



Mitchell E. Daniels, Jr.
Governor

Thomas W. Easterly
Commissioner

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

TO: Interested Parties / Applicant
DATE: December 22, 2006
RE: Noble Energy Production Inc. / 153-23634-00031
FROM: Nisha Sizemore
Chief, Permits Branch
Office of Air Quality

Notice of Decision: Approval - Registration

Please be advised that on behalf of the Commissioner of the Department of Environmental Management, I have issued a decision regarding the enclosed matter. Pursuant to IC 4-21.5-3-4(d) this order is effective when it is served. When served by U.S. mail, the order is effective three (3) calendar days from the mailing of this notice pursuant to IC 4-21.5-3-2(e).

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

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

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

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

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

Enclosures
FN-REGIS.dot 03/23/06



INDIANA DEPARTMENT OF ENVIRONMENTAL MANAGEMENT

We make Indiana a cleaner, healthier place to live.

Mitchell E. Daniels, Jr.
Governor

Thomas W. Easterly
Commissioner

100 North Senate Avenue
Indianapolis, Indiana 46204-2251
(317) 232-8603
(800) 451-6027
www.IN.gov/idem

December 22, 2006

Curtis Rueter
Noble Energy Production Inc.
1625 Broadway, Suite 2000
Denver, CO 80202

Re: Registered Construction and Operation Status,
153-23634-00031

Dear Mr. Rueter:

The application from Noble Energy Production Inc. received on September 11, 2006, has been reviewed. Based on the data submitted and the provisions in 326 IAC 2-5.1, it has been determined that the following natural gas processing plant, to be located in the southwest quarter of SEC 8 T8N R9W in Sullivan County, Indiana, is classified as registered:

- (a) One (1) amine process, identified as AMINE, approved for construction in 2006, with a natural gas throughput of 5.0 Million Standard Cubic Feet per Day (MMscfd) and amine recirculation rate of 25.0 gallons per minute (gpm), uncontrolled, and exhausting to stack AMINE.
- (b) One (1) triethylene glycol (TEG) dehydration process, identified as DEHY, approved for construction in 2006, with a natural gas throughput of 5.0 Million Standard Cubic Feet per Day (MMscfd) and glycol recirculation rate of 0.67 gallons per minute (gpm), uncontrolled, and exhausting to stack DEHY.
- (c) One (1) natural gas fired amine unit reboiler, identified as AMREB, approved for construction in 2006, with a maximum rated capacity of 3.00 million British thermal units (MMBtu) per hour, uncontrolled, and exhausting to stack AMREB.
- (d) One (1) natural gas fired dehydration unit reboiler, identified as DHREB, approved for construction in 2006, with a maximum rated capacity of 0.30 million British thermal units (MMBtu) per hour, uncontrolled, and exhausting to stack DHREB.
- (e) One (1) natural gas fired compressor engine, identified as ENG1, approved for construction in 2006, with a maximum rated capacity of 8.14 million British thermal units (MMBtu) per hour, uncontrolled, and exhausting to stack ENG1.
- (f) Condensate / Oil Truck loading, identified as TL1, approved for construction in 2006, with a maximum throughput of 10,400 barrels (bbl) of oil per year, uncontrolled.
- (g) Condensate / Oil storage tank, identified as TK1, approved for construction in 2006, with a maximum capacity of 8,400 gallons, exhausting to stack TK1.

The following conditions shall be applicable:

1. 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:
 - (a) Opacity shall not exceed an average of forty percent (40%) 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 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.

2. Pursuant to 326 IAC 2-1.1-11 (General Provisions; Compliance Requirements):
 - (a) Within 60 days after achieving maximum rate, but no more than 180 days after startup, the Permittee shall perform NO_x testing for natural gas fired compressor engine, ENG1, utilizing methods as approved by the Commissioner.
 - (b) All testing shall be performed according to the provisions of 326 IAC 3-6 (Source Sampling Procedures), except as provided elsewhere in this permit, 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 permit, shall be submitted to:

Indiana Department of Environmental Management
Compliance Data Section, Office of Air Quality
100 North Senate Avenue
Indianapolis, Indiana 46204-2251

no later than thirty-five (35) days prior to the intended test date. The protocol submitted by the Permittee does not require certification by an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
 - (c) 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 an "authorized individual" as defined by 326 IAC 2-1.1-1(1).
 - (d) Pursuant to 326 IAC 3-6-4(b), all test reports must be received by IDEM, OAQ not later than forty-five (45) days after the completion of the testing. An extension may be granted by IDEM, OAQ if the Permittee 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.

3. Pursuant to 40 CFR 60, Subpart LLL, the Permittee shall comply with the provisions of 40 CFR 60 Subpart A - General Provisions, which are incorporated by reference as 326 IAC 12, for the amine process operation in accordance with the schedule in 40 CFR 60, Subpart A.
4. Pursuant to CFR Part 60, Subpart LLL, the Permittee shall comply with the provisions of 40 CFR Part 60, Subpart LLL, which are incorporated by reference as 326 IAC 12, for the amine process as specified as follows:

§ 60.640 Applicability and designation of affected facilities.

- (a) The provisions of this subpart are applicable to the following affected facilities that process natural gas: each sweetening unit, and each sweetening unit followed by a sulfur recovery unit.
- (b) 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 §60.647(c) but are not required to comply with §§60.642 through 60.646.
- (c) The provisions of this subpart are applicable to facilities located on land and include facilities located onshore which process natural gas produced from either onshore or offshore wells.
- (d) The provisions of this subpart apply to each affected facility identified in paragraph (a) of this section which commences construction or modification after January 20, 1984.

§ 60.641 Definitions.

All terms used in this subpart not defined below are given the meaning in the Act and in subpart A of this part.

Acid gas means a gas stream of hydrogen sulfide (H₂S) and carbon dioxide (CO₂) that has been separated from sour natural gas by a sweetening unit.

Natural gas means a naturally occurring mixture of hydrocarbon and nonhydrocarbon gases found in geologic formations beneath the earth's surface. The principal hydrocarbon constituent is methane.

Onshore means all facilities except those that are located in the territorial seas or on the outercontinental shelf.

Reduced sulfur compounds means H₂S, carbonyl sulfide (COS), and carbon disulfide (CS₂).

Sulfur production rate means the rate of liquid sulfur accumulation from the sulfur recovery unit.

Sulfur recovery unit means a process device that recovers element sulfur from acid gas.

Sweetening unit means a process device that separates the H₂S and CO₂ contents from the sour natural gas stream.

Total SO₂ equivalents means the sum of volumetric or mass concentrations of the sulfur compounds obtained by adding the quantity existing as SO₂ to the quantity of SO₂ that would be obtained if all reduced sulfur compounds were converted to SO₂ (ppmv or kg/dscm (lb/dscf)).

*E*The sulfur emission rate expressed as elemental sulfur, kilograms per hour (kg/hr) [pounds per hour (lb/hr)], rounded to one decimal place.

*R*The sulfur emission reduction efficiency achieved in percent, carried to one decimal place.

S The sulfur production rate, kilograms per hour (kg/hr) [pounds per hour (lb/hr)], rounded to one decimal place.

X The sulfur feed rate from the sweetening unit (i.e., the H₂S in the acid gas), expressed as sulfur, Mg/D(LT/D), rounded to one decimal place.

Y The sulfur content of the acid gas from the sweetening unit, expressed as mole percent H₂S (dry basis) rounded to one decimal place.

Z The minimum required sulfur dioxide (SO₂) emission reduction efficiency, expressed as percent carried to one decimal place. Z_i refers to the reduction efficiency required at the initial performance test. Z_c refers to the reduction efficiency required on a continuous basis after compliance with Z_i has been demonstrated.

§ 60.647 Recordkeeping and reporting requirements.

(c) To certify that a facility is exempt from the control requirements of these standards, each owner or operator of a facility with a design capacity less than 2 LT/D of H₂S in the acid gas (expressed as sulfur) 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.

*§ 60.648 Optional procedure for measuring hydrogen sulfide in acid gas—Tutwiler Procedure.*¹

¹ Gas Engineers Handbook, Fuel Gas Engineering Practices, The Industrial Press, 93 Worth Street, New York, NY, 1966, First Edition, Second Printing, page 6/25 (Docket A-80-20-A, Entry II-I-67).

(a) When an instantaneous sample is desired and H₂S concentration is ten grains per 1000 cubic foot or more, a 100 ml Tutwiler burette is used. For concentrations less than ten grains, a 500 ml Tutwiler burette and more dilute solutions are used. In principle, this method consists of titrating hydrogen sulfide in a gas sample directly with a standard solution of iodine.

(b) *Apparatus.* (See Figure 1.) A 100 or 500 ml capacity Tutwiler burette, with two-way glass stopcock at bottom and three-way stopcock at top which connect either with inlet tubulature or glass-stoppered cylinder, 10 ml capacity, graduated in 0.1 ml subdivision; rubber tubing connecting burette with leveling bottle.

(c) *Reagents.* (1) Iodine stock solution, 0.1N. Weight 12.7 g iodine, and 20 to 25 g cp potassium iodide for each liter of solution. Dissolve KI in as little water as necessary; dissolve iodine in concentrated KI solution, make up to proper volume, and store in glass-stoppered brown glass bottle.

(2) Standard iodine solution, 1 ml=0.001771 g I. Transfer 33.7 ml of above 0.1N stock solution into a 250 ml volumetric flask; add water to mark and mix well. Then, for 100 ml sample of gas, 1 ml of standard iodine solution is equivalent to 100 grains H₂S per cubic feet of gas.

(3) Starch solution. Rub into a thin paste about one teaspoonful of wheat starch with a little water; pour into about a pint of boiling water; stir; let cool and decant off clear solution. Make fresh solution every few days.

(d) *Procedure.* Fill leveling bulb with starch solution. Raise (L), open cock (G), open (F) to (A), and close (F) when solutions starts to run out of gas inlet. Close (G). Purge gas sampling line and connect with (A). Lower (L) and open (F) and (G). When liquid level is several ml past the 100 ml mark, close (G) and (F), and disconnect sampling tube. Open (G) and bring starch solution to 100 ml mark by raising (L); then close (G). Open (F) momentarily, to bring gas in burette to atmospheric pressure, and close (F). Open (G), bring liquid level down to 10 ml mark by lowering (L). Close (G), clamp rubber tubing near (E) and disconnect it from burette. Rinse graduated cylinder with a standard iodine solution (0.00171 g I per ml); fill cylinder and record reading. Introduce successive small amounts of iodine thru (F); shake well after each addition; continue until a faint permanent blue color is obtained. Record reading; subtract from previous reading, and call difference D.

(e) With every fresh stock of starch solution perform a blank test as follows: introduce fresh starch solution into burette up to 100 ml mark. Close (F) and (G). Lower (L) and open (G). When liquid level reaches the 10 ml mark, close (G). With air in burette, titrate as during a test and up to same end point. Call ml of iodine used C. Then,

Grains H_2S per 100 cubic foot of gas = $100(D - C)$

(f) Greater sensitivity can be attained if a 500 ml capacity Tutwiler burette is used with a more dilute (0.001N) iodine solution. Concentrations less than 1.0 grains per 100 cubic foot can be determined in this way. Usually, the starch-iodine end point is much less distinct, and a blank determination of end point, with H_2S -free gas or air, is required.

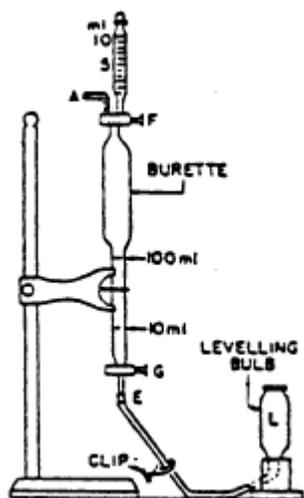


Figure 1. Tutwiler burette (lettered items mentioned in text)

5. Any change or modification which may increase the potential to emit of VOC, NO_x , SO_2 , PM or PM_{10} or any combination of HAPs to twenty five (25) tons per year, or a single HAP to ten (10) tons per year, from this source shall obtain approval from IDEM, OAQ prior to making the change.

This registration is the first air approval issued to this source. The source may operate according to 326 IAC 2-5.5.

An authorized individual shall provide an annual notice to the Office of Air Quality that the source is in operation and in compliance with this registration pursuant 326 IAC 2-5.1-2(f)(3). The annual notice shall be submitted to:

**Compliance Data Section
Office of Air Quality
100 North Senate Avenue
Indianapolis, IN 46204-2251**

no later than March 1 of each year, with the annual notice being submitted in the format attached.

An application or notification shall be submitted in accordance with 326 IAC 2 to the Office of Air Quality (OAQ) if the source proposes to construct new emission units, modify existing emission units, or otherwise modify the source.

Sincerely,

Original signed by

Nisha Sizemore, Chief
Permits Branch
Office of Air Quality

JH/EVP

cc: File - Sullivan County
Sullivan County Health Department
Air Compliance – Jim Thorpe
Permit Tracking
Compliance Data Section

Registration Annual Notification

This form should be used to comply with the notification requirements under 326 IAC 2-5.1-2(f)(3).

Company Name:	Noble Energy Production, Inc.
Address:	SW ¼ Sec 8 T8N R9W, Sullivan County, IN
City:	Sullivan County, IN
Authorized individual:	Curtis Rueter
Phone #:	303-228-4048
Registration #:	153-23634-00031

I hereby certify that Noble Energy Production Inc. is still in operation and is in compliance with the requirements of Registration 153-23634-00031.

Name (typed):
Title:
Signature:
Date:

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

Technical Support Document (TSD) for a Registration

Source Background and Description

Source Name:	Noble Energy Production, Inc.
Source Location:	SW ¼ Sect 8 T8N R9W, Sullivan County, IN
County:	Sullivan
SIC Code:	1311
Registration No.:	153-23634-00031
Permit Reviewer:	Julia Handley / EVP

The Office of Air Quality (OAQ) has reviewed an application from Noble Energy Production Inc. relating to the construction and operation of natural gas compressor station.

New Emission Units and Pollution Control Equipment

The application includes information relating to the construction and operation of the following equipment:

- (a) One (1) amine process, identified as AMINE, approved for construction in 2006, with a natural gas throughput of 5.0 Million Standard Cubic Feet per Day (MMscfd) and amine recirculation rate of 25.0 gallons per minute (gpm), uncontrolled, and exhausting to stack AMINE.
- (b) One (1) triethylene glycol (TEG) dehydration process, identified as DEHY, approved for construction in 2006, with a natural gas throughput of 5.0 Million Standard Cubic Feet per Day (MMscfd) and glycol recirculation rate of 0.67 gallons per minute (gpm), uncontrolled, and exhausting to stack DEHY.
- (c) One (1) natural gas fired amine unit reboiler, identified as AMREB, approved for construction in 2006, with a maximum rated capacity of 3.00 million British thermal units (MMBtu) per hour, uncontrolled, and exhausting to stack AMREB.
- (d) One (1) natural gas fired dehydration unit reboiler, identified as DHREB, approved for construction in 2006, with a maximum rated capacity of 0.30 million British thermal units (MMBtu) per hour, uncontrolled, and exhausting to stack DHREB.
- (e) One (1) natural gas fired compressor engine, identified as ENG1, approved for construction in 2006, with a maximum rated capacity of 8.14 million British thermal units (MMBtu) per hour, uncontrolled, and exhausting to stack ENG1.
- (f) Condensate / Oil Truck loading, identified as TL1, approved for construction in 2006, with a maximum throughput of 10,400 barrels (bbl) of oil per year, uncontrolled.
- (g) Condensate / Oil storage tank, identified as TK1, approved for construction in 2006, with a maximum capacity of 8,400 gallons, exhausting to stack TK1.

Existing Approvals

The source has no existing approvals.

Enforcement Issue

There are no enforcement actions pending.

Stack Summary

Stack ID	Operation	Height (ft)	Diameter (ft)	Flow Rate (acfm)	Temperature (°F)
ENG1	Compressor Engine	20	1.3	5956	842
AMREB	Amine Unit Reboiler	20	0.5	1800	800
DHREB	Dehydration Unit Reboiler	20	0.5	180	800
AMINE	Amine Unit Still Vent	20	0.5	180	150
DEHY	TEG Dehydration Unit Still Vent	20	0.5	9	212
TK1	Condensate/oil storage Tank	15	0.25	2	Ambient

Recommendation

The staff recommends to the Commissioner that the construction and operation 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.

A complete application for the purposes of this review was received on September 11, 2006.

Emission Calculations

See Appendix A of this document for detailed emission calculations (pages 1 through 6).

Potential to Emit of the Source Before Controls

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

Pollutant	Potential to Emit (tons/yr)
PM	0.03
PM-10	0.47
SO ₂	0.03
VOC	13.80
CO	20.07
NO _x	22.40

HAPs	Potential to Emit (tons/yr)
Benzene	0.26
Toluene	0.34
Ethylbenzene	0.52
Xylene	0.68
Hexane	0.15
2,2,4-trimethylpentane	0.01
Methanol	0.09
Acrolein	0.18
Acetaldehyde	0.30
Formaldehyde	2.62
Total	5.15

- (a) The potential to emit (as defined in 326 IAC 2-7-1(29)) of all criteria pollutants are less than 100 tons per year. Therefore, the source is not subject to the provisions of 326 IAC 2-7.
- (b) The potential to emit (as defined in 326 IAC 2-7-1(29)) of all criteria pollutants is less than 25 tons per year. Therefore, the source is not subject to the provisions of 326 IAC 2-6.1.
- (c) The potential to emit (as defined in 326 IAC 2-7-1(29)) of VOC and NOx are greater than levels listed in 326 IAC 2-1.1-3(e)(1), therefore the source is subject to the provisions of 326 IAC 2-5.5.1. A registration will be issued.
- (d) **Fugitive Emissions**
 Since this type of operation is not one of the twenty-eight (28) listed source categories under 326 IAC 2-2 and since there are no applicable New Source Performance Standards that were in effect on August 7, 1980, the fugitive particulate matter (PM) and volatile organic compound (VOC) emissions are not counted toward determination of PSD and Emission Offset applicability.

County Attainment Status

The source is located in Sullivan County.

Pollutant	Status
PM-10	Attainment
PM-2.5	Attainment
SO ₂	Attainment
NO ₂	Attainment
8-hour Ozone	Attainment
CO	Attainment
Lead	Attainment

- (a) Volatile organic compounds (VOC) and Nitrogen Oxides (NO_x) are regulated under the Clean Air Act (CAA) for the purposes of attaining and maintaining the National Ambient Air Quality Standards (NAAQS) for ozone. Therefore, VOC emissions and NO_x emissions are considered when evaluating the rule applicability relating to ozone. Sullivan County has been designated as attainment or unclassifiable for ozone. Therefore, VOC emissions and NO_x 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.
- (b) Sullivan County has been classified as attainment for PM_{2.5}. U.S. EPA has not yet established the requirements for Prevention of Significant Deterioration (PSD), 326 IAC 2-2 for PM 2.5 emissions. Therefore, until the U.S.EPA adopts specific provisions for PSD review for PM_{2.5} emissions, it has directed states to regulate PM₁₀ emissions as surrogate for PM_{2.5} emissions. See the State Rule Applicability for the source section.
- (c) On August 7, 2006, a temporary emergency rule took effect revoking the one-hour ozone standard in Indiana. The Indiana Air Pollution Control Board has approved a permanent rule revision to incorporate this change into 326 IAC 1-4-1. A permanent revision to 326 IAC 1-4-1 will take effect prior to the expiration of the emergency rule.
- (d) Sullivan County has been classified as attainment or unclassifiable in Indiana for all criteria pollutants. 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.

Source Status

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

Pollutant	Emissions (tons/yr)
PM	0.03
PM-10	0.47
SO ₂	0.03
VOC	13.80
CO	20.07
NO _x	22.40
Single HAP	2.62
Combination HAPs	5.15

- (a) This new source is not a major stationary source because no attainment pollutant is emitted at a rate of 250 tons per year or greater and it is not in one of the 28 listed source categories. Therefore, pursuant to 326 IAC 2-2, the PSD requirements do not apply.

Part 70 Permit Determination

326 IAC 2-7 (Part 70 Permit Program)

This new source is not subject to the Part 70 Permit requirements because the potential to emit (PTE) of:

- (a) each criteria pollutant is less than 100 tons per year,
- (b) a single hazardous air pollutant (HAP) is less than 10 tons per year, and
- (c) any combination of HAPs is less than 25 tons per year.

This is the first air approval issued to this source.

Federal Rule Applicability

- (a) There are no New Source Performance Standards (NSPS) (326 IAC 12 and 40 CFR Part 60) applicable to this source.
- (b) The 8,400 gallon storage tank identified as TK1 is not subject to the requirements of the New Source Performance Standard, 326 IAC 12, (40 CFR 60.110b, Subpart Kb) because the individual storage capacity is less than 75 cubic meters (19,813 gallons). Therefore, pursuant to 40 CFR 60.110b(b), this tank is exempt from this rule. Therefore NSPS Subpart Kb is not included in this permit.
- (c) The requirements of the New Source Performance Standard for Equipment Leaks of VOC from Onshore Natural Gas Processing Plants (40 CFR 60.630-636, Subpart KKK) are not applicable to this source. This NSPS applies only to emission units located at "natural gas processing plants," which are defined in the rule as "any processing site engaged in the extraction of natural gas liquids from field gas, fractionation of mixed natural gas liquids to natural gas products or both." No extraction or fractionation of natural gas liquids (such as ethane, propane, or butane) will be conducted at this source.
- (d) This natural gas compressor station is subject to New Source Performance Standard for Onshore Natural Gas Processing: SO₂ Emissions, 326 IAC 12 (40 CFR 60.460, Subpart LLL), because the amine process meets the definition of a sweetening unit and is to be constructed after January 20, 1984. However, this sweetening unit has design capacity less than 2 long tons per day (LT/D) of hydrogen sulfide (H₂S) in the acid gas (expressed as sulfur), therefore it is not required to comply with provisions 40 CFR 60.642 through 60.646 of this subpart, but is required to comply with 40 CFR 60.647(c). This requires that each owner or operator must keep, for the life of the facility, an analysis demonstrating that the facility's design capacity is less than 2 long tons per day (LT/D) of hydrogen sulfide (H₂S) in the acid gas (expressed as sulfur).

The amine process is subject to the following portions of 40 CFR 60, Subpart LLL:

- (1) 40 CFR 60.640(a).
- (2) 40 CFR 60.640(b).
- (3) 40 CFR 60.640(c).
- (4) 40 CFR 60.640(d).
- (5) 40 CFR 60.641.
- (6) 40 CFR 60.647(c).
- (7) 40 CFR 60.648.

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 LLL.

- (e) There are no National Emission Standards for Hazardous Air Pollutants (NESHAP)(326 IAC 14, 20 and 40 CFR Part 61, 63) applicable to this source.
- (f) The requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP), Subpart HH, Oil and Natural Gas Production, are not included in the permit because this source is not a major source of HAPs, as defined in 40 CFR 63.2.
- (g) The requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR 63.1270 Subpart HHH, Natural Gas Transmission and Storage Facilities, are not included in the permit because this source is not a major source of HAPs, as defined in 40 CFR 63.2.

- (h) The requirements of the National Emission Standards for Hazardous Air Pollutants (NESHAP), 40 CFR 63.6590 Subpart ZZZZ, Reciprocating Internal Combustion Engines, are not included in the permit because this source is not a major source of HAPs, as defined in 40 CFR 63.2.

State Rule Applicability – Entire Source

326 IAC 2-2 (Prevention of Significant Deterioration (PSD))

This new source is not in 1 of 28 source categories defined in 326 IAC 2-2-1(gg) and the potential to emit of any regulated pollutant before control is less than two hundred and fifty (250) tons per year. Therefore, the requirements of 326 IAC 2-2 are not applicable.

326 IAC 2-6 (Emission Reporting)

This source is not located in Lake or Porter County with the potential to emit greater than twenty-five (25) tons per year of NO_x, does not emit five (5) tons per year or more of lead and does not require a Part 70 Operating Permit. Therefore, the requirements of 326 IAC 2-6 do not apply.

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

The operation of this source will emit less than 10 tons per year of a single HAP or 25 tons per year of a combination of HAPs. Therefore, 326 IAC 2-4.1 does not apply.

326 IAC 5-1 (Opacity Limitations)

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

- (a) Opacity shall not exceed an average of forty percent (40%) 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 6-3 (Particulate Emission Limitations for Manufacturing Processes)

The potential particulate emissions from the facilities at this source are less than five hundred fifty-one thousandths (0.551) pound per hour. Therefore, pursuant to 326 IAC 6-3-1(b)(14) the requirements of 326 IAC 6-3 do not apply.

326 IAC 7-1.1 (Sulfur Dioxide Emission Limitations)

The potential SO₂ emissions from the facilities at this source are less than ten (10) pounds per hour and twenty-five (25) tons per year. Therefore, the requirements of 326 IAC 7-1.1 are not applicable.

326 IAC 8-1-6 (New facilities; General reduction requirements)

The potential VOC emissions from the one (1) compressor engine, identified as ENG1, the one (1) glycol dehydrator, identified as DEHY, the one (1) amine process, identified as AMINE, the one (1) truck loading process, identified as TL1, and the one 8,400 gallon tank, identified as TK1, constructed after January 1, 1980 are less than twenty five (25) tons per year. Therefore, the requirements of 326 IAC 8-1-6 are not applicable.

326 IAC 10-1 (Nitrogen Oxides Control in Clark and Floyd Counties)

This source is not located in Clark or Floyd County. Therefore, the requirements of 326 IAC 10-1 are not applicable.

326 IAC 9-1-2 (Carbon Monoxide Emission Requirements)

This source is not among the listed source categories in 326 IAC 9-1-2. Therefore, the requirements of 326 IAC 9-1-2 are not applicable.

State Rule Applicability - Individual Facilities

326 IAC 2-1.1-11 (General Provisions; Compliance Requirements):

Pursuant to 326 IAC 2-1.1-11 (General Provisions; Compliance Requirements), within 60 days after achieving maximum rate, but no more than 180 days after startup, the Permittee shall perform NO_x testing for natural gas fired compressor engine, ENG1, utilizing methods as approved by the Commissioner. This test shall be repeated at least once every five years from the date of this valid compliance demonstration.

Testing Requirements

The Permittee shall perform NO_x testing at the exhaust outlet of compressor engine ENG1 to confirm the NO_x emission factor.

Conclusion

The construction and operation of this natural gas compression station shall be subject to the conditions of the attached Registration No. 153-23634-00031.

Appendix A: Emission Calculations Summary

Company Name: Noble Energy Production, Inc.
Address City IN Zip: Sec 7 T8N R9W, Sullivan County, IN
Permit Number: 153-23634-00031
Plt ID: 153-00031
Reviewer: JH/EVP

Uncontrolled Potential Emissions (tons/year)

Pollutant	Emissions Generating Activity						TOTAL
	AMINE	DEHY	AMREB & DHREB	ENG1	TL1	TK1	
PM	0.00	0.00	0.03	0.00	0.00	0.00	0.03
PM10	0.00	0.00	0.11	0.36	0.00	0.00	0.47
SO2	0.00	0.00	0.01	0.02	0.00	0.00	0.03
NOx	0.00	0.00	1.45	20.95	0.00	0.00	22.40
VOC	0.00	6.99	0.08	4.21	0.93	2.46	14.66
CO	0.00	0.00	1.21	20.95	0.00	0.00	22.17
total HAPs	0.22	1.65	0.03	3.24	0.00	0.00	5.15
worst case single HAP	0.07	0.65	0.03	2.62	0.00	0.00	2.62

**Appendix A: Emission Calculations
Amine process (AMINE)
and glycol dehydration (DEHY)
Potential Emissions - VOCs, HAPs**

Company Name: Noble Energy Production, Inc.
Address City IN Zip: Sec 7 T8N R9W, Sullivan County, IN
Permit Number: 153-23634-00031
Plt ID: 153-00031
Reviewer: JH/EVP

1. Amine Process - Amine/Natural Gas Contactor

Hazardous Air Pollutant	Pounds per hour	Tons per year
Benzene	0.015	0.066
Toluene	0.008	0.035
Ethylbenzene	0.016	0.072
Xylenes	0.007	0.032
hexane	0.004	0.015
TOTAL	0.22	tons per year

Emissions based on AMINECalc gas model estimate supplied by the source, for natural gas throughput of 5 MMscfd, lean amine recirculation rate of 25 gpm, 20 trays, gas feed pressure of 850 psia and temperature of 100 F, input natural gas composition and without control.

AMINECalc is the recommended method for emission estimation as documented in the EPA's EIIP Volume II, chapter 10, Preferred and Alternate Methods for Estimating Air Emissions from Oil and Gas Field Production and Process Operations under section 4.2.4.

Emission based upon 8760 hours/year of operation

2. Glycol dehydration process - triethylene glycol (TEG)/natural gas contactor

Hazardous Air Pollutant	Pounds per hour	Tons per year
Benzene	0.0406	0.1779
Toluene	0.0689	0.302
Ethylbenzene	0.103	0.4512
Xylenes	0.1404	0.651
2,2,4-trimethylpentane	0.0018	0.0079
hexane	0.0147	0.0643
TOTAL	1.6543	tons per year
Volatile Organic Chemicals	Pounds per hour	Tons per year
VOC	1.5955	6.9882

Emissions based on Gas Research Institute (GRI) model GRI_GLYCalc model estimate supplied by the source, for natural gas throughput of 5 MMscfd, lean glycol recirculation rate of 0.67 gpm, gas feed pressure of 850 psia and temperature of 100 F, input natural gas composition and without control.

(GRI-GLYCalc) is the recommended method, as noted in AP-42 chapter 5.3 (Natural Gas Processing).

Emission based upon 8760 hours/year of operation

Appendix A: Emissions Calculations
Amine sweetening process reboiler (AMREB)
and Glycol Dehydration process reboiler (DHREB)
Natural Gas Combustion Only
MM BTU/HR <100
Small Boilers

Company Name: Noble Energy Production, Inc.
Address City IN Zip: Sec 7 T8N R9W, Sullivan County, IN
Permit Number: 153-23634-00031
Pit ID: 153-00031
Reviewer: JH/EVP

<u>Process</u>	<u>Heat Input Capacity (MMBtu/hr)</u>
AMREB	3
DHREB	0.3
Total	3.3

Heat Input Capacity MMBtu/hr	Potential Throughput MMCF/yr
3.3	28.9

Emission Factor in lb/MMCF	Pollutant						
	PM*	PM10*	SO2	NOx	VOC	CO	Hexane
	1.9	7.6	0.6	100.0 **see below	5.5	84.0	1.80
Potential Emission in tons/yr	0.03	0.11	0.01	1.45	0.08	1.21	0.03

*PM emission factor is filterable PM only. PM10 emission factor is filterable and condensable PM10 combined.

**Emission Factors for NOx: Uncontrolled = 100, Low NOx Burner = 50, Low NOx Burners/Flue gas recirculation = 32

Methodology

All emission factors are based on normal firing.

MMBtu = 1,000,000 Btu

MMCF = 1,000,000 Cubic Feet of Gas

Potential Throughput (MMCF) = Heat Input Capacity (MMBtu/hr) x 8,760 hrs/yr x 1 MMCF/1,000 MMBtu

Emission Factors are from AP 42, Chapter 1.4, Tables 1.4-1, 1.4-2, 1.4-3, SCC #1-02-006-02, 1-01-006-02, 1-03-006-02, and 1-03-006-03 (SUPPLEMENT D 3/98)

Emission (tons/yr) = Throughput (MMCF/yr) x Emission Factor (lb/MMCF)/2,000 lb/ton

Additional HAPs emission factors are available in AP-42, Chapter 1.4.

**Appendix A: Emission Calculations
Internal Combustion Engine (ENG1)
4-Stroke Lean Burn Natural Gas-fired
Reciprocating Engine**

**Company Name: Noble Energy Production, Inc.
Address City IN Zip: Sec 7 T8N R9W, Sullivan County, IN
Permit Number: 153-23634-00031
Plt ID: 153-00031
Reviewer: JH/EVP**

A. Emissions calculated based on heat input capacity (MMBtu/hr)

Heat Input Capacity
MM Btu/hr

8.1

Emission Factor in lb/MMBtu	Pollutant			
	PM	PM10*	SO2	VOC
	7.71E-05	9.99E-03	5.88E-04	0.1180
Potential Emission in tons/yr	0.00	0.36	0.02	4.21

Emission Factor in lb/MMBtu	Pollutant				
	n-Hexane	Methanol	Acrolein	Acetaldehyde	Benzene
	1.11E-03	2.50E-03	5.14E-03	8.36E-03	4.40E-04
Potential Emission in tons/yr	0.040	0.089	0.183	0.298	0.016

Emission Factors are from AP42 , Table 3.2-2

Emission (tons/yr) = [Heat input rate (MMBtu/hr) x Emission Factor (lb/MMBtu)] * 8760 hr/yr / (2,000 lb/ton)

PM emission factors are for filterable PM. PM10 emission factors are for filterable and condensable PM.

B. Emissions calculated based on output rating (hp)

Heat Input Capacity
Horsepower (hp)

Potential Throughput
hp-hr/yr

1085.0

9504600.0

Emission Factor in g/hp-hr	Pollutant		
	NOx	CO	Formaldehyde
	2.0000	2.0000	0.2500
Potential Emission in tons/yr	20.95	20.95	2.62

Methodology

The NOx emission factor is from proposed NSPS Subpart JJJJ for non-emergency SI natural gas engines >=500 HP.

Emission Factors for CO and Formaldehyde are provided by the source from Manufacturer for this engine and are greater than AP-42, Table 3.2-3, July 2000.

Potential Throughput (hp-hr/yr) = hp * 8760 hr/yr

Conversion factor of 7,450 Btu per hp-hr to convert from horsepower to Btu/hr, as provided by source for this engine.

Emission (tons/yr) = [Potential Throughput (hp-hr/yr) x Emission Factor (lb/hp-hr)] / (2,000 lb/ton)

**Appendix A: Emission Calculations
Truck Loading (TL1)
and Tank Loading (TK1)
Potential Emissions**

**Company Name: Noble Energy Production, Inc.
Address City IN Zip: Sec 7 T8N R9W, Sullivan County, IN
Permit Number: 153-23634-00031
Plt ID: 153-00031
Reviewer: JH/EVP**

1. Truck loading (TL1)

Loading loss (lb/1000 gal) = $(12.46 \cdot S \cdot P \cdot M) / T$ where

S= Saturation Factor = dedicated normal service
P = Tube Vapor Pressure of liquid loaded (psia)
M = Molecular weight of Vapors, lb/lb-mols
T = Temp of bulk liquid loaded, deg. R = (deg. F + 460)

Liquid Temperature (F) 80

Liquid Temperature (R) 540
Vapor Pressure (psia) 4.5
Molecular weight (lb/lb-mole) 68
Saturation Factor 0.6

Loading Loss (lb TOC/1000 gallons) = 4.2364

Pollutant	Loading loss (LB/1000 gallons)	Throughput (gal/year)	Potential Emissions (lb/yr)	Potential Emissions (ton/yr)
VOC	4.2364	436,800.00	1,850.46	0.92522976

Emission Calculation from AP-42 Section 5.2

2. Tank loading (TK1)

Pollutant	Losses (pounds per year)			Losses (tons per year)		
	Working Loss	Breathing Loss	Flashing Loss	Working Loss	Breathing Loss	Flashing Loss
VOC	819.1	495.12	3,600.00	0.40955	0.24756	1.8

TOTAL VOC 2.46 tons per year

Breathing and Working loss emissions from TANKS analysis for Vertical fixed rood tank, in Sullivan, IN with a net throughput of 436,800.00 gallons per year, as supplied by the source.

Flashing loss from Vasquez - Beggs solution Gas/oil ratio correlation method (for estimating VOC Flashing emissions, using stock tank gas-oil ratios for crude oil facilities) as supplied by the source.