

DEPARTMENT OF ENVIRONMENTAL QUALITY  
Permitting and Compliance Division  
Air Resources Management Bureau  
1520 East Sixth Avenue  
P.O. Box 200901, Helena, Montana 59620-0901  
(406) 444-3490

**DRAFT ENVIRONMENTAL ASSESSMENT (EA)**

Issued For: Exxon Mobil Corporation  
700 Exxon Road  
P.O. Box 1163  
Billings, MT 59103

**RECEIVED**

MAR 09 2006

LEGISLATIVE ENVIRONMENTAL  
POLICY OFFICE

Permit Number: #1564-18

Preliminary Determination Issued: March 8, 2006

Department Decision Issued:

Final Permit Issued:

1. Legal Description of Site: S½ of Section 24 and N½ of Section 25, Township 1 North, Range 26 East, Yellowstone County, Montana.
2. Description of Project: ExxonMobil is requesting to incorporate five existing emergency diesel-fired engines, one new emergency stationary diesel-fired engine, and two existing emergency stationary gasoline-fired engines into the existing permit.
3. Objectives of Project: ExxonMobil wants to ensure that all the emergency engines are properly permitted.
4. Alternatives Considered: In addition to the proposed action, the Department also considered the “no-action” alternative. The no-action alternative would deny issuance of the Montana Air Quality permit to ExxonMobil. However, the Department does not consider the “no-action” alternative to be appropriate because ExxonMobil 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 contained in Permit #1564-18.
6. Regulatory Effects on Private Property: The Department considered alternatives to the conditions imposed in this permit as part of permit development. The Department determined that the permit conditions would be reasonably necessary to ensure compliance with applicable requirements and to demonstrate compliance with those requirements and would not unduly restrict private property rights.

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

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

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

A. Terrestrial and Aquatic Life and Habitats

This permitting action could have an extremely minor effect on terrestrial and aquatic life and habitats, as the proposed project would include a new emergency engine at an existing, industrial property that has already been disturbed. The permitting action includes very little new industrial activity since it permits seven existing emergency engines and one proposed emergency engine, all with annual restrictions on hours of operation.

B. Water Quality, Quantity, and Distribution

This permitting action could have an extremely minor effect on water quality, quantity, and distribution because of the relatively small size of the project and the fact that it consists of permitting seven existing emergency engines and one proposed emergency engine, all with annual restrictions on hours of operation. While the facility would emit air pollutants, and corresponding deposition of pollutants would occur, as described in Section 7.F. of this EA, the Department determined that, due to conditions that would be placed in Permit #1564-18, there would be only a very small increase in emissions from deposition of pollutants on water quality, quantity, and distribution.

C. Geology and Soil Quality, Stability, and Moisture

No impact to the geology and soil quality, stability, and moisture from facility construction would occur because the project would occur at an existing industrial site and on existing equipment.

This permitting action could result in an extremely minor increase in the deposition of pollutants. As described in Section 7.F of this EA, the Department determined that the increase in deposition of pollutants in the areas surrounding the site would be minor. Overall, we believe that any impact to the geology and soil quality, stability, and moisture would be minor.

#### D. Vegetation Cover, Quantity, and Quality

This permitting action would have a minor effect on vegetation cover, quantity, and quality. The proposed project would affect an existing, industrial property that has already been disturbed. No additional vegetation on the site would be disturbed for the project. The addition of the proposed diesel boiler house emergency engine will cause a slight increase of NO<sub>x</sub>, CO, and VOC from historical emission levels, which might have a minor effect on the surrounding vegetation; however, the air quality permit associated with this project contains limitations to minimize the effect of the emissions on the surrounding environment. Overall, any impacts to vegetation cover, quantity, and quality would be minor.

#### E. Aesthetics

The proposed modification to the facility would be constructed in the area that has previously been disturbed and already has noise associated with its operation. In addition, seven of the eight engines are existing engines that are being retroactively permitted. Therefore, no impacts to aesthetics is anticipated.

#### F. Air Quality

There would be minor air quality impacts resulting from the proposed project. This permit action retroactively permits seven engines and also permits the installation of a new engine with a restriction on the hours of operation. ExxonMobil would be required to maintain compliance with the Billings/Laurel SO<sub>2</sub> State Implementation Plan (SIP), current permit conditions, and state and federal ambient air quality standards. The effect on air quality would be minor.

While deposition of pollutants would occur as a result of operating the facility, the Department determined that any air quality impacts from deposition of pollutants would be minor due to conditions that would be placed in Permit #1564-18.

#### G. Unique Endangered, Fragile, or Limited Environmental Resources

According to the Montana Natural Heritage program, there are four animal species of concern in the general vicinity of the refinery. They include the Milk Snake (*Lampropeltis triangulum*), the Peregrine Falcon (*Falco Peregrinus*), the Western Hognose Snake (*Heterodon Nasicus*), and the Spiny Softshell (*Trionyx Spiniferus*). This permitting action is not expected to have any impacts to terrestrial and aquatic life and/or their habitat; therefore, it is unlikely that unique, rare, threatened, or endangered species would experience any impacts. The project would occur at a previously disturbed industrial site, within allowable levels of emissions. However, there is a minor increase in potential air emissions, as described in Section 7.F. of this permit, which may have a minor impact on the surrounding area.

#### H. Demands on Environmental Resources of Water, Air, and Energy

As described in Section 7.B of this EA, this permitting action would have no effect on the environmental resource of water as there would be no discharges to groundwater or surface water associated with this permitting action.

As described in Section 7.F of this EA, the impact on the air resource in the area of the facility would be minor because the air emissions from the proposed project are low and the facility would be required to maintain compliance with other limitations affecting the overall emissions from the facility. Actual levels of pollutant emissions may increase as a result of this project; however, this action would include only minor increases in allowable levels.

I. Historical and Archaeological Sites

In an effort to identify any historical and archaeological sites near the proposed project area for previous projects, the Department contacted the Montana Historical Society, State Historic Preservation Office (SHPO). According to SHPO records, there have not been any previously recorded historic or archaeological sites within the proposed area. The project would occur within the boundaries of a previously disturbed industrial site. A historic agricultural site 24YL272, dating 1890-1899, is adjacent to the ExxonMobil facility; however, construction associated with the project would be limited to one additional emergency engine within the industrial area already disturbed. A cultural resource inventory was conducted in 1985 for the area in question. No additional impacts to the site would be expected to occur.

J. Cumulative and Secondary Impacts

Cumulative and secondary impacts from this project would be minor because there is only a minor increase in allowable NOx, CO, and VOC emissions, and actual increases are expected to be extremely small.

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

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

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

A. Social Structures and Mores

The proposed facility would not cause a disruption to any native or traditional lifestyles or communities (social structures or mores) in the area because the project would be constructed at a previously disturbed industrial site. The proposed project would not change the nature of the site.

B. Cultural Uniqueness and Diversity

The proposed project would not cause a change in the cultural uniqueness and diversity of the area because the land is currently used as a petroleum refinery; therefore, the land use would not be changing. The use of the surrounding area would not change as a result of this project.

C. Local and State Tax Base and Tax Revenue

This project would have a minor effect on the local and state tax base and tax revenue because the addition of the new emergency engine may prevent process interruption. Therefore, property tax revenue from the facility may increase slightly. However, no new employees would be added as a result of this project.

D. Agricultural or Industrial Production

The proposed project would not result in a reduction of available acreage or productivity of any agricultural land; therefore, agricultural production would not be affected. Industrial production could be improved with the addition of the new emergency engine.

E. Human Health

As described in Section 7.F of this EA, the impacts from this facility on human health would be minor because the emissions from the facility would increase, but not significantly from prior levels. The air quality permit for this facility 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 action would not alter any existing access to or quality of any recreational or wilderness area activities. This project would not have an impact on recreational or wilderness activities because the site is far removed from recreational and wilderness areas or access routes. Furthermore, the facility is contained on private property and would continue to be contained within private property boundaries.

G. Quantity and Distribution of Employment

The proposed project would not result in any impacts to the quantity or distribution of employment at the facility or surrounding community. No employees would be hired at the facility as a result of the project.

H. Distribution of Population

The proposed project does not involve any significant physical or operational change that would affect the location, distribution, density, or growth rate of the human population.

I. Demands for Government Services

The demands on government services would experience a minor impact. The primary demand on government services would be the acquisition of the appropriate permits by the facility (including local building permits, as necessary, and a state air quality permit) and compliance verification with those permits.

J. Industrial and Commercial Activity

The new emergency engine could prevent process down-time, therefore potentially allowing for a minor increase in industrial activity.

K. Locally Adopted Environmental Plans and Goals

The Department is unaware of any locally adopted environmental plans and goals that would be affected by the proposed change to the facility. The conditions associated with the Billings/Laurel SO<sub>2</sub> SIP would apply regardless of the status of the project.

L. Cumulative and Secondary Impacts

Overall, any cumulative and secondary impacts from this project on the social and economic aspects of the human environment would be minor. The project is associated with an existing facility and would not change the culture or character of the area.

Recommendation: An EIS is not required.

If an EIS is not required, explain why the EA is an appropriate level of analysis: The impacts resulting from this project would not be significant. The overall emissions increase would be minor.

Other groups or agencies contacted or which may have overlapping jurisdiction: None.

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

EA prepared by: Christine Weaver

Date: February 22, 2006

# APPENDIX A

**EXXON** COMPANY, U.S.A.

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REFINING DEPARTMENT  
BILLINGS REFINERY

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September 25, 1989

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Montana Department of  
Environmental Quality  
Permitting & Compliance Division  
Air & Waste Management Bureau

Mr. Jeffrey T. Chaffee, Chief  
Air Quality Bureau  
Department of Health and Environmental  
Sciences  
Cogswell Building  
Helena, Montana 59620

Dear Mr. Chaffee:

Exxon has reviewed the letter on Sulfur-in-Fuel Rule (SIFR) dated August 7, 1989. That letter provided local Billings industry with the desirable requirements for the Department to establish or determine compliance with the SIFR.

As you will recall, Exxon was required to install and operate a computer to monitor sulfur in fuel compliance as part of the 1979 Stipulation. Exxon has done so since that time. It was agreed at that time that weekly analysis on selected streams were adequate to establish compliance. As will be explained, recent data analysis continues to support weekly stream quality analysis rather than daily, as the State suggested. Below are the specific responses for the key parameters used in the SIFR compliance determination.

FUEL OIL QUALITY/USAGE

Wt. % Sulfur - This quality, which is the major sulfur input to SIFR, is determined by the Refinery Laboratory from a weekly sample collected from the refinery Fuel oil storage tank. This fuel oil supply tank is a 1900 barrel tank that is filled when needed from an 23,000 barrel tank of final product sold as a fuel to others. Turn over in the fuel oil supply tank is once every two to four days, depending of the refinery's fuel needs. Thus, the one analysis per week is quite representative of actual fuel being burned. Weekly data taken since January 1988 shows a standard deviation of only 0.39 weight percent on 80 data points. This means that 95% of the samples run were within 0.8 wt% of the average. The method of analysis is ASTM D-4294 for fuels.

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ENVIRONMENTAL QUALITY  
BILLINGS REGIONAL OFFICE

API Gravity - Like the sulfur content, this quality is determined by the Refinery Laboratory from the weekly fuel oil sample. The method of analysis is ASTM D-287 which determines the API gravity. The specific gravity (at 60°F) is then obtained from tables or the following calculation:

$$\text{Sp. Gr.} = 141.5 / (131.5 + \text{API})$$

Data taken since January 1988 shows a standard deviation of the specific gravity as 0.022 sp.gr. based on 80 data points. This shows that 95% of the data points are within 0.044 Sp. Gr. of the average.

Wt % BS&W (Bottoms, Sediment and Water - i.e. Water and Solids) - This is a parameter not included in the Departments request. Exxon uses this quality variable, which is a routine standard test, as part of the equation used to determine the fuel oil heating value as described below. Again, this parameter is determined on the weekly sample. Data taken since January (using ASTM method D-1796) shows a standard deviation of the BS&W at 0.41% based on 80 data points and that 95% of the data is within 0.82wt%.

Combining the variability of the above three parameters, i.e. sulfur content, gravity and BS&W, it is not justified to obtain more frequent analysis since the maximum deviation would be about 0.1 pounds of sulfur per million BTW fired using two standard deviations (95% of the time.)

High Heating Value (HHV) - This quality is determined via a calculation procedure obtained from a regression analysis of the above qualities and then compared against the measured value from the laboratory. This analysis was performed some years ago and the resultant equation is as follows:

$$\text{Fuel Oil HHV in Mil Btu/Barrel} = [160,000(1 - \text{BS\&W}/100) - (1250(\text{Sulfur})) - 565(\text{API})]42/10^{**6}$$

This equation is used extensively throughout the refinery for energy conservation and fuel firing controls on boilers and furnaces. Also, since the BS&W, gravity and sulfur content are produced from the Refinery Laboratory, they are available for input to the computer the same day. This is much more practical than sending a sample out to the local Laboratory for determination of the sample heating value. A more recent comparison between laboratory generated heating values and the calculation method showed results to be within 1%. Further, of all the data compared, the majority of the calculated heating values were less than those determined in the laboratory. This then results in a slightly conservative approach to the SIFR compliance.

Fuel Oil Consumption Rate - this value is determined via the rate of level change of the fuel oil supply tank. These barrels are converted to 60°F barrels and used along with the other data to determine the pounds of sulfur burned and the total heat released by the burning fuel. This level gauge is calibrated at least once per year.

FUEL GAS QUALITY/QUANTITY

All streams in the refinery are combined together to form sweet refinery fuel gas prior to distribution to the boilers/furnaces. The exception is a small quantity of natural gas used for pilots on selected furnaces. This natural gas is additive to the sweet refinery fuel gas impacts. All gases produced in the refinery are combined and treated at Montana Sulfur and Chemical Co. and then returned to the refinery as sweet refinery fuel gas. As needed, LPG is added to the sweet fuel gas to meet the fuel demands. A single sample is collected on this combined sweet fuel gas stream weekly for composition determination via a Hack-Carle gas chromatographic procedure developed specifically for the analysis of refinery fuel gas.

Hydrogen Sulfide Content - This quality is measured by means of a Draeger Tube method in vppm of hydrogen sulfide. This analysis is performed twice per day to monitor operations of the off-site Montana Sulfur plant operations. The results, which are usually below 50 vppm (about 3 grains H<sub>2</sub>S/100 SCF), are logged and inputted into the SIFR computer system as it is reported. Exxon believes this method is quick, accurate and based on years of experience around the world, quite accurate.

High Heating Value (HHV) - This quality represents the major heat input to SIFR. Like the fuel oil, a detailed regression analysis was performed on weekly fuel gas samples subjected to a Hach-Carle (special GC tube especially designed for refinery type fuel gases) gas chromatographic analysis in the Refinery Laboratory to determine stream specific gravity and heating value. Based on this regression analysis, the following equation was obtained and is used throughout the refinery for energy conservation and fuel boiler/furnace operations control as well as SIFR compliance:

$$\text{Sweet Refinery Fuel Gas HHV} = [1663(\text{Sp. Gr.}) - 3560(\text{Sp. Gr.})(\text{mole \% Inerts}/100) + 887(\text{mole \% Inerts}/100) + 88] 0.9912$$

The mole % Inerts is determined weekly via gas chromatograph and the specific gravity is determined on a continuous basis from an on line specific gravity analyzer located on the sweet refinery fuel gas stream. This analyzer is calibrated twice per month. Comparison between the HHV of the weekly analysis and the HHV calculated from the above equation are within 95% of each other.

Consumption Rate - This is determined by a continuous flow indicator that is corrected for pressure and temperature variations in the refinery sweet fuel gas stream. The orifice type meter is calibrated at least annually and physically inspected on the average of once per three to five years.

SOUR WATER STRIPPER GAS

This gas stream is a completely separate stream that has a heating value less than 100 Btu per SCF. Therefore, per the SIFR, it is not a contributor to the sulfur in fuel. However, the hydrogen sulfide content has been monitored and based on the values determined via monthly analysis, the resulting sulfur dioxide contribution, as with all other contributors, is included in Exxon's monthly emissions report.

REPORTING SUMMARY

Based on the above information, Exxon will be providing the following information to allow the Department to verify on a daily basis that compliance is maintained with the SIFR.

FUEL OIL

	<u>Frequency</u>	<u>Method</u>
Wt% Sulfur	Weekly	ASTM D-4294
API Gravity	Weekly	ASTM D- 287
Wt% BS&W	Weekly	ASTM D-1796
Consumption Rate, B/D	Daily	Continuous Tank down gauge
Heating Value, HHH (M Btu/B)	Weekly	Calculation

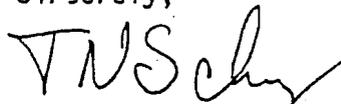
SWEET REFINERY FUEL GAS

Hydrogen Sulfide, vppm	2 times/day	Draeger Tube
Mole % Inerts	Weekly	Gas Chromatograph
Specific Gravity Difference	Weekly	Gas Chromatograph vs Continuous analyzer
Heating Value, HHV (Btu/SCF)	Continuous	Calculation
Consumption rate, k SCF/D	Daily	Continuous flow measurement

The attached table represents a format in which the data could be presented. Exxon would be willing to discuss both format and reporting frequency along with other BLAQTC members to keep both consistent.

Should you need further information, please contact me.

Sincerely,



T. N. Schug, Coordinator  
Environmental Affairs

TNS:ddh

cc: Jim Hughes, Air Quality Bureau

Exxon, USA  
 Billings Refinery  
 Sulfur In Fuel Compliance Report  
 for  
 The Month of September 1989

----- Fuel Oil Data -----						----- Fuel Gas Data -----					
Date	Wt. % Sulfur	API Gravity	Wt. % BS&W	HHV, M Btu/B	Volume Used, B/D	H2S Conc., vppm	Mole % Inerts	Specific Gravity	HHV, Btu/SCF	Volume Used, k SCF/D	Natural Gas Used, k SCF/D

Exxon, USA  
Billings Refinery  
Sulfur In Fuel Compliance Report  
for  
The Month of September, 1989

----- Fuel System Totals -----

-----  
Date M Btu Fired Lbs Sulfur Fired Daily lbs Sulfur/M Btu  
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Montana Department of  
**ENVIRONMENTAL QUALITY**

Brian Schweitzer, Governor

P.O. Box 200901 • Helena, MT 59620-0901 • (406) 444-2544 • [www.deq.mt.gov](http://www.deq.mt.gov)

March 9, 2006

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LEGISLATIVE ENVIRONMENTAL  
POLICY OFFICE

Bernie Geiser  
ExxonMobil Corporation - Billings Refinery  
700 ExxonMobil Road  
PO Box 1163  
Billings, MT 59103

RE: Montana Air Quality Permit Application #1564-18 - Emergency Engines

Dear Mr. Geiser:

The Montana Department of Environmental Quality -- Air Resources Management (ARM) Bureau is issuing a revised cover page for the Preliminary Determination on permit application #1564-18. The date for accepting comments on this application has been changed to March 23, 2006 to reflect the 15-day comment period provided by ARM 17.8.759(4)(b)(ii).

If you have any questions or comments, please contact me.

Sincerely,

Christine A. Weaver  
Air Quality Specialist  
Air Resources Management Bureau  
Phone: (406) 444-5287  
E-mail: [cweaver@mt.gov](mailto:cweaver@mt.gov)