



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We make Indiana a cleaner, healthier place to live.

Mitchell E. Daniels, Jr.
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Thomas W. Easterly
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100 North Senate Avenue
Indianapolis, Indiana 46204
(317) 232-8603
(800) 451-6027
www.IN.gov/idem

October 12, 2005

Ms. Linda Wilson
BP Products North America, Inc. Whiting Business Unit
P.O. Box 710
Whiting, Indiana 46394

Re: Minor Source Modification No.
089-21591-00453

Dear Ms. Wilson:

BP Products North America, Inc. Whiting Business Unit applied for a Part 70 permit on September 30, 1996 for a refinery, marketing terminal, and chemical plant. An application to modify the source was received on July 26, 2005. Pursuant to 326 IAC 2-7-10.5 the following emission units are approved for construction at the source:

- (a) Conversion of storage tank 3900 from an external floating roof tank to an internal floating roof tank. Tank 3900 is located at the J & L Tank Field, has a maximum storage capacity of 1,906,000 gallons, and will be used to store crude relief valve effluent. The storage tank was initially constructed in 1956 and will be modified in September 2005.
- (b) Modifications to the pipelines to allow for the diversion of crude relief valve effluent, including the installation of a relief valve header on the incoming crude pipelines.

The proposed Minor Source Modification approval will be incorporated into the pending Part 70 permit application pursuant to 326 IAC 2-7-10.5(l)(3). The source may begin operation upon issuance of the source modification approval.

Pursuant to Contract No. A305-5-65, IDEM, OAQ has assigned the processing of this application to Eastern Research Group, Inc., (ERG). Therefore, questions should be directed to Amanda Baynham, ERG, 1600 Perimeter Park Drive, Morrisville, North Carolina 27560, or call (919) 468-7910 to speak directly to Ms. Baynham. Questions may also be directed to Duane Van Laningham at IDEM, OAQ, 100 North Senate Avenue, Indianapolis, Indiana, 46204, or call (800) 451-6027 and ask for Duane Van Laningham or extension 3-6878, or dial (317) 233-6878.

Sincerely,
Original signed by

Nysa James, Section Chief
Permits Branch
Office of Air Quality

Attachments
ERG/AAB

cc: File – Lake County
U.S. EPA, Region V
Lake County Health Department
Hammond Department of Environmental Management
Northwest Regional Office
Air Compliance Section Inspector – Ramesh Tejuja
Compliance Data Section
Administrative and Development
Technical Support and Modeling



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PART 70 MINOR SOURCE MODIFICATION OFFICE OF AIR QUALITY

**BP Products North America Inc., Whiting Business Unit
2815 Indianapolis Blvd.
Whiting, Indiana 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.

Minor Source Modification No. 089-21591-00453	
Original signed by: Nysa James, Section Chief Permits Branch Office of Air Quality	Issuance Date: October 12, 2005

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SECTION A

SOURCE SUMMARY

This approval is based on information requested by the Indiana Department of Environmental Management (IDEM), Office of Air Quality (OAQ). The information describing the emission units contained in conditions A.1 through A.2 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 approval 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 stationary refinery, marketing terminal and chemical plant.

Responsible Official:	Whiting Business Unit Leader
Source Address:	2815 Indianapolis Blvd, Whiting, Indiana 46394
Mailing Address:	P.O. Box 710, Whiting, Indiana 46394
General Source Phone Number:	219-473-3179
SIC Code:	2911 and 2869
County Location:	Lake
Source Location Status:	Nonattainment for SO ₂ and ozone under the 1-hour and 8-hour ozone standards and PM _{2.5} Attainment for all other criteria pollutants
Source Status:	Part 70 Permit Program Major Source, under PSD, and Emission Offset Rules Major Source, Section 112 of the Clean Air Act 1 of 28 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 stationary source is approved to construct and operate the following emission units and pollution control devices:

- (a) Conversion of storage tank 3900 from an external floating roof tank to an internal floating roof tank. Tank 3900 is located at the J & L Tank Field, has a maximum storage capacity of 1,906,000 gallons, and will be used to store crude oil. The storage tank was initially constructed in 1956 and will be modified in September 2005.
- (b) Modifications to the pipelines to allow for the diversion of crude relief valve effluent, including the installation of a relief valve header on the incoming crude pipelines.

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

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

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

Terms in this permit shall have the definition assigned to such terms in the referenced regulation. In the absence of definitions in the referenced regulation, the applicable definitions found in the statutes or regulations (IC 13-11, 326 IAC 1-2 and 326 IAC 2-7) shall prevail.

B.2 Effective Date of the Permit [IC13-15-5-3]

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

B.3 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.4 NSPS Reporting Requirement

Pursuant to the New Source Performance Standards (NSPS), Part 60, Subparts Kb and GGG, the Permittee is hereby advised of the requirement to report the following at the appropriate times:

- (a) Commencement of construction date (no later than 30 days after such date);
- (b) Actual start-up date (within 15 days after such date); and
- (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

and for emission units located within the jurisdiction of the Hammond Department of Environmental Management:

Hammond Department of Environmental Management
5925 Calumet Avenue
Hammond, Indiana 46320

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.

B.5 Credible Evidence [326 IAC 2-7-5(3)][326 IAC 2-7-6][62 FR 8314][326 IAC 1-1-6]

For the purpose of submitting compliance certifications or establishing whether or not the Permittee has violated or is in violation of any condition of this permit, nothing in this permit shall preclude the use, including the exclusive use, of any credible evidence or information relevant to whether the Permittee would have been in compliance with the condition of this permit if the appropriate performance or compliance test or procedure had been performed.

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) The Permittee shall prepare and maintain Preventive Maintenance Plans (PMPs) within ninety (90) days after issuance of this permit, for the source as described in 326 IAC 1-6-3. At a minimum, the PMP shall include:
 - (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 60/63 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 Permit Amendment or Modification [326 IAC 2-7-11] [326 IAC 2-7-12]

- (a) Permit amendments and modifications are governed by the requirements of 326 IAC 2-7-11 or 326 IAC 2-7-12 whenever the Permittee seeks to amend or modify this permit.
- (b) Any application requesting an amendment or modification of this permit shall be submitted to:

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

and for emission units located within the jurisdiction of the Hammond Department of Environmental Management:

Hammond Department of Environmental Management
5925 Calumet Avenue
Hammond, Indiana 46320

Any such application shall be certified by the "responsible official" as defined by 326 IAC 2-7-1(34).

- (c) The Permittee may implement administrative amendment changes addressed in the request for an administrative amendment immediately upon submittal of the request. [326 IAC 2-7-11(c)(3)]
- (d) No permit amendment or modification is required for the addition, operation or removal of a nonroad engine, as defined in 40 CFR 89.2.

C.4 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 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.5 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.

C.6 Fugitive Dust Emissions [326 IAC 6-1-11.1]

Pursuant to 326 IAC 6-1-11.1 (Lake County Fugitive Particulate Matter Control Requirements), the particulate matter emissions from source wide activities shall meet the following requirements:

- (a) The average instantaneous opacity of fugitive particulate emissions from a paved road shall not exceed ten percent (10%).
- (b) The average instantaneous opacity of fugitive particulate emissions from an unpaved road shall not exceed ten percent (10%).
- (c) The average instantaneous opacity of fugitive particulate emissions from batch transfer shall not exceed ten percent (10%).
- (d) The opacity of fugitive particulate emissions from continuous transfer of material onto and out of storage piles shall not exceed ten percent (10%) on a three (3) minute average.
- (e) The opacity of fugitive particulate emissions from storage piles shall not exceed ten percent (10%) on a six (6) minute average.
- (f) There shall be a zero (0) percent frequency of visible emission observations of a material during the inplant transportation of material by truck or rail at any time.
- (g) The opacity of fugitive particulate emissions from the inplant transportation of material by front end loaders and skip hoists shall not exceed ten percent (10%).
- (h) There shall be a zero (0) percent frequency of visible emission observations from a building enclosing all or part of the material processing equipment, except from a vent in the building.
- (i) The PM₁₀ emissions from building vents shall not exceed twenty-two thousandths (0.022) grains per dry standard cubic foot and ten percent (10%) opacity.

- (j) The opacity of particulate emissions from dust handling equipment shall not exceed ten percent (10%).
- (k) Any facility or operation not specified in 326 IAC 6-1-11.1(d) shall meet a twenty percent (20%), three (3) minute average opacity standard.

The Permittee shall achieve these limits by controlling fugitive particulate matter emissions according to the Fugitive Dust Control Plan included in Appendix A, submitted on December 11, 1993 and revised May 28, 2004.

C.7 Operation of Equipment [326 IAC 2-7-6(6)]

Except as otherwise provided by statute or rule, or in this permit, all air pollution control equipment listed in this permit and used to comply with an applicable requirement shall be operated at all times that the emission units vented to the control equipment are in operation.

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

C.8 Performance Testing [326 IAC 3-6]

- (a) 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 51, 40 CFR 60, 40 CFR 61, 40 CFR 63, 40 CFR 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

and for emission units located within the jurisdiction of the Hammond Department of Environmental Management:

Hammond Department of Environmental Management
5925 Calumet Avenue
Hammond, Indiana 46320

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 and Hammond Department of Environmental Management for emission units located within this local agency's jurisdiction not later than forty-five (45) days after the completion of the testing. An extension may be granted by IDEM, OAQ, and Hammond Department of Environmental Management, if the source submits to IDEM, OAQ, a reasonable written explanation not later than five (5) days prior to the end of the initial forty-five (45) day period.

Compliance Requirements [326 IAC 2-1.1-11]

C.9 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. 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.10 Compliance Monitoring [326 IAC 2-7-5(3)] [326 IAC 2-7-6(1)]

If required by Section D, all monitoring and record keeping requirements shall be implemented when operation begins. The Permittee shall be responsible for installing any necessary equipment and initiating any required monitoring related to that equipment.

C.11 Monitoring Methods [326 IAC 3] [40 CFR 60] [40 CFR 63]

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

C.13 Other Instrument Specifications [326 IAC 2-1.1-11] \[326 IAC 2-7-5(3)]\ [326 IAC 2-7-6(1)]

- (a) When required by any condition of this permit, any analog instrument used to measure a parameter related to air pollution control performance shall have a scale such that the expected maximum reading for the normal range shall be no less than twenty percent (20%) of full scale
- (b) The Permittee may request that the IDEM, OAQ approve the use of an instrument that does not meet the above specifications provided the Permittee can demonstrate that an alternative pressure gauge or other instrument specification will adequately ensure compliance with permit conditions requiring the measurement of the parameters.

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

C.14 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 the 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:
 - (1) monitoring results;
 - (2) review of operation and maintenance procedures and records; and
 - (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.15 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, Northwest Regional Office, and Hammond Department of Environmental Management for emission units located within its jurisdiction 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

Hammond Department of Environmental Management
Telephone Number: 219-853-6306
Facsimile Number: 219-853-6343

Northwest Regional Office
Telephone Number: 219-757-0265
Facsimile Number: 219-757-0267
 - (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 46204-2251

and for emission units located within the jurisdiction of the Hammond Department of Environmental Management:

Hammond Department of Environmental Management
5925 Calumet Avenue
Hammond, Indiana 46320

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)(9) be revised in response to an emergency.
- (f) Failure to notify IDEM, OAQ, and Hammond Department of Environmental Management for emission units located within its jurisdiction 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.
- (h) The Permittee shall include all emergencies in the Quarterly Deviation and Compliance Monitoring Report.

C.16 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 noncompliant stack tests.

The response action documents submitted pursuant to this condition do 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.17 General Record Keeping Requirements [326 IAC 2-7-5(3)] [326 IAC 2-7-6] [326 IAC 2-2] [326 IAC 2-3]

- (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 or Hammond Department of Environmental Management for emission units within its jurisdiction makes a request for records to the Permittee, the Permittee shall furnish the records to the Commissioner or Hammond Department of Environmental Management within a reasonable time.
- (b) Unless otherwise specified in this permit, all record keeping requirements not already legally required shall be implemented within ninety (90) days of permit issuance.
- (c) If there is a reasonable possibility that a “project” (as defined in 326 IAC 2-2-1(qq) and 326 IAC 2-3-1(II)) at an existing emissions unit, other than projects at a Clean Unit, which is not part of a “major modification” (as defined in 326 IAC 2-2-1(ee) and 326 IAC 2-3-1(z)) may result in significant emissions increase and the Permittee elects to utilize the “projected actual emissions” (as defined in 326 IAC 2-2-1(rr) and 326 IAC 2-3-1(mm)), the Permittee shall comply with following:
- (1) Before beginning actual construction of the “project” (as defined in 326 IAC 2-2-1(qq) and 326 IAC 2-3-1(II)) at an existing emissions unit, document and maintain the following records:
 - (A) A description of the project.
 - (B) Identification of any emissions 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 326 IAC 2-3-1(mm)(2)(A)(3); 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 emissions 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 of or the potential to emit that regulated NSR pollutant at the emissions unit.

C.18 General Reporting Requirements [326 IAC 2-7-5(3)(C)] [326 IAC 2-1.1-11] [326 IAC 2-2] [326 IAC 2-3]

- (a) The Permittee 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 and reports required by conditions in Section D 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 required in Section D of this permit shall be submitted within thirty (30) days of the end of the reporting period. All reports do 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 of issuance of this permit and ending on the last day of the reporting period. 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) and 326 IAC 2-3-1(II)) at an existing emissions unit, and the project meets the following criteria, then the Permittee shall submit a report to IDEM, OAQ and Hammond Department of Environmental Management:
- (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) and 326 IAC 2-3-1(qq) for that regulated NSR 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).
- (g) The report required by paragraph (f) of this condition for a project at an existing emissions unit shall be submitted within sixty (60) days after the end of the year and contain the following:
- (1) The name, address, and telephone number of the major stationary source.

- (2) The annual emissions calculated in accordance with (c)(2) and (3) in Section C- General Record Keeping Requirements.
- (3) The emissions calculated under the actual-to-projected actual test stated in 326 IAC 2-2-2(d)(3) and 326 IAC 2-3-2(c)(3).
- (4) 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

- (h) 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 a request for inspection by IDEM, OAQ. The general public may request this information from the IDEM, OAQ and Hammond Department of Environmental Management under 326 IAC 17.1.

SECTION D.1

FACILITY OPERATION CONDITIONS

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

- (a) Conversion of storage tank 3900 from an external floating roof tank to an internal floating roof tank. Tank 3900 is located at the J & L Tank Field, has a maximum storage capacity of 1,906,000 gallons, and will be used to store crude oil. The storage tank was initially constructed in 1956 and will be modified in September 2005.
- (b) Modifications to the pipelines to allow for the diversion of crude relief valve effluent, including the installation of a relief valve header on the incoming crude pipelines.

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

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

D.1.1 Equipment Leaks of Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAP) [326 IAC 8-4-8] [326 IAC 12][40 CFR 60, Subpart GGG][326 IAC 20-16-1] [40 CFR 63, Subpart CC]

- (a) Pursuant to 326 IAC 8-4-8, the Permittee shall control leaks of VOC from pumps, compressors, valves, process drains, and pressure relief devices according to the Leak Detection and Repair (LDAR) Plan submitted by the Permittee and included as Appendix A. If it is determined that the control procedures specified in the monitoring program do not demonstrate compliance with the fugitive emission limitations, IDEM, OAQ may request that the plan be revised and submitted for approval. The revised plan will be effective immediately upon submittal to IDEM, OAQ.
- (b) Pursuant to 40 CFR 63, Subpart CC and 40 CFR 60, Subpart GGG, the Permittee shall comply with the requirements specified in Section E.2 for equipment leaks.

D.1.2 VOC and HAP Emissions From Storage Vessels [326 IAC 12] [40 CFR 60, Subpart Kb] [326 IAC 20-16-1] [40 CFR 63, Subpart CC]

Pursuant to 40 CFR 60, Subpart Kb and 40 CFR 63, Subpart CC, the Permittee shall comply with the requirements specified in Section E.1 for storage tank 3900.

D.1.3 Petroleum Liquid Storage Facilities [326 IAC 8-4-3]

Pursuant to 326 IAC 8-4-3(a), the Permittee shall comply with the following requirements for all petroleum liquid storage vessels with capacities greater than 39,000 gallons containing volatile organic compounds whose true vapor pressure is greater than 1.52 psi:

Pursuant to 326 IAC 8-4-3(b), the Permittee shall not permit the use of an affected fixed roof tank unless:

- (a) The tank has been retrofitted with an internal floating roof equipped with a closure seal, or seals, to close the space between the roof edge and tank wall unless the source has been retrofitted with equally effective alternate control which has been approved,
- (b) The facility is maintained such that there are no visible holes, tears or other opening in the seal or any seal fabric or materials,
- (c) All openings, except stub drains, are equipped with covers, lids or seals such that:
 - (1) The cover, lid or seal is in the closed position at all times except when in actual use;
 - (2) Automatic bleeder vents are closed at all times except when in actual use;

- (3) Rim vents if provided, are set to open when the roof is being floated off the roof leg supports or at the manufacturer's recommended setting.

Compliance Monitoring Requirements

D.1.4 Monitoring for Equipment Leaks of VOC [326 IAC 8-4-8]

Pursuant to 326 IAC 8-4-8 and to demonstrate compliance with Condition D.1.1(a), the Permittee shall monitor VOC leaks in accordance with the plan submitted by the Permittee and included as Appendix A.

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

D.1.5 Record Keeping Requirements

- (a) Pursuant to 326 IAC 8-4-8 and to document compliance with Condition D.1.1(a), the Permittee shall comply with equipment leak record keeping requirements specified in the plan submitted by the Permittee and included as Appendix A.
- (b) Pursuant to 326 IAC 8-4-3(d) and to document compliance with Condition D.1.3, the Permittee shall maintain the following records for storage vessel 3900:
 - (1) Type of petroleum liquid stored,
 - (2) Maximum true vapor pressure to the liquid as stored, and
 - (3) Results of inspections performed on the storage vessel.
- (c) All records shall be maintained in accordance with Section C – General Record Keeping Requirements, of the permit.

D.1.6 Reporting Requirements

Pursuant to 326 IAC 8-4-8 and to document compliance with Condition D.1.1(a), the Permittee shall submit reports as specified in the plan submitted by the Permittee and included as Appendix A.

SECTION E.1 40 CFR 63, Subpart CC – National Emission Standards for Hazardous Air pollutants from Petroleum Refineries and 40 CFR 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984

E.1.1 General Provisions Relating to NESHAP [326 IAC 20-1] [40 CFR Part 63, Subpart A]

Pursuant to 40 CFR 63.640, the Permittee shall comply with the provisions of 40 CFR Part 63, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 20-1, as specified in Table 6 of 40 CFR Part 63, Subpart CC in accordance with the schedule in 40 CFR Part 63, Subpart CC.

E.1.2 NESHAP Subpart CC Requirements [40 CFR Part 63, Subpart CC] [326 IAC 20-16]

Pursuant to 40 CFR Part 63, Subpart CC, the Permittee shall comply with the following provisions of 40 CFR Part 63, Subpart CC, which are incorporated by reference as 326 IAC 20-16:

§ 63.640 Applicability and designation of affected source.

(l) If an additional petroleum refining process unit is added to a plant site or if a miscellaneous process vent, storage vessel, gasoline loading rack, or marine tank vessel loading operation that meets the criteria in paragraphs (c)(1) through (c)(7) of this section is added to an existing petroleum refinery or if another deliberate operational process change creating an additional Group 1 emission point(s) (as defined in §63.641) is made to an existing petroleum refining process unit, and if the addition or process change is not subject to the new source requirements as determined according to paragraphs (i) or (j) of this section, the requirements in paragraphs (l)(1) through (l)(3) of this section shall apply. Examples of process changes include, but are not limited to, changes in production capacity, or feed or raw material where the change requires construction or physical alteration of the existing equipment or catalyst type, or whenever there is replacement, removal, or addition of recovery equipment. For purposes of this paragraph and paragraph (m) of this section, process changes do not include: Process upsets, unintentional temporary process changes, and changes that are within the equipment configuration and operating conditions documented in the Notification of Compliance Status report required by §63.654(f).

(1) The added emission point(s) and any emission point(s) within the added or changed petroleum refining process unit are subject to the requirements for an existing source.

(2) The added emission point(s) and any emission point(s) within the added or changed petroleum refining process unit shall be in compliance with this subpart by the dates specified in paragraphs (l)(2)(i) or (l)(2)(ii) of this section, as applicable.

(i) If a petroleum refining process unit is added to a plant site or an emission point(s) is added to any existing petroleum refining process unit, the added emission point(s) shall be in compliance upon initial startup of any added petroleum refining process unit or emission point(s) or by 3 years after the date of promulgation of this subpart, whichever is later.

(ii) If a deliberate operational process change to an existing petroleum refining process unit causes a Group 2 emission point to become a Group 1 emission point (as defined in §63.641), the owner or operator shall be in compliance upon initial startup or by 3 years after the date of promulgation of this subpart, whichever is later, unless the owner or operator demonstrates to the Administrator that achieving compliance will take longer than making the change. If this demonstration is made to the Administrator's satisfaction, the owner or operator shall follow the procedures in paragraphs (m)(1) through (m)(3) of this section to establish a compliance date.

(3) The owner or operator of a petroleum refining process unit or of a storage vessel, miscellaneous process vent, wastewater stream, gasoline loading rack, or marine tank vessel loading operation meeting the criteria in paragraphs (c)(1) through (c)(7) of this section that is added to a plant site and is subject to the requirements for existing sources shall comply with the reporting and recordkeeping requirements that are applicable to existing sources including, but not limited to, the reports listed in paragraphs (l)(3)(i) through (l)(3)(vii) of this section. A process change to an existing petroleum refining process unit shall be

subject to the reporting requirements for existing sources including, but not limited to, the reports listed in paragraphs (l)(3)(i) through (l)(3)(vii) of this section. The applicable reports include, but are not limited to:

(i) The Notification of Compliance Status report as required by §63.654(f) for the emission points that were added or changed;

(ii) Periodic Reports and other reports as required by §63.654 (g) and (h);

(iii) Reports and notifications required by sections of subpart A of this part that are applicable to this subpart, as identified in table 6 of this subpart.

(iv) Reports and notifications required by §63.182, or 40 CFR 60.487. The requirements of subpart H of this part are summarized in table 3 of this subpart;

(v) Reports required by §61.357 of subpart FF;

(vi) Reports and notifications required by §63.428 (b), (c), (g)(1), and (h)(1) through (h)(3) of subpart R of this part. These requirements are summarized in table 4 of this subpart; and

(vii) Reports and notifications required by §63.567 of subpart Y of this part. These requirements are summarized in table 5 of this subpart.

(4) If pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, or instrumentation systems are added to an existing source, they are subject to the equipment leak standards for existing sources in §63.648. A notification of compliance status report shall not be required for such added equipment.

(n) Overlap of subpart CC with other regulations for storage vessels.

(1) After the compliance dates specified in paragraph (h) of this section, a Group 1 or Group 2 storage vessel that is part of an existing source and is also subject to the provisions of 40 CFR part 60, subpart Kb, is required to comply only with the requirements of 40 CFR part 60, subpart Kb, except as provided in paragraph (n)(8) of this section.

(8) Storage vessels described by paragraphs (n)(1) and (n)(3) of this section are to comply with 40 CFR part 60, subpart Kb except as provided for in paragraphs (n)(8)(i) through (n)(8)(vi) of this section.

(i) Storage vessels that are to comply with §60.112b(a)(2) of subpart Kb are exempt from the secondary seal requirements of §60.112b(a)(2)(i)(B) during the gap measurements for the primary seal required by §60.113b(b) of subpart Kb.

(ii) If the owner or operator determines that it is unsafe to perform the seal gap measurements required in §60.113b(b) of subpart Kb or to inspect the vessel to determine compliance with §60.113b(a) of subpart Kb because the roof appears to be structurally unsound and poses an imminent danger to inspecting personnel, the owner or operator shall comply with the requirements in either §63.120(b)(7)(i) or §63.120(b)(7)(ii) of subpart G.

(iii) If a failure is detected during the inspections required by §60.113b(a)(2) or during the seal gap measurements required by §60.113b(b)(1), and the vessel cannot be repaired within 45 days and the vessel cannot be emptied within 45 days, the owner or operator may utilize up to two extensions of up to 30 additional calendar days each. The owner or operator is not required to provide a request for the extension to the Administrator.

(iv) If an extension is utilized in accordance with paragraph (n)(8)(iii) of this section, the owner or operator shall, in the next periodic report, identify the vessel, provide the information listed in §60.113b(a)(2) or §60.113b(b)(4)(iii), and describe the nature and date of the repair made or provide the date the storage vessel was emptied.

(v) Owners and operators of storage vessels complying with subpart Kb of part 60 may submit the inspection reports required by §§60.115b(a)(3), (a)(4), and (b)(4) of subpart Kb as part of the periodic reports required by this subpart, rather than within the 30-day period specified in §§60.115b(a)(3), (a)(4), and (b)(4) of subpart Kb.

(vi) The reports of rim seal inspections specified in §60.115b(b)(2) are not required if none of the measured gaps or calculated gap areas exceed the limitations specified in §60.113b(b)(4). Documentation of the inspections shall be recorded as specified in §60.115b(b)(3).

E.1.3 General Provisions Relating to NSPS Subpart Kb [326 IAC 12-1] [40 CFR Part 60, Subpart A]

Pursuant to 40 CFR 60.1(a), the Permittee shall comply with the provisions of 40 CFR Part 60, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1, for storage tank 3900, except when otherwise specified in 40 CFR 60, Subpart Kb.

E.1.4 NSPS Subpart Kb Requirements [40 CFR Part 60, Subpart Kb] [326 IAC 12]

Pursuant to 40 CFR 60.110b(a), the Permittee shall comply with the provisions of 40 CFR Part 60, Subpart Kb, which are incorporated by reference as 326 IAC 12 for storage tank 3900, as specified below:

§ 60.112b Standard for volatile organic compounds (VOC).

(a) The owner or operator of each storage vessel either with a design capacity greater than or equal to 151 m³ containing a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 5.2 kPa but less than 76.6 kPa or with a design capacity greater than or equal to 75 m³ but less than 151 m³ containing a VOL that, as stored, has a maximum true vapor pressure equal to or greater than 27.6 kPa but less than 76.6 kPa, shall equip each storage vessel with one of the following:

(1) A fixed roof in combination with an internal floating roof meeting the following specifications:

(i) The internal floating roof shall rest or float on the liquid surface (but not necessarily in complete contact with it) inside a storage vessel that has a fixed roof. The internal floating roof shall be floating on the liquid surface at all times, except during initial fill and during those intervals when the storage vessel is completely emptied or subsequently emptied and refilled. When the roof is resting on the leg supports, the process of filling, emptying, or refilling shall be continuous and shall be accomplished as rapidly as possible.

(ii) Each internal floating roof shall be equipped with one of the following closure devices between the wall of the storage vessel and the edge of the internal floating roof:

(C) A mechanical shoe seal. A mechanical shoe seal is a metal sheet held vertically against the wall of the storage vessel by springs or weighted levers and is connected by braces to the floating roof. A flexible coated fabric (envelope) spans the annular space between the metal sheet and the floating roof.

(iii) Each opening in a noncontact internal floating roof except for automatic bleeder vents (vacuum breaker vents) and the rim space vents is to provide a projection below the liquid surface.

(iv) Each opening in the internal floating roof except for leg sleeves, automatic bleeder vents, rim space vents, column wells, ladder wells, sample wells, and stub drains is to be equipped with a cover or lid which is to be maintained in a closed position at all times (i.e., no visible gap) except when the device is in actual use. The cover or lid shall be equipped with a gasket. Covers on each access hatch and automatic gauge float well shall be bolted except when they are in use.

(v) Automatic bleeder vents shall be equipped with a gasket and are to be closed at all times when the roof is floating except when the roof is being floated off or is being landed on the roof leg supports.

(vi) Rim space vents shall be equipped with a gasket and are to be set to open only when the internal floating roof is not floating or at the manufacturer's recommended setting.

(vii) Each penetration of the internal floating roof for the purpose of sampling shall be a sample well. The sample well shall have a slit fabric cover that covers at least 90 percent of the opening.

(viii) Each penetration of the internal floating roof that allows for passage of a column supporting the fixed roof shall have a flexible fabric sleeve seal or a gasketed sliding cover.

(ix) Each penetration of the internal floating roof that allows for passage of a ladder shall have a gasketed sliding cover.

§ 60.113b Testing and procedures.

The owner or operator of each storage vessel as specified in §60.112b(a) shall meet the requirements of paragraph (a), (b), or (c) of this section. The applicable paragraph for a particular storage vessel depends on the control equipment installed to meet the requirements of §60.112b.

(a) After installing the control equipment required to meet §60.112b(a)(1) (permanently affixed roof and internal floating roof), each owner or operator shall:

(1) Visually inspect the internal floating roof, the primary seal, and the secondary seal (if one is in service), prior to filling the storage vessel with VOL. If there are holes, tears, or other openings in the primary seal, the secondary seal, or the seal fabric or defects in the internal floating roof, or both, the owner or operator shall repair the items before filling the storage vessel.

(2) For Vessels equipped with a liquid-mounted or mechanical shoe primary seal, visually inspect the internal floating roof and the primary seal or the secondary seal (if one is in service) through manholes and roof hatches on the fixed roof at least once every 12 months after initial fill. If the internal floating roof is not resting on the surface of the VOL inside the storage vessel, or there is liquid accumulated on the roof, or the seal is detached, or there are holes or tears in the seal fabric, the owner or operator shall repair the items or empty and remove the storage vessel from service within 45 days. If a failure that is detected during inspections required in this paragraph cannot be repaired within 45 days and if the vessel cannot be emptied within 45 days, a 30-day extension may be requested from the Administrator in the inspection report required in §60.115b(a)(3). Such a request for an extension must document that alternate storage capacity is unavailable and specify a schedule of actions the company will take that will assure that the control equipment will be repaired or the vessel will be emptied as soon as possible.

(4) Visually inspect the internal floating roof, the primary seal, the secondary seal (if one is in service), gaskets, slotted membranes and sleeve seals (if any) each time the storage vessel is emptied and degassed. If the internal floating roof has defects, the primary seal has holes, tears, or other openings in the seal or the seal fabric, or the secondary seal has holes, tears, or other openings in the seal or the seal fabric, or the gaskets no longer close off the liquid surfaces from the atmosphere, or the slotted membrane has more than 10 percent open area, the owner or operator shall repair the items as necessary so that none of the conditions specified in this paragraph exist before refilling the storage vessel with VOL. In no event shall inspections conducted in accordance with this provision occur at intervals greater than 10 years in the case of vessels conducting the annual visual inspection as specified in paragraphs (a)(2) and (a)(3)(ii) of this section and at intervals no greater than 5 years in the case of vessels specified in paragraph (a)(3)(i) of this section.

(5) Notify the Administrator in writing at least 30 days prior to the filling or refilling of each storage vessel for which an inspection is required by paragraphs (a)(1) and (a)(4) of this section to afford the Administrator the opportunity to have an observer present. If the inspection required by paragraph (a)(4) of this section is not planned and the owner or operator could not have known about the inspection 30 days in advance or refilling the tank, the owner or operator shall notify the Administrator at least 7 days prior to the refilling of the storage vessel. Notification shall be made by telephone immediately followed by written documentation demonstrating why the inspection was unplanned. Alternatively, this notification including the written documentation may be made in writing and sent by express mail so that it is received by the Administrator at least 7 days prior to the refilling.

§ 60.115b Reporting and recordkeeping requirements.

The owner or operator of each storage vessel as specified in §60.112b(a) shall keep records and furnish reports as required by paragraphs (a), (b), or (c) of this section depending upon the control equipment installed to meet the requirements of §60.112b. The owner or operator shall keep copies of all reports and records required by this section, except for the record required by (c)(1), for at least 2 years. The record required by (c)(1) will be kept for the life of the control equipment.

(a) After installing control equipment in accordance with §60.112b(a)(1) (fixed roof and internal floating roof), the owner or operator shall meet the following requirements.

(1) Furnish the Administrator with a report that describes the control equipment and certifies that the control equipment meets the specifications of §60.112b(a)(1) and §60.113b(a)(1). This report shall be an attachment to the notification required by §60.7(a)(3).

(2) Keep a record of each inspection performed as required by §60.113b (a)(1), (a)(2), (a)(3), and (a)(4). Each record shall identify the storage vessel on which the inspection was performed and shall contain the date the vessel was inspected and the observed condition of each component of the control equipment (seals, internal floating roof, and fittings).

(3) If any of the conditions described in §60.113b(a)(2) are detected during the annual visual inspection required by §60.113b(a)(2), a report shall be furnished to the Administrator within 30 days of the inspection. Each report shall identify the storage vessel, the nature of the defects, and the date the storage vessel was emptied or the nature of and date the repair was made.

(4) After each inspection required by §60.113b(a)(3) that finds holes or tears in the seal or seal fabric, or defects in the internal floating roof, or other control equipment defects listed in §60.113b(a)(3)(ii), a report shall be furnished to the Administrator within 30 days of the inspection. The report shall identify the storage vessel and the reason it did not meet the specifications of §61.112b(a)(1) or §60.113b(a)(3) and list each repair made.

§ 60.116b Monitoring of operations.

(a) The owner or operator shall keep copies of all records required by this section, except for the record required by paragraph (b) of this section, for at least 2 years. The record required by paragraph (b) of this section will be kept for the life of the source.

(b) The owner or operator of each storage vessel as specified in §60.110b(a) shall keep readily accessible records showing the dimension of the storage vessel and an analysis showing the capacity of the storage vessel.

(c) Except as provided in paragraphs (f) and (g) of this section, the owner or operator of each storage vessel either with a design capacity greater than or equal to 151 m³ storing a liquid with a maximum true vapor pressure greater than or equal to 3.5 kPa or with a design capacity greater than or equal to 75 m³ but less than 151 m³ storing a liquid with a maximum true vapor pressure greater than or equal to 15.0 kPa shall maintain a record of the VOL stored, the period of storage, and the maximum true vapor pressure of that VOL during the respective storage period.

(d) Except as provided in paragraph (g) of this section, the owner or operator of each storage vessel either with a design capacity greater than or equal to 151 m³ storing a liquid with a maximum true vapor pressure that is normally less than 5.2 kPa or with a design capacity greater than or equal to 75 m³ but less than 151 m³ storing a liquid with a maximum true vapor pressure that is normally less than 27.6 kPa shall notify the Administrator within 30 days when the maximum true vapor pressure of the liquid exceeds the respective maximum true vapor pressure values for each volume range.

(e) Available data on the storage temperature may be used to determine the maximum true vapor pressure as determined below.

(1) For vessels operated above or below ambient temperatures, the maximum true vapor pressure is calculated based upon the highest expected calendar-month average of the storage temperature. For vessels operated at ambient temperatures, the maximum true vapor pressure is calculated based upon the maximum local monthly average ambient temperature as reported by the National Weather Service.

(2) For crude oil or refined petroleum products the vapor pressure may be obtained by the following:

(i) Available data on the Reid vapor pressure and the maximum expected storage temperature based on the highest expected calendar-month average temperature of the stored product may be used to determine the maximum true vapor pressure from nomographs contained in API Bulletin 2517 (incorporated by reference—see §60.17), unless the Administrator specifically requests that the liquid be sampled, the actual storage temperature determined, and the Reid vapor pressure determined from the sample(s).

(ii) The true vapor pressure of each type of crude oil with a Reid vapor pressure less than 13.8 kPa or with physical properties that preclude determination by the recommended method is to be determined from available data and recorded if the estimated maximum true vapor pressure is greater than 3.5 kPa.

E.1.5 One Time Deadlines Relating to NSPS Subpart Kb

The Permittee shall with the following requirements by the dates listed below:

Requirement	Rule Citation	Affected Facility	Deadline
Notification of the date of construction commencement	40 CFR 60.7(a)(1)	Storage Tank 3900	No later than 30 days after commencement of construction
Notification of initial startup and Compliance Report	40 CFR 60.7(a)(3) and 40 CFR 60.115b(a)(1)	Storage Tank 3900	Within 15 days of startup
First visual inspection	40 CFR 60.113b(a)(1)	Storage Tank 3900	Prior to filling the storage tank
Notify Administrator of initial filling of storage tank	40 CFR 60.113b(a)(5)	Storage Tank 3900	At least 30 days prior to initial filling

SECTION E.2 40 CFR Part 63, Subpart CC – National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries and 40 CFR 60, Subpart GGG – Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries

E.2.1 General Provisions Relating to NESHAP [326 IAC 20-1] [40 CFR Part 63, Subpart A]

Pursuant to 40 CFR 63.640, the Permittee shall comply with the provisions of 40 CFR Part 63, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 20-1, as specified in Table 6 of 40 CFR Part 63, Subpart CC in accordance with the schedule in 40 CFR Part 63, Subpart CC.

E.2.2 NESHAP Subpart CC Requirements [40 CFR Part 63, Subpart CC] [326 IAC 20-16]

Pursuant to 40 CFR Part 63, Subpart CC, the Permittee shall comply with the following provisions of 40 CFR Part 63, Subpart CC, which are incorporated by reference as 326 IAC 20-16:

§ 63.640 Applicability and designation of affected source.

(l) If an additional petroleum refining process unit is added to a plant site or if a miscellaneous process vent, storage vessel, gasoline loading rack, or marine tank vessel loading operation that meets the criteria in paragraphs (c)(1) through (c)(7) of this section is added to an existing petroleum refinery or if another deliberate operational process change creating an additional Group 1 emission point(s) (as defined in §63.641) is made to an existing petroleum refining process unit, and if the addition or process change is not subject to the new source requirements as determined according to paragraphs (i) or (j) of this section, the requirements in paragraphs (l)(1) through (l)(3) of this section shall apply. Examples of process changes include, but are not limited to, changes in production capacity, or feed or raw material where the change requires construction or physical alteration of the existing equipment or catalyst type, or whenever there is replacement, removal, or addition of recovery equipment. For purposes of this paragraph and paragraph (m) of this section, process changes do not include: Process upsets, unintentional temporary process changes, and changes that are within the equipment configuration and operating conditions documented in the Notification of Compliance Status report required by §63.654(f).

(1) The added emission point(s) and any emission point(s) within the added or changed petroleum refining process unit are subject to the requirements for an existing source.

(2) The added emission point(s) and any emission point(s) within the added or changed petroleum refining process unit shall be in compliance with this subpart by the dates specified in paragraphs (l)(2)(i) or (l)(2)(ii) of this section, as applicable.

(i) If a petroleum refining process unit is added to a plant site or an emission point(s) is added to any existing petroleum refining process unit, the added emission point(s) shall be in compliance upon initial startup of any added petroleum refining process unit or emission point(s) or by 3 years after the date of promulgation of this subpart, whichever is later.

(ii) If a deliberate operational process change to an existing petroleum refining process unit causes a Group 2 emission point to become a Group 1 emission point (as defined in §63.641), the owner or operator shall be in compliance upon initial startup or by 3 years after the date of promulgation of this subpart, whichever is later, unless the owner or operator demonstrates to the Administrator that achieving compliance will take longer than making the change. If this demonstration is made to the Administrator's satisfaction, the owner or operator shall follow the procedures in paragraphs (m)(1) through (m)(3) of this section to establish a compliance date.

(3) The owner or operator of a petroleum refining process unit or of a storage vessel, miscellaneous process vent, wastewater stream, gasoline loading rack, or marine tank vessel loading operation meeting the criteria in paragraphs (c)(1) through (c)(7) of this section that is added to a plant site and is subject to the requirements for existing sources shall comply with the reporting and recordkeeping requirements that are applicable to existing sources including, but not limited to, the reports listed in paragraphs (l)(3)(i) through (l)(3)(vii) of this section. A process change to an existing petroleum refining process unit shall be subject to the reporting requirements for existing sources including, but not limited to, the reports listed in paragraphs (l)(3)(i) through (l)(3)(vii) of this section. The applicable reports include, but are not limited to:

(i) The Notification of Compliance Status report as required by §63.654(f) for the emission points that were added or changed;

(ii) Periodic Reports and other reports as required by §63.654 (g) and (h);

(iii) Reports and notifications required by sections of subpart A of this part that are applicable to this subpart, as identified in table 6 of this subpart.

(iv) Reports and notifications required by §63.182, or 40 CFR 60.487. The requirements of subpart H of this part are summarized in table 3 of this subpart;

(v) Reports required by §61.357 of subpart FF;

(vi) Reports and notifications required by §63.428 (b), (c), (g)(1), and (h)(1) through (h)(3) of subpart R of this part. These requirements are summarized in table 4 of this subpart; and

(vii) Reports and notifications required by §63.567 of subpart Y of this part. These requirements are summarized in table 5 of this subpart.

(4) If pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, or instrumentation systems are added to an existing source, they are subject to the equipment leak standards for existing sources in §63.648. A notification of compliance status report shall not be required for such added equipment.

(p) Overlap of subpart CC with other regulations for equipment leaks. After the compliance dates specified in paragraph (h) of this section equipment leaks that are also subject to the provisions of 40 CFR parts 60 and 61 are required to comply only with the provisions specified in this subpart.

§ 63.648 Equipment leak standards.

(a) Each owner or operator of an existing source subject to the provisions of this subpart shall comply with the provisions of 40 CFR part 60 subpart VV and paragraph (b) of this section except as provided in paragraphs (a)(1), (a)(2), and (c) through (i) of this section. Each owner or operator of a new source subject to the provisions of this subpart shall comply with subpart H of this part except as provided in paragraphs (c) through (i) of this section.

(1) For purposes of compliance with this section, the provisions of 40 CFR part 60, subpart VV apply only to equipment in organic HAP service, as defined in §63.641 of this subpart.

(2) Calculation of percentage leaking equipment components for subpart VV of 40 CFR part 60 may be done on a process unit basis or a sourcewide basis. Once the owner or operator has decided, all subsequent calculations shall be on the same basis unless a permit change is made.

(b) The use of monitoring data generated before August 18, 1995 to qualify for less frequent monitoring of valves and pumps as provided under 40 CFR part 60 subpart VV or subpart H of this part and paragraph (c) of this section (i.e., quarterly or semiannually) is governed by the requirements of paragraphs (b)(1) and (b)(2) of this section.

(1) Monitoring data must meet the test methods and procedures specified in §60.485(b) of 40 CFR part 60, subpart VV or §63.180(b)(1) through (b)(5) of subpart H of this part except for minor departures.

(2) Departures from the criteria specified in §60.485(b) of 40 CFR part 60 subpart VV or §63.180(b)(1) through (b)(5) of subpart H of this part or from the monitoring frequency specified in subpart VV or in paragraph (c) of this section (such as every 6 weeks instead of monthly or quarterly) are minor and do not significantly affect the quality of the data. An example of a minor departure is monitoring at a slightly different frequency (such as every 6 weeks instead of monthly or quarterly). Failure to use a calibrated instrument is not considered a minor departure.

(h) Each owner or operator of a source subject to the provisions of this subpart must maintain all records for a minimum of 5 years.

E.2.3 General Provisions Relating to NSPS Subpart GGG [326 IAC 12-1] [40 CFR Part 60, Subpart A]

Pursuant to 40 CFR 60.590(a), the Permittee shall comply with the provisions of 40 CFR Part 60, Subpart A – General Provisions, which are incorporated by reference as 326 IAC 12-1, except when otherwise specified in 40 CFR 60, Subpart GGG or 40 CFR 60, Subpart VV.

E.2.4 New Source Performance Standards Requirements [40 CFR Part 60, Subpart GGG] [326 IAC 12]

Pursuant to CFR Part 60, Subpart GGG, the Permittee shall comply with the provisions of 40 CFR Part 60, Subpart GGG, which are incorporated by reference as 326 IAC 12 as follows:

§ 60.592 Standards.

(a) Each owner or operator subject to the provisions of this subpart shall comply with the requirements of §§60.482–1 to 60.482–10 as soon as practicable, but no later than 180 days after initial startup.

(b) An owner or operator may elect to comply with the requirements of §§60.483–1 and 60.483–2.

(d) Each owner or operator subject to the provisions of this subpart shall comply with the provisions of §60.485 except as provided in §60.593.

(e) Each owner or operator subject to the provisions of this subpart shall comply with the provisions of §§60.486 and 60.487.

§ 60.593 Exceptions.

(a) Each owner or operator subject to the provisions of this subpart may comply with the following exceptions to the provisions of subpart VV.

(d) An owner or operator may use the following provision in addition to §60.485(e): Equipment is in light liquid service if the percent evaporated is greater than 10 percent at 150 °C as determined by ASTM Method D86–78, 82, 90, 95, or 96 (incorporated by reference as specified in §60.18).

Subpart VV—Standards of Performance for Equipment Leaks of VOC in the Synthetic Organic Chemicals Manufacturing Industry

§ 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).

§ 60.482-4 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.

§ 60.482-7 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 m⁴/(MJ-sec) (metric units)

= 0.087 ft⁴/(Btu-sec) (English units)

(4) The net heating value (H_T) 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 × 10⁷ (g-mole)(MJ)/ (ppm-scm-kcal) (metric units)

= 4.674 × 10⁸ [(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.

(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),
 - (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.

INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT OFFICE OF AIR QUALITY

PART 70 SOURCE MODIFICATION CERTIFICATION

Source Name: BP Products North America, Inc., Whiting Business Unit
Source Address: 2815 Indianapolis Blvd, Whiting, Indiana 46394
Mailing Address: P.O. Box 710, Whiting, Indiana 46394
Source Modification No.: 089-21591-00453

This certification shall be included when submitting monitoring, testing reports/results or other documents as required by this approval.

Please check what document is being certified:

- Test Result (specify)
- Report (specify)
- Notification (specify)
- Affidavit (specify)
- Other (specify)

I certify that, based on information and belief formed after reasonable inquiry, the statements and information in the document are true, accurate, and complete.

Signature:

Printed Name:

Title/Position:

Date:

COMPLIANCE BRANCH
100 North Senate Avenue
Indianapolis, Indiana 46204
Phone: 317-233-5674
Fax: 317-233-5967

PART 70 OPERATING PERMIT
EMERGENCY OCCURRENCE REPORT

Source Name: BP Products North America, Inc., Whiting Business Unit
Source Address: 2815 Indianapolis Blvd, Whiting, Indiana 46394
Mailing Address: P.O. Box 710, Whiting, Indiana 46394
Source Modification No.: 089-21591-00453

This form consists of 2 pages

Page 1 of 2

This is an emergency as defined in 326 IAC 2-7-1(12)

§ The Permittee must notify the Office of Air Quality (OAQ), within four (4) business hours (1-800-451-6027 or 317-233-5674, ask for Compliance Section); and

§ The Permittee must submit notice in writing or by facsimile within two (2) working days (Facsimile Number: 317-233-5967), and follow the other requirements of 326 IAC 2-7-16.

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:

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

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Date/Time Emergency started:
Date/Time Emergency was corrected:
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 minimize 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: _____

Phone: _____

A certification is not required for this report.



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BP Products North America Inc. Whiting Business Unit Whiting, Indiana

Leak Detection and Repair (LDAR) Program

Maintained by the Whiting Business Unit Environmental Staff

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1.0 Introduction

BP Products North America operates an oil refining complex, Whiting Business Unit, located in three municipalities in Northwest Indiana, Whiting, Hammond and East Chicago. This facility is required by both state and Federal regulation to implement a leak detection and repair (LDAR) program to reduce volatile organic chemical emissions from equipment leaks. The purpose of this protocol is to document the procedures implemented by the refinery in its' Leak Detection and Repair (LDAR) program. The protocol is designed to provide an understanding of the various LDAR requirements and to document the reasons for and procedures used to implement this program. .

1.1 Purpose of Program

A principal purpose of the LDAR program at the Whiting Refinery is to reduce the emissions of Volatile Organic Compounds (VOC) and Hazardous Air Pollutants (HAP) from fugitive sources at the refinery. This serves two purposes: 1) it contributes to attainment and maintenance of clean air standards for the protection of public health and welfare, and 2) it reduces the loss of valuable product or intermediate streams and contributes to the bottom line of the corporation. To that end, the company is committed to reducing or eliminating the leaks from these sources. Another purpose of the program is to maintain compliance with both the USEPA and the Indiana Department of Environmental Management LDAR requirements and the Consent Decree that BP entered with the U.S. EPA and the Department of Justice, which was lodged in the Northern District Court of Indiana on January 18, 2001. This protocol will be reviewed periodically to reflect changes to applicability standards or requirements for units.

The refinery has established an overall leak rate goal of 2%. This will be achieved by the process unit-by process unit implementation of a leak detection and repair program that meets the requirements of the consent decree identified above. The leak rates for individual process units in the refinery may vary from unit to unit, but the overall goal of 2 percent will be achieved by maintaining a lower leak rate than the overall goal in some units to offset any units that have a higher leak rate.



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2.0 Regulatory and Other Legal Requirements for LDAR Program

There are three drivers for the LDAR programs at the refinery. These drivers are 1) state regulations that require a program to control VOC emissions from leaks, 2) Federal programs to control leaks of Hazardous Air Pollutants (HAP) from covered sources of fugitive emissions and VOC emissions from new sources of fugitive emissions, and 3) the Consent Decree that BP negotiated with EPA in 2000 which was lodged with the Northern District Court in Indiana on January 18, 2001, and entered on August 28, 2001. These programs are described in more detail below.

2.1 State Program Requirements

The State program is defined in 326 IAC 8-4-8 and documented in the Amoco Whiting Refinery VOC Leak Monitoring Program dated March 17, 1995 submitted to IDEM. The program requires monitoring of VOC components similar to the other requirements outlined in this document. VOC is defined as any organic material which participates in atmospheric photochemical reactions to form ozone. Excluded from the program are compounds listed in 326 IAC 1-2-48, material less than 0.5 RVP, gaseous streams operating with more than 50% hydrogen by volume and any streams operating with more than 50% nonphotochemically reactive hydrocarbon as defined in 326 IAC 1-2-48.

The monitoring requirements are on an annual basis for all pump seals, and pipeline valves in light liquid VOC service. Annual monitoring of all compressor seals, pipeline valves in gaseous service and pressure relief devices in gaseous VOC service. Any leaking component in gaseous service is monitored for two successive quarters. Repeat leaking components in gaseous VOC service must exceed 1% of all components in gaseous service to justify monitoring all components in gaseous service, weekly visual monitoring of all pump seals, and monitoring of relief valves within twenty-four hours after venting to the atmosphere is required.

2.2 Federal Regulatory Program Requirements

There are at least three different Federal programs that may impact the fugitive monitoring program at a petroleum refinery, depending on the year various process units were built, the principle use of the unit, and the composition of the streams contained in the unit. The requirements of these programs are summarized below.



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2.2.1 Maximum Achievable Control Technology for Petroleum Refineries (Refinery MACT)

The Refinery MACT requirements are found in 40 CFR Part 63, Subpart CC. The rule is one of the National Emission Standards for Hazardous Air Pollutants (NESHAP) that were established in Section 112 of the Clean Air Act, as amended. Refinery MACT applies to equipment in affected units that are operated in hazardous air pollutant (HAP) service for 300 or more hours during a calendar year. To be affected by Refinery MACT, the process fluid must contain at least 5% by weight of one or more of the subset of HAPs listed in the Refinery MACT rule and identified in the table below.

Table 1
Refinery MACT HAPs

Benzene	Ethylene glycol
Biphenyl	Methanol
1,3 Butadiene	Methyl ethyl ketone (2-butanone)
Carbon disulfide	Methyl isobutyl ketone (hexone)
Carbonyl sulfide	Methyl tert butyl ether
Cresol (mixed isomers)	Naphthalene
m-Cresol	Phenol
o-Cresol	Toluene
p-Cresol	2,2,4 Trimethylpentane
Cumene	Xylene (mixed isomers)
1,2 Dibromoethane (ethylene dibromide)	m-Xylene
1,2 Dichloroethane	o-Xylene
Diethanolamine	p-Xylene
Ethyl benzene	Hexane

There are two options from which a refinery can choose to comply with the Refinery MACT rule LDAR program. These include the New Source Performance Standard (NSPS) option and the modified Hazardous Organic NESHAP (HON) Option. The NSPS option requires the refinery to follow the provisions of 40 CFR Part 60, Subpart VV for all components in HAP service as defined above. The Whiting Refinery complies with the NSPS LDAR option for compliance with Refinery MACT (Subpart CC).



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2.2.2 Federal New Source Performance Standards (40 CFR Part 60)

The New Source Performance Standards (NSPS) 40 CFR Part 60 establish air emission standards for specific source categories built or modified after the applicable date in the standard. NSPS Subpart GGG contains the NSPS for equipment leaks of VOC in refineries. These standards apply to refinery process units that began construction or modification after January 4, 1983. Like MACT, compliance with NSPS Subpart GGG requires monitoring under NSPS Subpart VV. NSPS standards affect components that contain or contact a process fluid that is at least 10 percent VOC by weight. A VOC is defined as any organic compound which participates in atmospheric photochemical reaction or which is measured by a reference method, an equivalent reference method, an alternative method, or which is determined by procedures specified under any rule. NSPS Subpart GGG gives refineries an alternative means to determine light liquids (>10% evaporated at 302°F) and also exempts compressors in hydrogen service (50% H₂ by weight) from the standards.

2.2.3 Other Federal Standards Requiring LDAR-Type Monitoring

The standards referenced above are the most comprehensive in their LDAR requirements. Other standards require LDAR on closed vent systems that are used to comply with the standard. NSPS Subpart QQQ and Benzene NESHAP (40 CFR Part 61 Subpart FF) are two such standards applicable at the Whiting Refinery. In addition, the Hazardous Organic NESHAP (HON) may apply to certain units within a refinery that produce a chemical that is included on the list of Hazardous Organic Chemicals. The Whiting Refinery does not have any units subject to the HON requirements. The requirements for these rules are similar to the rules required for Refinery MACT but have different leak definitions and monitoring frequencies.

2.2.4 BP and U.S. EPA/DOJ Consent Decree Monitoring Requirements

As a result of the negotiations that led up to the signing of the Consent Decree on January 18, 2001, BP agreed to consolidate the requirements of its LDAR program under one program that applies to all valves and pumps in VOC or HAP service within the refinery. All of these sources will be monitored against a leak rate that is more stringent than Federal rules and at least as stringent as state programs. Compliance with the consent decree, will assure that compliance with the other programs will be attained.



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The decree requires that all valves and pumps in VOC and/or HAP service as defined in the NSPS and Refinery MACT rules be included in a refinery wide program with the goal of the program to minimize or eliminate leaks of fugitive emissions. The Consent Decree requires that the leak rate for block valves and control valves be set at 500 ppm, with a two year phase-in period for the refinery to get all valves not currently being monitored into the program. The cost to repair control valves whose leak rate is between 500 and 10,000 will be tracked along with the amount of VOC controlled, so that we can assess the economic benefit of including these valves. Continued inclusion of control valves will be reassessed after the study is completed. A first attempt at repair must be made on all valves that the monitoring team is authorized to repair (no control valves) if they are found to be leaking at 100 ppm over the background level. After the first attempt at repair, the valve must be immediately remonitored to determine if the leak was made worse by the attempt to repair. A two year study will also be done on the cost associated with and the amount of VOC controlled by repairing all pumps that have a leak rate over 2000 ppm. This will strictly be a paper study, which looks at the number of pumps required to be controlled, and the estimated cost of controlling the leaks. This study will be used to determine if we will be required to control pumps at the 2000ppm leak level at some point in the future.

The consent decree also requires additional training of the personnel responsible for the LDAR program as well as training of the operations personnel at the refinery on the relevant aspects of the program.

3.0 Applicable Regulations and Determination of Affected Units

This section briefly summarizes the applicability determinations for the various manufacturing units at the BP Whiting Refinery.

3.1 State Program Applicability

The Indiana LDAR program as defined at 326 IAC 8-4-8 applies to the Whiting Refinery as submitted to the IDEM in the program document dated March 17, 1995. Broadly, the program requires annual monitoring of gaseous, and light liquid valves, compressors, pumps, and pressure relief devices throughout all units in the refinery.



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3.2 NSPS (40 CFR Part 60) Applicability

The LDAR provisions of NSPS apply to some of the units at the Whiting Refinery. Based on our review, the currently applicable regulations are:

- Subpart GGG: Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries;
- Subpart QQQ: Standards of Performance for VOC Emissions from Petroleum Refinery Wastewater Systems

3.2.1 Determination of Units Affected by NSPS Subpart GGG Requirements

The refinery has pumps, compressors, pressure relief devices, sampling systems, valves and flanges in VOC service as defined in NSPS GGG. Based on our review, the following areas in the refinery are subject to Subpart GGG:

Unit	Affected date
Distillate Desulfurization Unit	Unit built in 1994
Hydrogen Unit	Unit built in 1994
Alky	Modified in 1996
11C PS	Modified in 1987
12PS	Modified in 2001
CFU	Modified in 2003

3.2.2 Determination of Units Affected by NSPS Subpart QQQ Requirements

The refinery has individual drain systems and junctions boxes in service subject to NSPS Subpart QQQ. NSPS Subpart QQQ requires drains to be monitored for emission controls in the following units:

UNIT	Affected Date
DDU	1994
HU	1994
11PS	1994
ALKY	1996
12PS	2001
SRU	2001
CFU	2003



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Also, monitoring provisions apply to closed vent systems. Specifically, the NSPS Subpart QQQ applies to the closed vent system on the carbon canisters. There are no carbon canisters subject to QQQ. The DDU flare however, controls the vapors from the unit sump.

3.3 USEPA LDAR Program Pursuant to NESHAPs (40 CFR Part 61)

The LDAR provisions of NESHAPs (40 CFR Part 61) apply to units at the Whiting Refinery. Based on our review the following regulations apply to the refinery:

Subpart FF: National Emissions Standard for Benzene Waste Operations (Benzene Waste Operations NESHAPs, BWON). The Refinery exceeds 10MG Total Annual Benzene and is therefore subject to the monitoring requirements of Subpart FF.

Subpart J: National Standards for Equipment Leaks (Fugitive Emissions Sources) of Benzene. The LUF/Benzene Stream is the only stream in the Refinery which contains greater than 10% benzene and is subject to the monitoring requirements of Subpart J.

3.4 USEPA LDAR Program Pursuant to MACT (40 CFR Part 63)

The LDAR provisions of MACT (40 CFR part 63) apply to units at the Whiting Refinery. Our review indicates that the following regulations apply to various processes at the refinery:

Subpart CC	National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries
------------	------------------------------------------------------------------------------------

3.4.1 Determination of Units subject to Subpart CC

Based on our review of Refinery MACT, all streams categorized as "light liquid (LL) contain >5% HAPs and are therefore subject to the LDAR requirements of Subpart CC, Refinery MACT. Since Refinery MACT allows NSPS compliance as one of the acceptable monitoring options, any unit or stream that is subject to NSPS will be in compliance with MACT if it is in compliance with the LDAR requirements in the NSPS. Therefore, there are no overlap issues between these two rules. There are no overlap issues between Refinery MACT and other MACT rules either as the Refinery MACT rule recognizes that there is the potential for conflict with the states rules which take precedence when there are overlapping authorities. HON compliance is deemed to be compliance with Refinery MACT, but the opposite is not true. Therefore, any



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source to which the HON LDAR requirements apply will have to comply with the HON requirements. This however, is not applicable to the Whiting Refinery.

The Hazardous Organic NESHAP (40 CFR 63, Subparts F, G, H, and I) applies to process units that produce as a principal product, one of the designated organic chemicals. Our review indicates that there are no units at the Whiting Refinery for which this applies.

3.5 LDAR Program Pursuant to BP/EPA Consent Decree

The BP/EPA Consent Decree that was lodged with the Northern Indiana District Court on January 18, 2001 requires that BP institute a program designed to minimize or eliminate leaks from fugitive sources of volatile organic compounds and hazardous air pollutants. VOC and HAP are defined in the same manner as the definitions in NSPS and Refinery MACT. Therefore, this program will apply NSPS and refinery MACT monitoring to all volatile organic and HAP streams in the refinery. When the program takes affect, it will be more stringent than any of the preceding Federal requirements for monitoring, since it defines a leak for purposes of this program as 500 ppm for all valves, and 2000 ppm for pumps.

4.0 Determination of Applicable Process Streams at Affected Units

This section briefly summarizes the applicability determination for the various process streams at the affected process units at the Whiting Refinery for Refinery MACT and NSPS GGG LDAR requirements.

4.1 Process Streams Affected by Refinery MACT (40 CFR Part 63 Subpart CC)

Pursuant to Refinery MACT, affected equipment must be in service more than 300 hours per year and must contact a fluid that is at least 5% by weight of one or more of the listed organic HAPs (See Table 1 in Section 2.2). The LDAR provisions are applicable to pumps, compressors, agitators, connectors, valves, sampling connection systems, surge accumulator vessels, bottoms receivers, pressure relief devices, open-ended valves or lines, and instrumentation systems. Inspection and monitoring requirements are specific to the phase state of the HAP for both gas/vapor and light liquid. When equipment is in gas/vapor service, it contains a gas or vapor at operating conditions. When equipment is in light liquid service it is a light liquid process fluid at the operating conditions. We are not required to monitor equipment in heavy liquid service, unless there are indications of a leak.



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4.2 Process Streams Affected by State Regulation 326 IAC 8-4-8

Process streams which are subject to the state VOC monitoring program are those that are in VOC service. VOC is defined as any organic material which participates in atmospheric photochemical reactions to form ozone. Excluded from the Whiting Refinery program are those compounds listed in 326 IAC 1-2-48, material less than 0.5 RVP, gaseous streams operating with more than 50% hydrogen by volume and any streams operating with more than 50% non-photochemically reactive hydrocarbon as defined in 326 IAC 1-2-48.

4.3 Equipment Specific Requirements Pursuant to NSPS Subpart GGG

Whiting Refinery's review of the NSPS Subpart GGG requirement for leak monitoring and repair has determined that the Refinery MACT requirements are at least as comprehensive as the NSPS GGG requirements.

4.4 Process Streams Affected by BP/EPA Consent Decree

The Consent decree applies to all volatile organic streams and all hazardous air pollutant streams as defined in NSPS and Refinery MACT, respectively.

5.0 Determination of Process Stream Applicability, Monitoring Frequency, and Repair Requirements

The Whiting Refinery satisfies Refinery MACT, IAC 326 8-4-8 and NSPS GGG LDAR requirements, and compliance with the requirements of the Consent Decree that we signed with EPA and was lodged with the Northern District of Indiana Court on January 18, 2001. The requirements of this decree are at least as stringent as NSPS requirements and the state monitoring requirements. As such, compliance with the terms of the consent decree will serve as a method of assuring compliance with the other, less stringent programs.

5.1 Determination of Applicable Process Streams at Affected Units

Only process streams with the potential of significant volatile organic concentration are to be monitored. Streams with no potential of applicability such as cooling water, steam, steam condensate, natural gas, nitrogen, utility water, and instrument air are not considered for monitoring purposes.



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The applicability to other refinery streams and designation of process stream composition as light liquid versus heavy liquid is based on lab data, material balances, or engineering judgement.

5.1.1 Process Stream Composition Determination

Equipment in VOC service is divided into four categories for the purposes of defining monitoring frequency and leak definition for specific pieces of equipment. The four categories are gas/vapor service, light liquid service, heavy liquid service, and in hydrogen service (only for compressors).

1. Gas/vapor service is defined as a piece of equipment that contains or contacts process fluid in the gaseous state at the operating conditions.
2. Light Liquid service is defined as a piece of equipment that contains or is in contact with a process fluid that meets all of the following criteria:
 - a. The process fluid is a liquid at the operating conditions
 - b. The percent evaporation is greater than 10 percent at 302° F.
3. Heavy Liquid service means that the piece of equipment contains or contacts a petroleum process fluid that is not in gas/vapor service or light liquid service.
4. In Hydrogen Service refers to streams that are >50% by volume Hydrogen. This designation exempts compressors from LDAR requirements. This exemption only applies to compressors, not to other components that may be located on the stream.

The summary of the classification system to determine the applicable requirements of the LDAR program to a process stream can be summarized as follows:

Process State	Weight Percent VOC in the Process Fluid		
	<10% VOC	>10% VOC	
Gas/Vapor	No LDAR Requirements	Gas/Vapor LDAR Requirements	
		<10% evaporation at 302°F	>10% evaporation at 302°F
Liquid	No LDAR Requirements	Heavy Liquid LDAR Requirements	Light Liquid LDAR Requirements



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5.1.2 Consent Decree Program Equipment Specific Monitoring Requirements

The Consent Decree that BP negotiated with the EPA and the Department of Justice, that was lodged with the Northern District of Indiana Court of Appeals on January 18th requires certain additional monitoring requirements that go above and beyond any monitoring requirements currently required by any program at the Whiting refinery.

The Decree requires that the refinery develop a facility wide program for LDAR compliance, including a facility wide leak rate goal that is achieved on a process unit by process unit basis, the identification of all valves and pumps that have the potential to leak volatile organic compounds or hazardous organic pollutants, as defined in 40 CFR 60, Subpart GGG or 40 CFR 63, Subpart CC, respectively, procedures for identifying leaking pumps and valves, procedures for including new pumps and valves in the program, and standards for new equipment that it intends to install to minimize leaks or replace chronic leakers. This program will be implemented on a facility wide basis. This document is to meet the requirement for the written program as required in the decree.

5.1.2 Overall Refinery Leak Rate Goal

The overall leak rate goal for the Whiting refinery is 2%. This goal is calculated on a source-wide basis as defined in 40 CFR 63.648(a)(2)

5.1.2.1 Identification of all Valves and Pumps

The refinery has identified all valves and pumps that are in either volatile organic compound service as defined in 40 CFR 60, Subpart GGG, or in hazardous air pollutant service as defined in 40 CFR 63, subpart CC. These components are included in the LDAR database, and will be updated as changes are made to the refinery. The "Management of Change" (MOC) process requires any change to the operation of the refinery must go through prior to enactment of the change will be the method that these changes will be identified. The MOC form contains the following questions: Does this change affect the content of any stream in the unit? If so, how? Does this change require the addition of any pump or valve to the unit? If so, identify the number and locations for the LDAR program. The Refinery MOC checklists are maintained on the Whiting Business Unit Home Web site. A list of all valves and pumps in VOC or HAP service that are in the refinery program is maintained by the Refinery LDAR Clerk. The following table summarizes the equipment specific monitoring requirements for the Whiting Refinery LDAR program.



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Equipment	Gas/Vapor Service	Light Liquid Service	Heavy Liquid Service
Pumps ⁶	N/A	Monitored Monthly Weekly Visual Inspection	Monitor within 5 days after evidence of leak/ Weekly Visual Inspection ²
Valves ⁴	Monthly/Quarterly	Monthly/Quarterly	Monitor within 5 days after evidence of leak
Pressure Relief valves (PRDs) ³	Designed for no detectable emissions. Monitor no later than 24 hours after pressure release	Monitor within 5 days after evidence of leak	Monitor within 5 days after evidence of leak
Compressors ⁵	Equipped with a seal that has a barrier fluid and sensor. Monitored Annually.	N/A	N/A
Sampling Connection System	Equipped with closed purge/vent system	Equipped with closed purge/vent system	Equipped with closed purge/vent system
Flange or connectors	Monitor within 5 days after evidence of leak	Monitor within 5 days after evidence of leak	Monitor within 5 days after evidence of leak

⁶Pumps with no external shaft and valves with no external stem can be designated for no detectable emissions if an annual compliance test yields an instrument reading of less than 500 ppm above background. These are for MACT pumps subject to NSPS or MACT. All other pumps are monitored annually.

² Weekly visual inspections are not required by LDAR regulations for heavy liquid pumps. Whiting Refinery performs inspections to ensure compliance with visual leak requirements.

⁴Whiting Refinery has an internal leak definition defined for block valves (non-control valves) as 500 PPM. Valves more than six feet (6') above a support can be designated as difficult to monitor and can be monitored once per year.

³ PRDs in gas/vapor service, that are part of closed vent system, are not subject to monitoring.

¹ Whiting does not have any components with this designation.

⁵ Compressors that are vented to a control device through a closed system of piping are not subject to monitoring. Compressors in hydrogen service are exempt from meeting LDAR standards (NSPS Subpart GGG).



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Equipment	Gas/Vapor Service	Light Liquid Service	Heavy Liquid Service
Closed Vent System	Designed for no detectable emissions. Monitored annually/visually inspected annually	N/A	N/A
Components designated as No Detectable Emissions (e.g. check valves, closed vent systems, etc.)	Upon designation and annually	Upon designation and annually	Upon designation and annually

5.1.3 Skip Period Monitoring

The Consent Decree requires that the refinery implement more frequent monitoring of all valves by choosing one of the following options on a process unit by process unit basis:

- Quarterly monitoring with no ability to skip periods
- Sustainable skip period program defined in Appendix H of the Decree.

The refinery has chosen to implement the quarterly monitoring program by January 18, 2003.

5.1.4 Closed Vent Systems and Control Devices

The closed vent system and control device at the Whiting Refinery is the flare system. The flares subject to this requirement are the DDU and #4UF flares. The rules impose two sets of requirements for these systems: components on the closed vent system must be operated with no detectable emissions (< 500 ppm) and the flares must comply with the requirements of 40 CFR 60.18.

The closed vent system is monitored annually for no detectable emissions. Additionally, during the equipment monitoring, the closed vent system is visually inspected in accordance with the rules [40 CFR 60.482-10(f)(1)] for visible, audible, or olfactory indications of leaks. The inspections are documented in a database that manages LDAR data.



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The flare pilots are monitored, in accordance with 40 CFR 60.18 and 40 CFR 60.485(g)(2), for the presence of a flame. The DDU and #4UF flares have thermocouples and IR cameras to detect flame presence.

5.1.5 Equipment Specific Leak Definitions and Repair Requirements

The consent decree requires that the refinery make a first attempt at repair on any valve upon which the LDAR technicians have authority to make a first attempt at repair. At the Whiting Refinery, this includes all block valves 4 inches or less and excludes all motor operated or pneumatic control valves. The consent decree requires the refinery to lower the definition for leaks for all valves, including control valves, to 500 ppm by January 18, 2003. After this leak level is implemented, the refinery must make a first attempt at repair within 5 days of the detection of a leak, and all regulatory leaks are required to be repaired within 15 days of the detection of a leak. Leaks that occur between the regulatory definition of leak (either the state level or NSPS/MACT level of 10,000 ppm) and the Consent Decree definition of 500ppm must be repaired within 30 days of detection of a leak. The cost of repair for control valves must be tracked and provided to EPA, so they can assess the cost effectiveness of the lower leak rate definition program. Monitoring of pumps will continue, but leaks greater than 2000 ppm must be recorded, and the cost to repair the pump must be estimated. This information will be submitted in a report to the EPA so that EPA can determine if it makes sense to require repair at a lower leak definition. Delays of repair are deemed acceptable when conditions in Section 5.3 are met. The following table summarizes Whiting Refinery Leak Definitions.

Equipment	Gas/ Vapor Service	Light Liquid	Heavy Liquid
Pumps ⁶	N/A	Indications of liquid drippings from seal. Monitor and repair reading of 10,000 ppm, record leaks and estimate cost to repair at 2,000 ppm.	Monitor Reading of 10,000 PPM.

⁶Pumps with no external shaft and valves with no external stem can be designated for no detectable emissions if an annual compliance test yields an instrument reading of less than 500 ppm above background.



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Equipment	Gas/ Vapor Service	Light Liquid	Heavy Liquid
Valves ⁴ First attempt at repair made at 100 ppm, record results of attempt. Valves are repaired at 500 PPM.	Instrument reading of 500 ppm or over, repair. Count as regulatory leaker if over 10,000 ppm Repair within 30 days if $500 \leq \text{leak} < 10,000$ Repair within 15 days if $10,000 \leq \text{leak}$	Instrument reading of 500 ppm or over, repair. Count as regulatory leaker if over 10,000 ppm Repair within 30 days if $500 \leq \text{leak} < 10,000$ Repair within 15 days if $10,000 \leq \text{leak}$	Instrument reading of 10,000 PPM
Pressure Relief valves (PRDs) ³	Instrument reading of 500 PPM.	Instrument reading of 10,000 PPM	Instrument reading of 10,000 PPM
Compressors ⁵	Monitor reading of 10,000 PPM.	N/A	N/A
Flange or connectors	Instrument reading of 10,000 PPM	Instrument reading of 10,000 PPM	Instrument reading of 10,000 PPM
Closed Vent System	Instrument reading of 500 PPM.	N/A	N/A

⁴ Whiting Refinery has a leak definition defined for block valves as 500 PPM, with a first attempt at repair. Valves more than six feet (6') above a support can be designated as difficult to monitor and can be monitored once per year.

³ PRDs in gas/vapor service, that are part of closed vent system, are not subject to monitoring.

⁵ Compressors that are vented to a control device through a closed system of piping are not subject to monitoring. Compressors in hydrogen service are exempt from meeting LDAR standards (NSPS Subpart GGG).



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Equipment	Gas/ Vapor Service	Light Liquid	Heavy Liquid
Components Designated as No Detectable Emission (e.g. check valves, closed vent systems, etc.)	Instrument reading of 500 PPM.	Instrument reading of 500 PPM.	N/A

6.0 Monitoring Procedures

The following section describes the procedures that the Whiting refinery will use to tag, monitor, repair, and follow-up with remonitoring for all components in the refinery LDAR program.

6.1 Field Tagging and Monitoring Procedures

The Whiting Refinery maintains a staff of BP employees responsible for the monitoring of components pursuant to this LDAR plan. The Environmental Technicians responsibilities include screening of all identified individual pieces of equipment for leaks. Each component in Light liquid and Gas/Vapor service is identified in the field with stainless steel stamped tag with a unique identification number. Each piece of equipment subject to the LDAR program has this unique identification distinguishing it from unaffected equipment. If the Environmental Technician discovers a component with the permanent tag missing, a new tag will be hung on the component. An example of the LDAR equipment tags used at the refinery complex is illustrated in Figure 5-1.

Monitoring is conducted using a portable hydrocarbon detection device, Foxboro model TVA-1000B. The analyzer is subject to performance evaluation requirements specified in EPA Method 21, Appendix A. Each monitoring device displays a screening value in units of parts per million that is an indication of the concentration of any leaking material at the leak interface. If the screening value is greater than the value regulations allow, a leak is indicated.

Whiting utilizes the Method 21 procedures for the monitoring of the affected components. Before any Method 21 monitoring of components may begin, several items are checked and documented. Start up calibration is conducted according to the manufacturers recommendations. Whiting personnel perform and properly document the instrument certification procedures. After the appropriate warm-up period, the zero gas and calibration gas



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is introduced into the instrument sample probe. The instrument readout is adjusted to correspond to the calibration gas value. The results of this calibration procedure is documented and maintained in the LEADERS software. If the meter readout cannot be adjusted to the proper value, a malfunction of the analyzer is indicated and corrective action is taken by the technicians before the start of component monitoring.

Once the analyzer has been properly calibrated for use, monitoring of individual components may begin. Monitoring procedures outlined in EPA method 21 are followed. The analyzer's probe inlet is placed at the surface of the potential leak interface where leakage could occur. The potential leak interface is the boundary between the process fluid and the atmosphere. For equipment with no moving parts at the leak interface, the probe should be placed directly on the leak interface. For equipment with moving parts, the probe should be placed approximately one (1) centimeter from the leak interface. Care must be taken to ensure that the probe is held perpendicular to the potential leak interface, otherwise inaccurate readings will result. The probe must be moved along the interface boundary while observing the instrument readout. If an increased meter reading is observed, the probe is slowly moved along the interface where concentrations register until the maximum reading is obtained. The probe inlet should be left at this maximum reading location for at least two times the instrument response time. The time spent monitoring each component, regardless of leak status, will equal two times the response time of the instrument used. The maximum reading is recorded as the component screening value. If a component has more than one potential leak interface that should be monitored (e.g., the valve packing and bonnet areas), the highest of the instrument readings for the entire component is recorded. Each component high reading will be entered into the datalogger device in the field before moving to the next component. The only exception to this is when hazardous conditions exist that make it unsafe to enter each reading before another component is monitored. An example of this situation is when technicians are monitoring from a ladder or while climbing in pipe alleys. In these cases, monitoring technicians may monitor several components in a row before safe conditions allow for them to enter results into datalogger.

Care should be taken to avoid fouling the sample probe with grease, dust, or liquids. Some fouling is unavoidable, so it is recommended that the probe tip filter be cleaned at least daily and any other filters on a weekly basis. Normally, these filters can be cleaned by just tapping them lightly on a table top, but if the deposits are wet and caked on, they should be washed with an aqueous solution of soap and alcohol. This solution also can be used to wash the probe and transfer line periodically. Care should be taken to blow the equipment dry before reuse. If the probe tip comes in contact with the liquid during component monitoring, immediately move the probe away from the liquid to stop the instrument pump from sucking liquids any deeper into the



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analyzer than it already has, and causing damage to the analyzer. Remove the sample tube assembly and clean all sample lines and filters before placing the analyzer back into service.

6.1.1 Valves

For valves, the most common source of leaks is at the seal between the stem and housing. To screen this source, the probe opening is placed where the stem exits the packing gland and is moved around the stem circumference. The maximum reading is recorded as the screening value. Also, the probe is placed in the packing gland to take up connector seat, and is moved along the periphery. In addition, valve housings of multipart assemblies should be screened at the surface of all points where leaks could occur (e.g., valve bonnet area).

6.1.2 Flanges and Connectors

For flanges, the probe opening is placed at the outer edge of the flange-gasket interface and the circumference of the flange is sampled. For screwed connectors, the threaded connection interface must also be screened around the circumference. A connector such as a tee includes three components and should be monitored and recorded individually.

6.1.3 Pumps, Compressors and Agitators

Pumps, compressors and agitators are screened with a circumferential traverse at the outer surface shaft and seal interface where the shaft exits the housing. If the source is a rotating shaft, the probe inlet is positioned within one centimeter of the shaft-seal interface. If the housing configuration prevents a complete traverse of the shaft periphery, all accessible portions must be sampled. All other joints on the pump or compressor housing where leakage could occur should also be sampled.

6.1.4 Pressure Relief Devices

The configuration of most pressure relief devices prevents sampling at the sealing seat. Because of their design and function, pressure relief devices must be approached with extreme caution. These devices should not be approached during periods of process upsets, or other times when the device is likely to activate. Similarly, care must be used in screening pressure relief devices to avoid interfering with the working parts of the device. For those devices equipped with an enclosed extension, the probe inlet is placed at approximately the center of weep hole of the exhaust point. It should be noted that personnel conducting the screening should be careful not to place hands, arms, or any parts of the body in the discharge piping area. Pressure Relief Devices that are not equipped with a weep hole to allow for safe screening are considered unsafe to monitor.

Refinery MACT, NSPS GGG, and Indiana state rule requirements differ somewhat in the standards for individual equipment items. However, the Consent Decree that BP signed with the EPA and DOJ and was lodged on the 18th of January, in the Northern District of Indiana



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Court includes the most stringent of all of the monitoring requirements. Monitoring to meet the requirements of this Consent Decree will meet compliance requirements for all other programs. Whiting Refinery maintains all of the applicable programs for State, NSPS, NESHAPs and MACT, and applies the most stringent requirements of the above regulations to each component monitored at the site.

6.2 Repair of Leaks

When a regulatory leak has been detected, a first attempt at repair is made within 5 calendar days. This attempt can include tightening of bonnet bolts, replacement of bonnet bolts, tightening of packing gland nuts, injection of lubricant into lubricated packing, tightening of flange connections, installation of plugs, repairs to screwed connections, replacement of gaskets, and other techniques. Note that the Whiting Environmental Technicians will have primary responsibility for the plugging of open-ended lines and valves when possible, and for making an initial attempt to repair leaking block valves by tightening the packing gland. After a leak is detected, a weatherproof and readily visible identification tag, marked with the equipment ID number, is attached to the leaking equipment when a leak is detected. For regulatory leaks, yellow tags are used. For internal leaks, blue tags are used. For delays of repair, green tags are used. For regulatory leaks on valves, the tag remains on the component after the repair has been made, for 2 consecutive months with non-leaking monitoring readings. For other equipment, the tag is removed after the leak has been repaired.

For leaks that cannot be repaired on the initial attempt (i.e. Technicians repair efforts), the Technician will notify the Refinery LDAR Clerk, who will issue a work order and notify Operations and Maintenance to repair the leaking component. The leak is documented in the monthly Refinery leak report. It is the responsibility of the plant Operations personnel to have the leak repaired.

If repair efforts are not successful and the leak must be repaired during a unit shutdown, or if some other reason exists for the delay of repairs, the procedures of Section 6.3, delay of repair will be followed.

Components leaking at greater than 50,000 ppm or on the delay of repair (TAR) list for 3 years require extraordinary efforts to be taken, rather than place or keep the component on the delay of repair list. For valves, extraordinary efforts / repairs are defined as non-routine repair methods, such as drill and tap. This requirement does not relieve the unit of its responsibilities under the temporary repair policy D-13. Repaired components must be remonitored no more



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than two business days following the repair. Repaired valves in light liquid or gaseous/vapor service require repeat inspection for two consecutive months following the repair.

6.3 Delay of Repair

The Whiting Refinery, will only have a delay in repair of leaking equipment for one of the following reasons:

- a. Repair is technically unfeasible until process unit shutdown. In this instance, repair will occur by end of the next process unit shutdown.
- b. Equipment is isolated from service and does not remain in VOC service.
- c. The emissions from material purge from immediate repair are greater than the emission likely to result from delay, and the purge material is collected and destroyed or recovered in an emission control device.
- d. Repair of a pump requires replacing existing seal design with a dual mechanical seal system, a new system with better performance, or a closed vent system and control device. Repair must be completed within 6 months of leak detection.
- e. Valve assembly replacement is necessary during shutdown, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before supplies were depleted. Next unit shutdown and repair must be completed within 6 months of first shutdown.

The Whiting Refinery plant personnel will notify the Whiting LDAR Clerk of the existence of a component that cannot be repaired immediately within the 15 day repair period. The Whiting LDAR Clerk will document this information on the Refinery Delayed Leak Repair Report. If repair is delayed because a process unit shutdown is required, the Asset Coordinator will complete and sign the bottom portion of the form to document the reason for delay of repair and the estimated date at which repairs will be made. Outstanding repairs will be discussed in periodic program reviews held between the Refinery LDAR program coordinator and the affected plant maintenance coordinators. Plant maintenance personnel will notify the Refinery LDAR coordinator immediately when these repairs have been completed and the coordinator will close out the Delayed Leak Repair Report. Records of delays of repairs are maintained as outlined in Section 7.0.



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6.4 Difficult To Monitor Components

Difficult to monitor components are defined in the Refinery LDAR program when the operator demonstrates that the component cannot be monitored without elevating the monitoring personnel more than 6 feet above a support surface. Difficult to monitor components will be monitored once per year utilizing specialized lift equipment.

6.5 Unsafe To Monitor Components

Components that can not be safely monitored in compliance with OSHA Standard 29 CFR 1926, Subpart M "Safety Standards for Fall Protection" are considered unsafe to monitor. The use of step ladders or extension ladders from platforms or scaffolds for monitoring HAP or VOC components is deemed unsafe at all times and will not be employed. Outside battery limits (OSBL), in areas where an ignition or explosion hazard does not exist, in addition to laddered used in compliance with OSAH Standard 29 CFR 1926, Subpart M, a condor lift may also be used for access. All components that cannot be accessed as described above are considered unsafe to monitor.

Unsafe to monitor components are also defined in the Refinery LDAR program when the operator demonstrates that the components cannot reasonably be monitored without exposing monitoring personnel to immediate danger.

- Monitoring personnel are exposed to ambient or equipment temperature extremes in excess of 300° F.
- Pressure Relief Devices are not equipped with an accessible weep holes at which a reading can safely be taken.

6.6 Visual Inspection Procedure Documentation

A weekly refinery-wide visual pump inspection is performed by the unit operations personnel to ensure seal integrity. All leaking components, regardless of how detected, will be kept in the Refinery LDAR program leaking components database.



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7.0 Recordkeeping Procedures

All records described in this section are maintained in a manner that can be readily accessed at the plant site through the environmental staff. Monitoring results are available for components with which the following rules apply:

1. Indiana State rules 326 IAC 8-4-8
2. 40 CFR Part 63 Subpart CC (Refinery MACT);
3. 40 CFR Part 60, Subpart GGG, and QQQ (NSPS for Fugitive leaks, process sewers, respectively);
4. 40 CFR part 61, Subpart FF (Benzene NESHAPS Waste Operations)
5. 40 CFR Part 63, Subparts F, G, and H (HON)

7.1 Information contained in FEMS Database

Components that are monitored are individually identified in the LDAR database with unique tag numbers. A description of the component service, equipment size, type, location, monitor readings, date of monitoring event, leak repair methods, date of repair, tester number, and monitoring instrument number recorded for each tag number. Currently, the Whiting Refinery has this information identified for approximately 70,000 components.

When a leak is detected, the following information is recorded and maintained for two years on file at the Whiting Refinery.

- a. Instrument, equipment, and operator identification numbers.
- b. Date leak was detected and date of first attempt to repair.
- c. Date of successful repair of leak
- d. Maximum instrument reading after leak is successfully repaired or determined to be unable to repair.
- e. Emission Point
- f. "Repair Delayed" and reason for delay if not repaired within 15 days.
- g. Dates of process unit shutdowns occurring while equipment is repaired.

After locating a block valve leak, the first attempt is made by the monitoring technician. All control valves, pumps, and other pieces of equipment are to be repaired by maintenance personnel. If the valve cannot be repaired, or is a control valve or pump, a leak identification tag is placed on the equipment with date of leak, ppm reading, and the valve tag number noted on the leak identification tag. All this information is entered into the database and a daily leak



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report distributed to the Asset and Maintenance personnel. After a repair attempt has been made, the Asset Personnel will call the field technician to re-monitor the component. All re-monitor information is logged in the Database. If the repair attempts are unsuccessful, Asset Personnel must decide if the unit must be shutdown in order to perform the necessary repair, see Section 6.3.

Other information maintained as part of the LDAR program is:

- a. P & ID equipment list
- b. Copies of periodic compliance reports
- c. Records of operation, design specifications, and performance demonstrations identified in 40 CFR 63.181 (G) for closed vent and control systems.
- d. Active Accessible components list by unit

8.0 Reporting

8.1 Federal Requirements

Federal regulations require reporting under MACT pursuant to 40 CFR Part 63 Subpart CC and NSPS pursuant to 40 CFR Part 60 Subpart GGG/VV. A combined report is prepared by the refinery environmental staff and submitted to the State of Indiana on a semi-annual basis.

Each Unit is reported separately. Reported information includes valves, pumps, compressors, and inaccessible valves monitored, leaking and not repaired. Date(s) of shutdown(s) during the reporting period are also noted in this report. Pump inspections including the pumps monitored, pumps visually inspected, pumps leaking, and pumps repaired are also reported.

8.2 Indiana State Requirements

The Indiana Department of Environmental Management requires slightly different information in its quarterly reports which are due April 30, July 31, October 31 and January 31, after the end of each quarter. BP is fulfilling state LDAR requirements by monitoring under the Consent Decree.



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9.0 Program Maintenance and QA/QC

9.1 Program Maintenance - Employee Awareness

A key aspect of the Whiting Refinery LDAR program is the awareness of both plant personnel and contractors about the nature of and purpose of the plant LDAR program. Plant personnel are trained on the aspects of LDAR relevant to their jobs. Training and awareness are accomplished through many means. These include articles in the site newsletter, email, meetings, and formal presentations. The critical information necessary by job type is outlined below.

- Training of all new LDAR personnel prior to beginning work
- Annual refresher training of LDAR personnel
- The purpose for the equipment and leak tags - Operations/Maintenance
- Identification of equipment and leak tags - Operations/Maintenance
- Requirement to maintain caps/plugs/etc in open ended lines when not in use - Operations
- Repair timing requirements - Maintenance
- Delay of repair implications and requirements - Operations/Maintenance
- Need to notify Environmental LDAR coordinator of missing tags - Operations/Maintenance
- Tagging requirements and responsibilities for new equipment - Maintenance/Operations/Asset Development
- Returning tags to Environmental for demolished equipment - Maintenance/Operations/Asset Development
- Re-tagging procedures for replaced equipment - Maintenance/Operations/Asset Development

9.2 Program Maintenance - Management of Change

As part of Management of Change (MOC), Environmental is involved in reviewing any changes to processing equipment that have an environmental impact. Changes with an environmental impact include addition of new components and change of service of existing components. This ensures the necessary changes to the component inventory can be made and any new equipment properly tagged. Environmental reviews the MOC and forwards the information to the LDAR Clerk to ensure proper tagging and monitoring.



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9.2.1 Standards for New Valves to Minimize Leaks and Replacement of Chronic Leakers

An element of the LDAR plan is standards for new equipment that it intends to install to minimize leaks or replace chronic leakers. The following standard addresses specifications for new valves to comply with the Consent Decree.

Valves are to be purchased which meet the criteria of the following ACES specifications:

- A PN-VA-GS-G Piping Valves General Service Selection Guide
- A PN-VA-LIST-S Piping Valves Listing Full Ordering Description Guide

In addition, all chronic leaker replacements must be capable of meeting design emission thresholds specified in the BP Consent Decree.

Valve selection shall be approved by appropriate members of the refinery Availability Group and consider such items as manufacturer, packing design and material, stem material (and coatings), and packing loading design.

Another element of the LDAR plan is identification and replacement of chronic leakers. Studies indicate that the majority of leaks are from a small number of components (i.e. chronic leakers). Whiting Business Unit's program will focus on valves that are chronic leakers.

For purposes of this program, the definition of chronically leaking component will be any valve that leaks at 10,000 ppm for 2 or more times during the 12 months¹. The program will examine chronic leakers that have received 1 or more extraordinary attempt at repair in an effort to achieve emissions less than 10,000 ppm or 50,000 ppm².

This list of chronically leaking components will be developed and reviewed semi-annually with the appropriate members of the refinery Reliability group. This group will evaluate the components and recommend any options to minimize leaks that are found to be feasible and economically justifiable.

Options can include, but are not limited to, the following:

¹ 10,000 ppm was chosen over 500 ppm to focus refinery resources on components that result in higher emissions.
² Extraordinary attempts at repair are defined under the Consent Decree to mean efforts such as drill and tap (i.e. injecting the valve). Any injections done to bring emissions lower than 10,000 ppm do not count toward the threshold.



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- Vent to an air pollution control device
- Different packing material
- Replacement with low emission valves

The recommended options for leak minimization will be completed no later than during the next process unit turnaround. The performance of the leak minimization option (i.e. average monitored reading) will be assessed for the next 12 months. The minimization option selected and the performance achieved will be reported to the refinery Reliability group (see attached form) and made available to other BP facilities. This will ensure that the refinery Reliability group has the most current information from which to evaluate future minimization efforts. The following form will facilitate this discussion.



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Leak Minimization Efforts Evaluation

Component Type	Description (e.g. Manufacturer, etc)	Size	Service	Pressure	Temperature	Leak Minimization Option	Date Implemented	Pre-Implementation 12-month Average Monitoring Reading (ppm)	Post-Implementation 12-month Average Monitoring Reading (ppm)



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9.4 Auditing

As part of the compliance assurance process, the Whiting Refinery periodically audits the LDAR program. The intent of these audits is to verify that the monitoring is being performed as required (see Section 6.0) and Program Maintenance activities are being followed and are effective in maintaining compliance. These audits fall under the following categories.

- Routine audit of main elements of program
- Audit of program by external BP auditors
- Audit of program by third party auditors

Documentation of the audits, including deficiencies noted along with any corrective actions taken or planned along with a schedule for completion, will be maintained in as part of the ISO 14001 Environmental Management System. Paper copies of information reviewed under the audit will be maintained in the HSE central files in accordance with the ISO 14001 Standard 4.5.1.

9.4.1 Routine Audits

Frequency	Name
Monthly	Technician Quality Audit Report for one day per technician selected at random by BP - Will check with unit sign-in logs.
	Leaker Audits (tags, first attempts, data entered, remonitors) - Perform a check of 10% of the leaker data for that time period, but no fewer than 5 leakers, to verify leak tags were hung and include all required information, first attempts/remonitoring was performed, and database is accurate.
	Tagging Verification Audits - Field check 1 unit at random for missing tags
	Open Ends Verification Audits - Field check 1 unit at random for open end lines
Annually	DTM/UTM Audits - Field check components identified as DTM/UTM to ensure that components meet guidelines for designation as DTM or UTM.

9.4.2 Audit of Program by BP Auditors External to the Refinery



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The Consent Decree requires that an external audit with BP auditors be conducted every 4 years, starting two years after the third party audit discussed below. This audit is to be conducted according to the broad framework approved by EPA. The broad framework is included in Appendix A, and includes comparative monitoring, records review, tagging procedures, data management, and observation of the LDAR technician's techniques.

9.4.3 Third Party Audit

The Consent Decree requires that the refinery conduct a third party audit of the LDAR program every four years, with the first audit being held within the first two years after the Consent Decree is lodged. This audit is also to include comparative monitoring, records review, tagging procedures, data management, and observation of the LDAR technician's monitoring techniques.

10.0 Refinery Incentive Program

The Consent Decree requires that the refinery establish an incentive program and a program that will hold the LDAR personnel accountable for LDAR performance. The refinery incentive program is included as Appendix C. The program is part of the Refinery's Near Miss Lottery program and awards personnel for being pro-active in maintaining equipment and finding leaking equipment.

11.0 Frequently Asked Questions and Answers

11.1 For what reasons can a regulatory repair deadline be delayed?

- If the repair is technically infeasible without a process unit shut down.
- If the equipment is isolated from the process and does not remain in VOC service.

For Valves:

- If emissions of purged material resulting from immediate repair are greater than the fugitive emissions likely to result from the delay and when the repair is affected, the purged material is collected and destroyed or recovered in a control device.



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Delayed beyond a process unit shut down:

- If valve assembly replacement is necessary, valve assembly supplies have been depleted, and valve assembly supplies had been sufficiently stocked before the supplies were depleted and the next process unit shut down occurs sooner than 6 months after the first unit shut down.

For Pumps:

- If the repair requires the use of a dual mechanical seal system that includes a barrier fluid system and the repair is completed as soon as practicable but no later than 6 months after the leak was detected.

The above reasons do not include:

- Unit slow downs
- Poor spare reliability

11.2 If a potential leak is indicated by sensory means, when does it become a regulatory leak?

Light Liquid Pumps:

- Liquids dripping from the seal at a rate of 3 drips/minute, or an instrument reading of 10,000 ppm.

Heavy Liquid Pumps:

- Instrument reading of 10,000 ppm

Flanges / Connectors:

- Instrument reading of 10,000 ppm

Valves

- Instrument reading of 10,000 ppm

Compressors

- Instrument reading of 10,000 ppm



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12.0 Leak Repair Process

See EP-ENV-AIR-LDAR-003



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Appendix A

Annual Audit Framework



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Framework for an Annual Audit Program for Leak Detection and Repair

This document lays out the structure of an annual audit program for LDAR activities at BP refineries. The audit program is part of an overall quality assurance program that includes internal audits, external audits, inspector training, and refresher training. This document discusses the content of the internal and external audits.

The audit program is proposed to include the following elements:

- Observation of inspector technique during calibration and monitoring;
- Comparative monitoring performance audit;
- Review of record keeping and data management;
- Review of repair completion issues;
- Review of tagging issues; and
- Review of other issues.

The internal audits would be done by two inspectors/LDAR program managers brought in from other refineries for a period of 4 days. The audits would begin with an orientation meeting to introduce the auditors to the people involved in LDAR at the refinery. The conventional systems audit activities would be done during the first two days. The comparative monitoring performance audit would then be carried out over the next two days. The audit team will need a few hours on the last day to organize observations, findings, and recommendations for improvement. The audit findings will be presented at an exit meeting and in a written summary. It is expected that the auditors will take any lessons learned or cautions back to their own facilities. In addition, the LDAR manager will circulate a copy of the findings and lessons learned to all company refineries.

We propose to conduct the internal audits once every 4 years at each refinery, in addition to funding an external audit at each refinery once every four years. The initial audit will be an external audit, which will further develop guidelines, record keeping, and provide training of potential internal auditors at the subject refinery. We also propose to offset the dates of audits at various company refineries so that several refineries are audited each year. This will spread out the effort and keep the audit activity on the minds of the inspectors. An example timeline for internal and external audits over an 8 year period is shown in Table 1 for a set of 8 refineries.

Table 1. Proposed Schedule of External and Internal Audits

Year	Planned Audit Activity (Inspectors from Refineries #)							
	Refinery 1	Refinery 2	Refinery 3	Refinery 4	Refinery 5	Refinery 6	Refinery 7	Refinery 8
1	External Audit	External Audit			External Audit	External Audit		
2			External Audit	External Audit			External Audit	External Audit
3	Internal Audit (2&3)	Internal Audit (1&4)			Internal Audit (6&7)	Internal Audit (5&8)		

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4			Internal Audit (2&4)	Internal Audit (1&3)			Internal Audit (6&8)	Internal Audit (5&7)
5	External Audit	External Audit			External Audit	External Audit		
6			External Audit	External Audit			External Audit	External Audit
7	Internal Audit (6&7)	Internal Audit (5&8)			Internal Audit (2&3)	Internal Audit (1&4)		
8			Internal Audit (6&8)	Internal Audit (5&7)			Internal Audit (2&4)	Internal Audit (1&3)

Each element of the internal audit is described briefly below.

Observation of Inspector Technique

Each auditor will pair up with an inspector from the refinery being audited to observe the calibration and monitoring techniques. This type of audit is useful for finding misconceptions about the appropriate Method 21 techniques. While in the field, auditors will also look for missing caps and plugs and observe technique on the less common component types (compressors, pumps, pressure relief valves, etc.). Findings from this type of audit will be added to the training programs to correct any misconceptions.

Comparative Monitoring

Comparative monitoring means that the auditor will bring his/her own monitoring instrument (and if feasible, calibration gases) and make measurements independent of the refinery LDAR inspectors. The auditors will pick several process units and monitor a semi-random subset of components in that unit. The leak frequency determined by the auditor will be compared to the historical leak frequencies reported by the refinery LDAR crew for that unit over the last few monitoring periods. Leak frequencies can vary a bit between monitoring periods, but it is indicative of a problem if the auditor finds a much greater percent leakers than the historical data would indicate.

The selection of process units will be done by categories. The historical leak frequency data will be used to order the process units from highest to lowest. The process units will then be divided into 2 categories based on leak frequency: upper half and lower half. The auditors will select about twice as many processes from the upper half (with higher leak frequencies) as from the lower half for monitoring. Records will be kept on which processes are audited, and no process will be checked again until all of the processes in its category have been monitored in either an internal or external audit. This assures that all processes will get audited, and that the areas of higher leak frequency are given more attention.

Within each process, the auditors will monitor at least a minimum number of components to achieve statistical confidence that the results for the subset give a reasonable representation of the results for the whole process. The minimum numbers of components will vary as a function of historical leak frequency. The lower the historical leak frequency, the higher the minimum numbers of components must be monitored to achieve statistical confidence. The table below provides some rough guidelines for minimum numbers to be monitored by component type and historical leak frequency:

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Table 2. Minimum Sample Size for Comparative Monitoring

Component Type	Historical Leak Frequency		
	<= 1%	>1% but <=3%	>3%
	Minimum Number to Monitor for Comparison Monitoring		
Valves (Gas & Light Liquid)	1000	500	250
Pump seals (Light Liquid)	Monitor all		

The minimum sample numbers for valves in the above table assume a good sized process unit. If a process has fewer valves than the suggested minimum, the audit crew would monitor them all.

The auditors must also consider how to select the components they are to monitor. One approach is to calculate what percentage of components the minimum sample would be. For instance, if a process unit with <1% leak frequency has about 2000 valves in gas or light liquid service, the minimum sample would be about 50% of the total valves. A good way to semi-randomly select a 50% subset is to pick a stream in gas or light liquid service and monitor the first valve, skip the second, monitor the third, etc. It would also be acceptable to simply monitor 25 to 50 components on a selected stream, then switch to another stream and monitor 25 to 50 components, and so on until reaching the target number of components. While this approach is not quite as random as the former, it is easier to keep track of in the field and should not generate any significant problems so long as the auditors are cautioned to include a representative sampling of all types of streams in the process.

The auditors (and the regular LDAR staff) will be trained in effective use of monitoring time. Components with preliminary monitoring values that are less than 20% of the leak definition, or more than the leak definition, can be monitored in a very short period of time. Only that small fraction of components (typically much less than 1%) that show a preliminary monitoring value between 20% and 99% of the leak definition need extra attention to be sure that they are not leakers. Components of this type that show steady monitoring values over a period of a minute or two can be recorded at that time. Components that exhibit a highly variable monitoring value should be checked for periods of up to 5 minutes (assuming it has not exceeded the leak definition earlier). This approach of allowing extra time on the few components that are under, but near, the leak definition will allow the audit crew to develop results similar to what an EPA multimedia audit team would show.

The results of the comparative monitoring can highlight problem areas. This type of test is good at identifying problems related to careless monitoring (i.e. the inspector knows how to do Method 21 properly, but loses the patience to carry it out strictly during the times between audits). Issues discovered in comparison monitoring can be added to training programs.

Review of Record Keeping and Data Management

This is a standard component of any LDAR audit and is a good check on many regulatory compliance issues. The auditors should focus on whether the appropriate records are kept and whether the contents make sense. Examples are copies of daily calibration sheets, quarterly instrument performance certifications, monitoring data, repair logs, etc.



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Review of Repair Completion

The audit should check that leakers identified through monitoring are receiving timely first attempts at repair and that repair is completed within the allowed time (usually 15 days). For those instances when repair completion within the allowed time is not possible, check to see that a delay of repair record has been initiated with the reason for the delay and an authorization. Also check to see that there is a management system to be sure that delayed repairs are completed during the next unit shutdown, or document why they were not. The audit should look for systemic problems in communications between the LDAR team, maintenance, and environmental staff.

Review of Tagging Issues

There are a number of issues related to tagging components to be monitored. One of the most basic is whether the appropriate components have been tagged and/or whether components that are not covered by the regulations have been incorrectly tagged. It is not possible for the audit crew to check all tags on even a few process units, but they should be alert to look for tagging problems as they do the observation and comparison monitoring. The auditors should also determine how the site handles missing tags and how they keep the database history intact when missing tags are replaced. The auditors should also check for how the LDAR team tracks components added to or removed from the units and how this type of information is transmitted to the LDAR team.

Review of Other Issues

There are a variety of other issues that should be considered by the auditors. The manner in which difficult-to-monitor and unsafe-to-monitor components are designated and the plan for monitoring them is one such issue. Inspector safety is another issue, since monitoring requires climbing with equipment, exposure to hot surfaces, etc. The guidelines for designating difficult-to-monitor and unsafe-to-monitor components need to meet regulatory requirements, but also be consistent with the refinery safety rules. Instrument reliability and routine maintenance are other good issues. How does the LDAR team cope with rain or very cold weather? There may be other site-specific or regulation-specific issues that apply to any given refinery.



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Appendix C

Refinery Incentive Program



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Refinery Incentive Program

The refinery maintains an employee incentive program for addressing Health, Safety, and Environmental (HSE) issues before they result in an accident or environmental incident. The details of the program are available on the Whiting Homepage at the following location

http://whiting.whi.am.bp.com/Home/HSE/whiting_near_miss_lottery.htm

Various aspects of the refinery LDAR program such as missing plugs, leaking flanges, etc. are acceptable for submittal under this program as long as positive action was taken to rectify the situation.

Revision Level	Change(s)	Author	Date
0	Initial Issue	L. Smith	02/2001
1	Consent Decree and Program Review	R. Dippo	06/2002
2	Incorporation of LEADERS software	R. Dippo	12/2003

Authored by:
Date:

Approved by:
Date:

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

**Technical Support Document (TSD) for a
Part 70 Minor Source Modification**

Source Background and Description

Source Name:	BP Products North America Inc., Whiting Business Unit
Source Location:	2815 Indianapolis Boulevard, Whiting, Indiana 46394-0710
County:	Lake
SIC Code:	2911 and 2869
Operation Permit No.:	T089-6741-00453
Operation Permit Issuance Date:	Not yet issued
Minor Source Modification No.:	089-21591-00453
Permit Reviewer:	ERG/AAB

The Office of Air Quality (OAQ) has reviewed a modification application from BP Products North America Inc. Whiting Business Unit (BP) relating to the modification of the following emission units and pollution control devices:

- (a) Conversion of storage tank 3900 from an external floating roof tank to an internal floating roof tank. Tank 3900 is located at the J & L Tank Field, has a maximum storage capacity of 1,906,000 gallons, and will be used to store crude relief valve effluent. The storage tank was initially constructed in 1956 and will be modified in September 2005.
- (b) Modifications to the pipelines to allow for the diversion of crude relief valve effluent, including the installation of a relief valve header on the incoming crude pipelines.

History

IDEM, OAQ drafted a Part 70 permit based on the application submitted by BP in September 1996 and additional information received from the source between 1996 and 2005. Issuance of the Part 70 permit is currently pending.

Source Definition

This stationary source company consists of three (3) plants:

- (a) The Whiting Refinery (previously designated 089-00003), located at 2815 Indianapolis Boulevard, Whiting, Indiana 46394;
- (b) The Marketing Terminal (previously designated 089-00004), located at 2530 Indianapolis Boulevard, Whiting, Indiana 46394; and
- (c) The Chemical Plant (previously designated 089-00076), located at 2357 Standard Avenue, Whiting, Indiana 46394.

Since the three (3) plants are located on contiguous or adjacent properties, are under the common control of the same entity, and the Whiting Refinery supports the Marketing Terminal and Chemical Plant, they will be considered one (1) source, effective from the date of issuance of the Part 70 permit.

Enforcement Issue

There are no enforcement actions pending.

Recommendation

The staff recommends to the Commissioner that the Part 70 Minor Source Modification be approved. This recommendation is based on the following facts and conditions:

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

An application for the purposes of this review was received on July 26, 2005.

Emission Calculations

The calculations submitted by the applicant have been verified and found to be accurate and correct. These calculations are provided in Appendix A of this document (Appendix A, Pages 1-7).

Potential To Emit of Modification

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

This table reflects the PTE before controls. Control equipment is not considered federally enforceable because it has been required in a federally enforceable permit.

Pollutant	Potential To Emit (tons/year)
PM	0.00
PM-10	0.00
PM2.5	0.00
SO ₂	0.00
VOC	0.75
CO	0.00
NO _x	0.00

HAP's	Potential To Emit (tons/year)
Total	Negligible

Justification for Modification

This Minor Source Modification to a source that has not been issued its Part 70 permit yet, is being performed pursuant to 326 IAC 2-7-10.5(d)(5), which requires any modification that is subject to a New Source Performance Standard (NSPS) or National Emission Standard for Hazardous Air Pollutants (NESHAP) to be processed as a minor source modification.

County Attainment Status

The source is located in Lake County.

Pollutant	Status
PM10	Maintenance Attainment
PM2.5	Nonattainment
SO ₂	Primary Nonattainment
NO ₂	Attainment
1-hr Ozone	Severe Nonattainment
8-hr Ozone	Moderate Nonattainment
CO	Maintenance Attainment
Lead	Attainment

- (a) U.S.EPA in Federal Register Notice 70 FR 943 dated January 5, 2005 has designated Lake County as nonattainment for PM2.5. 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 non-attainment areas without sufficient data. However, in order to ensure that sources are not potentially liable for violation of the Clean Air Act, the OAQ is following the U.S. EPA's guidance to regulate PM10 emissions as surrogate for PM2.5 emissions pursuant to the Non-attainment New Source Review requirements. See the State Rule Applicability for the source section.
- (b) Volatile organic compounds (VOC) and Nitrogen Oxides (NOx) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone.
- (1) 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 NOx 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 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. See the State Rule Applicability for the source section.
- (2) VOC and NOx 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 NOx emissions were reviewed pursuant to the requirements for nonattainment new source review.
- (c) Lake County has been classified as attainment or unclassifiable in Indiana for PM10, NO₂, CO, and lead. Therefore, these emissions were reviewed pursuant to the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2. See the State Rule Applicability for the source section
- (d) The portion of Lake County in which this source is located has been classified as nonattainment in Indiana for SO₂. Therefore, these emissions were reviewed pursuant to the requirements for Emission Offset, 326 IAC 2-3. See the State Rule Applicability for the source section.
- (e) Fugitive Emissions
Since this type of operation is one of the twenty-eight (28) listed source categories under 326 IAC 2-2, the fugitive emissions of PM and VOC are counted toward determination of PSD and Emission Offset applicability.

Source Status

Existing Source PSD or Emission Offset Definition (emissions after controls, based upon 8760 hours of operation per year at rated capacity and/or as otherwise limited):

Pollutant	Emissions (tons/year)
PM	> 100
PM10	> 100
PM2.5	> 100
SO ₂	> 100
VOC	> 100
CO	> 100
NO _x	> 100

- (a) This existing source is a major stationary source under PSD because an attainment regulated pollutant is emitted at a rate of 100 tons per year or more, and it is one of the 28 listed source categories.
- (b) This existing source is a major source under Emission Offset because VOC, NO_x, and SO₂ are emitted at a rate of 100 tons per year or more.
- (c) These emissions are based upon the 2003 emissions data submitted to IDEM by BP.

Potential to Emit of Modification After Issuance

The table below summarizes the potential to emit, reflecting all limits, of the significant emission units after controls. The control equipment is considered federally enforceable only after issuance of this Part 70 source modification.

Process/facility	Potential to Emit (tons/year)						
	PM	PM-10	SO ₂	VOC	CO	NO _x	HAPs
Tank 3900	0.0	0.0	0.0	0.48	0.0	0.0	Negligible
Fugitive Emissions	0.0	0.0	0.0	0.27	0.0	0.0	Negligible
Total Increase	0.0	0.0	0.0	0.75	0.0	0.0	Negligible
PSD/Emission Offset Threshold	25	15	40	25	100	40	--

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

This modification to an existing major stationary Emission Offset source is not major because the emissions increase is less than the Emission Offset significant levels. Therefore, pursuant to 326 IAC 2-3, the Emission Offset requirements do not apply.

Federal Rule Applicability

- (a) This minor modification does not involve a pollutant-specific emissions unit:
 - (1) with the potential to emit before controls equal to or greater than one hundred (100) tons per year, and

- (2) that is subject to an emission limit and has a control device that is necessary to meet that limit.

Therefore, the requirements of 40 CFR Part 64, Compliance Assurance Monitoring, are not applicable.

- (b) Storage tank 3900 is subject to the requirements of 40 CFR 60, Subpart Kb - Standards of Performance for Volatile Organic Liquid Storage Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After July 23, 1984 (326 IAC 12) because this tank

- (1) Has a storage capacity greater than 75 cubic meters (19,813 gallons);
- (2) Will be modified after July 23, 1984; and
- (3) Will be used to store a volatile organic liquid.

Therefore, this storage tank must be operated in compliance with the standards in 40 CFR 60.112b; testing requirements in 40 CFR 113b; the reporting and record keeping requirements in 40 CFR 115b; and the monitoring requirements in 40 CFR 60.116b. The applicable requirements for 40 CFR 60, Subpart Kb are shown in Section E.1 of the permit. Note that BP will comply with this subpart by installing an internal floating roof with a mechanical shoe primary seal.

The storage tank 3900 is subject to the following portions of Subpart Kb. Non-applicable portions of the NSPS will not be included in the permit.

- (1) 40 CFR 60.112b(a)(1)(i)
- (2) 40 CFR 60.112b(a)(1)(ii)(c)
- (3) 40 CFR 60.112b(a)(1)(iii) through (ix)
- (4) 40 CFR 60.113b(a)(1), (2), (4), and (5)
- (5) 40 CFR 60.115b(a)
- (6) 40 CFR 60.116b(a), (b), (c), (d), and (e)(1) and (e)(2).

The provisions of 40 CFR 60, Subpart A – General Provisions, which are incorporated as 326 IAC 12-1, apply to storage tank 3900, except when otherwise specified in 40 CFR 60, Subpart kb.

- (c) This modification is not subject to the requirements of 40 CFR 61, Subpart J (National Emission Standards for Equipment Leaks (Fugitive Emission Sources) of Benzene) (326 IAC 14) because this rule applies only to pressure relief devices, valves, flanges, and control systems that are in 'benzene service' (see 40 CFR 61.110 (Applicability and Designation of Sources). Equipment is 'in benzene service' when it '... either contains or contacts a fluid (Liquid or gas) that is at least 10 percent benzene by weight as determined according to the provisions of §61.245(d).' (see 40 CFR 61.111 (Definitions)).
- (d) This modification is subject to the New Source Performance Standard, 326 IAC 12, 40 CFR Part 60, Subpart GGG Standards of Performance for Equipment Leaks of VOC in Petroleum Refineries because it will be constructed and/or modified after the January 4, 1983 applicability date and is located at a petroleum refinery. Pursuant to 40 CFR 60.593, these units must be operated in compliance with 40 CFR 60, Subpart VV. The applicable requirements for 40 CFR 60, Subpart VV are included in Section E.2 of the draft permit.

The modification is subject to the following portions of 40 CFR 60, Subpart GGG. Non-applicable portions of the NSPS will not be included in the permit.

- (1) 40 CFR 60.592(a), (d) and (e).
- (2) 40 CFR 60.593(d).

This source is subject to the following portions of Subpart VV. Non applicable portions of the NSPS will not be included in the permit.

- (1) 40 CFR 60.481
- (2) 40 CFR 60.482-4
- (3) 40 CFR 60.482-7
- (4) 40 CFR 60.482-8
- (5) 40 CFR 60.482-9
- (6) 40 CFR 60.482-10
- (7) 40 CFR 60.485
- (8) 40 CFR 60.486
- (9) 40 CFR 60.487(a), (c)(1), (c)(2)(i), (c)(2)(ii), (c)(2)(vii), (c)(3)

The provisions of 40 CFR 60 Subpart A – General Provisions, which are incorporated as 326 IAC 12-1-1, apply to the facility described in this section except when otherwise specified in 40 CFR 60, Subpart GGG and 40 CFR 60 Subpart VV.

- (e) This source is subject to the requirements of 40 CFR Part 63, Subpart CC - National Emission Standards for Hazardous Air Pollutants from Petroleum Refineries because this refinery is a major source of hazardous air pollutants (HAPs).

Storage Tank Requirements: Storage tank 3900 is subject to the requirements of 40 CFR 63.646 (Storage Vessel Provisions). The requirements for storage tanks overlap with the NSPS requirements discussed in section (b) above. Storage tank 3900 is a Group 1 storage tank under 40 CFR 63, Subpart CC because it has a storage capacity greater than 46,758 gallons (177 cubic meters); is used to store a liquid with a maximum true vapor pressure of greater than or equal to 10.4 kPa and an annual average true vapor pressure of greater than or equal to 8.3 kPa; and has an annual average HAP liquid concentration greater than 4 percent by weight total organic HAP. Since storage tank 3900 is also subject to the requirements of 40 CFR 60, Subpart Kb and is part of an existing source, this storage tank must comply with the requirements in 40 CFR 60, Subpart Kb, except as provided in 40 CFR 63.640(n)(8) (see 40 CFR 63.640(n)(1)). (See Section (b) for a list of applicable requirements under 40 CFR 60, Subpart Kb.)

Equipment Leaks : The equipment leak provisions in 40 CFR 63.648 (Equipment Leak Standards) apply to the pumps, compressors, pressure relief devices, sampling connection systems, open-ended valves or lines, valves, or instrumentation systems in this modification because they are “in organic hazardous air pollutant service” (i.e., equipment that contains or contacts fluid with equal to or greater than 5% by weight total organic HAP). These units must comply with the requirements of 40 CFR 60, Subpart VV, which are listed in Section E.2 of the draft permit. (See Section (d) above for a list of applicable requirements under 40 CFR 60, Subpart VV.)

This modification is subject to the following portions of 40 CFR 63, Subpart CC. Portions of 40 CFR 63, Subpart CC not applicable to this modification will not be included in the Minor Source Modification Permit.

- (1) 40 CFR 63.640(n)(1) and (n)(8)
- (2) 40 CFR 63.648(a), (b), and (h)

The provisions of 40 CFR Part 63, Subpart A – General Provisions, which are incorporated as 326 IAC 20-1, apply to this modification except when otherwise specified in 40 CFR Part 63, Subpart CC.

- (f) This modification is not subject to the provisions of 40 CFR Part 61, Subpart FF - National Emission Standard for Benzene Waste Operations (326 IAC 14), because the storage tank 3900 will not be connected to the process sewer (drain systems).

State Rule Applicability – Entire Source

326 IAC 5-1 (Opacity Limitations)

This source is located in the portion of Lake County described in 326 IAC 5-1-1(c)(4); therefore, the opacity shall be limited by 326 IAC 5-1-2(2).

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 the 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 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

326 IAC 2-2 (Prevention of Significant Deterioration) and 326 IAC 2-3 (Emission Offset)

As a chemical plant and refinery, this plant belongs to one of the twenty-eight listed categories and is a major source under both 326 IAC 2-2 and 326 IAC 2-3. Lake County has been designated as nonattainment for PM2.5 and the 1-hour and 8-hour ozone standards. Lake County has been designated as severe nonattainment for the 1-hour ozone standard.

This modification to storage tank 3900 and the associated pipes will result in a small increase in VOC emissions (less than 1 ton per year). No increases in sulfur dioxide, nitrogen oxides, PM, PM10, carbon monoxide, or lead will result from this modification.

Because this source is located in an area that has been designated as severe nonattainment for the 1-hour ozone standard, the net increase in VOC emissions over a five consecutive year period immediately preceding the modification must be evaluated to determine the applicability of 326 IAC 2-3 (see 326 IAC 2-3-2(b)(1) and 326 IAC 2-3-1(q)).

Contemporaneous Increases in VOC Between July 1999 and July 2005:

Modification	Date	Increase in VOC (tons/yr)
TK3604 Conversion	8/23/2000	0.3
TK6127	9/30/2000	0.1
3SPS Steam Sharing	5/11/2001	0.0
SRU: SBS Tail Gas Unit	6/27/2001	3.6
VRU 300: Tower T-391	7/18/2001	0.2
Soil Remediation: IC Engines	9/13/2001	4.0
CFHU: Furnace F-801C	11/30/2001	2.1
Sulfur Pits Project	4/15/2002	0.0
Fuel Oil Elimination/NSPS Subpart J	4/24/2002	0.0
FCU-600: SCR Project	10/18/2002	0.0
3SPS: NOx Controls	1/30/2003	0.0
DDU: Incorporate Amendment	5/14/2003	0.0
FBI: Wet ESP and Carbon Bed	5/27/2003	0.0
DDU: Debottlenecking Project	9/10/2003	1.1
CRU Conversion Project	11/17/2003	2.2
4UF and FCU-500: MACT II Compliance	7/15/2004	0.0
ULSD Project	10/20/2004	8.5
Storage Tank 3900 Modifications	Planned for Sept. 2005	0.75
Total		22.85
Emission Offset de minimis Threshold		25

Since the increase in VOC emissions is less than the de minimis level, this modification is not subject to the requirements of 326 IAC 2-3 or 326 IAC 2-2.

State Rule Applicability – Individual Facilities

326 IAC 8-4-3 (Petroleum Liquid Storage Facilities)

Storage tank 3900 is subject to the requirements of 326 IAC 8-4-3 (Petroleum Liquid Storage Facilities) because this tank will be used to store petroleum liquids with a true vapor pressure of greater than 1.52 psi, has a storage capacity of greater than 39,000 gallons, and is located in Lake County. The following conditions have been included in the permit:

Pursuant to 326 IAC 8-4-3(b), the Permittee shall not permit the use of an affected fixed roof tank unless:

- (1) The tank has been retrofitted with an internal floating roof equipped with a closure seal, or seals, to close the space between the roof edge and tank wall unless the source has been retrofitted with equally effective alternate control which has been approved,
- (2) The facility is maintained such that there are no visible holes, tears or other opening in the seal or any seal fabric or materials,
- (3) All openings, except stub drains, are equipped with covers, lids or seals such that:
 - (A) The cover, lid or seal is in the closed position at all times except when in actual use;
 - (B) Automatic bleeder vents are closed at all times except when in actual use;
 - (C) Rim vents, if provided, are set to open when the roof is being floated off the roof leg supports or at the manufacturer's recommended setting.

Pursuant to 326 IAC 8-4-3(d), the Permittee shall maintain records of the types of volatile petroleum liquid stored, the maximum true vapor pressure of the liquid as stored, and the results of the inspections performed on the storage vessel. Such records shall be maintained for a period of two years and shall be made available to the Commissioner upon written request.

326 IAC 8-4-8 (Leaks From Petroleum Refineries)

The storage tank and associated piping are subject to the requirements of 326 IAC 8-4-8 (Leaks From Petroleum Refineries; Monitoring, Reports) because these facilities are part of a petroleum refinery that is located in Lake County. This rule requires the source to develop and conduct a monitoring program that meets the guidelines in 326 IAC 8-4-8(c) through (m). BP will comply with this rule by following the requirements set forth in the monitoring program outlined in Appendix A of this minor source modification permit.

326 IAC 8-9 (Volatile Organic Liquid Storage Vessels)

Storage tank 3900 is not subject to the requirements of 326 IAC 8-9 because this storage tank is subject to 40 CFR 60, Subpart Kb. Storage tanks subject to the provisions of 40 CFR 60, Subpart Kb are exempt from 326 IAC 8-9 by 326 IAC 8-9-2(8).

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

Storage tank 3900 and the associated piping modifications are not subject to the requirements of the 326 IAC 8-1-6 because these facilities are subject to other Article 8 requirements.

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

Storage tank 3900 and the associated piping modifications are not subject to the requirements of 326 IAC 2-4.1 because these facilities are regulated by National Emission Standards for Hazardous Air Pollutants issued pursuant to Section 112(d) of the Clean Air Act.

Compliance Requirements

Permits issued under 326 IAC 2-7 are required to ensure that sources can demonstrate compliance with applicable state and federal rules on a more or less continuous basis. All state and federal rules contain compliance provisions, however, these provisions do not always fulfill

the requirement for a more or less continuous demonstration. When this occurs IDEM, OAQ, in conjunction with the source, must develop specific conditions to satisfy 326 IAC 2-7-5. As a result, compliance requirements are divided into two sections: Compliance Determination Requirements and Compliance Monitoring Requirements.

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

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

1. The storage tank and associated pipes have applicable compliance monitoring conditions as specified in the following federal rules:
 - (a) 40 CFR 60, Subpart Kb: Comply with the monitoring and testing provisions in 40 CFR 60.113b and 60.116b(e);
 - (b) 40 CFR 60, Subpart GGG and 40 CFR 63, Subpart CC: Comply with the monitoring and testing requirements in 40 CFR 60, Subpart VV;
 - (c) 40 CFR 61, Subpart FF: Comply with the monitoring requirements 40 CFR 61.343, 61.351, and 61.346(b).

Conclusion

The construction of this proposed modification shall be subject to the conditions of the attached proposed Part 70 Minor Source Modification No. 089-21591-00453.

APPENDIX A

**(VOC Emissions from Storage Tank 3900 and
Fugitive Components)**

FUGITIVE VOC EMISSIONS ESTIMATION
Storage Tank 3900 Modification Project

Component Type	Service	Counts *	%VOC	Leak Fraction (a) (%)	Leak Emission Factor (b) (kg/hr/s)	No-Leak Emission Factor (b) (kg/hr/s)	Emission Rate Without Credit (c) (tons/yr)	Emission Rate With Credit (tons/yr) (d)
Valves	Gas	0	100	1%	0.2626	0.0006	0.00	0.00
	Gas	0	65	1%	0.2626	0.0006	0.00	0.00
	Gas	0	33	1%	0.2626	0.0006	0.00	0.00
Total Gas Valve Emissions							0.00	0.00
	Light Liquid	25	100	1%	0.0852	0.0017	0.88	0.04
	Light Liquid	0	50	1%	0.0852	0.0017	0.00	0.00
Total Light Liquid Valve Emissions							0.88	0.04
	Heavy Liquid	0	100	1%	0.00023	0.00023	0.00	0.00
	Heavy Liquid	0	40	1%	0.00023	0.00023	0.00	0.00
	Heavy Liquid	0	20	1%	0.00023	0.00023	0.00	0.00
Total Heavy Liquid Valve Emissions							0.00	0.00
Flanges	Gas	0	100	1%	0.0375	0.00006	0.00	0.00
	Gas	0	65	1%	0.0375	0.00006	0.00	0.00
	Gas	0	33	1%	0.0375	0.00006	0.00	0.00
Total Gas Flange Emissions							0.00	0.00
	Light Liquid	54	100	1%	0.0375	0.00006	0.23	0.23
	Light Liquid	0	50	1%	0.0375	0.00006	0.00	0.00
Total Light Liquid Flange Emissions							0.23	0.23
	Heavy Liquid	0	100	1%	0.0375	0.00006	0.00	0.00
	Heavy Liquid	0	40	1%	0.0375	0.00006	0.00	0.00
	Heavy Liquid	0	20	1%	0.0375	0.00006	0.00	0.00
Total Heavy Liquid Flange Emissions							0.00	0.00
Pumps	Light Liquid	0	100	1%	0.437	0.012	0.00	0.00
	Light Liquid	0	50	1%	0.437	0.012	0.00	0.00
Total Light Liquid Pump Emissions							0.00	0.00
	Heavy Liquid	0	100	1%	0.3885	0.0135	0.00	0.00
	Heavy Liquid	0	40	1%	0.3885	0.0135	0.00	0.00
	Heavy Liquid	0	20	1%	0.3885	0.0135	0.00	0.00
Total Heavy Liquid Pump Emissions							0.00	0.00
Compressor	Gas	0	33	0.1%	1.608	0.0894	0.00	0.00
Pressure Relief Valves (e)	Gas	0	100	1%	1.691	0.0447	0.00	0.00
TOTAL							1.11	0.00

FUGITIVE VOC EMISSIONS ESTIMATION
Storage Tank 3900 Modification Project

NOTES:

- (a) Reference: estimated from overall refinery leak rates for 1999 and 2000 except for flanges and heavy liquid pumps and valves. Leak rate for these components is estimated.
- (b) Reference: USEPA, 1995, Table 2-6, units are in kilogram per hour per source.
- (c) Based on a leak definition of 10,000 ppmv.
- (d) Includes a 95% credit for gas and light liquid valves monitored at 500 ppmv.
- (e) All Pressure Relief Valves vent to a control device, therefore, 100% control is applied in the final emission totals.

SAMPLE CALCULATIONS:

(1) Valves in light liquid service without credit = (No. of valves x ((%VOC) x (Leak % / 100) x (Leak Factor, kg/hr/s x 8,760 hrs/yr)) + ((%VOC) x (1 - Leak %) / 100) x (No-Leak Factor, kg/hr/s x 8,760 hrs/yr))) x 2.2 lb/kg / 2,000 lb/ton
 = 384 x (((0.33) x (1 / 100) x 0.2626 kg/hr/s x 8,760 hr/yr)) + ((0.33) x (1 - 1/100) x (0.0006 kg/hr/s x 8760 hr/yr))) x 2.2 lb/kg / 2,000 lb/ton
 = 0.88 tons/yr

(2) Valves in light liquid service with credit = 0.88 tons/yr x 0.05
 = 0.04 tons/yr

TANKS 4.0

Emissions Report - Detail Format

Tank Identification and Physical Characteristics

Identification
 User Identification: TK 3900
 City: Whiting
 State: IN
 Company: BP
 Type of Tank: Internal Floating Roof Tank
 Description: Crude RV Relief Tank

Tank Dimensions
 Diameter (ft): 90.00
 Volume (gallons): 1,906,000.00
 Turnovers: 0.53
 Self Supp. Roof? (y/n): Y
 No. of Columns: 0.00
 Eff. Col. Diam. (ft): 0.00

Paint Characteristics
 Internal Shell Condition: Light Rust
 Shell Color/Shade: White/White
 Shell Condition: Good
 Roof Color/Shade: White/White
 Roof Condition: Good

Rim-Seal System
 Primary Seal: Mechanical Shoe
 Secondary Seal: Shoe-mounted

Deck Characteristics
 Deck Fitting Category: Detail
 Deck Type: Welded

Deck Fitting/Status	Quantity
Access Hatch (24-in. Diam./Bolted Cover, Gasketed	1
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1
Roof Leg or Hanger Well/Adjustable	22
Gauge-Hatch/Sample Well (8-in. Diam./Weighted Mech. Actuation, Gask.	2
Vacuum Breaker (10-in. Diam./Weighted Mech. Actuation, Gask.	2
Roof Drain (3-in. Diameter)/Open	1

Meteorological Data used in Emissions Calculations: Chicago, Illinois (Avg Atmospheric Pressure = 14.38 psia)

TANKS 4.0
Emissions Report - Detail Format
Liquid Contents of Storage Tank

Mixture/Component	Month	Daily Liquid Surf Temperatures (deg F)	Liquid Bulk Temp. (deg F)	Vapor Pressures (psia)	Vapor Mol. Weight	Liquid Mass Fract.	Vapor Mass Fract.	Mol. Weight	Basis for Vapor Pressure Calculations
		Avg. Min. Max.		Avg. Min. Max.					
Crude oil (RVP 10)	All	50.66 45.76 55.55	49.02	6.3686 N/A N/A	50.0000			207.00	Option 4: RVP=10

TANKS 4.0

Emissions Report - Detail Format

Detail Calculations (AP-42)

Annual Emission Calculations	
Rim Seal Losses (lb):	418.0454
Seal Factor A (lb-mole/ft-yr):	1.6000
Seal Factor B (lb-mole/ft-yr (mph) ^{1.75}):	0.3000
Value of Vapor Pressure Function:	0.1452
Vapor Pressure at Daily Average Liquid Surface Temperature (psia):	6.3686
Tank Diameter (ft):	90.0000
Vapor Molecular Weight (lb/lb-mole):	50.0000
Product Factor:	0.4000
Withdrawal Losses (lb):	10.7125
Number of Columns:	0.0000
Effective Column Diameter (ft):	0.0000
Annual Net Throughput (gal/yr.):	1,008,000.000
Shell Clingage Factor (bb/1000 sqft):	0.0050
Average Organic Liquid Density (lb/gal):	7.1000
Tank Diameter (ft):	90.0000
Deck Fitting Losses (lb):	564.7691
Value of Vapor Pressure Function:	0.1452
Vapor Molecular Weight (lb/lb-mole):	50.0000
Product Factor:	0.4000
Tot. Roof Fitting Loss Fact. (lb-mole/yr):	194.5400
Deck Seam Losses (lb):	0.0000
Deck Seam Length (ft):	1,081.4900
Deck Seam Loss per Unit Length Factor (lb-mole/ft-yr):	0.0000
Deck Seam Length Factor (ft/sqft):	0.0000
Tank Diameter (ft):	90.0000
Vapor Molecular Weight (lb/lb-mole):	50.0000
Product Factor:	0.4000

	Quantity	KFa (lb-mole/yr)	Deck Fitting Loss Factors KFb (lb-mole/(yr mph ^{1.75}))	m	Losses (lb.)
Deck Fitting/Status					
Access Hatch (24-in. Diam.)/Bolted Cover, Gasketed	1	1.60	0.00	0.00	4.6450
Automatic Gauge Float Well/Unbolted Cover, Gasketed	1	4.30	17.00	0.38	12.4633
Roof Leg or Hanger Well/Adjustable	22	7.90	0.00	0.00	504.5568
Gauge-Hatch/Sample Well (8-in. Diam.)/Weighted Mech. Actuation, Gask.	2	0.47	0.02	0.97	2.7289
Vacuum Breaker (10-in. Diam.)/Weighted Mech. Actuation, Gask.	2	6.20	1.20	0.94	35.9984
Roof Drain (3-in. Diameter)/Open	1	1.50	0.21	1.70	4.3547

Total Losses (lb): 993.5280

TANKS 4.0
Emissions Report - Detail Format
Individual Tank Emission Totals

Annual Emissions Report

Components	Losses(lbs)			Total Emissions
	Rim Seal Loss	Withdrawal Loss	Deck Fitting Loss	
Crude oil (RVP 10)	418.05	10.71	564.77	993.53
			Deck Seam Loss	0.00