

AIR QUALITY PERMIT

Issued To: Devon Louisiana Corporation Permit: #3420-00
Stevens Compressor Station Application Complete: 11/17/05
Clear Creek Road Preliminary Determination Issued: 12/22/05
PO Box 2606 Department's Decision Issued: 01/09/06
Havre, MT 59501 Permit Final: 01/25/06
AFS: #005-0015

An air quality permit, with conditions, is hereby granted to Devon Louisiana Corporation (Devon), pursuant to Sections 75-2-204 and 211 of the Montana Code Annotated (MCA), as amended, and the Administrative Rules of Montana (ARM) 17.8.740, *et seq.*, as amended, for the following:

SECTION I: Permitted Facilities

A. Permitted Equipment

Permit #3420-00 is issued to Devon for the operation of a natural gas compressor station known as the Stevens Compressor Station. A complete list of the permitted equipment is contained in Section I.A of the Permit Analysis.

B. Plant Location

The facility is located in the SW¹/₄ of the NE¹/₄ of Section 14, Township 25 North, Range 18 East, in Blaine County, Montana. The facility's office is located at Clear Creek Road, PO Box 2606, Havre, MT, 59501.

SECTION II: Conditions and Limitations

A. Emission Control Requirements

1. The maximum rated design capacity of the compressor shall not exceed 1,085-horsepower (hp).
2. The compressor shall be a 4-stroke lean-burn fitted with an oxidation catalyst and an electronic air-to-fuel ratio (AFR) controller. The gram per brake horsepower-hour (g/bhp-hr) emission limits for the compressor engine shall be (ARM 17.8.752).

Oxides of Nitrogen (NO _x):	1.0 g/bhp-hr
Carbon Monoxide (CO)	0.5 g/bhp-hr
Volatile Organic Compounds (VOC):	1.0 g/bhp-hr

3. Devon shall operate all equipment to provide the maximum air pollution control for which it was designed (ARM 17.8.752).
4. Devon shall not cause or authorize emissions to be discharged into the outdoor atmosphere from any sources installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over six consecutive minutes (ARM 17.8.304).

5. Devon shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308).
6. Devon shall treat all unpaved portions of the haul roads, access roads, parking lots, or general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precaution limitation in Section II.A.5 (ARM 17.8.749).

B. Testing Requirements

1. Devon shall initially test the unit for NO_x and CO concurrently to demonstrate compliance with the NO_x and CO emission limits in Section II.A.2. The initial source testing shall be conducted within 180 days of the initial start up date of the compressor engine. After the initial source test, additional testing shall occur on an every four-year basis or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and 17.8.749).
2. The Department may require further testing (ARM 17.8.105).
3. All compliance source tests shall conform to the requirements of the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).

C. Operational Reporting Requirements

1. Devon shall supply the Department with annual production information for all emission points, as required by the Department in the annual emission inventory request. The request will include, but is not limited to, all sources of emissions identified in the emission inventory contained in the permit analysis and sources identified in Section I.A of the permit analysis.

Production information shall be gathered on a calendar-year basis and submitted to the Department by the date required in the emission inventory request. Information shall be in the units required by the Department. This information may be used to calculate operating fees, based on actual emissions from the facility, and/or to verify compliance with permit limitations (ARM 17.8.505).

2. Devon shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.745, that would include a change in control equipment, stack height, stack diameter, stack flow, stack gas temperature, source location or fuel specifications, or would result in an increase in source capacity above its permitted operation or the addition of a new emission unit. The notice must be submitted to the Department, in writing, 10 days prior to start up or use of the proposed de minimis change, or as soon as reasonably practicable in the event of an unanticipated circumstance causing the de minimis change, and must include the information requested in ARM 17.8.745(1)(d) (ARM 17.8.745).
3. All records compiled in accordance with this permit must be maintained by Devon as a permanent business record for at least five years following the date of the measurement, must be available at the plant site for inspection by the Department, and must be submitted to the Department upon request (ARM 17.8.749).

D. Notification

1. Devon shall provide the Department with written notification of the actual installation date of the unit within 30 days after the actual installation date.
2. Devon shall provide the Department with written notification of the actual start-up date of the unit within 15 days after the actual start-up date.

SECTION III: General Conditions

- A. Inspection – Devon shall allow the Department’s representatives access to the source at all reasonable times for the purpose of making inspections or surveys, collecting samples, obtaining data, auditing any monitoring equipment (CEMS, CERMS) or observing any monitoring or testing, and otherwise conducting all necessary functions related to this permit.
- B. Waiver – The permit and the terms, conditions, and matters stated herein shall be deemed accepted if Devon fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Devon of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq.* (ARM 17.8.756).
- D. Enforcement – Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties or other enforcement action as specified in Section 75-2-401, *et seq.*, MCA.
- E. Appeals – Any person or persons jointly or severally adversely affected by the Department’s decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department’s decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department’s decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department’s decision on the application is final 16 days after the Department’s decision is made.
- F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by the Department at the location of the source.
- G. Permit Fee – Pursuant to Section 75-2-220, MCA, as amended by the 1991 Legislature, failure to pay the annual operation fee by Devon may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.
- H. Construction Commencement – Construction must begin within three years of permit issuance and proceed with due diligence until the project is complete or the permit shall be revoked (ARM 17.8.762).

Permit Analysis
Devon Louisiana Corporation
Stevens Compressor Station
Permit #3420-00

I. Introduction/Process Description

Devon Louisiana Corporation (Devon) proposed to construct and operate a natural gas compressor station located in the SW¼ of the NE¼ of Section 14, Township 25 North, Range 18 East, in Blaine County, Montana. The facility is known as the Stevens Compressor Station.

A. Permitted Equipment

The facility consists of a 4-stroke lean-burn compressor engine of no more than 1,085 horsepower (hp), fitted with an oxidation catalyst and an electronic air-to-fuel ratio (AFR) controller.

B. Source Description

The Stevens Compressor Station gathers, compresses, and transports nearby field gas, which is accomplished through the use of a natural gas-driven compressor engine. The compressed natural gas is then transported through the pipeline.

II. Applicable Rules and Regulations

The following are partial explanations of some applicable rules and regulations that apply to the facility. The complete rules are stated in the Administrative Rules of Montana (ARM) and are available, upon request, from the Department of Environmental Quality (Department). Upon request, the Department will provide references for location of complete copies of all applicable rules and regulations or copies where appropriate.

A. ARM 17.8, Subchapter 1 – General Provisions, including but not limited to:

1. ARM 17.8.101 Definitions. This rule includes a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.
2. ARM 17.8.105 Testing Requirements. Any person or persons responsible for the emission of any air contaminant into the outdoor atmosphere shall, upon written request of the Department, provide the facilities and necessary equipment (including instruments and sensing devices) and shall conduct tests, emission or ambient, for such periods of time as may be necessary using methods approved by the Department.
3. ARM 17.8.106 Source Testing Protocol. The requirements of this rule apply to any emission source testing conducted by the Department, any source or other entity as required by any rule in this chapter, or any permit or order issued pursuant to this chapter, or the provisions of the Clean Air Act of Montana, 75-2-101, *et seq.*, Montana Code Annotated (MCA).

Devon shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited to, using the proper test methods and supplying the required reports. A copy of the Montana Source Test Protocol and Procedures Manual is available from the Department upon request.

4. ARM 17.8.110 Malfunctions. (2) The Department must be notified promptly by telephone whenever a malfunction occurs that can be expected to create emissions in excess of any applicable emission limitation or to continue for a period greater than four hours.
5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means that, without resulting in reduction of the total amount of air contaminant emitted, conceals or dilutes an emission of air contaminant that would otherwise violate an air pollution control regulation. (2) No equipment that may produce emissions shall be operated or maintained in such a manner as to create a public nuisance.

B. ARM 17.8, Subchapter 2 – Ambient Air Quality, including, but not limited to the following:

1. ARM 17.8.204 Ambient Air Monitoring
2. ARM 17.8.210 Ambient Air Quality Standards for Sulfur Dioxide
3. ARM 17.8.211 Ambient Air Quality Standards for Nitrogen Dioxide
4. ARM 17.8.212 Ambient Air Quality Standards for Carbon Monoxide
5. ARM 17.8.213 Ambient Air Quality Standard for Ozone
6. ARM 17.8.214 Ambient Air Quality Standard for Hydrogen Sulfide
7. ARM 17.8.220 Ambient Air Quality Standard for Settled Particulate Matter
8. ARM 17.8.221 Ambient Air Quality Standard for Visibility
9. ARM 17.8.222 Ambient Air Quality Standard for Lead
10. ARM 17.8.223 Ambient Air Quality Standard for PM₁₀

Devon must maintain compliance with the applicable ambient air quality standards.

C. ARM 17.8, Subchapter 3 – Emission Standards, including, but not limited to:

1. ARM 17.8.304 Visible Air Contaminants. This rule requires that no person may cause or authorize emissions to be discharged into the outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over six consecutive minutes.
2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of less than 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, Devon shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.
3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this rule.
4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.
5. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. This rule requires that no person shall burn liquid, solid, or gaseous fuel in excess of the amount set forth in this rule.

6. ARM 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank is equipped with a vapor loss control device as described in (1) of this rule.
7. ARM 17.8.340 Standard of Performance for New Stationary Sources and Emission Guidelines for Existing Sources. This rule incorporates, by reference, 40 Code of Federal Regulations (CFR) 60, Standards of Performance for New Stationary Sources (NSPS). The Stevens Compressor Station is not subject to any NSPS, including the following:
 - Subpart KKK – Stevens Compressor Station does not qualify as a natural gas processing plant that engages in the extraction of natural gas liquids.
 - Subpart LLL – Stevens Compressor Station does not handle sour gas.
 - Subpart IIII – Stevens Compressor Station is not a compression ignition (diesel) engine.
8. ARM 17.8.342 Emission Standards for Hazardous Air Pollutants for Source Categories. A major Hazardous Air Pollutant (HAP) source, as defined and applied in 40 CFR 63, shall comply with the requirements of 40 CFR 63, as applicable, including the following subparts:
 - Subpart HH - National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities.
 - Subpart HHH –National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage Facilities
 - Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (Internal Combustion engines > 500 hp)

Based on the information submitted by Devon, the Stevens Compressor Station is not subject to the provisions of 40 CFR Part 63, because the facility is not a major source of HAPs.

- D. ARM 17.8, Subchapter 5 – Air Quality Permit Application, Operation, and Open Burning Fees, including, but not limited to:
 1. ARM 17.8.504 Air Quality Permit Application Fees. This rule requires that an applicant submit an air quality permit application fee concurrent with the submittal of an air quality permit application. A permit application is incomplete until the proper application fee is paid to the Department. Devon submitted the appropriate permit application fee for the current permit action.
 2. ARM 17.8.505 Air Quality Permit Operation Fees. An annual air quality operation fee must, as a condition of continued operation, be submitted to the Department by each source of air contaminants holding an air quality permit (excluding an open burning permit) issued by the Department. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

An air quality operation fee is separate and distinct from an air quality permit application fee. The annual assessment and collection of the air quality operation fee, described above, shall take place on a calendar-year basis. The Department may insert into any final permit issued after the effective date of these rules, such conditions as may be necessary to require the payment of an air quality operation fee on a calendar-year basis, including provisions that prorate the required fee amount.

- E. ARM 17.8, Subchapter 7 – Permit, Construction, and Operation of Air Contaminant Sources, including, but not limited to:
1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.
 2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a person to obtain an air quality permit or permit alteration to construct, alter or use any air contaminant sources that have the Potential to Emit (PTE) greater than 25 tons per year of any pollutant. The Stevens Compressor Station has an uncontrolled PTE greater than 25 tons per year of Nitric Oxide (NO_x), Carbon Monoxide (CO), and Volatile Organic Compounds (VOC); therefore, an air quality permit is required.
 3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.
 4. ARM 17.8.745 Montana Air Quality Permits--Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.
 5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, alteration or use of a source. Devon submitted the required permit application for the current permit action. (7) This rule requires that the applicant notify the public by means of legal publication in a newspaper of general circulation in the area affected by the application for a permit. Devon submitted an affidavit of publication of public notice for the November 8, 2005, issue of the *Havre Daily News*, a newspaper of general circulation in the City of Havre, Hill County, as proof of compliance with the public notice requirements.
 6. ARM 17.8.749 Conditions for Issuance or Denial of Permit. This rule requires that the permits issued by the Department must authorize the construction and operation of the facility or emitting unit subject to the conditions in the permit and the requirements of this subchapter. This rule also requires that the permit must contain any conditions necessary to assure compliance with the Federal Clean Air Act (FCAA), the Clean Air Act of Montana, and rules adopted under those acts.
 7. ARM 17.8.752 Emission Control Requirements. This rule requires a source to install the maximum air pollution control capability that is technically practicable and economically feasible, except that Best Available Control Technology (BACT) shall be used. The BACT analysis is discussed in Section III of this Permit Analysis.
 8. ARM 17.8.755 Inspection of Permit. This rule requires that air quality permits shall be made available for inspection by the Department at the location of the source.
 9. ARM 17.8.756 Compliance with Other Requirements. This rule states that nothing in the permit shall be construed as relieving Devon of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq.*

10. ARM 17.8.759 Review of Permit Applications. This rule describes the Department's responsibilities for processing permit applications and making permit decisions on those permit applications that do not require the preparation of an environmental impact statement.
 11. ARM 17.8.762 Duration of Permit. An air quality permit shall be valid until revoked or modified, as provided in this subchapter, except that a permit issued prior to construction of a new or altered source may contain a condition providing that the permit will expire unless construction is commenced within the time specified in the permit, which in no event may be less than one year after the permit is issued.
 12. ARM 17.8.763 Revocation of Permit. An air quality permit may be revoked upon written request of the permittee, or for violations of any requirement of the Clean Air Act of Montana, rules adopted under the Clean Air Act of Montana, the FCAA, rules adopted under the FCAA, or any applicable requirement contained in the Montana State Implementation Plan (SIP).
 13. ARM 17.8.764 Administrative Amendment to Permit. An air quality permit may be amended for changes in any applicable rules and standards adopted by the Board of Environmental Review (Board) or changed conditions of operation at a source or stack that do not result in an increase of emissions as a result of those changed conditions. The owner or operator of a facility may not increase the facility's emissions beyond permit limits unless the increase meets the criteria in ARM 17.8.745 for a de minimis change not requiring a permit, or unless the owner or operator applies for and receives another permit in accordance with ARM 17.8.748, ARM 17.8.749, ARM 17.8.752, ARM 17.8.755, and ARM 17.8.756, and with all applicable requirements in ARM Title 17, Chapter 8, Subchapters 8, 9, and 10.
 14. ARM 17.8.765 Transfer of Permit. This rule states that an air quality permit may be transferred from one person to another if written notice of Intent to Transfer, including the names of the transferor and the transferee, is sent to the Department.
- F. ARM 17.8, Subchapter 8 – Prevention of Significant Deterioration of Air Quality, including, but not limited to:
1. ARM 17.8.801 Definitions. This rule is a list of applicable definitions used in this subchapter.
 2. ARM 17.8.818 Review of Major Stationary Sources and Major Modifications--Source Applicability and Exemptions. The requirements contained in ARM 17.8.819 through ARM 17.8.827 shall apply to any major stationary source and any major modification, with respect to each pollutant subject to regulation under the FCAA that it would emit, except as this subchapter would otherwise allow.

This facility is not a major stationary source since this facility is not a listed source and the facility's PTE is below 250 tons per year of any pollutant (excluding fugitive emissions).

G. ARM 17.8, Subchapter 12 – Operating Permit Program Applicability, including, but not limited to:

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any source having:
 - a. PTE > 100 tons per year of any pollutant;
 - b. PTE > 10 tons per year of any one HAP, PTE > 25 tons per year of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or
 - c. PTE > 70 tons per year of particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀) in a serious PM₁₀ nonattainment area.
2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing Air Quality Permit #3420-00 for Devon, the following conclusions were made:
 - a. The facility's PTE is less than 100 tons per year for any pollutant.
 - b. The facility's PTE is less than 10 tons per year for any one HAP and less than 25 tons per year for all HAPs.
 - c. This source is not located in a serious PM₁₀ nonattainment area.
 - d. This facility is not subject to any current NSPS.
 - e. This facility is not subject to any current NESHAP standards.
 - f. This source is not a Title IV affected source, nor a solid waste combustion unit.
 - g. This source is not an EPA designated Title V source.

Based on these facts, the Department determined that Devon will be a minor source of emissions as defined under Title V.

III. BACT Determination

A BACT determination is required for each new or altered source. Devon shall install on the new or altered source the maximum air pollution control capability that is technically practicable and economically feasible, except that BACT shall be used.

Natural Gas Compressor Engine

1. CO BACT

Identification of CO Control Options:

CO is a product of incomplete combustion. Reciprocating engines have the following types of CO control options:

1. Parametric controls (timing and operating at a leaner air-to fuel ratio)

2. Postcombustion catalytic controls:
 - Lean-burn – oxidation catalysts
 - Rich-burn – nonselective catalytic reduction (NSCR)

Eliminate Technically Infeasible CO Options:

Catalytic oxidation applied to a rich-burn is technically infeasible because the oxygen concentration from a rich-burn engine is not high enough for a catalytic oxidizer to operate properly. Excess oxygen is needed by the catalytic oxidizers to efficiently oxidize CO to CO₂.

An NSCR unit applied to a lean-burn or lean-burn retrofit engine is also technically infeasible because the NSCR unit needs a rich fuel-to-air ratio to operate effectively.

Rank Feasible CO Control Options:

Technically feasible control options, in order of the lowest CO emission rate to the highest CO emission rate:

Control Technology	% Control	CO Emission Rate (g/bhp-hr)
Lean-burn with Catalytic Oxidizer and AFR	70% - 90%	0.5
Lean-burn without Control	--	1.5
Rich-burn with NSCR and AFR	80% - 90%	2.0
Rich-burn without Control	--	8.0

The control methods listed above are widely used; these control options cannot be eliminated solely based on environmental or energy impacts. Lean-burn engines do emit relatively higher HAP (formaldehyde) emissions than rich-burn engines. Lean-burn engines cannot be eliminated based on higher formaldehyde emissions, but the higher formaldehyde emissions can affect the BACT determination.

Select CO BACT:

Devon proposes to utilize a lean-burn engine with an oxidation catalyst and an AFR controller, which is considered the most technically practicable and economically feasible control of CO from compressor engines. Based on past Department determinations, lean-burn natural gas compressor engines controlled with an oxidation catalyst and an AFR controller, meeting emission limits of 0.5 gram per brake horsepower-hour (g/bhp-hr) CO are considered BACT. Further, it has been demonstrated that these technologies, operated together, are capable of achieving the g/bhp-hr BACT emission limits established for the proposed compressor engine.

The BACT limit will be 0.5 g/bhp-hr for CO.

2. NO_x BACT

Identification of NO_x Control Options:

Essentially all NO_x formed in natural gas-fired reciprocating engines occurs through the thermal NO_x mechanism, which is mostly formed in high-temperature regions in the cylinder where combustion air has mixed sufficiently with the fuel. Maximum NO_x formation occurs near the stoichiometric air-to-fuel mixture ratio. Lean-burn engines typically have lower NO_x emissions than rich-burn engines.

Reciprocating engines have the following types of NO_x control options:

1. Parametric controls (timing and operating at a leaner air-to fuel ratio)
2. Postcombustion catalytic controls:
 - Lean-burn – selective catalytic reduction (SCR)
 - Rich-burn – nonselective catalytic reduction (NSCR)

Eliminate Technically Infeasible Options:

SCR is not applied to rich-burn engines because oxygen in the exhaust is not high enough for an SCR to operate properly. Additionally, an SCR is not designed to operate on compressor engines that can expect variable load demands and rapid start and stop operation. Typical compressor engines operate at variable loads, thereby creating technical difficulties for SCR operation such as periods of ammonia skip or periods of insufficient ammonia injection. SCR units have not been installed on lean-burn compressor engines in Montana.

An NSCR unit applied to a lean-burn or lean-burn retrofit engine is also technically infeasible because the NSCR unit needs a rich fuel-to-air ratio to operate effectively.

Rank Feasible NO_x Control Options:

Technically feasible control options, in order of the lowest to the highest NO_x emission rate:

Control Technology	% Control	NO _x Emission Rate (g/bhp-hr)
Lean-burn with AFR	5% - 30%	1.0
Rich-burn with NSCR and AFR	90%	1.0
Lean-burn without Control	--	1.0 -2.0
Rich-burn without Control	--	16.0

The control methods listed above are widely used; these control options cannot be eliminated solely based on environmental or energy impacts.

Lean-burn engines do emit relatively higher HAP (formaldehyde) emissions than rich-burn engines. Lean-burn engines cannot be eliminated based on higher formaldehyde emissions, but the higher formaldehyde emissions can affect the BACT determination.

Select NO_x BACT:

Lean-burn engine technology with an AFR controller and rich-burn engines with NSCR and AFR are considered the two most technically practicable and economically feasible controls of NO_x from compressor engines. Devon proposes to utilize a lean-burn engine with an AFR controller. Based on past Department determinations, lean-burn natural gas compressor engines controlled with an AFR controller, meeting emission limits of 1.0 gram per brake horsepower-hour (g/bhp-hr) NO_x, are considered BACT. Further, it has been demonstrated that these technologies, operated together, are capable of achieving the g/bhp-hr BACT emission limits established for the proposed compressor engine. The BACT limit will be 1.0 g/bhp-hr for NO_x.

3. VOC BACT

Devon proposed the use of an oxidation catalyst and an AFR controller to meet 1.0 g/bhp-hr. The Department determined that no additional controls and burning pipeline quality natural gas to meet an emission limit of 1.0 g/bhp-hr constitutes BACT for the proposed compressor engine. The Department is not aware of any BACT determinations that have required controls for VOC emissions from natural gas fired compressor engines.

4. PM₁₀ and SO₂ BACT

The Department is not aware of any BACT determinations that have required controls for PM₁₀ or sulfur dioxide (SO₂) emissions from natural gas fired compressor engines. Devon proposed no additional controls and burning pipeline quality natural gas as BACT for PM₁₀ and SO₂ emissions from the proposed compressor engine. Due to the relatively small amount of PM₁₀ and SO₂ emissions from the proposed engine, any add-on controls would be cost prohibitive. Therefore, the Department concurred with Devon's BACT proposal and determined that no additional controls and burning pipeline quality natural gas will constitute BACT for PM₁₀ and SO₂ emissions from the compressor engine.

IV. Emission Inventory

Source ID	Source	Pollutant - TPY					
		NO _x	CO	VOC	SO ₂	PM ₁₀	HAPs
CE	4-Stroke Lean-burn	10.48	5.24	10.48	0.021	0.35	2.53
Totals		10.48	5.24	10.48	0.021	0.35	2.53

1,085-Hp 4-Stroke Lean-burn Pumping Unit Engine

Fuel Heating Value: 1,000 MMBtu/MMScf (Company Information)
 Fuel Consumption Rate: 8.08 MMBtu/hr (Company Information)

NO_x Emissions:

Emission Factor: 1.0 g/hp-hr (Company Information)
 Calculations: 1.0 g/hp-hr * 0.002205 lb/g * 1085 hp = 2.39 lb/hr
 2.39 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 10.48 ton/yr

CO Emissions:

Emission Factor: 0.5 g/hp-hr (Company Information)
 Calculations: 0.5 g/hp-hr * 0.002205 lb/g * 1085 hp = 1.20 lb/hr
 1.20 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 5.24 ton/yr

VOC Emissions:

Emission Factor: 1.0 g/hp-hr (Company Information)
 Calculations: 1.0 g/hp-hr * 0.002205 lb/g * 1085 hp = 2.39 lb/hr
 2.39 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 10.48 ton/yr

SO₂ Emissions:

Emission Factor: 0.000588 lb/MMBtu (AP-42, Chapter 3, Table 3.2-3, 7/00)
 Calculations: 0.000588 lb/MMBtu * 8.08 MMBtu/hr = 0.0048 lb/hr
 0.0048 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 0.021 ton/yr

PM Emissions (PM emissions include PM₁₀ and PM_{2.5}, both condensable and filterable):

Emission Factor: 0.00999 lb/MMBtu (AP-42, Chapter 3, Table 3.2-3, 7/00)
Calculations: 0.00999 lb/MMBtu * 8.08 MMBtu/hr = 0.081 lb/hr
0.081 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 0.35 ton/yr

HAP Emissions (HAP emissions include formaldehyde):

Emission Factor: 0.072 lb/MMBtu (AP-42, Chapter 3, Table 3.2-3, 7/00)
Calculations: 0.072 lb/MMBtu * 8.08 MMBtu/hr = 0.58 lb/hr
0.58 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 2.53 ton/yr

V. Existing Air Quality

The Devon facility is located in eastern Montana in a sparsely populated area with generally very good ventilation throughout the year. The legal description of the facility is the SW¹/₄ of the NE¹/₄ of Section 14, Township 25 North, Range 18 East, in Blaine County, Montana. Blaine County is unclassifiable/attainment for the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants.

VI. Ambient Air Impact Analysis

The Department determined, based on ambient air quality modeling, that the impact from this permitting action will be minor. The Department believes it will not cause or contribute to a violation of any ambient air quality standard.

Bison Engineering, Inc. (Bison) conducted air quality modeling for the proposed compressor engine as part of the air quality permit application. Proposed NO_x emissions were modeled to demonstrate compliance with the Montana Ambient Air Quality Standards (MAAQS) and the NAAQS. In addition, although a New Source Review (NSR) - Prevention of Significant Deterioration (PSD) increment analysis was not required for this permitting action, the Department requested that permittees in the area of coal bed methane (CBM) natural gas compressor stations model for PSD increments for NO_x; therefore, a PSD increment analysis was conducted.

The EPA approved Industrial Source Complex (ISC3) model and five years of meteorological data (1987 through 1991) were utilized for the air quality model. The surface and upper air data was collected at the Great Falls, National Weather Station #24143.

The receptor grid elevations were derived from digital elevation model (DEM) files using the United States Geological Survey (USGS) 7.5-minute series (1:24,000 scale) digitized topographic maps. A Cartesian receptor grid of 2,726 receptors was developed outside the fence line boundary. Receptors were placed at 50-m intervals along the fence line; 100-m intervals for a distance up to 1 kilometer (km) from the fence line; 250-m intervals for a distance of 1 km to 3 km from the fence line; and 500-m intervals for a distance of 3 km to 10 km from the fence line.

The only air quality pollutant evaluated was NO_x since this pollutant is the primary pollutant of concern for the compressor stations located in the CBM counties. First, a significant impact analysis was performed for the proposed Stevens Compressor station emissions, only. The highest modeled annual NO_x concentration from the new engine was 2.26 ug/m³ – because this exceeded the NO₂ significance level of 1 ug/m³, a full impact analysis (FIA) was conducted to determine the cumulative impact from other sources in the area. FIA modeling conducted for NO_x emissions from the Stevens Compressor engine included the two facilities within 50-km of the proposed station. Both of the facilities are compressor stations located approximately 21 km north of Stevens.

Table 1 shows the results from the cumulative impact modeling.

Table 1. NAAQS/MAAQS Compliance Demonstration

Pollutant	Avg Period	Modeled Conc ^a (ug/m ³)	Background Conc. (ug/m ³)	Ambient Conc (ug/m ³)	NAAQS (ug/m ³)	% of NAAQS	MAAQS (ug/m ³)	% of MAAQS
NO ₂	1-hr	65.5 ^b	75	140.5	--	--	564	25
	Annual	2.3 ^b	6	8.3	100	8.3	94	8.8

^a Concentrations are high-second high values except annual averages.

^b This value is the NO_x impact.

All of the modeled impacts are well below the NO₂ NAAQS and MAAQS. The modeled cumulative annual NO₂ impact is less than 10% of the 25 ug/m³ annual NO₂ Class II PSD increment. The modeling demonstrates that the proposed compressor engine at the Stevens Compressor Station will not cause or contribute to a violation of the ambient standards.

VII. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, the Department conducted a private property taking and damaging assessment and determined there are no taking or damaging implications.

VIII. Environmental Assessment

An environmental assessment, required by the Montana Environmental Policy Act, was completed for this project. A copy is attached.

DEPARTMENT OF ENVIRONMENTAL QUALITY
Permitting and Compliance Division
Air Resources Management Bureau
P.O. Box 200901, Helena, Montana 59620
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FINAL ENVIRONMENTAL ASSESSMENT (EA)

Issued To: Devon Louisiana Corporation (Devon)
Stevens Compressor Station
PO Box 2606
Havre, Montana, 59501

Air Quality Permit Number: 3420-00

Preliminary Determination Issued: December 22, 2005

Department Decision Issued: January 9, 2006

Permit Final: January 25, 2006

1. *Legal Description of Site:* Devon's Stevens Compressor Station would be located in the SW¹/₄ of the NE¹/₄ of Section 14, Township 25 North, Range 18 East, in Blaine County, Montana.
2. *Description of Project:* Devon proposed to construct and operate a natural gas-driven 4-stroke, lean-burn compressor engine up to 1,085 hp.
3. *Objectives of Project:* The proposed project would generate business and revenue for the company by allowing them to gather and compress nearby field gas.
4. *Alternatives Considered:* In addition to the proposed action, the Department also considered the "no-action" alternative. The "no-action" alternative would deny issuance of the Montana Air Quality Permit to the proposed facility. However, the Department does not consider the "no-action" alternative to be appropriate because Devon demonstrated compliance with all applicable rules and regulations as required for permit issuance. Therefore, the "no-action" alternative was eliminated from further consideration.
5. *A Listing of Mitigation, Stipulations, and Other Controls:* A list of enforceable conditions, including a BACT analysis, would be included in Permit #3420-00.
6. *Regulatory Effects on Private Property:* The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined that the permit conditions would be reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements and would not unduly restrict private property rights.

7. The following table summarizes the potential physical and biological effects of the proposed project on the human environment. The “no-action” alternative was discussed previously.

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Terrestrial and Aquatic Life and Habitats			X			Yes
B	Water Quality, Quantity, and Distribution			X			Yes
C	Geology and Soil Quality, Stability and Moisture			X			Yes
D	Vegetation Cover, Quantity, and Quality			X			Yes
E	Aesthetics			X			Yes
F	Air Quality			X			Yes
G	Unique Endangered, Fragile, or Limited Environmental Resources			X			Yes
H	Demands on Environmental Resource of Water, Air and Energy			X			Yes
I	Historical and Archaeological Sites			X			Yes
J	Cumulative and Secondary Impacts			X			Yes

SUMMARY OF COMMENTS ON POTENTIAL PHYSICAL AND BIOLOGICAL EFFECTS: The following comments have been prepared by the Department.

A. Terrestrial and Aquatic Life and Habitats

Minor impacts on terrestrial or aquatic life and habitats would be expected from the proposed project because the facility would be a source of air pollutants and minor amounts of land disturbance would be required to construct the facility. While the facility would emit air pollutants and corresponding deposition of pollutants would occur, the Department determined that any impacts from deposition would be minor due to the relatively small amount of pollutants emitted, dispersion characteristics of the pollutants and the atmosphere (see Section 7.F of this EA), and conditions that would be placed in Permit #3420-00. Any impacts from facility construction would be minor due to the relatively small size of the project (approximately one acre). Overall, any impacts to terrestrial and aquatic life and habitats would be minor.

B. Water Quality, Quantity, and Distribution

Minor, if any, impacts would be expected on water quality, quantity, and distribution from the proposed project because of the relatively small size of the project. While the facility would emit air pollutants and corresponding deposition of pollutants would occur, the Department determined that any impacts from deposition would be minor due to the relatively small amount of pollutants emitted, dispersion characteristics of the pollutants and the atmosphere (see Section 7.F of this EA), and conditions that would be placed in Permit #3420-00. In addition, facility construction would not impact water quality, quantity, or distribution because there is no surface water at or near the site and only minor amounts of construction would be required to construct the facility. Overall, any impacts to water quality, quantity, and distribution would be minor.

C. Geology and Soil Quality, Stability, and Moisture

Minor impacts would occur on the geology and soil quality, stability, and moisture from the proposed project because minor construction would be required to complete the project. Any impacts to the geology and soil quality, stability, and moisture from facility construction would be minor due to the relatively small size of the project. In addition, while deposition of pollutants would occur, the Department determined that the chance of pollutant deposition impacting the geology and soil in the areas surrounding the site would be minor due to the relatively small amount of pollutants emitted and the dispersion characteristics of the pollutants and the atmosphere (see Section 7.F of this EA). Permit #3420-00 would contain conditions that would also minimize impacts to geology and soil by limiting the amount of equipment installed at the facility and limiting the emissions from the facility. Overall, any impacts to the geology and soil quality, stability, and moisture would be minor.

D. Vegetation Cover, Quantity, and Quality

Minor impacts would occur on vegetation cover, quantity, and quality because minor construction would be required to complete the project. Any impacts to the vegetation cover, quantity, and quality from facility construction would be minor due to the relatively small size of the project. In addition, while deposition of pollutants would occur, the Department determined that the chance of deposition of pollutants impacting the vegetation in the areas surrounding the site would be minor due to the relatively small amount of pollutants emitted and dispersion characteristics of the pollutants and the atmosphere (see Section 7.F of this EA). Permit #3420-00 contains conditions that would also minimize the impacts to vegetation by limiting the amount of equipment installed at the facility and limiting the emissions from the facility. Overall, any impacts to vegetation cover, quantity, and quality would be minor.

E. Aesthetics

Minor impacts would result on the aesthetics of the area because the facility would be a new facility. Overall, any aesthetic impacts would be minor due to the relatively small size of the facility and the permit conditions that would minimize emissions from the facility.

F. Air Quality

The air quality of the area would realize minor impacts from the proposed project because the facility would emit relatively small amounts of NO_x, VOC, and CO, and very small amounts of HAPs, PM₁₀, and SO₂. Dispersion modeling demonstrates that all of the modeled impacts for NO_x are below the NAAQS and MAAQS and will not cause or contribute to a violation of the ambient standard (please refer to Section VI of the permit analysis). In addition, air emissions from the facility would be minimized by conditions that would be placed in Permit #3420-00. Conditions would include, but would not be limited to, the requirement to operate Best Available Control Technology (BACT). Permit #3420-00 would also include conditions requiring Devon to use reasonable precautions to control fugitive dust emissions.

Since controlled emissions from the proposed station would exhibit good dispersion characteristics and would not exceed any Montana ambient air quality modeling threshold, the Department determined that controlled emissions from the source will not cause or contribute to a violation of any ambient air quality standard. Therefore, any impacts to air quality from the proposed facility would be minor.

G. Unique Endangered, Fragile, or Limited Environmental Resources

In an effort to identify any unique endangered, fragile, or limited environmental resources in the area, the Department contacted the Montana Natural Heritage Program, Natural Resource Information System (NRIS). In this case, the area was defined by the section, township, and range of the proposed location with an additional 1-mile buffer zone. The NRIS search identified a species of special concern, the Greater Sage-grouse, that is outside of the immediate area of Stevens Compressor station, but within one mile. Due to the minor amounts of construction that would be required (approximately one acre), the relatively low levels of pollutants that would be emitted, dispersion characteristics of pollutants and the atmosphere, and conditions that would be placed in Permit #3420-00, the Department determined that the chance of the project impacting any species of special concern would be minor.

H. Demands on Environmental Resource of Water, Air, and Energy

The proposed project would have impacts on the demands on the environmental resources of air and water because the facility would be a source of air pollutants. However, any impacts on the environmental resources of air and water would be minor because the facility's potential to emit would be relatively small by industrial standards. While deposition of pollutants would occur, as explained in Sections 7.B and 7.F of this EA, the Department determined that the chance of the proposed project impacting demands on air and water resources would be minor due to dispersion characteristics of pollutants and the atmosphere and conditions that would be placed in Permit #3420-00.

The proposed project would have minor impacts on the demand on the environmental resource of energy. Overall, any impacts on the demands on the environmental resources of air, water, and energy would be minor.

I. Historical and Archaeological Sites

In an effort to identify any historical and archaeological sites near the proposed project area, the Department contacted the Montana Historical Society, State Historic Preservation Office (SHPO). According to SHPO records, there have not been any previously recorded historic or archaeological sites within the proposed area. In addition, SHPO records indicated that no previous cultural resource inventories have been conducted in the area. SHPO stated that there was a low likelihood that cultural properties would be impacted and that a recommendation for a cultural resource inventory was unwarranted. However, SHPO requested to be contacted to have the site investigated if cultural materials are inadvertently discovered. Therefore, the Department determined that the chance of the project impacting any cultural or historic sites would be minor.

J. Cumulative and Secondary Impacts

Overall, the cumulative and secondary impacts on the physical and biological aspects of the human environment in the immediate area would be minor due to the relatively small size of the project. Potential emissions from the facility would be relatively small by industrial standards. The Department expects this facility to operate in compliance with all applicable rules and regulations outlined in Permit #3420-00.

8. The following table summarizes the potential economic and social effects of the proposed project on the human environment. The “no-action” alternative was discussed previously.

		Major	Moderate	Minor	None	Unknown	Comments Included
A	Social Structures and Mores				X		Yes
B	Cultural Uniqueness and Diversity				X		Yes
C	Local and State Tax Base and Tax Revenue			X			Yes
D	Agricultural or Industrial Production			X			Yes
E	Human Health			X			Yes
F	Access to and Quality of Recreational and Wilderness Activities				X		Yes
G	Quantity and Distribution of Employment			X			Yes
H	Distribution of Population				X		Yes
I	Demands for Government Services			X			Yes
J	Industrial and Commercial Activity			X			Yes
K	Locally Adopted Environmental Plans and Goals				X		Yes
L	Cumulative and Secondary Impacts			X			Yes

SUMMARY OF COMMENTS ON POTENTIAL ECONOMIC AND SOCIAL EFFECTS: The following comments have been prepared by the Department.

A. Social Structures and Mores

The proposed project would not cause a disruption to any native or traditional lifestyles or communities (social structures or mores) in the area because the proposed project would take place in a remote location in which oil and gas exploration and extraction activities are present. The proposed project would not change the predominant use of the surrounding area and the facility would be relatively small by industrial standards.

B. Cultural Uniqueness and Diversity

The cultural uniqueness and diversity of the area would remain unchanged from the proposed project (no impact) because the proposed project would take place in a remote location in which oil and gas exploration and extraction activities are present. The proposed project would not change the predominant use of the surrounding area and the facility would be relatively small by industrial standards.

C. Local and State Tax Base and Tax Revenue

The proposed project would result in minor, if any, impacts to the local and state tax base and tax revenue because the proposed project would not require new permanent employees to be hired. In addition, only minor amounts of construction would be needed to complete the project.

D. Agricultural or Industrial Production

The current land use of the proposed location is open range land (native range grasses and sagebrush); therefore, the proposed project would not impact agricultural production. The compressor station may promote future industrial production in the area. Overall, any impacts to agricultural or industrial production would be minor.

E. Human Health

The proposed project would result in only minor, if any, impacts to human health because of the relatively small quantity of potential emissions. As explained in Section 7.F of this EA, deposition of pollutants would occur. However, the Department determined that the proposed project, permitted by Permit #3420-00, would comply with all applicable air quality rules, regulations, and standards. These rules, regulations, and standards are designed to be protective of human health.

F. Access to and Quality of Recreational and Wilderness Activities

The proposed project would not have any impacts on access to recreational and wilderness activities because of the relatively small size of the facility. The proposed project would not have impacts on the quality of recreational and wilderness activities in the area.

G. Quantity and Distribution of Employment

The proposed project would not affect the quantity and distribution of employment because no permanent employees would be hired as a result of the proposed project. However, temporary construction-related positions could result from this project. Any impacts to the quantity and distribution of employment would be minor due to the relatively small size of the facility.

H. Distribution of Population

The proposed project would not affect distribution of population in the area because the facility would be located in a relatively remote location. The proposed project would not create any new permanent employment that would cause an increase in population in the area. In addition, the proposed project would not have impacts that would cause a decrease in the distribution of population in the surrounding area because the facility would be relatively small by industrial standards and the facility would only emit relatively small amounts of emissions.

I. Demands for Government Services

There would be minor impacts on demands of government services because additional time would be required by government agencies to issue Permit #3420-00 and to monitor compliance with applicable rules and standards. In addition, the roads in the area may realize a minor increase in vehicle traffic. However, any impacts on government services to regulate the minor increase in traffic would be minor due to the overall small size of the operation. Overall, any impacts on the demands for government services would be minor.

J. Industrial and Commercial Activity

Only minor impacts would be expected on the local industrial and commercial activity because the proposed project would represent only a minor increase in the industrial and commercial activity in the area. However, any new oil & gas well facilities with a PTE greater than 25 tons per year of any regulated air pollutant would be required to obtain a Montana Air Quality Permit and the Department would perform an EA for each permit application, evaluating impacts to industrial and commercial activity for each proposed project.

K. Locally Adopted Environmental Plans and Goals

The Department is not aware of any locally adopted environmental plans and goals affected by issuing Permit #3420-00. The state standards would protect the proposed site and the environment surrounding the site.

L. Cumulative and Secondary Impacts

Overall, cumulative and secondary impacts from the proposed project would result in minor impacts to the economic and social aspects of the human environment in the immediate area due to the relatively small size of the facility. Due to the relatively small size of the project, the industrial production, employment, and tax revenue (etc.) would not be significantly impacted by the proposed project. The Department would not expect other industries to be impacted by the proposed project and the Department believes that this facility could be expected to operate in compliance with all applicable rules and regulations as would be outlined in Permit #3420-00. In addition, further cumulative impacts may result from other companies actively drilling in the natural gas field. The companies would likely apply for air quality permits for additional facilities. However, impacts from additional facilities that require air quality permits would be evaluated upon the Department's receipt of any future permit applications.

Recommendation: No EIS is required.

If an EIS is not required, explain why the EA is an appropriate level of analysis: The current permitting action is for the construction and operation of a crude oil tank farm facility. Permit #3420-00 would include conditions and limitations to ensure the facility would operate in compliance with all applicable rules and regulations. In addition, there are no significant impacts associated with this proposal.

Other groups or agencies contacted or which may have overlapping jurisdiction: Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program

Individuals or groups contributing to this EA: Department of Environmental Quality – Air Resources Management Bureau, Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program

EA prepared by: Christine Weaver

Date: December 21, 2005