



Montana Department of
ENVIRONMENTAL QUALITY

Brian Schweitzer, Governor

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July 12, 2010

Scott Formolo
Iofina Natural Gas, Inc.
8480 East Orchard Road, Suite 3600
Greenwood Village, CO 80111

Dear Mr. Formolo:

Montana Air Quality Permit #4549-00 is deemed final as of July 10, 2010, by the Department of Environmental Quality (Department). This permit is for a natural gas-fired generator engine. All conditions of the Department's Decision remain the same. Enclosed is a copy of your permit with the final date indicated.

For the Department,

Vickie Walsh
Air Permitting Program Supervisor
Air Resources Management Bureau
(406) 444-9741

Ed Warner
Environmental Engineer
Air Resources Management Bureau
(406) 444-2467

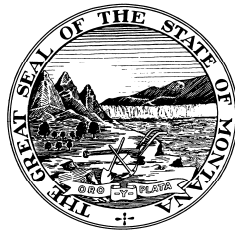
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Enclosure

Montana Department of Environmental Quality
Permitting and Compliance Division

Montana Air Quality Permit #4549-00

Iofina Natural Gas, Inc. – Wall Corner Pumping Station
8480 East Orchard Road, Suite 3600
Greenwood Village, CO 80111

July 10, 2010



MONTANA AIR QUALITY PERMIT

Issued To: Iofina Natural Gas, Inc.
Wall Corner Pumping Station
8480 East Orchard Road, Suite 3600
Greenwood Village, CO 80111

Montana Air Quality Permit: #4549-00
Application Complete: 5/11/10
Preliminary Determination Issued: 6/8/10
Department's Decision Issued: 6/24/10
Permit Final: 7 /10/10
AFS #: 041-0012

A Montana Air Quality Permit (MAQP), with conditions, is hereby granted to Iofina Natural Gas, Inc. (Iofina), 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. Permitted Equipment

Iofina proposes to operate a four-stroke rich-burn natural gas-fired generator engine up to 265 horsepower (hp).

B. Plant Location

Iofina's pumping station is to be located in the SE¹/₄ of SE¹/₄ Section 32, Township 35 North, Range 12 East, in Hill County, Montana and is known as the Wall Corner Pumping Station.

SECTION II: Conditions and Limitations

A. Emission Limitations

1. Iofina shall operate no more than one natural gas-fired generator engine and the maximum rated design capacity shall not exceed 265 hp. The engine shall be a four-stroke rich-burn design and employ a non-selective catalytic reduction (NSCR) pollution control device and an air to fuel ratio (AFR) controller (ARM 17.8.749 and ARM 17.8.752).
2. Iofina shall maintain and operate all of the equipment in a manner consistent with good air pollution control practice for minimizing emissions (ARM 17.8.752).
3. Iofina shall burn only pipeline quality natural gas in the generator engine (ARM 17.8.752).
4. The pound per hour (lb/hr) emission limits for the natural gas-fired generator engine shall be determined using the following equation and grams per brake horsepower hour (g/bhp-hr) pollutant-specific emission factors (ARM 17.8.752):

Equation:

Emission Limit (lb/hr) = Emission Factor (g/bhp-hr) * maximum rated design capacity of engine (bhp) * 0.002205 lb/g

Emission Factors:

Oxides of Nitrogen (NO_x): 2.0 g/bhp-hr
Carbon Monoxide (CO): 2.0 g/bhp-hr
Volatile Organic Compounds (VOC): 1.0 g/bhp-hr

5. Iofina 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).
6. Iofina 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).
7. Iofina shall treat all unpaved portions of the haul roads, access roads, parking lots, or general plant area with water and/or chemical dust suppressant as necessary to maintain compliance with the reasonable precautions limitation in Section II.A.6 (ARM 17.8.749).
8. Iofina shall comply with any applicable standards, limitations, reporting, recordkeeping, and notification requirements contained in Title 40 Code of Federal Regulations (40 CFR) 60, Subpart JJJJ – *Standards of Performance for Stationary Spark Ignition Internal Combustion Engines* and 40 CFR 63, Subpart ZZZZ – *National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines* (ARM 17.8.340; 40 CFR 60, Subpart JJJJ; and 40 CFR 63, Subpart ZZZZ).

B. Testing Requirements

1. The engine shall be tested for NO_x and CO concurrently within 180 days of the initial start-up date of the engine to demonstrate compliance with the emission limits as calculated in Section II.A.4. After the initial source test, additional testing shall continue on an every 4-year basis or according to another testing/monitoring scheduled as approved by the Department of Environmental Quality (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. Iofina 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. Iofina shall notify the Department of any construction or improvement project conducted, pursuant to ARM 17.8.745, that would include ***the addition of a new emissions unit***, 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. The notice must be submitted to the Department, in writing, 10 days prior to startup 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(l)(d) (ARM 17.8.745).
3. All records compiled in accordance with this permit must be maintained by Iofina 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

Iofina shall provide the Department with written notification of the actual start-up date of the generator engine postmarked within 15 days after the actual start-up date (ARM 17.8.749).

SECTION III: General Conditions

- A. Inspection – Iofina 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 Iofina fails to appeal as indicated below.
- C. Compliance with Statutes and Regulations – Nothing in this permit shall be construed as relieving Iofina of the responsibility for complying with any applicable federal or Montana statute, rule, or standard, except as specifically provided in ARM 17.8.740, *et seq.* (ARM 17.8.756).
- D. Enforcement – Violations of limitations, conditions and requirements contained herein may constitute grounds for permit revocation, penalties, or other enforcement action as specified in Section 75-2-401, *et seq.*, MCA.
- E. Appeals – Any person or persons jointly or severally adversely affected by the Department’s decision may request, within 15 days after the Department renders its decision, upon affidavit setting forth the grounds therefore, a hearing before the Board of Environmental Review (Board). A hearing shall be held under the provisions of the Montana Administrative Procedures Act. The filing of a request for a hearing does not stay the Department’s decision, unless the Board issues a stay upon receipt of a petition and a finding that a stay is appropriate under Section 75-2-211(11)(b), MCA. The issuance of a stay on a permit by the Board postpones the effective date of the Department’s decision until conclusion of the hearing and issuance of a final decision by the Board. If a stay is not issued by the Board, the Department’s decision on the application is final 16 days after the Department’s decision is made.

- F. Permit Inspection – As required by ARM 17.8.755, Inspection of Permit, a copy of the air quality permit shall be made available for inspection by the Department at the location of the source.
- G. Permit Fee – Pursuant to Section 75-2-220, MCA, failure to pay the annual operation fee by Iofina may be grounds for revocation of this permit, as required by that section and rules adopted thereunder by the Board.
- H. Duration of Permit – Construction or installation must begin or contractual obligations entered into that would constitute substantial loss within 3 years of permit issuance and proceed with due diligence until the project is complete or the permit shall expire (ARM 17.8.762).

Montana Air Quality Permit (MAQP) Analysis
Iofina Natural Gas, Inc.
MAQP #4549-00

I. Introduction/Process Description

Iofina Natural Gas, Inc. (Iofina) owns and operates a 265 horsepower (hp) natural gas-fired generator engine. The facility is located in the SE¼ of SE¼ of Section 32, Township 35 North, Range 12 East, in Hill County, and is known as the Wall Corner Pumping Station.

A. Permitted Equipment

Iofina proposes to operate no more than one four-stroke rich-burn natural gas-fired generator engine with a maximum rated design capacity not to exceed 265 hp. The engine shall have a non-selective catalytic reduction (NSCR) unit and an air to fuel ratio (AFR) controller.

B. Source Description

Iofina proposes to operate the generator engine to produce electricity for on-site use. The Wall Corner Pumping Station will house several transfer pumps to transmit water from producing gas wells to an injection facility located several miles away.

II. Applicable Rules and Regulations

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

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

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

Iofina 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 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

Iofina 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 less than 20% for all fugitive emission sources and that reasonable precautions be taken to control emissions of airborne particulate matter. (2) Under this rule, Iofina shall not cause or authorize the use of any street, road, or parking lot without taking reasonable precautions to control emissions of airborne particulate matter.
3. ARM 17.8.309 Particulate Matter, Fuel Burning Equipment. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter caused by the combustion of fuel in excess of the amount determined by this rule.
4. ARM 17.8.310 Particulate Matter, Industrial Process. This rule requires that no person shall cause, allow, or permit to be discharged into the atmosphere particulate matter in excess of the amount set forth in this rule.
5. ARM 17.8.322 Sulfur Oxide Emissions--Sulfur in Fuel. This rule requires that no person shall burn liquid, solid, or gaseous fuel in excess of the amount set forth in this rule.
6. ARM 17.8.324 Hydrocarbon Emissions--Petroleum Products. (3) No person shall load or permit the loading of gasoline into any stationary tank with a capacity of 250 gallons or more from any tank truck or trailer, except through a permanent submerged fill pipe, unless such tank is equipped with a vapor loss control device as described in (1) of this rule.

7. ARM 17.8.340 Standard of Performance for New Stationary Sources and Emission Guidelines for Existing Sources. This rule incorporates, by reference, 40 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 Part 60. This MAQP is written in a de minimis-friendly manner; therefore, the following NSPS subparts may become applicable in the future:
 - a. 40 CFR 60, Subpart A – General Provisions apply to all equipment or facilities subject to an NSPS Subpart as listed below:
 - b. 40 CFR 60, Subpart JJJJ – Standard of Performance for Stationary Spark Ignition Internal Combustion Engines. Owners and operators of stationary spark ignition internal combustion engines (SI ICE) that commence construction after June 12, 2006, where the stationary SI ICE with a maximum capacity of less than 500 hp are manufactured on or after July 1, 2008, are subject to this subpart.
 8. ARM 17.8.341 Emission Standards for Hazardous Air Pollutants. This source shall comply with the standards and provisions of 40 CFR Part 63, as appropriate. This facility is considered an area source of hazardous air pollutants (HAP); therefore, the following national emissions standards for hazardous air pollutants (NESHAP) apply:
 - a. 40 CFR 63, Subpart A – General Provisions apply to all equipment or facilities subject to a NESHAP Subpart as listed below:
 - b. 40 CFR 63, Subpart ZZZZ - National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Engines. A stationary reciprocating internal combustion engine (RICE) at a major or area source of HAPs is subject to this subpart. 40 CFR 63.6590 states that an affected source that is a new or reconstructed stationary RICE located at an area source must meet the requirements of this part by meeting the requirements of 40 CFR 60, Subpart JJJJ for spark ignition engines (even in the event that Subpart JJJJ would not normally be applicable). No further requirements apply for such engines under this part.
- 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. Iofina submitted the appropriate permit application fee for the current permit action.
 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. The air quality operation fee is based on the actual or estimated actual amount of air pollutants emitted during the previous calendar year.

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

- E. ARM 17.8, Subchapter 7 – Permit, Construction, and Operation of Air Contaminant Sources, including, but not limited to:
1. ARM 17.8.740 Definitions. This rule is a list of applicable definitions used in this chapter, unless indicated otherwise in a specific subchapter.
 2. ARM 17.8.743 Montana Air Quality Permits--When Required. This rule requires a person to obtain an air quality permit or permit modification to construct, modify, or use any air contaminant sources that have the potential to emit (PTE) greater than 25 tons per year (TPY) of any pollutant. Iofina has a PTE greater than 25 TPY of carbon monoxide (CO); therefore, an air quality permit is required.
 3. ARM 17.8.744 Montana Air Quality Permits--General Exclusions. This rule identifies the activities that are not subject to the Montana Air Quality Permit program.
 4. ARM 17.8.745 Montana Air Quality Permits--Exclusion for De Minimis Changes. This rule identifies the de minimis changes at permitted facilities that do not require a permit under the Montana Air Quality Permit Program.
 5. ARM 17.8.748 New or Modified Emitting Units--Permit Application Requirements. (1) This rule requires that a permit application be submitted prior to installation, modification, or use of a source. Iofina 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. Iofina submitted an affidavit of publication of public notice for the April 21, 2010, 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 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 Iofina 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 modified 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 stationary source because this facility is not a listed source and the facility's PTE is below 250 TPY of any pollutant (excluding fugitive emissions).

- G. ARM 17.8, Subchapter 12 – Operating Permit Program Applicability, including, but not limited to:
1. ARM 17.8.1201 Definitions. (23) Major Source under Section 7412 of the FCAA is defined as any source having:
 - a. PTE > 100 TPY of any pollutant;
 - b. PTE > 10 TPY of any one HAP, PTE > 25 TPY of a combination of all HAPs, or lesser quantity as the Department may establish by rule; or

- c. PTE > 70 TPY of particulate matter with an aerodynamic diameter of 10 microns or less (PM₁₀) in a serious PM₁₀ nonattainment area.
2. ARM 17.8.1204 Air Quality Operating Permit Program. (1) Title V of the FCAA amendments of 1990 requires that all sources, as defined in ARM 17.8.1204(1), obtain a Title V Operating Permit. In reviewing and issuing MAQP #4549-00 for Iofina, the following conclusions were made:
 - a. The facility's PTE is less than 100 TPY for any pollutant.
 - b. The facility's PTE is less than 10 TPY for any one HAP and less than 25 TPY for all HAPs.
 - c. This source is not located in a serious PM₁₀ nonattainment area.
 - d. This facility is not currently subject to any NSPS; however, 40 CFR 60, Subpart JJJJ may become applicable depending on the type of engine that is used.
 - e. This facility is subject to the area source provisions of a NESHAP standard (40 CFR 63, Subpart ZZZZ – National Emissions Standards for HAP for Stationary RICE).
 - f. This source is not a Title IV affected source, or a solid waste combustion unit.
 - g. This source is not an EPA designated Title V source.

Based on these facts, the Department determined that Iofina will be a minor source of emissions as defined under Title V. However, if minor sources subject to NSPS are required to obtain a Title V Operating Permit, Iofina will be required to obtain a Title V Operating Permit.

III. BACT Determination

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

The primary criteria pollutants from natural gas-fired engines are oxides of nitrogen (NO_x), CO, and volatile organic compounds (VOC). The formation of NO_x is related to combustion temperature in the engine cylinder. CO and VOC are primarily the result of incomplete combustion. PM emissions are usually low from engines burning natural gas. Oxides of sulfur (SO_x) are very low since sulfur compounds are removed from natural gas at processing plants. Control options for NO_x and CO are typically considered together because the NO_x and CO emissions vary conversely with each other.

Three generic control techniques have been developed for reciprocating engines: combustion modifications such as advanced engine design for new sources or major modification to existing sources (clean-burn cylinder head designs and pre-stratified charge combustion for rich-burn engines); parametric controls (timing and operating at a leaner air-to-fuel ratio); and post-combustion catalytic controls installed on the engine exhaust system. Post-combustion catalytic technologies include selective catalytic reduction (SCR) and CO oxidation catalysts for lean-burn engines, and NSCR for rich-burn engines. The proposed generator engine is a four-stroke rich-burn engine.

NO_x and CO BACT

Pre-stratified charge combustion is a retrofit system that is limited to four-stroke carbureted natural gas engines; therefore, it is not feasible for the proposed generator engine because it uses a fuel injection system rather than a carburetor. The engine is a rich-burn design and cannot implement the parametric controls used to minimize emissions in a lean-burn engine. Therefore, post-combustion catalytic controls are the most appropriate pollution control technology for the proposed engine.

The BACT for the proposed engine is NSCR with AFR controller. This technique uses the residual hydrocarbons and CO in the rich-burn engine exhaust as a reducing agent for NO_x. In NSCR, hydrocarbons and CO are oxidized by oxygen (O₂) and NO_x. The excess hydrocarbons, CO, and NO_x pass over a catalyst (usually a noble metal such as platinum, rhodium, or palladium) that oxidizes the excess hydrocarbons and CO to water and carbon dioxide, while reducing NO_x to molecular nitrogen. NO_x reduction efficiencies are usually greater than 90%, while CO reduction efficiencies are approximately 90%. Engines operating with NSCR require tight AFR control to maintain high reduction effectiveness without high hydrocarbon emissions. The BACT emissions limits will be based on an emission factor of 2.0 grams per brake horsepower-hour (g/bhp-hr) for both NO_x and CO. This emission factor is based on the experience and recommendation of the personnel contracted by Iofina to supply, equip, and maintain the proposed engine and is comparable to other recently permitted sources by the Department.

VOC BACT:

The Department is not aware of any BACT determinations that have required controls for VOC emissions from natural gas-fired engines. The uncontrolled potential VOC emissions from the proposed engine are relatively low and any add-on controls would be cost prohibitive. The control technology selected for NO_x and CO also oxidizes VOC emissions. Proper operation and maintenance of the engine and pollution control equipment constitutes BACT for VOC emissions. The BACT limit for VOC will be based on an emission factor of 1.0 g/bhp-hr which is comparable to other recently permitted similar sources.

The Department is not aware of any BACT determinations for the control of PM and SO_x that have required add-on controls for the natural gas-fired engine. The uncontrolled emissions of PM and SO_x are relatively low when combusting pipeline quality natural gas; therefore, BACT for PM and SO_x is proper operation of the engine and burning only pipeline quality natural gas.

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

IV. Emission Inventory

Emission Source	TPY						
	PM	PM ₁₀	PM _{2.5}	NO _x	CO	VOC	SO ₂
265 hp Natural Gas 4SRB Engine	0.19	0.19	0.19	5.11	5.11	0.29	0.01

NOTES:

All PM values include the sum of filterable and condensable fractions.

4SRB four-stroke rich burn

Natural Gas 4SRB Engine

Note: Emissions are based on the power output of the engine (265 hp).

Operational Capacity of Engine = 265 hp

Operational Capacity of Engine = 2.23 million British thermal units per hour (MMBtu/hr) (Applicant information)

Hours of Operation = 8,760 hours per year

Filterable PM/PM₁₀/PM_{2.5} Emissions:

Emission Factor = 0.0095 pounds per million British thermal units (lb/MMBtu) (All PM < 1 μm, AP-42, Sec. 3.2, Table 3.2-3, 7/00)

Calculation: (8,760 hours) * (2.23 MMBtu/hr) * (0.0095 lb/MMBtu) * (ton/2000 lb) = 0.09 TPY

Condensable PM Emissions:

Emission Factor = 0.00991 lb/MMBtu (AP-42, Sec. 3.2, Table 3.2-3, 7/00)

Calculation: (8,760 hours) * (2.23 MMBtu/hr) * (0.00991 lb/MMBtu) * (ton/2000 lb) = 0.10 TPY

NO_x Emissions:

Emission Factor = 2 g/bhp-hr (BACT)

Calculation: (8,760 hours) * (265 hp) * (2 g/bhp-hr) * (0.0022 pounds per gram [lb/g]) * (ton/2000 lb) = 5.11 TPY

CO Emissions:

Emission Factor = 2 g/bhp-hr (BACT)

Calculation: (8,760 hours) * (265 hp) * (2 g/bhp-hr) * (0.0022 lb/g) * (ton/2000 lb) = 5.11 TPY

VOC Emissions:

Emission Factor = 0.0296 lb/MMBtu (AP-42, Sec. 3.2, Table 3.2-3, 7/00)

Calculation: (8,760 hours) * (2.23 MMBtu/hr) * (0.0296 lb/MMBtu) * (ton/2000 lb) = 0.29 TPY

SO_x Emissions:

Emission Factor = 0.000588 lb/MMBtu (AP-42, Sec. 3.2, Table 3.2-3, 7/00)

Calculation: (8,760 hours) * (2.23 MMBtu/hr) * (0.000588 lb/MMBtu) * (ton/2000 lb) = 0.01 TPY

V. Existing Air Quality

The existing air quality in the location of the Wall Corner Pumping Station is currently designated as attainment/unclassified for the National Ambient Air Quality Standards (NAAQS) for all criteria pollutants.

VI. Ambient Air Impact Analysis

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

VII. Taking or Damaging Implication Analysis

As required by 2-10-105, MCA, the Department conducted the following private property taking and damaging assessment.

YES	NO	
X		1. Does the action pertain to land or water management or environmental regulation affecting private real property or water rights?
	X	2. Does the action result in either a permanent or indefinite physical occupation of private property?
	X	3. Does the action deny a fundamental attribute of ownership? (ex.: right to exclude others, disposal of property)
	X	4. Does the action deprive the owner of all economically viable uses of the property?
	X	5. Does the action require a property owner to dedicate a portion of property or to grant an easement? [If no, go to (6)].
		5a. Is there a reasonable, specific connection between the government requirement and legitimate state interests?
		5b. Is the government requirement roughly proportional to the impact of the proposed use of the property?

YES	NO	
	X	6. Does the action have a severe impact on the value of the property? (consider economic impact, investment-backed expectations, character of government action)
	X	7. Does the action damage the property by causing some physical disturbance with respect to the property in excess of that sustained by the public generally?
	X	7a. Is the impact of government action direct, peculiar, and significant?
	X	7b. Has government action resulted in the property becoming practically inaccessible, waterlogged or flooded?
	X	7c. Has government action lowered property values by more than 30% and necessitated the physical taking of adjacent property or property across a public way from the property in question?
	X	Takings or damaging implications? (Taking or damaging implications exist if YES is checked in response to question 1 and also to any one or more of the following questions: 2, 3, 4, 6, 7a, 7b, 7c; or if NO is checked in response to questions 5a or 5b; the shaded areas)

Based on this analysis, the Department determined there are no taking or damaging implications associated with this permit action.

VIII. Environmental Assessment

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

DEPARTMENT OF ENVIRONMENTAL QUALITY
Permitting and Compliance Division
Air Resources Management Bureau
P.O. Box 200901, Helena, Montana 59620
(406) 444-3490

FINAL ENVIRONMENTAL ASSESSMENT (EA)

Issued To: Iofina - Wall Corner Pumping Station

Montana Air Quality Permit Number: #4549-00

Preliminary Determination Issued: 6/8/10

Department Decision Issued: 6/24/10

Permit Final: 7/10/10

1. *Legal Description of Site:* SE¼ of SE¼ Section 32, Township 35 North, Range 12 East, in Hill County
2. *Description of Project:* Iofina proposes to operate a four-stroke rich-burn natural gas-fired generator engine up to 265 hp to produce electricity for on-site use.
3. *Objectives of Project:* The Wall Corner Pumping Station will house several transfer pumps to transmit water from producing gas wells to an injection facility located several miles away.
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 Iofina 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 MAQP #4549-00.
6. *Regulatory Effects on Private Property:* The Department considered alternatives to the conditions imposed in this permit as part of the permit development. The Department determined that the permit conditions 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

The proposed facility would have a minor impact on terrestrial and aquatic life and habitats in the project area. The generator engine would be a minor source of air emissions as well as a source of noise. The Department has determined that any impacts from emissions or deposition of pollutants would be minor due to the dispersion characteristics of the pollutants, the atmosphere, and the conditions contained in MAQP #4549-00.

B. Water Quality, Quantity and Distribution

The proposed facility would have a minor impact on water quality, quantity, and distribution in the project area. The proposed project would not have any discharges into surface water or onto the proposed project site. However, water may be required for fugitive dust control of the access roads and the general facility property.

C. Geology and Soil Quality, Stability and Moisture

The proposed facility would have a minor impact on geology and soil quality, stability, and moisture. The project would be entirely located on leased private land and the equipment would be located within an existing building. Water may be required for fugitive dust control of the access roads and the general facility property.

D. Vegetation Cover, Quantity, and Quality

The project would have a minor affect on the local vegetation. The impacts from emissions or deposition of pollutants would be minor due to dispersion characteristics of the pollutants, the atmosphere, and the conditions that would be placed in MAQP #4549-00. Approximately one acre of land would be disturbed as a result of this proposed project. The project site contains winter and summer wheat, grazing land, and few trees.

E. Aesthetics

The proposed project would have a minor affect on the local aesthetics. The surrounding land use is primarily agricultural. The proposed equipment would be housed within existing structures and only one acre of land disturbance is expected for construction.

F. Air Quality

The area surrounding the proposed project is unclassifiable/attainment for the NAAQS for all criteria air pollutants. Emissions of air pollutants would occur as a result of the permit action; however, MAQP #4549-00 would contain conditions limiting opacity and generator emissions and require Iofina to minimize airborne dust through the use of water or chemical dust suppressants and to operate pollution control equipment to minimize engine emissions of NO_x, CO, and VOC. Compliance with all of the permit conditions would ensure that effects to the local air quality would be minor.

G. Unique Endangered, Fragile, or Limited Environmental Resources

The proposed project would impact the unique endangered, fragile, or limited environmental resources because emissions of PM₁₀, NO_x, CO, VOC, and SO_x would increase in the area because of the operation of the facility. However, the Department believes that any impacts would be minor due to the relatively small amount of the above listed pollutants emitted, dispersion characteristics of the pollutants and the atmosphere, and conditions placed in MAQP #4549-00, including, but not limited to, BACT requirements discussed in Section III of the permit analysis for this permit.

The Montana Natural Heritage Program (MNHP) identified occurrences of five animal species of concern within the vicinity of the proposed project location that are classified either as sensitive or without classification by the U.S. Bureau of Land Management. Sensitive animal species of concern are the Sprague's Pipit, Baird's Sparrow, McCown's Longspur, and Chestnut-collared Longspur. The unclassified animal is the Grasshopper Sparrow.

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

The proposed project would have a minor impact on environmental resources of water, air, and energy. Water may be required to control dust from the access roads and overall plant area. Energy would be provided by the generator engine, so no line power would be necessary at the site. The engine would be a source of air emissions. The Department has determined that any impacts from emissions or deposition of pollutants would be minor due to the dispersion characteristics of the pollutants, the atmosphere, and the conditions contained in MAQP #4549-00.

I. Historical and Archaeological Sites

The Department contacted the Montana Historical Society, State Historical Preservation Office (SHPO) in an effort to identify any historical and archaeological sites that may be present in the area of operation. According to their records there are no previously recorded sites in the area of the proposed project location and there is a low likelihood of adverse disturbance to any known archaeological or historic site. Therefore, no impacts upon historical or archaeological sites would be expected as a result of this project.

J. Cumulative and Secondary Impacts

Overall, the cumulative and secondary impacts from this project on the physical and biological environment in the immediate area would be minor due to the relatively small size and potential environmental impact of the operation. The Department believes that this facility could be expected to operate in compliance with all applicable rules and regulations as outlined in MAQP #4549-00.

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

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

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

A. Social Structures and Mores

The operation would cause no disruption to the native or traditional lifestyles or communities of the area because the facility would be located on private land and the equipment would be located within existing structures.

B. Cultural Uniqueness and Diversity

The operation would have no impact on the cultural uniqueness and diversity of the area because the facility would be located on private land and the equipment would be located within existing structures. No current culturally unique or diverse activities are known to be occurring at the proposed site location.

C. Local and State Tax Base and Tax Revenue

The project would have a minor effect on the local and state tax base and revenue due to the taxes generated from the purchase of supplies and the employee payroll.

D. Agricultural or Industrial Production

The project would have a minor effect on the agricultural production because it would be located within land that is primarily used for agriculture and approximately one acre of land is expected to be disturbed for construction. There is no other known industrial activity occurring at or near the proposed site.

E. Human Health

MAQP #4549-00 would incorporate conditions to ensure that the facility would be operated in compliance with all applicable rules and standards. These rules and standards are designed to be protective of human health.

F. Access to and Quality of Recreational and Wilderness Activities

The proposed operations would not affect any access to or aesthetic attribute of recreational and wilderness activities in the area.

G. Quantity and Distribution of Employment

The proposed operations would not disrupt the distribution of employment in the area because no additional employees would be hired, nor would permanent employees be located at the facility.

H. Distribution of Population

The proposed operations would not disrupt the normal population distribution in the area because the facility would be located within private land. No additional employees would be hired, nor would permanent employees be located at the facility.

I. Demands for Government Services

Government services would be required for acquiring the appropriate permits from government agencies. In addition, the permitted sources of emissions would be subject to periodic inspections by government personnel. Demands for government services would be minor.

J. Industrial and Commercial Activity

The level of industrial or commercial activity would experience a minor increase as a result of the proposed facility's intent to use the electricity from the generator in the company's natural gas recovery process.

K. Locally Adopted Environmental Plans and Goals

The Department is not aware of any locally adopted environmental plans or goals. MAQP #4549-00 would incorporate conditions to ensure that the facility would be operated in compliance with all applicable rules and standards.

L. Cumulative and Secondary Impacts

Overall, the revenue generated with this project would result in minor cumulative or secondary impacts that affect the economic and social environment in the immediate area. Air pollution from the facility would be controlled by Department determined BACT and conditions in MAQP #4549-00. The Department believes that this facility could be expected to operate in compliance with all applicable rules and regulations as outlined in MAQP #4549-00.

Recommendation: No Environmental Impact Statement (EIS) is required.

If an EIS is not required, explain why the EA is an appropriate level of analysis: The current permitting action is for the construction and operation of natural gas-fired generator engine. MAQP #4549-00 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 this proposal.

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

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

EA prepared by: Ed Warner

Date: 6/2/10