

**DEPARTMENT OF ENVIRONMENTAL CONSERVATION**  
**AIR QUALITY OPERATING PERMIT**

Permit No. 225TVP01  
Application No. 225  
Administrative Revision: August 7, 2002

Issue Date: June 20, 2000  
Expiration Date: June 20, 2005

The Department of Environmental Conservation, under the authority of AS 46.14 and 18 AAC 50, issues an operating permit to the Permittee, **Alaska Power & Telephone Company**, for the operation of the **Tok Power Generating Station**.

This permit satisfies the obligation of the owner and operator to obtain an operating permit as set out in AS 46.14.130(b).

As required by AS 46.14.120(c), the Permittee shall comply with the terms and conditions of this operating permit.

As set out in 18 AAC 50.340(i), after the issue date of this permit, the Permittee is no longer required to comply with the terms and conditions of Air Quality Control Permit to Operate No. 9533-AA001.

All terms and conditions of Air Quality Construction No. 9933-AC012 have been incorporated into this Operating Permit. Under AS 46.14.290, the Permittee is considered in compliance with applicable requirements of this Construction Permit to the extent allowed under 42 U.S.C. 7661c(f) (Clean Air Act, sec. 504(f)) by complying with this Operating Permit

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John F. Kuterbach, Manager  
Air Permits Program

\_\_\_\_\_  
Date

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**List of Abbreviations Used in this Permit**

AAC.....	Alaska Administrative Code
ADEC .....	Alaska Department of Environmental Conservation
AS.....	Alaska Statutes
ASTM.....	American Society of Testing and Materials
C.F.R. ....	Code of Federal Regulations
COMS .....	Continuous Opacity Monitoring System
dscf.....	Dry standard cubic feet
EPA.....	US Environmental Protection Agency
gr/dscf.....	grain per dry standard cubic feet (1 pound = 7000 grains)
GPH.....	gallons per hour
HAPS.....	Hazardous Air Pollutants [hazardous air contaminants as defined in AS 46.14.990(14)]
ID.....	Source Identification Number
MACT.....	Maximum Achievable Control Technology
Mlb .....	thousand pounds
NESHAPs .....	Federal National Emission Standards for Hazardous Air Pollutants [as defined in 40 C.F.R. §61]
NSPS .....	Federal New Source Performance Standards [as defined in 40 C.F.R. §60]
PPM.....	Parts per million
PS .....	Performance specification
PSD.....	Prevention of Significant Deterioration
RM.....	Reference Method
SIC.....	Standard Industrial Classification
SO <sub>2</sub> .....	Sulfur dioxide
TPH.....	Tons per hour
TPY.....	Tons per year
VOC .....	volatile organic compound [as defined in 18 AAC 50.990(103)]
Wt% .....	weight percent

**Section 1. Identification**

## Names and Addresses

Permittee: **Alaska Power & Telephone Company**  
191 Otto Street  
P.O. Box 3222  
Port Townsend, WA 98368

Facility: **Tok Power Generating Station**

Location: UTM Coordinates: 7,023,500 N; 401,000 E; Zone 7

Physical Address: Mile 1314, Alaska Highway  
Tok, Alaska 99780

Owner: Alaska Power & Telephone  
P.O. Box 3222  
Port Townsend, WA 98368

Operator: Same as owner above

Permittee's Responsible Official Robert S. Grimm, President

Designated Agent: Davis Wright Tremaine LLP  
550 W. 7th Ave., Ste. 1450  
Anchorage, AK 98368

Facility and Building Contact: Don Mahon  
(907) 883-5101

Fee Contact: Robert S. Grimm, President  
Alaska Power & Telephone  
P.O. Box 3222  
Port Townsend, WA 98368

SIC Code of the Facility:  
4911 Electrical Services

[18 AAC 50.350(b), 1/18/97]

**Section 2.      *General Emission Information***

Emissions of Regulated Air Contaminants, as provided in Permittee's application:

nitrogen dioxide, sulfur dioxide, PM-10, carbon monoxide, and volatile organic compounds

Operating Permit Classifications:

1. 18 AAC 50.325(b)(1)

[18 AAC 50.350(b), 1/18/97]

**Section 3. Fee Requirements**

1. **Assessable Emissions.** The permittee shall pay to the department annual emission fees based on the facility'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 contaminant that the facility emits or has the potential to emit in quantities greater than 10 tons per year. The quantity for which fees will be assessed is the lesser of
  - 1.1 the facility's assessable potential to emit of 353.8 tpy (249 tons of NO<sub>x</sub>, 39.3 tons of SO<sub>2</sub>, 65.5 tons of CO); or
  - 1.2 the facility'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.

[18AAC50.400 - 420 & 18 AAC 50.350(c), 1/18/97]

2. **Assessable Emissions Estimates.** Emission fees will be assessed as follows:

- 2.1 no later than March 31 of each year, the permittee may submit an estimate of the facility's assessable emissions to ADEC, Air Permits Program, ATTN: Assessable Emissions Estimate, 410 Willoughby Ave., Juneau, AK 99801-1795; 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
- 2.2 if no estimate is received on or before March 31 of each year, emission fees for the next fiscal year will be based on the potential to emit set out in condition 1.1.

[18AAC50.410 & 18 AAC 50.350(c), 1/18/97]

#### **Section 4. Source Inventory and Description**

Regulated sources at the facility are shown below. Source descriptions and ratings are given for identification purposes only.

[18 AAC 50.335(e), 1/18/97]

**Table 1 – Regulated Source Information**

<b>ID</b>	<b>Source Name</b>	<b>Source Description</b>	<b>Rating/size (not enforceable)</b>
1	Unit 3	Caterpillar Diesel Generator, Cat D3516B, installation date 1999	1285 kW
2	Unit 4	Caterpillar Diesel Generator, Cat 3516, Serial #73200308, installation date 1981	1135 kW
3	Unit 5	Caterpillar Diesel Generator, Cat D3516, installation date 1995	1135 kW
4	Unit 7	Fairbanks-Morse Diesel Generator FBM 3316, Serial #872033, Installation date 1977	1250 kW
5	Unit 8	Caterpillar Diesel Generator, Cat D3508, Serial #70Z00587, Installation date 1985	440 kW
6	Unit 9	Caterpillar Diesel Generator, Cat D3516, Serial #73Z00165, Installation date 1995	930 kW
7	TK-01	Horizontal, No. 2-D Fuel Oil Storage Tank Installation date 1995	30,000-gallon
8	Miscellaneous	Fugitive Emissions	N/A

## **Section 5. Source-Specific Requirements**

### **Diesel Fired Internal Combustion Engines**

#### *Visible Emissions*

3. The Permittee shall not cause or allow visible emissions, excluding condensed water vapor, emitted from Source ID 1 – 6 to reduce visibility through the exhaust effluent by greater than 20% for more than three minutes in any one hour.

3.1 Monitor, record and report according to Section 12.

[18 AAC 50.055(a)(1), 1/18/97]

[18 AAC 50.350(d)], 6/21/98]

[18 AAC 50.350(g-i), 1/18/97]

#### *Particulate Matter*

4. The Permittee shall not cause or allow particulate matter emitted from Source ID 1 – 6 to exceed 0.05 grains per cubic foot of exhaust gas corrected to standard conditions and averaged over three hours.

4.1 Monitor, record and report according to Section 12.

[18 AAC 50.055(b)(1), 1/18/97]

[18 AAC 50.350(d)], 6/21/98]

[18 AAC 50.350(g-i), 1/18/97]

#### *Sulfur Compound Emissions*

5. The Permittee shall not cause or allow sulfur compound emissions, expressed as SO<sub>2</sub>, from Source ID 1 – 6 to exceed 500 PPM averaged over three hours.

[18 AAC 50.055(c), 1/18/97]

[18 AAC 50.350(d)], 6/21/98]

- 5.1 Compliance with this condition is assured by using a grade of fuel that limits sulfur content to less than 0.5 percent by weight, such as DF-1 or DF-2.
- 5.2 Obtain a statement or receipt from the fuel supplier showing the grade of the fuel for each shipment of fuel delivered to the facility. If a certificate is not available from the supplier, analyze a representative sample of the fuel to determine the sulfur content using an approved ASTM method such as ASTM D975-84, D3120-92, D4152-90, D2622-91 and ASTM 396-92.
- 5.3 Report under condition 39 whenever you receive fuel that does not meet the requirements of condition 5.1. When reporting under this condition, include a material balance calculation of the sulfur compound emissions, in PPM, expected from this fuel, made in accordance with Section 14.

- 5.4 Include in the report required by condition 40 a list of the fuel grades received at the facility during the reporting period, and any reports required by condition 5.3.
- 5.5 Keep records of the sulfur contents of each shipment of fuel, each calculated three-hour SO<sub>2</sub> concentration, and all test results and calculations required under conditions 5.2, 5.3, or 5.4. Report copies of the records with the report required by condition 40.
- 5.6 Submit a report in accordance with condition 39 if a three-hour exhaust concentration, calculated pursuant to condition 5.3, is greater than 500 PPM.

[18 AAC 50.350(g) – (i), 1/18/97]

### Volatile Organic Liquid Storage Vessels

- 6. For Source ID 7, the Permittee shall keep readily accessible records showing the dimension of the fuel storage tank vessel and an analysis showing the capacity of the storage vessel

[18 AAC 50.040(a)(2)(M), 1/18/97]

[Federal Citation: 40 C.F.R. §60.110b(c), 40 C.F.R. §60.116b(b), 7/1/97]

- 7. Notify the department before storing a fuel oil other than diesel fuel in Source 7.

[18 AAC 50.040(a)(2)(M) and 18 AAC 50.350(i), 1/18/97]

[Federal Citation: 40 C.F.R. §60.110b(c), 7/1/97]

[Permit No. 9933-AC012, 11/17/99]

### Source Subject to Federal New Source Performance Standards

- 8. **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 Source ID 7 including associated air pollution control equipment in a manner consistent with good air pollution control practice for minimizing emissions. Determination of whether acceptable operating and maintenance procedures are being used will be based on information available to the department which may include, but is not limited to, monitoring results, opacity observations, review of operating and maintenance records, and inspections of Source ID 7.

[18 AAC 50.040(a), 1/18/97]

[Federal Citation: 40 C.F.R. 60.11(d)]

### Burning Used Oil in Sources

**Caution: Compliance with the requirements of the following conditions will ensure compliance with the applicable requirements of 18 AAC 50. This permit does not ensure compliance with other applicable state or federal laws concerning management, use, or disposal of used oil.**

- 9. Until the department approves a particulate matter source test demonstrating that burning the used oil will comply with the particulate matter emission standard of condition 4, the Permittee shall blend or co-fire any used oil with at least an equal volume of virgin fuel oil.
  - 9.1 Perform fuel blending or co-firing using a metering system or other reproducible method accurate to ±5 percent.
  - 9.2 For blending, record the date, the quantity of used oil in gallons, and the quantity of virgin fuel oil in gallons added to the blend. For co-firing, record the date, the quantity of used oil fired, and the quantity of virgin oil fired at the same time.

- 9.3 Report under condition 39 whenever used oil is not blended or co-fired as described above.
- 9.4 Include in the semiannual report required by condition 40 the total amount of used oil burned in the period.

[18 AAC 50.055(b) 6/21/98]  
[18 AAC 50.350(g)-(i)]

**10.** The Permittee shall only burn used oil or a used oil/virgin fuel blend meeting the specifications in 10.3 unless the Department verifies in writing that burning the off-specification used oil will comply with 18 AAC 50.110. For off-specification used oil, the department will, in its discretion, require the Permittee to provide information as necessary to verify compliance with 18 AAC 50.110.

- 10.1 Analyze a representative sample of each batch of used oil using SW-846 test methods for arsenic, lead, cadmium, chromium, total halogens, flash point, and polychlorinated biphenyls (PCBs), prior to blending with the virgin fuel oil.
- 10.2 If used oil does not meet the specification in condition 10.3, calculate and record the amount of virgin fuel oil required per gallon of used oil such that the blend will meet the specifications. Blend the used oil with at least the amount of virgin fuel oil determined in this condition. Record the information required under condition 9.2.
- 10.3 The used oil must meet the following specifications:
- a. Flash point greater than 100°F; and concentrations of
  - b. Polychlorinated Biphenyls (PCBs) no higher than 50 ppm,
  - c. Total Halogens no higher than 1000 ppm,\*
  - d. Arsenic no higher than 5 ppm,
  - e. Cadmium no higher than 2 ppm,
  - f. Chromium no higher than 10 ppm, and
  - g. Lead no higher than 100 ppm
- 10.4 Keep records of each analysis, measurement, and calculation required under conditions 10.1 – 10.2.
- 10.5 Report under condition 39 whenever the used oil is not analyzed according to condition 10.1 and whenever a used oil blend is burned that does not meet the specification in condition 10.3.
- 10.6 Include in the semiannual report required by condition 40 the calculations recorded under condition 10.2.

[18 AAC 50.030 and 18 AAC 50.110, 1/18/97]]

[18 AAC 50.110 5/26/72]  
[18 AAC 50.350(g-l), 1/18/97]

## Section 6. Facility-Wide Requirements

### Nitrogen Compound Emissions

11. Permittee shall limit the facility emissions of nitrogen oxides to no more than 249 tons in any twelve consecutive months.

[18 AAC 50.350(e)(3), 1/18/97]  
[Permit No. 9933-AC012, 11/17/99]

- 11.1 Limit the combined electrical generation from Source ID 1 – 6 to no more than 14.69 GWhr in any twelve consecutive months, where

Combined electrical generation =

$$(G1 \times 1.038) + ((G2 + G3) \times 1.1) + (G4 + G5) + (G6 \times 1.083)$$

Gn = power production from each Source ID n, in GWhr during the twelve consecutive months—e.g. G1 = power production from Source ID 1 and G2 = power production from Source ID 2, etc.

[18 AAC 50.350(e)(3), 1/18/97]  
[Permit No. 9933-AC012, 11/17/99]

- 11.2 Maintain a monthly log for each source, ID 1 – 6, showing

- a. the number of hours each source operated;
- b. quantity of fuel consumed for the month;
- c. the power production, in kilowatt-hours, generated by the source for the month; and
- d. the total power production, in kilowatt-hours, generated by the source for the previous twelve consecutive months;

[18 AAC 50.350 (g) & (h), 1/18/97]  
[Permit No. 9933-AC012, 11/17/99]

- 11.3 Each month, calculate and record the combined electrical generation for the previous twelve consecutive months. Calculate this value according to the equation in condition 11.1 and record the result in GW-hr rounded to two decimal places.

[18 AAC 50.350 (g) & (h), 1/18/97]  
[Permit No. 9933-AC012, 11/17/99]

- 11.4 If the combined electrical generation calculated under condition 11.1 is greater than or equal to 13.86 GWhr, conduct NO<sub>x</sub> source tests on Source ID 1 and 4 through 5, according to the procedures specified in Section 9. Conduct the source tests no later than 90-days after the value calculated in condition 11.3 exceeds 13.86 GWhr. If the source tests determine different emission factors than those in condition 11.6, the department will reopen this permit to revise the electric generation limit

- 11.5 Report in accordance with condition 39 whenever the calculation in 11.3 exceeds 14.69 GW-hr.

- 11.6 The electric generation limit in condition 11.1 presumes the emission factors listed below. The Department will, in its discretion, require source tests to verify these emission factors. If the source tests determine different emission factors, the department will reopen this permit to revise the electric generation limit.

<b>Source ID</b>	<b>Emission Factor (lb NO<sub>x</sub>/kWh)</b>
1	0.0352
2	0.0373
3	0.0373
4	0.0339
5	0.0339
6	0.0367

- 11.7 The permittee may revise the limit in condition 11.1 by minor permit amendment based on new emission factors determined by source tests approved by the department. The permittee shall use the procedures in 18 AAC 50.375 to request any minor permit amendment.

[18 AAC 50.350(i), 1/18/97]

- 11.8 Include the records required by conditions 11.2 and 11.3 in the semiannual report required under condition 40.

[18 AAC 50.350(j), 1/18/97]

**Section 7. Insignificant Sources**

This section contains the requirements that the Permittee identified under 18 AAC 50.335(q)(2) as applicable to insignificant sources at the facility. This section also specifies the testing, monitoring, reporting, and recordkeeping for insignificant sources that the department finds necessary to ensure compliance with the applicable requirements. Insignificant sources are not exempted from any air quality control requirement or federally enforceable requirement, except that the requirements of conditions 39 and 40 of this permit do not apply to this section.

As set out in 18 AAC 50.350(m), the shield of AS 46.14.290 does not apply to insignificant sources.

- 12.** The Permittee shall not cause or allow visible emissions, excluding condensed water vapor, emitted from an industrial process, fuel-burning equipment, or an incinerator to reduce visibility through the exhaust effluent by greater than 20% for more than three minutes in any one hour.

[18 AAC 50.055(a)(1) and 18 AAC 50.050(a)(2), 1/18/97]
- 13.** The Permittee shall not cause or allow particulate matter emitted from an industrial process or fuel-burning equipment to exceed 0.05 grains per cubic foot of exhaust gas corrected to standard conditions and averaged over three hours.

[18 AAC 50.055(b)(1), 1/18/97]
- 14.** The Permittee shall not cause or allow sulfur compound emissions, expressed as SO<sub>2</sub>, from an industrial process or fuel-burning equipment, to exceed 500 PPM averaged over three hours.

[18 AAC 50.055(c), 1/18/97]
- 15.** Based on reasonable inquiry, the Permittee shall certify compliance with the requirements specified in conditions 12, 13, and 14 as set out in condition 41 of this permit.

[18 AAC 50.350(m)(3), 9/4/98]

## **Section 8. Generally Applicable Requirements**

- 16. Asbestos NESHAP.** The Permittee shall comply with the requirements set forth in 40 C.F.R. §61.145, §61.150, and §61.152, and the applicable sections set forth in 40 C.F.R. §61, Subpart A and Appendix A.

[18 AAC 50.040(b)(3) & 18 AAC 50.350(d)(1), 1/18/97]  
[Federal Citation: 40 C.F.R. §61, Subpart M, 12/19/96]

- 17. Refrigerant Recycling and Disposal.** The Permittee shall comply with the standards for recycling and emission reduction of refrigerants set forth in 40 C.F.R. §82, Subpart F.

[18 AAC 50.040(d) & 18 AAC 50.350(d)(1), 1/18/97]  
[Federal Citation: 40 C.F.R. §82, Subpart F, 7/1/97]

- 18. Good Air Pollution Control Practice.** The Permittee shall install, maintain and operate, in accordance with manufacturer's procedures, fuel burning equipment, process equipment, emission control devices, testing equipment and monitoring equipment to provide optimum control of air contaminant emissions during all operating periods. This condition is not federally enforceable.

[18 AAC 50.030 & 18 AAC 50.350 (f)(2)-(3), 1/18/97]

- 19. Dilution.** The Permittee shall not dilute emissions with air to comply with this permit.

[18 AAC 50.045(a) 1/18/97]

**19.1 Check all ductwork and exhaust systems for leaks, and repair any leaks found**

- a. No sooner than 30 days prior to conducting a source test to demonstrate compliance with this permit,
- b. Once during the first six months of this permit and every 17,520 hours of source operation thereafter for sources subject to visible emission observations conducted pursuant to Section 13, or
- c. Once during the life of this permit for any other source regulated by this permit.

[18 AAC 50.350(g), 1/18/97]

**19.2 Keep records of all inspections and repairs performed under this condition.**

[18 AAC 50.350(h), 1/18/97]

**19.3 Upon request of the department, submit copies of the records.**

[18 AAC 50.350(i), 1/18/97]

- 20. Modification.** The Permittee shall not construct, operate, or modify a source that will result in a violation of the applicable emission standards or that will interfere with the attainment or maintenance of the ambient air quality standards or maximum allowable ambient concentrations.

[18 AAC 50.045(c) & 18 AAC 50.350(f)(3), 1/18/97]

**20.1 Obtain all permits or permit revisions required for construction, modification, or operation under 18 AAC 50 and AS 46.14.**

[18 AAC 50, Article 3, 1/18/97]

**20.2 Comply with the conditions of all permits obtained under 18 AAC 50 and AS 46.14.**

[18 AAC 50, Article 3, 1/18/97]

**21. Bulk Materials Handling, Construction and Industrial Activities.** The Permittee shall take reasonable precautions to prevent particulate matter from being emitted into the ambient air as a result of industrial activities, construction projects, or the handling, transportation, and storage of bulk materials.

[18 AAC 50.040(e), 18 AAC 50.045(d), & 18 AAC 50.350(d)(1), 1/18/97]

21.1 Keep records describing all precautions taken to prevent particulate matter from becoming airborne due to any of the activities described in this condition. If the precautions taken by the Permittee are not listed in the State Air Quality Control Plan, also record a statement describing why the Permittee finds the precaution reasonable. Reasonable precautions, as listed in the State Air Quality Control Plan, include

- a. installation and use of hoods, fans, and dust collectors to enclose and vent the handling of dusty materials;
- b. use of water or chemicals for dust control in the demolition of existing structures, construction operations, road grading, or land clearing; and
- c. application of asphalt, oil, water, or suitable chemicals on dirt roads, material stockpiles and other surfaces which can create airborne dusts.

[18 AAC 50.040(e) & 18 AAC 50.350(g)-(h), 1/18/97]

21.2 At least once each month, perform visual surveys of fugitive particulate matter sources as follows:

- a. Conduct a survey of all bulk materials handling, construction and industrial activities at the facility for the potential of airborne particulate matter in accordance with the procedures listed in 40 C.F.R. §60, Appendix A, RM 22
- b. Within 2 days of discovering that particulate matter emissions are leaving the property at a level which potentially could unreasonably interfere with the enjoyment of life or property, be injurious to human health or welfare, animal or plant life, or property, or cause an exceedance of a PM-10 ambient air quality standard or increment contained in 18 AAC 50.010(1) or 18 AAC 50.020(b)(2), initiate corrective actions to prevent emissions from leaving the property
- c. Keep contemporaneous records of all visual surveys performed and corrective actions taken to prevent particulate matter emissions from leaving the property. Submit summaries of the records with the report required by condition 40 of this permit.
- d. Submit a report in accordance with condition 39 whenever a visual survey reveals that particulate matter emissions at levels specified in condition 21.2b are leaving the property.

[18 AAC 50.350(g - i), 1/18/97]

**22. Stack Injection.** The Permittee shall not release materials other than process emissions, products of combustion, or materials introduced to control pollutant emissions from a stack at a source constructed or modified after November 1, 1982, unless approved in writing by the department.

[18 AAC 50.055(g) and 18 AAC 50.310(m), 1/18/97]

**23. Open Burning.** The Permittee shall comply with the following requirements when conducting open burning at the facility:

23.1 Open burning of asphalts, rubber products, plastics, tars, oils, oily wastes, contaminated oil cleanup materials, or other materials in a way that gives off black smoke is prohibited without written approval of the department in accordance with the procedures set forth in 18 AAC 50.065.

[18 AAC 50.040(e), 18 AAC 50.065(b), & 18 AAC 50.350(d)(1), 1/18/97]

23.2 Open burning or incineration of pesticides, halogenated organic compounds, cyanic compounds, or polyurethane products in a way that gives off black smoke or acidic gases or particulate matter is prohibited.

[18 AAC 50.040(e), 18 AAC 50.065(c) & 18 AAC 50.350(d)(1), 1/18/97]

23.3 Open burning of putrescible garbage, animal carcasses, or petroleum-based materials, including materials contaminated with petroleum or petroleum derivatives, is prohibited if it causes odor or black smoke that has an adverse effect on nearby persons or property.

[18 AAC 50.040(e), 18 AAC 50.065(d), & 18 AAC 50.350(d)(1), 1/18/97]

23.4 Open burning is prohibited in an area if the department declares an air quality advisory under 18 AAC 50.245, stating that open burning is not permitted in that area for the day.

[18 AAC 50.040(e), 18 AAC 50.065(e), & 18 AAC 50.350(d)(1), 1/18/97]

23.5 When conducting open burning, the Permittee shall ensure that

- a. The material is kept as dry as possible through the use of cover or dry storage;
- b. Before igniting the burn, noncombustibles are separated to the greatest extent practicable;
- c. Natural or artificially induced draft is present;
- d. To the greatest extent practicable, combustibles are separated from grass or peat layer;
- e. Combustibles are not allowed to smolder; and
- f. Sufficient written records are kept to demonstrate that the Permittee complies with the limitations in this condition. Upon request of the department, submit copies of the records.

[18 AAC 50.040(e), 18 AAC 50.065(a), 18 AAC 50.350(d)(1) & 18 AAC 50.335(g – h), 1/18/97]

**24. Air Pollution Prohibited.** The Permittee shall not cause any emission which is injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life or property.

[18 AAC 50.110, 5/26/72; 18 AAC 50.040(e), & 18 AAC 50.350(d)(1), 1/18/97]

24.1 Within 24 hours of receiving a complaint that is attributable to emissions from the facility, investigate the complaint and initiate corrective actions to alleviate or eliminate the cause of the complaint.

[18 AAC 50.350(g), 1/18/97]

24.2 Keep records of the date, time, and nature of all complaints received and summary of the investigation and corrective actions undertaken for complaints attributable to emissions from the facility. Upon request of the department, submit copies of the records.

[18 AAC 50.350(h - i), 1/18/97]

**25. Permit Renewal:** To renew this permit, the Permittee shall submit a complete application under 18 AAC 50.335 no sooner than *18 months before the expiration date of the permit* and no later than *6 months before the expiration date of the permit*.

[18 AAC 50.335(a), 1/18/97]

**26. Source Replacement:** The Permittee may replace a diesel engine with a like-kind unit of a rated capacity no greater than the replaced ones.

[18 AAC 50.365(a), 1/18/97]

26.1 Monitor and record by keeping a record of each change.

[18 AAC 50.365(b)(1), 1/18/97]

26.2 Report by sending a notice of the change to the Department and the federal administrator, postmarked no later than one day after making the change; the notice must include

- a. In the heading of the notice, the words, "Off-Permit Facility Change;"
- b. A description of the change;
- c. The date on which the change occurred or will occur;
- d. Any change in emissions;
- e. A list of any air quality control requirement or federally-enforceable requirement that would apply as a result of the change; and
- f. Assurance that, as of the date specified in condition 26.2c, the Permittee will attach a copy of the notice to the operating permit.

[18 AAC 50.365(b)(2), 1/18/97]

**Section 9. General Source Testing and Monitoring Requirements**

- 27. Requested Source Tests.** In addition to any source testing explicitly required by this permit, the Permittee shall conduct source testing as requested by the department to determine compliance with applicable permit requirements.
- [18 AAC 50.220(a), 18 AAC 50.345(a)(10), 1/18/97]
- 28. Operating Conditions.** Unless otherwise specified by an applicable requirement or test method, the Permittee shall conduct source testing
- 28.1 At a point or points that characterize the actual discharge to into the ambient air; and
- 28.2 At the maximum rated burning or operating capacity of the source or another rate determined by the department to characterize the actual discharge into the ambient air.
- [18 AAC 50.220(b) & 18 AAC 50.350(g), 1/18/97]
- 29. Reference Test Methods.** The Permittee shall use the following as reference test methods when conducting source testing for compliance with this permit:
- 29.1 Source testing for compliance with requirements adopted by reference in 18 AAC 50.040(a) must be conducted in accordance with the methods and procedures specified in 40 C.F.R. §60.
- [18 AAC 50.220(c) & 18 AAC 50.350(g), 1/18/97]
- 29.2 Source testing for compliance with requirements adopted by reference in 18 AAC 50.040(b) must be conducted in accordance with the methods and procedures specified in 40 C.F.R. §61.
- [18 AAC 50.220(c) & 18 AAC 50.350(g), 1/18/97]
- 29.3 Source testing for compliance with requirements adopted by reference in 18 AAC 50.040(c) must be conducted in accordance with the source test methods and procedures specified in 40 C.F.R. §63.
- [18 AAC 50.220(c) & 18 AAC 50.350(g), 1/18/97]
- 29.4 Source testing for the reduction in visibility through the exhaust effluent must be conducted in accordance with the procedures set out in Section 13 of this permit.
- [18 AAC 50.220(c) & 18 AAC 50.350(g), 1/18/97]
- 29.5 Source testing for emissions of particulate matter, sulfur compounds, nitrogen compounds, carbon monoxide, lead, volatile organic compounds, fluorides, sulfuric acid mist, municipal waste combustor organics, metals, and acid gases must be conducted in accordance with the methods and procedures specified 40 C.F.R. §60, Appendix A.
- [18 AAC 50.220(c), 18 AAC 50.040 & 18 AAC 50.350(g), 1/18/97]
- 29.6 Source testing for emissions of PM-10 must be conducted in accordance with the procedures specified in 40 C.F.R. §51, Appendix M.
- [18 AAC 50.220(c) & 18 AAC 50.350(g), 1/18/97]
- 29.7 Source testing for emissions of any contaminant may be determined using an alternative method approved by the department in accordance with Method 301 in Appendix A to 40 C.F.R. §63.
- [18 AAC 50.220(c) & 18 AAC 50.350(g), 1/18/97]

- 30. Excess Air Requirements.** To determine compliance with this permit, standard exhaust gas volumes must only include the volume of gases formed from the theoretical combustion of fuel, plus the excess air volume normal for the specific source type, corrected to standard conditions (dry gas at 70° F and an absolute pressure of 760 millimeters of mercury).  
[18 AAC 50.990(88), 18 AAC 50.220(c)(3) & 18 AAC 50.350(g), 1/18/97]
- 31. Test Plans.** Before conducting any source tests, the Permittee shall submit a plan to the Department. The plan must include the methods and procedures to be used for sampling, testing, and quality assurance, and must specify how the source will operate during the test and how the Permittee will document this operation. A complete plan must be submitted within 60 days of receiving a request under condition 27 and at least 30 days before the scheduled date of any tests.  
[18 AAC 50.345(a)(10), 18 AAC 50.350(b)(3) & 18 AAC 50.350(g), 1/18/97]
- 32. Test Notification.** At least 10 days before conducting a source test, the Permittee shall give the Department written notice of the date and time the source test will begin.  
[18 AAC 50.345(a)(10), 18 AAC 50.350(b)(3) & 18 AAC 50.335(g), 1/18/97]
- 33. Test Reports.** Within 45 days after completing a source test, the Permittee shall submit two copies of the results, to the extent practical, in the format set out in the *Source Test Report Outline* of Volume III, Section IV.3 of the State Air Quality Control Plan, adopted by reference in 18 AAC 50.030(8). The Permittee shall certify the results as set out in condition 35 of this permit.  
[18 AAC 50.345(a)(10), 18 AAC 50.350(b)(3) & 18 AAC 50.350(h), 1/18/97]
- 34. Particulate Matter Calculations.** In source testing for compliance with the particulate matter standards in condition 4, the three-hour average is determined using the average of three one-hour test runs.  
[18 AAC 50.220(f) & 18 AAC 50.350(g), 1/18/97]

## **Section 10. General Recordkeeping, Reporting, and Compliance Certification Requirements**

- 35. Certification.** The Permittee shall certify all reports, compliance certifications, or other documents submitted to the Department under this permit by including the signature of a responsible official for the permitted facility 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." For the same six-month reporting period, the excess emission reports submitted pursuant to condition 39 may be certified with the operating report required by condition 40 of this permit. All other reports must be certified upon submittal.

[18 AAC 50.205, 18 AAC 50.345(a)(9), 18 AAC 50.350(b)(3) & 18 AAC 50.350(i) 1/18/97]

- 36. Submittals.** Unless otherwise directed by the department or this permit, the Permittee shall send reports, compliance certifications, and other documents required by this permit to ADEC, Air Permits Program, 610 University Ave., Fairbanks, AK 99709-3643, ATTN: Compliance Technician.

[18 AAC 50.350(i), 1/18/97]

- 37. 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 this permit. The Department, in its discretion, will require the Permittee to furnish copies of those records directly to the federal administrator.

[18 AAC 50.200, 18 AAC 50.345(a)(8), 18 AAC 50.350(b)(3) & 18 AAC 50.350(g - i), 1/18/97]

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

38.1 Copies of all reports and certifications submitted pursuant to this Section of this permit.

38.2 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 recordings for continuous monitoring instrumentation;
- b. sampling dates and times of sampling and 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 analyses;
- g. the analytical techniques or methods used in the analyses; and
- h. the results of the analyses.

[18 AAC 50.350(h), 1/18/97]

**39. Excess Emission and Permit Deviation Reports.** The Permittee shall report all emissions or operations that exceed or deviate from the requirements of this permit or that present a potential threat to human health or safety as soon as possible, but no later than 48 hours, after the event commences. The report must include the information listed on the form contained in Section 15 of this permit. The Permittee may use this form to report emissions under this condition.

[18 AAC 50.235(a)(2), 18 AAC 50.240(c) &amp; 18 AAC 50.350(i), 1/18/97]

**40. Operating Reports.** During the life of this permit, the Permittee shall submit an original and two copies of an operating report by August 1 for the period January 1 to June 30 and by February 1 for the period July 1 to December 31. This report must include copies of the records required to be reported by the conditions of this permit. In addition, the report must include a listing of all deviations from the requirements of this permit that occurred during the reporting period. For each deviation, the report must identify

40.1 the date of the deviation;

40.2 the equipment involved;

40.3 the permit condition;

40.4 a description of the deviation; and

40.5 any corrective action or preventive measures taken and the date of such actions.

[18 AAC 50.350(d)(4), (f)(3) &amp; (i), 1/18/97]

**41. Annual Compliance Certification.** Each year by February 1, the Permittee shall compile and submit an original and two copies of an annual compliance certification report as follows:

41.1 For each permit term and condition set forth in Section 3 through Section 10 of this permit, including terms and conditions for monitoring, reporting, and recordkeeping:

- a. certify the compliance status over the preceding calendar year consistent with the monitoring required by this permit;
- b. state whether compliance is intermittent or continuous; and
- c. briefly describe each method used to determine the compliance status.

41.2 Submit a copy of the report directly to the U.S. EPA-Region 10, Office of Air Quality, M/S OAQ-107, 1200 Sixth Avenue, Seattle, WA 98101.

[18 AAC 50.350(j), 1/18/97]

**Section 11. Standard Conditions Not Otherwise Included in the Permit**

42. Consistent with Alaska law, for purpose of submitting compliance certifications or establishing whether or not the Permittee has violated or is in violation of any standard in this permit, nothing in this permit precludes the use of any credible evidence of information relevant to whether the facility would have been in compliance with applicable requirements if the appropriate performance or compliance test or procedure had been performed.
- [18 AAC 50.350(f)(3), 1/18/97]  
[Federal Citation: 40 C.F.R. §52.12(c), 7/1/99]
43. The Permittee must comply with each permit term and condition. Noncompliance constitutes a violation of AS 46.14, 18 AAC 50, and the Clean Air Act, except for those requirements designated as not federally-enforceable, and is grounds for:
- a. an enforcement action,
  - b. permit termination, revocation and reissuance, or modification in accordance with AS 46.14.280, or
  - c. denial of an operating-permit renewal application.
- [18 AAC 50.345(a)(1) & 18 AAC 50.350(b)(3), 1/18/97]
44. 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.
- [18 AAC 50.345(a)(2) & 18 AAC 50.350(b)(3), 1/18/97]
45. 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 this permit.
- [18 AAC 50.345(a)(3) & 18 AAC 50.350(b)(3), 1/18/97]
46. Compliance with permit terms and conditions is considered to be compliance with those requirements that are:
- a. included and specifically identified in the permit, or
  - b. determined in writing in the permit to be inapplicable.
- [18 AAC 50.345(a)(4) & 18 AAC 50.350(b)(3), 1/18/97]
47. 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 operating permit condition.
- [18 AAC 50.345(a)(5) & 18 AAC 50.350(b)(3), 1/18/97]
48. The permit does not convey any property rights of any sort, nor any exclusive privilege.
- [18 AAC 50.345(a)(6) & 18 AAC 50.350(b)(3), 1/18/97]
49. The Permittee shall allow an officer or employee of the Department or an inspector authorized by the Department, upon presentation of credentials and at reasonable times with the consent of the owner or operator, to:

- 49.1 enter upon the premises where a source subject to the operating permit is located or where records required by the permit are kept,
- 49.2 have access to and copy any records required by the permit,
- 49.3 inspect any facilities, equipment, practices, or operations regulated by or referenced in the permit, and
- 49.4 sample or monitor substances or parameters to assure compliance with the permit or other applicable requirements.

[18 AAC 50.345(a)(7) & 18 AAC 50.350(b)(3), 1/18/97]

## **Section 12. Visible Emissions and Particulate Matter Monitoring Plan**

### Visible Emissions Observations

- 50.** Except as provided in conditions 51 and 52, the Permittee shall observe visible emissions in the exhaust of each source as follows:
- 50.1 Within 6 months after the issue date of this permit and at least once every 1000 hours that a source operates thereafter, observe its exhaust for 60 minutes to obtain 240 individual 15-second readings in accordance with Section 13 of this permit; OR
- 50.2 Each day that a source operates, observe the exhaust for the presence or absence of visible emissions, excluding condensed water vapor. Record the following information in a written log for each observation:
- a. The date and time of the observation;
  - b. From Table 1 of this permit, the ID of the source observed;
  - c. Whether visible emissions are present or absent in the exhaust;
  - d. If the source starts operation on the day of the observation, the startup time of the source; and
  - e. Name, title, and signature of the person making the observation.
- 51.** The Permittee may reduce the number of 60-minute observations required by condition 50.1 to one observation for every 4380 hours of source operation, provided that no more than 8 individual 15-second readings during each of the most recent 60 minute observations conducted during 4000 hours of operation are greater than 20-percent opacity.
- 52.** The Permittee may reduce the number of visible emission observations required by condition 50.2 to one observation for every 30 days of source operation if the source operates without visible emissions in the exhaust during the most recent 30 days of operation.

### Corrective Actions Based on Visible Emissions Observations

- 53.** If visible emissions are present in the exhaust during an observation performed under condition 50.2, the Permittee shall
- 53.1 Take actions to reduce visible emissions from the source within 24 hours of the observation;
- 53.2 Keep a written record of the starting date, the completion date, and a description of the actions taken to reduce visible emissions; and
- 53.3 After completing the actions taken to reduce visible emissions, observe the visible emissions in accordance with condition 50.2. If visible emissions are present in the exhaust during any of the next 30 observations, observe the exhaust in accordance with condition 50.1 no later than 14 calendar days after the visible emissions are first observed.

## Particulate Matter Testing

- 54.** The Permittee shall conduct tests to determine the concentration of particulate matter in the exhaust of a source as follows:
- 54.1 Conduct the tests according to the requirements set out in Section 9 of this permit;
- 54.2 During each test, observe visible emissions in accordance with Section 13 and calculate the average opacity that was measured during the test. Submit the results of the visible emission observations and the calculation with the source test report.
- 54.3 Conduct the tests no later than 90 days after any time a 60 minute visible emission observation performed under this Section results in
- a. 13 or more 15-seconds readings with an opacity greater than 20%; or
  - b. a six-minute average opacity that is greater than 12% for a source with an exhaust stack diameter that is less than 21 inches.

## Reporting Requirements

- 55.** The Permittee is not required to comply with conditions 31, 32, and 33 observing visible emissions under this section.
- 56.** Within 180 days after the effective date of this permit, the Permittee shall measure the exhaust stack diameter of each Source IDs 1 through 6 and report this information to the department with the next report required by condition 40.
- 57.** The Permittee shall keep a record of the operating hours for each Source IDs 1 through 6 and submit these records with the report required by condition 40.
- 58.** For all 60-minute visible emissions observations that occurred during an applicable reporting period, the Permittee shall submit copies of observation results with the report required by condition 40.
- 59.** The Permittee shall submit a report in accordance with condition 39 if:
- 59.1 a 60-minute visible emission observation results in
- a. 13 or more 15-seconds readings with an opacity greater than 20%;
  - b. a six-minute average opacity that is greater than 12% for a source with an exhaust stack diameter that is less than 21 inches; or
- 59.2 the results of a test for particulate matter exceed the particulate matter emission limit.

[18 AAC 50.350(g), (h), and (i), 1/18/97]

### **Section 13. Visible Emission Evaluation Procedures**

An observer qualified according to 40 C.F.R. §60, RM 9 shall use the following procedures to determine the reduction of visibility through the exhaust effluent.

**Position.** The qualified observer shall stand at a distance sufficient to provide a clear view of the emissions with the sun oriented in the 140° sector to his back. Consistent with maintaining the above requirement, the observer shall, as much as possible, make his observations from a position such that his line of vision is approximately perpendicular to the plume direction and, when observing opacity of emissions from rectangular outlets (e.g., roof monitors, open baghouses, noncircular stacks), approximately perpendicular to the longer axis of the outlet. The observer's line of sight should not include more than one plume at a time when multiple stacks are involved, and in any case the observer should make his observations with his line of sight perpendicular to the longer axis of such a set of multiple stacks (e.g., stub stacks on baghouses). The observer shall maintain a distance of at least 15 feet from the emission point.

**Field Records.** The observer shall record the name of the plant, emission location, facility type, observer's name and affiliation, and the date on the Visible Emissions Field Data Sheet. The time, estimated distance to the emission location, approximate wind direction, estimated wind speed, description of the sky condition (presence and color of clouds), and plume background are recorded on the sheet at the time opacity readings are initiated and completed.

**Observations.** Opacity observations shall be made at the point of greatest opacity in that portion of the plume where condensed water vapor is not present. The observer shall not look continuously at the plume but instead shall observe the plume momentarily at 15-second intervals. Unless directed to do otherwise in this permit, observe emissions for 60 consecutive minutes to obtain a minimum of 240 observations.

**Attached Steam Plumes.** When condensed water vapor is present within the plume as it emerges from the emission outlet, opacity observations shall be made beyond the point in the plume at which condensed water vapor is no longer visible. The observer shall record the approximate distance from the emission outlet to the point in the plume at which the observations are made.

**Detached Steam Plume.** When water vapor in the plume condenses and becomes visible at a distinct distance from the emission outlet, the opacity of emissions should be evaluated at the emission outlet prior to the condensation of water vapor and the formation of the steam plume.

**Recording Observations.** Opacity observations shall be recorded to the nearest 5 percent at 15-second intervals on the Visible Emissions Observation Record contained in this section. Record 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.

**Data Reduction.** To determine compliance with a standard set out in conditions 3 and 12 of this permit, count the number of observations that exceed 20 percent opacity and record this number on the sheet.

### Visible Emissions Field Data Sheet

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

Company: \_\_\_\_\_

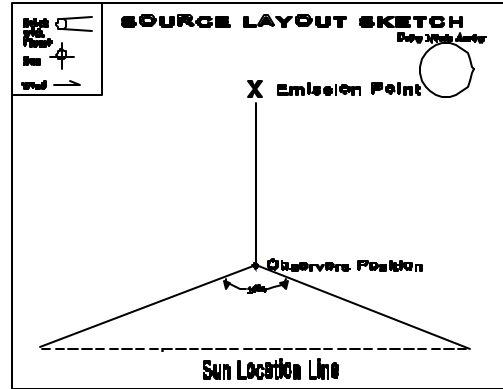
Location: \_\_\_\_\_

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

Source: \_\_\_\_\_

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 14. Material Balance Calculation

If the sulfur content of a fuel shipment is greater than 0.5% by weight, calculate the three-hour exhaust concentration of SO<sub>2</sub> using the following equations:

$$A = 31,200 \times [\text{wt}\%S_{\text{fuel}}] = 31,200 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$B = 0.148 \times [\text{wt}\%S_{\text{fuel}}] = 0.148 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$C = 0.396 \times [\text{wt}\%C_{\text{fuel}}] = 0.396 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$D = 0.933 \times [\text{wt}\%H_{\text{fuel}}] = 0.933 \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$E = B + C + D = \underline{\hspace{2cm}} + \underline{\hspace{2cm}} + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$F = 21 - [\text{vol}\%_{\text{dry}}O_{2, \text{exhaust}}] = 21 - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$G = [\text{vol}\%_{\text{dry}}O_{2, \text{exhaust}}] \div F = \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$H = 1 + G = 1 + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$I = E \times H = \underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

$$\text{SO}_2 \text{ concentration} = A \div I = \underline{\hspace{2cm}} \div \underline{\hspace{2cm}} = \underline{\hspace{2cm}} \text{ PPM}$$

The **wt%*S*<sub>fuel</sub>**, **wt%*C*<sub>fuel</sub>**, and **wt%*H*<sub>fuel</sub>** are equal to the weight percents of sulfur, carbon, and hydrogen in the fuel. These percentages should total 100%.

The fuel weight percent (wt%) of sulfur is obtained pursuant to condition 5.2. The fuel weight percents of carbon and hydrogen are obtained from the fuel refiner.

The volume percent of oxygen in the exhaust (**vol%*dry**O*<sub>2, exhaust</sub>**) is obtained from oxygen meters, manufacturer's data, or from the most recent ORSAT analysis at the same engine load used in the calculation.

Enter all of the data in percentages without dividing the percentages by 100. For example, if **wt%*S*<sub>fuel</sub>** = 1.0%, then enter 1.0 into the equations not 0.01 and if **vol%*dry**O*<sub>2, exhaust</sub>** = 3.00%, then enter 3.00, not 0.03.

[18 AAC 50.350(g), 1/18/97]

**Section 15. ADEC Notification Form**

Fax this form to: (907) 269-7508 Telephone: (907) 269-8888

Alaska Power & Telephone Company

Company Name

Tok Power Generating Station

Facility Name

**1. Reason for notification:**

- Excess Emission                       Permit Condition Exceedence

**2. Event Information (Use 24-hour clock):**

	<b>START Time:</b>	<b>END Time:</b>	<b>Duration (hr:min):</b>
Date: _____	_____ : _____	_____ : _____	_____ : _____
Date: _____	_____ : _____	_____ : _____	_____ : _____
		<b>Total:</b>	_____ : _____

**3. Cause of Event (Check all that apply):**

- START UP                       UPSET CONDITION                       CONTROL EQUIPMENT  
 SHUT DOWN                       SCHEDULED MAINTENANCE                       OTHER \_\_\_\_\_

*Attach a detailed description of what happened, including the parameters or operating conditions exceeded.*

**4. Sources Involved:**

*Identify each Emission Source involved in the event, using the same identification number and name as in the Permit. List any Control Device or Monitoring System affected by the event. Attach additional sheets as necessary.*

Source ID No.	Source Name	Description	Control Device
_____	_____	_____	_____
_____	_____	_____	_____

**5. Emission Limit and/or Permit Condition Exceeded:**

*Identify each Emission Standard and Permit Condition exceeded during the event. Attach a list of ALL known or suspected injuries or health impacts. Attach additional sheets as necessary.*

Permit Condition	Limit	Exceedance
_____	_____	_____
_____	_____	_____

**6. Emission Reduction:**

*Attach a detailed description of ALL of the measures taken to minimize and/or control emissions during the event.*

**7. Corrective Actions:**

*Attach a detailed description of ALL corrective actions taken to restore the system to normal operation.*

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:

\_\_\_\_\_  
Signature:

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

**Alaska Department of Environmental Conservation**

**Air Permits Program**

**June 20, 2000**

Tok Power Generating Station

**LEGAL AND FACTUAL BASIS**

**of the terms and conditions for**

**Permit No. 225TVP01**

**Administrative Revision 2**

## INTRODUCTION

This document sets forth the legal and factual basis for the terms and conditions of Operating Permit No. 225TVP01.

The Tok Power Generating Station is a prime power diesel electric generating facility that provides electricity to the communities of Tok, Tanacross, and Dot Lake Alaska. The facility is owned and operated by Alaska Power & Telephone. Alaska Power & Telephone **Company** is the Permittee for the facility's operating permit.

## PROCESS DESCRIPTION

As provided in the application, the facility contains six diesel-electric generators and one storage tank, i.e. source ID 1 – 6 and Source 7 in Table 1 of Operating Permit 225TVP01. The installation dates are listed in Table 1, too.

The sources at the facility regulated in Operating Permit 225TVP01 are identified in Table 1 in Section 4 of the permit

### Source Inventory and Description

Section 4 of Operating Permit No. 225TVP01 contains Table 1 describing the sources regulated by the permit. The table is provided for information and identification purposes only. Specifically, the source rating/size provided in the table is not intended to create an enforceable limit.

## BASIS FOR REQUIRING AN OPERATING PERMIT

The Tok Power Generating Station requires an operating permit because it has the potential to emit 100 tons per year (tpy) or more of a regulated air contaminant. The Tok Power Generating Station meets the definition of operating permit facility in the state regulations in Section 3. Alaska regulations require operating permit applications to include identification of "regulated sources." As applied to the Tok Power Generating Station, the state regulations require a description of:

Each source regulated by a standard in 18 AAC 50.055, Industrial Processes and Fuel Burning Equipment [18 AAC 50.335(e)(4)(C)];

Each source subject to a standard adopted by reference in 18 AAC 50.040 [18 AAC 50.335(e)(2)]; and

Sources subject to requirements in an existing DEC permit [18 AAC 50.335(e)(5)]

The emission sources at Tok Power Generating Station classified as "regulated sources" according to the above DEC regulations are listed in Table 1 of Permit No. 225TVP01.

## CURRENT AIR QUALITY PERMITS

### Previous Air Quality Permit to Operate

The most recent permit issued for this facility is permit-to-operate number 9533-AA001. This permit-to-operate include all construction authorizations issued through April 14, 1995, and was issued before

January 18, 1997. All facility-specific requirements established in this previous permit are included in the new operating permit as described below.

### **Construction Permits**

Construction Permit No. 9933-AC012 was issued to this facility on November 17, 1999. The facility-specific requirements established in this construction permit are included in the new operating permit as described below.

### **Permit Application History**

The owner or operator submitted an application on December 4, 1997.

The owner or operator amended this application on February 25, 1998 and on March 9, 1998.

The application was complete on March 17, 1998.

The applicant submitted additional information on March 21, 2000.

## FACILITY-SPECIFIC REQUIREMENTS CARRIED FORWARD

18 AAC 50.350(d)(1)(D) requires that this permit include each facility specific requirement established in prior permits 9533-AA001 and 9933-AC012. Table 1 and Table 2 below list the old requirement (condition) and the new condition that carries over the old requirement into the new permit.

**Table 1.** A comparison of pre-January 18, 1997 Permit No. 9533-AA001 conditions to Permit No. 225TVP01 conditions.1

<b>Permit No. 9533-AA001 condition</b>	<b>Description of Requirement</b>	<b>Permit No. 225TVP01 condition</b>	<b>How condition was revised</b>
Introductory paragraph and Exhibit A	Authority for permit and source list	Section 2 and Table 1	Same information, different format
1 and 2	Comply with ambient air quality standards	20	Now required only for construction permits.
3 and Exhibit B except Condition E	Comply with most stringent emission standards, limits, & specifications	Section 5 and Section 6	Emission limits unchanged and now listed as condition
Exhibit B, Condition E	Total fuel consumption limit	None	No authority for this limit
4	Semiannual opacity monitoring	3.1 and Section 12	Can Require more in-depth monitoring
5	Install and operate for optimum emission control	18	A SIP requirement
6	Annual power output limit	11	Slightly lower limit based on some vendor data; the same as conditions 25.1 and 25.1.1 of Construction Permit No. 9933-AC012
7	Source test at Department request	27	Not revised
8	Conduct source tests at the highest emission rate	28.2	Not revised
9	Submit a source-test plan	31 and 36	Not revised
10	Submit a source-test report to the Juneau office	33 and 36	Source-test reports now sent to Fairbanks office
11 and Exhibit E	Reporting of excess emissions	39 and Section 15	New wording and new reporting form
12	Access to facility	49	Standard condition now in

<b>Permit No. 9533-AA001 condition</b>	<b>Description of Requirement</b>	<b>Permit No. 225TVP01 condition</b>	<b>How condition was revised</b>
			regulation
13 and Exhibit D	Submit facility operating report every year	40 and 36	Requires more in-depth reporting every 6 months, except that the operating hours and fuel consumption do not need to be reported
14	Keep records for 3 years	38	Keep records for 5 years. Standard condition now in regulation
15	Display permit	None	Not required in regulation
Exhibit C	Source-test reference methods	29	Not revised
Exhibit F	Permit Application Documentation	Statement of Basis, Permit Application History	Not revised

**Table 2.** A comparison of Permit No. 9933-AC012 conditions to Permit No. 225TVP01 conditions.

<b>Permit No. 9933-AC012 condition</b>	<b>Description of Requirement</b>	<b>Permit No. 225TVP01 condition</b>	<b>How condition was revised</b>
Introductory paragraph	Authority for permit	Section 2	Same information, different format
1	Comply with Permit No. 9533-AA001 except as revised in Permit No. 9933-AC012	None	This requirement was explicitly deleted in the introductory paragraph of the new operating permit
2	If permit terms and conditions between Permit No. 9933-AC012 and Permit No. 9533-AA001 conflict, then comply with Permit No. 9933-AC012	None	Not applicable regarding the Permit No. 9533-AA001 and no regulatory authority regarding Permit No. 9933-AC012
3	Comply with each condition of the permit	43	Not revised
4	Not a defense to halt or reduce permitted activity	44	Not revised
5	Each permit term or condition is independent	45	Not revised
6 through 6.2	Compliance with permit terms defined	46	Not revised
7	Permit may be modified, reopened, revoked and reissued, or terminated for cause	47	Not revised
8	Permit is not a property right or exclusive privilege	48	Not revised
9 through 9.4	Allow the Department to inspect the facility	49	Not revised

<b>Permit No. 9933-AC012 condition</b>	<b>Description of Requirement</b>	<b>Permit No. 225TVP01 condition</b>	<b>How condition was revised</b>
10	Furnish information to the Department	37	Not revised
11	Certify all documents	35	Not revised
12	Submit documents to the Fairbanks office, except excess-emission reports	36	Not revised
13	Keep records for 5 years	38	Not revised
14 through 14.1.6	Source-test methods	29	Not revised
15	Visible-emissions surveillance use Method 9, 40 C.F.R. §60, Appendix A	29.4 and Section 12	Not revised
16	Continuous monitoring system requirements	None	The Permittee does not have and is not required to have any continuous monitoring systems
17	Alternative monitoring	29.7	Not revised
18 through 19.2	Reporting of excess-emission	39, 35, and Section 15	New wording and new reporting form
20	Display permit	None	Not required in regulation
21	Operate each source in compliance with applicable emission standards	Section 5, Section 6, and Section 7	The applicable emission standards were specified along with monitoring, recordkeeping, and reporting conditions to ensure compliance
22	Submit facility operating report every year	40 and 36	Requires more in-depth reporting every 6 months except that operating hours and fuel consumption do not need to be reported
23	Authorizes Permittee to install a new source	None	Not necessary. The new source has already been installed
24	May replace a source with a like-of-a kind-rated source	26	Regulations were cited

<b>Permit No. 9933-AC012 condition</b>	<b>Description of Requirement</b>	<b>Permit No. 225TVP01 condition</b>	<b>How condition was revised</b>
25	Total NO <sub>x</sub> emissions limited to less than 235 TPY	11	Limit increased to 249 TPY as an owner-requested limit, but source testing is required at 235 TPY. Cushion is due to uncertainty of emission factors coupled with elimination of initial source testing requirements
25.1 and 25.1.1	Limit total electrical generation limited to less than an adjusted 13.86 GWhr	11.1 - 11.4	Limit increased to 14.69 GWhr, but source testing is required at 13.86 GWhr. Cushion is due to uncertainty of emission factors coupled with elimination of initial source testing requirements.
25.2	Remove existing source before installing the new source	None	Not necessary because the old source has already been removed
26 through 26.1	Monitor and record electrical production and estimate fuel consumption	11.2	Not revised
26.2 through 26.2.1 and 27.3	Calculate, record, and report total NO <sub>x</sub> emissions and the NO <sub>x</sub> emission factors were listed	11.6	Calculating, recording, and reporting NO <sub>x</sub> emissions is not necessary because it is a duplication of the electrical production monitoring, recordkeeping, and reporting requirements. The NO <sub>x</sub> emission factors were included to compare with source-test results
27 and 27.1	Report sulfur content of the fuel	5.4 and 5.5	Not revised
27.2	Report total fuel use, operating hours, and power production	11.8	Reporting total operating hours and fuel use is not necessary because there is no authority
28 and 29	Fuel-storage-tanks requirements	6 through 7	The recordkeeping requirement when storing a fuel oil with a true vapor pressure $\geq$ 3.5 kPa was not include because the Source ID 7 currently stores

Permit No. 9933-AC012 condition	Description of Requirement	Permit No. 225TVP01 condition	How condition was revised
			diesel fuel, which is < 3.5 kPa. The Permittee is required to notify the department if the type of fuel stored is changed.
30	Visible-emission and particulate-matter standards	3 through 4.1 and Section 12	The standards were not revised, but an entire section is now devoted to ensuring compliance with these standards
31, 32.4, and 33.3	Sulfur-compound emission standard	5 through 5.6	The standard was not revised, but monitoring conditions can be more stringent.
32, 32.1, 33, and 33.1	Particulate-matter monitoring and recording	27, 29.5, and 33	Not revised
32.2, 32.3, and 33.2	Visible-emission monitoring, recordkeeping, and recording	3, 3.1, and Section 12	Can require more in-depth monitoring
34 through 34.2	Air pollution prohibited	24 through 24.2	Must investigate and take corrective action within 24 hours—no prior time limit. Submit complaint records upon request instead of with the facility operating reports
34.3	Modification or replacement	20 through 20.2	References 18 AAC 50 and AS 46.14 instead of indicating what a notification requires

## LEGAL AND FACTUAL BASIS FOR THE PERMIT CONDITIONS

### Conditions 1 - 2

**Legal Basis:** [18 AAC 50.400 – 420]  
[18 AAC 50.350(c), 1/18/97]

The regulations require all permits to include due dates for the payment of fees and any method the Permittee may use to recompute assessable emissions.

**Factual Basis:** These conditions require the Permittee to pay fees in accordance with the department's billing regulations. The department's billing regulations set the due dates for payment of fees based on the billing date.

The default assessable emissions are set forth in the conditions. The conditions also set forth how a Permittee may recompute assessable emissions. . If Permittee does not wish to annually calculate assessable emissions, emissions fees may be paid based on “potential to emit.”

The potential to emit for sulfur dioxide is based upon a 0.5% fuel sulfur as allowed in the permit. Permittee has made no owner requested limits to keep sulfur content to its typical fuel analysis of less than this amount.

### Condition 3

**Legal Basis:** [18 AAC 50.055(a)(1), 1/18/97]  
[18 AAC 50.350(d)], 6/21/98]

Diesel engines are fuel-burning equipment. This regulation applies to operation of all fuel-burning equipment in Alaska.

**Factual basis:** The condition cites the state visible emission standard applicable to fuel-burning equipment. The Permittee shall not cause or allow the diesel engines to violate this standard.

The monitoring, recordkeeping, and reporting requirements are listed in Section 12 of the permit. The requirements for the visible emission and particulate matter standards are combined in this section.

There are two options for monitoring visible emissions. One option requires the Permittee to observe visible emissions in accordance with the state reference test method. The other option requires the Permittee to momentarily observe the exhaust for presence or absence of visible emissions. This latter option takes into account the difficulty and expense of getting certified readers to remote locations in Alaska.

Under the latter option, all sources are initially observed for the presence or absence of visible emissions in the exhaust for 30 operating days. Visible emissions are presumed to be absent if the exhaust exhibits less than 5 percent opacity. The department believes the initial thirty days is sufficient to capture all operating modes and to assure the monitoring determines if the engine complies with the visible emission standard. If visible emissions are absent during the 30 operating days, the monitoring frequency is relaxed to one observation for every 30 days of source operation. The department believes monthly checks are sufficient to monitor for the presence of increased visible emissions that may result from degradation of an engine.

If the Permittee observes smoke in the exhaust during the initial 30 operating days or during a monthly check, the Permittee must take action to reduce visible emissions from the source within 72 hours of the observation. After completing the action, the Permittee continues to observe the exhaust for the presence or absence of visible emissions for another 30 operating days. If smoke is observed during this 30-day period, the Permittee must observe visible emissions using the state reference test method within 14 days after the visible emissions are observed.

The recordkeeping requirements consist of keeping records of the results all visible emission observations and records of any actions taken to reduce visible emissions. The Permittee must report copies of the results of all observations done using the state reference test method with operating reports. The Permittee must report emissions in excess of the state visible emission standard.

### Condition 4

**Legal Basis:** [18 AAC 50.055(b)(1), 1/18/97]  
[18 AAC 50.350(d)], 6/21/98]

Diesel engines are fuel-burning equipment. This regulation applies to operation of all fuel-burning equipment in the State of Alaska.

**Factual basis:** The condition cites the state particulate-matter emission standard applicable to fuel-burning equipment. The Permittee shall not cause or allow diesel engines to violate this standard.

The monitoring, recordkeeping, and reporting requirements are listed in Section 12 of the permit. The requirements for the visible emission and particulate matter standards are combined in this section.

The requirement to test for particulate matter to determine compliance with the standard is triggered by the results of observations conducted in accordance with the state reference test method. The Permittee is required to conduct tests if the results of an observation show noncompliance with visible emission standard or the average opacity indicates noncompliance with the particulate matter standard.

The department is not requiring initial tests to show compliance with the particulate matter standards. Based on manufacturers' data, the department believes that most new diesel engines comply with the particulate matter standard<sup>1</sup>. Also, there are opacity-particulate correlations<sup>2</sup> that show emissions from diesel engines commonly used in Alaska will meet the state standard of 0.05 grains per dry standard cubic foot if the average opacity in the exhaust is less than 20 percent. The department believes this is sufficient justification to not require initial compliance testing since the Permittee certified compliance with the visible emission standard in the application. However, the department is requiring testing if the Permittee observes visible emissions greater than the state standard.

In a general operating permit for diesel engines, the department required source tests for particulate matter when the average opacity of a visible emission observation exceeded twelve percent. Since that time, the department has uncovered additional test data and literature that supports a statement that diesel engines will meet the 0.05 grain loading standard when the average opacity is less than twelve percent, provided that the exhaust outlet diameter (path length for opacity observations) exceeds 21 inches. Testing conducted at both an Alaskan power plant and an Hawaiian utility confirm that compliance with the 20 percent opacity standard will insure compliance with the 0.05 gr/dscf particulate standard, provided that the exhaust outlet is 21 inches or larger. This test data closely agrees with values obtained using the smoke density calculator at <http://www.dieselnet.com/calculator/index.html>. The calculator is based on the report, *Particulate Matter Measurements*, DieselNet Technology Guide, Revision 1997.12. Based on this new information, the department is requiring testing if the Permittee observes visible emissions greater than 12%, expressed as a six-minute average and the stack diameter if the source is less than 21 inches. The department is also requiring the Permittee to measure visible emissions during a source test and to calculate the average opacity during the test.

The Permittee must report copies of all source test reports and emissions in excess of the particulate matter standard.

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<sup>1</sup> See attached data

<sup>2</sup> See attached graph

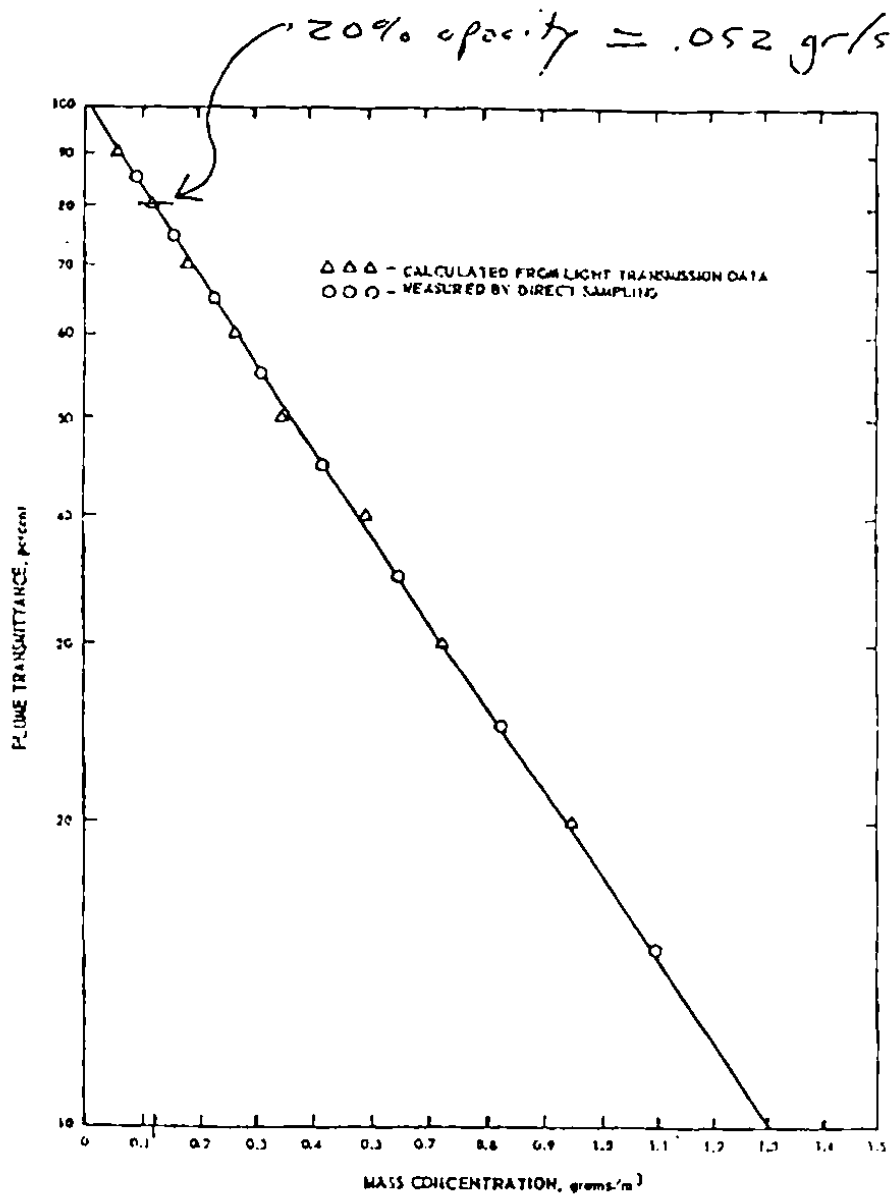


Figure 32. Mass concentration of black plume as calculated from transmittance and measured by direct sampling.

**OPTICAL PROPERTIES AND VISUAL EFFECTS**

Test	Capacity	Capacity	HP	desc	asfm	% moisture	Fahrenheit	%O2	gmKwh	gm/cm	psi/d
FO2.0.2% S	KW	not avail.	not avail.	not avail.	not avail.	not avail.	not avail.	not avail.	not avail.	not avail.	not avail.
FO2.0.2% S CAT	3412 DITTA	360	360	939	1969	5239 not avail.	890	1203 n/a	0.09 n/a	0.008 From vendor	
FO2.0.2% S CAT	3516	1135	1586	483	930	2161 not avail.	1203 n/a	0.06 n/a	0.008 From vendor	0.008 From vendor	
FO2.0.2% S CAT	3512	855	855	1205.7	3261	9189	817 n/a	0.24 n/a	0.24 n/a	0.021 From vendor	
FO 1&.2	CAT	1450	1200	n/a	2114	6003 not avail.	822 n/a	0.165 n/a	0.165 n/a	0.017 From vendor	
FO 1&.2	CAT	1450	1200	n/a	3941.3	11228.4	874.6	10.5	n/a	0.031 METHOD 5	
FO 1&.2	CAT	1450	1200	n/a	3927.5	11170.1	875.5	10.5	n/a	0.028 METHOD 5	
FO 1&.2	CAT	3516	1200	n/a	3869.8	10883.3	877.7	10.3	n/a	0.030 METHOD 5	
FO 1&.2	CAT	3518	1730	n/a	4644	13002 not avail.	817	15	0.15 n/a	0.012 From vendor	
FO2.0.2% S CAT	3606	2300	2300	3084	5990	16744 not avail.	811	15	0.29 n/a	0.023 From vendor	
FO2.0.2% S CAT	3608	2460	3299	6886	5990	19282 not avail.	795	15	0.24 n/a	0.018 From vendor	
FO2.0.2% S CAT	3608	3460	4640	8288	6288	26005 not avail.	817	15	0.15 n/a	0.012 From vendor	
FO2.0.2% S CAT	3812	3700	4962	10143	10143	28399 not avail.	838	15	0.28 n/a	0.021 From vendor	
FO2.0.2% S CAT	3812	4600	6189	11960	11960	33489 not avail.	811	15	0.39 n/a	0.029 From vendor	
FO2.0.2% S CAT	3618	4920	6398	13774	13774	38568 not avail.	795	15	0.24 n/a	0.01862 From vendor	
FO2.0.2% S CAT	3616	-600	800	800	1548	3232	549	13.2 n/a	n/a	0.00662 METHOD 5	
FO2	Alias Copc 12 cyclinder	-600	800	800	1522	3156	547	13.1 n/a	n/a	0.00815 METHOD 5	
FO 2	Alias Copc 12 cyclinder	-600	800	800	1534	3205	555	13.2 n/a	n/a	0.019 METHOD 5	
FO 2	Alias Copc 8 cyclinder	-375	500	500	1022	2025	497	13.2 n/a	n/a	0.020 METHOD 5	
FO 2	Alias Copc 8 cyclinder	-375	500	500	1062	2084	495	13.5 n/a	n/a	0.018 METHOD 5	
FO 2	Alias Copc B cyclinder	-375	500	500	1110	2159	488	11.0 n/a	n/a	0.025 METHOD 5	
FO 1&.2	Ruston	2200	1850	2500	6497.5	18612.0	760.4	11.1 n/a	n/a	0.022 METHOD 5	
FO 1&.2	Ruston	2200	1850	2500	6482.8	18383.5	744.4	11.0 n/a	n/a	0.022 METHOD 5	
FO 1&.2	Ruston	2200	1850	2500	6586.7	18572.5	747.0	11.0 n/a	n/a	0.021 METHOD 5	
FO2.0.2% S CAT	3116DITTA A	2400	201.15 not avail.	150 not avail.	not avail.	not avail.	not avail.	5	0.22	0.022 From vendor	
FO2.0.2% S CAT	3116DITTA A	2400	254.79 not avail.	190 not avail.	not avail.	not avail.	not avail.	5	0.23	0.038 From vendor	
FO2.0.2% S CAT	3116DITTA B	2400	288.2 not avail.	200 not avail.	not avail.	not avail.	not avail.	5	0.23	0.037 From vendor	
FO2.0.2% S CAT	3116DITTA B	2400	221.265 not avail.	165 not avail.	not avail.	not avail.	not avail.	5	0.22	0.028 From vendor	
FO2.0.2% S CAT	3116DITTA G	2300	288.2 not avail.	200 not avail.	not avail.	not avail.	not avail.	5	0.23	0.030 From vendor	
FO2.0.2% S CAT	3116DITTA G	2200	261.495 not avail.	195 not avail.	not avail.	not avail.	not avail.	5	0.16	0.028 From vendor	
FO2.0.2% S CAT	3116DITTA G	2100	248.085 not avail.	185 not avail.	not avail.	not avail.	not avail.	5	0.15	0.026 From vendor	
FO2.0.2% S CAT	3116DITTA G	2000	241.38 not avail.	180 not avail.	not avail.	not avail.	not avail.	5	0.32	0.057 From vendor	
FO2.0.2% S CAT	3116DITTA C	2500	241.38 not avail.	180 not avail.	not avail.	not avail.	not avail.	5	0.23	0.033 From vendor	
FO2.0.2% S CAT	3116DITTA C	2400	234.675 not avail.	175 not avail.	not avail.	not avail.	not avail.	5	0.26	0.038 From vendor	
FO2.0.2% S CAT	3116DITTA C	2200	214.56 not avail.	160 not avail.	not avail.	not avail.	not avail.	5	0.27	0.044 From vendor	
FO2.0.2% S CAT	3116DITTA C	2100	201.15 not avail.	150 not avail.	not avail.	not avail.	not avail.	5	0.29	0.052 From vendor	
FO2.0.2% S CAT	3116DITTA C	2000	194.445 not avail.	145 not avail.	not avail.	not avail.	not avail.	5	0.30	0.057 From vendor	
FO2.0.2% S CAT	3116DITTA C	1950	201.15 not avail.	150 not avail.	not avail.	not avail.	not avail.	5	0.23	0.014 From vendor	
FO2.0.2% S CAT	3116DITTA C	1800	241.58 not avail.	180 not avail.	not avail.	not avail.	not avail.	5	0.23	0.025 From vendor	
FO2.0.2% S CAT	3116DITTA C	2400	181.74 not avail.	140 not avail.	not avail.	not avail.	not avail.	5	0.22	0.031 From vendor	
FO2.0.2% S CAT	3116DITTA B	2400	201.15 not avail.	150 not avail.	not avail.	not avail.	not avail.	5	0.22	0.034 From vendor	
FO2.0.2% S CAT	3116DITTA B	2400	207.655 not avail.	155 not avail.	not avail.	not avail.	not avail.	5	0.24	0.030 From vendor	
FO2.0.2% S CAT	3116DITTA C	2400	201.15 not avail.	150 not avail.	not avail.	not avail.	not avail.	5	0.24	0.037 From vendor	
FO2.0.2% S CAT	3116DITTA C	2300	194.445 not avail.	145 not avail.	not avail.	not avail.	not avail.	5	0.28	0.037 From vendor	
FO2.0.2% S CAT	3116DITTA C	2200	181.035 not avail.	135 not avail.	not avail.	not avail.	not avail.	5	0.22	0.033 From vendor	
FO2.0.2% S CAT	3116DITTA C	2100	181.035 not avail.	135 not avail.	not avail.	not avail.	not avail.	5	0.22	0.030 From vendor	
FO2.0.2% S CAT	3116DITTA C	2000	174.23 not avail.	130 not avail.	not avail.	not avail.	not avail.	5	0.22	0.030 From vendor	

MMB Continuous  
C Inherent

**Condition 5.**

**Legal Basis:** [18 AAC 50.055(c), 1/18/97]  
[18 AAC 50.350(d)], 6/21/98]

The condition applies to diesel engines because the engines are fuel-burning equipment.

**Factual basis:** The condition re-iterates a sulfur emission standard applicable to fuel-burning equipment. The Permittee may not cause or allow their equipment to violate this standard.

Sulfur dioxide comes from the sulfur in the liquid, hydrocarbon fuel (e.g. diesel or No. 2 fuel oil). Attachment 1 of this document provides the proof of the stoichiometric, mass-balance equations to calculate sulfur-dioxide concentration of the exhaust gas from the combustion of fuel with ambient air. According to these equations, fuel containing no more than 0.5% sulfur by weight will always comply with the emission standard. For fuels with a sulfur content higher than 0.5%, the condition requires the Permittee to use Section 14 to calculate the sulfur-dioxide concentration using the equations to show that the standard is not exceeded.

Either fuel sulfur testing or verification of ASTM fuel grade will verify compliance.

**Conditions 6- 7**

**Legal Basis:** [18 AAC 50.040(a)(2)(M), 1/18/97]  
[18 AAC 50.350(i), 1/18/97]  
[Federal Citation: 40 C.F.R. §60.116b(a) & (b), 7/1/97]

**Factual basis:** Condition 6 is from a federal requirement for storage tanks, which were adopted by reference in 18 AAC 50. Fuels with a maximum vapor pressure less than 15.0 kPa stored in Source ID 7 are subject to the paragraph 116b(a) and (b) size and volume recordkeeping provisions of 40 C.F.R. §60, Subpart Kb. Source IDs 1 – 6 were designed to burn diesel fuel, which has a maximum vapor pressure no higher than about 0.8 kPa. Condition 7 reminds the Permittee and the department that if more volatile fuels such as gasoline or airplane fuel are stored in Source ID 7, then the Permittee should notify the department so that the permit can be amended to include the requirements of Subpart Kb. This permit condition was carried over from the previous construction permit.

**Condition 8**

**Legal Basis:** [18 AAC 50.040(a)(2)(M), 1/18/97]  
[Federal Citation 40 C.F.R. 60.11(d)]

**Factual Basis:** Condition 8 is a federal requirement applicable to Source ID 7 because it is subject to NSPS requirements. Source ID 7 is subject to the federally enforceable requirement to be operated consistent with good air pollution control practices.

**Conditions 9 - 10 above**

**Legal Basis:** [18 AAC 50.030, 1/18/97]  
[18 AAC 50.055(b)(1), 1/18/97]  
[18 AAC 50.110, 1/18/97]

**Factual basis:** These conditions set out the requirements for burning used oil. These requirements were contained in several pre-January 18, 1997 permits and mirror those found in the Alaska Air Quality Control Plan.

Because of various metal contaminants, used oil may have higher particulate emissions than virgin fuel oil. Staff experience indicates that burning used oil by itself may violate 18 AAC 50.055(b).

The monitoring set out for compliance with the particulate matter standard in condition 4 is not rigorous enough to detect potential violations of the standard due to burning used oil. Rather than complicate the standard monitoring, this permit requires the permittee to blend or co-fire the used oil with at least an equal quantity of virgin fuel oil. Blending or co-firing the used oil with virgin fuel oil has been used to ensure compliance at other facilities, and the department believes such blending, along with the normal particulate matter monitoring, will ensure compliance with the particulate matter standard. As an alternative, the permittee can demonstrate compliance using a source test.

The various contaminants in used oil can injure human health or welfare when burned and emitted by a source. Without a site-specific risk assessment, the department can not determine the amount of contaminants that can be emitted safely. However, the USEPA has established specifications for used oil, and allows essentially unrestricted burning of used oil meeting these specifications. The department is confident that used oil meeting these specifications will comply with 18 AAC 50.110. The permit requires used oil to either meet or to be blended to meet the EPA specifications, unless the department verifies that burning the oil will meet 18 AAC 50.110.

## Condition 11

**Legal Basis:** [18 AAC 50.350(e)(3), 1/18/97]  
[18 AAC 50.350(g) - (i), 1/18/97]  
[Permit No. 9933-AC012, 11/17/99]

**Factual basis:** This is a limit applicable to all of the diesel engines to avoid a PSD review for the facility by not exceeding the 250 TPY trigger in 18 AAC 50.310(d) by being classified as a PSD major facility under 18 AAC 50.300(c)(1). The Permittee may not cause or allow their equipment to violate this limit. Condition 11.1, which is based on vendor and AP-42 emission factors, ensures compliance with the emission limit. The equation is the same as condition 25.1.1 (i.e. the NO<sub>x</sub> limit) in Permit No. 9933-AC012, but the limit is now higher to match the owner-requested NO<sub>x</sub> limit of 249 TPY. The NO<sub>x</sub> emission limit in Permit No. 9933-AC012 was established at 235 TPY to preclude the need for source testing verification of the emission factors. In this permit, Condition 11.4 requires source testing to get an accurate NO<sub>x</sub> emission factors if estimated emissions exceed 235 TPY (13.86 GWh).

Monitoring requires all pertinent parameters to be recorded monthly, and compliance is determined by a twelve month rolling total. This ensures compliance with the annual emission limit in a manner that is practicably enforceable per EPA guidance.

## Conditions 12 - 14

**Legal Basis:** [18 AAC 50.055(a)(1), 1/18/97]  
[18 AAC 50.055(b)(1), 1/18/97]  
[18 AAC 50.055(c), 1/18/97]

[18 AAC 50.050(a)(2), 1/18/97]

[18 AAC 50.350(m)(3), 9/4/98]

**Factual basis:** These are general emission standards which apply to all industrial processes fuel-burning equipment, and incinerators regardless of size. The conditions re-iterate the general standards and require compliance for insignificant sources. The Permittee may not cause or allow their equipment to violate these standards. Insignificant sources are not listed in the permit unless specific monitoring, recordkeeping and reporting are necessary to ensure compliance.

### Condition 15

**Legal Basis:** [18 AAC 50.350(m)(3), 9/4/98]

**Factual Basis:** The regulations require a Permittee to certify that their insignificant sources comply with applicable requirements. The condition restates the regulatory requirement.

### Condition 16

**Legal Basis:** [18 AAC 50.040(b)(3) & 18 AAC 50.350(d)(1), 1/18/97]

[Federal Citation: 40 C.F.R. §61, Subpart M, 12/19/96]

If the Permittee engages in asbestos demolition and renovation, then these requirements may apply.

**Factual Basis:** The condition cites and requires compliance with the regulations that will apply if the Permittee engages in asbestos demolition or renovation. Because these regulation include adequate monitoring and reporting requirements and because the Permittee is not currently engaged in such activity, simply citing the regulatory requirements is sufficient.

**Condition 17**

**Legal Basis:** [18 AAC 50.040(d) & 18 AAC 50.350(d)(1), 1/18/97]

[Federal Citation: 40 C.F.R. §82, Subpart F, 7/1/97]

**Factual Basis:** The condition cites and requires compliance with the regulations that will apply if the Permittee uses certain refrigerants. Because these regulation include adequate monitoring and reporting requirements and because the Permittee is not currently engaged in such activity, simply citing the regulatory requirements is sufficient

**Condition 18**

**Legal Basis:** [18 AAC 50.030 & 18 AAC 50.350(f)(2) and (3), 1/18/97]

This condition is necessary to implement a requirement in 18 AAC 50 and Alaska's federally approved SIP.

**Factual Basis:** This condition restates a requirement in Alaska's federally approved SIP.

**Condition 19**

**Legal Basis:** [18 AAC 50.045(a) & 18 AAC 50.350(f)(3), 1/18/97]

Applies to the Permittee because the Permittee must comply with emission standards in 18 AAC 50.

**Factual Basis:** The requirement prohibits diluting emissions as a means of compliance. In practical terms, dilution only affects compliance when the emissions are being measured. Therefore, the monitoring is limited to immediately before source testing and once a year for exhaust that is continuously monitored.

Dilution can occur by design or by leaks in the exhaust ductwork. Intentional dilution is not expected to be a problem, as it would increase operating costs by increasing induced draft fan power requirements. Careful review of source test plans and operating conditions will prevent intentional dilution. Therefore, only leaks need to be monitored under this condition.

The monitoring adequately prevents dilution by requiring leaks to be repaired before compliance with the emission standards is measured.

**Condition 20**

**Legal Basis:** [18 AAC 50.045(c) & 18 AAC 50.350(f)(3), 1/18/97]

Applies to the Permittee because they will operate a source in Alaska.

**Factual Basis:** This requirement prohibits violation of the air quality standards. Alaska's air quality control plan uses construction permit to ensure that new or increased pollution will not violate these standards. Therefore, as long as the Permittee obtains and complies with the required construction permits, the new or increased pollution will not violate the standards.

Monitoring simply requires the Permittee to obtain and comply with all required permits.

**Condition 21**

**Legal Basis:** [18 AAC 50.040(e), 18 AAC 50.045(d), & 18 AAC 50.350(d)(1), 1/18/97]

Applies to the Permittee because the Permittee will engage in industrial activity at the facility.

**Factual Basis:** The condition restates the regulatory prohibition on fugitive dust. This prohibition calls for reasonable precautions to be taken to prevent particulate matter from being emitted into the ambient air while engaged in industrial activities.

The Permittee must keep records describing all precautions taken to prevent particulate matter from becoming airborne due to any of the activities described in this condition. If the precautions are not listed in the State Air Quality Control Plan, then the Permittee must also record a statement describing why the Permittee believes the precaution is reasonable. This monitoring ensures that the Permittee takes the reasonable precautions and has a reason for deciding if the precaution is reasonable.

The Permittee must perform visual surveys at least once each month, and take corrective action if particulate matter is observed leaving the property. This is intended to identify whether the reasonable precautions taken are working, and to correct the problem if the precautions are not working.

## Condition 22

**Legal Basis:** [18 AAC 50.055(g) and 18 AAC 50.310(m), 1/18/97]

Applies to the facility because the facility contains a stack or source modified after November 1, 1982.

**Factual Basis:** The condition restates the prohibition on stack injection (i.e. disposing of material by injecting it into a stack). No specific monitoring for this condition is practical. Compliance is ensured by inspections, because the source or stack would need to be modified to accommodate stack injection.

## Condition 23

**Legal Basis:** [18 AAC 50.040(e), 18 AAC 50.065(b), & 18 AAC 50.350(d)(1), 1/18/97]

These conditions apply if the Permittee conducts open burning at the facility.

**Factual Basis:** The condition requires the Permittee to comply with the regulatory requirements when conducting open burning at the facility.

Not specific monitoring is required for this condition. The permit does require the Permittee to keep "sufficient records" to demonstrate compliance with the standards for conducting open burning, but does not specify what these records should contain.

More extensive monitoring and recordkeeping is not warranted because the Permittee does not conduct open burning as a routine part of their business. Also, most of the requirements are prohibitions, which are not easily monitored. Additional monitoring is achieved through condition 24, which requires a record of complaints. Therefore, the department does not believe that additional monitoring is warranted.

## Condition 24

**Legal Basis:** [18 AAC 50.110, 5/26/72]

[18 AAC 50.040(e), & 18 AAC 50.350(d)(1), 1/18/97]

Applies to the facility because the facility will have emissions.

**Factual Basis:** The condition restates the general prohibition on injurious air emissions, which applies to any emissions from the facility. While the other permit conditions and emissions limitation should ensure compliance with this condition, unforeseen emission impacts can violate this standard.

These violations would go undetected except for complaints from affected persons. Therefore, to monitor compliance, the Permittee must monitor and respond to complaints.

The Permittee is to report any complaints and injurious emissions. The plant does not handle any large quantities of hazardous air pollutants. The Permittee must keep records of the date, time, and nature of all complaints received and summary of the investigation and corrective actions undertaken for these complaints and to submit copies of these records upon request of the department.

### Condition 25

**Legal Basis:** [18 AAC 50.335(a), 1/18/97]

Applies if the Permittee intends to renew the permit.

**Factual Basis:** The condition restates the regulatory deadlines, citing the specific dates applicable to the facility. Submittal of the renewal application is sufficient monitoring, recordkeeping and reporting.

### Condition 26

**Legal Basis:** [18 AAC 50.365(a), 1/18/97]

[18 AAC 50.365(b)(1) – (2), 1/18/97]

[Permit No. 9933-AC012, 11/17/99]

**Factual Basis:** The Permittee requested that this condition be included to describe to type of equipment changes that could be made without requiring a significant permit revision. It is copied word-for-word out of the regulations and is a restatement of Condition 24 in Permit No.9533-AA001.

### Condition 27

**Legal Basis:** [18 AAC 50.345(a)(10), 1/18/97]

[18 AAC 50.220a), 1/18/97]

Standard condition to be included in all permits.

**Factual Basis:** Condition requires the Permittee to conduct source tests as requested by the department, therefore no monitoring is needed. Conducting the requested source test is its own monitoring.

### Conditions 28 - 30

**Legal Basis:** [18 AAC 50.220(b) & (c), 1/18/97]

[18 AAC 50.350(g), 1/18/97]

Applies when the Permittee is required to conduct a source test.

**Factual Basis:** These conditions restate regulatory requirements for source testing. As such, they supplement the specific monitoring requirements stated elsewhere in this permit. The tests reports required by later conditions adequately monitor compliance with these conditions, therefore no specific monitoring, reporting, or recordkeeping is needed.

### Conditions 31 - 33

**Legal Basis:** [18 AAC 50.345(a)(10), 1/18/97]

[18 AAC 50.350(b)(3), 1/18/97]

[18 AAC 50.350(g), 1/18/97]

Applies when the Permittee is required to conduct a source test.

**Factual Basis:** Standard condition 18 AAC 50.345(a)(10) is incorporated through these three conditions. Because this standard condition supplements specific monitoring requirements stated elsewhere in this permit, no monitoring, reporting, or recordkeeping is required. The source test itself is adequate to monitor compliance with this condition.

### Condition 34

**Legal Basis:** [18 AAC 50.220(f), 1/18/97]

[18 AAC 50.350(g), 1/18/97]

Applies when the Permittee tests for compliance with the particulate matter standard.

**Factual Basis:** The condition incorporates a regulatory requirement for particulate matter source tests. The Permittee must use a certain equation to calculate the particulate-matter emission concentration from the source test results. Because this condition supplements specific monitoring requirements stated elsewhere in this permit, no monitoring, reporting, or recordkeeping is required.

The statement and the equation that requires the source tests to account for emissions caused by soot blowing, grate cleaning, or other routine maintenance activities were deleted from this condition in Administrative Amendment 1. The department believes routine maintenance activities are not done while the diesel engines are operating.

**Condition 35**

**Legal Basis:** [18 AAC 50.205, 1/18/97]  
[18 AAC 50.345(a)(9), 1/18/97]  
[18 AAC 50.350(b)(3) & 18 AAC 50.350(i) 1/18/97]

Applies because the permit requires the Permittee to submit reports, and because the condition is a standard condition.

**Factual Basis:** This condition restates the regulatory requirement that all reports must be certified. To ease the certification burden, the condition allows the excess emission reports to be certified with the semi-annual operating report, although the excess emission reports must be submitted more frequently. This condition supplements the reporting requirements of the permit and no monitoring, recordkeeping or reporting for this condition is needed.

**Condition 36**

**Legal Basis:** [18 AAC 50.350(i), 1/18/97]

Applies because the Permittee is required to send reports to the department.

**Factual Basis:** This condition merely specifies where submittals to the department should be sent. Receipt of the submittal at the correct department office is sufficient monitoring for this condition. This condition supplements the reporting requirements of the permit and no monitoring, recordkeeping or reporting for this condition is needed.

**Condition 37**

**Legal Basis:** [18 AAC 50.200, 1/18/97]  
[18 AAC 50.345(a)(8), 1/18/97]  
[18 AAC 50.350(b)(3) & 18 AAC 50.350(g – i), 1/18/97]

Applies to all Permittee s, and incorporates a standard condition

**Factual Basis:** Incorporates a standard condition in regulation, which tells the Permittee to submit information requested by the department. Receipt of the requested information is adequate monitoring.

**Condition 38**

**Legal Basis:** [18 AAC 50.350(h), 1/18/97]

Applies to records required by a permit.

**Factual Basis:** The condition restates the regulatory requirements for recordkeeping, and supplements the recordkeeping defined for specific conditions in the permit. The records being kept provide adequate evidence of compliance with this requirement, therefore, no additional monitoring, recordkeeping or reporting is required.

**Condition 39**

**Legal Basis:** [18 AAC 50.235(a)(2), 18 AAC 50.240(c) & 18 AAC 50.350(i), 1/18/97]

Applies when the emissions or operations deviate from the requirements of the permit.

**Factual Basis:** This condition satisfies two regulatory requirements related to excess emissions—the technology-based emission standard regulation and the excess emission regulation. Although there are some differences between the regulations, the condition satisfies the requirements of each regulation.

The condition does not mandate the use of the department's reporting form, but it does specify that the information listed on the form must be included in the report.

The reports themselves and the other monitoring records required under this permit provide an adequate monitoring of whether the Permittee has complied with the condition. Therefore, no additional monitoring, recordkeeping or reporting is required.

#### Condition 40

**Legal Basis:** [18 AAC 50.350(d)(4), 1/18/97]  
[18 AAC 50.350(i), 1/18/97]  
Applies to all permits.

**Factual Basis:** The condition restates the requirements for reports listed in regulation. The condition supplements the specific reporting requirements elsewhere in the permit and does not need any monitoring, recordkeeping or reporting. The reports themselves are adequate monitoring for compliance with this condition.

#### Condition 41

**Legal Basis:** [18 AAC 50.350(j), 1/18/97]  
Applies to all Permittees.

**Factual Basis:** This condition specifies the periodic compliance certification requirements, and specifies a due date for the annual compliance certification. Because this requirement is a report, no monitoring, recordkeeping or reporting is needed.

#### Condition 42

**Legal Basis:** [18 AAC 50.350(f)(3), 1/18/97]  
[Federal Citation: 40 C.F.R. §52.12(c), 7/1/99]  
Applies to all federally approved permits.

**Factual Basis:** This condition clarifies that any credible evidence can be used to verify compliance with the permit, not just the monitoring required under the permit. This condition is necessary to ensure compliance with the Clean Air Act. No monitoring, recordkeeping, or reporting is necessary for this condition.

#### Conditions 43 - 49

**Legal Basis:** [18 AAC 50.345(a), 1/18/97]  
Applies to all operating permits.

**Factual Basis:** These are standard conditions required for all operating permits.

#### Condition 50 - 59

**Legal Basis:** [18 AAC 50.350(g)-(i), 1/18/97]

Applies because these conditions detail the monitoring, recordkeeping, and reporting required in conditions 3 and 4.

**Factual Basis:** Each permit term and condition must include monitoring, recordkeeping and reporting for the Permittee to show verifiable compliance with each permit term and condition.

## ATTACHMENT 1

**MEMORANDUM****State of Alaska**  
**Department of Environmental Conservation**  
**Division of Air and Water Quality - Air Quality Maintenance**

TO: John Stone, Chief

DATE: March 24, 1998

FILE: 74.05.02

FROM: John Kuterbach  
Air Quality MaintenanceSUBJECT: Maximum SO<sub>2</sub> Concentration  
from the combustion of #2  
diesel fuel

EPA in their Title V permit reviews is requiring the department to demonstrate that limiting fuel sulfur to 0.5% will ensure compliance with our 500 ppmv SO<sub>2</sub> limit. This memorandum sets forth engineering calculations which demonstrate that combustion of #2 diesel fuel containing up to 0.5% sulfur will always comply with the 500 ppmv SO<sub>2</sub> limit regardless of the engine involved. I recommend that we reference these calculations in future "statements of basis" that we send to EPA with our draft operating permits.

**Summary**

This engineering calculation examined the stoichiometric combustion of #2 diesel fuel and calculated the maximum sulfur dioxide content of the flue gases. Typically, combustion of #2 diesel fuel can produce up to 338 ppmv SO<sub>2</sub> in the flue gas. Although this figure varies proportionally with the carbon content of the diesel fuel, the figure will never exceed the 500ppm limit.

I conclude that combustion of #2 diesel fuel with air will always comply with the 500ppmv emission limit. The ASTM specification for #2 diesel fuel limits sulfur to 0.5% or less.

**Assumptions**

All constituents of the fuel are burned proportionally

Any excess air typical of combustion would tend to dilute the SO<sub>2</sub> concentration in the flue gas, therefore only theoretical air is considered.

#2 diesel fuel is composed of Carbon, Hydrogen, Sulfur, and negligible amounts of Water and ash.

Ignore the water because the standard is a dry standard and the water will drop out of any calculations.

Ignore the ash as negligible unless the study predicts an SO<sub>2</sub> concentration greater than 450 ppm.

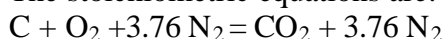
Typical #2 diesel fuel is composed of 87% Carbon, 12.5% Hydrogen, and 0.5% Sulfur

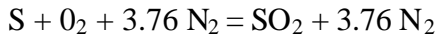
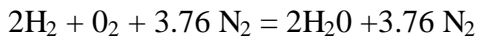
Calculations.

Using normal air for combustion (79% N<sub>2</sub> and 21% O<sub>2</sub>):

For each lb-mole of Oxygen in Air, there is 3.76 lb-mole Nitrogen (1 lb-mole O<sub>2</sub>) = (0.79/0.21) = 3.76 lb-mole N<sub>2</sub>

The stoichiometric equations are:





To calculate the dry exhaust gases ( $\text{CO}_2$ ,  $\text{N}_2$ ,  $\text{SO}_2$ ) the following equations are used:

$$\text{moles CO}_2 = (\text{lb C}) \times (1 \text{ lb-mole C}/12.01 \text{ lb C}) \times (1 \text{ lb-mole CO}_2/1 \text{ lb mole C})$$

$$\begin{aligned} \text{moles N}_2 = & (\text{lb C}) \times (1 \text{ lb-mole C}/12.01 \text{ lb C}) \times (3.76 \text{ lb-mole N}_2/\text{lb-mole C}) \\ & + (\text{lb H}_2) \times (1 \text{ lb-mole H}_2/2.016 \text{ lb H}_2) \times (3.76 \text{ lb-mole N}_2/2 \text{ lb-mole H}_2) \\ & + (\text{lb S}) \times (1 \text{ lb-mole S}/32.06 \text{ lb S}) \times (3.76 \text{ lb-mole N}_2/\text{lb-mole S}) \end{aligned}$$

$$\text{moles SO}_2 = + (\text{lb S}) \times (1 \text{ lb-mole S}/32.06 \text{ lb S}) \times (\text{lb-mole SO}_2/1 \text{ lb-mole S})$$

Condensing these equations leaves:

$$\text{moles CO}_2 = \text{lb C}/12.01$$

$$\text{moles N}_2 = 3.76 \times [(\text{lb C}/12.01) + (\text{lb H}_2/4.032) + (\text{lb S}/32.06)]$$

$$\text{moles SO}_2 = \text{lb S}/32.06$$

Then, by Avogadro's Law and the definition of mole:

$$\text{ppmv SO}_2 = 1,000,000 \times [\text{moles SO}_2/(\text{moles CO}_2 + \text{moles N}_2 + \text{moles SO}_2)]$$

## Results

Using 100 pounds of fuel as a basis, we examined the following three cases:

Case	Pounds in Fuel		
	Carbon	Hydrogen	Sulfur
1	87	12.5	0.5
2	96	3.5	0.5
3	78	21.5	0.5

Case 1 is the normal case, Case 2 increases carbon by 10 percent, and Case 3 decreases carbon by 10 percent.

	Case 1	Case 2	Case 3
moles $\text{CO}_2$	7.24	7.99	6.49
moles $\text{N}_2$	38.94	33.36	44.51
moles $\text{SO}_2$	0.0156	0.0156	0.0156
Total Dry Moles	46.196	41.366	51.016
ppmv $\text{SO}_2$	338	377	306

## Conclusion

The above calculations show that #2 diesel fuel combusted with air will always comply with the 500 ppmv  $\text{SO}_2$  limit. The calculations use the conservative assumptions of complete combustion and no excess air. The real-world includes partial combustion and excess air, both of which would tend to dilute the  $\text{SO}_2$  concentration in the exhaust effluent.

The equations above can be used as an initial screening for other petroleum fuels even with a higher sulfur content or significant ash.

If you agree this memorandum has value, please share it with the rest of the AQM staff.