

Ms. R.J. Mahoney
Indiana Energy, Inc.
8399 Zionsville Road
Indianapolis, IN 46268

Re: 105-11259-00017
First Significant Revision to
FESOP 105-6133-00017

Dear Ms. Mahoney:

Indiana Gas Company was issued a permit on December 13, 1996 for a natural gas storage facility. A letter requesting changes to this permit was received on August 12, 1999. Pursuant to the provisions of 326 IAC 2-8-11.1 a significant permit revision to this permit is hereby approved as described in the attached Technical Support Document.

The modification consists of adding an amine desulfurization process, including two amine contact tanks, two reboilers and a flare, additional glycol dewatering facilities, including one glycol contact tank, one reboiler and a flare, and a change in the calculated NOx emissions from the existing compressor engines which will change the testing requirements and maximum throughput allowed for the engines.

The following construction conditions are applicable to the proposed project:

1. General Construction Conditions
The data and information supplied with the application shall be considered part of this source modification approval. Prior to any proposed change in construction which may affect the potential to emit (PTE) of the proposed project, the change must be approved by the Office of Air Management (OAM).
2. This approval to construct does not relieve the permittee of the responsibility to comply with the provisions of the Indiana Environmental Management Law (IC 13-11 through 13-20; 13-22 through 13-25; and 13-30), the Air Pollution Control Law (IC 13-17) and the rules promulgated thereunder, as well as other applicable local, state, and federal requirements.
3. Effective Date of the Permit
Pursuant to IC 13-15-5-3, this approval becomes effective upon its issuance.
4. Pursuant to 326 IAC 2-1.1-9 (Revocation), the Commissioner may revoke this approval if construction is not commenced within eighteen (18) months after receipt of this approval or if construction is suspended for a continuous period of one (1) year or more.
5. All requirements and conditions of this construction approval shall remain in effect unless modified in a manner consistent with procedures established pursuant to 326 IAC 2.
6. NSPS Reporting Requirement
That pursuant to the New Source Performance Standards (NSPS), Part 60.7, Subpart A, the source owner/operator 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) Anticipated start-up date (not more than 60 days or less than 30 days prior to such date);
- (c) Actual start-up date (within 15 days after such date); and
- (d) 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 Data Section, Office of Air Management
100 North Senate Avenue, P. O. Box 6015
Indianapolis, IN 46206-6015

The application and enforcement of these standards have been delegated to the IDEM-OAM. The requirements of 40 CFR Part 60 are also federally enforceable.

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

This decision is subject to the Indiana Administrative Orders and Procedures Act - IC 4-21.5-3-5. If you have any questions on this matter, please contact Bryan Sheets, OAM, 100 North Senate Avenue, P.O. Box 6015, Indianapolis, Indiana, 46206-6015, or call at (800) 451-6027, press 0 and ask for Bryan Sheets or extension (3-0431), or dial (317) 233-0431.

Sincerely,

Paul Dubenetzky, Chief
Permits Branch
Office of Air Management

Attachments

bjs

cc: File - Monroe County
U.S. EPA, Region V
Monroe County Health Department
Air Compliance Section Inspector - Joe Foyst
Compliance Data Section - Karen Nowak
Administrative and Development - Janet Mobley
Technical Support and Modeling - Michele Boner

**FEDERALLY ENFORCEABLE STATE
OPERATING PERMIT (FESOP)
OFFICE OF AIR MANAGEMENT**

**Indiana Gas Company, Inc. - Dolan Storage Field
3592 East Boltinghouse Road
Bloomington, Indiana 47408**

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

This permit is issued in accordance with 326 IAC 2 and 40 CFR Part 70 and contains the conditions and provisions specified in 326 IAC 2-8 and 40 CFR Part 70.6 as required by 42 U.S.C. 7401, et. seq. (Clean Air Act as amended by the 1990 Clean Air Act Amendments) and IC 13-15 and IC 13-17 (prior to July 1, 1996, IC 13-1-1-4 and IC 13-7-10).

Operation Permit No.: F105-6133-00017	
Original issued by Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date: December 13, 1996
First Significant Permit Revision: 105-11259	Pages Affected: 3, 4, 5, 21, 22, 22A and 26
Issued by: Paul Dubenetzky, Branch Chief Office of Air Management	Issuance Date:

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SECTION A

SOURCE SUMMARY

A.1 General Information

The Permittee owns and operates an natural gas desulfurization and storage facility.

Responsible Official: R.J. Mahoney
Source Address: 3592 East Boltinghouse Road, Bloomington, Indiana 47408
Mailing Address: 8399 Zionsville Road, Indianapolis, Indiana 46248
SIC Code: 4924
County Location: Monroe
County Status: Attainment for all criteria pollutants
Source Status: Synthetic Minor Source, FESOP Program

A.2 Emission Units and Pollution Control Summary

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

- a) One (1) 1100 brake horsepower 4 cycle natural gas-fired reciprocating internal combustion engine, with natural gas compressor, known as CE-1.
- b) One (1) 2000 brake horsepower 4 cycle natural gas-fired internal combustion engine, with intercooler, with prechambered cylinder head, with natural gas compressor, known as CE-2.
- c) The natural gas desulfurization process, consisting of:
 - 1) Two (2) amine contact towers, enclosed, with H₂S emissions from the natural gas routed to the flare.
 - 2) Two (2) natural gas-fired reboilers, identified as FCU-4 and FCU-5, each with a heat input capacity of 2.5 million Btu per hour, and exhausting to Stack IDs FCU-4 and FCU-5.
 - 3) One (1) natural gas-fired flare, identified as IF-4, with a heat input capacity of 0.25 million Btu per hour, and exhausting directly to the atmosphere.

A.3 Insignificant Activities

This stationary source also includes the following insignificant activities, as defined in 326 IAC 2-7-1(20):

- a) Space heaters, process heaters, or boilers using the following fuels: Natural gas-fired combustion sources with heat input equal to or less than ten million (10,000,000) British thermal units per hour. This includes the three (3) natural gas-fired reboilers used for the glycol dewatering system, identified as FCU-1, FCU-2 and FCU-3, with heat input capacities of 0.325, 0.75 and 0.375 MMBtu per hour, respectively.
- b) Combustion source flame safety purging on startup.
- c) The following VOC and HAP storage containers: Storage tanks with capacity less than or equal to 1,000 gallons and annual throughputs less than 12,000 gallons.
- d) The following VOC and HAP storage containers: Vessels storing lubricating oil, hydraulic oils, machining oils, and machining fluids.
- e) Application of oils, greases, lubricants or other nonvolatile materials applied as temporary protective coatings.

- f) Closed loop heating and cooling systems.
- g) Heat exchanger cleaning and repair.
- h) Process vessel degreasing and cleaning to prepare for internal repairs.
- i) Equipment used to collect any material that might be released during a malfunction, process upset, or spill cleanup, including catch tanks, temporary liquid separators, tanks, and fluid handling equipment.
- j) Blowdown for any of the following: sight glass; boiler; compressors; pumps; and cooling tower.
- k) Emergency generators as follows: Gasoline generators not exceeding 110 horsepower.
- l) Purge double block and bleed valves.
- m) Filter or coalescer media changeout.
- n) Although fugitive emissions are not used to determine status (unless the source falls into the 26 source categories - which this does not), there are numerous valves and flanges at this site.
- o) Three (3) natural gas-fired flares used for the glycol dewatering system, identified as IF-1, IF-2 and IF-3, with heat input capacities of 0.325, 0.75 and 0.1 MMBtu per hour, respectively.

A.4 FESOP Applicability [326 IAC 2-8-2]

This stationary source, otherwise required to have a Part 70 permit as described in 326 IAC 2-7-2(a), has applied to Indiana Department of Environmental Management (IDEM), Office of Air Management (OAM) for a Federally Enforceable State Operating Permit (FESOP).

SECTION D.1 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-8-4(10)]

- a) One (1) 1100 brake horsepower 4 cycle natural gas-fired reciprocating internal combustion engine, with natural gas compressor, known as CE-1.
- b) One (1) 2000 brake horsepower 4 cycle natural gas-fired internal combustion engine, with intercooler, with prechambered cylinder head, with natural gas compressor, known as CE-2.

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

D.1.1 Nitrogen Oxides (NO_x)

The total combined natural gas delivered to the two (2) engines (CE-1 and CE-2) for combustion shall not exceed 62.0 million cubic feet (MMCF) per twelve (12) consecutive month period. This is equivalent to limiting NO_x emissions to 91.7 tons per year. Therefore, the requirements of 326 IAC 2-7 do not apply. This limitation will also satisfy the requirement to limit all other regulated pollutants below the Title V permitting threshold.

D.1.2 Natural Gas Fuel

Pursuant to Registration CP 05-2923, ID 105-00017, issued on August 9, 1993, the two (2) engines (CE-1 and CE-2) shall use only natural gas as fuel.

D.1.3 Preventive Maintenance Plan

A Preventive Maintenance Plan (PMP), in accordance with Condition B.13 of this permit, is required for these facilities.

Compliance Determination Requirements [326 IAC 2-8-4(3)]

D.1.4 Testing Requirements

Testing of this facility is not required by this permit. However, if testing is required, compliance with the NO_x limit specified in Condition D.1.1 shall be determined by a performance test conducted in accordance with Section C - Performance Testing. This does not preclude testing requirements on this facility under 326 IAC 2-8-4 and 326 IAC 2-8-5.

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

D.1.5 Record Keeping Requirements

To document compliance with Condition D.1.1, the Permittee shall maintain records in accordance with (1) through (3) below.

- (1) Calendar dates covered in the compliance determination period;
- (2) Actual natural gas usage since last compliance determination period;
- (3) Until natural gas fuel flow meters are installed, the actual hours of operation of the two (2) engines may be used to calculate natural gas usage assuming the engines are operating at full load during each hour of operation.

D.1.5 Reporting Requirements

A quarterly summary to document compliance with Condition D.1.1 shall be submitted to the address listed in Condition C.14 (General Reporting Requirements), using the enclosed forms or their equivalent, within thirty (30) days after the end of the quarter being reported.

SECTION D.2 FACILITY OPERATION CONDITIONS

Facility Description [326 IAC 2-8-4(10)]

- c) The natural gas desulfurization process, consisting of:
- 1) Two (2) amine contact towers, enclosed, with H₂S emissions from the natural gas routed to the flare.
 - 2) Two (2) natural gas-fired reboilers, identified as FCU-4 and FCU-5, each with a heat input capacity of 2.5 million Btu per hour, and exhausting to Stack IDs FCU-4 and FCU-5.
 - 3) One (1) natural gas-fired flare, identified as IF-4, with a heat input capacity of 0.25 million Btu per hour, and exhausting directly to the atmosphere.

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

D.2.1 Sulfur Dioxide (SO₂)

The total combined throughput of natural gas desulfurized in the two (2) amine contact towers shall not exceed 4,575 million cubic feet per twelve (12) consecutive month period. Therefore, the requirements of 326 IAC 2-7 (Title V) and 326 IAC 2-2 (Prevention of Significant Deterioration) will not apply.

D.2.2 General Provisions Relating to NSPS [326 IAC 12-1][40 CFR Part 60, Subpart A]

The provisions of 40 CFR Part 60, Subpart A - General Provisions, which are incorporated by reference in 326 IAC 12-1, apply to the facility described in this section except when otherwise specified in 40 CFR Part 60, Subpart LLL.

D.2.3 New Source Performance Standard (NSPS) for Onshore Natural Gas Processing [40 CFR 60, Subpart LLL]

The design capacity of the amine contact towers shall be less than 2 long tons per day (LT/D) of hydrogen sulfide (H₂S) in the acid gas (expressed as sulfur). Therefore, the requirements of 40 CFR 60.642 through 60.646 do not apply.

D.2.4 Preventive Maintenance Plan

A Preventive Maintenance Plan (PMP), in accordance with Condition B.13 of this permit, is required for these facilities.

Compliance Determination Requirements [326 IAC 2-8-4(3)]

D.2.5 Testing Requirements

Testing of these facilities is not required by this permit. However, if testing is required, compliance shall be determined by a performance test conducted in accordance with Section C - Performance Testing. This does not preclude testing requirements on this facility under 326 IAC 2-8-4 and 326 IAC 2-8-5.

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

D.2.6 Record Keeping Requirements

- (a) To document compliance with Condition D.2.1, the Permittee shall maintain records in accordance with (1) and (2) below.

- (1) Calendar dates covered in the compliance determination period; and
 - (2) Actual natural gas processed per month in the amine contact towers since last compliance determination period.
- (b) To document compliance with Condition D.2.3 and 40 CFR 60.647, the Permittee shall keep, for the life of the facility, an analysis demonstrating that the facility's design capacity is less than 2 LT/D of H₂S expressed as sulfur.

D.2.7 Reporting Requirements

A summary to document compliance with Condition D.2.1 shall be submitted to the address listed in Condition C.14 (General Reporting Requirements) upon request.

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

FESOP Monthly Report

Source Name: Indiana Gas Company, Inc., Dolan Storage Field
Source Address: 3592 East Boltinghouse Road, Bloomington, Indiana 47408
FESOP No.: F105-6133-00017
Facility: Two (2) natural gas-fired reciprocating internal combustion engines, CE-1 and CE-2
Parameter: Nitrogen Oxides
Limit: Combined natural gas throughput of 62.0 million cubic feet (MMCF) per twelve (12) consecutive month period (equivalent to 91.7 tons NOx per year)

Year: _____

Month	Natural Gas Usage This Month (MMCF)	Natural Gas Usage 12 Month Period (MMCF)

- 9 No deviation occurred in this quarter.
- 9 Deviation/s occurred in this quarter.
Deviation has been reported on: _____

Submitted by: _____

Title/Position: _____

Signature: _____

Date: _____

Indiana Department of Environmental Management Office of Air Management

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

**Indiana Gas Company, Inc. - Dolan Storage Field
3592 East Boltinghouse Road
Bloomington, Indiana 47408**

Revision No.: 105-11259, Plt ID: 105-00017

On September 14, 1999, the Office of Air Management (OAM) had a notice published in The Herald Times, Bloomington, Indiana, stating that Indiana Gas Company had applied for a Significant Revision to a Federally Enforceable State Operating Permit (FESOP) to construct and operate a natural gas desulfurization process. The notice also stated that OAM proposed to issue an approval for this operation and provided information on how the public could review the proposed revision approval and other documentation. Finally, the notice informed interested parties that there was a period of thirty (30) days to provide comments on whether or not this approval should be issued as proposed.

Upon further review, IDEM, OAM has determined that the New Source Performance Standard for Onshore Natural Gas Processing, 40 CFR 60, Subpart LLL, applies to the desulfurization ("sweetening") process because it is an affected facility as defined by the rule and will be constructed after the applicability date of January 20, 1984.

Pursuant to 40 CFR 60.640, facilities that have a design capacity less than 2 long tons per day (LT/D) of hydrogen sulfide (H₂S) in the acid gas (expressed as sulfur) are required to comply with 40 CFR 60.647(c) but are not required to comply with 40 CFR 60.642 through 60.646. IDEM, OAM has determined that Indiana Gas' desulfurization process has a design capacity less than 2 LT/D by the following equation:

$$\frac{400 \text{ cu ft H}_2\text{S}}{1,000,000 \text{ cu ft NG}} \times \frac{0.0911 \text{ lb H}_2\text{S}}{\text{cu ft H}_2\text{S}} \times \frac{90 \text{ mmcf NG}}{\text{day}} \times \frac{\text{ton (short)}}{2000 \text{ lbs}} \times \frac{\text{ton (long)}}{1.12 \text{ tons (short)}} = 1.46 \text{ LT/D}$$

Therefore, the record keeping requirements of 40 CFR 60.647(c) is the only portion of the NSPS that applies to Indiana Gas' desulfurization process. The following language will be added to the permit to assure compliance with the NSPS requirements.

D.2.2 General Provisions Relating to NSPS [326 IAC 12-1][40 CFR Part 60, Subpart A]

The provisions of 40 CFR Part 60, Subpart A - General Provisions, which are incorporated by reference in 326 IAC 12-1, apply to the facility described in this section except when otherwise specified in 40 CFR Part 60, Subpart LLL.

D.2.3 New Source Performance Standard (NSPS) for Onshore Natural Gas Processing [40 CFR 60, Subpart LLL]

The design capacity of the amine contact towers shall be less than 2 long tons per day (LT/D) of hydrogen sulfide (H₂S) in the acid gas (expressed as sulfur). Therefore, the requirements of 40 CFR 60.642 through 60.646 do not apply.

In addition, the record keeping requirements of Condition D.2.4 (renumbered to D.2.6) will be revised to include part (b) which contains the NSPS record keeping requirements as follows:

- (b) To document compliance with Condition D.2.3 and 40 CFR 60.647, the Permittee shall keep, for the life of the facility, an analysis demonstrating that the facility's design capacity is less than 2 LT/D of H₂S expressed as sulfur.

Indiana Department of Environmental Management Office of Air Management

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

Source Background and Description

Source Name: Indiana Gas Company, Inc., Dolan Storage Field
Source Location: 3592 East Boltinghouse Road, Bloomington, Indiana 47408
County: Monroe
SIC Code: 4924
Operation Permit No.: F105-6133-00017
FESOP Issuance Date: December 13, 1996
Permit Revision No.: 105-11259-00017
Permit Reviewer: Bryan Sheets

The Office of Air Management (OAM) has reviewed a revision application from Indiana Gas Company, Inc. relating to the construction and operation of a new desulfurization process, as well as changes to the emission factors used for the existing compressors which would preclude the requirement to perform stack testing.

History

On December 13, 1996, Indiana Gas Company, Inc. (Indiana Gas) received a FESOP to operate the existing natural gas storage facility and prime mover engines.

Indiana Gas proposes to operate a desulfurization ("sweetening") process which will remove H₂S from the natural gas. This process involves contacting the natural gas with an amine solution in a contact tower. The H₂S gas removed from the natural gas is routed to a natural gas-fired flare where it is oxidized to form SO₂. The used amine solution in the contact tower is regenerated by routing it to a reactivator tank, where it is heated by a reboiler. This process consists of the following new emissions units:

- (a) Two (2) amine contact towers, enclosed, with H₂S emissions from the natural gas routed to the flare.
- (b) Two (2) natural gas-fired reboilers, identified as FCU-4 and FCU-5, each with a heat input capacity of 2.5 million Btu per hour, and exhausting to Stack IDs FCU-4 and FCU-5.
- (c) One (1) natural gas-fired flare, identified as IF-4, with a heat input capacity of 0.25 million Btu per hour, and exhausting directly to the atmosphere.

In addition to the new sweetening process, Indiana Gas proposes to add a glycol contact tower, used to remove water from the natural gas. This process is similar to the sweetening process, where the natural gas is contacted by triethylene glycol to remove the water. The water and trace amounts of triethylene glycol is routed to a natural gas-fired flare where it is incinerated. The glycol solution used in the contact tower is regenerated by routing it to a reactivator tank, where it is heated by a reboiler. The new equipment consists of the following emissions units:

- (d) One (1) glycol contact tower, enclosed, with steam and trace amounts of triethylene glycol routed to the flare.
- (e) One (1) natural gas-fired reboiler, identified as FCU-3, with a heat input capacity of 0.375 million Btu per hour, and exhausting to Stack ID FCU-3.

- (f) One (1) natural gas-fired flare, identified as IF-3, with a heat input capacity of 0.10 million Btu per hour, and exhausting directly to the atmosphere.

The remaining revision request deals with a change to the original permitting. It was Indiana Gas' intention to use manufacturer's emission factors to determine potential emissions for one of the compressor engines. Therefore, a natural gas usage limit for the one engine was based on the manufacturer's emission factor with a requirement to verify the emission factor by a stack test. After issuance of the permit, Indiana Gas met with representatives of IDEM to discuss these requirements. It was determined that a stack test would not be required if Indiana Gas was willing to accept a natural gas usage limit based on the AP-42 emission factors. After this discussion a source inspection was performed and a warning letter was issued to Indiana Gas due to the fact that a stack test had not been performed. On March 23, 1998 Indiana Gas submitted a request to resolve this situation by amending the permit. This modification is the result of that request.

Existing Approvals

The source was issued a Federally Enforceable State Operating Permit F 105-6133-00017 on December 13, 1996.

Enforcement Issue

There are no enforcement actions pending.

Stack Summary for New Equipment

Stack ID	Operation	Height (feet)	Diameter (feet)	Flow Rate (acfm)	Temperature (°F)
FCU-3	Amine Reboiler	14	0.67	1000	NA
FCU-4	Amine Reboiler	26.5	1.67	1000	NA
FCU-5	Glycol Reboiler	26.5	1.67	1000	NA
IF-3	Amine Flare	18	1	1100	NA
IF-4	Glycol Flare	50	0.25	1100	NA

Recommendation

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

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

An application for the purposes of this review was received on August 12, 1999.

Emission Calculations

See Appendix A of this document for detailed emissions calculations of the new equipment as well as those for the entire source.

Potential To Emit

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.”

For new equipment:

Pollutant	Potential To Emit (tons/year)
PM	0.19
PM-10	0.19
SO ₂	89.5
VOC	0.14
CO	2.07
NO _x	2.46

Note: For the purpose of determining Title V applicability for particulates, PM-10, not PM, is the regulated pollutant in consideration.

HAP's	Potential To Emit (tons/year)
Hexane	0.04
All Other HAPs	negligible
TOTAL	0.05

The potential to emit (as defined in 326 IAC 2-1.1-1(16)) of SO₂ from the new equipment is equal to or greater than 25 tons per year. Therefore, the source is subject to the provisions of 326 IAC 2-8-11.1(f) for significant permit revisions.

Proposed Changes

Amending Condition D.1.1:

The original condition limited total natural gas usage for both engines to an equivalent amount of 55 MMCF per year based on an AP-42 emission factor for engine #1 and the manufacturer's emission factor for engine #2. Since AP-42 emission factors will be used now to estimate emissions from both engines, the limit will simply be changed to 62 MMCF per year for both engines as follows:

D.1.1 Nitrogen Oxides (NO_x)

- (a) ~~The calculated nitrogen oxides equivalent total throughput of natural gas delivered to CE-1, the 1100 brake horsepower engine, and 0.104 times the natural gas delivered to in CE-2, the 2000 brake horsepower engine, shall not exceed 55.0 million cubic feet (56,100 million British thermal units) per rolling 12-month total. This is with natural gas with a heat value of 1020 British thermal units per cubic foot. The use of the calculated equivalent nitrogen oxides throughput is required to account for the different nitrogen oxides emission rates for CE-1 and CE-2. This calculated NO_x throughput is equivalent to a nitrogen oxides source emission rate of 90.75 tons per rolling 12-month total. Therefore, the requirements of 326 IAC 2-7 do not apply.~~
- (b) ~~The emissions of nitrogen oxides from CE-2, the 2000 brake horsepower 4 cycle natural gas-fired internal combustion engine, is based on not more than 0.334 pounds pf nitrogen oxides emissions per million British thermal units of natural gas fuel input. Therefore, the requirements of 326 IAC 2-7 do not apply.~~

The total combined natural gas delivered to the two (2) engines (CE-1 and CE-2) for combustion shall not exceed 62.0 million cubic feet (MMCF) per twelve (12) consecutive month period. This is equivalent to limiting NO_x emissions to 91.7 tons per year. Therefore, the requirements of 326 IAC 2-7 do not apply. This limitation will also satisfy the requirement to limit all other regulated pollutants below the Title V permitting threshold.

The monthly reporting form will also be revised to clarify the new limit.

Removing Condition D.1.2

The original condition limited total natural gas usage to the same amount required in Condition D.1.1. This is a superfluous condition and a sentence has been added to condition D.1.1 to state that the natural gas usage limit to keep NO_x below the Title V threshold will also satisfy the requirement to keep all other pollutants below the Title V thresholds. Therefore, this condition will be removed.

Amending Condition D.1.4

The original condition required a stack test to verify that manufacturer's emission factors used to develop the natural gas usage limits are accurate. However, Indiana Gas has agreed to use AP-42 emission factors to develop the limit which makes it unnecessary to perform stack testing. Therefore, this condition will be changed as follows:

D.1.4 2000 Brake Horsepower Engine GE-1 Testing Requirements

- a) ~~A manufacturer's emission test for NO_x and CO for an engine representative of the 2000 brake horsepower 4 cycle natural gas-fired internal combustion engine, GE-2, verifying the NO_x and CO emission factors to be used in calculating compliance with conditions D.1.1b) and D.1.2b) shall be submitted within 90 days of the issuance of this FESOP. The test shall have been performed according to 40 CFR 60, Appendix A and methods acceptable to the department.~~
- b) ~~An emission test shall be performed, within 36 months of the issuance of this FESOP, if an acceptable manufacturer's test for NO_x and CO for an engine representative of the 2000 brake horsepower 4 cycle natural gas-fired internal combustion engine, GE-2, is not available. This test shall be performed according to methods acceptable to the department.~~

Testing of this facility is not required by this permit. However, if testing is required, compliance with the NO_x limit specified in Condition D.1.1 shall be determined by a performance test conducted in accordance with Section C - Performance Testing. This does not preclude testing requirements on this facility under 326 IAC 2-8-4 and 326 IAC 2-8-5.

Adding Section D.2:

Since the amine desulfurization process is considered significant, Section D.2 will be added to properly address any rules or regulations which apply. Since the amount of SO₂ generated from the amine desulfurization process is dependant on the amount of natural gas processed, a limit will be established on the throughput of natural gas processed to assure that SO₂ emissions from the source do not exceed the Title V or PSD thresholds. The following conditions will be added:

D.2.1 Sulfur Dioxide (SO₂)

The total combined throughput of natural gas desulfurized in the two (2) amine contact towers shall not exceed 4,575 million cubic feet per twelve (12) consecutive month period. Therefore, the requirements of 326 IAC 2-7 (Title V) and 326 IAC 2-2 (Prevention of Significant Deterioration) will not apply.

D.2.2 Preventive Maintenance Plan

A Preventive Maintenance Plan (PMP), in accordance with Condition B.13 of this permit, is required for these facilities.

D.2.3 Testing Requirements

Testing of these facilities is not required by this permit. However, if testing is required, compliance shall be determined by a performance test conducted in accordance with Section C - Performance Testing. This does not preclude testing requirements on this facility under 326 IAC 2-8-4 and 326 IAC 2-8-5.

D.2.4 Record Keeping Requirements

To document compliance with Condition D.2.1, the Permittee shall maintain records in accordance with (1) and (2) below.

- (1) Calendar dates covered in the compliance determination period; and
- (2) Actual natural gas processed per month in the amine tanks since last compliance determination period.

D.2.5 Reporting Requirements

A summary to document compliance with Condition D.2.1 shall be submitted to the address listed in Condition C.14 (General Reporting Requirements) upon request.

Actual Emissions

No previous emission data has been received from the source.

Limited Potential to Emit

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

Process/facility	Limited Potential to Emit (tons/year)						
	PM	PM10	SO ₂	VOC	CO	NO _x	HAPs
Compressor Engines	1.45	0.54	0.02	50.6	8.9	91.7	0.058
Desulfurization Process			89.4				
Insignificant Reboilers and Flares	0.26	0.26	0.02	0.2	2.8	3.4	0.064
Total Emissions	1.71	0.8	89.44	50.8	11.7	95.1	0.122

County Attainment Status

The source is located in Monroe County.

Pollutant	Status
PM-10	Attainment or Unclassifiable
SO ₂	Attainment or Unclassifiable
NO ₂	Attainment or Unclassifiable
Ozone	Attainment or Unclassifiable
CO	Attainment or Unclassifiable
Lead	Attainment or Unclassifiable

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

Federal Rule Applicability

There are no New Source Performance Standards (NSPS) (326 IAC 12 and 40 CFR Part 60) applicable to the new equipment or this source.

There are no National Emission Standards for Hazardous Air Pollutants (NESHAPs)(326 IAC 14 and 40 CFR art 63) applicable to the new equipment or this source.

State Rule Applicability - Entire Source

326 IAC 2-6 (Emission Reporting)

This source is located in Monroe County and the potential to emit regulated pollutants is less than one hundred (100) tons per year. Therefore, 326 IAC 2-6 does not apply.

326 IAC 5-1 (Visible Emissions Limitations)

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

- (a) Opacity shall not exceed an average of forty percent (40%) any one (1) six (6) minute averaging period as determined in 326 IAC 5-1-4.
- (b) Opacity shall not exceed sixty percent (60%) for more than a cumulative total of fifteen (15) minutes (sixty (60) readings) as measured according to 40 CFR 60, Appendix A, Method 9 or fifteen (15) one (1) minute nonoverlapping integrated averages for a continuous opacity monitor) in a six (6) hour period.

326 IAC 6-4 (Fugitive Dust Emissions)

This source is subject to the requirements of 326 IAC 6-4 (Fugitive Dust Emissions) and shall meet the limitations of 326 IAC 6-4-2.

State Rule Applicability - New Equipment

326 IAC 2-7 and 326 IAC 2-2

The maximum amount of natural gas treated in the amine contact tanks shall not exceed 4,575 million cubic feet (MMCF) year. Therefore, the requirements of 326 IAC 2-2 and 326 IAC 2-7 will not apply.

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, OAM, 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 requirement applicable to the new equipment is as follows:

1. The amount of natural gas processed in the amine contact tanks shall be monitored and recorded.

This monitoring condition is necessary because to ensure compliance with 326 IAC 2-8 (FESOP) and 326 IAC 2-2 (Prevention of Significant Deterioration).

Air Toxic Emissions

Indiana presently requests applicants to provide information on emissions of the 188 hazardous air pollutants (HAPs) set out in the Clean Air Act Amendments of 1990. These pollutants are either carcinogenic or otherwise considered toxic and are commonly used by industries. They are listed as air toxics on the Office of Air Management (OAM) Part 70 Application Form GSD-08.

- (a) This new equipment and source will emit levels of air toxics less than those which constitute a major source according to Section 112 of the 1990 Clean Air Act Amendments.
- (b) See attached calculations for detailed air toxic calculations.

Conclusion

The operation of the amine desulfurization process shall be subject to the conditions of the attached proposed **FESOP Revision No. 105-11259-00017**.

Company Name: Indiana Gas Company, Inc. - Dolan Storage Field
Address City IN Zip: 3592 East Boltinghouse Road, Bloomington, IN 47408
Permit Number: 105-11259
Pit ID: 105-00017
Reviewer: Bryan Sheets
Date: 08/24/99

A. Compressors

Total Heat Input Capacity (MMBtu/hr)	Potential Throughput (MMCF/yr)						Limited Throughput (MMCF/yr)
	PM	PM10	SO2	NOx	VOC	CO	
30.7	263.7						62.0
Emission Factor in lb/MMBtu	0.046	0.017	6.0E-04	2.90	1.80	0.28	
Potential Emissions in tons/yr	6.19	2.29	0.08	390.0	215.1	37.7	
Limited Emissions in tons/yr	1.45	0.54	0.02	91.7	50.59	8.9	

Methodology
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas
Potential Throughput (MMCF/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBtu
Limited Throughput (MMCF/yr) = Heat Input (MMBtu/hr) x 8,760 hrs/yr x NOx Limit (tons/yr) / NOx PTE (tons/yr) / 1020 MMBtu/MMCF
Emission Factors from AP 42, Chapter 3.2, Tables 3.2-2 and 3.2-4, except SO2 from AIRS 2-02-002-02
Potential Emissions (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lb/MMBtu) * 8760 hrs/yr / 2,000 lb/ton
Limited Emissions (tons/yr) = Limited Throughput (MMCF/yr) / Potential Throughput (MMCF/yr) x Potential Emissions (tons/yr)

B. Insignificant Reboilers and Flares

Heat Input Capacity (MMBtu/hr)		Potential Throughput (MMCF/yr)					
New Units	Total	New Units		Total			
5.725	7.875	49.2	67.6				
		PM	PM10	SO2	NOx	VOC	CO
Emission Factor in lb/MMCF	7.6	7.6	0.6	100	5.5	84	
New Unit Emissions in tons/yr	0.19	0.19	0.01	2.46	0.14	2.07	
Total Emissions in tons/yr	0.26	0.26	0.02	3.4	0.2	2.8	

Methodology
MMBtu = 1,000,000 Btu
MMCF = 1,000,000 Cubic Feet of Gas
Potential Throughput (MMCF/yr) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,020 MMBtu
Emission Factors from AP 42, Chapter 1.4, Tables 1.4-1 and 1.4-2
Potential Emissions (tons/yr) = Heat Input Capacity (MMBtu/hr) x Emission Factor (lb/MMBtu) * 8760 hrs/yr / 2,000 lb/ton

Company Name: Indiana Gas Company, Inc. - Dolan Storage Field
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C. Desulfurization Process

The desulfurization process removes H2S from the natural gas by bringing it into contact with an amine solution in two contact towers. These towers then send the spent amine to reactivators to regenerate the amine solution. The reactivators use two reboilers to regenerate the amine solution, which is then routed back to the contact towers. The H2S removed from the natural gas is converted to SO2 by a flare. To determine the amount of SO2 emissions generated, the amount of H2S in the natural gas must be known. The maximum amount of H2S in the natural gas is taken to be 228 ppmv annual average. The SO2 emissions are calculated as follows:

$$228 \text{ cu ft H}_2\text{S/MMCF ng} \times 0.0911 \text{ lb H}_2\text{S/cu ft} \times 64/34 \text{ lb SO}_2/\text{lbH}_2\text{S} = 39.1 \text{ lbs SO}_2/\text{MMCF}$$

$$39.1 \text{ lbs SO}_2/\text{MMCF} \times 4575 \text{ MMCF/yr} / 2000 \text{ lbs/ton} = 89.4 \text{ tons/yr}$$

This has been compared to the amount calculated by AP-42 emission factors and is more conservative; therefore, it shall be used for the permitting determination.

D. HAP Emissions from Natural Gas Combustion

Potential Throughput (MMCF/yr)	
New Units	Total
49.2	129.6

HAP	Emission Factor (lbs/MMCF)	Emissions (tons/yr)		HAP	Emission Factor (lbs/MMCF)	Emissions (tons/yr)	
		New Units	Total			New Units	Total
2-Methylnaphthalene	2.40E-05	5.90E-07	1.56E-06	Cobalt Compounds	8.40E-05	2.07E-06	5.44E-06
3-Methylchloranthrene	1.80E-06	4.43E-08	1.17E-07	Dibenz(a,h)anthracene	1.20E-06	2.95E-08	7.78E-08
7,12-Dimethylbenz(a)anthracene	1.60E-05	3.94E-07	1.04E-06	Dichlorobenzene	1.20E-03	2.95E-05	7.78E-05
Acenaphthene	1.80E-06	4.43E-08	1.17E-07	Fluoranthene	3.00E-06	7.38E-08	1.94E-07
Acenaphthylene	1.80E-06	4.43E-08	1.17E-07	Fluorene	2.80E-06	6.89E-08	1.81E-07
Anthracene	2.40E-06	5.90E-08	1.56E-07	Formaldehyde	7.50E-02	1.85E-03	4.86E-03
Arsenic Compounds	2.00E-04	4.92E-06	1.30E-05	Hexane	1.80E+00	4.43E-02	1.17E-01
Benzo(a)anthracene	1.80E-06	4.43E-08	1.17E-07	Indeno(1,2,3-cd)pyrene	1.80E-06	4.43E-08	1.17E-07
Benzo(b)anthracene	2.10E-03	5.17E-05	1.36E-04	Manganese Compounds	3.80E-04	9.35E-06	2.46E-05
Benzo(e)anthracene	1.20E-06	2.95E-08	7.78E-08	Mercury Compounds	2.60E-04	6.40E-06	1.66E-05
Benzo(k)fluoranthene	1.80E-06	4.43E-08	1.17E-07	Naphthalene	6.10E-04	1.50E-05	3.95E-05
Benzo(h,i)perylene	1.20E-06	2.95E-08	7.78E-08	Nickel Compounds	2.10E-03	5.17E-05	1.36E-04
Benzo(k)fluoranthene	1.80E-06	4.43E-08	1.17E-07	Phenanthrene	1.70E-05	4.18E-07	1.10E-06
Beryllium Compounds	1.20E-05	2.95E-07	7.78E-07	Pyrene	5.00E-06	1.23E-07	3.24E-07
Cadmium Compounds	1.10E-03	2.71E-05	7.10E-05	Selenium Compounds	2.40E-05	5.90E-07	1.56E-06
Chromium Compounds	1.40E-03	3.44E-05	9.07E-05	Toluene	3.40E-03	8.36E-05	2.20E-04
Chrysene	1.80E-06	4.43E-08	1.17E-07	TOTAL HAPs		4.64E-02	1.22E-01

METHODOLOGY
Potential Emissions (tons/yr) = Potential Throughput (MMCF/yr) x Emission Factor (lbs/MMCF) / 2000 lbs/ton
Emission Factors are from AP 42, Tables 1.4-3 and 1.4-4.