

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR QUALITY CONTROL MINOR PERMIT

Minor Permit: AQ0215MSS05

Preliminary - April 10, 2020

Rescinds Minor Permit: AQ0215MSS04

Revises Minor Permit: AQ0215MSS03

The Alaska Department of Environmental Conservation (Department), under the authority of AS 46.14 and 18 AAC 50, issues Air Quality Control Minor Permit AQ0215MSS05 to the Permittee listed below.

Permittee: City of Unalaska, Department of Public Utilities
P.O. Box 610
Unalaska, AK 99685

Stationary Source: Dutch Harbor Power Plant

Project: Re-authorize operation of EU ID 16 and restart EU IDs 7 and 8.

Location: UTM Coordinates Zone 3, Northing 5972.60 km; Easting 399.06 km

Permit Contact: Dan Winters, Director of Public Utilities, 907-581-1831

This project is classified under 18 AAC 50.508(6) for revising or rescinding the terms and conditions of a Title I permit, 18 AAC 50.508(5) for establishing owner requested limits, and 18 AAC 50.502(c)(2)(B) for the installation of a new emission unit with a rated capacity exceeding 10 million British thermal units per hour in a sulfur dioxide special protection area.

This permit satisfies the obligation of the Permittee to obtain a minor permit under 18 AAC 50. As required by AS 46.14.120(c), the Permittee shall comply with the terms and conditions of this permit.

James R. Plosay, Manager
Air Permits Program

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Section 1 Emissions Unit Inventory

Emissions Unit Authorization. The Permittee is authorized to install and operate the emissions units listed in Table 1 in accordance with the minor permit application and the terms and conditions of this permit. Unless noted elsewhere in this permit, the information in Table 1 is for identification purposes only. The specific EU descriptions do not restrict the Permittee from replacing an EU identified in this section.

Table 1 – Emissions Unit Inventory

EU ID	EU Description	Make/Model	Rating	Installation Date
7	Genset #8	Caterpillar 3516	1,180 kWe	1989
8	Genset #9	Caterpillar 3512B	1,230 kWe	1994
13	Genset #10	Wärtsilä 12V32C	5,211 kWe	2010
14	Genset #11	Wärtsilä 12V32C	5,211 kWe	2010
15	Genset #13	Caterpillar C280-16 Generator (900 rpm)	4,416 kWe	2011
16	Genset #12	Caterpillar C280-16 Generator (900 rpm)	4,416 kWe	2015
17	Genset #15	Caterpillar C-9 DITA	250 kWe	2010

Notes:

All EUs were authorized under previous Title I permits.

1. The Permittee shall comply with all applicable provisions of AS 46.14 and 18 AAC 50 when installing a replacement EU, including any applicable minor or construction permit requirements.
2. **Verification of Equipment Specifications and Maintenance of Equipment.** The Permittee shall install and maintain EU ID 16 listed in Table 1 according to the manufacturer's or operator's maintenance procedures. Keep a copy of the manufacturer's or operator's maintenance procedure onsite and make records available to the Department personnel upon request. The records may be kept in electronic format.

Section 2 Fee Requirements

3. Conditions 3 and 4 of Minor Permit AQ0215MSS03, dated November 28, 2012 are rescinded.
4. **Assessable Emissions.** The Permittee shall pay to the Department annual emission fees based on the stationary source's assessable emissions as determined by the Department under 18 AAC 50.410. The assessable emission fee rate is set out in 18 AAC 50.410. The Department will assess fees per ton of each air pollutant that the stationary source emits or has the potential to emit in quantities 10 tons per year or greater. The quantity for which fees will be assessed is the lesser of:
 - 4.1 the stationary source's assessable potential to emit of 1,475 tpy, or
 - 4.2 the stationary source's projected annual rate of emissions that will occur from July 1 to the following June 30, based upon credible evidence of actual annual emissions emitted during the most recent calendar year or another 12 month period approved in writing by the Department, when demonstrated by the most representative of one or more of the following methods:
 - 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;
 - d. other methods and calculations approved by the Department, including appropriate vendor-provided emissions factors when sufficient documentation is provided.
5. **Assessable Emission Estimates.** Emission fees will be assessed as follows:
 - 5.1 No later than March 31 of each year, the Permittee may submit an estimate of the stationary source's assessable emissions to ADEC, Air Permits Program, ATTN: Assessable Emissions Estimate, PO Box 111800, Juneau, AK 99811-1800; the submittal must include all of the assumptions and calculations used to estimate the assessable emissions in sufficient detail so the Department can verify the estimates; or
 - 5.2 If no estimate is submitted on or before March 31 of each year, emission fees for the next fiscal year will be based on the potential to emit set out in Condition 4.1.

Section 3 Ambient Air Quality Protection Requirements

- 6.** The Permittee shall protect the 1-hour, 3-hour, 24-hour and annual SO₂ AAAQS by complying with the following:
 - 6.1 Construct and maintain EU ID 16 with the minimum stack height of 25.4 meters above grade.
 - 6.2 Construct and maintain EU ID 16 with an uncapped vertical release. This condition does not preclude the use of flapper valve rain covers, or other similar designs that do not hinder the vertical momentum of the exhaust plume.
 - 6.3 Burn diesel fuel with a sulfur content of no greater than 0.01 percent by weight (wt%) in EU ID 16.

Section 4 Owner Requested Limits to Avoid PSD Review

7. Condition 22.3 of Minor Permit AQ0215MSS03, dated November 28, 2012 is rescinded.
8. The Permittee shall calculate and report actual VOC and SO₂ emissions as follows:
 - 8.1 Maintain a dedicated fuel meter on each of EU IDs 7, 8, and 13 through 15.
 - a. Monitor and record the monthly fuel usage for each of EU IDs 7, 8, and 13 through 15.
 - 8.2 Before the end of each calendar month, calculate and record the combined VOC emissions from EU IDs 7, 8, and 13 through 15 for the previous month, using Equation 1 and fuel use records from Condition 8.1a, Equation 2 and power production records from Condition 10.1a, and VOC emission factors in Table 2 or more recent emission factors from a Department accepted source test.

Equation 1

$$VOC_{EU} = \frac{Fuel_{EU} * EF_{EU} * 0.139}{2000}$$

Where: VOC_{EU} = monthly VOC emissions for an individual EU, in tons
 $Fuel_{EU}$ = fuel combusted in a calendar month for an individual EU, in gallons
 EF_{EU} = VOC emission factor for an individual EU, in lb/MMBtu
0.139 = assumed energy content of liquid fuel in MMBtu/gallon
2000 = pounds per ton conversion factor

Equation 2

$$VOC_{EU} = \frac{kWhr_{EU} * EF_{EU}}{453.6 * 2000}$$

Where: VOC_{EU} = monthly VOC emissions for an individual EU, in tons
 $kWhr_{EU}$ = monthly energy produced for an individual EU, in kilowatt hours
 EF_{EU} = VOC emission factor for an individual EU, in g/kW-hr
453.6 = grams per pound conversion factor

Table 2: VOC Emission Factors

EU ID	Emission Factor
7	0.082 lb/MMBtu
8	0.082 lb/MMBtu
13	0.082 lb/MMBtu
14	0.082 lb/MMBtu
15	0.64 g/kW-hr

- 8.3 Calculate the 12-month rolling VOC emissions by adding the previous 11 eleven months.
- 8.4 Before the end of each calendar month, calculate and record the combined SO₂ emissions from EU IDs 7, 8, and 13 through 15 for the previous month, using the mass balance calculation in Equation 3.

Equation 3

$$SO_2 = \frac{M_{fuel} * 0.0001 * 7 * 2}{2000}$$

Where: *SO₂* = monthly SO₂ emissions for EU IDs 7, 8, and 13–15 combined, in tons
M_{fuel} = monthly fuel usage for EU IDs 7, 8, & 13–15 combined, in gallons
0.0001 = maximum allowable sulfur content for EU IDs 7, 8, & 13–15, in lb S/lb fuel
7 = assumed density of liquid fuel in pound per gallon
2 = moles of SO₂ produced per mole of sulfur in fuel

- 8.5 Calculate the 12-month rolling SO₂ emissions by adding the previous 11 months.
 - 8.6 Include copies of the records required under Conditions 8.2 through 8.5 in the operating report described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18AAC 50.
 - 8.7 Report in accordance with the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC 50 if the combined VOC emissions calculated under Condition 8.3 exceed 51.2 tpy or if the combined SO₂ emissions calculated under Condition 8.5 exceed 46.8 tpy.
9. Condition 23 of Minor Permit AQ0215MSS03, dated November 28, 2012 is rescinded.
10. **ORL to Avoid PSD Review for PM₁₀.** The Permittee shall limit PM₁₀ emissions from EU IDs 7, 8, 13, 14, 15, and 17 to no more than 22.3 tons per year and shall calculate actual PM₁₀ emissions as follows:
- 10.1 Maintain a dedicated kilowatt meter with an accuracy of plus or minus two percent on EU IDs 7, 8, 13 through 15, and 17.
 - a. Monitor and record the monthly kilowatts produced by EU IDs 7, 8, 13 through 15, and 17.
 - 10.2 Before the end of each calendar month calculate and record the combined PM₁₀ emissions from EU IDs 7, 8, 13, 14, 15, and 17 for the previous month using Equation 4 and fuel use records from Condition 8.1a, Equation 5 and power production records from Condition 10.1a, and PM₁₀ emission factors in Table 3 or more recent emission factors from a Department accepted source test.

Equation 4

$$PM_{10} = \frac{Fuel_{EU} * EF_{EU} * 0.139}{2000}$$

Where: PM_{10} = monthly PM_{10} emissions for an individual EU, in tons
 $Fuel_{EU}$ = fuel combusted in a calendar month for an individual EU, in gallons
 EF_{EU} = PM_{10} emission factor for an individual EU, in lb/MMBtu
0.139 = assumed energy content of liquid fuel in MMBtu/gallon

Equation 5

$$PM_{10} = \frac{kWhr_{EU} * EF_{EU}}{453.6 * 2000}$$

Where: PM_{10} = monthly PM_{10} emissions for an individual EU, in tons
 $kWhr_{EU}$ = monthly energy produced for an individual EU, in kilowatt hours
 EF_{EU} = PM_{10} emission factor for an individual EU, in g/kW-hr
453.6 = grams per pound conversion factor

Table 3: PM_{10} Emission Factors

EU ID	Emission Factor
7	0.573 lb/MMBtu
8	0.573 lb/MMBtu
13	0.2 g/kW-hr
14	0.2 g/kW-hr
15	0.394 g/kW-hr
17	0.2 g/kW-hr

- 10.3 Calculate the 12-month rolling PM_{10} emissions by adding the previous 11 months.
- 10.4 Include copies of the records required under Conditions 10.2 and 10.3 in the operating report described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18AAC 50.
- 10.5 Report in accordance with the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC 50 if the combined PM_{10} emissions calculated under Condition 10.3 exceed the limit in Condition 10.
- 11. **ORL to Avoid PSD Review for NO_x .** The Permittee shall limit the combined NO_x emissions from EU IDs 7 and 16 to no more than 161.7 tons per year and shall calculate actual NO_x emissions as follows:
 - 11.1 Install and maintain a dedicated kilowatt meter with an accuracy of plus or minus two percent on EU ID 16.
 - a. Monitor and record the monthly kilowatts produced by EU ID 16.

- 11.2 Before the end of each calendar month calculate and record the combined NO_x emissions from EU IDs 7 and 16 for the previous month using Equation 6 and power production records from Conditions 10.1a and 11.1a, and NO_x emission factors in Table 4 or more recent emission factors from a Department accepted source test.

Equation 6

$$NO_x = \frac{kWhr_7 * EF_7 + kWhr_{16} * EF_{16}}{453.6 * 2000}$$

Where: *NO_x* = monthly NO_x emissions for EU IDs 7 & 16 combined, in tons
kWhr = monthly energy produced for an individual EU, in kilowatt hours
EF = NO_x emission factor for an individual EU, in g/kWhr
453.6 = grams per pound conversion factor

Table 4: NO_x Emission Factors

EU ID	Emission Factor
7	17.7 g/kWhr
16	8.83 g/kWhr

- 11.3 Calculate the 12-month rolling NO_x emissions by adding the previous 11 months.
- 11.4 Include copies of the records required under Conditions 11.2 and 11.3 in the operating report described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18AAC 50.
- 11.5 Report in accordance with the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC 50 if the combined NO_x emissions calculated under Condition 11.3 exceed the limit in Condition 11.
- 12. Power Production Limit.** The Permittee shall limit the power produced by EU ID 16 to no greater than 3,760 kWe for any given hour. Demonstrate compliance as follows:
- 12.1 Monitor and record hourly power production for EU ID 16.
- a. Identify the highest hourly power produced for each calendar day and the highest hourly power produced for each calendar month.
- 12.2 In the operating report described in the applicable operating permit issued for the source under AS 46.14.130(b) and 18AAC 50, include the highest hourly power produced (kWe) by EU ID 16 and the date on which it occurred, for each calendar month of the reporting period.
- 12.3 Report in accordance with the applicable operating permit issued for the source under AS 46.14.130(b) and 18 AAC 50 any time the power produced by EU ID 16 exceeds the limit in Condition 12.

Section 5 Standard Permit Conditions

- 13.** The Permittee must comply with each permit term and condition. Non-compliance with a permit term or condition constitutes a violation of AS 46.14, 18 AAC 50, and, except for those terms or conditions designated in the permit as not federally enforceable, the Clean Air Act, and is grounds for
 - 13.1 an enforcement action; or
 - 13.2 permit termination, revocation and reissuance, or modification in accordance with AS 46.14.280.
- 14.** 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.
- 15.** Each permit term and condition is independent of the permit as a whole and remains valid regardless of a challenge to any other part of the permit.
- 16.** The permit may be modified, reopened, revoked and reissued, or terminated for cause. A request by the Permittee for modification, revocation and reissuance, or termination or a notification of planned changes or anticipated noncompliance does not stay any permit condition.
- 17.** The permit does not convey any property rights of any sort, nor any exclusive privilege.

Section 6 Permit Documentation

<u>Date</u>	<u>Document Details</u>
February 27, 2020	Department receives addendum to application for Minor Permit AQ0215MSS05 with a revised PSD analysis.
February 6, 2020	Department notifies Unalaska that it is requiring a two-step PSD analysis and that the contemporaneous period moved back in time, as if Minor Permit AQ0215MSS04 was never issued.
January 28, 2020	Department receives addendum to application for Minor Permit AQ0215MSS05 requesting an integrated review in accordance with 18 AAC 50.326(c)(1).
January 28, 2020	Department notifies Unalaska that it will not be able to operate under Minor Permit AQ0215MSS05 until the revision to the operating permit is active.
January 6, 2020	Department receives application for Minor Permit AQ0215MSS05 to rescind Minor Permit AQ0215MSS04 and reauthorize the operation of EU ID 16. Applicant also requests revisions to Minor Permit AQ0215MSS03 as well as withdrawal of the application for Construction Permit AQ0215CPT05.
May 22, 2019	Department determines that application for Construction Permit AQ0215CPT05 is incomplete.
March 27, 2019	Department receives application for Construction Permit AQ0215CPT05 to recommission EU IDs 7 & 8.
November 24, 2014	Department issues Minor Permit AQ0215MSS04 which requires decommissioning of EU IDs 7 & 8.
August 15, 2014	Department receives application for Minor Permit AQ0215MSS04 to authorize installation of EU ID 16.
November 28, 2012	Department issues Minor Permit AQ0215MSS03