

# DEPARTMENT OF ENVIRONMENTAL CONSERVATION AIR QUALITY CONTROL MINOR PERMIT

Permit AQ0183MSS02

Preliminary – July 19, 2010

The Department of Environmental Conservation (Department), under the authority of AS 46.14 and 18 AAC 50, issues Air Quality Control Minor Permit AQ0183MSS01 to the Permittee listed below.

**Permittee:** **BP Exploration (Alaska) Inc.**  
P.O. Box 196612  
Anchorage, Alaska 99519

**Owner(s):** **BP Exploration (Alaska) Inc.** **ConocoPhillips Alaska, Inc.**  
900 East Benson Blvd (zip 99508) 700 G Street (zip 99501)  
P.O. Box 196612 P.O. Box 100360  
Anchorage AK, 99519-6612 Anchorage, AK 99510-0360

**ExxonMobil Corporation** **Chevron USA, Inc.**  
3301 C Street, Suite 400 (zip 99503) 11111 S. Wilcrest (zip 77099)  
P.O. Box 196601 P.O. Box 36366  
Anchorage, AK 99519-6601 Houston, TX 77236

**Operator** Same as Permittee

**Stationary Source:** **Gathering Center #2 (GC-2)**

**Location:** Latitude: 70° 18' 42" N; Longitude: 148° 51' 35 W"

**Physical Address:** Section 16, Township 11N, Range 13E, Umiat Meridian

**Project Name:** H<sub>2</sub>S Limit Increase

**Permit Contact:** Rachel Buckbee (907) 564-4549

This permit revises the H<sub>2</sub>S limit for the natural gas burned at GC-2. The permit satisfies the obligation of the Permittee to comply with the air quality investigation under 18 AAC 50.201.

This permit authorizes the Permittee to revise the fuel gas H<sub>2</sub>S content limit under the terms and conditions of this permit, and as described in the original permit application and subsequent application supplements listed in Section 6 except as specified in this permit.

The Permittee may operate under this permit upon issuance.

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John F. Kuterbach, Manager  
Air Permits Program

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### Abbreviations/Acronyms

AAAQS .....	Alaska Ambient Air Quality Standards
AAC .....	Alaska Administrative Code
ADEC .....	Alaska Department of Environmental Conservation
AS .....	Alaska Statutes
ASTM .....	American Society of Testing and Materials
BACT .....	Best Available Control Technology
BPXA .....	BP Exploration (Alaska), Inc.
GC-2 .....	Gathering Center #2
C.F.R. ....	Code of Federal Regulations
EPA .....	Environmental Protection Agency
MR&R .....	Monitoring, Recordkeeping, and Reporting
NA .....	Not Applicable
NSPS .....	New Source Performance Standards
ORL .....	Owner Requested Limit
PSD .....	Prevention of Significant Deterioration
PTE .....	Potential to Emit
RM .....	Reference Method
TAR .....	Technical Analysis Report
ULSD	Ultra-low Sulfur Diesel (diesel fuel with a maximum sulfur content of 15 ppmw)

### Units and Measures

bhp .....	brake horsepower or boiler horsepower
gr./dscf .....	grains per dry standard cubic foot (1 pound = 7,000 grains)
dscf .....	dry standard cubic foot
gph .....	gallons per hour
g/hp-hr .....	grams per horsepower-hour
g/kW-hr .....	grams per kilowatt-hour
hp .....	horsepower
kW .....	kilowatts (electric)
lb .....	pounds
MMBtu .....	million British thermal units
MMBtu/hr .....	million British thermal units per hour
MMscf .....	million standard cubic feet
MW .....	Megawatts (electric)
ppmw .....	parts per million by weight
ppmv .....	parts per million by volume
ppmvd .....	parts per million by volume dry
scf .....	standard cubic feet (dry gas at 68 °F and absolute pressure of 760 mmHg)
scfm .....	standard cubic feet per minute (dry gas at 68 °F and absolute pressure of 760 mmHg)
TPY .....	tons per year
wt% .....	weight percent

### Pollutants

CO .....	Carbon Monoxide
NO <sub>x</sub> .....	Oxides of Nitrogen
NO <sub>2</sub> .....	Nitrogen Dioxide
PM-10 .....	Particulate Matter with an aerodynamic diameter less than 10 microns
S .....	Sulfur
SO <sub>2</sub> .....	Sulfur Dioxide
H <sub>2</sub> S .....	Hydrogen Sulfide

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### ***Section 1. Permit Administration***

1. Minor Permit AQ0183MSS01 remains in effect except as revised by Minor Permit AQ0183MSS02.

## Section 2. Emission Unit Inventory

2. **Emission Unit Description.** Emission units listed in Table 1 have specific limits for Title 1 purposes. Except as noted elsewhere in this permit, the information in Table 1 is for identification purposes only. This permit does not authorize new emission units. This emission unit inventory is included only for convenience of identification. In case of a conflict between this inventory and a previous authorization, the previous authorization prevails.

**Table 1 - Emission Unit Inventory**

Unit No	Tag No.	Unit Description	Nominal Rating/Size	Construction /Install/Modification Date
<b>Gas-Fired Turbines</b>				
1	GTRB-02-7000	GE MS5382C Compressor	38,000 hp ISO	Modified 1999
2	GTRB-02-7001	GE MS5382C Compressor	38,000 hp ISO	Modified 1999
3	GTRB-W3152	Solar Mars Compressor	12,600 hp ISO	Constr. 3/83
4	GTRB-02-7704A	Sulzer S3 Pump	7,910 hp ISO	Before 8/82
5	GTRB-02-7704B	Sulzer S3 Pump	7,910 hp ISO	Before 3/83
6	GTRB-02-7529	Ruston TB 5000 Pump	4,900 hp ISO	Before 12/81
7	GTRB-02-7504A	Ruston TB 2500 Pump	2,500 hp ISO	Before 12/81
8	GTRB-02-7504B	Ruston TB 2500 Pump	2,500 hp ISO	Before 12/81
<b>Gas-Fired Heaters</b>				
9	B-02-7000	Cleaver Brooks 200800 EG Heater (Dual fired)	33.5 MMBtu/hr	Before 12/81
10	B-02-7001	Cleaver Brooks 200800 EG Heater (Dual fired)	33.5 MMBtu/hr	Before 12/81
11	B-02-7002	Cleaver Brooks 200800 EG Heater (Dual fired)	20.9 MMBtu/hr	Before 4/77
12	B-02-0001	Cleaver Brooks 200800 EG Heater (Dual fired)	20.9 MMBtu/hr	Before 4/77
13	B-02-0002	Cleaver Brooks 200800 EG Heater (Dual fired)	20.9 MMBtu/hr	Before 4/77
14	B-02-0003	Cleaver Brooks 200800 EG Heater (Dual fired)	20.9 MMBtu/hr	Before 4/77
15	B-02-0004	Cleaver Brooks 200800 EG Heater (Dual fired)	20.9 MMBtu/hr <sup>a</sup>	Before 4/77
16	B-02-0067	BS&B TEG Reboiler	7.73 MMBtu/hr <sup>a</sup>	2004
17	B-02-0068	BS&B TEG Reboiler	7.73 MMBtu/hr	2004
36	GTS Bath Heater	GTS Bath Heater	37 MMBtu/hr	2007
<b>Liquid Fuel-Fired Equipment</b>				
18	GNED-02-0001	Detroit Diesel Emergency Generator	738 hp (550 kW)	1976/77
19	GNED-02-0002	Detroit Diesel Emergency Generator	738 hp (550 kW)	1976/77
20	GNED-01-0011	Detroit Diesel Emergency Generator	738 hp (550 kW)	1976/77
21	PED-02-0049	Detroit Diesel Firewater Pump	280 hp	1976/77
22	PED-02-7004	Detroit Diesel Firewater Pump	280 hp	1982/83
23	GNED-02-7500	Detroit Diesel Emergency Generator	3,600 hp (2,685 kW)	1976/77
24	GTRB-02-8001	Alison 501KB Emergency Turbine Generator	5,000 hp (3,730 kW)	1983/84
<b>Flares</b>				
25	FL-02-0001	KALDAIR LP/HP Vertical Emergency Flares		1977
26	FL-02-0002	KALDAIR LP/HP Vertical Emergency Flares		1977

Unit No	Tag No.	Unit Description	Nominal Rating/Size	Construction /Install/Modification Date
27	FL-02-0003	KALDAIR LP/HP Vertical Emergency Flares		1977
28	FL-02-0004	KALDAIR LP/HP Vertical Emergency Flares		1977
29	FL-02-0005	KALDAIR HP Vertical Emergency Flares		1977
30	FL-02-0006	KALDAIR HP Vertical Emergency Flares		1977
31	FL-02-0007	KALDAIR HP Vertical Emergency Flares		1977
32	FL-02-0008	National Horizontal Burn Pit Emergency Flare		Unknown
<b>Fixed Roof Storage Tanks Greater than 10,000 Gallon Capacity</b>				
33	T-02-7703	KALDAIR LP/HP Vertical Emergency Flares	493,500 gallons	Constr. 1982
34	T-02-8511	Oil Skim Storage Tank	577,122 gallons	Installed 1991
34	T-02-8511	Oil Skim Storage Tank	577,122 gallons	Installed 1991

Table 1 Notes:

<sup>a</sup>The ratings for Units 16 and 17 are revised from 5.7 MMBtu/hr to 7.73 MMBtu/hr to reflect the burner replacement implemented in 2004 as an off permit change.

### **Section 3. Emission Fees**

3. **Assessable Emissions.** The Permittee shall pay to the Department an annual emission fee based on the stationary source's assessable emissions as determined by the Department under 18 AAC 50.410. The assessable emission fee rate is set out in 18 AAC 50.410(b). The Department will assess fees per ton of each air pollutant that the stationary source emits or has the potential to emit in quantities greater than 10 tons per year. The quantity for which fees will be assessed is the lesser of
  - 3.1 the stationary source's assessable potential to emit of 3,379 TPY; or
  - 3.2 the stationary source's projected annual rate of emissions that will occur from July 1 to the following June 30, based upon actual annual emissions emitted during the most recent calendar year or another 12 month period approved in writing by the Department, when demonstrated by
    - a. an enforceable test method described in 18 AAC 50.220;
    - b. material balance calculations;
    - c. emission factors from EPA's publication AP-42, Vol. I, adopted by reference in 18 AAC 50.035; or
    - d. other methods and calculations approved by the Department.
4. **Assessable Emission Estimates.** Emission fees will be assessed as follows:
  - 4.1 No later than March 31 of each year, the Permittee may submit an estimate of the stationary source's assessable emissions to ADEC, Air Permits Program, ATTN: Assessable Emissions Estimate, 410 Willoughby Ave., Suite 303, P.O. Box 111800, Juneau, AK 99811-1800; the submittal must include all of the assumptions and calculations used to estimate the assessable emissions in sufficient detail so the Department can verify the estimates; or
  - 4.2 If no estimate is submitted on or before March 31 of each year, emission fees for the next fiscal year will be based on the potential to emit set forth in Condition 3.1.

## **Section 4. Ambient Air Quality Protection Requirements**

### **SO<sub>2</sub> Ambient Air Quality Protection:**

5. The Permittee shall protect the 3-hour, 24-hour and annual average SO<sub>2</sub> ambient air quality standards and increments by limiting:
  - 5.1 the hydrogen sulfide (H<sub>2</sub>S) content of the gaseous fuel to no greater than 185 ppmv at any time, and the sulfur content of the liquid fuel to no greater than 15 ppmw; or
  - 5.2 the H<sub>2</sub>S content of the gaseous fuel to no greater than 125 ppmv at any time, and the sulfur content of the liquid fuel to no greater than:
    - a. 415 ppmw for Emission Units 9, 10 and 11 (when burning liquid fuel in these units), and
    - b. 0.11 percent, by weight, for all other emission units operating on liquid fuel.
6. To demonstrate compliance with the liquid fuel sulfur and H<sub>2</sub>S limits in Condition 5, the Permittee shall:
  - 6.1 Obtain the sulfur content of the liquid fuel as follows:
    - a. For liquid fuel from a North Slope topping plant, obtain from the topping plant, the results of a monthly fuel sulfur analysis;
    - b. For liquid fuel obtained from a third-party supplier keep receipts from the supplier that specify fuel grade and amount of fuel sulfur for each shipment of fuel;
  - 6.2 Prior to burning non-ULSD liquid fuel in Emission Unit 9, 10 or 11; check the sulfur content of the fuel burned by these units using an applicable test method authorized under the current operating permit issued for the source under AS 46.14.130(b) and 18 AAC 50. The Permittee need not repeat this fuel sulfur check if:
    - a. the fuel test demonstrates compliance with the 415 ppmw fuel sulfur limit; and
    - b. the fuel tank that services Emission Units 9 through 11:
      - (i) has not received a new fuel delivery subsequent to the fuel sulfur test, or
      - (ii) has only received ULSD deliveries.
  - 6.3 Analyze the fuel gas H<sub>2</sub>S content on a monthly basis using ASTM D 4810-88, ASTM D 4913-89, Gas Producer's Association (GPA) method 2377-86, or an alternative analytical method approved by the Administrator.
    - a. The fuel gas H<sub>2</sub>S analysis required under this condition may be performed by the owner or operator, a service contractor retained by the owner or operator, the fuel vendor, or any other qualified agency.
  - 6.4 Keep records of all fuel sulfur checks conducted under Condition 6.2 and all fuel gas H<sub>2</sub>S tests conducted under Condition 6.3 as described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC 50.

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- 6.5 Include in the Operating Report described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC 50 the following items for each month covered under the operating report:
- a. The sulfur content of the liquid fuel obtained under Condition 6.1;
  - b. The applicable H<sub>2</sub>S and liquid fuel sulfur limits established under Condition 5 when burning liquid fuel containing the sulfur content described under Condition 6.5a;
  - c. Whether liquid-fuel was burned in Emission Units 9, 10 or 11, and if so report
    - (i) whether the fuel was ULSD, or
    - (ii) the results of the fuel sulfur content obtained under Condition 6.2;
  - d. The H<sub>2</sub>S concentration measured for that month under Condition 6.3; and
  - e. A statement as to whether the fuels used that month complied with the applicable H<sub>2</sub>S and liquid fuel sulfur limits established under Condition 5.
- 6.6 Report Excess Emissions and Permit Deviations as described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC 50, if the liquid fuel sulfur content, or the fuel gas H<sub>2</sub>S content, exceeds the applicable limit in Condition 5.
7. To protect the annual average SO<sub>2</sub> air quality standard and increment, the Permittee shall limit the hours of operation for Emission Units 18 through 24 to no more than 200 hours per consecutive 12-month period per unit.<sup>1</sup>
- 7.1 Monitor and record the monthly hours of operation and the consecutive 12-month summation for each of the units subject to the hour limit.
  - 7.2 Report the monthly and the consecutive 12-month total hours that each of the units operated each month of the reporting period with the operating report described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC 50.
  - 7.3 Report under Excess Emissions and Permit Deviations as described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC 50 whenever the consecutive 12-month total hours exceed the limit in Condition 7.

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<sup>1</sup> These operating hour limits were established in a previous permit action. The limit was also used in the modeling analysis to demonstrate compliance with the ambient standards/increments.

## **Section 5. Standard Permit Conditions**

8. The Permittee must comply with each permit term and condition. Noncompliance with a permit term or condition constitutes a violation of AS 46.14, 18 AAC 50, and, except for those terms or conditions designated in the permit as not federally enforceable, the Clean Air Act, and is grounds for
  - 8.1 an enforcement action; or
  - 8.2 permit termination, revocation and reissuance, or modification in accordance with AS 46.14.280.
9. It is not a defense in an enforcement action to claim that it would have been necessary to halt or reduce the permitted activity in order to maintain compliance with a permit term or condition.
10. Each permit term and condition is independent of the permit as a whole and remains valid regardless of a challenge to any other part of the permit.
11. Compliance with permit terms and conditions is considered to be compliance with those requirements that are
  - 11.1 included and specifically identified in the permit; or
  - 11.2 determined in writing in the permit to be inapplicable.
12. The permit may be modified, reopened, revoked and reissued, or terminated for cause. A request by the Permittee for modification, revocation and reissuance, or termination or a notification of planned changes or anticipated noncompliance does not stay any permit condition.
13. The permit does not convey any property rights of any sort, nor any exclusive privilege.

## **Section 6. Permit Documentation**

- June 6, 2010 Letter from Rachel Buckbee (BPXA) to Alan Schuler (ADEC) certifying AECOM's May 27, 2010 Revised Modeling Memo. A certification statement signed by Dale Kruger (BPXA's AK OPS Area Operations Manager West) accompanies the letter.
- May 27, 2010 Email from Courtney Taylor (AECOM) to Alan Schuler (ADEC) with attached letter report and follow up printed letter Re: BPXA Prudhoe Bay Gathering Center 2 Revised Ambient Air Quality Modeling to Support the Minor Permit Application.
- January 7, 2010 Letter from Rachael Buckbee (BPXA) to John Kuterbach (ADEC), Re: Greater Prudhoe Bay Fuel Gas H<sub>2</sub>S, A Historical Perspective and Proposed Path Forward for the BPXA CPS, FS-2, GC-1, GC-2 and GC-3 Stationary Source Title V Permit Fuel Gas H<sub>2</sub>S Limits.
- November 28, 2007 Minor Permit Application to Revise and Rescind Limits of Air Quality Operating/Construction Permit AQ0183TVP01.