

**DEPARTMENT OF ENVIRONMENTAL CONSERVATION**  
**AIR QUALITY CONTROL MINOR PERMIT**

**Permit AQ0227MSS05**  
Rescinds Permit 227CP01  
Rescinds Permit AQ0227MSS02  
Rescinds Permit AQ0227MSS04

Date: Preliminary – June 10, 2010

The Alaska Department of Environmental Conservation (Department), under the authority of AS 46.14 and 18 AAC 50, issues Air Quality Control Minor Permit AQ0227MSS05 to the Permittee listed below.

**Permittee:** **TDX North Slope Generating, Inc.**  
4300 B Street, Suite 402  
Anchorage, AK 99503

**Owner and Operator:** Same as Permittee

**Stationary Source** Deadhorse Power Plant

**Project:** Add a Turbine, Two Engines and Revise Owner Requested Limits

**Location:** Latitude: 70° 14' 08.03" North; Longitude: 148° 22' 59.77" West

**Physical Address:** Mile 3, Spine Rd., Deadhorse, AK

**Permit Contact:** Hans Jensen (907) 659-2559, [hjensen@tdxpower.com](mailto:hjensen@tdxpower.com)

This project is classified under 18 AAC 50.502(c) for NO<sub>x</sub>, and 18 AAC 50.508(6) for revising or rescinding terms and conditions of a Title I permit. This permit satisfies the obligation of the Permittee to obtain a minor permit under 18 AAC 50.

This permit authorizes the Permittee to operate under the terms and conditions of this permit, and as described in the original permit application and subsequent application supplements listed in Section 10 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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## Section 1 Emission Unit Inventory

- Emission Unit (EU) Authorization.** The Permittee is authorized to install and operate the emission units listed in Table 1 subject to terms and conditions of this permit. Except as noted elsewhere in this permit, the information in Table 1 is for identification purposes only. The specific unit descriptions do not restrict the Permittee from replacing an emission unit identified in Table 1 with one of the same nominal rating and fuel type. The Permittee shall comply with all applicable provisions of AS 46.14 and 18 AAC 50 when installing a replacement emission unit, including any applicable minor or construction permit requirements.

**Table 1 – Emission Unit Inventory**

Emission Unit ID	Unit Name	Unit Description	Fuel Type	Nominal Rating/Size	Construction Date	Emission Unit Location <sup>c</sup>
1a	Generator No. 1	Caterpillar G3516B LE	Natural Gas	1,818 bhp [1,350 kW]	2006	South Plant
2	Generator No. 2	Caterpillar G3516	Natural Gas	1,152 bhp [800 kW]	1992	South Plant
3	Generator No. 3	Caterpillar G3516	Natural Gas	1,152 bhp [800 kW]	1992	South Plant
4a	Generator No. 4	Caterpillar G3516B LE	Natural Gas	1,818 bhp [1,350 kW]	2006	South Plant
5	Generator No. 6	EMD V20-645E	Diesel	3,600 bhp [2,600 kW]	1982	South Plant
6	Generator No. 11	Caterpillar G3616	Natural Gas	4,811 bhp [3,350 kW]	2003	South Plant
8	Above Ground Fuel Storage Tank No. 13	N/A	Diesel	20,000 gallons	1992	South Plant
9	Above Ground Fuel Storage Tank No.14	N/A	Diesel	5,000 gallons	1992	South Plant
10	Turbine Generator No. 1	Solar Taurus T-60	Natural Gas	5.2 MW	2008 <sup>a</sup>	North Plant
11	Turbine Generator No. 2	Solar Taurus T-60	Natural Gas	5.2 MW	2009 <sup>b</sup>	North Plant
12	Emergency Generator No. 1	Cummins GTA-28	Natural Gas	574 kW	TBD	South Plant
13	Emergency Generator No. 2	Cummins NTA-855	Diesel	300 kW	TBD	North Plant

Table 1 Notes:

<sup>a</sup> This turbine is used and was originally purchased by William Distributed Power. This unit was manufactured on May 9, 2000.

<sup>b</sup> This turbine is used and was originally purchased by William Distributed Power. This unit was manufactured on April 13, 2000.

<sup>c</sup> The North and South Plants comprise the Deadhorse Power Plant stationary source.

## **Section 2 Assessable Emissions**

2. **Assessable Emissions.** The Permittee shall pay to the Department annual emission fees 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. 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 10 tons per year. The quantity for which fees will be assessed is the lesser of:
  - 2.1 Stationary source's assessable potential to emit of 612 tpy; or
  - 2.2 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.
3. **Assessable Emission Estimates.** Emission fees will be assessed as follows:
  - 3.1 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, PO 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
  - 3.2 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 2.1.

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

4. To protect the NO<sub>2</sub> ambient air quality standard and maximum allowable increase; the SO<sub>2</sub> ambient air quality standards and maximum allowable increases; and the PM-10 ambient air quality standards and maximum allowable increases, the Permittee shall, for each emission unit listed in Table 2, comply with the following provisions:
  - 4.1 maintain the exhaust stack so that the stack height is at or above the minimum stack height shown in Table 2, and
  - 4.2 maintain the exhaust stack with uncapped, vertical outlets – flapper valves, or similar, are allowed as long as they do not hinder the vertical momentum of the exhaust plume.

**Table 2 - Required Stack Heights**

<b>Emission Unit ID</b>	<b>Emission Unit Name</b>	<b>Unit Description</b>	<b>Minimum Stack Height<sup>a</sup> (m)</b>
1a	Generator No. 1	Caterpillar G3516B LE	15.00
2	Generator No. 2	Caterpillar G3516	14.00
3	Generator No. 3	Caterpillar G3516	14.00
4a	Generator No. 4	Caterpillar G3516B LE	15.00
5	Generator No. 6	EMD V20-645E	16.00
6	Generator No. 11	Caterpillar G3616	13.72
10	Turbine Generator No. 1	Solar Taurus T-60	9.98
11	Turbine Generator No. 2	Solar Taurus T-60	9.98
12	Emergency Generator No. 1	Cummins GTA-28	14.00
13	Emergency Generator No. 2	Cummins NTA-855	3.05

Table 2 Notes

<sup>a</sup> Stack height is the height measured from the existing grade to the top of the stack

5. To protect the annual average NO<sub>2</sub> ambient air quality standard and maximum allowable increase, the Permittee shall comply as follows:
  - 5.1 EU ID 12 shall not exceed a total of 700 hours of operation per 12 month rolling period.
  - 5.2 EU ID 13 shall not exceed a total of 250 hours of operation per 12 month rolling period.
  - 5.3 Prior to startup of EU ID 12, disconnect the fuel supply to EU ID 7. Submit to the Department a written notice within 30 days of the date of disconnecting the EU ID 7 fuel supply and subsequent date of removal of EU 7 from the stationary source.

- 5.4 Prior to startup, equip EU IDs 12 and 13 with dedicated engine hour meters. Submit to the Department within 30 days of the date of installation related vendor and technical data for the installed engine hour meters.
- 5.5 Record at the end of each calendar month the hour-meter reading for each of EU IDs 12 and 13. Calculate and record the total operating hours per 12-month rolling period by summing the monthly operating hours with the total operating hours for the prior 11 month period, per unit.
- 5.6 Report as a permit deviation in accordance with Condition 34, whenever the total hours of operation for EU 12 or EU 13 exceed the limitations of Condition 5.1 or Condition 5.2, respectively.
- 5.7 Include copies of the records required by Condition 5.5 with the stationary source operating report by Condition 35 for the period covered by the report.
6. To protect the annual average NO<sub>2</sub> ambient air quality standard and maximum allowable increase, the Permittee shall comply with the stationary source diesel fuel oil consumption restriction as follows:
  - 6.1 Limit total fuel oil consumption to EU IDs 5 and 13 to not exceed 300,000 gallons per 12-month rolling period.
  - 6.2 Monitor and record the diesel fuel consumption (gallons) for each of EU IDs 5 and 13 no less than once per calendar month. Calculate and record the total diesel fuel consumption per 12-month rolling period by summing the monthly fuel consumption for EU IDs 5 and 13.
  - 6.3 Report as a permit deviation in accordance with Condition 34, whenever the total combined fuel consumption to EUs 5 and 13 exceeds the limitation of Condition 6.1.
  - 6.4 Include copies of the records required by Condition 6.2 with the stationary source operating report by Condition 35 for the period covered by the report.
7. To protect the 24-hour SO<sub>2</sub> ambient air quality standard and maximum allowable increase, the Permittee, use only fuel oil with a sulfur content of no more than 0.2 percent by weight in all diesel-fired emission units.
  - 7.1 Obtain a statement or receipt from the fuel supplier certifying the maximum sulfur content of the fuel for each shipment of fuel delivered to the stationary source. If a certification is not available from the supplier, analyze a representative sample of the fuel according to Condition 7.2 to determine the sulfur content.
  - 7.2 If required under Condition 7.1, analyze the fuel samples using ASTM method D129, D4294, D2622, D6428 or an appropriate method listed in 18 AAC 50.035.
  - 7.3 Report under Excess Emissions and Permit Deviation Condition 34, any fuels that exceed 0.2 percent by weight.
  - 7.4 Attach copies of the applicable records required by Conditions 7.1 and 7.2 in the operating report under Condition 35.

- 8.** To protect the 24-hour SO<sub>2</sub> ambient air quality standard and maximum allowable increase, use only fuel gas with total sulfur content of no more than 100 parts per million (ppmv) by volume in all gas-fired emission units.
  - 8.1 Obtain a semiannual statement or receipt from the fuel supplier certifying the fuel gas sulfur concentration in ppmv. If a certificate is not available from the supplier, then analyze a representative sample of the fuel no less than once each six months to determine the sulfur content using 40 C.F.R. 60, Appendix A, Method 11 or an appropriate method listed in 18 AAC 50.035.
  - 8.2 Report under Excess Emissions and Permit Deviation Condition 34, whenever the total sulfur concentration of the fuel gas obtained or analyzed exceeds 100 ppmv.
  - 8.3 Attach copies of the records required by Condition 8.1 in the operating report under Condition 35.

## **Section 4      Owner Requested Limits to avoid PSD**

### CO Limits

9. The Permittee shall limit the total CO emissions from Emission Units 1a, 2, 3, 4a, 5, 6, and 10 through 13 listed in Table 1 to no greater than 240.1 tons per 12 month rolling period. Monitor and record in accordance with Conditions 9.1 through 9.6 below.

9.1 For Emission Units 10 and 11 (CO Group A):

- a. Capture the *sixty second average load* (in percent of full-load) and the *sixty second average inlet air temperature* (in degrees Fahrenheit) during all periods of operation. Record for each calendar day, the minimum *sixty second average load* (in percent of full-load) and the minimum *sixty second average inlet air temperature* (in degrees Fahrenheit). Data capture and recording may be electronic.
- b. Except as noted below, round the *sixty second average load* up to the next highest load and round the *sixty second average inlet air temperature* down to the next lowest inlet air temperature presented in Table 4. Consider all *sixty second average loads* between 40% (inclusive) and 50% (exclusive), as 40% loads. Data rounding may be electronic.
- c. Using the method described in Condition 9.1c, determine the pounds of CO emitted during the sixty-second period for the given *sixty second average load* and *sixty second average inlet air temperature*, as rounded under Condition 9.1a. For each hour, sum the sixty-second emissions to determine the hourly CO emissions (in pounds). Record the hourly CO emissions. Data selection and recording may be electronic.
- d. When calculating the CO emissions under Condition 9.1c, the Permittee must use either the lb/min CO values listed in Table 4, or Department-approved substitute lb/min values derived from a Department-approved source test. Use one of the following approaches if a parameter measured under Condition 9.1 is missing or suspect. Note which approach is used (if applicable) in the operating report under Condition 35.
  - (i) If the *sixty second average load* is unknown or suspect, use the largest lb/min CO emissions in Table 4 (or the substitute worst-case lb/min value) for the given inlet air temperature.
  - (ii) If the *sixty second average inlet air temperature* is unknown or suspect,
    - (A) use the largest lb/min CO emissions in Table 4 (or the substitute worst-case lb/min value) for the given load, or

- (B) obtain the ambient temperature measured by the National Weather Service (NWS) at the Deadhorse Airport for each hour of missing inlet air temperature and use the NWS temperature in lieu of the inlet air temperature when calculating the pounds of CO under Condition 9.1c.
- (iii) If the *sixty second average load* and the *sixty second average inlet air temperature* are both unknown or suspect, use 3.87 lb/min (or the Department-approved substitute maximum lb/min value).
- e. By the end of each calendar month, calculate and record the *monthly CO emissions* (in pounds) by summing the CO emissions calculated in Condition 9.1c during the previous month. Calculation and recording may be electronic.
- f. By the end of each calendar month, calculate and record the *cumulative monthly CO emissions* (in pounds) for CO Group A by summing all *monthly CO emissions* calculated in Condition 9.1e for the previous calendar month. Calculation and recording may be electronic.
- g. By the end of each calendar month, calculate and record the *Group A twelve month rolling CO emissions* (in tons) by summing the *cumulative monthly CO emissions* during the previous twelve months and dividing the sum by 2,000 (lb/ton). Calculation and recording may be electronic.

9.2 For Emission Units 1a, 2, 3, 4a, and 6 (CO Group B):

- a. Calculate the daily CO emission rate for each emission unit by multiplying the fuel specific emission rate (worst case vendor data) as listed in Table 3 by the unit's daily fuel consumption. For any period during which daily fuel consumption records are not recorded or records are suspect, use the maximum design fuel consumption for each recorded hour of source operation. The Permittee may upon written Department approval use site-specific emission factors.

Formula:  $E = F \times C$  where: E = Emission rate [lb/day]

F = Fuel Factor [lb/gallon or lb/Mscf]

C = Fuel consumption [gallon/day or Mscf/day]

- b. By the end of each calendar month, calculate and record the *monthly CO emissions* (in pounds) for each unit by summing the CO emissions calculated in Condition 9.2a during the previous month.
- c. By the end of each calendar month, calculate and record the *cumulative monthly CO emissions* (in pounds) for CO Group B by summing all *monthly CO emissions* calculated in Condition 9.2b for the previous calendar month.

- d. By the end of each calendar month, calculate and record the *Group B twelve month rolling CO emissions* (in tons) by summing the *cumulative monthly CO emissions* during the previous twelve months and dividing the sum by 2,000 (lb/ton).

9.3 For Emission Units 5, 12, and 13 (CO Group C):

- a. Calculate the daily CO emission rate for each emission unit by multiplying the fuel specific emission rate (from worst case vendor data or AP-42) as listed in Table 3 by the unit's daily hours of operation. The Permittee may upon written Department approval use site-specific emission factors.

Formula:  $E = F \times H$  where: E = Emission rate [lb/day]

F = Fuel Factor [lb/hr]

H = Hours of Operation [hrs/day]

- b. By the end of each calendar month, calculate and record the *monthly CO emissions* (in pounds) for each unit by summing the CO emissions calculated in Condition 9.3a during the previous month.
- c. By the end of each calendar month, calculate and record the *cumulative monthly CO emissions* (in pounds) for CO Group C by summing all *monthly CO emissions* calculated in Condition 9.3b for the previous calendar month.
- d. By the end of each calendar month, calculate and record the *Group C twelve month rolling CO emissions* (in tons) by summing the *cumulative monthly CO emissions* during the previous twelve months and dividing the sum by 2,000 (lb/ton).

9.4 By the end of each calendar month, calculate and record the *Total Twelve Month Rolling CO Emissions* (in tons) by adding the *Group A, Group B, and Group C twelve month rolling CO emissions*.

9.5 Report, as described under Excess Emissions and Permit Deviation Reports under Condition 34, if the *Total Twelve Month Rolling CO Emissions* (as calculated under Condition 9.4) exceeds 240.1 tons per 12-month rolling period.

9.6 In each operating report required under Condition 35:

- a. For each month of the reporting period
  - (i) the range of inlet air temperatures recorded for the turbine (Emission Units 10 and 11) during the month; and
  - (ii) any periods where the monitoring equipment/electronic algorithm required under Condition 9.1, was malfunctioning or inoperable (specify the malfunctioning/inoperable item with each period);

- b. the *cumulative monthly CO* emissions for CO Groups A, B, and C, as calculated in Conditions 9.1f, 9.2c, and 9.3c, for each month of the reporting period;
- c. the *Groups A, B, and C twelve month rolling CO emissions*, as calculated in Conditions 9.1g, 9.2d, and 9.3d; and
- d. the *Total Twelve Month Rolling CO Emissions for Group A, B, and C combined*, as calculated under Condition 9.4, for each twelve month period covered by the operating report.

#### NO<sub>x</sub> Limits

10. The Permittee shall limit the total NO<sub>x</sub> emissions from Emission Units 1a, 2, 3, 4a, 5, 6, and 10 through 13 listed in Table 1 to no greater than 242.6 tons per 12 month rolling period. Monitor and record in accordance with Conditions 10.1 through 10.7 below:

##### 10.1 For Emission Units 10 and 11 (NO<sub>x</sub> Group A):

- a. Capture the *sixty second average load* (in percent of full-load) and the *sixty second average inlet air temperature* (in degrees Fahrenheit) during all periods of operation. Record for each calendar day, the minimum *sixty second average load* (in percent of full-load) and the minimum *sixty second average inlet air temperature* (in degrees Fahrenheit). Data capture and recording may be electronic.
- b. Except as noted below, round the *sixty second average load* up to the next highest load and round the *sixty second average inlet air temperature* down to the next lowest inlet air temperature presented in Table 4. Consider all *sixty second average loads* between 40% (inclusive) and 50% (exclusive), as 40% loads. Data rounding may be electronic.
- c. Using the method described in Condition 10.1d, determine the pounds of NO<sub>x</sub> emitted during the sixty-second period for the given *sixty second average load* and *sixty second average inlet air temperature*, as rounded under Condition 10.1b. For each hour, sum the sixty-second emissions to determine the hourly NO<sub>x</sub> emissions (in pounds). Record the hourly NO<sub>x</sub> emissions. Data selection and recording may be electronic.
- d. When calculating the NO<sub>x</sub> emissions under Condition 10.1c, the Permittee must use either the lb/min NO<sub>x</sub> values listed in Table 4, or Department-approved substitute lb/min values derived from a Department-approved source test. Use one of the following approaches if a parameter measured under Condition 10.1 is missing or suspect. Note which approach is used (if applicable) in the operating report under Condition 35:
  - (i) If the *sixty second average load* is unknown or suspect, use the largest lb/min NO<sub>x</sub> emissions in Table 4 (or the substitute worst-case lb/min value) for the given inlet air temperature.

- (ii) If the *sixty second average inlet air temperature* is unknown or suspect,
  - (A) use the largest lb/min NO<sub>x</sub> emissions Table 4 (or the substitute worst-case lb/min value) for the given load, or
  - (B) obtain the ambient temperature measured by the National Weather Service (NWS) at the Deadhorse Airport for each hour of missing inlet air temperature and use the NWS temperature in lieu of the inlet air temperature when calculating the pounds of NO<sub>x</sub> under Condition 10.1c.
- (iii) If the *sixty second average load* and the *sixty second average inlet air temperature* are both unknown or suspect, use 0.62 lb/min (or the Department-approved substitute maximum lb/min value).
- e. By the end of each calendar month, calculate and record the *monthly NO<sub>x</sub> emissions* (in pounds) by summing the NO<sub>x</sub> emissions calculated in Condition 10.1c during the previous month. Calculation and recording may be electronic.
- f. By the end of each calendar month, calculate and record the *cumulative monthly NO<sub>x</sub> emissions* (in pounds) for NO<sub>x</sub> Group A by summing all *monthly NO<sub>x</sub> emissions* calculated in Condition 10.1e for the previous calendar month. Calculation and recording may be electronic.
- g. By the end of each calendar month, calculate and record the *Group A twelve month rolling NO<sub>x</sub> emissions* (in tons) by summing the *cumulative monthly NO<sub>x</sub> emissions* during the previous twelve months and dividing the sum by 2,000 (lb/ton). Calculation and recording may be electronic.

10.2 For Emission Units 1a, 2, 3, 4a, and 6 (NO<sub>x</sub> Group B):

- a. Calculate the daily NO<sub>x</sub> emission rate for each emission unit by multiplying the fuel specific emission rate (worst case vendor data) as listed in Table 3 by the unit's daily fuel consumption. For any period during which daily fuel consumption records are not recorded or records are suspect, use the maximum design fuel consumption for each recorded hour of source operation. The Permittee may upon written Department approval use site-specific emission factors.

Formula:  $E = F \times C$     where: E = Emission rate [lb/day]

F = Fuel Factor [lb/gallon or lb/Mscf]

C = Fuel consumption [gallon/day or Mscf/day]

- b. By the end of each calendar month, calculate and record the *monthly NO<sub>x</sub> emissions* (in pounds) for each unit by summing the NO<sub>x</sub> emissions calculated in Condition 10.2a during the previous month.

- c. By the end of each calendar month, calculate and record the *cumulative monthly NO<sub>x</sub> emissions* (in pounds) for NO<sub>x</sub> Group B by summing all *monthly NO<sub>x</sub> emissions* calculated in Condition 10.2b for the previous calendar month.
- d. By the end of each calendar month, calculate and record the *Group B twelve month rolling NO<sub>x</sub> emissions* (in tons) by summing the *cumulative monthly NO<sub>x</sub> emissions* during the previous twelve months and dividing the sum by 2,000 (lb/ton).

10.3 For Emission Units 5, 12, and 13 (NO<sub>x</sub> Group C):

- a. Calculate the daily NO<sub>x</sub> emission rate for each emission unit by multiplying the hourly emission rate (from worst case vendor data or AP-42) as listed in Table 3 by the unit's daily hours of operation. The Permittee may upon written Department approval use site-specific emission factors.

Formula:  $E = F \times H$      where: E = Emission rate [lb/day]

F = Fuel Factor [lb/hr]

H = Hours of Operation [hrs/day]

- b. By the end of each calendar month, calculate and record the *monthly NO<sub>x</sub> emissions* (in pounds) for each unit by summing the NO<sub>x</sub> emissions calculated in Condition 10.3a during the previous month.
- c. By the end of each calendar month, calculate and record the *cumulative monthly NO<sub>x</sub> emissions* (in pounds) for NO<sub>x</sub> Group C by summing all *monthly NO<sub>x</sub> emissions* calculated in Condition 10.3b for the previous calendar month.
- d. By the end of each calendar month, calculate and record the *Group C twelve month rolling NO<sub>x</sub> emissions* (in tons) by summing the *cumulative monthly NO<sub>x</sub> emissions* during the previous twelve months and dividing the sum by 2,000 (lb/ton).

10.4 By the end of each calendar month, calculate and record the *Total Twelve Month Rolling NO<sub>x</sub> Emissions* (in tons) by adding the *Group A, Group B, and Group C twelve month rolling NO<sub>x</sub> emissions*.

10.5 Report, under Excess Emissions and Permit Deviation Reports under Condition 34 if the *Total Twelve Month Rolling NO<sub>x</sub> Emissions* (as calculated under Condition 10.4) exceeds 242.6 tons per 12-month rolling period.

10.6 In each operating report required under Condition 35:

- a. For each month of the reporting period
  - (i) the range of inlet air temperatures recorded for the turbine (Emission Units 10 and 11) during the month; and

- (ii) any periods where the monitoring equipment/electronic algorithm required under Condition 10.1, was malfunctioning or inoperable (specify the malfunctioning/inoperable item with each period);
  - b. the *cumulative monthly NO<sub>x</sub>* emissions for NO<sub>x</sub> Groups A, B, and C, as calculated in Conditions 10.1f, 10.2c, and 10.3c, for each month of the reporting period;
  - c. the *Groups A, B, and, C twelve month rolling NO<sub>x</sub> emissions*, as calculated in Conditions 10.1g, 10.2d and 10.3d; and
  - d. the *Total Twelve Month Rolling NO<sub>x</sub> Emissions for Group A, B, and C combined*, as calculated under Condition 10.4, for each twelve month period covered by the operating report.
- 10.7 If the total 12-month rolling NO<sub>x</sub> or CO emissions for Emissions Units 1a, 2, 3, 4a, 5, 6, and 10 through 13 exceed 225 tons, within 60 days conduct an emission source test on each emission unit. The emission source test shall represent no less than 4 loads of each unit, including the minimum, maximum and two mid range load points. Conduct the test in accordance with 40 C.F.R. 60, Appendix A, Test Method 7E for NO<sub>x</sub> or Test Method 10 for CO. Monitor and record each unit's fuel consumption during the emission source test. Derive a fuel-specific NO<sub>x</sub> or CO emission factor for each load using the emission rate methodology as is set out in 40 C.F.R. 60, Appendix A, Method 19. Upon Department approval, use site- and fuel-specific emissions factors and the methodology described in Conditions 9 or 10 to calculate the 12-month rolling period emissions for each unit.
- 11. Before initial start-up, equip each of Emission Units 11, 12, and 13 with a dedicated hour meter to total the operating hours of the emission unit.

## **Section 5 State Emission Standards**

*Industrial Processes and Fuel-Burning Equipment, Emission Units 1a, 2, 3, 4a, 5, 6 and 10, 11, 12, and 13*

- 12. Visible Emissions.** The Permittee shall not cause or allow visible emissions, excluding condensed water vapor, emitted from Emission Units 1a, 2, 3, 4a, 5, 6, 10, 11, 12, and 13 to reduce visibility through the exhaust effluent by more than 20 percent averaged over any six consecutive minutes.
- 12.1 For Emission Unit 13 verify initial compliance as follows:
- a. Obtain a certified manufacturer guarantee that the emission unit will comply with the visible emission standard; or
  - b. Conduct a Method 9 visible emission source test within 30 days of unit installation.
- 12.2 Attach a copy of the guarantee obtained under Condition 12.1a, or a copy of the surveillance records developed under Condition 12.1b, as applicable, to the operating report required under Condition 35.
- 12.3 Report under Excess Emissions and Permit Deviation under Condition 34, if any visible emissions exceed the limit in Condition 12.
- 12.4 For Emission Unit 13 monitor, record and report in accordance with Conditions 13 through 15.
- 12.5 For Emission Units 10, 11 and 12, burn only gas as fuel. Monitoring for these emission units shall consist of a certification in each operating report required under Condition 35. Report under Excess Emissions and Permit Deviation under Condition 34 if any fuel is burned other than gas.
- 13. Visible Emissions Monitoring.** The Permittee shall observe the exhaust of Emission Units 5 and 13 for visible emissions using either the Method 9 Plan under Condition 13.1 or the Smoke/No-Smoke Plan under Condition 13.2. The Permittee may change visible-emissions plans for an emission unit at any time unless prohibited from doing so by Condition 13.3.
- 13.1 **Method 9 Plan.** For all 18-minute observations in this plan, observe exhaust, following 40 C.F.R. 60, Appendix A-4, Method 9, adopted by reference in 18 AAC 50.040(a), for 18 minutes to obtain 72 consecutive 15-second opacity observations.
- a. First Method 9 Observation. For Emission Unit 13, observe exhaust for 18 minutes within six months after the issue date of this permit. For any unit, observe exhaust for 18 minutes within 14 calendar days after changing from the Smoke/No-Smoke Plan of Condition 13.2. For any unit replaced during the term of this permit, observe exhaust for 18 minutes within 30 days of startup.

- b. Monthly Method 9 Observations. After the first Method 9 observation, perform 18-minute observations at least once in each calendar month that an emission unit operates.
  - c. Semiannual Method 9 Observations. After observing emissions for three consecutive operating months under Condition 13.1b, unless a six-minute average is greater than 15 percent and one or more observations are greater than 20 percent, perform 18-minute observations at least semiannually.  
Semiannual observations must be taken between four and seven months after the previous set of observations.
  - d. Annual Method 9 Observations. After at least two semiannual 18-minute observations, unless a six-minute average is greater than 15 percent and one or more individual observations are greater than 20 percent, perform 18-minute observations at least annually.  
Annual observations must be taken between 10 and 13 months after the previous observations.
  - e. Increased Method 9 Frequency. If a six-minute average opacity is observed during the most recent set of observations to be greater than 15 percent and one or more observations are greater than 20 percent, then increase or maintain the 18-minute observation frequency for that emission unit to at least monthly intervals, until the criteria in Condition 13.1c for semiannual monitoring are met.
- 13.2 **Smoke/No Smoke Plan.** Observe the exhaust for the presence or absence of visible emissions, excluding condensed water vapor.
- a. Initial Monitoring Frequency. Observe the exhaust during each calendar day that an emission unit operates.
  - b. Reduced Monitoring Frequency. After the emission unit has been observed on 30 consecutive operating days, if the emission unit operated without visible smoke in the exhaust for those 30 days, then observe emissions at least once in every calendar month that an emission unit operates.
  - c. Smoke Observed. If smoke is observed, either begin the Method 9 Plan of Condition 13.1 or perform the corrective action required under Condition 13.3
- 13.3 **Corrective Actions Based on Smoke/No Smoke Observations.** If visible emissions are present in the exhaust during an observation performed under the Smoke/No Smoke Plan of Condition 13.2, then the Permittee shall either follow the Method 9 plan of Condition 13.1 or
- a. initiate actions to eliminate smoke from the emission unit within 24 hours of the observation;
  - b. keep a written record of the starting date, the completion date, and a description of the actions taken to reduce smoke; and

- c. after completing the actions required under Condition 13.3a,
  - (i) take Smoke/No Smoke observations in accordance with Condition 13.2.
    - (A) at least once per day for the next seven operating days and until the initial 30 day observation period is completed; and
    - (B) continue as described in Condition 13.2b; or
  - (ii) if the actions taken under Condition 13.3a do not eliminate the smoke, or if subsequent smoke is observed under the schedule of Condition 13.3c(i)(A), then observe the exhaust using the Method 9 Plan unless the Department gives written approval to resume observations under the Smoke/No Smoke Plan; after observing smoke and making observations under the Method 9 Plan, the Permittee may at any time take corrective action that eliminates smoke and restart the Smoke/No Smoke Plan under Condition 13.2a.

**14. Visible Emissions Recordkeeping.** The Permittee shall keep records as follows:

14.1 When using the Method 9 Plan of Condition 13.1,

- a. the observer shall record
  - (i) the name of the stationary source, emission unit and location, emission unit type, observer's name and affiliation, and the date on the Visible Emissions Field Data Sheet in Section 12;
  - (ii) the time, estimated distance to the emissions location, sun location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), plume background, and operating rate (load or fuel consumption rate) on the sheet at the time opacity observations are initiated and completed;
  - (iii) the presence or absence of an attached or detached plume and the approximate distance from the emissions outlet to the point in the plume at which the observations are made;
  - (iv) opacity observations to the nearest five percent at 15-second intervals on the Visible Emissions Observation record in Section 12; and
  - (v) the minimum number of observations required by the permit; each momentary observation recorded shall be deemed to represent the average opacity of emissions for a 15-second period.
- b. To determine the six-minute average opacity, divide the observations recorded on the record sheet into sets of 24 consecutive observations; sets need not be consecutive in time and in no case shall two sets overlap; for each set of 24 observations, calculate the average by summing the opacity of the 24 observations and dividing this sum by 24; record the average opacity on the sheet.

- c. Calculate and record the highest 18-consecutive-minute averages observed.
  - 14.2 If using the Smoke/No Smoke Plan of Condition 13.2, record the following information in a written log for each observation and submit copies of the recorded information upon request of the Department:
    - a. the date and time of the observation;
    - b. from Table 1, the ID of the emission unit observed;
    - c. whether visible emissions are present or absent in the exhaust;
    - d. a description of the background to the exhaust during the observation;
    - e. if the emission unit starts operation on the day of the observation, the startup time of the emission unit;
    - f. name and title of the person making the observation; and
    - g. operating rate (load or fuel consumption rate).
- 15. Visible Emissions Reporting.** The Permittee shall report visible emissions as follows:
  - 15.1 Include in each stationary source operating report under Condition 35:
    - a. which visible-emissions plan of Condition 13 was used for each emission unit; if more than one plan was used, give the time periods covered by each plan;
    - b. for each emission unit under the Method 9 Plan,
      - (i) copies of the observation results (i.e. opacity observations) for each emission unit that used the Method 9 Plan, except for the observations the Permittee has already supplied to the Department; and
      - (ii) a summary to include:
        - (A) number of days observations were made;
        - (B) highest six-minute average observed; and
        - (C) dates when one or more observed six-minute averages were greater than 20 percent;
    - c. for each emission unit under the Smoke/No Smoke Plan, the number of days that Smoke/No Smoke observations were made and which days, if any, that smoke was observed; and
    - d. a summary of any monitoring or recordkeeping required under Conditions 13 and 14 that was not done;
  - 15.2 Report in the operating report required under Condition 35:
    - a. the results of Method 9 observations that exceed an average of 20 percent opacity for any six-minute period; and



- 18. Particulate Matter Record Keeping for Diesel Engines.** Within 180 calendar days after the effective date of this permit, the Permittee shall record the exhaust stack diameter(s) of Emission Unit 13 listed in Table 1. Report the stack diameter(s) in the next operating report required under Condition 35.
- 19. Particulate Matter Reporting for Diesel Engines.** The Permittee shall report as follows:
- 19.1 report in the operating report required under Condition 35:
    - a. the results of any PM source test that exceeds the PM emissions limit; or
    - b. if one of the criteria of Condition 17.2 was exceeded and the Permittee did not comply with either Condition 17.1a or 17.1b, this must be reported by the day following the day compliance with Condition 17.1 was required;
  - 19.2 report observations in excess of the threshold of Condition 17.2b within 30 days of the end of the month in which the observations occur;
  - 19.3 in each stationary source operating report required under Condition 35:
    - a. the dates, EU No., and results when an observed 18-minute average was greater than an applicable threshold in Condition 17.2;
    - b. a summary of the results of any PM testing under Condition 17; and
    - c. copies of any visible emissions observation results (opacity observations) greater than the thresholds of Condition 17.2, if they were not already submitted.
- 20. Sulfur Compound Emissions.** The Permittee shall not cause or allow sulfur compound emissions, expressed as SO<sub>2</sub>, from Emission Units 1a, 2, 3, 4a, 5, 6, 10, 11, 12, and 13 to exceed 500 ppm averaged over three hours. Monitor record and report as described in Conditions 7 and 8.

## **Section 6      *Generally Applicable Requirements***

- 21. Maintenance.** The Permittee shall conduct maintenance of all fuel burning and related equipment according to the manufacturer's maintenance procedures. The Permittee shall keep a copy of either the manufacturer's or operator's maintenance procedures.

## **Section 7      Federal Requirements**

**22. NSPS Subpart A Notification.** For any affected facility<sup>1</sup> or existing facility<sup>2</sup> regulated under NSPS requirements in 40 C.F.R. 60, the Permittee shall furnish the Department and EPA written or electronic notification of:

- 22.1 the date that construction or reconstruction of an affected facility commences postmarked no later than 30 days after such date;
- 22.2 the actual date of initial startup of an affected facility postmarked within 15 days after such date;
- 22.3 any physical or operational change to an existing facility which may increase the emission rate of any air pollutant to which a standard applies unless that change is specifically exempted under an applicable subpart or in 40 C.F.R. 60.14(e), postmarked 60 days or as soon as practicable before the change is commenced and shall include:
  - a. information describing the precise nature of the change,
  - b. present and proposed emission control systems,
  - c. productive capacity of the facility before and after the change, and
  - d. the expected completion date of the change;
- 22.4 any proposed replacement of an existing facility, for which the fixed capital cost of the new components exceeds 50 percent of the fixed capital cost that would be required to construct a comparable entirely new facility, postmarked as soon as practicable, but no less than 60 days before commencement of replacement, and including the following information:
  - a. the name and address of owner or operator,
  - b. the location of the existing facility,
  - c. a brief description of the existing facility and the components that are to be replaced,
  - d. a description of the existing and proposed air pollution control equipment,
  - e. an estimate of the fixed capital cost of the replacements, and of constructing a comparable entirely new facility,
  - f. the estimated life of the existing facility after the replacements, and

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<sup>1</sup> Affected facility means, with reference to a stationary source, any apparatus to which a standard applies, as defined in 40 C.F.R. 60.2, effective 7/1/07.

<sup>2</sup> Existing facility means, with reference to a stationary source, any apparatus of the type for which a standard is promulgated in this part, and the construction or modification of which was commenced before the date of proposal of that standard; or any apparatus which could be altered in such a way as to be of that type, as defined in 40 C.F.R. 60.2, effective 7/1/07.

- g. a discussion of any economic or technical limitations the facility may have in complying with the applicable standards of performance after the proposed replacements.
- 23. NSPS Subpart A Startup, Shutdown, & Malfunction Requirements.** The Permittee shall maintain records of the occurrence and duration of any start-up, shutdown, or malfunction in the operation of EU 10 or 11, any malfunctions of associated air-pollution control equipment, or any periods during which a continuous monitoring system or monitoring device for EU 10 or 11 is inoperative.
- 24. NSPS Subpart A Performance (Source) Tests.** The Permittee shall conduct source tests according to 40 C.F.R. 60.8 on any affected facility at such times as may be required by EPA, and shall provide the Department and EPA with a written report of the results of the source test.
- 25. NSPS Subpart A Good Air Pollution Control Practice.** At all times, including periods of startup, shutdown, and malfunction, the Permittee shall, to the extent practicable, maintain and operate EUs 10 and 11 including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. The Administrator will determine whether acceptable operating and maintenance procedures are being used based on information available, which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance records, and inspections of EUs 10 and 11.
- 26. NSPS Subpart A Credible Evidence.** For the purpose of submitting compliance certifications or establishing whether or not the Permittee has violated or is in violation of the standards set forth in Conditions 28 and 29 nothing in 40 C.F.R. Part 60 shall preclude the use, including the exclusive use, of any credible evidence or information, relevant to whether EUs 10 and 11 would have been in compliance with applicable requirements of 40 C.F.R. Part 60 if the appropriate performance or compliance test or procedure had been performed.
- 27. NSPS Subpart A Concealment of Emissions.** The Permittee shall not build, erect, install, or use any article, machine, equipment or process, the use of which conceals an emission which would otherwise constitute a violation of a standard set forth in Conditions 28 and 29. Such concealment includes, but is not limited to, the use of gaseous diluents to achieve compliance with an opacity standard or with a standard that is based on the concentration of a pollutant in the gases discharged to the atmosphere.

**Turbines Subject to NSPS Subpart GG, Emission Units 10 and 11**

- 28. NSPS Subpart GG NO<sub>x</sub> Standard.** The Permittee shall not allow the exhaust gas concentration of NO<sub>x</sub> from EUs 10 and 11 to exceed 181.5 ppmv NO<sub>x</sub> at 15 percent O<sub>2</sub> dry exhaust basis.

28.1 **Waivers.** The Permittee shall provide to the Department a written copy of any U.S. EPA granted waiver of the federal emission standards, recordkeeping, monitoring, performance testing, or reporting requirements, or approved custom monitoring schedules upon request by the Department. The Permittee shall keep a copy of each U.S. EPA issued monitoring waiver or custom monitoring schedule with the permit.

28.2 **Monitoring**

- a. **Periodic Testing.** For each turbine subject to Condition 28 that operates for 400 hours or more in any 12-month period during the life of this permit, the Permittee shall satisfy either Condition 28.2a(i) or 28.2a(ii):
- (i) For existing turbines whose latest emissions source testing was certified as operating at less than or equal to 90 percent of the limit shown in Condition 29, the Permittee shall conduct a NO<sub>x</sub> and O<sub>2</sub> source test under 40 C.F.R. 60, Appendix A, Method 20, or Method 7E and either Method 3 or 3A, within the first applicable criteria below in the noted timeframe, except as set out in Conditions 28.2a(i)(C) and 28.2a(ii):
    - (A) Within 5 years of the latest performance test, or
    - (B) Within 1 year of the date of issue of this permit if the last source test occurred greater than five years prior to issuance of this permit and the 400-hour threshold was triggered within 6 months of the permit issue date, or
    - (C) Within 1 year after exceeding 400 hours of operation in a 12-month period if the last source test occurred greater than 5 years prior to the exceedance.
  - (ii) For existing turbines whose latest emissions source testing was certified as operating at greater than 90 percent of the limit shown in Condition 28, the Permittee shall conduct a NO<sub>x</sub> and O<sub>2</sub> source test under 40 C.F.R. 60, Appendix A, Method 20, or Method 7E and either Method 3 or 3A, annually until two consecutive tests show performance results certified at less than or equal to 90 percent of the limit of Condition 28.
- b. **Substituting Test Data.** The Permittee may use a Method 20, or Method 7E and either Method 3 or Method 3a test, under Condition 28.2a performed on only one of a group of turbines to satisfy the requirements of those conditions for the other turbines in the group if:
- (i) the Permittee demonstrates that test results are less than 90 percent of the emission limits of Condition 28, and are projected under Condition 28.2c to be less than or equal to 90 percent of the limit at maximum load;
  - (ii) for any source test done after the issuance date of this permit, the Permittee identifies in a source test plan:
    - (A) the turbine to be tested;

- (B) the other turbines in the group that are to be represented by the test; and
  - (C) why the turbine to be tested is representative, including that each turbine in the group
    - (1) is located at a stationary source operated and maintained by the Permittee;
    - (2) is tested under close to identical ambient conditions;
    - (3) is the same make and model and has identical injectors and combustor;
    - (4) uses the same fuel type from the same source.
  - (iii) The Permittee may not use substitute test results to represent emissions from a turbine or group of turbines if that turbine or group of turbines is operating at greater than 90 percent of the emission limits of Condition 28.
- c. **Load.** The Permittee shall comply with the following:
- (i) Conduct all tests under Condition 28.2 in accordance with 40 C.F.R. 60.335, except as otherwise approved in writing by the Department, or by EPA if the circumstances at the time of the EPA approval are still valid. For the highest load condition, if it is not possible to operate the turbine during the test at maximum load, the Permittee will test the turbine when operating at the highest load achievable by the turbine under the ambient and stationary source operating conditions in effect at the time of the test.
  - (ii) Demonstrate in the source test plan for any test performed after the issue date of this permit whether the test is scheduled when maximum NO<sub>x</sub> emissions are expected.
  - (iii) If the highest operating rate tested is less than the maximum load of the tested turbine or another turbine represented by the test data,
    - (A) for each such turbine the Permittee shall provide to the Department as an attachment to the source test report
      - (1) additional test information from the manufacturer or from previous testing of units in the group of turbines; if using previous testing of the group of turbines, the information must include all available test data for the turbines in the group; and
      - (2) a demonstration based on the additional test information that projects the test results from Condition 28.2 to predict the highest load at which emissions will comply with the limit in Condition 28;

- (B) the Permittee shall not operate any turbine represented by the test data at loads for which the Permittee's demonstration predicts that emissions will exceed the limit of Condition 28;
- (C) the Permittee shall comply with a written finding prepared by the Department that
  - (1) the information is inadequate for the Department to reasonably conclude that compliance is assured at any load greater than the test load, and that the Permittee must not exceed the test load;
  - (2) the highest load at which the information is adequate for the Department to reasonably conclude that compliance assured is less than maximum load, and the Permittee must not exceed the highest load at which compliance is predicted, or
  - (3) the Permittee must retest during a period of greater expected demand on the turbine; and
- (D) the Permittee may revise a load limit by submitting results of a more recent Method 20, or 7E and either Method 3 or 3a test, done at a higher load, and, if necessary, the accompanying information and demonstration described in Condition 28.2c(iii)(A); the new limit is subject to any new Department finding under Condition 28.2c(iii)(C) and
- (iv) In order to perform a Method 20, or Method 7E and either Method 3 or 3a, emission test, the Permittee may operate a turbine at a higher load than that prescribed by Condition 28.2c(iii).
- (v) For the purposes of Conditions 28.2 through 28.4, maximum load means the hourly average load that is the smallest of
  - (A) 100 percent of manufacturer's design capacity of the gas turbine at ISO standard day conditions;
  - (B) the highest load allowed by an enforceable condition that applies to the turbine; or
  - (C) the highest load possible considering permanent physical restraints on the turbine or the equipment which it powers.

28.3 Recordkeeping. The Permittee shall keep records as follows:

- a. The Permittee shall comply with the following for each turbine for which a demonstration under Condition 28.2c(iii) does not show compliance with the limit of Condition 28 at maximum load.
  - (i) The Permittee shall keep records of

- (A) load; or
  - (B) as approved by the Department, surrogate measurements for load and the method for calculating load from those measurements.
- (ii) Records in Condition 28.3a shall be hourly or otherwise as approved by the Department.
  - (iii) Within one month after submitting a demonstration under Condition 28.2c(iii)(A)(2) that predicts that the highest load at which emissions will comply is less than maximum load, or within one month of a Department finding under Condition 28.2c(iii)(C), whichever is earlier, the Permittee shall propose to the Department how they will measure load or load surrogates, and shall propose and comply with a schedule for installing any necessary equipment and beginning monitoring. The Permittee shall comply with any subsequent Department direction on the load monitoring methods, equipment, or schedule.
- b. For any turbine subject to Condition 28, that will operate less than 400 hours in any 12 consecutive months, the Permittee shall keep monthly records of the hours of operation.

28.4 Reporting. The Permittee shall keep reports as follows:

- a. In each operating report required under Condition 35, the Permittee shall list for each turbine tested or represented by testing at less than maximum load and for which the Permittee must limit load under Condition 28.2c(iii):
  - (i) the load limit;
  - (ii) the turbine identification; and
  - (iii) the highest load recorded under Condition 28.3a during the period covered by the operating report.
- b. In each operating report required under Condition 35, for each turbine for which Condition 28.2 has not been satisfied because the turbine normally operates less than 400 hours in any 12 consecutive months, the Permittee shall identify:
  - (i) the turbine;
  - (ii) the highest number of operating hours for any 12 consecutive months ending during the period covered by the report; and
  - (iii) any turbine that operated for 400 or more hours.
- c. The Permittee shall report, under Excess Emissions and Permit Deviation Reports under Condition 34, if:
  - (i) a test result exceeds the emission standard;

- (ii) Method 20 or 7E testing is required under Condition 28.2a(i) or 28.2a(ii) but not performed, or
- (iii) the turbine was operated at a load exceeding that allowed by Conditions 28.2c(iii)(B) and 28.2c(iii)(C); exceeding a load limit is deemed a single violation rather than a multiple violation of both monitoring and the underlying emission limit.

**29. NSPS Subpart GG Sulfur Standard.** The Permittee shall comply with either the SO<sub>2</sub> standard in Condition 29.1, or the fuel sulfur content standard in Condition 29.2 below:

29.1 Do not allow the exhaust gas concentration of SO<sub>2</sub> from EU 10 and 11 to exceed 150 ppmvd corrected to 15 percent O<sub>2</sub>, or

29.2 Do not allow the sulfur content for the fuel burned in EU 10 and 11 to exceed 0.8 percent by weight.

29.3 **Monitoring** - The Permittee shall monitor compliance with the standards listed in Condition 29 as follows:

- a. The owner or operator of a new turbine that commences construction after July 8, 2004, which does not use water or steam injection to control NO<sub>x</sub> emissions may, but is not required to, perform continuous parameter monitoring as follows:
  - (i) For any lean premix stationary combustion turbine, the owner or operator shall continuously monitor the appropriate parameters to determine whether the unit is operating in low-NO<sub>x</sub> mode.
- b. The steam or water to fuel ratio or other parameters that are continuously monitored as described in Condition 29.3a shall be monitored during the performance test required under 40 C.F.R. 60.8, to establish acceptable values and ranges. The owner or operator may supplement the performance test data with engineering analyses, design specifications, manufacturer's recommendations and other relevant information to define the acceptable parametric ranges more precisely. The owner or operator shall develop and keep on-site a parameter monitoring plan which explains the procedures used to document proper operation of the NO<sub>x</sub> emission controls. The plan shall include the parameter(s) monitored and the acceptable range(s) of the parameter(s) as well as the basis for designating the parameter(s) and acceptable range(s). Any supplemental data such as engineering analyses, design specifications, manufacturer's recommendations and other relevant information shall be included in the monitoring plan.

- c. Monitor the total sulfur content of the fuel being fired in the turbine, except as provided in Condition 29.3d. The sulfur content of the fuel must be determined using total sulfur methods described in 40 C.F.R. 60.335(b)(10) and Condition 29.3e(ii). Alternatively, if the total sulfur content of the gaseous fuel during the most recent performance test was less than 0.4 weight percent (4000 ppmw), ASTM D4084–82, 94, D5504–01, D6228–98, or Gas Processors Association Standard 2377–86, which measure the major sulfur compounds may be used.
- d. The owner or operator may elect not to monitor the total sulfur content of the gaseous fuel combusted in the turbine, if the gaseous fuel is demonstrated to meet the definition of natural gas in 40 C.F.R. 60.33 1(u), regardless of whether an existing custom schedule approved by the Administrator requires such monitoring. The owner or operator shall use one of the following source of information to make the required demonstration<sup>3</sup>:
  - (i) The gas quality characteristics in a current, valid purchase contract, tariff sheet or transportation contract for the gaseous fuel, specifying that the maximum total sulfur content of the fuel is 20.0 grains/100 scf or less; or
  - (ii) Representative fuel sampling data, showing that the sulfur content of the gaseous fuel does not exceed 20 grains/100 scf. At a minimum, the amount of fuel sampling data specified in 40 C.F.R. 75, Appendix D, Section 2.3.1.4 or 2.3.2.4 is required.
- e. The frequency of determining the sulfur content of the fuel shall be as follows:
  - (i) Gaseous fuel. For owners and operators that elect not to demonstrate sulfur content using options in Condition 29.3d, and for which the fuel is supplied without intermediate bulk storage, the sulfur content value of the gaseous fuel shall be determined and recorded once per unit operating day.
  - (ii) Custom schedules. Notwithstanding the requirements of Condition 29.3e(i), operators or fuel vendors may develop custom schedules for determination of the total sulfur content of gaseous fuels, based on the design and operation of the affected facility and the characteristics of the fuel supply. Except as provided in 40 C.F.R. 60.334(i)(3)(i) and (i)(3)(ii), custom schedules shall be substantiated with data and shall be approved by the Administrator before they can be used to comply with the standard in Condition 29. The two custom sulfur monitoring schedules set forth in 40 C.F.R. 60.334(i)(3)(i)(A) through (D) and 60.334(i)(3)(ii) are acceptable without prior Administrative approval.

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<sup>3</sup> The Permittee submitted a certified statement to the Department dated October 27, 2009 indicating that the fuel gas combusted at the stationary source meets the definition of natural gas in 40 C.F.R. 60.331(u), pursuant to 40 C.F.R. 60.334(h)(3). Periodic fuel sulfur monitoring under Condition 29.3c and reporting under Condition 29.6 do not apply to Subpart GG turbines that have demonstrated that natural gas fuel meets the definition of 40 C.F.R. 60.331(u) as set out by Condition 29.3d. Per 40 C.F.R. 60.334(i)(3)(i), a custom sulfur monitoring schedule under 60.334(i)(3)(ii)(A) is acceptable without prior Administrative approval.

- 29.4 Test Methods and Procedures. If the owner or operator is required under Conditions 29.3e(i) or 29.3e(ii) to periodically determine the sulfur content of the fuel combusted in the turbine, a minimum of three fuel samples shall be collected during the performance test. Analyze the samples for the total sulfur content of the fuel using Condition 29.4a:
- a. For gaseous fuels, ASTM D1072-80, 90; D3246-81, 92, 96; D4468-85; or D6667-01. The applicable ranges of some ASTM methods mentioned above are not adequate to measure the levels of sulfur in some fuel gases. Dilution of samples before analysis (with verification of the dilution ratio) may be used, subject to the prior approval of the Administrator.
  - b. The fuel analyses required under Condition 29.3e(ii) 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.
- 29.5 Recordkeeping - Keep records as required by Condition 29.3 and 29.3e(ii), and in accordance with Condition 30.
- 29.6 Reporting. For each affected unit that periodically determines the fuel sulfur content under Condition 29.3c, the owner or operator shall submit reports of excess emissions and monitor downtime, in accordance with 40 C.F.R. 60.7(c) except where otherwise approved by a custom fuel monitoring schedule. Excess emissions shall be reported for all periods of unit operation, including startup, shutdown and malfunction as described by 40 C.F.R. 60.334(j)(2).

## **Section 8      *General Recordkeeping and Reporting Requirements***

**30. Recordkeeping Requirements.** The Permittee shall keep all records required by this permit for at least five years after the date of collection, including:

- 30.1 Copies of all reports and certifications submitted pursuant to this section of the permit; and
- 30.2 Records of all monitoring required by this permit and information about the monitoring, including:
  - a. The date, place, and time of sampling or measurements;
  - b. The date(s) analyses were performed;
  - c. The company or entity that performed the analyses;
  - d. The analytical techniques or methods used;
  - e. The results of such analyses; and,
  - f. The operating conditions at the time of sampling or measurement.

**31. 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.

31.1 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 31.1a, that the person accepts or agrees to be bound by an electronic record executed or adopted with that signature.

**32. Submittals.** Unless otherwise directed by the Department or this permit, the Permittee shall send an original and one copy of reports, compliance certifications, and other submittals required by this permit to ADEC, Air Permits Program, 610 University Ave., Fairbanks, AK 99709-3643, ATTN: Compliance Technician. The Permittee may, upon consultation with the Compliance Technician regarding software compatibility, provide electronic copies of data reports, source test reports, or other records under a cover letter certified in accordance with Condition 31.

**33. 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.

**34. Excess Emissions and Permit Deviation Reports**

34.1 The Permittee shall report all emissions or operations that exceed or deviate from the requirements of this permit as follows:

- a. In accordance with 18 AAC 50.240(c), as soon as possible after the event commenced or is discovered, report
  - (i) Emissions that present a potential threat to human health or safety; and
  - (ii) Excess emissions that the Permittee believes to be unavoidable;
- b. In accordance with 18 AAC 50.235(a), within two working days after the event commenced or was discovered, report an unavoidable emergency, malfunction, or non-routine repair that causes emissions in excess of a technology based emission standard;
- c. Report all other excess emissions and permit deviations:
  - (i) Within 30 days of the end of the month in which the emissions or deviation occurs, except as provided in conditions 34.1c(ii); or
  - (ii) If a continuous or recurring excess emissions is not corrected within 48 hours of discovery, within 72 hours of discovery unless the Department provides written permission to report under Condition 34.1c(i).

34.2 When reporting excess emissions or a permit deviation, the Permittee must report using either the Department's on-line form, which can be found at <http://www.dec.state.ak.us/air/ap/site.htm> or <https://myalaska.state.ak.us/deca/air/airtoolsweb/>, or if the Permittee prefers, the form contained in Section 13 of this permit. The Permittee must provide all information called for by the form that is used.

34.3 If requested by the Department, the Permittee shall provide a more detailed written report as requested to follow up an excess emissions report.

**35. Operating Reports.** The Permittee shall submit to the Department an original and one copy of an operating report by August 1 for the period January 1 to June 30 of the current year, and by February 1 for the period July 1 to December 31 of the previous year.

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

35.2 The Permittee may, upon consultation with the Compliance Technician regarding software compatibility, provide electronic copies of data reports, emission source test reports, or other records under a cover letter certified in accordance with Departmental submission requirements.

35.3 If excess emissions or permit deviations that occurred during the reporting period are not reported under Condition 35.1, either

- a. The Permittee shall identify

- (i) The date of the deviation;
  - (ii) The equipment involved;
  - (iii) The permit condition affected;
  - (iv) A description of the excess emissions or permit deviation; and
  - (v) Any corrective action or preventive measures taken and the date of such actions; or
- b. When excess emissions or permit deviations have already been reported under Condition 34 the Permittee shall cite the date or dates of those reports.

## **Section 9      *Standard Conditions***

- 36.** 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
  - 36.1 an enforcement action; or
  - 36.2 permit termination, revocation and reissuance, or modification in accordance with AS 46.14.280.
- 37.** 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.
- 38.** 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.
- 39.** 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.
- 40.** The permit does not convey any property rights of any sort, nor any exclusive privilege.

## **Section 10 Permit Documentation**

March 1, 2010	Response to February 22, 2010 request for supplemental modeling information received.
February 22, 2010	Department request to provide additional air modeling results for EU 13 combined with EU 10 and EU 11.
April 16, 2009	Minor permit application for TDX's Deadhorse Power Plant.
June 9, 2009	Test results to verify the NO <sub>x</sub> and CO emission factors and to determine opacity, required by Condition 11 of Minor Permit AQ0227MSS04, were received from TDX.
July 28, 2009	Response to incompleteness findings and a request for additional information was received from TDX.
October 27, 2009	Response to a request for additional information was received from TDX. TDX also informed the Department that they now plan to install a 300-kilowatt diesel-fired engine to provide emergency power in the event of a power outage at the North Plant instead of a 250-kilowatt natural gas-fired engine as originally planned. The assessable PTE was also revised.
September 12, 2008	Technical Analysis Report for Permit AQ0227MSS04 to Remove Emission Unit No. 5 and Establish ORL for Carbon Monoxide.
March 12, 2008	Technical Analysis Report for Permit AQ0227MSS03 to install Solar Taurus T-60 Turbine Fast Track.
December 6, 2005	Technical Analysis Report for Permit AQ0227MSS02 for EUs 1 and 4 Replacement Project.
February 10, 2003	Technical Analysis Report for Permit 227CP01 to install a gas fired and diesel fired generator engine drives.

## Section 11 Emission Factors

**Table 3 - Emission Units 1a, 2, 3, 4a, 5, 6, 12, and 13 Emission Factors**

<b>Emission Unit ID</b>	<b>Unit Name</b>	<b>Unit Description</b>	<b>Fuel Type</b>	<b>Rating</b>	<b>Fuel Specific CO Emission Rate</b>	<b>Fuel Specific NO<sub>x</sub> Emission Rate</b>
1a	Generator No. 1	Caterpillar G3516B LE	Natural Gas	1,818 bhp	0.86 lb/Mscf	0.31 lb/Mscf
2	Generator No. 2	Caterpillar G3516	Natural Gas	1,152 bhp	0.57 lb/Mscf	707 lb/Mscf
3	Generator No. 3	Caterpillar G3516	Natural Gas	1,152 bhp	0.57 lb/Mscf	707 lb/Mscf
4a	Generator No. 4	Caterpillar G3516B LE	Natural Gas	1,818 bhp	0.86 lb/Mscf	0.31 lb/Mscf
5	Generator No. 6	EMD V20-645E	Diesel	3,600 bhp	3.77 lb/hr	125.89 lb/hr
6	Generator No. 11	Caterpillar G3616	Natural Gas	4,811 bhp	0.91 lb/Mscf	240 lb/Mscf
12	Emergency Generator No. 1	Cummins GTA-28	Natural Gas	574 kW	0.14 lb/hr	2.04 lb/hr
13	Emergency Generator No. 2	Cummins NTA-855	Diesel	300 kW	2.69 lb/hr	12.46 lb/hr

**Table 4 – Solar Taurus 60 Turbines (Emission Units 10 and 11) Emission Factors**

10% load					20% load				
Ambient Temperature	NOx (ppm)	NOx (lb/min)	CO (ppm)	CO (lb/min)	Ambient Temperature	NOx (ppm)	NOx (lb/min)	CO (ppm)	CO (lb/min)
60	70	0.08	3240	2.25	60	70	0.10	2980	2.60
40	70	0.08	3240	2.32	40	70	0.10	2980	2.78
20	70	0.09	3240	2.42	20	70	0.11	2980	2.80
0	70	0.09	3240	2.50	0	70	0.11	2980	2.90
-20	70	0.09	3240	2.57	-20	70	0.12	2980	3.02
-40	70	0.09	3240	2.67	-40	70	0.12	2980	3.10
-60	70	0.10	3240	2.78	-60	70	0.13	2980	3.25
30% load					40% load				
Ambient Temperature	NOx (ppm)	NOx (lb/min)	CO (ppm)	CO (lb/min)	Ambient Temperature	NOx (ppm)	NOx (lb/min)	CO (ppm)	CO (lb/min)
60	70	0.12	2720	2.87	60	70	0.14	2460	3.05
40	70	0.13	2720	2.98	40	70	0.15	2460	3.17
20	70	0.13	2720	3.10	20	70	0.16	2460	3.32
0	70	0.14	2720	3.22	0	70	0.16	2460	3.43
-20	70	0.14	2720	3.33	-20	70	0.17	2460	3.57
-40	70	0.15	2720	3.45	-40	70	0.17	2460	3.70
-60	70	0.15	2720	3.62	-60	70	0.18	2460	3.87
50% load					60% load				
Ambient Temperature	NOx (ppm)	NOx (lb/min)	CO (ppm)	CO (lb/min)	Ambient Temperature	NOx (ppm)	NOx (lb/min)	CO (ppm)	CO (lb/min)
60	25	0.07	50	0.08	60	25	0.07	50	0.09
40	25	0.07	50	0.08	40	25	0.08	50	0.09
20	25	0.07	50	0.09	20	25	0.08	50	0.10
0	25	0.08	50	0.09	0	25	0.08	50	0.10
-20	42	0.13	100	0.19	-20	42	0.14	100	0.21
-40	120	0.39	150	0.29	-40	120	0.43	150	0.32
-60	120	0.40	150	0.31	-60	120	0.44	150	0.34
70% load					80% load				
Ambient Temperature	NOx (ppm)	NOx (lb/min)	CO (ppm)	CO (lb/min)	Ambient Temperature	NOx (ppm)	NOx (lb/min)	CO (ppm)	CO (lb/min)
60	25	0.08	50	0.09	60	25	0.08	50	0.10
40	25	0.08	50	0.10	40	25	0.09	50	0.11
20	25	0.09	50	0.10	20	25	0.09	50	0.11
0	25	0.09	50	0.11	0	25	0.10	50	0.12
-20	42	0.16	100	0.23	-20	42	0.17	100	0.24
-40	120	0.46	150	0.35	-40	120	0.50	150	0.38
-60	120	0.48	150	0.37	-60	120	0.52	150	0.40
90% load					100% load				
Ambient Temperature	NOx (ppm)	NOx (lb/min)	CO (ppm)	CO (lb/min)	Ambient Temperature	NOx (ppm)	NOx (lb/min)	CO (ppm)	CO (lb/min)
60	25	0.09	50	0.11	60	25	0.10	50	0.12
40	25	0.10	50	0.12	40	25	0.11	50	0.13
20	25	0.10	50	0.12	20	25	0.11	50	0.13
0	25	0.11	50	0.13	0	25	0.12	50	0.14
-20	42	0.18	100	0.27	-20	42	0.20	100	0.29
-40	120	0.55	150	0.42	-40	120	0.60	150	0.45
-60	120	0.57	150	0.43	-60	120	0.62	150	0.47

## Section 12 Visible Emissions Forms

### Visible Emissions Field Data Sheet

Certified Observer: \_\_\_\_\_

Company &  
 Stationary  
 Source: \_\_\_\_\_

Location: \_\_\_\_\_

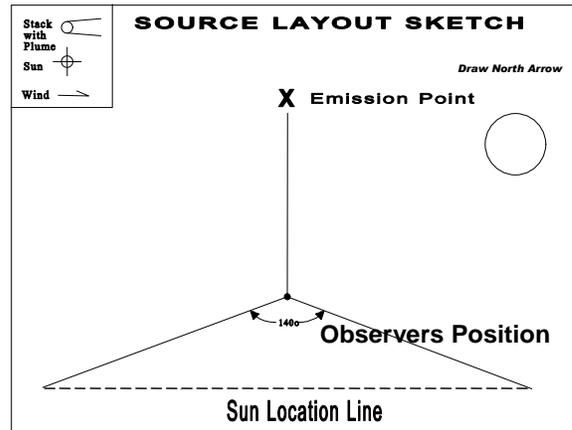
Test No.: \_\_\_\_\_ Date: \_\_\_\_\_

Emission Unit: \_\_\_\_\_

Production Rate/Operating  
 Rate: \_\_\_\_\_

Unit Operating Hours: \_\_\_\_\_

Hrs. of observation: \_\_\_\_\_



Clock Time	Initial				Final
Observer location					
Distance to discharge					
Direction from discharge					
Height of observer point					
Background description					
Weather conditions					
Wind Direction					
Wind speed					
Ambient Temperature					
Relative humidity					
Sky conditions: (clear, overcast, % clouds, etc.)					
Plume description:					
Color					
Distance visible					
Water droplet plume? (Attached or detached?)					
Other information					



### Section 13 ADEC Notification Form

TDX North Slope Generating, Inc  
 Stationary Source Name  
 Deadhorse Power Plant  
 Company Name

AQ0227MSS05  
 Air Quality Permit No.  
 Date

**When did you discover the Excess Emissions/Permit Deviation?**

Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_

Time: \_\_\_\_ : \_\_\_\_

**When did the event/deviation occur?**

Begin Date: \_\_\_\_ / \_\_\_\_ / \_\_\_\_ Time: \_\_\_\_ : \_\_\_\_ (Use 24-hr clock.)

End Date \_\_\_\_ / \_\_\_\_ / \_\_\_\_ Time: \_\_\_\_ : \_\_\_\_ (Use 24-hr clock.)

**What was the duration of the event/deviation?** : (hrs:min) or days  
 (total # of hrs, min, or days, if intermittent then include only the duration of the actual emissions/deviation)

**Reason for Notification:** (please check only 1 box and go to the corresponding section)

- Excess Emissions – Complete Section 1 and Certify
- Deviation from Permit Condition – Complete Section 2 and Certify
- Deviations from COBC, CO, or Settlement Agreement – Complete Section 2 and Certify

#### Section 1. Excess Emissions

(a) Was the exceedance:  Intermittent or  Continuous

(b) Cause of Event (Check one that applies):

- Start Up/Shut Down  Natural Cause (weather/earthquake/flood)
- Control Equipment Failure  Schedule Maintenance/Equipment Adjustment
- Bad Fuel/Coal/Gas  Upset Condition  Other

(c) Description

Describe briefly, what happened and the cause. Include the parameters/operating conditions exceeded, limits, monitoring data and exceedance.

(d) Emissions Units Involved:

Identify the emission unit involved in the event, using the same identification number and name as in the permit. Identify each emission standard potentially exceeded during the event and the exceedance.

EU ID	EU Name	Permit Condition Exceeded/Limit/Potential Exceedance

(e) Type of Incident (please check only one):

- Opacity \_\_\_\_\_ %       Venting \_\_\_\_\_ gas/scf       Control Equipment Down  
 Fugitive Emissions       Emission Limit Exceeded       Other  
 Marine Vessel Opacity       Flaring

(f) Unavoidable Emissions:

Do you intend to assert that these excess emissions were unavoidable?       Yes       No

Do you intend to assert the affirmative defense of 18 AAC 50.235?       Yes       No

*Certify Report (Go to end of form.)*

**Section 2. Permit Deviations**

(a) Permit Deviation Type (check only one box, corresponding with the section in the permit):

- Emission Unit-Specific       Generally Applicable Requirements  
 Failure to Monitor/Report       Reporting/Monitoring for Diesel Engines  
 General Source Test/Monitoring Requirements       Recordkeeping Failure  
 Recording/Reporting/Compliance Certification       Insignificant Emission Unit  
 Standard Conditions Not Included in the Permit       Stationary Source Wide  
 Other Section: \_\_\_\_\_ (Title of section and section number of your permit).

(b) Emission Unit Involved:

Identify the emission unit involved in the event, using the same identification number and name as in the permit. List the corresponding permit conditions and the deviation.

EU ID	EU Name	Permit Condition/ Potential Deviation

(c) Description of Potential Deviation:

Describe briefly what happened and the cause. Include the parameters/operating conditions and the potential deviation.

(d) Corrective Actions:

Describe actions taken to correct the deviation or potential deviation and to prevent future recurrence.

**Certification:**

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.

Printed Name:

Title:

Date:

Signature:

Phone Number:

**NOTE:** *This document must be certified in accordance with 18 AAC 50.345(j)*

**To Submit this Report:**

Fax to: 907-451-2187

Or

Email to: [DEC.AQ.Airreports@alaska.gov](mailto:DEC.AQ.Airreports@alaska.gov)

*If faxed or emailed, the report must be certified within the Operating Report required for the same reporting period per Condition 35.*

Or

Mail to:           ADEC  
                      Air Permits Program  
                      610 University Avenue  
                      Fairbanks, AK 99709-3643

Or

Phone Notification: 907-451-5173

*Phone notifications require a written follow-up report.*

Or

Submission of information contained in this report can be made electronically at the following website:

<https://myalaska.state.ak.us/deca/air/airtoolsweb/>

*If submitted online, report must be submitted by an authorized E-Signer for the stationary source.*