

# DEPARTMENT OF ENVIRONMENTAL CONSERVATION

## AIR QUALITY CONTROL MINOR PERMIT

**Permit AQ0503MSS03:**

**Preliminary– February 7, 2011**

**Rescind Permits AQ0503MSS01 and AQ0503MSS02**

The Alaska Department of Environmental Conservation (the department), under the authority of AS 46.14 and 18 AAC 50, issues Air Quality Control Minor Permit No. AQ0503MSS01 to the Permittee listed below.

**Permittee:** BP Exploration (Alaska), Inc. (BPXA)  
900 East Benson Boulevard  
Anchorage, AK 99519-6612

**Owner/Operator:** Same as Permittee

**Stationary Source:** **Northstar Production Facility (Northstar)**

**Location:** Seal Island--Six miles offshore north of Point Storkersen in the Beaufort Sea

**Physical Address:** (see above)

**Permit Contact:** Alison Cooke (Air Specialist)  
(907) 564-4838  
alison.cooke@bp.com

**Project:** Updating Permit Conditions

This minor permit is issued under 18 AAC 50.508(6) to revise or rescind terms and conditions of a Title I permit issued under 18 AAC 50. This permit satisfies the obligation of the Permittee to obtain a minor permit under these provisions.

The Permittee shall not operate the stationary source under this minor permit provisions until the Department issues a revision to the operating permit issued to the source that contains the provisions of this minor permit.

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John F. Kuterbach  
Manager, Air Permits Program

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## Section 1 Emission Unit Inventory

1. **Authorization<sup>1</sup>**. The Permittee is authorized to install and operate the emission units listed in Group A, Group B, and Group C in accordance with the terms and conditions of this permit and the minor permit application.

**Group A - Stationary Emission Units<sup>a</sup>**

Unit No.	Equipment Use	Description	Fuel Type	Maximum Nominal Rating/unit
1, 2	Turbines (Compressor)	GE LM2500	Fuel Gas	32,715 hp
3-5	Turbines (Generator)	Solar Mars 90	Fuel Gas	11,892 kW
6, 7	Emergency Generators	Cummins QSK 60-G6[2003]	Diesel	2,180 kWm
8	Fire Water Pump	Cummins KTA19	Diesel	755 hp
9a	Incinerator	Unknown	Waste	365 tons/yr
			Fuel Gas	2.4 MMBtu/hr
10a	Waste Heat Recovery – Supplemental Burner	Tulsa/Zeeco	Fuel Gas	52.183 MMBtu/hr
10b	Waste Heat Recovery – Fresh Air Burner	Tulsa/Zeeco	Fuel Gas	82 MMBtu/hr
11	High Pressure (HP) Flare	Corona	Pilot, Purge, Produced Gas	660.09 MMscf/d
12	Low Pressure (LP) Flare	Corona	Pilot, Purge, Produced Gas	18.022 MMscf/d
13	Glycol Reboiler	Natco	Fuel Gas	5 MMBtu/hr
16	Space Heater, Warehouse	James P. Sheldon Co. Inc.	Fuel Gas	0.7 MMBtu/hr
17	Space Heater, Warehouse	James P. Sheldon Co, Inc.	Fuel Gas	1.075 MMBtu/hr
18	Space Heater, Warehouse	James P. Sheldon Co, Inc.	Fuel Gas	1.082 MMBtu/hr
19	Diesel Storage Tank	Unknown	Diesel	3,060 Bbl
20	TEG Storage Tank	Unknown	TEG	245 Bbl
21	Corrosion Inhibitor Storage Tank	Unknown	Corrosion Inhibitor	245 Bbl

<sup>a</sup> Except as noted elsewhere in this permit, the information in this table is for identification purposes only.

<sup>1</sup>This permit is not authorizing installation of any new equipment. All of the emission units listed in this section was authorized under a previous permit action.

**Group B - Portable Equipment**

<b>Unit No.</b>	<b>Equipment Use</b>	<b>Description</b>	<b>Fuel Type</b>	<b>Maximum Capacity</b>
N/A	Crane	Unknown	Diesel	250 hp
N/A	Snowmelter	Unknown	Diesel	10 MMBtu/hr
N/A	Heaters	Various	Diesel	3 MMBtu/hr

**Group C - Intermittent Well Servicing Equipment**

<b>Unit No.</b>	<b>Equipment Use</b>	<b>Description</b>	<b>Fuel Type</b>	<b>Maximum Capacity</b>
N/A	I.C. Engines 250 to 600 hp	Various	Diesel	1,675 hp
N/A	IC Engines > 600 hp	Various	Diesel	1,475 hp
N/A	Heaters and Boilers	Various	Diesel	21.5 MMBtu/hr
N/A	Turbines	Various	Diesel	6,200 bhp
N/A	Portable Spill Cleanup Tanks	6	Hydrocarbon Waste	25,290 gallons each

## **Section 2 State Emission Standards**

### **Incinerator Emission Standards - Unit 9a:**

2. **Visible Emissions.** The Permittee shall comply with 18 AAC 50.050(a), which states that visibility through the exhaust effluent of an incinerator may not be reduced by visible emissions, excluding condensed water vapor, by more than 20 percent averaged over any six consecutive minutes.
  - 2.1 No less than once each calendar year and upon the Department's request, conduct a visible emission surveillance on the incinerator Unit 9a exhaust stack in accordance with Condition 19, to ascertain compliance with 18 AAC 50.050(a).
  - 2.2 Attach the surveillance results to the Operating Report as described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC.50.

### **Industrial Processes and Fuel-Burning Equipment - Units 1-8, 10a, 10b, 11-13, 16-18, 206, 207, 210b, 219, and heaters listed in Section 1, Groups B and C:**

3. **Visible Emissions:** The Permittee shall comply with 18 AAC 50.055(a)(1), which states that visible emissions, excluding condensed water vapor, from an industrial process or fuel-burning equipment may not reduce visibility through the exhaust effluent by more than 20 percent averaged over any six consecutive minutes<sup>4</sup>
  - 3.1 For Units 1-5, 10a, 10b, 13, and 16-18, burn only fuel gas. Certify in each Operating Report as described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC.50, the type of fuel burned in each of these emission units.
  - 3.2 Conduct visible emission surveillance in accordance with Condition 19 upon Department's request and as scheduled below:
    - a. For Units 6 and 7 (Emergency Generators), no less than one surveillance per 400 unit-hours of operation (emergency and non-emergency hours combined) for each unit.
    - b. For Unit 8, no less than one surveillance per 1,000 hours of operation.
  - 3.3 Attach to the Operating Report as described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC.50, Visible Emission Reports for a surveillance conducted under Condition 3.2
4. **Particulate Matter:** The Permittee shall comply with 18 AAC 50.055(b)(1), which states that particulate matter (PM) emitted from an industrial process or fuel-burning equipment may not exceed 0.05 grains per cubic foot of exhaust gas corrected to standard conditions and averaged over three hours.
  - 4.1 Upon Department request, conduct PM emission tests in accordance with the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC.50.

- 4.2 Report PM source test results conducted in accordance with the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC.50.
5. **Sulfur Compounds:** The Permittee shall comply with 18 AAC 50.055, which states that sulfur compound emissions, expressed as sulfur dioxide, may not exceed 500 ppm averaged over a period of three hours.
  - 5.1 Comply with fuel gas Hydrogen Sulfide (H<sub>2</sub>S) limits and diesel fuel sulfur content limits in Condition 9.1 and 9.2.
  - 5.2 Monitor record and report as described in Conditions 9.3, and 9.4.

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### **Section 3      *Ambient Air Quality Protection Requirements***

6. **Notification.** The Permittee shall provide unique identification and labels on each emission unit listed in Condition 1 and at the stationary source. Maintain additional information on unit category, subcategory, and unit number, as applicable, in an on-site log available to the Department's compliance officers for:
  - 6.1 Stationary Emission Units, Section 1, Group A;
  - 6.2 Portable Equipment, Section 1, Group B;
  - 6.3 Intermittent Well Servicing Equipment, Section 1, Group C:
    - a. I.C. Engines between 250 to 600 brake horsepower (bhp),
    - b. I.C. Engines larger than 600 bhp, and
  - 6.4 Keep records of all on-site equipment. Maintain equipment inventories for units listed in Section 1, Group A (Stationary Emission Units).
7. **Used Oil.** Do not burn used oil at the stationary source.
8. **General Ambient Air Quality Provisions.** Comply with the following provisions to protect the Nitrogen Dioxide (NO<sub>2</sub>), Sulfur Dioxide (SO<sub>2</sub>), PM with an aerodynamic diameter of less than or equal to nominal 10 microns (PM-10) and Carbon Monoxide (CO) air quality standards:
  - 8.1 **Stack Configuration:**
    - a. Construct and maintain vertical, uncapped exhaust stacks for all: permanent emission units; all portable emission units rated at or above 40 bhp; all intermittent emission engines rated at or above 400 bhp; and all intermittent heaters/boilers with a heat input rating of 2.8 MMBtu/hr or more. This condition does not preclude the use of flapper valve rain covers, or other similar designs, that do not hinder the vertical momentum of the exhaust plume.
    - b. Maintain the minimum exhaust stack heights listed in Table 1.

**Table 1 – Minimum Stack Height Requirements**

Unit		Minimum Stack Height Above Grade (m)
ID	Description	
1 - 2	GE LM2500 Turbines	35.1
3-5	Solar Mars Turbines	35.1
6 - 7	Emergency Diesel Generators	35.0
8	Fire Water Pump	17.3 <sup>1</sup>
9a	Incinerator	19.8
10a / 10b	Waste Heat Recovery Units (WHRU)	35.1
13	Glycol Reboiler	35.1
15 - 18	Space Heaters	10.0

- c. Provide as-built drawings of each exhaust stack for permanent emission units listed in Table 1 in the Operating Report as described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC.50.

**9. Fuel Sulfur Limits:**

- 9.1 For gas-fired emission units, limit the maximum fuel H<sub>2</sub>S content to 50 parts per million by volume (ppmv).
- 9.2 For the Group C emission units and all intermittently used oil field service equipment such as internal combustion units and boilers/heaters rated at less than 400 hp or 2.8 MMBtu/hr and all other non-road diesel fired engines, limit the maximum fuel sulfur content to less than or equal to 15 ppmw.
- 9.3 Measure the H<sub>2</sub>S content of natural gas fuel no less than once a month and as described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC 50. Measure the fuel sulfur content of fuel oil in accordance with sulfur measurement methods incorporated by reference within ASTM D 396 or D 975 either for each delivery or for the bulk diesel tank no less than once a month. Permittee may alternatively attach a vendor certification documenting the fuel sulfur content of each fuel delivery to Northstar.
- 9.4 List in the Operating Report as described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC.50.
- a. The maximum monthly gaseous fuel H<sub>2</sub>S testing results or vendor certification required by Condition 9.3; and
- b. The analytical test results for fuel oil sulfur testing results or vendor certification required by Condition 9.3.

<sup>1</sup> On October 26, 2010, BPXA requested the Department to change the fire water pump stack height (Unit ID 8) from 19.8 m to 17.3 m. In this Minor Permit AQ0503MSS03, the Department incorporates BPXA'S request to change the stack height in Table 1 (Minimum Stack Height Requirements) for Northstar. Due to this change, Condition 18.5(b) of the Title V Operating Permit AQ0503TVP01 is no longer applicable.

10. **Operating Limits for Ambient Air Protection.** Comply with the operating limits specified in Table 2 for each emission unit.

**Table 2 - Unit Specific Hourly, Daily, and Annual Limits**

Unit		Maximum Aggregate Capacity/Limit	Daily Limit	Aggregated 12-month rolling Limit(s)
ID	Description/Operation			
<b>Stationary Emission Units - Group A</b>				
1 - 2	GE LM2500 Turbines	NA	<i>unrestricted</i>	234 tons NO <sub>x</sub>
3 - 5	Solar Mars Turbines	NA	<i>unrestricted</i>	249 tons NO <sub>x</sub>
6 - 7	Emergency Diesel Generators	NA	<i>unrestricted</i>	1,000 hrs
8	Fire Water Pump	NA	<i>unrestricted</i>	104 hrs <sup>a</sup>
9b	Smart Ash Incinerator	NA	6 hrs	730 hrs
10b	Fresh Air Burner	NA	<i>unrestricted</i>	500 hrs
11 - 12	HP and LP Flare	25.5 MMScf/hr	200.5 MMscf	669 MMscf
<b>Portable Equipment - Group B</b>				
	Heaters	3 MMBtu/hr	<i>unrestricted</i>	162,038 gal
	Snow Melters	10 MMBtu/hr	<i>unrestricted</i>	164,422 gal
	Cranes	250 bhp	<i>unrestricted</i>	<i>unrestricted</i>
<b>Intermittent Well Servicing Equipment - Group C</b>				
	IC engines: 400 to 600 bhp	1,675 bhp	<i>unrestricted</i>	106,032 gal
	IC engines > 600 bhp	1,475 bhp	<i>unrestricted</i>	56,713 gal
	Heaters and Boilers	21.5 MMBtu/hr	<i>unrestricted</i>	479,719 gal
	Turbines	6,200 bhp	3,262 gal	16,311 gal

**Table 2 Notes:**

<sup>a</sup> The limit applies for non-emergency use.

11. Monitoring and Recording for compliance with Condition 0:

11.1 Monitor and record the hours of operation each calendar month for Units 1-8 and 10b. Record the cumulative 12-month rolling hours of operation for each month before the end of the following month.

11.2 For each equipment pool subject to a cumulative rated capacity limit (bhp or MMBtu/hr), record the date, time, rated capacity, and duration each unit is in service, and the cumulative total capacity used for the equipment pool for operations each day the limit applied. In lieu of monitoring and recording the time, duration, and total capacity, the Permittee may assume continuous operation for either each day or 12-hour shift the unit operates and the nameplate equipment load or vendor specified maximum load.

Alternatively, for Portable Equipment listed in Section 1, Group B, and for Intermittent Equipment in Section 1, Group C, if diesel fuel burned on the island during a day is less than 1,158 gallons, then list only the total fuel burned on the island for the day.

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- 11.3 For each unit or equipment pool subject to annual fuel use limits, measure and record the total volume of diesel fuel delivered to the unit or equipment pool each calendar month. For the turbines (in Group C) subject to daily fuel use limits, measure and record the volume of diesel fuel used each day.
- a. Flow meters and totalizers, if used, must be calibrated and certified to within  $\pm 5$  percent.
  - b. Provide a statement of calibration or certification in the Operating Report as described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC 50, and note the date of last calibration or certification.
- 11.4 For the high pressure (HP) and low pressure (LP) flare (Units 11 and 12), measure and record the combined hourly, daily and monthly flaring rates and the 12-month rolling flaring for each month by the end of the following month. Include pilot, purge, and produced gases in the flaring rate measurements.
- 11.5 For the Turbines (Units 1-5), calculate and record the daily NO<sub>x</sub> emissions based on hours of operation and emission factors for specific temperature and load ranges listed in *Exhibit A*. Calculate and record the total NO<sub>x</sub> emissions for Units 1-2 (GE LM2500 Turbines) and 3-5 (Solar Mars Turbines) for each month and 12-month rolling period by the end of the following month by summing the NO<sub>x</sub> emissions for each day the units operate during the time period.
12. Reporting: Report in the Operating Report as described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC.50:
- 12.1 For each of the following emission units subject to an hourly operational limit (e.g., MMscf, bhp or MMBtu), list the limit and the highest hourly recordings for each month of the reporting period and for each month the limit is exceeded, list the recording for every instance the limit is exceeded.
    - a. Units 11-12 listed in Group A;
    - b. Cranes, Heaters and Snow Melters listed in Group B, the inventory of the portable units including capacity;
    - c. I.C. Engines of capacity 400-600 bhp and larger than 600 bhp, Heaters and Boilers and Turbines listed in Group C, the inventory of the portable units including capacity.
  - 12.2 For each of the following emission units subject to a daily operational limit (e.g., hours, MMscf, or gallons), list the limit and the highest daily recordings for each month of the reporting period and for each month the limit is exceeded, list the recording for every instance the limit is exceeded.
    - a. Units 11 and 12 listed in Group A;
    - b. Turbines listed in Group C, the diesel fuel burned in the turbines. Alternatively, if diesel fuel burned on the island during a day is less than 1,158 gallons, then report only the total fuel burned on the island for the day.

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- 12.3 For each of the following emission units subject to a 12-month rolling total operational limit (e.g., hours, cubic feet, gallons, or MMscf) list the limit and the monthly and 12-month rolling total for each month of the reporting period:
- a. Units 6-7, 8, 10b, and 11-12 listed in Group A;
  - b. Heaters and Snow melters listed in Group B;
  - c. I.C. Engines of capacity 400-600 bhp and larger than 600 bhp, Heaters and Boilers and Turbines listed in Group C;
  - d. Alternatively, for Portable Equipment listed in Section 1, Group B, and for Intermittent Equipment in Section 1, Group C, if diesel fuel burned on the island each day is less than 1,158 gallons, then report only the total fuel burned on the island for the month and 12-month rolling total.
- 12.4 For each of the following equipment pools subject to a tons per year limit of NO<sub>x</sub>, list the limit, and 12-month rolling total for each month of the reporting period:
- a. Units 1 and 2 (GE LM250 Turbines) listed in Section 1, Group A;
  - b. Units 3-5 (Solar Turbines) listed in Group A;
13. 40 CFR 62 Subpart III; Commercial and Industrial Solid Waste Incineration Units – Unit 9a listed in Section 1, Group A.
- 13.1 Applicability and delegation of authority, 40 CFR 62.14525(c)(2). An affected facility is an incinerator unit, which commenced construction on or before November 30, 1999. Incineration is limited to at least 30 percent municipal solid waste or refuse-derived fuel in a unit that has the capacity to burn less than 35 tons per day of municipal solid waste or refuse-derived fuel.
- 13.2 Monitoring of operations, 40 CFR 62.14525(c)(2)(ii). Except as provided for in a U.S. EPA alternate monitoring schedule or waiver, keep records on a calendar quarter basis of the weight of municipal solid waste burned, and the weight of all other fuels and waste burned in the unit.

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## **Section 4 Best Available Control Technology (BACT)**

### **14. NO<sub>x</sub> BACT**

- 14.1 Install and operate as BACT for the following fuel burning equipment at the Northstar:
  - a. Units 6 and 7 (Emergency Generator) with variable fuel injection timing retard as incorporated by the manufacturer;
  - b. Units 1-2 (Turbines) with dry low NO<sub>x</sub> combustion technology; and
  - c. Units 3-5 (Turbines) with SoLoNO<sub>x</sub>® dry low NO<sub>x</sub> combustion technology.
- 14.2 Comply with the following not to exceed NO<sub>x</sub> emission limits.
  - a. For Units 1-2 (Turbines):
    - (i) 25 ppmv corrected to 15 percent Oxygen and 24.3 lb/hour per unit, expressed as NO<sub>2</sub>, at 0°F or greater; and
    - (ii) 43 lb/hour per unit, expressed as NO<sub>2</sub>, at less than 0°F.
  - b. For Units 3-5 (Turbines):
    - (i) 42 ppmv corrected to 15% Oxygen and 21.7 lb/hour per unit, expressed as NO<sub>2</sub>, in low emissions operations and at 0°F or greater; and
    - (ii) 83.4 lb/hr per unit, expressed as NO<sub>2</sub>, at less than 0°F or when not operating in low emissions operation.
  - c. For Units 6 and 7 (Emergency Generators) shall not exceed 13 grams NO<sub>x</sub>/kW-hr;
  - d. Unit 10a (Waste Heat Recovery Supplemental Burner) shall not exceed 0.10 lb NO<sub>x</sub>/MMBtu; and
  - e. Unit 10b (Waste Heat Recovery Fresh Air Burner) shall not exceed 0.12 lb NO<sub>x</sub>/MMBtu.
- 14.3 Monitor compliance as follows:
  - a. For Units 3-5, monitor emissions mode (low, intermediate, or full) using continuous tracking of gas producer speed through the turbine control panel. Record the date, time, and duration for which each of Units 3-5 is in each emissions mode.
  - b. Conduct NO<sub>x</sub> emission source tests upon department request in accordance with Condition 19.
- 14.4 Report NO<sub>x</sub> source test results as described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC.50.

## 15. CO BACT

15.1 Install and operate as BACT for the following fuel burning equipment:

- a. Unit 9a (Incinerator) with secondary combustion chamber; and
- b. Unit 11 (HP Flare) and Unit 12 (LP Flare) with air-assist or sonic design and smokeless flare technology.

15.2 Comply with the following not to exceed CO emission limits:

- a. For Units 1-2:
  - (i) 25 ppmv corrected to 15% Oxygen and 14.8 lb CO/hour per unit at 0°F or greater;
  - (ii) 38 lb CO/hour per unit at less than 0°F; and
  - (iii) a cumulative total of 143 tons CO per 12-month rolling period.
- b. For Units 3-5:
  - (i) 50 ppmv CO corrected to 15% Oxygen and 15.7 lb/hour per unit in low emissions operation and at 0°F or greater;
  - (ii) 37.1 lb CO/hr per unit in low emissions operation and at less than 0°F;
  - (iii) 367 lb CO/hr per unit when not operating in low emissions operation; and
  - (iv) a cumulative total of 3,000 hours when not operating in low emissions operation per 12-month rolling period.
- c. For Units 6-7 (Emergency Generator) no greater than 13.2 lb CO/hour per unit.
- d. For Unit 8 (Fire Water Pump) no greater than 6.4 lb CO/hour.
- e. For Unit 10a (Waste Heat Recovery System Supplemental Burner) no greater than 0.08 lb CO/MMBtu.
- f. For Unit 10b (Waste Heat Recovery System Fresh Air Burner) no greater than 0.08 lb CO/MMBtu.

15.3 Monitor compliance as follows:

- a. For Units 3-5, calculate and record daily average CO emission rates from the turbines based on hours of operation and emission factors for specific temperature and load ranges as set out in *Exhibit A*. Calculate and record the total CO emission rates for Units 3-5 for each month and 12-month rolling period, by the end of the following month, by summing the CO rates for each day. If the cumulative total CO emission rate exceeds 504 tons per 12-month rolling period, reassess CO best available control technology for Units 3-5 and submit to the department within 90 days of discovery.

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- b. For Units 1 and 2, calculate and record daily average CO emission rates from the turbines based on hours of operation and emission factors for specific temperature and load ranges as set out in *Exhibit A: Emission Factors for Primary Turbines*. Calculate and record the total CO emission rates for Units 1 and 2 for each month and 12-month rolling period, by the end of the following month, by summing the CO rates for each day the units operate during the time period to ascertain compliance with the limit listed in Condition 15.2a(iii).
  - c. Conduct CO emission source tests upon Department's request as described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC.50.
- 15.4 Report CO source test results as described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC.50. If Units 3-5 exceed a cumulative total of 504 tons of CO per 12-month rolling period, submit within 90 days of discovery a current best available control technology reassessment for Units 3-5.
- 15.5 Report in the Operating Report as described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC.50.:
- a. For Units 3-5, the cumulative 12-month rolling total hours of operation in each emissions mode,
  - b. The cumulative monthly and 12-month rolling total CO emissions from Units 1-2 and Units 3-5.

## 16. SO<sub>2</sub> BACT

- 16.1 Comply with the following fuel sulfur limits as representative of BACT:
- a. H<sub>2</sub>S content of gaseous fuel shall not exceed 50 ppmv;
  - b. Sulfur content of fuel oil shall not exceed 0.1% by weight; and
- 16.2 Conduct fuel sulfur monitoring and record keeping in accordance with Condition 9.3;
- 16.3 Report fuel sulfur content as provided for under Condition 9.4;

## 17. VOC BACT

- 17.1 Install and operate as BACT:
- a. Unit 9a (Incinerator) with secondary combustion chamber;
  - b. Units 11 and 12 (LP and HP Flare) with air-assist or sonic design and smokeless flare technology;
  - c. Water Injection Tanks and Slop Oil Tank with a sealed system design vented to the flaring system; and
  - d. Portable Fuel Oil Storage Tanks with conservation vents.

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17.2 Operate and maintain each pump, pressure relief device, open-ended valve or line, valve compressor and flange, or other connector in VOC or wet gas service, and each natural gas processing device or system in accordance with good operational practices. Tag and repair all leaking connectors, pumps, and compressors in VOC or wet gas service as soon as practicable. Maintain a log of preventive maintenance, surveillance activities, and repairs.

**18. PM-10 BACT**

18.1 Install and operate as BACT:

- a. Fuel burning equipment with good operation practices;
- b. Unit 9a with secondary combustion chamber;
- c. Units 11 and 12 with air-assist or sonic design and smokeless flare technology.

18.2 Comply with the following surrogate PM-10 emission limits as representative of BACT. Visible emissions from:

- a. Units 1-5 (Turbines) and Units 10a and 10b (Waste Heat Recovery System Burner) shall not exceed 10 percent opacity for greater than three minutes in any one hour;
- b. All industrial processes, incinerators, and fuel-burning equipment shall comply with the applicable State visible emission and grain loading standards listed in Conditions 2, 3 and 4.

18.3 Monitor compliance as follows:

- a. Conduct visible emission surveillance monitoring and emission source tests in accordance with Conditions 19, and Condition 2.1 and 3.2; and

18.4 Report the results of the visible emission surveillance reports and emission source tests as set out in Conditions 19 and 2.2 and 3.3.

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## **Section 5      *General Recordkeeping, Reporting and Testing Requirements***

19. **Source Test Requirements:** The Permittee shall conduct the verification (source) testing required or allowed by this permit as follows:
- 19.1 Use the applicable test methods set out in 40 CFR Part 60, Appendix A. The Permittee may propose alternative test methods if it can be shown to be of equivalent accuracy, and will ensure compliance with the applicable standards or limits. Alternative test procedures must be approved by the Department prior to the test date.
    - a. Nitrogen Oxides, NO<sub>x</sub>, expressed as NO<sub>2</sub> (ppm and lb/hr): Reference Method 7E or Method 20.
    - b. Carbon Monoxide, CO (ppm and lb/hr): Reference Method 10
    - c. Oxygen, O<sub>2</sub> (percent): Reference Method 3 or 3A.
    - d. Stack Velocity and Volumetric Flow Rate: Reference Methods 1-4.
    - e. Visible Emissions: Reference Method 9.
  - 19.2 Submit to the Department at least 30 days before the scheduled date of the tests, a complete plan for conducting the source tests. The Permittee need not submit this plan for a visible emissions source test conducted under Condition 19.1e.
  - 19.3 Give the Department written notice of the test dates 10 days before each series.
  - 19.4 Within 60 days after completion of the set of tests, submit the results, to the extent practical, in the format set out in *Source Test Report Outline* in Volume III, Section IV.3, of the State Air Quality Control Plan, adopted by reference in 18 AAC 50.030(8). Include all information required under Condition 19.1, if applicable.
20. **Recordkeeping Requirements.** The Permittee shall keep all records required by this permit for at least five years after the date of collection, including:
- 20.1 Copies of all reports and certifications submitted pursuant to this section of the permit.
  - 20.2 Records of all monitoring required by this permit, and information about the monitoring including:
    - a. calibration and maintenance records, original strip chart or computer based recording for continuous monitoring instrumentation;
    - b. sampling dates and times for sampling or measurements;
    - c. the operating conditions that existed at the time of sampling or measurement;
    - d. the date analyses were performed;
    - e. the location where samples were taken;
    - f. the company or entity that performed the sampling and analysis;

- g. the analytical techniques or method used in the analyses; and
- h. the results of the analyses

21. **Operating Reports.** During the life of the applicable operating permit issued to the source under AS 46.14.130(b) and 18 AAC 50, the Permittee shall submit an original and one copy of an operating report by May 15 for the period January 1 to March 31 of the current year, August 15 for the period April 1 to June 30 of the current year, November 15 for the period July 1 to September 30 of the current year and February 15 for the period October 1 to December 31 of the previous year.

21.1 The operating report must include all information required to be in operating reports by other conditions of this permit.

21.2 If excess emissions or permit deviations that occurred during the reporting period are not reported under Condition 21.1, either

a. the Permittee shall identify

- (1) the date of the deviation;
- (2) the equipment involved;
- (3) the permit condition affected;
- (4) a description of the excess emissions or permit deviation; and
- (5) any corrective action or preventive measures taken and the date or dates of the such actions; or

21.3 when excess emissions or permit deviations have already been reported under Condition 22, the Permittee may cite the date or dates of those report

22. **Excess Emissions and Permit Deviation Reports.** Notify the Department 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, should emissions and operations deviate from the requirements of this permit.

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## **Section 6      *General Certification and Information Requests Requirements***

23. **Certification.** The Permittee shall certify any permit application, report, affirmation, or compliance certification submitted to the department and required under the permit by including the signature of a responsible official for the permitted stationary source following the statement: “Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete.” Excess emission reports must be certified either upon submittal or with an operating report required for the same reporting period. All other reports and other documents must be certified upon submittal.
- 23.1 The Department may accept an electronic signature on an electronic application or other electronic record required by the Department if
- a. a certifying authority registered under AS 09.25.510 verifies that the electronic signature is authentic; and
  - b. the person providing the electronic signature has made an agreement, with the certifying authority described in Condition 23.1a that the person accepts or agrees to be bound by an electronic record executed or adopted with that signature.
24. **Information Requests.** The Permittee shall furnish to the Department, within a reasonable time, any information the Department requests in writing to determine whether cause exists to modify, revoke and reissue, or terminate the permit or to determine compliance with the permit. Upon request, the Permittee shall furnish to the Department copies of records required to be kept by the permit. The Department may require the Permittee to furnish copies of those records directly to the federal administrator.

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## **Section 7      Standard Permit Conditions**

25. 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:
  - 25.1 An enforcement action;
  - 25.2 Permit termination, revocation and reissuance, or modification in accordance with AS 46.14.280; or
26. 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.
27. Each permit term or condition is independent of the permit as a whole, and remains valid regardless of a challenge to any other part of the permit.
28. 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 of a notification of planned changes or anticipated noncompliance does not stay any permit condition.
29. The permit does not convey any property rights of any sort, nor any exclusive privilege.

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## **Section 8      Permit Documentation**

- October 26, 2010**      Letter from Alison Cooke (BPXA) addressed to Jimmy Yap requesting to reissue for Public Comment the draft preliminary permit for BPXA Northstar Minor Permit AQ0503MSS03. BPXA's additional request include Fire Water Pump stack height correction and elimination of the Rig Engines and associated equipment (Group D) from the emission unit inventory. Attachment includes Comments on Public Draft Notice for Minor Permit AQ00503MSS03.
- October 1, 2010**      Preliminary Decision for Minor Permit AQ0503MSS01.
- February 10, 2010**      BPXA's response to the Department's evaluation of BPXA's Permit Hygiene Requests (later renamed Updating Permit Conditions by the Department) for the Northstar's Minor Permit AQ0503MSS03
- January 7, 2010**      Email from Debra Dalcher of the Department to Alison Cooke of BPXA updating BPXA regarding permit change request processing and requesting a response to several permit change-related questions.
- November 23, 2009**      Email from Alison Cooke of BPXA to Debra Dalcher of the Department confirming the list of permit change requests.
- October 26, 2009**      Response letter to Department from BPXA regarding permit application technical deficiency.
- September 23, 2009**      Conference call between Permittee and Department to discuss the technical deficiency letter sent to BPXA on August 20, 2009.
- August 20, 2009**      Notification of permit application technical deficiency sent to BPXA.
- April 28, 2009**      BPXA submitted an update to the December 11, 2008 permit application.
- March 26, 2009**      BPXA submitted modeling files to the Department in response to the February 10, 2009 technical deficiency letter.
- February 10, 2009**      Notification of permit application technical deficiency sent to BPXA.
- December 11, 2008**      Minor permit application submitted by BPXA for the Northstar Production Facility to add an owner requested limit for fuel sulfur and address permit change items

**Exhibit A: Emission Factors for Primary Turbines**

**CO Emission Factors for Solar Mars 90**

Operating Condition	Predictive Emission Rate (lbs/hr)
<b>Below 0° F</b>	
Low %NGP ( $\leq 86\%$ )	Maximum value of 367
Medium %NGP ( $>86\%, \leq 90\%$ )	Average value of 317.8
High %NGP ( $>90\%$ )	Maximum value of 30.8
<b>Above 0° F</b>	
Low %NGP ( $\leq 86\%$ )	Maximum value of 367
Medium %NGP ( $>86\%, \leq 90\%$ )	Average value of 238.9
High %NGP ( $>90\%$ )	Maximum value of 15.7

**NO<sub>x</sub> Emission Factors for Solar Mars 90**

Operating Condition	Predictive Emission Rate (lbs/hr)
<b>Below 0° F</b>	
Very Low %NGP ( $\leq 79\%$ )	Maximum value of 6.2
Low %NGP ( $>79, \leq 90\%$ )	$0.8029 * [\%NGP] - 57.196$
High %NGP ( $>90\%, \leq 94.7\%$ )	Average value of 20.4
Very High %NGP ( $>94.7\%$ )	Average value of 28.4
<b>Above 0° F</b>	
Very Low %NGP ( $\leq 84\%$ )	Maximum value of 5.4
Low %NGP ( $>84, \leq 90\%$ )	$1.2408 * (\%NGP) - 98.796$
High %NGP ( $>90\%, \leq 94.7\%$ )	Average value of 13.6
Very High %NGP ( $>94.7\%$ )	Average value of 10.3

**NO<sub>x</sub> Emission Factors (lb/hr) for GE LM2500**

Mean Daily Temperature (°F)	Average Daily Load	
	> 75%	$\leq 75\%$
$\geq 59$	21	18
$< 59$ and $\geq 10$	23	20
$<10$ and $\geq 0$	37	34
$< 0$	20	19

**CO Emission Factors (lb/hr) for GE LM2500**

Mean Daily Temperature (°F)	Average Daily Load	
	> 75%	$\leq 75\%$
$\geq 59$	13	11
$< 59$ and $\geq 10$	14	12
$<10$ and $\geq 0$	33	17
$< 0$	12	7

Note: Site-specific emission factors for NO<sub>x</sub> and CO for the GE LM2500 turbine inlet temperatures below 0°F were approved by the department on July 31, 2003.