

AIR QUALITY PERMIT

Issued To: Havre Pipeline Company, LLC
P.O. Box 2606
Havre, MT 59501

Permit: #3138-01
Application Complete: 07/09/03
Preliminary Determination Issued: 07/29/03
Department's Decision Issued: 08/14/03
Permit Final: 08/30/03
AFS: #005-0002

An air quality permit, with conditions, is hereby granted to Havre Pipeline Company, LLC (HPC), pursuant to Sections 75-2-204 and 211 of the 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

HPC owns and operates a natural gas compressor station located approximately 12 miles northwest of Chinook in the SW¹/₄ of the SE¹/₄ of Section 34, Township 34 North, Range 18 East in Blaine County, Montana. The facility is known as the Williams Compressor Station. A complete list of the permitted equipment is contained in Section I.A of the permit analysis.

B. Current Permit Action

On June 9, 2003, the Department of Environmental Quality – Air and Waste Management Bureau (Department) received a Montana Air Quality Permit Application for Stationary Sources from Bison Engineering, Inc. (Bison), on behalf of HPC. The application was deemed complete on July 9, 2003, upon the submittal of additional information by HPC. Specifically, HPC requested to replace an existing 512-horsepower (Hp) Waukesha natural gas compressor engine with a 345-Hp Caterpillar natural gas compressor engine. The current permit action incorporates HPC's request into the permit.

SECTION II. Conditions and Limitations

A. Emission Limitations

1. Emissions from the 345-Hp Caterpillar natural gas compressor engine shall be controlled with the use of a Non-Selective Catalytic Reduction (NSCR) Unit and an Air-Fuel Ratio (AFR) Controller and emissions shall not exceed the following limits (ARM 17.8.752):

NO _x ¹	0.76 pounds per hour (lb/hr)
CO	1.52 lb/hr
VOC	0.76 lb/hr

2. HPC shall operate all equipment to provide the maximum air pollution control for which it was designed (ARM 17.8.752).

¹ NO_x reported as NO₂

3. HPC 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).
4. HPC 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).
5. HPC shall treat all unpaved portions of the access roads, parking lots, or general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.4 (ARM 17.8.749).

B. Testing Requirements

1. HPC shall test the 345-Hp Caterpillar natural gas compressor engine for NO_x and CO, concurrently, and demonstrate compliance with the NO_x and CO emission limits contained in Section II.A.1 within 180 days of the initial start up date of the compressor engine. Further testing shall continue 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 conform to the requirements of 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. HPC 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.

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. HPC shall notify the Department of any construction or improvement project conducted pursuant to ARM 17.8.745(1), 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 HPC 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).

D. Notification

HPC shall provide the Department with written notification of the following information within the specified time periods (ARM 17.8.749).

1. HPC shall provide the Department with written notification of commencement of construction of the 345-Hp Caterpillar natural gas compressor engine within 30 days after commencement of construction.
2. HPC shall provide the Department with the actual start-up date of the 345-Hp Caterpillar natural gas compressor engine within 15 days after the actual start-up date of the compressor engine.

SECTION III: General Conditions

- A. Inspection – HPC 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 HPC fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving HPC 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 Department’s decision on the application is not final unless 15 days have elapsed and there is no request for a hearing under this section. The filing of a request for a hearing postpones the effective date of the Department’s decision until conclusion of the hearing and issuance of a final decision by the Board.
- F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy 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 HPC 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 3 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
Havre Pipeline Company, LLC
Permit #3138-01

I. Introduction/Process Description

Havre Pipeline Company, LLC (HPC), owns and operates a natural gas compressor station located approximately 12 miles northwest of Chinook in the SW¹/₄ of the SE¹/₄ of Section 34, Township 34 North, Range 18 East in Blaine County, Montana. The facility is known as the Williams Compressor Station.

A. Permitted Equipment

The facility consists of the following equipment:

- (1) 345-Horsepower (Hp) Caterpillar G379NA natural gas compressor engine
- (1) Compressor engine skid plate
- Miscellaneous support equipment

B. Source Description

The Williams Compressor Station utilizes the 345-Hp Caterpillar natural gas compressor engine to drive a gas compressor that gathers nearby field gas and transmits the natural gas through a natural gas pipeline. The compressor engine is the only emitting unit at the facility. The facility is an unmanned compressor station that utilizes a chain link fence to restrict access to the site and HPC personnel routinely monitor the unoccupied station.

C. Permit History

On November 22, 2000, the Department of Environmental Quality – Air and Waste Management Bureau (Department) received a complete Montana Air Quality Permit Application for Stationary Sources from Bison Engineering, Inc. (Bison), on behalf of HPC, for the construction and operation of the Williams Compressor Station. The application was assigned Montana Air Quality Permit (MAQP) #3138-00. The only emitting unit at the facility was a 512-Hp Waukesha F3521GU natural gas compressor engine. The final MAQP #3138-00 was issued on January 19, 2001.

D. Current Permit Action

On June 9, 2003, the Department received a Montana Air Quality Permit Application for Stationary Sources from Bison, on behalf of HPC. The application was deemed complete on July 9, 2003, upon the submittal of additional information by HPC. Specifically, HPC requested to replace the existing 512-Hp Waukesha natural gas compressor engine with a 345-Hp Caterpillar natural gas compressor engine. The current permit action incorporates HPC's request into the permit. MAQP #3138-01 replaces MAQP #3138-00.

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 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).

HPC shall comply with the requirements contained in the Montana Source Test Protocol and Procedures Manual, including, but not limited, 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 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

HPC 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 6 consecutive minutes.
2. ARM 17.8.308 Particulate Matter, Airborne. (1) This rule requires an opacity limitation of 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, HPC 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. (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. HPC will burn natural gas in the 345-Hp Caterpillar natural gas compressor engine, which will 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 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 CFR 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. The source, as defined and applied in 40 CFR 63, shall comply with applicable subparts of 40 CFR 63:

40 CFR 63, Subpart HH - National Emission Standards for Hazardous Air Pollutants From Oil and Natural Gas Production Facilities. Owners or operators of oil and natural gas production facilities, as defined and applied in 40 CFR Part 63, shall comply with the applicable provisions of 40 CFR Part 63, Subpart HH. In order for a natural gas production facility to be subject to 40 CFR Part 63, Subpart HH requirements, certain criteria must be met. First, the facility must be a major source of Hazardous Air Pollutants (HAP) as determined according to paragraphs (a)(1)(i) through (a)(1)(iii) of 40 CFR 63, Subpart HH. Second, a facility that is determined to be major for HAPs must also either process, upgrade, or store hydrocarbon liquids prior to the point of custody transfer, or

process, upgrade, or store natural gas prior to the point at which natural gas enters the natural gas transmission and storage source category or is delivered to a final end user. Third, the facility must also contain an affected source as specified in paragraphs (b)(1) through (b)(4) of 40 CFR Part 63, Subpart HH. Finally, if the first three criteria are met, and the exemptions contained in paragraphs (e)(1) and (e)(2) of 40 CFR Part 63, Subpart HH do not apply, the facility is subject to the applicable provisions of 40 CFR Part 63, Subpart HH. Based on the information submitted by HPC, the Williams Compressor Station is not subject to the provisions of 40 CFR Part 63, Subpart HH, because the facility is not a major source of HAPs.

40 CFR 63, Subpart HHH National Emission Standards for Hazardous Air Pollutants From Natural Gas Transmission and Storage Facilities. Owners or operators of natural gas transmission or storage facilities, as defined and applied in 40 CFR Part 63, shall comply with the standards and provisions of 40 CFR Part 63, Subpart HHH. In order for a natural gas transmission and storage facility to be subject to 40 CFR Part 63, Subpart HHH requirements, certain criteria must be met. First, the facility must transport or store natural gas prior to the gas entering the pipeline to a local distribution company or to a final end user if there is no local distribution company. In addition, the facility must be a major source of HAPs as determined using the maximum natural gas throughput as calculated in either paragraphs (a)(1) and (a)(2) or paragraphs (a)(2) and (a)(3) of 40 CFR Part 63, Subpart HHH. Second, a facility must contain an affected source (glycol dehydration unit) as defined in paragraph (b) of 40 CFR Part 63, Subpart HHH. Finally, if the first two criteria are met, and the exemptions contained in paragraph (f) of 40 CFR Part 63, Subpart HHH, do not apply, the facility is subject to the applicable provisions of 40 CFR Part 63, Subpart HHH. Based on the information submitted by HPC, the Williams Compressor Station is not subject to the provisions of 40 CFR 63, Subpart HHH, because the facility is not a major source of HAPs.

- D. ARM 17.8, Subchapter 4 – Stack Height and Dispersion Techniques, including, but not limited to:
1. ARM 17.8.401 Definitions. This rule includes a list of definitions used in this chapter, unless indicated otherwise in a specific subchapter.
 2. ARM 17.8.402 Requirements. HPC must demonstrate compliance with the ambient air quality standards with a stack height that does not exceed Good Engineering Practices (GEP). The proposed height of the new or altered stack for the Williams Compressor Station is below the allowable 65-meter GEP stack height.
- E. 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. HPC submitted the appropriate permit application fee for the current permit action.
 2. ARM 17.8.505 When Permit Required--Exclusions. 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.

- F. 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 facility to obtain an air quality permit or permit modification if they construct, alter or use any air contaminant sources that have the potential to emit greater than 25 tons per year of any pollutant. The HPC Williams Compressor Station has the potential to emit more than 25 tons per year of 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 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 are not subject to 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, modification or use of a source. HPC 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. HPC submitted an affidavit of publication of public notice for the June 11, 2003, issue of the *Havre Daily News*, a newspaper of general circulation in the Town of Havre in 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 feasible and economically practicable, 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 HPC 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.
- G. 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.

The HPC Williams Compressor Station is not a major stationary source since the facility is not a listed source and the facility's potential to emit is below 250 tons per year of any pollutant (excluding fugitive emissions).

H. 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. Potential to Emit (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 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 #3138-01 for HPC, 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 for any one HAP and less than 25 tons/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 the HPC Williams 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. HPC 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 utilized. A BACT determination is required for each new or modified source. The BACT analysis addresses the available methods for controlling NO_x and CO emissions from the proposed compressor engine. The Department reviewed previous BACT determinations for compressor engines before making the following BACT determinations.

A. No Additional Controls

This practice would consist of operating the natural gas compressor engine without any add-on pollution control equipment.

B. Air Fuel Ratio (AFR) Controller (NO_x Control at the Crossover Point)

In this process, the proper air-to-fuel ratio is obtained by adjusting the engine to operate at the crossover point, where NO_x and CO emissions are equal. At the crossover point, the engine operates neither too lean nor too rich. Excess hydrocarbon in a rich fuel mixture causes incomplete combustion; thus, lowering the exhaust temperature to a point where the concentration of NO_x decreases, but the concentration of CO increases. Combustion of a lean fuel mixture occurs at higher temperatures accompanied by higher concentration of NO_x but a lower concentration of CO.

An engine can operate manually at the crossover point; however, the engine must be tuned frequently to account for operational changes such as varying engine load, operating temperature, fuel gas quality, etc.

C. Non-Selective Catalytic Reduction (NSCR) Unit

An NSCR unit controls NO_x emissions by using the CO and the residual hydrocarbons in the exhaust of a rich-burn engine as a reducing agent for NO_x. Without the catalyst, in the presence of oxygen, the hydrocarbons will be oxidized instead of reacting with NO_x. As the excess hydrocarbon and NO_x pass over a honeycomb or monolithic catalyst (usually a combination of noble metals such as platinum, palladium, and/or rhodium), the reactants are reduced to N₂, H₂O, and CO₂. The noble metal catalyst usually operates between 800 degrees Fahrenheit (°F) and 1,200°F; therefore, the unit would normally be mounted near the engine exhaust to maintain a high enough temperature to allow the various reactions to occur. In order to achieve maximum performance, 80% to 90% reduction of NO_x concentration, the engine needs to burn a rich fuel mixture, causing the engine to operate less efficiently.

D. NSCR unit with an AFR Controller

In order to provide for the most effective use of the catalyst in an NSCR unit (described in Section III.C), it is necessary to install an electronic AFR controller (described in Section III.B.). This device maintains the proper air/fuel ratio that will optimize the degree of reducing agents in order to provide maximum emission reduction while minimizing agents that can poison the catalyst.

E. Lean-Burn Engine

The lean-burn engine uses a precombustion chamber to enclose a rich mixture of air and fuel; the mixture is then ignited in this chamber. The resulting ignition front fires into the larger main cylinder that contains a much leaner fuel mixture. Staging the combustion and burning a leaner fuel mixture results in lowering of peak flame temperatures. Lower combustion temperature assures lower NO_x concentration in the exhaust gas stream; however, excess air in the fuel/air mixture can result in increased CO emissions.

F. Lean-Burn Engine with an AFR controller

The NO_x and CO emissions from a lean-burn engine can be stabilized by installing an electronic AFR controller. This device maintains the proper air to fuel ratio that will optimize the performance of the lean burn engine. A lean-burn engine with an AFR controller achieves approximately the same reduction in emissions as a rich-burn engine fitted with an NSCR unit and an AFR controller.

G. Selective Catalytic Reduction Unit

Selective Catalytic Reduction (SCR) is a post combustion technology that has been shown to be effective in reducing NO_x emissions from lean burn engines. SCR units can achieve NO_x control efficiencies as high as 90% for lean burn engines that are operated at a constant load. An SCR unit selectively reduces NO_x emissions by injecting either liquid anhydrous ammonia or aqueous ammonium hydroxide into the exhaust gas stream prior to the gas stream reaching the catalyst. The catalyst is typically made from noble metals, base metal oxides such as vanadium and titanium, and zeolite-based material. NO_x, NH₃, and O₂ react on the surface of the catalyst to form N₂ and H₂O. For an SCR unit to operate properly, the exhaust gas must be within a particular temperature range (typically between 450°F and 850°F). The catalyst that is utilized dictates the temperature range. Exhaust gas temperatures greater than the upper limit will pass the NO_x and NH₃ through the catalyst prior to the reaction. NH₃ emissions, called ammonia slip, are a key consideration when specifying an SCR unit.

H. Catalytic Oxidation

Catalytic Oxidation is a post combustion technology that has been applied to oxidize CO emissions from lean burn engines. As mentioned in Section 3.E of this permit analysis, lean burn technologies may cause increased CO emissions. In a catalytic oxidation system, CO passes over a catalyst, usually a noble metal, which oxidizes the CO to CO₂ at efficiencies of 70-90%.

I. Summary

While no additional controls would have no energy or economic impacts on HPC, no additional controls would have negative impacts on air quality. Therefore, the Department determined that no additional controls will not constitute BACT for the natural gas compressor engine.

Use of an AFR controller to adjust the engine to operate at the crossover point results in both NO_x and CO emissions at reasonable levels for lower power engines. However, an AFR controller does not provide as high of a reduction in NO_x and CO emissions as an NSCR unit; therefore, the Department determined that an AFR controller, alone, will not constitute BACT for the natural gas compressor engine.

An NSCR unit can also be used to effectively reduce NO_x and CO emissions. However, the engine needs to burn a rich fuel mixture to achieve maximum performance, causing the engine to operate less efficiently and an NSCR unit does not provide as high of a reduction in NO_x and CO emissions as an NSCR unit with an AFR controller. Therefore, the Department determined that an NSCR unit, alone, will not constitute BACT for the natural gas compressor engines.

A lean-burn engine with an AFR controller can be utilized to effectively reduce NO_x and CO emissions. A lean-burn engine has a higher initial cost than a rich-burn engine fitted with an NSCR unit and an AFR controller; however, since there is no add-on equipment, the lean-burn engine requires far less maintenance than a rich-burn engine fitted with an NSCR unit and an AFR controller. However, because HPC proposed to install a rich burn engine and because a lean-burn engine with an AFR controller achieves approximately the same reduction in emissions as a rich-burn engine fitted with an NSCR unit and an AFR controller, the Department determined that neither a lean burn engine, nor a lean burn engine with an AFR controller will constitute BACT in this case.

An SCR unit can also be utilized to effectively reduce NO_x emissions; however, SCR units are only applicable to lean burn engines because a high oxygen concentration (as found in lean burn engines) is needed for the unit to operate properly. In addition, for engines that typically operate at variable loads, such as engines utilized for natural gas transmission, an SCR unit may not function effectively and may cause either periods of ammonia slip or periods of insufficient ammonia injection. An oxidation catalyst may be used in conjunction with an SCR unit to effectively reduce CO emissions; however, as with an SCR unit, oxidation catalysts are only applicable to lean burn engines because a high oxygen concentration (as found in lean burn engines) is needed for the unit to operate properly. Because SCR units and oxidation catalysts require excess O₂ to operate properly and because SCR units are not used on engines that operate at variable loads (such as natural gas compressor engines), the Department determined that a lean burn engine with an SCR unit and/or an oxidation catalyst will not constitute BACT in this case.

The Department determined that an NSCR unit with an AFR controller constitutes BACT for NO_x and CO emissions resulting from the operation of the proposed natural gas compressor engine. NSCR/AFR control equipment typically constitute BACT for rich-burn compressor engines. An NSCR unit with an electronic AFR controller effectively reduces NO_x and CO emissions and is an economically and environmentally feasible option. The pound per hour BACT emission limits for the 345-Hp compressor engine, as stated in condition II.A.1 of the permit, were determined using 1.0 gram per horsepower-hour (g/Hp-hr) for NO_x, 2.0 g/Hp-hr for CO, and 1.0 g/Hp-hr for VOC.

The control options selected have controls and control costs comparable to other recently permitted similar sources and are capable of achieving the BACT emission limits.

IV. Emission Inventory

Source	Ton/year				
	PM ₁₀	NO _x	VOC	CO	SO _x
345-Hp Waukesha Compressor Engine (EU1)	0.11	3.33	3.33	6.66	0.00
Total	0.11	3.33	3.33	6.66	0.00

345-Hp Caterpillar Compressor Engine

Brake Horsepower: 345 bhp
Hours of operation: 8760 hr/yr

PM₁₀ Emissions

Emission Factor: 9.50E-03 lb/MMBtu (AP-42, Chapter 3, Table 3.2-3, 7/00)
Fuel Consumption: 2.54 MMBtu/hr (Maximum Design)
Calculations: 2.54 MMBtu/hr * 9.50E-03 lb/MMBtu = 0.024 lb/hr
0.024 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 0.11 ton/yr

NO_x Emissions

Emission factor: 1.00 gram/bhp-hour (BACT Determination)
Calculations: 1.00 gram/bhp-hour * 345 bhp * 0.002205 lbs/gram = 0.761 lb/hr
0.761 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 3.33 ton/yr

VOC Emissions

Emission factor: 1.00 gram/bhp-hour (BACT Determination)
Calculations: 1.00 gram/bhp-hour * 345 bhp * 0.002205 lbs/gram = 0.761 lb/hr
0.761 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 3.33 ton/yr

CO Emissions

Emission factor: 2.00 gram/bhp-hour (BACT Determination)
Calculations: 2.00 gram/bhp-hour * 345 bhp * 0.002205 lb/gram = 1.521 lb/hr
1.521 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 6.66 ton/yr

SO₂ Emissions

Emission factor: 5.88E-04 lb/MMBtu (AP-42, Chapter 3, Table 3.2-3, 7/00)
Fuel Consumption: 2.54 MMBtu/hr (Maximum Design)
Calculations: 2.54 MMBtu/hr * 5.88E-04 lb/MMBtu = 0.001 lb/hr
0.001 lb/hr * 8760 hr/yr * 0.0005 ton/lb = 0.004 ton/yr

V. Existing Air Quality

The HPC Williams Compressor Station is located in the SW¹/₄ of the SE¹/₄ of Section 34, Township 34 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

There are no nonattainment areas within a reasonable distance of the site and the Department believes that the HPC Williams Compressor Station will not cause or contribute to a violation of any ambient air quality 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 and Waste Management Bureau
P.O. Box 200901, Helena, Montana 59620
(406) 444-3490

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Issued To: Havre Pipeline Company, LLC
Williams Compressor Station
P.O. Box 2606
Havre, MT 59501

Air Quality Permit Number: 3138-01

Preliminary Determination Issued: 07/29/03

Department Decision Issued: 08/14/03

Permit Final: 08/30/03

1. *Legal Description of Site:* The Williams Compressor Station is located approximately 12 miles northwest of Chinook in the SW¹/₄ of the SW¹/₄ of Section 34, Township 34 North, Range 18 East in Blaine County, Montana.
2. *Description of Project:* HPC proposes to replace a 512-Hp Waukesha F3521GU natural gas compressor engine with a 345-Hp Caterpillar G379NA natural gas compressor engine.
3. *Objectives of Project:* The proposed project would result in continued business and revenue for HPC by allowing HPC to continue to process natural gas. In addition, the engine that is being removed may be able to be utilized at a different location.
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 air quality preconstruction permit to the proposed facility. However, the Department does not consider the “no-action” alternative to be appropriate because HPC 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 #3138-01.
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 are reasonably necessary to ensure compliance with applicable requirements and demonstrate compliance with those requirements and do 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 deer, antelope, coyotes, geese, ducks, and other terrestrials would potentially use the area around the facility and because the facility would be a source of air pollutants. The facility would emit air pollutants and corresponding deposition of pollutants would occur; however, as described in Section 7.F. of this EA, replacing the 512-Hp compressor engine with a 345-Hp compressor engine would result in lower overall emissions from the facility. In addition, minor land disturbance would occur to install the compressor engine skid. Any impacts from installing the compressor engine would be minor due to the relatively small size of the project. Overall, any impacts to terrestrial and aquatic life and habitats would be minor.

B. Water Quality, Quantity and Distribution

Minor impacts would be expected on water quality, quantity, and distribution from the proposed project because the facility would be a source of air pollutants. The nearest surface water to the facility is Battle Creek, which is located approximately 2 miles West of the facility. No discharges into surface water would occur from operating the facility. However, minor amounts of water may be required to control fugitive dust emissions from the access roads and the general facility property. In addition, the facility would emit air pollutants and corresponding deposition of pollutants would occur; however, as described in Section 7.F. of this EA, replacing the 512-Hp compressor engine with a 345-Hp compressor engine would result in lower overall emissions from the facility.

Further, water quality, quantity, and distribution would not be impacted from installing the 345-Hp compressor engine because there is no surface water at or relatively close to the site. Furthermore, no discharges into surface water would occur and no use of surface water would

be expected for installation of the compressor engine. Therefore, no impacts to water quality, quantity, and distribution would be expected from installing the compressor engine. 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 land disturbance would be required to install the 345-Hp compressor engine. In addition, no discharges, other than air emissions, would occur at the facility. Any impacts to the geology and soil quality, stability and moisture from installing the compressor engine would be minor due to the relatively small size of the project.

Further, deposition of pollutants would occur; however, as described in Section 7.F of this EA, replacing the 512-Hp compressor engine with a 345-Hp compressor engine would result in lower overall 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 land disturbance would be required to install the 345-Hp compressor engine. In addition, no discharges, other than air emissions, would occur at the facility. Any impacts to the vegetation cover, quantity, and quality from installing the 345-Hp compressor engine would be minor due to the relatively small size of the project.

Further, deposition of pollutants would occur; however, as described in Section 7.F of this EA, replacing the 512-Hp compressor engine with a 345-Hp compressor engine would result in lower overall emissions from the facility. Overall, any impacts to vegetation cover, quantity, and quality would be minor.

E. Aesthetics

The proposed project would not change the aesthetics of the area because the Williams Creek Compressor Station is an existing compressor station and the project involves replacing a 512-Hp natural gas compressor engine with a 345-Hp natural gas compressor engine. Visual and noise impacts would be expected to remain relatively unchanged.

F. Air Quality

The air quality of the area would realize minor impacts from the proposed project because the Williams Compressor Station would continue to be a source of air pollutants. However, the proposed project would decrease particulate matter less than 10 microns (μm) in diameter (PM_{10}), carbon monoxide (CO), volatile organic compounds (VOC) and sulfur dioxide (SO_2) emissions from the facility. The Department believes that the amount of controlled emissions from this facility would not cause or contribute to an exceedance of any ambient air quality standard. Due to the relatively low emissions that would result from the proposed project, any impacts to air quality 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). The NRIS search identified *Vulpes Velox* (Swift Fox) as a specie

of special concern in the general area of the proposed facility. In this case, the area was defined by the section, township, and range of the proposed location with an additional 1-mile buffer zone. Due to the minor amounts of land disturbance that would be required, the fact that the Williams Compressor Station is an existing compressor station, the relatively low levels of pollutants that would be emitted, and because the proposed project would result in overall lower emissions from the facility, the Department determined that it would be unlikely that the proposed project would impact any species of special concern and that any potential impacts would be minor.

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

The proposed project would have minor impacts on the demands for the environmental resources of air and water because the facility would be a source of air pollutants. Deposition of pollutants would occur as a result of operating the facility; however, as explained in Section 7.F of this EA, replacing the 512-Hp compressor engine with a 345-Hp compressor engine would result in lower overall emissions from the facility.

The proposed project would be expected to have minor impacts on the demand for the environmental resource of energy because power would be required at the site. The impact on the demand for the environmental resource of energy would be minor because the facility is an existing compressor station and would continue to be relatively small by industrial standards. Overall, the impacts for the demands on the environmental resources of water, air, and energy would be minor.

I. Historical and Archaeological Sites

In an effort to identify any historical and archaeological sites located near the proposed project area, the Department contacted the Montana Historical Society, State Historic Preservation Office (SHPO). According to SHPO records, there are not any previously recorded historic or archaeological sites within the proposed area. However, SHPO stated that the absence of cultural properties in the area does not mean that they do not exist, but may reflect a lack of previous cultural resource inventories in the area because SHPO records indicate only a few previous cultural resource inventories have been conducted. Because of the previous industrial disturbance at the site, SHPO believes there is a low likelihood cultural properties would be impacted. Overall, the Department determined that the chance of the project impacting any historical and archaeological sites in the area would be minor due to the relatively small size of the project.

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. Only small amounts of land disturbance would be required to complete the project and only relatively low amounts of air pollutants would be emitted. In addition, the facility is an existing compressor station and the project would result in overall lower emissions from the facility. 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 #3138-01.

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 ECENOMIC AND SOCIAL EFFECTS: The following comments have been prepared by the Department.

A. Social Structures and Mores

The proposed project would not have any impacts on native or traditional lifestyles or communities (social structures or mores) in the area because the proposed project would take place at an existing compressor station located in a relatively remote location. The nearest home not associated with the project would be approximately 1 mile from the facility and the facility would be relatively small by industrial standards.

B. Cultural Uniqueness and Diversity

The proposed project would not have any impacts to the cultural uniqueness and diversity of the area because the proposed project would take place at an existing compressor station located in a relatively remote location. The nearest home not associated with the project would be approximately 1 mile from the facility and the facility would be relatively small by industrial standards.

C. Local and State Tax Base and Tax Revenue

The proposed project would not have any impacts to the local and state tax base and tax revenue because no new employees would be expected to be hired as a result of installing and/or operating the 345-Hp compressor engine. The facility would simply continue to operate one compressor engine at the existing site location.

D. Agricultural or Industrial Production

The land surrounding the facility is rural agriculture grazing land; however, because the facility is an existing, relatively small compressor station and because the proposed project would result in overall lower emissions from the facility, 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. As explained in Section 7.F of this EA, replacing the 512-Hp compressor engine with a 345-Hp compressor engine would result in lower overall emissions from the facility. While deposition of pollutants would continue to occur, the Department believes that the proposed project 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 and quality of recreational and wilderness activities because the facility is an existing compressor station located in a relatively remote location. The proposed project consists of replacing the permitted 512-Hp compressor engine with a 345-Hp compressor engine.

G. Quantity and Distribution of Employment

The proposed project would not have any impacts on the quantity and distribution of employment because no new employees would be hired as a result of installing and/or operating the 345-Hp compressor engine.

H. Distribution of Population

The proposed project would not have any impacts on the distribution of population in the area because the facility is an existing compressor station located in a relatively remote location and the proposed project would not create any new jobs.

I. Demands for Government Services

There would be minor impacts on the demands for government services because additional time would be required by government agencies to issue Permit #3138-01. Ensuring compliance with applicable rules, standards, and Permit #3138-01 would not require any additional time beyond what is currently done. Overall, any demands for government services to regulate the facility would be minor due to the relatively small size of the facility.

J. Industrial and Commercial Activity

No impacts would be expected on the local industrial and commercial activity because the proposed project would not change the industrial and commercial activity in the area. The proposed project would be relatively small and would take place at a relatively remote location and would consist of replacing a 512-Hp compressor engine with a 345-Hp compressor engine.

K. Locally Adopted Environmental Plans and Goals

The Department is not aware of any locally adopted environmental plans and goals that would be affected by issuing Permit #3138-01. The state standards would protect the proposed site and the environment surrounding the site.

L. Cumulative and Secondary Impacts

Overall, the social and economic cumulative and secondary impacts from this project would be minor because the proposed project would take place at the existing facility and overall emissions from the facility would decrease. New businesses would not be drawn to the area and jobs would not be created or lost due to the proposed project. Because no new employees would be hired for the proposed project, there would be no economic impacts from new employees.

Recommendation: No EIS is required.

If an EIS is not required, explain why the EA is an appropriate level of analysis: The current permit action is for the replacement of a 512-Hp compressor engine with a 345-Hp compressor engine at an existing facility. Permit #3138-01 includes conditions and limitations to ensure the facility will operate in compliance with all applicable rules and regulations. In addition, there are no significant impacts associated with the proposed project.

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 and Waste management Bureau, Montana Historical Society – State Historic Preservation Office, Natural Resource Information System – Montana Natural Heritage Program

EA prepared by: Dave Aguirre
Date: July 10, 2003