards: Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and connectors.

- (a) If evidence of a potential leak is found by visual, audible, olfactory, or any other detection method at pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and connectors, the owner or operator shall follow either one of the following procedures:
 - (1) The owner or operator shall monitor the equipment within 5 days by the method specified in §60.485(b) and shall comply with the requirements of paragraphs (b) through (d) of this section.
 - (2) The owner or operator shall eliminate the visual, audible, olfactory, or other indication of a potential leak.
- (b) If an instrument reading of 10,000 ppm or greater is measured, a leak is detected.
- (c)
 - (1) When a leak is detected, it shall be repaired as soon as practicable, but not later than 15 calendar days after it is detected, except as provided in §60.482–9.
 - (2) The first attempt at repair shall be made no later than 5 calendar days after each leak is detected.
- (d) First attempts at repair include, but are not limited to, the best practices described under §60.482–7(e).

§ 60.482-9 Standards: Delay of repair.

- (a) Delay of repair of equipment for which leaks have been detected will be allowed if repair within 15 days is technically infeasible without a process unit shutdown. Repair of this equipment shall occur before the end of the next process unit shutdown.
- (b) Delay of repair of equipment will be allowed for equipment which is isolated from the process and which does not remain in VOC service.
- (c) Delay of repair for valves will be allowed if:
 - (1) The owner or operator demonstrates that emissions of purged material resulting from immediate repair are greater than the fugitive emissions likely to result from delay of repair, and
 - (2) When repair procedures are effected, the purged material is collected and destroyed or recovered in a control device complying with §60.482–10.
- (d) Delay of repair for pumps will be allowed if:
 - (1) Repair requires the use of a dual mechanical seal system that includes a barrier fluid system, and
 - (2) Repair is completed as soon as practicable, but not later than 6 months after the leak was detected.
- (e) Delay of repair beyond a process unit shutdown will be allowed for a valve, if valve assembly replacement is necessary during the process unit shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were

depleted. Delay of repair beyond the next process unit shutdown will not be allowed unless the next process unit shutdown occurs sooner than 6 months after the first process unit shutdown.

§ 60.482-10 Standards: Closed vent systems and control devices.

- (a) Owners or operators of closed vent systems and control devices used to comply with provisions of this subpart shall comply with the provisions of this section.
- (b) Vapor recovery systems (for example, condensers and absorbers) shall be designed and operated to recover the VOC emissions vented to them with an efficiency of 95 percent or greater, or to an exit concentration of 20 parts per million by volume, whichever is less stringent.
- (c) Enclosed combustion devices shall be designed and operated to reduce the VOC emissions vented to them with an efficiency of 95 percent or greater, or to an exit concentration of 20 parts per million by volume, on a dry basis, corrected to 3 percent oxygen, whichever is less stringent or to provide a minimum residence time of 0.75 seconds at a minimum temperature of 816 °C.
- (d) Flares used to comply with this subpart shall comply with the requirements of §60.18.
- (e) Owners or operators of control devices used to comply with the provisions of this subpart shall monitor these control devices to ensure that they are operated and maintained in conformance with their designs.
- (f) Except as provided in paragraphs (i) through (k) of this section, each closed vent system shall be inspected according to the procedures and schedule specified in paragraphs (f)(1) and (f)(2) of this section.
 - (1) If the vapor collection system or closed vent system is constructed of hard-piping, the owner or operator shall comply with the requirements specified in paragraphs (f)(1)(i) and (f)(1)(ii) of this section:
 - (i) Conduct an initial inspection according to the procedures in §60.485(b); and
 - (ii) Conduct annual visual inspections for visible, audible, or olfactory indications of leaks.
 - (2) If the vapor collection system or closed vent system is constructed of ductwork, the owner or operator shall:
 - (i) Conduct an initial inspection according to the procedures in §60.485(b); and
 - (ii) Conduct annual inspections according to the procedures in §60.485(b).
- (g) Leaks, as indicated by an instrument reading greater than 500 parts per million by volume above background or by visual inspections, shall be repaired as soon as practicable except as provided in paragraph (h) of this section.
 - (1) A first attempt at repair shall be made no later than 5 calendar days after the leak is detected.

- (2) Repair shall be completed no later than 15 calendar days after the leak is detected.
- (h) Delay of repair of a closed vent system for which leaks have been detected is allowed if the repair is technically infeasible without a process unit shutdown or if the owner or operator determines that emissions resulting from immediate repair would be greater than the fugitive emissions likely to result from delay of repair. Repair of such equipment shall be complete by the end of the next process unit shutdown.
- (i) If a vapor collection system or closed vent system is operated under a vacuum, it is exempt from the inspection requirements of paragraphs (f)(1)(i) and (f)(2) of this section.
- (j) Any parts of the closed vent system that are designated, as described in paragraph (l)(1) of this section, as unsafe to inspect are exempt from the inspection requirements of paragraphs (f)(1)(i) and (f)(2) of this section if they comply with the requirements specified in paragraphs (j)(1) and (j)(2) of this section:
 - (1) The owner or operator determines that the equipment is unsafe to inspect because inspecting personnel would be exposed to an imminent or potential danger as a consequence of complying with paragraphs (f)(1)(i) or (f)(2) of this section; and
 - (2) The owner or operator has a written plan that requires inspection of the equipment as frequently as practicable during safe-to-inspect times.
- (k) Any parts of the closed vent system that are designated, as described in paragraph (l)(2) of this section, as difficult to inspect are exempt from the inspection requirements of paragraphs (f)(1)(i) and (f)(2) of this section if they comply with the requirements specified in paragraphs (k)(1) through (k)(3) of this section:
 - (1) The owner or operator determines that the equipment cannot be inspected without elevating the inspecting personnel more than 2 meters above a support surface; and
 - (2) The process unit within which the closed vent system is located becomes an affected facility through §§60.14 or 60.15, or the owner or operator designates less than 3.0 percent of the total number of closed vent system equipment as difficult to inspect; and
 - (3) The owner or operator has a written plan that requires inspection of the equipment at least once every 5 years. A closed vent system is exempt from inspection if it is operated under a vacuum.
- (l) The owner or operator shall record the information specified in paragraphs (l)(1) through (l)(5) of this section.
 - (1) Identification of all parts of the closed vent system that are designated as unsafe to inspect, an explanation of why the equipment is unsafe to inspect, and the plan for inspecting the equipment.
 - (2) Identification of all parts of the closed vent system that are designated as difficult to inspect, an explanation of why the equipment is difficult to inspect, and the plan for inspecting the equipment.

- (3) For each inspection during which a leak is detected, a record of the information specified in §60.486(c).
 - (4) For each inspection conducted in accordance with §60.485(b) during which no leaks are detected, a record that the inspection was performed, the date of the inspection, and a statement that no leaks were detected.
 - (5) For each visual inspection conducted in accordance with paragraph (f)(1)(ii) of this section during which no leaks are detected, a record that the inspection was performed, the date of the inspection, and a statement that no leaks were detected.
- (m) Closed vent systems and control devices used to comply with provisions of this subpart shall be operated at all times when emissions may be vented to them.

§ 60.485 Test methods and procedures.

- (a) In conducting the performance tests required in §60.8, the owner or operator shall use as reference methods and procedures the test methods in appendix A of this part or other methods and procedures as specified in this section, except as provided in §60.8(b).
- (b) The owner or operator shall determine compliance with the standards in §§60.482, 60.483, and 60.484 as follows:
 - (1) Method 21 shall be used to determine the presence of leaking sources. The instrument shall be calibrated before use each day of its use by the procedures specified in Method 21. The following calibration gases shall be used:
 - (i) Zero air (less than 10 ppm of hydrocarbon in air); and
 - (ii) A mixture of methane or n-hexane and air at a concentration of about, but less than, 10,000 ppm methane or n-hexane.
- (c) The owner or operator shall determine compliance with the no detectable emission standards in §§60.482–2(e), 60.482–3(i), 60.482–4, 60.482–7(f), and 60.482–10(e) as follows:
 - (1) The requirements of paragraph (b) shall apply.
 - (2) Method 21 shall be used to determine the background level. All potential leak interfaces shall be traversed as close to the interface as possible. The arithmetic difference between the maximum concentration indicated by the instrument and the background level is compared with 500 ppm for determining compliance.
- (d) The owner or operator shall test each piece of equipment unless he demonstrates that a process unit is not in VOC service, i.e., that the VOC content would never be reasonably expected to exceed 10 percent by weight. For purposes of this demonstration, the following methods and procedures shall be used:
 - (1) Procedures that conform to the general methods in ASTM E260–73, 91, or 96, E168–67, 77, or 92, E169–63, 77, or 93 (incorporated by reference—see §60.17) shall be used to determine the percent VOC content in the process fluid that is contained in or contacts a piece of equipment.

- (2) Organic compounds that are considered by the Administrator to have negligible photochemical reactivity may be excluded from the total quantity of organic compounds in determining the VOC content of the process fluid.
 - (3) Engineering judgment may be used to estimate the VOC content, if a piece of equipment had not been shown previously to be in service. If the Administrator disagrees with the judgment, paragraphs (d) (1) and (2) of this section shall be used to resolve the disagreement.
- (e) The owner or operator shall demonstrate that an equipment is in light liquid service by showing that all the following conditions apply:
- (1) The vapor pressure of one or more of the components is greater than 0.3 kPa at 20 °C (1.2 in. H₂O at 68 °F). Standard reference texts or ASTM D2879–83, 96, or 97 (incorporated by reference—see §60.17) shall be used to determine the vapor pressures.
 - (2) The total concentration of the pure components having a vapor pressure greater than 0.3 kPa at 20 °C (1.2 in. H₂O at 68 °F) is equal to or greater than 20 percent by weight.
 - (3) The fluid is a liquid at operating conditions.
- (f) Samples used in conjunction with paragraphs (d), (e), and (g) of this section shall be representative of the process fluid that is contained in or contacts the equipment or the gas being combusted in the flare.
- (g) The owner or operator shall determine compliance with the standards of flares as follows:
- (1) Method 22 shall be used to determine visible emissions.
 - (2) A thermocouple or any other equivalent device shall be used to monitor the presence of a pilot flame in the flare.
 - (3) The maximum permitted velocity for air assisted flares shall be computed using the following equation:

$$V_{\max} = K_1 + K_2 H_T$$

Where:

V_{\max}	=	Maximum permitted velocity, m/sec (ft/sec)
H_T	=	Net heating value of the gas being combusted, MJ/scm (Btu/scf).
K_1	=	8.706 m/sec (metric units)
	=	28.56 ft/sec (English units)
K_2	=	0.7084 m ⁴ /(MJ-sec) (metric units)
	=	0.087 ft ⁴ /(Btu-sec) (English units)

- (4) The net heating value (HT) of the gas being combusted in a flare shall be computed using the following equation:

$$H_T = K \sum_{i=1}^n C_i H_i$$

Where:

- | | | |
|-------|---|---|
| K | = | Conversion constant, 1.740×10^7 (g-mole)(MJ)/ (ppm-scm-kcal) (metric units) |
| | = | 4.674×10^8 [(g-mole)(Btu)/(ppm-scf-kcal)] (English units) |
| C_i | = | Concentration of sample component "i," ppm |
| H_i | = | net heat of combustion of sample component "i" at 25 °C and 760 mm Hg (77 °F and 14.7 psi), kcal/g-mole |
- (5) Method 18 and ASTM D2504–67, 77, or 88 (Reapproved 1993) (incorporated by reference—see §60.17) shall be used to determine the concentration of sample component "i."
- (6) ASTM D2382–76 or 88 or D4809–95 (incorporated by reference—see §60.17) shall be used to determine the net heat of combustion of component "i" if published values are not available or cannot be calculated.
- (7) Method 2, 2A, 2C, or 2D, as appropriate, shall be used to determine the actual exit velocity of a flare. If needed, the unobstructed (free) cross-sectional area of the flare tip shall be used.

§ 60.486 Recordkeeping requirements.

- (a) (1) Each owner or operator subject to the provisions of this subpart shall comply with the recordkeeping requirements of this section.
- (2) An owner or operator of more than one affected facility subject to the provisions of this subpart may comply with the recordkeeping requirements for these facilities in one recordkeeping system if the system identifies each record by each facility.
- (b) When each leak is detected as specified in §§60.482–2, 60.482–3, 60.482–7, 60.482–8, and 60.483–2, the following requirements apply:
- (1) A weatherproof and readily visible identification, marked with the equipment identification number, shall be attached to the leaking equipment.
- (2) The identification on a valve may be removed after it has been monitored for 2 successive months as specified in §60.482–7(c) and no leak has been detected during those 2 months.
- (3) The identification on equipment except on a valve, may be removed after it has been repaired.

- (c) When each leak is detected as specified in §§60.482–2, 60.482–3, 60.482–7, 60.482–8, and 60.483–2, the following information shall be recorded in a log and shall be kept for 2 years in a readily accessible location:
- (1) The instrument and operator identification numbers and the equipment identification number.
 - (2) The date the leak was detected and the dates of each attempt to repair the leak.
 - (3) Repair methods applied in each attempt to repair the leak.
 - (4) “Above 10,000” if the maximum instrument reading measured by the methods specified in §60.485(a) after each repair attempt is equal to or greater than 10,000 ppm.
 - (5) “Repair delayed” and the reason for the delay if a leak is not repaired within 15 calendar days after discovery of the leak.
 - (6) The signature of the owner or operator (or designate) whose decision it was that repair could not be effected without a process shutdown.
 - (7) The expected date of successful repair of the leak if a leak is not repaired within 15 days.
 - (8) Dates of process unit shutdowns that occur while the equipment is unrepaired.
 - (9) The date of successful repair of the leak.
- (d) The following information pertaining to the design requirements for closed vent systems and control devices described in §60.482–10 shall be recorded and kept in a readily accessible location:
- (1) Detailed schematics, design specifications, and piping and instrumentation diagrams.
 - (2) The dates and descriptions of any changes in the design specifications.
 - (3) A description of the parameter or parameters monitored, as required in §60.482–10(e), to ensure that control devices are operated and maintained in conformance with their design and an explanation of why that parameter (or parameters) was selected for the monitoring.
 - (4) Periods when the closed vent systems and control devices required in §§60.482–2, 60.482–3, 60.482–4, and 60.482–5 are not operated as designed, including periods when a flare pilot light does not have a flame.
 - (5) Dates of startups and shutdowns of the closed vent systems and control devices required in §§60.482–2, 60.482–3, 60.482–4, and 60.482–5.
- (e) The following information pertaining to all equipment subject to the requirements in §§60.482–1 to 60.482–10 shall be recorded in a log that is kept in a readily accessible location:
- (1) A list of identification numbers for equipment subject to the requirements of this subpart.

- (2) (i) A list of identification numbers for equipment that are designated for no detectable emissions under the provisions of §§60.482–2(e), 60.482–3(i) and 60.482–7(f).
- (ii) The designation of equipment as subject to the requirements of §60.482–2(e), §60.482–3(i), or §60.482–7(f) shall be signed by the owner or operator.
- (3) A list of equipment identification numbers for pressure relief devices required to comply with §60.482–4.
- (4) (i) The dates of each compliance test as required in §§60.482–2(e), 60.482–3(i), 60.482–4, and 60.482–7(f).
- (ii) The background level measured during each compliance test.
- (iii) The maximum instrument reading measured at the equipment during each compliance test.
- (5) A list of identification numbers for equipment in vacuum service.
- (f) The following information pertaining to all valves subject to the requirements of §60.482–7(g) and (h) and to all pumps subject to the requirements of §60.482–2(g) shall be recorded in a log that is kept in a readily accessible location:
 - (1) A list of identification numbers for valves and pumps that are designated as unsafe-to-monitor, an explanation for each valve or pump stating why the valve or pump is unsafe-to-monitor, and the plan for monitoring each valve or pump.
 - (2) A list of identification numbers for valves that are designated as difficult-to-monitor, an explanation for each valve stating why the valve is difficult-to-monitor, and the schedule for monitoring each valve.
- (g) The following information shall be recorded for valves complying with §60.483–2:
 - (1) A schedule of monitoring.
 - (2) The percent of valves found leaking during each monitoring period.
- (h) The following information shall be recorded in a log that is kept in a readily accessible location:
 - (1) Design criterion required in §§60.482–2(d)(5) and 60.482–3(e)(2) and explanation of the design criterion; and
 - (2) Any changes to this criterion and the reasons for the changes.
- (i) The following information shall be recorded in a log that is kept in a readily accessible location for use in determining exemptions as provided in §60.480(d):
 - (1) An analysis demonstrating the design capacity of the affected facility,

- (2) A statement listing the feed or raw materials and products from the affected facilities and an analysis demonstrating whether these chemicals are heavy liquids or beverage alcohol, and
- (3) An analysis demonstrating that equipment is not in VOC service.
- (j) Information and data used to demonstrate that a piece of equipment is not in VOC service shall be recorded in a log that is kept in a readily accessible location.
- (k) The provisions of §60.7 (b) and (d) do not apply to affected facilities subject to this subpart.

§ 60.487 Reporting requirements.

- (a) Each owner or operator subject to the provisions of this subpart shall submit semiannual reports to the Administrator beginning six months after the initial startup date.
- (b) The initial semiannual report to the Administrator shall include the following information:
 - (1) Process unit identification.
 - (2) Number of valves subject to the requirements of §60.482-7, excluding those valves designated for no detectable emissions under the provisions of §60.482-7(f).
 - (3) Number of pumps subject to the requirements of §60.482-2, excluding those pumps designated for no detectable emissions under the provisions of §60.482-2(e) and those pumps complying with §60.482-2(f).
 - (4) Number of compressors subject to the requirements of §60.482-3, excluding those compressors designated for no detectable emissions under the provisions of §60.482-3(i) and those compressors complying with §60.482-3(h).
- (c) All semiannual reports to the Administrator shall include the following information, summarized from the information in §60.486:
 - (1) Process unit identification.
 - (2) For each month during the semiannual reporting period,
 - (i) Number of valves for which leaks were detected as described in §60.482(7)(b) or §60.483-2,
 - (ii) Number of valves for which leaks were not repaired as required in §60.482-7(d)(1),
 - (iii) Number of pumps for which leaks were detected as described in §60.482-2(b) and (d)(6)(i),
 - (iv) Number of pumps for which leaks were not repaired as required in §60.482-2(c)(1) and (d)(6)(ii),

- (v) Number of compressors for which leaks were detected as described in §60.482–3(f),
 - (vi) Number of compressors for which leaks were not repaired as required in §60.482–3(g)(1), and
 - (vii) The facts that explain each delay of repair and, where appropriate, why a process unit shutdown was technically infeasible.
- (3) Dates of process unit shutdowns which occurred within the semiannual reporting period.
- (4) Revisions to items reported according to paragraph (b) if changes have occurred since the initial report or subsequent revisions to the initial report.
- (d) An owner or operator electing to comply with the provisions of §§60.483–1 or 60.483–2 shall notify the Administrator of the alternative standard selected 90 days before implementing either of the provisions.
- (e) An owner or operator shall report the results of all performance tests in accordance with §60.8 of the General Provisions. The provisions of §60.8(d) do not apply to affected facilities subject to the provisions of this subpart except that an owner or operator must notify the Administrator of the schedule for the initial performance tests at least 30 days before the initial performance tests.
- (f) The requirements of paragraphs (a) through (c) of this section remain in force until and unless EPA, in delegating enforcement authority to a State under section 111(c) of the Act, approves reporting requirements or an alternative means of compliance surveillance adopted by such State. In that event, affected sources within the State will be relieved of the obligation to comply with the requirements of paragraphs (a) through (c) of this section, provided that they comply with the requirements established by the State.

§ 60.488 Reconstruction.

For the purposes of this subpart:

- (a) The cost of the following frequently replaced components of the facility shall not be considered in calculating either the “fixed capital cost of the new components” or the “fixed capital costs that would be required to construct a comparable new facility” under §60.15: pump seals, nuts and bolts, rupture disks, and packings.
- (b) Under §60.15, the “fixed capital cost of new components” includes the fixed capital cost of all depreciable components (except components specified in §60.488 (a)) which are or will be replaced pursuant to all continuous programs of component replacement which are commenced within any 2-year period following the applicability date for the appropriate subpart. (See the “Applicability and designation of affected facility” section of the appropriate subpart.)

For purposes of this paragraph, “commenced” means that an owner or operator has undertaken a continuous program of component replacement or that an owner or operator has entered into a contractual obligation to undertake and complete, within a reasonable time, a continuous program of component replacement.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE BRANCH
100 North Senate Avenue, Indianapolis, IN 46204**

**PART 70 OPERATING PERMIT
CERTIFICATION**

Source Name: Innovene USA LLC
Source Location: 2357 Standard Avenue, Whiting, IN 46394

<p>This certification shall be included when submitting monitoring, testing reports/results or other documents as required by this approval.</p> <p>Please check what document is being certified:</p> <p><input type="checkbox"/> Test Result (specify)</p> <p><input type="checkbox"/> Report (specify)</p> <p><input type="checkbox"/> Notification (specify)</p> <p><input type="checkbox"/> Affidavit (specify)</p> <p><input type="checkbox"/> Other (specify)</p>

<p>I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.</p> <p>Signature:</p> <p>Printed Name:</p> <p>Title/Position:</p> <p>Date:</p>

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY, COMPLIANCE BRANCH
100 North Senate Avenue, Indianapolis, IN 46204**

**PART 70 OPERATING PERMIT
EMERGENCY OCCURRENCE REPORT**

Source Name: Innovene USA LLC
Source Location: 2357 Standard Avenue, Whiting, IN 46394

<p><input type="checkbox"/> This is an emergency as defined in 326 IAC 2-7-1(12)</p> <p>The Permittee must notify the Office of Air Quality (OAQ), no later than four (4) business hours (1-800-451-6027 or 317-233-5674, ask for Compliance Section); and</p> <p>The Permittee must submit notice in writing or by facsimile no later than two (2) working days (Facsimile Number: 317-233-5967), and follow the other requirements of 326 IAC 2-7-16.</p> <p>Address: 100 North Senate Avenue, Indianapolis, Indiana 46204</p>
--

This EMERGENCY OCCURRENCE REPORT consists of 2 pages.

If any of the following are not applicable, mark N/A

Facility/Equipment/Operation:
Control Equipment:
Permit Condition or Operation Limitation in Permit:
Description of the Emergency:
Describe the cause of the Emergency:
Date/Time Emergency started:
Date/Time Emergency was corrected:

Page 2 of 2 of the EMERGENCY OCCURRENCE REPORT

Was the facility being properly operated at the time of the emergency? Y N
Describe:
Type of Pollutants Emitted: TSP, PM ₁₀ , SO ₂ , VOC, NO _x , CO, Pb, other:
Estimated amount of pollutant(s) emitted during emergency:
Describe the steps taken to mitigate the problem:
Describe the corrective actions/ response steps taken:
Describe the measures taken to reduce emissions:
If applicable, describe the reasons why continued operation of the facilities are necessary to prevent imminent injury to persons, severe damage to equipment, substantial loss of capital investment, or loss of product or raw materials of substantial economic value:

Form Completed By:
Title/Position:
Date:
Telephone:

A certification by the responsible official as defined by 326 IAC 2-7-1(34) is NOT required for this report.

**INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT
OFFICE OF AIR QUALITY
COMPLIANCE DATA SECTION
100 North Senate Avenue, Indianapolis, IN 46204**

**PART 70 OPERATING PERMIT
QUARTERLY DEVIATION AND COMPLIANCE MONITORING REPORT**

Source Name: Innovene USA LLC
Source Location: 2357 Standard Avenue, Whiting, IN 46394

Months: _____ to _____ Year: _____

This Quarterly Deviation And Compliance Monitoring Report consists of 2 pages.

This report shall be submitted quarterly based on a calendar year. Any deviation from the requirements, the date(s) of each deviation, the probable cause of the deviation, and the response steps taken must be reported. A deviation required to be reported pursuant to an applicable requirement that exists independent of the permit, shall be reported according to the schedule stated in the applicable requirement and does not need to be included in this report. Additional pages may be attached if necessary. If no deviations occurred, please specify in the box marked "No deviations occurred this reporting period".	
<input type="checkbox"/> NO DEVIATIONS OCCURRED THIS REPORTING PERIOD.	
<input type="checkbox"/> THE FOLLOWING DEVIATIONS OCCURRED THIS REPORTING PERIOD	
Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Page 2 of 2 of Quarterly Deviation And Compliance Monitoring Report	
Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	
Permit Requirement (specify permit condition #)	
Date of Deviation:	Duration of Deviation:
Number of Deviations:	
Probable Cause of Deviation:	
Response Steps Taken:	

Form Completed By:
Title/Position:
Date:
Telephone:

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 Significant Source Modification

Source Description and Location

Source Name:	Innovene USA LLC
Source Location:	2357 Standard Avenue, Whiting, IN 46394
County:	Lake
SIC Code:	2821, 325211
Significant Source Modification No.:	089-22011-00076
Permit Writer:	Iryn Calilung 317/233-5692

This existing chemical plant manufactures polybutene from butane/butene mixture by a catalytic polymerization reaction using aluminum chloride as a catalyst. The maximum capacity of this chemical plant is 250 million pounds per year. This chemical plant consists of the following existing emission units:

Table 1 - - Existing Emission Units and Control	
Emission Unit	Emission Unit ID
Catalysts Storage Silo	EU-1
Unloading Rack	EU-2
Product Shipping Rack	EU-3
Process Heater	EU-4
Vapor recovery Unit	EU-5
Chemical Plant Storage Tanks and Cooling Towers	EU-6
Flare	PIB Flare (also known as F-1)

Existing Approvals

This existing chemical plant submitted an application for a Part 70 Operating Permit on September 23, 1996. At this time this application is still under review. The chemical plant is operating under the following approvals:

- (1) Registration - no identification, issued on November 2, 1981.
- (2) Registration - no identification, issued on September 21, 1984.
- (3) Permit 089-2108-00076, issued on July 3, 1991.

Source Determination

On December 16, 2005, the sale of the shares of Innovene USA LLC from BP Whiting Refinery to INEOS was finalized. Due to this sale of this existing chemical plant, common ownership and control has been eliminated between BP Whiting Refinery and Innovene USA LLC. Based on this lack of common control and ownership, it has been determined that Innovene USA LLC is a separate source from BP Whiting Refinery.

County Attainment Status

This existing chemical plant is located in Lake County.

Pollutant	Status
PM10	Attainment
PM2.5	Attainment
SO ₂	Nonattainment
NO ₂	Attainment
1-Hour Ozone	Severe Nonattainment
8-Hour Ozone	Nonattainment
CO	Attainment
Lead	Attainment

- (1) Volatile organic compounds (VOC) and Nitrogen Oxides (NO_x) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone.
 - (a) 1-Hour Ozone Standard
On January 26, 1996 in 40 CFR 52.777(i), the U.S. EPA granted a waiver of the requirements of Section 182(f) of the CAA for Lake and Porter Counties, including the lower NO_x threshold for nonattainment new source review. Therefore, VOC emissions alone are considered when evaluating the rule applicability relating to the 1-hour ozone standards. Lake County has been designated as severe nonattainment in Indiana for the 1-hour ozone standard. Therefore, VOC emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3.
 - (b) 8-Hour Ozone Standard
VOC and NO_x emissions are considered when evaluating the rule applicability relating to the 8-hour ozone standard. Lake County has been designated as nonattainment for the 8-hour ozone standard. Therefore, VOC and NO_x emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3.

- (2) **PM_{2.5}**
U.S. EPA, in the Federal Register Notice 70 FR 943 dated January 5, 2005, has designated Lake County as nonattainment for PM_{2.5}. On March 7, 2005 the Indiana Attorney General's Office, on behalf of IDEM, filed a law suit with the Court of Appeals for the District of Columbia Circuit challenging U.S. EPA's designation of nonattainment areas without sufficient data. However, in order to ensure that sources are not potentially liable for a violation of the Clean Air Act, the OAQ is following the U.S. EPA's guidance to regulate PM₁₀ emissions as a surrogate for PM_{2.5} emissions pursuant to the requirements of Emission Offset, 326 IAC 2-3.
- (3) **SO₂**
Lake County has been classified as nonattainment in Indiana for SO₂ emissions. Therefore, these emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3.
- (4) **Other Regulated Criteria Pollutants**
Lake County has been classified as attainment or unclassifiable in Indiana for the other criteria pollutants. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2.
- (5) **Listed Source Categories**
Since this plant is classified as a chemical plant, it is considered one of the twenty-eight (28) listed source categories, as specified in 326 IAC 2-2-1(gg)(1) and fugitive emissions are counted toward the determination of PSD and Emission Offset applicability.

Source Status Prior to the Proposed Modification

- (1) **Major EO Source**
This existing source is a major stationary source, under Emission Offset 326 IAC 2-3, because VOC is emitted at a rate of 25 tons per year or more for a source located in a severe ozone nonattainment area, and it is one of the twenty-eight (28) listed source categories, as specified in 326 IAC 2-2-1(gg)(1). (See Actual Emissions of the Entire Source Prior to the Proposed Modification below.)
- (2) **Major PSD Source**
This existing source is a major stationary source, under PSD 326 IAC 2-2, because CO emissions are 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). (See Actual Emissions of the Entire Source Prior to the Proposed Modification below.)
- (3) **HAP Minor Source**
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 a single HAP and 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 of the Entire Source Prior to the Proposed Modification

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

Pollutant	Actual Emissions (tons/year)
PM10	--
SO ₂	1
VOC	53
CO	129
NO _x	27
HAP	--

Background and Description of the Proposed Modification

On November 8, 2005, the Office of Air Quality (OAQ) received a modification application from Innovene USA LLC relating to the construction and operation of a new rail loading/unloading rack system and the associated piping for butane/butene (BB) feed stock and spent BB. Additional Information was received on November 28, 2005.

This new rail loading/unloading rack system, identified as EU-7, has a maximum capacity of 300 gallons per minute per car and a total of 2,084 cars per year and consists of six (6) rail loading/unloading locations on two (2) new rail sidings. This new rail loading/unloading rack system will enable Innovene USA LLC to receive BB feed stock from other sources and to load spent BB to the railcars.

VOC emissions from the new rail loading/unloading rack system will be controlled by the existing flare, identified as PIB Flare. This PIB Flare has a maximum capacity of 540,000 pounds per hour of fuel and natural gas. Controlled emissions exhaust through the existing stack SV 2.

The following are the sources of fugitive equipment leaks:

- (a) pumps equipped with double-mechanical seals;
- (b) piping manifold(s) for the loading/unloading rack;
- (c) receiver drum(s) to provide surge capacity;
- (d) various valves;
- (e) condenser(s);
- (f) G-L separator(s) for the condenser;

- (g) two (2) compressors with closed vent systems;
- (h) lines of piping; and
- (i) associated valves and flanges to connect the BB feed system and to the spent BB pipe system downstream of the vapor recovery unit.

The following table summarizes the estimated equipment leaks:

Table 4 - - Equipment Leaks		
Type of Component	Number of Components in Light Liquid Service	Number of Components in Gas/Vapor Service
Pumps	2	--
Valves	83	54
Flanges	231	154
Compressors	--	2

The maximum capacity of the chemical plant (250 million pounds per year) will not change due to this proposed modification.

There will be no new building constructed for this proposed modification.

Enforcement Issues

There are no pending enforcement actions related to this proposed modification.

Stack Summary

Table 5 - - Stack Summary of the Proposed Modification					
Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
SV 2 (existing)	PIB Flare	250	3.0	60,000	200

Emission Calculations

Innovene USA LLC submitted detailed emission calculations as part of their application. These detailed calculations have been incorporated as Appendix A of this technical support document. The tables below summarize the potential to emit for the proposed modification.

Table 6 - - Total Emissions (Before Control) of the Proposed Modification (tons/year)						
Emission Unit	VOC	NOx	PM	PM10	SO2	CO
Loading/Unloading Rack (EU-7)	175	--	--	--	--	--
Fugitive Emissions from Leak Equipment (Fug EU-7)	1.12	--	--	--	--	--
Existing PIB Flare (increase in PTE only)	--	0.59	0.00797	0.0319	0.00252	0.35
Total	176.12	0.59	0.00797	0.0319	0.00252	0.35

Table 7 - - Total Emissions (After Control) of the Proposed Modification (tons/year)						
Emission Unit	VOC	NOx	PM	PM10	SO2	CO
Loading/Unloading Rack (EU-7)	1.75	--	--	--	--	--
Fugitive Emissions from Leak Equipment (Fug EU-7)	1.12	--	--	--	--	--
Existing PIB Flare (increase in PTE only)	--	0.59	0.00797	0.0319	0.00252	0.35
Total	2.87	0.59	0.00797	0.0319	0.00252	0.35

Permit Level Determination of the Proposed Modification – Part 70

Pursuant to 326 IAC 2-1.1-1(16), Potential to Emit (PTE) 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 of the proposed modification 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 (tons/year)
PM	0.00797
PM10	0.0319
SO ₂	0.00252
VOC	176.12
CO	0.35
NO _x	0.59
Single HAP	--
Combination of HAPs	--

This proposed source modification is processed as a significant source modification pursuant to 326 IAC 2-7-10.5 (f)(2) and (4) because the potential to emit of the proposed modification is greater than 25 tons per year (before control) and it is subject to 326 IAC 8-1-6 (General Reductions for New Facilities).

Permit Level Determination of the Proposed Modification – PSD or Emission Offset

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 only to the extent that the effect of the control equipment is made practically enforceable in the permit.

Emission Unit	VOC	NO _x	PM	PM10	SO ₂	CO
Loading/Unloading Rack (EU-7)	1.75	--	--	--	--	--
Fugitive Emissions from Leak Equipment (Fug EU-7)	1.12	--	--	--	--	--
Existing PIB Flare (increase in PTE only)	--	0.59	0.00797	0.0319	0.00252	0.35
Total	2.87	0.59	0.00797	0.0319	0.00252	0.35
PSD or EO Significant Levels	25	40	25	15	40	100

- (1) This modification to an existing major stationary source, located in Lake County, is not major because the NO_x, PM, PM10, SO₂ and CO emission increases are less than the PSD significant levels. Therefore, pursuant to 326 IAC 2-2, the PSD requirements do not apply.
- (2) This modification to an existing major stationary source, located in Lake County, is not major because the VOC emission increase is less than the Emission Offset significant level. In addition, this VOC increase and the VOC contemporaneous increases are less than the VOC de minimis (see VOC De Minimis Determination below). Therefore, pursuant to 326 IAC 2-3, the Emission

Offset requirements do not apply.

- (3) Lake County has been designated as nonattainment for PM2.5 in 70 FR 943 dated January 5, 2005. According to the April 5, 2005 EPA memo titled "Implementation of New Source Review Requirements in PM2.5 Nonattainment Areas" authored by Steve Page, Director of OAQPS, until EPA promulgates the PM2.5 major NSR regulations, states should assume that a major stationary source's PM10 emissions represent PM2.5 emissions. IDEM will use the PM10 nonattainment major NSR program as a surrogate to address the requirements of nonattainment major NSR for the PM2.5 NAAQS. A significant emissions increase would be a net emissions increase or the potential of fifteen (15) tons per year or greater of PM10.

The potential to emit of PM10 from the proposed modification to less than fifteen (15) tons per year. Therefore, assuming that PM10 emissions represent PM2.5 emissions, 326 IAC 2-3 does not apply for PM2.5.

VOC De Minimis Determination

- (1) Lake County is classified as a severe nonattainment area for the 1-hour ozone standard.
- (2) Since Innovene US LLC is located in Lake County, the proposed modification must be evaluated to determine if it is a minor modification in terms of 326 IAC 2-3 by determining if the VOC emission increase is de minimis. [326 IAC 2-3-1(z)]
- (3) De minimis means a VOC increase that does not exceed twenty-five (25) tons per year when the net emissions increases from the proposed modification are aggregated with all other net emissions increases from the source over a five (5) consecutive calendar year period prior to, and including, the year of the modification. [326 IAC 2-3-1(q)]
- (4) The VOC emission increases over the previous five (5) calendar years plus the emission increase from the current modification result in an emission increase less than the de minimis level, therefore this modification is considered a minor modification and not subject to the requirements of 326 IAC 2-3 (Emission Offset). [326 IAC 2-3-2(b)]
- (5) Based on the evaluation of the VOC de minimis determination submitted by Innovene USA LLC, there are no contemporaneous VOC increases from calendar years January 2000 to December 2005. This information was verified through the OAQ's permit database.
- (6) Since the total increase in VOC emissions for the past five (5) years is less than the de minimis level, this modification is not subject to the requirements of 326 IAC 2-3 Emission Offset.

Federal Rule Applicability Determination

The following federal rules have been evaluated if they are applicable to the source due to this proposed modification:

- (1) New Source Performance Standards (NSPS) 40 CFR Part 60
 - (a) 40 CFR 60, Subpart VV
The equipment leaks associated with the proposed modification are subject to the requirements of 40 CFR 60, Subpart VV - Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry 40 CFR Part 60.48, Subpart VV because this plant is used to manufacture polybutenes (CAS #9003-29-6), which is one of the chemicals listed in 40 CFR 60.489 (List of Chemicals Produced by Affected Facilities).

This federal regulation is incorporated by reference as 326 IAC 12.

The equipment leaks subject to this rule include the following:

- (1) pumps equipped with double-mechanical seals;
- (2) piping manifold(s) for the loading/unloading rack;
- (3) receiver drum(s) to provide surge capacity;
- (4) various valves;
- (5) condenser(s);
- (6) G-L separator(s) for the condenser;
- (7) two (2) compressors with closed vent systems;
- (8) lines of piping; and
- (9) associated valves and flanges to connect the BB feed system and to the spent BB pipe system downstream of the vapor recovery unit.

The following table summarizes the estimated equipment leaks:

Table 10 - - Equipment Leaks		
Type of Component	Number of Components in Light Liquid Service	Number of Components in Gas/Vapor Service
Pumps	2	--
Valves	83	54
Flanges	231	154
Compressors	--	2

Upon initial start up, the equipment leaks are subject to the following:

- | | | |
|-----|------------------|---|
| (a) | 40 CFR 60.482-1 | Standards: General. |
| (b) | 40 CFR 60.482-2 | Standards: Pumps in light liquid service. |
| (c) | 40 CFR 60.482-3 | Standards: Compressors. |
| (d) | 40 CFR 60.482-4 | Standards: Pressure relief devices in gas/vapor service. |
| (e) | 40 CFR 60.482-5 | Standards: Sampling connection systems. |
| (f) | 40 CFR 60.482-6 | Standards: Open-ended valves or lines. |
| (g) | 40 CFR 60.482-7 | Standards: Valves in gas/vapor service and in light liquid service. |
| (h) | 40 CFR 60.482-8 | Standards: Pumps and valves in heavy liquid service, pressure relief devices in light liquid or heavy liquid service, and connectors. |
| (i) | 40 CFR 60.482-9 | Standards: Delay of repair. |
| (j) | 40 CFR 60.482-10 | Standards: Closed vent systems and control devices. |
| (k) | 40 CFR 60.485 | Test methods and procedures. |
| (l) | 40 CFR 60.486 | Recordkeeping requirements. |
| (m) | 40 CFR 60.487 | Reporting requirements. |

Nonapplicable portions of the NSPS will not be included in the permit.

- (b) 40 CFR 60, Subpart III
This chemical plant is not subject to the requirements of 40 CFR 60, Subpart III - Standards of Performance for Volatile Organic Compound (VOC) Emissions from the Synthetic Organic Chemical Manufacturing Industry (SOCMI) Air Oxidation Unit Process (326 IAC 12) because this facility does not produce as a product, co-product, by-product or intermediate any of the chemicals listed in 40 CFR 60.617.
 - (c) 40 CFR 60, Subpart NNN
This chemical plant is not subject to the requirements of 40 CFR 60, Subpart NNN - Standards of Performance for Volatile Organic Compounds (VOC) Emissions From Synthetic Organic Chemical Manufacturing Industry (SOCMI) Distillation Operations (326 IAC 12) because this facility does not produce as a product, co-product, by-product or intermediate any of the chemicals listed in 40 CFR 60.667.
 - (d) 40 CFR 60, Subpart RRR
This chemical plant is not subject to the requirements of 40 CFR 60, Subpart RRR - Standards of Performance for Volatile Organic Compound Emissions from Synthetic Organic Chemical Manufacturing Industry (SOCMI) Reactor Processes (326 IAC 12) because the source does not produce any of the chemicals listed in §60.707 as a product, co-product, by-product, or intermediate.
- (2) National Emission Standards for Hazardous Air Pollutants (NESHAPs) 40 CFR Part 63
- (a) There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14, 326 IAC 20, and 40 CFR Part 63) included in the permit for this proposed rail loading/unloading rack system.
 - (b) This chemical plant is not subject to the requirements of 40 CFR 63, Subparts F, G, H, or I because it does not:

- (1) Manufacture as primary product any of the chemicals listed in §63.100(b)(1);
 - (2) Use as a reactant or manufacture as a product, or co-product any of the chemicals listed in Table 2 of this 40 CFR 63, Subpart F.
- (c) 40 CFR 63, Subpart FFFF
 This chemical plant is not subject to the requirements of 40 CFR 63, Subpart FFFF - National Emission Standards of Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing because this NESHAP applies to organic chemical manufacturing process units (MCPUs) that satisfy the conditions in 40 CFR 63.2435(b) (1) through (b)(3). Although the chemical plant operates under the SIC code 282, it does not process, use, or produce any of the organic HAP listed in section 112(b) of the Clean Air Act or hydrogen halide and halogen HAP, as defined in 40 CFR 63.2550.
- (3) 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 or after 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 applicability criteria, under 40 CFR 64.1, to each new or modified emission unit involved in the proposed project modification:

Table 11- - CAM Applicability							
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)
Loading/Unloading Rack (EU-7)	PIB Flare	Yes	VOC Greater than 25	VOC Less than 25	25	Yes	No

Based on this evaluation, the requirements of 40 CFR Part 64, CAM are applicable to the loading/unloading rack system and PIB Flare upon issuance of the Part 70 Operating Permit Renewal. A CAM plan must be submitted as part of the Part 70 Operating Permit renewal application.

State Rule Applicability Determination

The following state rules are applicable to the source due to the proposed modification:

- (1) Pursuant to 326 IAC 2-1.1-4 (Federal Provisions), in case of a conflict between the state rules and a provision of federal law or regulation, the more stringent requirement applies.
- (2) 326 IAC 1-6-3 (Preventive Maintenance Plan)
The PIB Flare is subject to the preventive maintenance plan requirements.
- (3) 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 of this TSD.
- (4) 326 IAC 2-4.1 (Major Sources of Hazardous Air Pollutants (HAP))
The operation of the rail loading/unloading rack system 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.
- (5) 326 IAC 2-6 (Emission Reporting)
Even prior to this modification, this existing source, which is located in Lake County, and has a potential to emit VOC greater than or equal to twenty-five (25) tons per year, is subject to the emission reporting requirements. An emission statement covering the previous calendar year must be submitted by July 1 of each year. The emission statement shall contain, at a minimum, the information specified in 326 IAC 2-6-4.
- (6) 326 IAC 2-7 (Part 70 Program)
The proposed modification will be constructed at the existing Innovene USA LLC plant. It will be incorporated into the pending Part 70 Operating Permit of Innovene USA LLC.
- (7) 326 IAC 5-1-2 (Opacity Limitations)
The proposed modification is subject to the opacity standards (20%) specified in 326 IAC 5-1-2(2)(B) because it is located in Lake County.
- (8) 326 IAC 8-1-6 (General Reductions for New Facilities)
The VOC potential emissions of the proposed modification are greater than 25 tons per year, therefore, the new rail loading/unloading rack system is subject to the best available control technology review required under 326 IAC 8-1-6. See the VOC BACT Analysis portion of this TSD for the detailed determination.
- (9) 326 IAC 6.8 (Particulate Matter Limitations for Lake County)
The proposed loading and unloading rack system is not subject to these rules because it does not emit particulate matter emissions.

VOC BACT Analysis

326 IAC 8-1-6 requires a best available control technology (BACT) review to be performed on the proposed modification because the new additional rail loading/unloading rack system has VOC potential emissions greater than 25 tons per year.

BACT is a mass emission limitation based on the maximum degree of pollution reduction of volatile organic compound (VOC) emissions, which is achievable on a case-by-case basis.

BACT analysis takes into account the energy, environmental, and economic impacts on the source. These reductions may be determined through the application of available control techniques, process design, work practices, and operational limitations. Such reductions are necessary to demonstrate that the emissions remaining after application of BACT will not cause or contribute to air pollution, thereby protecting public health and the environment.

The Office of Air Quality (OAQ) makes BACT determinations by following these steps.

- (1) The first step is to identify all control technologies.
- (2) The second step is to eliminate technically infeasible options.
- (3) The third step is to rank the remaining control technologies by effectiveness.
- (4) The fourth step is to evaluate the most effective controls and document results.
- (5) The last step is to select the BACT control and mass emission limit.

Once the technically feasible control technologies have been identified, they are ranked in order of control effectiveness, with the most effective control alternative on top. The ranked alternatives are reviewed in terms of environmental, energy, and economic impacts specific to the proposed modification. If the analysis determines that the evaluated alternative is not appropriate as BACT due to any of the impacts, then the next most effective is evaluated. This process is repeated until a control alternative is chosen as BACT.

The proposed BACT must provide emission limitations, which are at least as stringent as the federally approved State Implementation Plan (SIP) or the federal New Source Performance Standards (NSPS) and National Emission Standards for Hazardous Air Pollutants (NESHAP).

In going through the feasible controls, there may be several different limits that have been set as BACT for the same control technology. The permitting agency has to choose the most stringent limit as BACT unless the applicant demonstrates in a convincing manner why that limit is not feasible. The final BACT determination would be the technology with the most stringent corresponding limit that is technically and economically feasible.

There is no requirement in the State or Federal regulations to require innovative control to be used as BACT. Innovative control means a control that has not been demonstrated in a commercial application on similar units. Innovative controls are normally given a waiver from the BACT requirements due to the uncertainty of actual control efficiency.

VOC BACT requires that the applicant install the best available control technology, not create new ones. Based on this, the OAQ will not evaluate or require any innovative controls for this BACT analysis. Only available and proven control technologies are evaluated. A control technology is considered available when there are sufficient data indicating that the technology results in a reduction in emissions of regulated pollutants.

The following VOC determinations are based on the information obtained from the permit application submitted by Innovene USA LLC, the EPA RACT/BACT/LAER (RBLCL) Clearinghouse, and electronic versions of permits available at the websites of other permitting agencies.

The following control alternatives were evaluated to control VOC emissions from the proposed rail loading/unloading rack system. The technologies are arranged in a descending order in terms of feasibility and efficiency.

Table 13 - - VOC BACT Control Analysis	
Technology	Technical Feasibility
<p>Flare</p> <p>Technically Feasible</p> <p>- Yes</p> <p>BACT - Yes</p>	<p>A flare is technically feasible for controlling the VOC emissions from the proposed rail loading/unloading rack system because it is useful for intermittent VOC laden streams and it will be readily available for use when a railcar is received. Typical efficiencies for flares are over 98% control efficiency.</p> <p>Innovene USA LLC chose to use the existing flare, identified as PIB flare, to control the VOC emissions from the proposed rail loading/unloading rack system. This PIB Flare was determined to be BACT when the chemical plant was initially permitted. This PIB Flare operates at a minimum of 99% overall control efficiency.</p> <p>Since Innovene USA LLC has chosen a control technology that is both technically feasible and has been proven to operate at comparable efficiencies as the other technically feasible control technologies, no cost analysis has been conducted.</p>
<p>Carbon Adsorption</p> <p>Technically Feasible</p> <p>- Yes</p>	<p>Carbon adsorption is technically feasible for VOC emission control from the proposed rail loading/unloading rack system. Typical efficiencies for carbon adsorption range from 95% to 98% control efficiency.</p> <p>Since the top control alternative option has been chosen as the VOC BACT, further evaluation for carbon adsorption is not necessary.</p>
<p>Thermal Oxidation</p> <p>Technically Feasible</p> <p>- No</p>	<p>Thermal oxidizer is not technically feasible for VOC emission control from the proposed rail loading/unloading rack system because thermal oxidizers take time to heat up to the optimum operating temperature and cannot be readily available for use when a railcar is received.</p>
<p>Catalytic Oxidation</p> <p>Technically Feasible</p> <p>- No</p>	<p>Catalytic oxidation is not technically feasible for VOC emissions control from the proposed rail loading/unloading rack system because volatile organic compounds are destroyed at a lower temperature.</p>

Proposed VOC BACT - - Innovene USA LLC

Based on the information provided above, the VOC BACT standards and mass emissions limitations for the new rail loading/unloading rack system are as follows:

- (1) The existing flare (PIB Flare) shall be utilized to control the VOC emissions from the new rail loading/unloading rack system.
- (2) The overall control efficiency of PIB Flare shall be at least 99% when controlling the VOC emissions from the new rail loading/unloading rack system.

Compliance Determination and Monitoring Requirements

Permits issued under 326 IAC 2-7 (Part 70 Program) 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 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. Unlike Compliance Determination Requirements, failure to meet Compliance Monitoring Requirements 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.

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

- (1) The PIB Flare will be required verify the control device design specifications by utilizing the approved methods specified in 40 CFR 60.18.
- (2) The equipment leaks are subject to the applicable compliance requirements under the NSPS for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry (40 CFR 60.480, Subpart VV).

Conclusion and Recommendation

- (1) The construction and operation of this proposed modification shall be subject to the conditions of the attached proposed Part 70 Significant Source Modification No. **089-22011-00076**.
- (2) Unless otherwise stated, information used in this review was derived from the application and additional information received by the Office of Air Quality (OAQ) on November 8, 2005 and November 28, 2005.
- (3) The OAQ staff recommend to the IDEM's Commissioner that this approval to construct and operate (**SSM No. 089-22011-00076**) be approved.
- (4) Copies of the application and preliminary findings have been provided to the Whiting Public Library, 1735 Oliver Street, Whiting, IN 46394.
- (5) A copy of the preliminary findings is also available on the Internet at: www.IN.gov/idem/air/permits/Air-Permits-Online.

IDEM Contact

Questions regarding this proposed permit can be directed to Ms. Iryn Calilung at the Indiana Department Environmental Management, Office of Air Quality, 100 North Senate Avenue, Indianapolis, Indiana 46204 or by telephone at (317) 233-5692 or toll free at 1-800-451-6027 extension 3-5692.

For additional information about air permits and how the public can participate, see IDEM's Guide for Citizen Participation and Permit Guide on the Internet at: www.IN.gov/idem/guides.

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

Addendum to the Technical Support Document (TSD)
for a Part 70 Significant Source Modification

Source Description and Location

Source Name:	Innovene USA LLC
Source Location:	2357 Standard Avenue, Whiting, IN 46394
County:	Lake
SIC Code:	2821, 325211
Significant Source Modification No.:	089-22011-00076
Permit Writer:	Iryn Calilung 317/233-5692

Public Notification and Participation

On January 18, 2006, the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ) had notices published in The Post tribune, Merrillville, IN and The Times., Munster, IN, stating that Innovene USA LLC had applied for an air approval to construct and operate a new rail loading/unloading rack system and the associated piping for butane/butene (BB) feed stock and spent BB. The public comment period ended on February 16, 2006. The purpose of the 30-day public comment period is to allow anyone the opportunity to review and provide comments regarding the draft permit and its supporting documents.

Comments Received

Written comments from Innovene USA LLC (Innovene) were received on January 15, 2006. Innovene commented that the source status, under A.1 - General Information, of the draft permit, should categorize the Innovene Chemical Plant as a minor source under the Prevention of Significant Deterioration (PSD) rules. In addition, the discussion titled "Source Status Prior to the Proposed Modification", on page 3 of the Technical Support Document (TSD) is not correct. The Innovene Chemical Plant does not have the potential to emit of 100 tons per year of carbon monoxide (CO). The primary source of CO emissions is from the PIB Flare. The PIB Flare can be used by a separate source, the refinery owned by BP Products North America - Whiting Business Unit (BP Whiting Refinery), to control emissions from some of its own operations. It appears that IDEM has included emissions from the BP Whiting Refinery in Innovene's source status discussion. Those emissions from the BP Whiting Refinery that are vented to the PIB Flare should be attributed to the refinery processes from which they originate versus the chemical plant's PIB Flare. Given this, and given the most recent revised potential to emit completed by Innovene, Innovene asserts that CO potential to emit of the Innovene Chemical Plant is less than 100 tons per year. Thus, the language in A.1- General Information, of the draft permit and in the section of the TSD titled "Source Status Prior to the Proposed Modification" should be revised to reflect that Innovene is a minor source for CO under the PSD rules.

Since the PIB Flare is owned by Innovene USA LLC and it is located at the Innovene Chemical Plant, IDEM considers all the CO emissions generated by this PIB Flare to be part of the Innovene's potential to emit. Based on this determination, the PSD major status of the Innovene Chemical Plant was not changed. There are no changes to the draft permit due to this comment.

IDEM Contact

Questions regarding this proposed permit can be directed to Ms. Iryn Calilung at the Indiana Department Environmental Management, Office of Air Quality, 100 North Senate Avenue, Indianapolis, Indiana 46204 or by telephone at (317) 233-5692 or toll free at 1-800-451-6027 extension 3-5692.

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Loading/Unloading Rack Emissions During Loading of Rail Cars with Non-condensable Vapors Present

Table 1: Spent BB Railcar Loading Emissions Calculation Results

Case	Condition of Full Rail Car as Received						Condition of Emptied Rail Car						Loading of Rail Car				Vent Condensing			Flare	
	Temperature (F)	Pressure (psia)	Vapor Density (lb/cu ft)	Total Vapor Mass (lb)	C4 Vapor Mass (lb)	N2 Mass (lb)	Temperature (F)	Pressure (psia)	Vapor Density (lb/cu ft)	Total Vapor Mass (lb)	C4 Vapor Mass (lb)	N2 Mass (lb)	Loading Time (hr)	Total Vapor Vent Rate (lb/hr)	C4 Vapor Vent Rate (lb/hr)	Cond Pressure (psia)	Cond Temp (F)	C4 Condensing Rate (lb/hr)	C4 Vent Rate Thru Condenser (lb/hr)	Total C4 Vented to Flare (lb)	Total C4 Emitted from Flare (lb)
1	100	141.6	1.068	145	96.7	48.3	100	0.6885	3111	3063	48.3	1.821	1657	1631	140	120	1549	81.6	148.5	148.5	1.5
2	90	119.8	0.911	124	82.9	41.3	90	0.5909	2670	2629	41.3	1.821	1422	1400	140	110	1354	46.0	83.7	83.7	0.8
3	80	100.5	0.7736	105.2	70.2	35.0	80	0.5046	2281	2246	35.0	1.821	1120	1196	140	100	1169	27.1	49.4	49.4	0.5
4	75	91.92	0.7117	96.8	64.6	32.2	75	0.4854	2103	2071	32.2	1.821	1120	1103	83	85	1011	82.1	187.7	187.7	1.7
5	70	84.0	0.6538	88.9	59.3	29.6	70	0.4287	1937	1907	29.6	1.821	1032	1016	83	80	868	55.9	116.3	116.3	1.2
6	60	69.7	0.5496	74.7	49.8	24.9	60	0.362	1636	1611	24.9	1.821	871.1	857.8	83	80	824	33.9	61.7	61.7	0.6

Table 2: Spent BB Railcar Loading Potential to Emit

Maximum number of railcars loaded per year: 2084

	Uncontrolled	Controlled
Worst Case VOC Emissions (lb per Railcar)	167.7	1.7
Worst Case PTE VOC at 1,042 cars/year (tpy) (typical operation)	87.35	0.87
Worst Case PTE VOC at 2,084 cars/year (tpy) (maximum operation)	174.71	1.75

Note: Flare control efficiency is 99%

Table 3: Fugitive Emissions From Equipment Leaks

Type of Component	Total Number	Number in Liquid Service	Number in Vapor Service	Percent Leakers	Leaking (i.e., greater than or equal to 10,000 ppmv) Emission Factor			Non-Leaking (i.e., less than 10,000 ppmv) Emission Factor		Uncontrolled Emissions		Total Controlled* Emissions (Fugitive and Controlled)	
					Light Liquid Service SOCMl Factor (Kg/hr-comp.)	Vapor Service SOCMl Factor (Kg/hr-Comp.)	Vapor Service SOCMl Factor (Kg/hr-comp.)	Light Liquid Service SOCMl Factor (Kg/hr-comp.)	Vapor Service SOCMl Factor (Kg/hr-comp.)	VOC Emission Rate (lb/hr) (TPY)	VOC Emission Rate (lb/hr) (TPY)	VOC Emission Rate (lb/hr) (TPY)	VOC Emission Rate (lb/hr) (TPY)
Valves	137	83	54	0.25%	0.0892	0.0782	0.000131	0.48	0.11	0.48	0.11		
Flanges (Connectors)	395	231	154	0.03%	0.113	0.113	0.000081	0.43	0.10	0.43	0.10		
Pumps	2	2	0	0.15%	0.243	0	0	0.04	0.01	0.04	0.01		
Compressor seals	2	0	2	0%	0	1.608	0	0.0894	1.73	0.39	0.17	0.04	0.26
Total Emissions										2.68	0.61	1.12	0.26

*Note: Only compressors will be controlled by the closed vent system and flare. The emissions from the compressors are fugitive emissions plus captured and controlled emissions. The emissions from the other components are fugitive emissions.

Methodology and Basis

The SOCMl Factors are from "Protocol for Equipment Leak Emission Estimates," EPA-453/R-95-017, November 1995. SOCMl Screening Ranges Emission Factors from Table 2-5 were used. The factors are a weighted average of the leaking and non-leaking factors, based on the percentage of that component that have had detected leaks at the comparable existing equipment in the past and assumptions described below.

The "percent leakers" rates are based on percentages of existing equipment components that have had detected leaks in the past and information submitted in the Title V permit application submitted on September 23, 1996. Data for monitoring conducted in 2001, 2002, and 2005, using 10,000 ppm as a leak rate, was used for recent data. Data from 2003 and 2004 was based on a different leak rate. Since the SOCMl factors are based on 10,000 ppm, data based on 10,000 ppm was used.

"Percent leakers" for the valves: The worst-case leak rate from the three years of data (2001, 2002, and 2005) was 0.194%. The leak rates for valves in liquid service and valves in vapor service varied slightly, but the worst case rate (i.e., the 0.194% leak rate from valves in vapor service) is considered for the purposes of estimating PTE. The actual worst-case leak rate factor based on recent data (0.194%) was compared to the leak rates provided in the Title V permit application, submitted on September 23, 1996. A leak rate of 0.30% for valves was provided in the Title V permit application. Since the calculations presented here are PTE calculations, Innovene chose the mean between the Title V application assumptions for the existing equipment and the existing equipment leak rates to arrive at 0.25% leaking rate (i.e., 0.194% + ((0.3%-0.194%)/2)). As the new equipment will be assumed to have less opportunity to leak, this is still a conservative assumption.

"Percent leakers" for the flanges and connectors: No leaks were detected during the three years of data (2001, 2002, and 2005). A leak rate of 0.06% for flanges and connectors was provided in the Title V permit application. Since the calculations presented here are PTE calculations, Innovene chose the mean between the Title V application assumptions for the existing equipment and the existing equipment leak rates to use 0.03% leaking rate (i.e., 0% + (0.06%/2)). As the new equipment will be assumed to have less opportunity to leak, this is still a conservative assumption.

"Percent leakers" for the pumps: No leaks were detected during the three years of data (2001, 2002, and 2005). A leak rate of 0.3% for pumps was provided in the Title V permit application. Since the calculations presented here are PTE calculations, Innovene chose the mean between the Title V application assumptions for the existing equipment and the existing equipment leak rates to use 0.15% leaking rate (i.e., 0% + (0.3%/2)). As the new equipment will be assumed to have less opportunity to leak, this is still a conservative assumption.

The "percent leakers" for the compressor seals are based on monitoring conducted during 2001, 2002, and 2005, using 10,000 ppm as a leaking rate. No leaks were detected during these monitoring periods. In addition, no data was provided in the original Title V permit application regarding compressor leak rates. Therefore, a leak rate of 0% was used.

None of the chemicals present in the BB feed stream composition are expected to be HAPs based on preliminary information from potential suppliers.

VOC Emission Rate = VOC Emissions from Light Liquid Service + VOC Emissions from Vapor Service

VOC Emissions from Light Liquid Service = VOC Emissions from Leaking Components + VOC Emissions from Non-Leaking Components

VOC Emissions from Leaking Components (liquid service) = Number in Liquid Service x Percent Leakers x Leaking Light Liquid Service SOCMl Factor x (2.20 lb/Kg) x 8,760 hours x (1 ton/2000 lbs)

Flare Potential to Emit (due to use by Proposed Loading/Unloading Rack and Closed Vent System for Compressors)

Original flare PTE was based on a maximum potential flaring time for the original operations vented to the flare (refer to supplement to CE-05 in original Title V permit application). The same methodology is used below for the additional potential flaring due to the proposed loading/unloading rack and the associated closed vent system for the compressors.

Additional Flare PTE based on Maximum Potential Exhaust to Flare for Proposed Loading/Unloading Rack and Closed Vent System:

Total VOC from loading/unloading rack (tpy) =	1.75 controlled
Total VOC from closed vent system for compressors (tpy) =	0.02 controlled

The pilot emissions are not included in these PTE calculations since they were included in the original PTE calculations (i.e., the pilot would have been lit at all times to make it available for the existing operations venting to the flare).

Total potential flare time for loading/unloading rack (hr/yr) =	3795.89 (based on 2,084 cars per year and 1.821 hrs/car)
Flare VOC control efficiency =	99%

Amount of Gas Combusted:

Other Criteria pollutant emissions from flare are based on amount of supplemental natural gas and amount of displaced gas burned during flaring. *Loading/Unloading Rack*

If 1.75 tpy of VOC is emitted, then 1.75 tpy/(1-efficiency) is what was combusted (1.75 ton/0.01) = tons or lbs

Closed Vent System for Compressors

If 0.02 tpy of VOC is emitted, then 0.02 tpy/(1-efficiency) is what was combusted (0.02 ton/0.01) = tons or lbs

Total

Assume gas to flare has an average specific gravity of 0.042 lb/scf (assumes gas is methane).

Total VOC combusted (lb/year) = VOC combusted from loading/unloading rack (lb/year) + VOC combusted from compressors (lb/year)

Total volume of gas burned is the total VOC combusted divided by the specific gravity of the gas (352550.85 lb/0.042 lb/scf) = scf/yr or MMscf/yr

Maximum volume of gas combusted per year (MMscf/yr) = 8.39

	PM	PM ₁₀	SO ₂	NO _x	CO
Emission Factor (lb/MMscf)	1.9	7.6	0.6	140	84
Emissions (tpy)	7.97E-03	3.19E-02	2.52E-03	0.59	0.35
Emissions (lb/hr)	4.20E-03	1.68E-02	1.33E-03	0.31	0.19

Emission Factors are from AP-42, Chapter 1.4 (NO_x factor uses the factor for large boilers with low NO_x burners). Emissions in lb/hr are based on 3,795.89 hrs/year flaring time. Note that this may be conservative for equipment leaks (i.e., equipment leaks may occur over a longer time period since emissions are possible whenever the compressor is in use).

Sample Calculation

$$\text{VOC Emissions from Pumps} = \left[\frac{12 \text{ pumps}}{0.002} \right] \times \left[\frac{0.243 \text{ kg}}{\text{hr-pump}} \right] + \left[\frac{12 \text{ pumps}}{(1-0.002)} \right] \times \left[\frac{0.00187 \text{ kg}}{\text{hr-pump}} \right] = 0.043 \text{ tons/year}$$

1 kg = 2.20462 lbs

Closed Vent System

The compressors will be equipped with a closed vent system routed to the existing flare, capable of an overall 90% control efficiency. The overall control efficiency is based on an engineering estimate, using the control efficiency for a closed vent system provided in Table 5-1 of the US EPA document "Protocol for Equipment Leak Emission Estimates".

Overall Closed Vent System Control Efficiency (%) =	90%
Existing PIB Flare Destruction Efficiency (%) =	99%
Estimated Capture Efficiency (%) =	90.9%

Overall Control Efficiency / Flare Destruction Efficiency

Fugitive VOC Potentially Not Captured By Closed Vent System

VOC Emission Rate (TPY) =	0.16	Uncontrolled VOC Emission Rate (TPY) * (1 - Estimated Capture Efficiency)
VOC Emission Rate (lb/hr) =	0.04	Uncontrolled VOC Emission Rate (lb/hr) * (1 - Estimated Capture Efficiency)
VOC Controlled by Closed Vent System and Flare		
VOC Emission Rate (TPY) =	0.02	Uncontrolled VOC Emission Rate (TPY) * Estimated Capture Efficiency * (1 - Existing PIB Flare Destruction Efficiency)
VOC Emission Rate (lb/hr) =	0.004	Uncontrolled VOC Emission Rate (lb/hr) * Estimated Capture Efficiency * (1 - Existing PIB Flare Destruction Efficiency)

Total VOC Emission Rate from Compressors When Controlled by Closed Vent System and Flare

VOC Emission Rate (TPY) =	0.17	Fugitive VOC Not Captured By Closed Vent System (TPY) + VOC Controlled by Closed Vent System and Flare (TPY)
VOC Emission Rate (lb/hr) =	0.039	Fugitive VOC Not Captured By Closed Vent System (lb/hr) + VOC Controlled by Closed Vent System and Flare (lb/hr)