

AIR QUALITY PERMIT

Issued To: Devon Energy Production Company, L.P. Permit: #2772-10
CS-102 Compressor Station Administrative Amendment (AA)
P.O. Box 2606 Request Received: 03/13/06
Clear Creek Road Department's Decision on AA: 05/04/06
Havre, MT 59501 Permit Final: 05/20/06
AFS #: 015-0001

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

Section I: Permitted Facilities

A. Plant Location

The CS 102 Natural Gas Compressor Station is located in the SE $\frac{1}{4}$ of the NW $\frac{1}{4}$ of Section 26, Township 27 North, Range 16 East, in Chouteau County, Montana. A list of permitted equipment can be found in Section I.A. of the Permit Analysis.

B. Current Permit Action

On March 13, 2006, the Department of Environmental Quality – Air Resources Management Bureau (Department) received a request to change the corporate name on Permit #2772-09 from Devon-Louisiana Corporation to Devon Energy Production Company, L.P. (Devon). The current permit action changes the corporate name on Permit #2772-10 as requested.

Section II: Limitations and Conditions

A. Emission Limitations

1. Emissions from the new 738-horsepower (hp) Waukesha rich-burn compressor engine shall be controlled with the use of Non-Selective Catalytic Reduction (NSCR) technology with an air-fuel-ratio (AFR) controller and shall not exceed the following limits (ARM 17.8.752):

NO _x ¹	1.63 pounds per hour (lb/hr)
CO	1.63 lb/hr
VOC	1.63 lb/hr

2. Emissions from the 772-hp Superior compressor engine shall not exceed the following limits (ARM 17.8.749 and ARM 17.8.752):

NO _x ¹	2.98 lb/hr
CO	3.06 lb/hr
VOC	2.12 lb/hr

1 NO_x reported as NO₂

3. Emissions from the existing 738-hp Waukesha compressor engine shall be controlled with the use of NSCR technology with an AFR controller and shall not exceed the following limits (ARM 17.8.752):

NO _x ²	3.25 lb/hr
CO	4.88 lb/hr
VOC	1.63 lb/hr

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 6 consecutive minutes (ARM 17.8.304).
5. Devon shall not cause or authorize emissions to be discharged into the atmosphere from haul roads, access roads, parking lots, or the general plant property without taking reasonable precautions to control emissions of airborne particulate matter (ARM 17.8.308).
6. Devon shall treat all unpaved portions of the access roads, parking lots, and general plant area with fresh water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.5 (ARM 17.8.749).

B. Testing Requirements

1. Devon shall test the 738-hp Waukesha rich-burn compressor engine for NO_x and CO, concurrently, to demonstrate compliance with the NO_x and CO emission limits contained in Section II.A.1. Testing shall be conducted on an every 4-year basis or according to another testing/monitoring schedule as may be approved by the Department (ARM 17.8.105 and ARM 17.8.749).
2. All compliance source tests shall be conducted in accordance with the Montana Source Test Protocol and Procedures Manual (ARM 17.8.106).
3. The Department may require further testing (ARM 17.8.105).

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 Section I 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 units as 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

² NO_x reported as NO₂

above its permitted operation or the addition of a new emissions 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 5 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).

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 all 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 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 sections 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 Department personnel at the location of the permitted source.
- G. Permit Fees - 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.

Permit Analysis
Devon Energy Production Company, L.P.
Permit #2772-10

I. Introduction/Process Description

A. Permitted Equipment

Devon Energy Production Company, L.P. owns and operates the following equipment:

- (2) 738-horsepower (hp) Waukesha Compressor Engines
- (1) 772-hp Superior Compressor Engine
- (1) 0.5 Million British thermal units/hour (MMBtu/hr) ALCO TEG Dehydrator
- (1) 120-MBtu/hr Heater
- (1) 75-MBtu/hr Heater
- (1) 300-hp Ajax DPC Compressor Engine
- (1) 100-hp Arrow 330 TA Engine for engine-driven chiller

B. Source Description

The CS 102 Natural Gas Compressor Station is located in the SE¹/₄ of the NW¹/₄ of Section 26, Township 27 North, Range 16 East, in Chouteau County, Montana. The CS 102 Compressor Station compresses pipeline gas for transport to major market areas. This facility also removes the moisture from the gas during the process. This is accomplished with the dehydrator, also called a reboiler or glycol unit.

C. Permit History

Montana Power Company (MPC) was issued Permit #2772-00 for the operation of a compressor station and associated equipment at the Big Sandy Field, Station 102-1.

On March 1, 1994, the Department of Environmental Quality (Department) issued Permit #2772-01. This modification was requested by MPC to revise the emission limitation units. The revision was due to varying parameters, such as engine revolutions per minute (RPM), operating load (bhp), ambient air temperature, gas temperature, site, elevation, fuel gas quality, air/fuel ratio (AFR), field gas conditions, etc. Rather than expressing the limit for engines in a grams per brake horsepower-hour (g/bhp-hr), an emission limit expressed in pound per hour (lb/hr) was requested for operational flexibility. Also, to clarify NO_x mass emission calculations, NO_x emission limitations were identified as NO₂.

Permit #2772-02 was issued on November 1, 1997. The reason for the modification was the transfer of the ownership of the Big Sandy Field Station 102-1 from MPC to UMC Petroleum Corporation. Also, an Ajax DPC 300-hp compressor engine was added. With this change, the facility requested an operational limit to keep the emissions below the Title V operating permit threshold. The addition of the engine was covered under the Administrative Rules of Montana (ARM) 17.8.705(1)(r) because the potential emissions of the new equipment were below 15 tons per year, the de minimis threshold. The rule references were also updated. Permit #2772-02 replaced Permit #2772-01.

On June 3, 1999, the Department received notification that UMC Petroleum Corp had merged with Ocean Energy, Inc., Havre Pipeline Inc. (HPC). The HPC, Big Sandy Field Station 102 compressor station began operating as a subsidiary of Ocean Energy, Inc. Subsequently, on June 11, 1999, the Department issued Permit #2772-03, which replaced Permit #2772-02.

On October 15, 1999, HPC requested a de minimis determination for the installation of a 772-hp Superior 6GTLE compressor engine and an ALCO Dehydrator at the Big Sandy Field Compressor Station 102. HPC planned to remove the existing 600-hp White Superior compressor engine and the Sivalls Dehydrator after installation of the new equipment. Permit **#2772-04** replaced Permit #2772-03.

On July 29, 2000, HPC requested an alteration of Permit #2772-04. The alteration added a 1607-hp Waukesha Compressor Engine and a 607-hp Waukesha Compressor Engine. The alteration also removed a 600-hp White Superior Compressor Engine and a 300-MBtu/hr Sivalls Reboiler from the permit. In addition, the emission inventory for the 300-hp Ajax Compressor Engine was corrected and the operational limitations introduced in Permit #2772-02 were removed because the hours of operation limitation was no longer needed to keep the facility below the Title V threshold. Permit **#2772-05** replaced Permit #2772-04.

On July 10, 2001, HPC requested an alteration of Permit #2772-05 for the addition of a 738-hp Waukesha Compressor Engine. Further, HPC requested that the 1607-hp and the 607-hp Waukesha Compressor Engines be removed from the permit. Permit **#2772-06** replaced Permit #2772-05.

On April 3, 2003, the Department received a request from HPC for the addition of a 100-horsepower (hp) Arrow VRG 330 TA engine to provide power for an engine-driven chiller. On October 31, 2003, the Department received a letter from HPC for the determination of applicability of Subpart KKK to the facility. This permit action added the 100-hp Arrow engine to the permit according to the provisions of ARM 17.8.745, addressed the applicability of Subpart KKK, and updated the permit to reflect current permit language and rule references used by the Department. Permit **#2772-07** replaced Permit #2772-06.

On July 9, 2004, the Department received from HPC a complete permit application for the modification of Montana Air Quality Permit #2772-07. Specifically, Devon requested to add one 738-hp Waukesha 3521 GSI rich-burn compressor engine to the facility. The 738-hp engine was removed from the Blaine County #5 Compressor Station (Permit #3145) to be used at the CS 102 Compressor Station. In addition, HPC Energy Corporation requested that the Department change the corporate name on Permit #2772-07 from Ocean Energy, Inc. to Devon Energy Corporation. This permit action added the 738-hp Waukesha 3521 GSI rich-burn compressor engine to Permit #2772-07, changed the corporate name, and updated the permit to reflect current permit language and rule references used by the Department. **Permit #2772-08** replaced Permit #2772-07.

The Department received a letter dated August 19, 2004, from Devon-Louisiana Corporation to change the corporate name on Permit #2772-07 from Ocean Energy, Inc. to Devon-Louisiana Corporation. Prior to that request (and to the subsequent permit action being issued final in Permit #2772-08), Ocean Energy, Inc. had requested a name change to Devon Energy Corporation. The Department transferred ownership of Permit #2772-08 from Devon Energy Corporation to Devon-Louisiana Corporation. **Permit #2772-09** replaced Permit #2772-08.

D. Current Permit Action

On March 13, 2006, the Department received a request to change the corporate name on Permit #2772-09 from Devon-Louisiana Corporation to Devon Energy Production Company, L.P. (Devon). The current permit action changes the corporate name on Permit #2772-10 as requested. **Permit #2772-10** replaces Permit #2772-09.

E. Additional Information

Additional information, such as applicable rules and regulations, Best Available Control Technology (BACT)/Reasonably Available Control Technology (RACT) determinations, air quality impacts, and environmental assessments, is included in the analysis associated with each change to the permit.

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. Upon request, the Department will provide references for locations 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 emissions 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 4 hours.
5. ARM 17.8.111 Circumvention. (1) No person shall cause or permit the installation or use of any device or any means which, without resulting in reduction in 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 that a public nuisance is created.

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

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 to an outdoor atmosphere from any source installed after November 23, 1968, that exhibit an opacity of 20% or greater averaged over 6 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 (PM). (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 PM.
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, PM caused by the combustion of fuel in excess of the amount determined by this section.
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 PM in excess of the amount set forth in this section.
5. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. (4) Commencing July 1, 1972, no person shall burn liquid or solid fuels containing sulfur in excess of 1 pound of sulfur per million Btu fired. (5) Commencing July 1, 1971, no person shall burn any gaseous fuel containing sulfur compounds in excess of 50 grains per 100 cubic feet of gaseous fuel, calculated as hydrogen sulfide at standard conditions. Devon will utilize pipeline quality natural gas, in the engines, the dehydration unit, and the space heaters to meet this limitation.
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 a tank is equipped with a vapor loss control device as described in (1) of this rule, or is a pressure tank as described in (1) of this rule.
7. ARM 17.8.340 Standard of Performance for New Stationary Sources. This rule incorporates, by reference, 40 Code of Federal Regulations (CFR) Part 60, Standards of Performance for New Stationary Sources (NSPS). This facility is not an NSPS affected source because it does not meet the definition of any NSPS subpart defined in 40 CFR 60.

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 Emission Standards for Hazardous Air Pollutants for Reciprocating Internal Combustion Engines.

Based on the information submitted by Devon, the CS-102 facility 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 was not required to submit a fee because the current permit action is administrative.
2. ARM 17.8.505 Air Quality 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; and 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 pro-rate 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. Devon has a PTE greater than 25 tons per year of carbon monoxide (CO) and nitrogen oxides (NO_x); therefore, an air quality permit is required.

3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that do not require a permit under 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 was not required to submit a permit application because the current permit action is administrative. (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. The current permit is an administrative amendment action; therefore, no public notice was required.
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 BACT shall be utilized. The required BACT analysis is included 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 1 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 source since the facility is not a listed source and does not have a PTE greater than 250 tons per year of any pollutant (excluding fugitive emissions).

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

1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any stationary source having:
 - a. PTE > 100 tons/year of any pollutant;
 - b. PTE > 10 tons/year of any one HAP, PTE > 25 tons/year of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or
 - c. PTE > 70 tons/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 Applicability. (1) Title V of the FCAA 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 #2772-10 for the Devon Big Sandy Field Station CS 102 Compressor Station, the following conclusions were made:
- a. The facility's PTE is less than 100 tons/year for any pollutant.
 - b. The facility's PTE is less than 10 tons/year of any one HAP and less than 25 tons/year of 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 has determined that the Devon CS 102 Compressor Station 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 a new or altered source the maximum air pollution control capability which is technically practicable and economically feasible, except that BACT shall be utilized.

A BACT analysis was not required for the current permit action because the current permit action is considered an administrative permit action.

IV. Emission Inventory

Source	Ton/year					
	PM	PM ₁₀	NO _x	CO	VOC	SO _x
772-hp Superior Compressor Engine	0.54	0.54	13.02	13.39	9.30	0.03
300-hp Ajax Compressor Engine	0.10	0.10	13.04	2.61	2.90	0.01
738-hp Waukesha Compressor Engine	0.31	0.31	14.22	21.38	7.13	0.02
Alco Dehydrator Reboiler and Still Vent	0.02	0.02	0.22	0.18	0.01	0.00
Two Natural Gas-Fired Heaters	0.00	0.00	0.09	0.02	0.00	0.00
100-hp Arrow Engine	0.03	0.03	9.74	2.90	0.97	0.00
New 738-hp Waukesha Compressor Engine	0.24	0.24	7.13	7.13	7.13	0.01495
Total	1.24	1.24	57.46	47.61	27.44	0.07

772-bhp Superior Compressor Engine

Heat Content of Natural Gas: 1,000 MMBtu/MMSCF

Fuel Consumption Rate: 15.98 MBtu/bhp-hr

Number of hours of operation per year: 8760hr/yr

Fuel Combustion Rate: $15.98 \text{ MBtu/bhp-hr} * 772 \text{ hp} = 12.34 \text{ MMBtu/hr}$
Fuel Usage: $12.34 \text{ MMBtu/hr} * 1,000 \text{ MMBtu/MMSCF} * 8760 \text{ hr/yr} = 108.10 \text{ MMSCF/yr}$

PM Emissions

PM Emission Factor is equal to the PM₁₀ Emission Factor, so PM Emissions are equal to PM₁₀ Emissions.

PM₁₀ Emissions

Emission Factor: 10.0 lb/MMSCF (Fire Version 5.0, 8/95 2-02-002-02)

Control Efficiency: 0%

Calculations: $E(\text{PM}_{10}) = 10.0 \text{ lb/MMSCF} * 108.10 \text{ MMSCF/yr} * 0.0005 \text{ ton/lb} = 0.54 \text{ ton/yr}$

SO_x Emissions

Emission Factor: 0.6 lb/MMSCF (Fire Version 5.0, 8/95 2-02-002-02)

Control Efficiency: 0%

Calculations: $E(\text{SO}_x) = 0.6 \text{ lb/MMSCF} * 108.10 \text{ MMSCF/yr} * 0.0005 \text{ ton/lb} = 0.03 \text{ ton/yr}$

VOC Emissions

Emission Factor: 1.25 g/bhp-hr (Manufacturer's data)

Control Efficiency: 0%

Calculations: $E(\text{VOC}) = 1.25 \text{ g/bhp-hr} * 772 \text{ bhp} * 0.0022 \text{ lb/g} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 9.30 \text{ ton/yr}$

NO_x Emissions

Emission Factor: 1.75 g/bhp-hr (Manufacturer's data)

Control Efficiency: 0%

Calculations: $E(\text{NO}_x) = 1.75 \text{ g/bhp-hr} * 772 \text{ bhp} * 0.0022 \text{ lb/g} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 13.02 \text{ ton/yr}$

CO Emissions

Emission Factor: 1.80 g/bhp-hr (Manufacturer's data)

Control Efficiency: 0%

Calculations: $E(\text{CO}) = 1.80 \text{ g/bhp-hr} * 772 \text{ hp} * 0.0022 \text{ lb/g} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 13.39 \text{ ton/yr}$

300-hp Ajax Compressor Engine

Brake Horsepower: 300 bhp

Hours of Operation: 8760 hr/yr

Max Fuel Combustion Rate: $8.50 \text{ MBtu/hp-hr} * 300 \text{ hp} = 2,550 \text{ MBtu/hr} = 2.25 \text{ MMBtu/hr}$

Fuel Heating Value: 1,000 Btu/SCF = 1,000 MMSCF/MMBtu

Calculated Fuel Usage [MMSCF]: (Fuel Combustion Rate [MMBtu]/Heat Content of Fuel [MMBtu/MMSCF])*Hours/Year

Calculated Fuel Usage: $(2.25 \text{ MMBtu/hr} / 1000 \text{ MMSCF/MMBtu}) * 8760 \text{ hr/yr} = 19.71 \text{ MMSCF}$

PM Emissions

PM Emission Factor is equal to PM₁₀ Emission Factor, so the PM Emissions are equal to PM₁₀ Emissions

PM₁₀ Emissions

Emission Factor: 10.0 lbs/MMSCF (FIRE, PC Version, 1/95, 2-02-002-02)

Calculations: $E(\text{PM}_{10}) = 10.0 \text{ lb/MMSCF} * 19.71 \text{ MMSCF} * 0.0005 \text{ ton/lb} = 0.10 \text{ ton/yr}$

NO_x Emissions

Emission Factor: 4.5g/bhp-hr (Data from Manufacturer)

Calculations: $E(\text{NO}_x) = 4.5 \text{ g/bhp-hr} * 300 \text{ bhp} * 1 \text{ lb}/453.6 \text{ g} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 13.04 \text{ ton/yr}$

CO Emissions

Emission Factor: 0.9g/bhp-hr (Data from Manufacture)

Calculations: $E(\text{CO}) = 0.9 \text{ g/bhp-hr} * 300 \text{ bhp} * 1 \text{ lb}/453.6 \text{ g} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 2.61 \text{ ton/yr}$

VOC Emissions

Emission Factor: 1.0 g/bhp-hr (Data from Manufacturer)

Calculations: $E(\text{VOC}) = 1.0 \text{ g/bhp-hr} * 300 \text{ bhp} * 1 \text{ lb}/453.6 \text{ g} * 8760 \text{ hr/yr} * 0.0005 \text{ ton/lb} = 2.90 \text{ ton/yr}$

SO_x Emissions

Emission Factor: 0.6 lbs/MMSCF (FIRE, PC Version, 1/95, 2-02-002-02)

Calculations: $E(\text{SO}_x) = 0.6 \text{ lb/MMSCF} * 19.71 \text{ MMSCF} * 0.0005 \text{ ton/lb} = 0.01 \text{ ton/yr}$

738-hp Waukesha Compressor Engine

Fuel Combustion Rate: 7.005 MMBtu/hr

Heat Content of Natural Gas: 1,000MMBtu/MMSCF

Fuel Usage[MMSCF]: = Fuel Combustion Rate [MMBtu/hr]/Heat Content of Fuel [MMBtu/MMSCF]* Hour/Year

Calculated Fuel Usage: $(7.005 \text{ MMBtu/hr}/1,000 \text{ MMBtu/MMSCF}) * 8760 \text{ hr/yr} = 61.36 \text{ MMSCF/yr}$
Hours of Operations: 8760 hr/yr
Break Horsepower: 738 bhp

PM Emissions

PM Emission Factor is equal to PM₁₀ Emission Factor, so the PM Emissions are equal to the PM₁₀ Emissions

PM₁₀ Emissions

Emission Factor: 10.00 lb/MMSCF (Fire 5.0, 20-200-202, 8/95)
Calculations: $E(\text{PM}_{10}) = 10.00 \text{ lb/MMBtu} * 61.36 \text{ MMSCF/yr} * 0.0005 \text{ ton/lb} = 0.31 \text{ ton/yr}$

NO_x Emissions

Emission Factor: 2.00 g/bhp-hr (Revised BACT guidelines Dec.13, 1993)
Calculations: $E(\text{NO}_x) = 2.00 \text{ g/bhp-hr} * 738 \text{ bhp} * 2.205 \times 10^{-3} \text{ lb/g} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 14.22 \text{ ton/yr}$

VOC Emissions

Emission Factor: 1.00 g/bhp-hr (Revised BACT guidelines Dec.13, 1993)
Calculations: $E(\text{VOC}) = 1.00 \text{ g/bhp-hr} * 738 \text{ bhp} * 2.205 \times 10^{-3} \text{ lb/g} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 7.13 \text{ ton/yr}$

SO_x Emissions

Emission Factor: 0.6 lb/MMSCF (Fire 5.0, 20-200-202, 8/95)
Calculations: $E(\text{SO}_x) = 0.6 \text{ lb/MMSCF} * 61.36 \text{ MMSCF/yr} * 0.0005 \text{ ton/lb} = 0.02 \text{ ton/yr}$

CO Emissions

Emission Factor: 3.00 g/bhp-hr (Revised BACT guidelines Dec.13, 1993)
Calculations: $E(\text{CO}) = 3.00 \text{ g/bhp-hr} * 738 \text{ bhp} * 2.205 \times 10^{-3} \text{ lb/g} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 21.38 \text{ ton/yr}$

ALCO Dehydrator Reboiler and Stil Vent

Fuel Combustion Rate: 0.50 MMBtu/hr
Heat Content of Natural Gas: 1,000 MMBtu/MMSCF
Fuel Usage: 4.38 MMSCF/yr
Number of Hours of Operation: 8760 hr/yr

PM Emissions

PM Emission Factor is equal to PM₁₀ Emission Factor, so the PM Emissions are equal to PM₁₀ Emissions

PM₁₀ Emissions

Emission factor: 7.6 lb/MMSCF (AP 42 Sec.1.4-2, 3/98)
Control Efficiency: 0%
Calculations: $E(\text{PM}_{10}) = 7.6 \text{ lb/MMSCF} * 4.38 \text{ MMSCF/yr} * 0.0005 \text{ ton/lb} = 0.017 \text{ ton/yr}$

NO_x Emissions

Emission Factor: 100.00 lb/MMSCF (AP 42 Sec.1.4-1, 3/98)
Control Efficiency: 0%
Calculations: $E(\text{NO}_x) = 100.00 \text{ lb/MMSCF} * 4.38 \text{ MMSCF/yr} * 0.0005 \text{ ton/lb} = 0.22 \text{ ton/yr}$

CO Emissions

Emission Factor: 84.00 lb/MMSCF (AP 42 Sec.1.4-2, 3/98)
Control Efficiency: 0%
Calculations: $E(\text{CO}) = 84.00 \text{ lb/MMSCF} * 4.38 \text{ MMSCF/yr} * 0.0005 \text{ ton/yr} = 0.18 \text{ ton/yr}$

VOC Emissions

Emission Factor: 5.5 lb/MMSCF (AP 42 Sec.1.4-2, 3/98)
Control Efficiency: 0%
Calculations: $E(\text{VOC}) = 5.5 \text{ lb/MMSCF} * 4.38 \text{ MMSCF/yr} * 0.0005 \text{ ton/yr} = 0.01 \text{ ton/yr}$

SO_x Emissions

Emission Factor: 0.60 lb/MMSCF (AP 42 Sec.1.4-2, 3/98)
Control Efficiency: 0%
Calculations: $E(\text{SO}_x) = 0.60 \text{ lb/MMSCF} * 4.38 \text{ MMSCF/yr} * 0.0005 \text{ ton/lb} = 0.00 \text{ ton/yr}$

Natural Gas Space Heaters (2)

Two Heaters of Total Combustion Rate: 195 MBtu/hr=0.195 MMBtu/hr
Number of hour of Operation: 8760 hours per year.
Heat Content of Natural Gas: 1,000 MMBtu/MMSCF
Fuel Usage: $[\text{MMSCF}] = (\text{Fuel Combustion Rate} [\text{MMBtu/hr}]/\text{Heat Content of Fuel} [\text{MMBtu/MMSCF}]) * \text{Hour /Year}$

Calculated Fuel Usage: $(0.195 \text{ MMBtu/hr}/1000 \text{ MMBtu/MMSCF}) * 8760 \text{ hr/yr} = 1.71 \text{ MMSCF}$

PM Emissions

PM Emission Factor is equal to PM₁₀ Emission Factor, so the PM Emissions are equal to PM₁₀ Emissions

PM₁₀ Emissions

Emission Factor: 3.00 lb/MMSCF (Fire Version 5.0, SCC 10500106; 8/95)

Control Efficiency: 0%

Calculations: $E(\text{PM}_{10}) = 3.00 \text{ lb/MMSCF} * 1.71 \text{ MMSCF} * 0.0005 \text{ ton/lb} = 0.01 \text{ ton/yr}$

SO_x Emissions

Emission Factor: 0.60 lb/MMSCF (Fire Version 5.0, SCC 10500106; 8/95)

Control Efficiency: 0%

Calculations: $E(\text{SO}_x) = 0.60 \text{ lb/MMSCF} * 1.71 \text{ MMSCF} * 0.0005 \text{ ton/lb} = 0.00 \text{ ton/yr}$

VOC Emissions

Emission Factor: 5.30 lb/MMSCF (Fire Version 5.0, SCC 10500106; 8/95)

Control Efficiency: 0%

Calculations: $E(\text{VOC}) = 5.30 \text{ lb/MMSCF} * 1.71 \text{ MMSCF} * 0.0005 \text{ ton/lb} = 0.00 \text{ ton/yr}$

NO_x Emissions

Emission Factor: 100.00 lb/MMSCF (Fire Version 5.0, SCC 10500106; 8/95)

Control Efficiency: 0%

Calculations: $E(\text{NO}_x) = 100.00 \text{ lb/MMSCF} * 1.71 \text{ MMSCF} * 0.0005 \text{ ton/lb} = 0.09 \text{ ton/yr}$

CO Emissions:

Emission Factor: 20.00 lb/MMSCF (Fire Version 5.0, SCC 10500106; 8/95)

Control Efficiency: 0%

Calculations: $E(\text{CO}) = 20.00 \text{ lb/MMSCF} * 1.71 \text{ MMSCF} * 0.0005 \text{ ton/lb} = 0.02 \text{ ton/yr}$

100-hp Arrow VRG 330 TA engine-driven chiller

Fuel Combustion Rate: 0.731 MMBtu/hr

Heat Content of Natural Gas: 1,000 MMBtu/MMSCF

Fuel Usage [MMSCF]: = Fuel Combustion Rate [MMBtu/hr]/Heat Content of Fuel [MMBtu/MMSCF]* Hour/Year

Calculated Fuel Usage: $(0.731 \text{ MMBtu/hr}/1,000 \text{ MMBtu/MMSCF}) * 8760 \text{ hr/yr} = 6.40 \text{ MMSCF/yr}$

Hours of Operations: 8760 hr/yr

Break Horsepower: 100 bhp

PM Emissions

PM Emission Factor is equal to PM₁₀ Emission Factor, so the PM Emissions are equal to PM₁₀ Emissions

PM₁₀ Emissions

Emission Factor: 10.00 lb/MMSCF (Fire PC Version 1/95, 2-02-002-02)

Control Efficiency: 0%

Calculations: $E(\text{PM}_{10}) = 10.00 \text{ lb/MMSCF} * 6.40 \text{ MMSCF} * 0.0005 \text{ ton/lb} = 0.03 \text{ ton/yr}$

SO_x Emissions

Emission Factor: 0.6 lb/MMSCF (Fire Version 5.0, 8/95 2-02-002-02)

Control Efficiency: 0%

Calculations: $E(\text{SO}_x) = 0.6 \text{ lb/MMSCF} * 6.40 \text{ MMSCF/yr} * 0.0005 \text{ ton/lb} = 0.002 \text{ ton/yr}$

VOC Emissions

Emission Factor: 1.0 g/bhp-hr (BACT guideline EF used; manufacturer's data < permit determination value)

Control Efficiency: 0%

Calculations: $E(\text{VOC}) = 1.0 \text{ g/bhp-hr} * 100 \text{ bhp} * 0.0022 \text{ lb/g} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 0.97 \text{ ton/yr}$

NO_x Emissions

Emission Factor: 10.084 g/bhp-hr (CAT G3608 SITA Engine Specifications)

Control Efficiency : 0%

Calculations: $E(\text{NO}_x) = 10.084 \text{ g/bhp-hr} * 100 \text{ bhp} * 0.0022 \text{ lb/g} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 9.74 \text{ ton/yr}$

CO Emissions

Emission Factor: 3.0 g/bhp-hr (BACT guideline EF used; manufacturer's data < permit determination value)

Control Efficiency: 0%

Calculations: $E(\text{CO}) = 3.0 \text{ g/bhp-hr} * 100 \text{ hp} * 0.0022 \text{ lb/g} * 0.0005 \text{ ton/lb} * 8760 \text{ hr/yr} = 2.90 \text{ ton/yr}$

New 738-hp Waukesha Compressor Engine

Fuel Combustion Rate: 5.805 MMBtu/hr

Heat Content of Natural Gas: 1,000MMBtu/MMscf

Fuel Usage[MMSCF]: = Fuel Combustion Rate [MMBtu/hr]/Heat Content of Fuel [MMBtu/MMSCF]* Hour/Year

Calculated Fuel Usage: (5.805 MMBtu/hr/1,000 MMBtu/MMSCF) * 8760 hr/yr = 50.85 MMscf/yr

Hours of Operations: 8760 hr/yr

Break Horsepower: 738 bhp

PM Emissions

PM Emission Factor is equal to PM₁₀ Emission Factor, so the PM Emissions are equal to the PM₁₀ Emissions

PM₁₀ Emissions

Emission Factor: 0.0095 lb/MMBtu (AP-42 Table 3.2-3 (07/00))

Calculations: E(PM₁₀) = (0.0095 lb/MMBtu) x (5.805 MMBtu/hr) x (8,760 hr/yr) x (1 ton/2000 lb) = 0.24 ton/yr

= (0.24 ton/yr) x (2000 lb/ton) x (1 yr/8760 hr) = 0.054 lb/hr

NO_x Emissions

Emission Factor: 1.00 g/bhp-hr (Department BACT Determination)

Calculations: E(NO_x) = (1.00 g/bhp-hr) x (738 bhp) x (1 lb/453.6 g) x (0.0005 ton/lb) x (8760 hr/yr) = 7.13 ton/yr

= (7.13 ton/yr) x (2000 lb/ton) x (1 yr/8760 hr) = 1.63 lb/hr

VOC Emissions

Emission Factor: 1.00 g/bhp-hr (Department BACT Determination)

Calculations: E(VOC) = (1.00 g/bhp-hr) x (738 bhp) x (1 lb/453.6 g) x (0.0005 ton/lb) x (8760 hr/yr) = 7.13 ton/yr

= (7.13 ton/yr) x (2000 lb/ton) x (1 yr/8760 hr) = 1.63 lb/hr

SO_x Emissions

Emission Factor: 0.000588 lb/MMBtu (AP-42 Table 3.2-3 (07/00))

Calculations: E(SO_x) = (0.000588 lb/MMBtu) x (5.805 MMBtu/hr) x (8,760 hr/yr) x (1 ton/2000 lb) = 0.01495 ton/yr

= (0.01495 ton/yr) x (2000 lb/ton) x (1 yr/8760 hr) = 0.003 lb/hr

CO Emissions

Emission Factor: 1.0 g/bhp-hr (Department BACT Determination)

Calculations: E(CO) = (1.0 g/bhp-hr) x (738 bhp) x (1 lb/453.6 g) x (0.0005 ton/lb) x (8760 hr/yr) = 7.13 ton/yr

= (7.13 ton/yr) x (2000 lb/ton) x (1 yr/8760 hr) = 1.63 lb/hr

V. Existing Air Quality

The air quality classification for the area is "Better than National Standards" or unclassifiable attainment for the National Ambient Air Quality Standards for criteria pollutants. There are no nonattainment areas in the nearby area.

VI. Taking or Damaging Implication Analysis

As required by 2-10-101 through 105, MCA, the Department conducted a private property taking and damaging assessment and determined there are no taking or damaging implications.

VII. Environmental Assessment

An environmental assessment was not required because this action is administrative.

Permit Analysis Prepared by: Julie Merkel

Date: 04/28/06