Alaska Department of Environmental Conservation
Air Permits Program

TECHNICAL ANALYSIS REPORT

For the terms and conditions of
Minor Permit AQ0264MSS07

Issued to United States Air Force
For the Eielson Air Force Base

Preliminary – March 26, 2026

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1. INTRODUCTION

This Technical Analysis Report (TAR) provides the Alaska Department of Environmental Conservation's (Department's) basis for issuing Minor Permit AQ0264MSS07 to United States Air Force (USAF) for the Eielson Air Force Base. The USAF requested the permit under 18 AAC 50.508(6) in order to revise terms or conditions previously established in a Title I Permit. Minor Permit AQ0264MSS07 rescinds minor permit AQ0264MSS06.

2. STATIONARY SOURCE DESCRIPTION

The Eielson Air Force Base (EAFB) is an existing stationary source. The stationary source is located approximately 37 kilometers southeast of Fairbanks, Alaska. The 354th Fighter Wing is the host unit at EAFB and is assigned to the 11th Air Force, headquartered at Joint Base Elmendorf/Richardson near Anchorage. The wing supports operations, maintenance, mission support, and medical group functions and is host to ten tenant units. The 354th Fighter Wing delivers lethal airpower to combatant commanders in defense of national military objectives.

The EAFB, like other military installations, differs from most industrial facilities in that the base hosts and supports a wide variety of functions and activities not normally associated with an industrial site. The stationary source consists of an operational air field, residential housing, gas stations, utilities, military police and fire departments, and hospital facilities. The stationary source does not include the Army Air Force Exchange Service, Defense Commissary Agency, elementary and high schools, and the Alaska Air National Guard facilities. These facilities are located on EAFB but are not considered to be support facilities to the primary activities of the base or under common control of the USAF.

The emissions unit (EU) inventory consists of six coal-fired boilers, 12 liquid fuel-fired boilers, five auxiliary generators, 70 emergency generators, a jet engine testing "Hush House" facility, a coal processing system, above ground and underground storage tanks, and rock crushing equipment, including primary/secondary crushers, tertiary crushers, screens, transfer points, and truck unloading.

The USAF currently operates under Operating Permit AQ0264TVP02 Revision 5, and Minor Permits AQ0264MSS05 and AQ0264MSS06.

3. APPLICATION DESCRIPTION

The USAF submitted their application on February 21, 2025 to revise conditions in AQ0264MSS06. The requested changes are as follows:

- Generalize and revise the rock crusher equipment capacities;
- Revise the rock crusher engines to be nonroad engines (NRE) and remove their operating limit (this request was later withdrawn);
- Revise the auxiliary power generators BACT power output limit on EU IDs 20 – 23A;
- Update the EU inventory with removed units, replaced units, and new units;
- Remove the 200-hour operating limit for emergency engine EU IDs 24A – 80; and
- Remove the fuel throughput operating limit for JP-8 storage tank EU IDs 104 and 105.

The USAF additionally requested that the replaced rock crusher and ancillary equipment authorized be generalized to allow contractors to use combinations of equipment that cumulatively fall under the new ratings chosen.

4. CLASSIFICATION FINDINGS

Based on the review of the application, the Department finds that:

1. Minor Permit AQ0264MSS07 is classified under 18 AAC 50.502(b)(3) for construction and operation of a rock crusher with a rated capacity of at least five tons per hour.
2. Minor Permit AQ0264MSS07 is classified under 18 AAC 50.508(6) to revise or rescind terms and conditions of a Title I permit.

5. APPLICATION REVIEW FINDINGS

Based on the review of the application, the Department finds that:

1. The USAF's minor permit application for the Eielson Air Force Base contains the elements listed in 18 AAC 50.540.
2. USAF requested removal of Condition 12 of AQ0264MSS06 on the basis that the permit classification avoided through implementation of the ORL (Major Permit Modification for VOC) would not have been triggered in the absence of the ORL. When removing an ORL without a replacement limit, the source becomes subject to the classification that was originally avoided with the ORL. Condition 12 is an ORL on fuel tank EU IDs 104 and 105, limiting the units to a combined 18 million gallons of JP-8 fuel per 12 consecutive months. At the time of original implementation in construction permit AQ0264CPT03, emissions from the fuel tanks were anticipated to exceed the major permit modification threshold for VOC if left unlimited. USAF demonstrated in their most recent permit application that potential emissions from the tanks limited by this fuel throughput limit would not exceed the major permit modification threshold of 40 TPY if the throughput limit was removed. This was accomplished by calculating the potential emissions of storage tanks EU IDs 104 and 105 if all JP-8 delivered to Eielson Air Force Base was diverted through these tanks. The 2022 recorded quantity of JP-8 provided to the entire Eielson Air Force Base was 67 million gallons. Potential emissions from this scenario were demonstrated to be 0.18 TPY, an increase from 0.05 TPY. Therefore, it was demonstrated that a major permit modification for VOC will not occur in absence of the ORL, and the condition has been removed.
3. USAF requested to modify the ratings of EU IDs 86 – 103 by generalizing the crusher equipment units and increasing their ratings. The Department requested further information following the request to generalize the crusher ratings, as initial installation and past iterations modifying the crusher ratings required modeling demonstrations. The original crusher equipment ratings were used in the October 30, 2006 ambient demonstration for Minor Permit AQ0264MSS01. MSS01 required an ambient demonstration for PM_{10} increments to add the rock crushing equipment because the existing modeling demonstration of the GP9 permit (standard permit for rock crushers) demonstrated that uncontrolled rock crushers may cause increment violations. Additionally, the GP9 assumed no other increment consuming units beyond the crusher equipment, while the EAFB has other increment consuming EUs present. Minor Permit AQ0264MSS03 required a revised ambient demonstration to add an additional crusher and engine. The Department initially concluded that the proposed modification of the modeled inventory would require a revised ambient demonstration to demonstrate continued compliance with the PM_{10} increment.

In response to the Department's request, USAF performed an analysis of the previous modeling demonstrations in addition to revising the proposed generalized crusher equipment ratings. The Department's review of the analysis found that the derived potential emissions of the revised crusher equipment ratings did not exceed either MSS01 or MSS03 ambient demonstration grams-per-second emissions or TPY emissions. In particular, the USAF's analysis updated the assumptions in the previous ambient demonstration that the crushing equipment would operate year round, while maintaining the co-location of multiple crushing equipment at the worst-case location of Loop Access Road (formerly Asphalt Pit). The Department therefore made a case-specific determination to accept the qualitative analysis for modifying the crusher ratings. The generalizing of the crusher equipment ratings was incorporated as Ambient Air Quality Protection Requirements.

4. USAF requested the addition of EU IDs 70, 130, 131, and 132. USAF removed EU IDs 5, 6, 27, 42, 57, 58, 61, 19B, and 123 and requested their removal from the EU inventory. EU IDs 19, 23, 24, 28, 30, 32, 35, 36, 37, 55, 65, 66, 67, 68, 69, 70A, and 118 were replaced with EU IDs 19A, 23A, 24A, 28A, 30A, 32A, 35A, 36A, 37A, 55A, 65B, 66B, 67A, 68A, 69A, 70B, and 118A.

5. USAF requested removal of Condition 10 of AQ0264MSS06 on the basis that the limit is no longer necessary with actual operating records demonstration potential hours. Condition 10 of AQ0264MSS06 originated as an ambient protection limit in Construction Permit 264CP03, issued to the Permittee in 2004. The condition limits emergency engine EU IDs 24 – 80 to 200 hours of operation each per 12-month rolling period. Removal of the limit requires the Permittee to address potential emissions emitted in the absence of the limit. The 200 hour annual limit on each emergency engine's operating hours was implemented to avoid including the emergency engine inventory in the source's ambient increment demonstration. USAF noted in the application that each emergency engine, in the absence of the ORL, would still be limited to 100 hours of non-emergency operation by the requirements of federal subparts NSPS IIII and NESHAP ZZZZ (New Source Performance Standards for Stationary Compression Ignition Internal Combustion Engines and National Emission Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines). Additionally, the Department recognizes the 1995 EPA emergency generator PTE memorandum written by Director Seitz (Seitz memo) stating that 500 hours is an appropriate default assumption for estimating emergency generator operating hours, and that alternative estimates can be made where justified by the permitting authority. However, the ORL limits operation of the listed emergency engines to 200 hours, and does not specify emergency or non-emergency hours. In order to remove the ORL, the Permittee must either replace the limit with an equal limit, or the source must take on the classification that was avoided with the ORL. Because the ORL was implemented to avoid including the engines in modeling, the Department requires a qualitative assessment detailing how the addition of the emergency engines to the ambient demonstration for the source would impact short term air quality standards and increments. In the absence of a revised ambient demonstration including the impacts of the emergency engines, the 200 hour emergency engine limit is retained.

6. USAF requested that PTE of emergency engines EU IDs 26 and 54 be calculated at 140 hours, EU ID 72 at 130 hours, and EU IDs 130, 131, and 132 at 200 hours. As in the

preceding finding, the Department recognizes the Seitz memo for precedent of calculating emergency engine PTE using 500 hours of annual operation. The Seitz memo also specifies that *"Alternative estimates can be made on a case-by-case basis where justified by the source owner or permitting authority (for example, if historical data on local power outages indicate that a larger or smaller number would be appropriate."* Accordingly, USAF provided records of actual operation for EU IDs 26, 54, 130, 131, and 132. The records demonstrate that operation of any engine did not exceed 100 hours in any consecutive 12-month period. However, the duration of historic data for each engine varied. EU IDs 26 and 54 have operational data records from January 2018 to November 2024, 83 months. EU IDs 130 and 131 were installed in 2019 and 2020, respectively, and each had operational records for 46 months. EU ID 132 was installed in 2022, and had operational records for 23 months. EU ID 72 has not yet been installed, and does not have any operational records. On a case-specific basis the Department can allow lower emergency generator PTE hours, and in this circumstance agrees that EU IDs 26 and 54, 130 and 131 are representative with 140 and 200 hours, respectively. EU ID 132 retains PTE calculations using 500 hours, because there are insufficient operational records for the engine. EU ID 72 retains PTE calculations using 200 hours, as limited by Condition 9.

7. USAF requested to revise Condition 7 of AQ0264MSS06. Condition 7 was implemented as a BACT limit originally in Construction Permit 9831-AC019, Condition 13.b as the result of a PSD major modification for NO_x. The condition sets an emission limit, maximum power output limit, and fuel consumption limit. The condition includes language that allows the Permittee to exceed the listed maximum power output limit after a performance test on the EUs demonstrates compliance with the emission limit at a higher maximum power output. On November 27, 2013, USAF submitted a performance test report for Onan Generators, EU IDs 21 and 22 demonstrating that both tested generators showed compliance with the 10.8 grams per horsepower hour (g/hp-hr) emission limit while operating at a power output of 1,425 kilowatts (kW). The Department accepted the performance test report on January 27, 2014, along with USAF's request to operate EU IDs 20 – 23 at the maximum power of 1,425 kW and not lower than 300 kW. The Department did not revise the condition as requested, because it originated as a BACT limit and the application did not detail the PSD project steps necessary for implementing or modifying a BACT limit. Instead, the Department added a footnote documenting the new maximum power output, as is allowed by the original condition language.

8. In calculating PTE for the MSS07 application, USAF asserted that PM_{10} emissions for the coal boilers should be calculated using 60% of the emission factors derived from the most recent coal boiler source tests. This 60% value originates from the particle size distribution used in Table 1.1-9 of AP-42 calculations for spreader-stoker boilers burning bituminous coal. The table states that 60% of the filterable PM emissions captured in the AP-42 test were particle size 10 micron or less (PM_{10}). The Department did not modify the PM_{10} PTE for the coal boilers by using the AP-42 particle distribution calculation, because the source testing conducted on these boilers did not include a particle size distribution analysis. Should the Permittee wish to utilize a particle size distribution to modify the coal boiler emission factors, the Department requires that a particle size distribution analysis be performed on the sample collected during the source test. This

analysis must also demonstrate that the distribution is not prone to fluctuation. The Department used the emission factors provided by USAF that did not have the 60% distribution modifier to calculate the assessable PM_{10} emissions for the coal boilers.

9. Additionally in calculating assessable PM emissions, the Department revised the erroneous 206.9 TPY PTE for the coal fired boilers in Table A-1 of MSS06. This value was calculating assuming the emissions from all six soot blowers (7.873 lb/hr for each blower) operating continuously (8,760 hours) in addition to the emissions from the coal boilers. The value also incorrectly calculated coal boiler emissions converting from pounds to tons twice. The erroneous value was not carried over in Table 2 of MSS06, which separately was incorrect for excluding all coal boiler emissions (retaining only soot blower emissions). The coal boilers PM_{10} emissions should have been 31.27 (2.87 TPY from blowers and 28.4 TPY from the coal boilers), with soot blowers operating 122 hours (20 minutes of each boiler operating day). This would make the overall source PM_{10} emissions 68.79 TPY (31.27 TPY from coal boilers and 37.52 TPY from all other emissions units at the source).
10. In calculating PTE for the MSS07 application, USAF provided VOC emission calculations excluding volatile HAP emissions. This was performed to avoid double counting volatile HAP emissions as both HAP and VOC emissions. However, the Department assesses total VOC emissions as including both VOC and volatile HAP emissions together as one assessable pollutant, and avoids double counting volatile HAP emissions by excluding them from the total assessable HAP emissions. The Department revised the assessable VOC emissions by adding the volatile HAP to the assessable VOC, and removing the volatile HAP from the total assessable HAP.
11. The Department discontinued ORL conditions from AQ0265MSS06 regarding EU IDs 19 and 19A. These conditions included requirements for operation of EU ID 19 before and during the commission of EU ID 19A, as well as the requirement for EU ID 19 to be decommissioned. EU ID 19 has been decommissioned and the requirements for beginning operation of EU ID 19A were completed. The scenario under which these conditions were necessary has finished, and the conditions can now be removed.
12. Potential emissions of CO increased from 183.0 TPY in AQ0264MSS06 to 490.69 TPY under this permit AQ0264MSS07. Eielson is classified as a PSD major source due to potential emissions of at least one pollutant exceeding 250 TPY. As a PSD major source, the permit threshold for PSD major modification is an increase exceeding 100 TPY CO. The Department determined that the increase of CO PTE does not trigger a PSD major modification under 18 AAC 50.306. The Department made this determination after USAF provided an analysis regarding the CO emission increase in response to an information request to support the application for MSS07. USAF specified that 279.7 tons of the CO PTE increase is due to updating the CO emission factor for the coal boilers, EU IDs 1 – 4, 5A, and 6A. Specifically, the emissions increase resulted from updating the emission factor established in TVP02 and continued in MSS06. MSS06 used an emission factor of 1.04 pounds per ton (lb/ton) CO for each of EU IDs 1 – 4, 5A, and 6A. This emission factor originated from a 2000 source test on EU 2 and was used in TVP02. MSS05 previously used an emission factor of 5.0 lb/ton, the AP-42 emission factor for coal boilers. The application for TVP02 was submitted before MSS05, but the minor permit was issued earlier. MSS05 and TVP02 were then simultaneously active

with different emission factors for coal boilers. The MSS07 application resolved the different emission factors. Replacing the source test emission factor of 1.04 lb/ton with the 5.0 lb/ton emission factor results in 550 TPY CO. Added to the CO emissions of the rest of the source, the MSS06 CO TPY would be revised to 619.7 TPY. The Department concluded that the emission increase was not due to any change in operation of boilers, nor a project change. Therefore, the emissions increase was not considered a project under PSD and does not trigger permit change. Finally, USAF determined and the Department confirmed that while the 1.04 lb/ton emission factor was portrayed in MSS06, assessable emissions for the source were calculated using an emission factor of 5.0 lb/ton (the emission factor implemented in MSS05). Therefore, the lower emission factor was never improperly used for calculating assessable fees.

13. USAF requested to revise the fuel sulfur limit condition 8 of AQ0264MSS06 under the Title V renewal application addendum for AQ0264TVP02 Revision 4. Condition 8 of AQ0264MSS06 is an ORL and ambient air quality protection requirement for SO_2 emission standards. The request stated that EU IDs 17 and 18 should be removed from the condition as they are propane fired, and not diesel or distillate fuel fired as the condition states. Additionally, USAF requested that emissions units installed after 2013 should not be listed in the condition because it was issued in 2013. The Department removed EU IDs 17 and 18 from the condition because the propane fired units are not controlled by a fuel oil limit. The Department did not remove the other requested units because they were either already included in the permit inventory at the time of the condition, or are replacement emissions units. Replacement units must continue to show compliance with the same limits of the replaced emissions units, or be added under a separate emissions unit ID.

6. EMISSIONS SUMMARY AND PERMIT APPLICABLITY

Table A shows the emissions summary and permit applicability with assessable emissions from the stationary source. Emission factors and detailed calculations are provided in Appendix A.

A summary of the potential to emit (PTE) and assessable PTE, as determined by the Department, is shown in Table A below.

Table A – Emissions Summary and Permit Applicability, tons per year (TPY)

Parameter	NO_x	CO	VOC	$PM_{2.5}$	PM_{10}	SO_2	HAPs
PTE before Modification[1]	615.5	619.7	29.6	68.79	68.79	464.3	8.23
PTE after Modification	624.31	490.57	31.93	49.25	49.25	394.49	11.5
Change in PTE	8.81	-129.13	2.33	-19.54	-19.54	-69.81	3.27
18 AAC 50.502(c)(3) Permit Thresholds[2]	10	N/A	N/A	10	N/A	10	N/A
502(c)(3) Applicable?	N	N/A	N/A	N	N	N	N/A
18 AAC 50.306 PSD Thresholds	40	100	40	15	25	40	N/A
PSD Applicable?	N	N	N	N	N	N	N/A
Title V Permit Thresholds	100	100	100	100	100	100	10/25
Title V Permit Required?	Y	Y	N	N	N	Y	N
Assessable Emissions [2,3,4]	624.31	490.57	31.93	0	49.25	394.49	2.97

Parameter	NO_x	CO	VOC	$PM_{2.5}$	PM_{10}	SO_2	HAPs
Total Assessable	1,593.52						

Notes:

1. PTE before modification is from the Technical Analysis Report for Permit AQ0264MSS06, except for CO and PM revisions. CO emissions for MSS06 were calculated using the revised emission factor for coal boilers. PM emissions for MSS06 excluded emissions from the coal boilers.
2. Assessable emissions include fugitive emissions but do not include nonroad engines.
3. PM_{10} emissions include $PM_{2.5}$ emissions. Therefore, $PM_{2.5}$ is not counted in total assessable emissions.
4. USAF subtracted volatile HAP from VOC emissions. Assessable VOC emissions include volatile HAP emissions, to compare with significant emission thresholds and to avoid double counting in assessable HAP emissions. The Department added volatile HAP emissions VOC to calculate assessable VOC emissions, and subtracted volatile HAP emissions from assessable HAP emissions.

7. REVISIONS TO PERMIT CONDITIONS

Table B below lists the requirements carried over from Minor Permit AQ0264MSS06 into Minor Permit AQ0264MSS07.

Table B – Comparison of AQ0264MSS06 to AQ0264MSS07 Conditions[6]

Permit AQ0264MSS06 Condition No.	Description of Requirement	Permit AQ0264MSS07 Condition No.	How Condition was Revised
7.b	EU IDs 20 – 23A BACT Maximum Power Output Limit	7.1b	Added footnote noting performance test that demonstrated compliance with 1,425 kW power output.
8	Ambient Air Quality Protection Fuel Sulfur Limit	8	Revised to exclude EU IDs 17 and 18, which are propane-fired and not diesel or distillate fuel-fired.
10	Emergency Engines Ambient Air Quality Protection Hour Limit	9	Added EU ID 122. Construction Permit CP03 included both of these engines in the original condition.
12	JP-8 Storage Tanks EU IDs 104, 105 Fuel ORL	-	Removed.
14, 15, 16	EU ID 19 Limits	-	Removed. EU IDs 19 was decommissioned on 07/23/2021, and EU ID 19A was commissioned on 11/23/2024, satisfying the requirements of Condition 16.
17	Crusher engines EU IDs 82 – 84 Hour ORL	19	No change.
18.2.b	Crusher Ambient Air Quality Protection Requirements	11.2a, 11.2b	Fixed grammar when specifying additional wetting is necessary when dust is visible. Clarified asphalt pit is at Loop Access Road.

[6] This table does not include all standard and general conditions.

19	Crusher signage	12.1	Revised minimum signage language.
Section 10	Crusher Location Change Form	Section 10	Revised the notification requirement for moving equipment to be in comport with current relocation form in asphalt/rock crusher minor general permits MG3/MG9.
20, 21	Maintenance Requirements	2	Incorporated with Condition 2 to differentiate from ORL conditions.

8. PERMIT ADMINISTRATION

Minor Permit AQ0264MSS07 may operate in accordance with Minor Permit AQ0264MSS07 upon issuance of Operating Permit AQ0264TVP03.

9. PERMIT CONDITIONS

The bases for the standard and general conditions imposed in Minor Permit AQ0264MSS07 are described below.

Cover Page

18 AAC 50.544(a)(1) requires the Department to identify the stationary source, Permittee, and contact information. The Department provided this information on the cover page of the permit.

Section 1: Emissions Unit Inventory

The EUs authorized and/or restricted by this permit are listed in Table 1 of the permit. Unless otherwise noted in the permit, the information in Table 1 is for identification purposes only. Condition 1 is a general requirement to comply with AS 46.14 and 18 AAC 50 when installing a replacement EU.

Condition 2 is a general requirement for good air pollution control practices and maintenance of EUs operated at the stationary source. Maintaining and operating equipment in good working order is fundamental to preventing unnecessary or excess emissions. Standard conditions for monitoring compliance with emission standards are based on the assumption that good maintenance is performed. Without appropriate maintenance, equipment can deteriorate more quickly than with appropriate maintenance. The Permittee is required to keep maintenance records to show that proper maintenance procedures were followed, and to make the records available to the Department.

Section 2: Fee Requirements

18 AAC 50.544(a)(2) requires the Department to include a requirement to pay fees in accordance with 18 AAC 50.400 – 18 AAC 50.499 in each minor permit issued under 18 AAC 50.542. The Department used the Standard Permit Condition (SPC) I language for Minor Permit AQ0264MSS07. However, the Department modified the condition by removing the requirement to only pay for emissions of each air pollutant in quantities of 10 tons per year or greater, to be consistent with the updates to the emission fees in 18 AAC 50.410(a) that went into effect September 7, 2022. The Department is in the process of incorporating these updates into SPC I.

Section 3: State Emission Standards

Condition 4, Visible Emissions

Visible emissions, excluding condensed water vapor, from an industrial process or fuel-burning equipment may not reduce visibility through the effluent by more than 20 percent averaged over six consecutive minutes, under 18 AAC 50.055(a)(1). Per 18 AAC 50.990(39), "fuel-burning equipment" does not include mobile internal combustion engines (e.g., NREs).

The Department is requiring an initial compliance demonstration within 60 days of startup of the new EU IDs 23A, 24A, 28A, 30A, 32A, 35A - 37A, 55A, 65B - 69A, 70B, 118A, and 130 - 132.

Condition 5, Particulate Matter (PM)

Particulate Matter emitted from an industrial process or fuel burning equipment may not exceed 0.05 grains per cubic foot of exhaust gas (gr/dscf), averaged over three hours, under 18 AAC 50.055(b).

Experience has shown there is a correlation between opacity and particulate matter. Twenty percent visible emissions would normally comply with the 0.05 gr/dscf. As such, compliance with opacity limits is included as a surrogate method of assuring compliance with the PM standards.

Condition 6, Sulfur Compound Emissions

Sulfur compound emissions from an industrial process or fuel burning equipment may not exceed 500 ppm averaged over a period of three hours, under 18 AAC 50.055(c).

Calculations show that fuel oil with sulfur content less than 0.74 percent by weight will comply with the state emissions standard. Diesel fuel grades that requires less than 0.5 percent fuel sulfur will meet the state emissions standard.

Section 4: Best Available Control Technology Limits

Condition 7, BACT NO_x Limits

18 AAC 50.544(a)(3) and 18 AAC 50.544(a)(6) require the Department to include conditions to protect air quality, when warranted. The Department determined that conditions are warranted to restrict the annual emissions of NO_x from diesel fired generators EU IDs 20 – 23A. The BACT limits for these units were originally developed in Permit to Operate 9831-AC019 and carried forward into Minor Permits AQ0264MSS04 and AQ0264MSS06, which has been rescinded and replaced by Minor Permit AQ0264MSS07.

Condition 7 limits NO_x emissions to 10.8 grams per horsepower-hour by implementing a power output limit on each of the units. When first implemented, output was restricted to 80% load to assure that the units operated in compliance with the BACT emissions limit. The BACT condition additionally required a performance test to demonstrate compliance with the emissions limit. The condition language allows for, after a performance test, operating up to any engine load for which the performance test showed compliance.

The Department added a footnote to specify that the latest accepted performance test demonstrating compliance with the emissions limit reached 1,425 kW power output.

Section 5: Ambient Air Quality Protection Requirements

The conditions in this section provide enforceable terms and conditions intended to protect the Alaskan Ambient Air Quality Standards (AAAQS).

Condition 8, Fuel Sulfur Limit

Condition 8 limits the sulfur content of liquid fuel to 0.15 percent by weight. The condition was originally implemented in Permit to Operate 9831-AC019, as part of an ambient demonstration for SO_2 standards. The condition was carried forward into Construction Permits 264CP03 and 264CP04, Minor Permits AQ0264MSS04 and then AQ0264MSS06, which has been rescinded and replaced by Minor Permit AQ0264MSS07. EU IDs 17 and 18 were removed from the limit as they are propane fired and not diesel or distillate fuel fired. Propane has a commercial sulfur content of 0.0185 percent by weight, so the emissions units will not exceed the 0.15 weight percent limit from the condition on liquid fuels.

Condition 9, Emergency Engine Hourly Operations Limit

Condition 9 limits emergency engines EU IDs 24 – 80, and 122 to 200 hours of operation per consecutive 12 months. The condition originated in Construction Permit 0264CP03 as an ambient protection condition for annual NO_2, 24-hour PM_{10}, 1-hour and 8-hour CO, and 24-hour and 3-hour SO_2, as well as an ORL to avoid including the units in a PSD ambient demonstration for increments.

The decision to implement a 200 hour limit on each of the listed emergency engines stemmed from a PSD avoidance limit request for an annual horsepower-hour limit on the emergency engines. The CP03 TAR states: “The department finds that the proposed cap would allow existing and new engines to operate in excess of annual operations assumed for Alaska Ambient Air Quality Standards (AAAQS) and increment air dispersion modeling”. In response, USAF modeled the emergency engines each with a 200 hour annual limit to demonstrate compliance with NO_2, CO, PM_{10}, and SO_2 AAAQS. The Department determined that engines greater than 60 kW that exceeded 200 hours per year could affect long-term degradation of air quality at Eielson AFB and consume increment. However, operation of the engines limited to 200 hours annually was determined to be too intermittent to be considered a long term emitting activity, and therefore not an increment consuming activity. Therefore, in implementing the 200 hour annual limit used in the AAAQS model as an enforceable condition, the Department determined that the engines did not require further modeling to demonstrate compliance with the increment.

Minor Permits AQ0264MSS04 and AQ0264MSS06 added additional engines to the limit to avoid modeling. The Department included EU ID 122 in the condition, as they were originally included under the limit in permit CP03 before the units had ID numbers. They were erroneously excluded under permit Minor permits AQ0264MSS04 and AQ0264MSS06.

Condition 10, EU ID 81 Hush House Jet Engine Test Limit

Condition 10 limits the number of F-16 engine tests within a 12-month period. The condition originated in Construction Permit 0264CP04 as a limit to protect the annual NO_2 standard.

Conditions 11 & 12, Asphalt/Rock Crusher Location and Signage

Conditions 11 and 12 contain the requirements implemented by the ambient demonstration that supported Minor Permit AQ0264MSS01 to protect the 24-hour PM_{10} increment, as well as the revised ambient demonstration that supported Minor Permit AQ0264MSS03 for the 24-hour PM_{10} increment. Asphalt and rock crushing activities are restricted from operating in areas such as ambient air regions designated in condition 11.1. The Department revised the language of the wet suppression requirements in Condition 11.2a, to clarify when additional wetting is necessary. Should the Permittee decide to operate the asphalt and rock crusher equipment in locations beyond those defined in Condition 11.2b, they must provide notice to the Department and consider the siting requirements of the area. The location previously denoted "asphalt pit" was revised to "Loop Access Road", to better define the site. The condition additionally details further requirements should alternative siting result in complaints.

Condition 12 specifies that the Permittee must place signs around the site of asphalt and rock crushing equipment operation. At the Permittee's request, the Department revised the minimum sign language to exclude referencing the base commander and escorting staff.

Condition 13, Crusher Equipment Limits

Condition 13 is a new condition limiting the throughput of rock crushing equipment under EU IDs 86 through 103 to the rating assigned to each equipment classification, for the protection of the 24-hour PM_{10} increment. This condition allows multiple pieces of crushing equipment, e.g. primary/secondary/tertiary crushers, conveyers, truck unloading points, etc. to operate under each of the cited EU IDs so long as they collectively remain below the respective unit-specific throughput limits. This condition also requires the Permittee to certify that crushing equipment listed under these EU IDs do not operate in excess of 3,650 hours in any consecutive 12-month period to reflect the Permittee's seasonal assumptions used to calculate their PTE.

Condition 14, EU IDs 15 and 16 Fuel Limit

This condition originated in Construction Permit 264CP03 as an ORL to avoid PSD classification under 18 AAC 50.306 for NO_x and SO_2, as well as an ambient protection limit to protect the 24-hour and 3-hour SO_2 standards. The limit restricts boiler EU IDs 15 and 16 to a cumulative 3,583,851 gallons of fuel per consecutive 12-month period. Monitoring and recordkeeping are required to be conducted following the requirements of NSPS Subpart Dc.

Section 6: Owner Requested Limits (ORLs) to Avoid Permit Classification/Modification

18 AAC 50.544(h) describes the requirements for a permit classified under 18 AAC 50.508(5).

Conditions 15, 16, and 17

Conditions 15, 16, and 17 were implemented both as ambient air protection requirements and as ORLs. By complying with each ambient air condition, the Permittee shall demonstrate compliance with these ORLs. The Department has included reference to the respective ambient air protection requirements in lieu of replicating the condition language in the ORLs.

Condition 18, EU IDs 7 and 8 Hourly Operations Limit

Condition 18 carries forward an ORL developed in Construction Permit 264CP02 to avoid Prevention of Significant Deterioration (PSD) Classification under 18 AAC 50.306 for NO_x and CO. The ORL restricts auxiliary boilers EU IDs 7 and 8 to a cumulative 4,464 hours per consecutive 12-month period.

Conditions 19, Asphalt/Rock Crusher Engine Operational Limits

Condition 19 is an ORL developed in Minor Permit AQ0264MSS01 to avoid PSD classification under 50.306 for NO_x. In Minor Permit AQ0264MSS03, an additional crusher engine was added to the condition in order to avoid minor permit classification under 50.502(c)(3) for NO_x. The ORL restricts crusher engines EU IDs 82 – 84 to 4,000 hours each per 12 consecutive months.

Section 7: General Recordkeeping, Reporting, and Certification Requirements

Condition 20, Certification

18 AAC 50.205 requires the Permittee to certify any permit application, report, affirmation, or compliance certification submitted to the Department. The Department used the language in Standard Permit Condition (SPC) XVII. This requirement is reiterated as a standard permit condition in 18 AAC 50.345(j).

Condition 21 Submittals

Condition 21 clarifies where the Permittee should send their reports, certifications, and other submittals required by the permit. The Department used the language in SPC XVII. The Department included this condition from a practical perspective rather than a regulatory obligation.

Condition 22, Information Requests

AS 46.14.020(b) allows the Department to obtain a wide variety of emissions, design and operational information from the owner and operator of a stationary source. This statutory provision is reiterated as a standard permit condition in 18 AAC 50.345(i). The Department used the standard language in Minor Permit AQ0264MSS07.

Condition 23, Regional Haze Visibility Protection Area

Condition 23 contains requirements from 18 AAC 50.265(1) and 50.265(4)(B) for stationary sources located in the Regional Haze Visibility Protection Area (RHVPA), as specified in 18 AAC 50.025(a)(4), which is shown in Figure III.K.13 H-1 of the July 5, 2022 Amendments to: State Air Quality Control Plan (Regional Haze SIP) [7] and adopted by reference in 18 AAC 50.030. Condition 23.1 contains the requirements from 18 AAC 50.265(1) which requires Permittee's to maintain onsite for 10 years, records of any maintenance to any significant emissions unit that has or may have an effect on any emission that affects visibility of Class I areas. Condition 23.2 contains the requirements from 18 AAC 50.265(4)(B) which requires Permittee's to report a best estimate of the projected equipment life in the first operating report required in Condition 107 after a new significant emissions unit is installed (i.e., significant EUs installed after July 5, 2022) at the stationary source.

[7] The July 5, 2022 Amendments to: State Air Quality Control Plan for the Regional Haze SIP can be found at the following website: https://dec.alaska.gov/media/25964/section-iii-k-13-second-implementation-period-combined-sip-section-adopted-07-05-22.pdf.

Section 8: Standard Permit Conditions

Conditions 24 – 29, Standard Permit Conditions

18 AAC 50.544(a)(5) requires each minor permit issued under 18 AAC 50.542 to contain the standard permit conditions in 18 AAC 50.345, as applicable. 18 AAC 50.345(a) clarifies that subparts (c)(1) and (2), and (d) through (o), may be applicable for a minor permit.

The Department included all of the minor permit-related standard conditions of 18 AAC 50.345 in Minor Permit AQ0264MSS07. The Department incorporated these standard conditions as follows:

- 18 AAC 50.345(c)(1) and (2) is incorporated as Condition 24 of Section 8 (Standard Permit Conditions);
- 18 AAC 50.345(d) through (h) is incorporated as Conditions 25 through 29, respectively, of Section 8 (Standard Permit Conditions); and
- As previously discussed, 18 AAC 50.345(i) is incorporated as Condition 22 and 18 AAC 50.345(j) is incorporated as Condition 20 of Section 7 (Recordkeeping, Reporting, and Certification Requirements).

APPENDIX A: Emissions Calculations

Table A-1 presents details of the EUs, their characteristics, and emissions. Potential emissions are estimated using maximum annual operation for all fuel burning equipment as defined in 18 AAC 50.990(39) subject to any operating limits.

Table A-1 – Emissions Summary, in Tons Per Year (TPY)

EU ID	Unit ID/ Description	Maximum Rating or Capacity	Operating Limits	NO_x		CO		VOC		PM_{10}		SO_2
				EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	PTE (tpy)
Coal Fired Boilers												
1	CH&PP Boiler #1	117,800 lb/hr	**220,000** tons/ yr	3.63[1] lb/ton coal	323.4	4.05[3] lb/ ton coal	360.9	0.05[5] lb/ton coal	5.50	0.25[6] lb/ton coal & 2.45[7] lb/hr soot blow	22.87	295.81[10]
1A	CH&PP Boiler #1A											
2	CH&PP Boiler #2	110,600 lb/hr										
2A	CH&PP Boiler #2A											
3	CH&PP Boiler #3	114,500 lb/hr										
4	CH&PP Boiler #4	120,000 lb/hr										
4A	CH&PP Boiler #4A											
5A	CH&PP Boiler #5A	120,000 lb/hr		2.09[2] lb/ton coal	43.68	1.59[4] lb/ton coal	33.23			0.11[8] lb/ton coal & 4.52[9] lb/hr	2.85	8.46[11]
6A	CH&PP Boiler #6A	120,000 lb/hr		1.80[2] lb/ton coal								3.76[11]
Liquid Fuel Fired Boilers												
7	Auxiliary Heating Plant Boiler #1	60.7 MMBtu/ hr	**4,464** hr/yr	20.0[12] lb/10[3] gal	20.27	5.0 lb/10[3] gal	5.07	0.34 lb/10[3] gal	0.34	3.3 lb/10[3] gal	3.34	21.6[13]
8	Auxiliary Heating Plant Boiler #2											
9	Missile Storage Boiler #1	3.3 MMBtu/ hr	8,760 hr/yr	20.0[12] lb/10[3] gal	2.16	5.0 lb/10[3] gal	0.54	0.34 lb/10[3] gal	0.04	3.3 lb/10[3] gal	0.36	2.30

EU ID	Unit ID/ Description	Maximum Rating or Capacity	Operating Limits	NO_x		CO		VOC		PM_{10}		SO_2
				EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	PTE (tpy)
10	Missile Storage Boiler #2	2.9 MMBtu/ hr	8,760 hr/yr		1.90		0.48		0.03		0.31	2.03
11	Alert Hangar Boiler #1	6.0 MMBtu/ hr	8,760 hr/yr		3.93		0.98		0.07		0.65	4.19
12	Alert Hangar Boiler #2	6.0 MMBtu/ hr	8,760 hr/yr	20.0[12] lb/10^3 gal	3.93	5.0 lb/10^3 gal	0.98	0.34 lb/10^3 gal	0.07	3.3 lb/10^3 gal	0.65	4.19
13	Waste Water Treatment Boiler #1	6.7 MMBtu/ hr	8,760 hr/yr	20.0[12] lb/10^3 gal	4.39	5.0 lb/10^3 gal	1.10	0.34 lb/10^3 gal	0.07	3.3 lb/10^3 gal	0.72	4.68
14	Waste Water Treatment Boiler #2	6.7 MMBtu/ hr	8,760 hr/yr	20.0[12] lb/10^3 gal	4.39	5.0 lb/10^3 gal	1.10	0.34 lb/10^3 gal	0.07	3.3 lb/10^3 gal	0.72	4.68
15	Auxiliary Heating Plant II Boiler #1	98.0 MMBtu/ hr	**3,583,851** gal/ yr	20.0[12] lb/10^3 gal	35.84	5.0 lb/10^3 gal	8.96	0.34 lb/10^3 gal	0.61	3.3 lb/10^3 gal	5.91	38.17
16	Auxiliary Heating Plant II Boiler #2											
Propane Fired Heaters												
17	Corrosion Control Heater #1	14.7 MMBtu/ hr	N/A	13.0[14] lb/ mgal	18.32	7.5[11] lb/ mgal	10.56	1.0[11] lb/ mgal	1.41	0.7[11] lb/ mgal	0.98	2.12[13]
18	Corrosion Control Heater #2											
Diesel and Gasoline Fired Internal Combustion Engines												
19A	CH&PP Main Auxiliary Generator	4,309 bhp	8,760 hr/yr	7.11[15] lb/hr	31.14	5.52 lb/hr	24.16	4.69E-04 lb/hp-hr	8.85	0.32 lb/hr	1.40	0.19[16]
20	CH&PP Auxiliary Generator #1	2,220 bhp	**173,800** gal	1.97E-02[17] lb/hp-hr	11.70	1.93E-02 lb/MMBtu	0.06	6.42E-04 lb/hp-hr	0.38	1.40E-04 lb/hp-hr	0.08	0.00[16]
21	CH&PP Auxiliary Generator #2	2,220 bhp		1.97E-02[17] lb/hp-hr	11.70	2.45E-02 lb/MMBtu	0.07	6.42E-04 lb/hp-hr	0.38	1.40E-04 lb/hp-hr	0.08	0.00[16]

EU ID	Unit ID/ Description	Maximum Rating or Capacity	Operating Limits	NO_x		CO		VOC		PM_{10}		SO_2
				EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	PTE (tpy)
22	CH&PP Auxiliary Generator #3	2,220 bhp		1.97E-02[18] lb/hp-hr	11.70	4.71E-03 lb/MMBtu	0.01	6.42E-04 lb/hp-hr	0.38	1.40E-04 lb/hp-hr	0.08	0.00[16]
23A	CH&PP Auxiliary Generator #4	1,855 bhp		2.40E-02[19] lb/hp-hr	11.91	5.10E-02 lb/MMBtu	0.15	6.42E-04 lb/hp-hr	0.32	7.00E-04 lb/hp-hr	0.35	0.00[16]
24A	Waste Water Treatment Generator	755 bhp	**200** hr/yr	1.02E-02[20] lb/hp-hr	0.77	1.26E-03 lb/hp-hr	0.77	5.29E-04 lb/hp-hr	0.04	1.98E-04 lb/hp-hr	0.01	0.00[16]
25	Central Avenue (Clinic) Generator	470 bhp	**200** hr/yr	3.10E-02[21] lb/hp-hr	1.46	6.68E-03 lb/hp-hr	0.31	2.51E-03 lb/hp-hr	0.12	2.20E-03 lb/hp-hr	0.10	0.05[13]
26	Refueling Station Generator-Oscar Row	1,135 bhp	**140** hr/yr	2.40E-02[22] lb/hp-hr	1.91	5.50E-03 lb/hp-hr	0.44	6.42E-04 lb/hp-hr	0.05	7.00E-04 lb/hp-hr	0.06	0.09[13]
28A	Alert Hangar Generator	173 bhp	**200** hr/yr	7.81E-03[23] lb/hp-hr	0.14	7.19E-03 lb/hp-hr	0.12	4.11E-04 lb/hp-hr	0.01	4.11E-04 lb/hp-hr	0.01	0.00[16]
29	Power Plant Fire Pump	196 bhp	**200** hr/yr	3.10E-02[21] lb/hp-hr	0.61	6.80E-03 lb/hp-hr	0.13	2.51E-03 lb/hp-hr	0.05	2.20E-03 lb/hp-hr	0.04	0.02[13]
30A	Missile Maintenance Generator[16]	207 bhp	**200** hr/yr	7.81E-03[23] lb/hp-hr	0.16	7.19E-03 lb/hp-hr	0.15	4.11E-04 lb/hp-hr	0.01	4.11E-04 lb/hp-hr	0.01	0.00[16]
31	Control Tower Generator[16]	207 bhp	**200** hr/yr	3.10E-02[21] lb/hp-hr	0.64	6.68E-03 lb/hp-hr	0.14	2.51E-03 lb/hp-hr	0.05	2.20E-03 lb/hp-hr	0.05	0.02[13]
32A	Telephone Exchange Generator[16]	229 bhp	**200** hr/yr	7.81E-03[23] lb/hp-hr	0.18	7.19E-03 lb/hp-hr	0.16	4.11E-04 lb/hp-hr	0.01	4.11E-04 lb/hp-hr	0.01	0.00[16]
33	Command Post Generator[16]	145 bhp	**200** hr/yr	7.81E-03[23] lb/hp-hr	0.11	1.03E-02 lb/hp-hr	0.15	4.11E-04 lb/hp-hr	0.01	6.16E-04 lb/hp-hr	0.01	0.00[16]
34	Airfield Lighting Generator[16]	470 bhp	**200** hr/yr	3.10E-02[21] lb/hp-hr	1.46	6.68E-03 lb/hp-hr	0.31	2.51E-03 lb/hp-hr	0.12	2.20E-03 lb/hp-hr	0.10	0.05[13]
35A	Fire Pump P8 (Thunder Dome #1) [16]	365 bhp	**200** hr/yr	3.10E-02[21] lb/hp-hr	1.13	6.68E-03 lb/hp-hr	0.24	2.51E-03 lb/hp-hr	0.09	2.20E-03 lb/hp-hr	0.08	0.00[16]

EU ID	Unit ID/ Description	Maximum Rating or Capacity	Operating Limits	NO_x		CO		VOC		PM_{10}		SO_2
				EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	PTE (tpy)
36 A	Fire Pump P9 (Thunder Dome #2) [16]	365 bhp	**200** hr/yr	3.10E-02 [21] lb/hp-hr	1.13	6.68E-03 lb/hp-hr	0.24	2.51E-03 lb/hp-hr	0.09	2.20E-03 lb/hp-hr	0.08	0.00 [16]
37 A	Fire Pump P10 (Thunder Dome #3) [16]	365 bhp	**200** hr/yr	3.10E-02 [21] lb/hp-hr	1.13	6.68E-03 lb/hp-hr	0.24	2.51E-03 lb/hp-hr	0.09	2.20E-03 lb/hp-hr	0.08	0.00 [16]
38	Fire Pump P11 (F-16 Hangar Pump #1) [16]	340 bhp	**200** hr/yr	3.10E-02 [21] lb/hp-hr	1.05	6.68E-03 lb/hp-hr	0.23	2.51E-03 lb/hp-hr	0.09	2.20E-03 lb/hp-hr	0.07	0.04 [13]
39	Fire Pump P12 (F-16 Hangar Pump #2) [16]	340 bhp	**200** hr/yr	3.10E-02 [21] lb/hp-hr	1.05	6.68E-03 lb/hp-hr	0.23	2.51E-03 lb/hp-hr	0.09	2.20E-03 lb/hp-hr	0.07	0.04 [13]
40	Fire Pump P13 (F-16 Hangar Pump #3) [16]	340 bhp	**200** hr/yr	3.10E-02 [21] lb/hp-hr	1.05	6.68E-03 lb/hp-hr	0.23	2.51E-03 lb/hp-hr	0.09	2.20E-03 lb/hp-hr	0.07	0.04 [13]
41	Fire Pump P19 (Hog Pen A-10s) [16]	235 bhp	**200** hr/yr	3.10E-02 [21] lb/hp-hr	0.73	6.68E-03 lb/hp-hr	0.23	2.51E-03 lb/hp-hr	0.06	2.20E-03 lb/hp-hr	0.05	0.03 [13]
43	Fire Pump P6-Fire Support [16]	121 bhp	**200** hr/yr	3.10E-02 [21] lb/hp-hr	0.38	6.68E-03 lb/hp-hr	0.16	2.51E-03 lb/hp-hr	0.03	2.20E-03 lb/hp-hr	0.03	0.01 [13]
44	Fire Pump P5-Fire Support [16]	121 bhp	**200** hr/yr	3.10E-02 [21] lb/hp-hr	0.38	6.68E-03 lb/hp-hr	0.08	2.51E-03 lb/hp-hr	0.03	2.20E-03 lb/hp-hr	0.03	0.01 [13]
45	Fire Pump P1-Fire Support [16]	121 bhp	**200** hr/yr	3.10E-02 [21] lb/hp-hr	0.38	6.68E-03 lb/hp-hr	0.08	2.51E-03 lb/hp-hr	0.03	2.20E-03 lb/hp-hr	0.03	0.01 [13]
46	Taxi Way P4 Fire Pump [16]	121 bhp	**200** hr/yr	3.10E-02 [21] lb/hp-hr	0.38	6.68E-03 lb/hp-hr	0.08	2.51E-03 lb/hp-hr	0.03	2.20E-03 lb/hp-hr	0.03	0.01 [13]
47	Flightline P3 Fire Pump [16]	121 bhp	**200** hr/yr	3.10E-02 [21] lb/hp-hr	0.38	6.68E-03 lb/hp-hr	0.08	2.51E-03 lb/hp-hr	0.03	2.20E-03 lb/hp-hr	0.03	0.01 [13]
48	Fire Pump P2 [16]	121 bhp	**200** hr/yr	3.10E-02 [21] lb/hp-hr	0.38	6.68E-03 lb/hp-hr	0.08	2.51E-03 lb/hp-hr	0.03	2.20E-03 lb/hp-hr	0.03	0.01 [13]
49	Comms Squadron Emergency Generator [16]	170 bhp	**200** hr/yr	3.10E-02 [21] lb/hp-hr	0.53	6.68E-03 lb/hp-hr	0.11	2.51E-03 lb/hp-hr	0.04	2.20E-03 lb/hp-hr	0.04	0.02 [13]
50	Water Treatment Plant Generator [16]	470 bhp	**200** hr/yr	7.81E-03 [23] lb/hp-hr	0.37	7.19E-03 lb/hp-hr	0.34	4.11E-04 lb/hp-hr	0.02	4.11E-04 lb/hp-hr	0.02	0.00 [16]

EU ID	Unit ID/ Description	Maximum Rating or Capacity	Operating Limits	NO_x		CO		VOC		PM_{10}		SO_2
				EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	PTE (tpy)
51	Utilidor (Auxiliary Heat Plant) Emergency Generator[15]	755 bhp	**200** hr/yr	2.40E-02[22] lb/hp-hr	1.81	5.50E-03 lb/hp-hr	0.42	6.42E-04 lb/hp-hr	0.05	7.00E-04 lb/hp-hr	0.05	0.08[13]
52	E-2 Complex Fuel Tank Emergency Generator[15]	765 bhp	**200** hr/yr	2.40E-02[22] lb/hp-hr	1.84	5.50E-03 lb/hp-hr	0.42	6.42E-04 lb/hp-hr	0.05	7.00E-04 lb/hp-hr	0.05	0.09[13]
53	Fuel Hydrant System Emergency Generator[15]	749 bhp	**200** hr/yr	2.40E-02[22] lb/hp-hr	1.80	5.50E-03 lb/hp-hr	0.41	6.42E-04 lb/hp-hr	0.05	7.00E-04 lb/hp-hr	0.05	0.08[13]
54	Joint Mobility Complex (JMC) Emergency Generator[15]	1,200 bhp	**140** hr/yr	2.40E-02[22] lb/hp-hr	1.87	5.50E-03 lb/hp-hr	0.43	6.42E-04 lb/hp-hr	0.05	7.00E-04 lb/hp-hr	0.05	0.08[13]
55 A	North ILS Generator[16]	69 bhp	**200** hr/yr	6.55E-03[20] lb/hp-hr	0.05	4.45E-03 lb/hp-hr	0.03	8.18E-03 lb/hp-hr	0.06	3.75E-04 lb/hp-hr	0.00	0.00[16]
56	DET 460 Generator[16]	145 bhp	**200** hr/yr	7.81E-03[23] lb/hp-hr	0.11	1.03E-02 lb/hp-hr	0.15	4.11E-04 lb/hp-hr	0.01	6.16E-04 lb/hp-hr	0.01	0.00[16]
59	New Security Forces Facility Generator [16]	535 bhp	**200** hr/yr	3.10E-02[21] lb/hp-hr	1.66	6.68E-03 lb/hp-hr	0.36	2.51E-03 lb/hp-hr	0.13	2.20E-03 lb/hp-hr	0.12	0.06[13]
60	Fire Station No. 1 Generator[16]	170 bhp	**200** hr/yr	3.10E-02[21] lb/hp-hr	0.53	6.68E-03 lb/hp-hr	0.11	2.51E-03 lb/hp-hr	0.04	2.20E-03 lb/hp-hr	0.04	0.02[13]
62	354 Wing MOC Generator[16]	170 bhp	**200** hr/yr	3.10E-02[21] lb/hp-hr	0.53	6.68E-03 lb/hp-hr	0.11	2.51E-03 lb/hp-hr	0.04	2.20E-03 lb/hp-hr	0.04	0.02[13]
63	F-Well pump[16]	230 bhp	**200** hr/yr	7.81E-03[23] lb/hp-hr	0.18	7.19E-03 lb/hp-hr	0.17	4.11E-04 lb/hp-hr	0.01	4.11E-04 lb/hp-hr	0.01	0.00[16]
64 A	A Water Well Pump - Generator[16]	145 bhp	**200** hr/yr	7.81E-03[23] lb/hp-hr	0.11	1.03E-02 lb/hp-hr	0.15	4.11E-04 lb/hp-hr	0.01	6.16E-04 lb/hp-hr	0.01	0.00[16]

EU ID	Unit ID/ Description	Maximum Rating or Capacity	Operating Limits	NO_x		CO		VOC		PM_{10}		SO_2
				EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	PTE (tpy)
64B	B Water Well Pump - Generator[16]	145 bhp	**200** hr/yr	7.81E-03[23] lb/hp-hr	0.11	1.03E-02 lb/hp-hr	0.15	4.11E-04 lb/hp-hr	0.01	6.16E-04 lb/hp-hr	0.01	0.00[16]
65B	Aircraft Arrestor Engine NW[16]	64 bhp	**200** hr/yr	3.10E-02[21] lb/hp-hr	0.19	6.68E-03 lb/hp-hr	0.04	2.51E-03 lb/hp-hr	0.02	2.20E-03 lb/hp-hr	0.01	0.01[13]
66B	Aircraft Arrestor Engine NE[16]	64 bhp	**200** hr/yr	3.10E-02[21] lb/hp-hr	0.19	6.68E-03 lb/hp-hr	0.04	2.51E-03 lb/hp-hr	0.02	2.20E-03 lb/hp-hr	0.01	0.01[13]
67A	Aircraft Arrestor Engine 3/4 W[16]	61 bhp	**200** hr/yr	3.10E-02[21] lb/hp-hr	0.19	6.68E-03 lb/hp-hr	0.04	2.51E-03 lb/hp-hr	0.02	2.20E-03 lb/hp-hr	0.01	0.01[13]
68A	Aircraft Arrestor Engine 3/4 E[16]	61 bhp	**200** hr/yr	3.10E-02[21] lb/hp-hr	0.19	6.68E-03 lb/hp-hr	0.04	2.51E-03 lb/hp-hr	0.02	2.20E-03 lb/hp-hr	0.01	0.01[13]
69 A	Aircraft Arrestor Engine SE[16]	64 bhp	**200** hr/yr	3.10E-02[21] lb/hp-hr	0.20	6.68E-03 lb/hp-hr	0.04	2.51E-03 lb/hp-hr	0.02	2.20E-03 lb/hp-hr	0.01	0.01[13]
70B	Aircraft Arrestor Engine SW[16]	64 bhp	**200** hr/yr	3.10E-02[21] lb/hp-hr	0.20	6.68E-03 lb/hp-hr	0.04	2.51E-03 lb/hp-hr	0.02	2.20E-03 lb/hp-hr	0.01	0.01[13]
71	Loop Refueling (Type III Hydrant) Generator[16]	685 bhp	**200** hr/yr	2.40E-02[22] lb/hp-hr	1.64	5.50E-03 lb/hp-hr	0.38	6.42E-04 lb/hp-hr	0.04	7.00E-04 lb/hp-hr	0.05	0.08[13]
72	AH&P-Plant II Generator[16]	1,810 bhp	**200** hr/yr	1.25E-02[24] lb/hp-hr	2.26	7.19E-03 lb/hp-hr	1.30	6.58E-04 lb/hp-hr	0.12	4.11E-04 lb/hp-hr	0.07	0.00[16]
73	4 Bay Loop Emergency Generator [16]	250 bhp	**200** hr/yr	7.81E-03[23] lb/hp-hr	0.20	7.19E-03 lb/hp-hr	0.18	4.11E-04 lb/hp-hr	0.01	4.11E-04 lb/hp-hr	0.01	0.00[16]
74	8 Bay Loop Emergency Generator[16]	364 bhp	**200** hr/yr	7.81E-03[23] lb/hp-hr	0.28	7.19E-03 lb/hp-hr	0.26	4.11E-04 lb/hp-hr	0.01	4.11E-04 lb/hp-hr	0.01	0.00[16]

EU ID	Unit ID/ Description	Maximum Rating or Capacity	Operating Limits	NO_x		CO		VOC		PM_{10}		SO_2
				EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	PTE (tpy)
75	Missile Maintenance Well Pump Emergency Generator[16]	99 bhp	**200** hr/yr	3.10E-02[21] lb/hp-hr	0.31	6.68E-03 lb/hp-hr	0.07	2.51E-03 lb/hp-hr	0.02	2.20E-03 lb/hp-hr	0.02	0.00[16]
76	E-2 Farm Fire Pump Emergency Generator[16]	130 bhp	**200** hr/yr	3.10E-02[21] lb/hp-hr	0.40	6.68E-03 lb/hp-hr	0.09	2.51E-03 lb/hp-hr	0.03	2.20E-03 lb/hp-hr	0.03	0.01[13]
77	Dining Facility Emergency Generator[16]	364 bhp	**200** hr/yr	7.81E-03[23] lb/hp-hr	0.28	7.19E-03 lb/hp-hr	0.26	4.11E-04 lb/hp-hr	0.11	4.11E-04 lb/hp-hr	0.01	0.00[16]
78	Red Flag Emergency Generator[16]	145 bhp	**200** hr/yr	7.81E-03[23] lb/hp-hr	0.11	1.03E-02 lb/hp-hr	0.15	4.11E-04 lb/hp-hr	0.01	6.16E-04 lb/hp-hr	0.01	0.00[16]
79	Tank E-6 Generator[16]	539 bhp	**200** hr/yr	7.81E-03[23] lb/hp-hr	0.42	7.19E-03 lb/hp-hr	0.39	4.11E-04 lb/hp-hr	0.02	4.11E-04 lb/hp-hr	0.02	0.00[16]
80	Cooling Pond Generator[15]	755 bhp	**200** hr/yr	1.25E-02[24] lb/hp-hr	0.94	7.19E-03 lb/hp-hr	0.54	6.58E-04 lb/hp-hr	0.05	4.11E-04 lb/hp-hr	0.03	0.00[16]
112	North Glideslope Generator[16]	36.5 bhp	500 hr/yr	3.10E-02[21] lb/hp-hr	0.28	6.68E-03 lb/hp-hr	0.06	2.51E-03 lb/hp-hr	0.02	2.20E-03 lb/hp-hr	0.02	0.01[13]
113	ASOS/GPS Generator[16]	68 bhp	500 hr/yr	3.10E-02[21] lb/hp-hr	0.53	6.68E-03 lb/hp-hr	0.11	2.51E-03 lb/hp-hr	0.04	2.20E-03 lb/hp-hr	0.04	0.02[13]
114	Base Radio MARS Generator[16]	56 bhp	500 hr/yr	3.10E-02[21] lb/hp-hr	0.43	6.68E-03 lb/hp-hr	0.09	2.51E-03 lb/hp-hr	0.04	2.20E-03 lb/hp-hr	0.03	0.01[13]
115	TACAN South Glideslope Generator[16]	49 bhp	500 hr/yr	3.10E-02[21] lb/hp-hr	0.38	6.68E-03 lb/hp-hr	0.08	2.51E-03 lb/hp-hr	0.03	2.20E-03 lb/hp-hr	0.03	0.01[13]
116	Lift Station Generator[16]	145 bhp	500 hr/yr	7.81E-02[23] lb/hp-hr	0.28	1.03E-02 lb/hp-hr	0.37	4.11E-04 lb/hp-hr	0.01	6.16E-04 lb/hp-hr	0.02	0.00[16]
117	South ILS Generator[16]	99 bhp	500 hr/yr	3.10E-02[21] lb/hp-hr	0.77	6.68E-03 lb/hp-hr	0.17	2.51E-03 lb/hp-hr	0.06	2.20E-03 lb/hp-hr	0.05	0.03[13]
118 A	Quarry Hill Generator[16]	49 bhp	500 hr/yr	1.17E-02[25] lb/hp-hr	0.14	9.04E-03 lb/hp-hr	0.11	6.16E-04 lb/hp-hr	0.01	4.93E-04 lb/hp-hr	0.01	0.00[16]
119	POL Control Generator[16]	27 bhp	500 hr/yr	1.17E-02[25] lb/hp-hr	0.08	9.04E-03 lb/hp-hr	0.06	6.16E-04 lb/hp-hr	0.00	4.93E-04 lb/hp-hr	0.00	0.00[16]

EU ID	Unit ID/ Description	Maximum Rating or Capacity	Operating Limits	NO_x		CO		VOC		PM_{10}		SO_2
				EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	PTE (tpy)
120	MXS/UCC Generator[16]	38.6 bhp	500 hr/yr	3.10E-02[21] lb/hp-hr	0.30	6.68E-03 lb/hp-hr	0.06	2.51E-03 lb/hp-hr	0.02	2.20E-03 lb/hp-hr	0.02	0.01[13]
122	Fire Station No. 2 Generator[16]	102 bhp	200 hr/yr	3.10E-02[21] lb/hp-hr	0.32	6.68E-03 lb/hp-hr	0.07	2.51E-03 lb/hp-hr	0.03	2.20E-03 lb/hp-hr	0.02	0.01[13]
124	Emergency Wastewater Pump Engine[16]	80 bhp	500 hr/yr	3.10E-02[21] lb/hp-hr	0.62	6.68E-03 lb/hp-hr	0.13	2.51E-03 lb/hp-hr	0.05	2.20E-03 lb/hp-hr	0.04	0.00[16]
125	Emergency Wastewater Pump Engine[16]	80 bhp	500 hr/yr	3.10E-02[21] lb/hp-hr	0.62	6.68E-03 lb/hp-hr	0.13	2.51E-03 lb/hp-hr	0.05	2.20E-03 lb/hp-hr	0.04	0.00[16]
129	North Slope Relay Generator[16]	145 bhp	500 hr/yr	7.81E-03[21] lb/hp-hr	0.28	1.03E-02 lb/hp-hr	0.37	4.11E-04 lb/hp-hr	0.01	6.16E-04 lb/hp-hr	0.02	0.00[16]
130	OSS Weapons Intel Facility Emergency Generator	208 bhp	**200** hr/yr	7.81E-03[21] lb/hp-hr	0.41	7.19E-03 lb/hp-hr	0.37	4.11E-04 lb/hp-hr	0.02	4.11E-04 lb/hp-hr	0.02	0.00[16]
131	Consolidated Munitions Facility Emergency Generator	173 bhp	**200** hr/yr	7.81E-03[21] lb/hp-hr	0.34	7.19E-03 lb/hp-hr	0.31	4.11E-04 lb/hp-hr	0.02	4.11E-04 lb/hp-hr	0.02	0.00[16]
132	Tank E-11 Generator	539 bhp	**500** hr/yr	7.81E-03[21] lb/hp-hr	1.05	7.19E-03 lb/hp-hr	0.97	4.11E-04 lb/hp-hr	0.06	4.11E-04 lb/hp-hr	0.06	0.00[16]
Hush House												
81	Hush House[26]	n/a	**70** tests/ yr		19.73		15.76		0.25		1.06	1.05
Portable Asphalt/Rock Crusher Diesel Fired Internal Combustion Engines												
82	Recycle Plant Engine[27]	450 hp	**4,000** hr/yr	1.02E-02 lb/hp-hr	9.18	5.76E-03 lb/hp-hr	5.18	2.51E-03 lb/hp-hr	2.26	2.47E-04 lb/hp-hr	0.22	0.01[16]
83	Jaw Crusher Engine[27]	450 hp	**4,000** hr/yr	1.02E-02 lb/hp-hr	9.18	5.76E-03 lb/hp-hr	5.18	2.51E-03 lb/hp-hr	2.26	2.47E-04 lb/hp-hr	0.22	0.01[16]
84	Hydrascreen Engine[27]	96 hp	**4,000** hr/yr	1.10E-02 lb/hp-hr	2.11	1.37E-03 lb/hp-hr	0.26	2.51E-03 lb/hp-hr	0.48	1.81E-04 lb/hp-hr	0.03	0.00[16]
Fire Training												

EU ID	Unit ID/ Description	Maximum Rating or Capacity	Operating Limits	NO_x		CO		VOC		PM_{10}		SO_2
				EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	PTE (tpy)
85	Fire Training[28]	n/a	140,000 gal/yr	5.57E-03 lb/gal fuel	0.39	1.54E-02 lb/gal	1.08	2.40E-02 lb/gal	1.68	9.50E-03 lb/gal	0.67	0.11
Portable Asphalt/Rock Crusher Fugitives												
86	Tertiary Crushing	150 ton/hr	3,650 hr/yr							5.4E-04[29] lb/ton	0.15	
87	Conveyor Transfer Point #1	115[30] ton/hr	3,650 hr/yr							4.60E-05[29] lb/ton	0.01	
88	Conveyor Transfer Point #2	115[30] ton/hr	3,650 hr/yr							4.60E-05[29] lb/ton	0.01	
89	Screening	600 ton/hr	3,650 hr/yr							7.4E-04[29] lb/ton	0.81	
90	Conveyor Transfer Point #3	115[30] ton/hr	3,650 hr/yr							4.60E-05[29] lb/ton	0.01	
91	Conveyor Transfer Point #4	115[30] ton/hr	3,650 hr/yr							4.60E-05[29] lb/ton	0.01	
92	Conveyor Transfer Point #5	115[30] ton/hr	3,650 hr/yr							4.60E-05[29] lb/ton	0.01	
93	Fines Screening	150 ton/hr	3,650 hr/yr							2.2E-03[29] lb/ton	0.60	
94	Conveyor Transfer Point #6	115[30] ton/hr	3,650 hr/yr							4.60E-05[29] lb/ton	0.01	
95	Conveyor Transfer Point #7	115[30] ton/hr	3,650 hr/yr							4.60E-05[29] lb/ton	0.01	
96	Conveyor Transfer Point #8	115[30] ton/hr	3,650 hr/yr							4.60E-05[29] lb/ton	0.01	
97	Truck Unload to All Crushers	1,500 ton/hr	3,650 hr/yr							1.60E-05[29] lb/ton	0.04	
98	Conveyor Transfer Point #9	115[30] ton/hr	3,650 hr/yr							4.60E-05[29] lb/ton	0.01	

EU ID	Unit ID/ Description	Maximum Rating or Capacity	Operating Limits	NO_x		CO		VOC		PM_{10}		SO_2
				EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	PTE (tpy)
99	Conveyor Transfer Point #10	115[30] ton/hr	3,650 hr/yr							4.60E-05[29] lb/ton	0.01	
100	Conveyor Transfer Point #11	115[30] ton/hr	3,650 hr/yr							4.60E-05[29] lb/ton	0.01	
101	Primary/ Secondary Crushing	600 ton/hr	3,650 hr/yr							[31]	0.00	
102	Conveyor Transfer Point #12	115[30] ton/hr	3,650 hr/yr							4.60E-05[29] lb/ton	0.01	
103	Conveyor Transfer Point #13	115[30] ton/hr	3,650 hr/yr							4.60E-05[29] lb/ton	0.01	
Other Regulated Sources												
109	Aircraft Corrosion Control Facility[32]								2.98		0.13	
110 A	Sandwich Belt Conveyer[33]										0	
110 B	Segment Crusher[33]										1.4	
111	Coal Tripper System[34]	150 TPH	220,000 tons/ yr							0.03 lb/hr	0.02	
Fuel Storage Tanks												
104	Tank 1317-1[35]	420,000 Gallons							0.02			
105	Tank 1318-2[35]	420,000 Gallons							0.02			
106	Tank 3241-5[35]	420,000 Gallons							0.08			
107	Tank 3244-6[35]	420,000 Gallons							0.08			
126	Fuel Tank Quartermaster station[36]	25,948 Gallons							0.22			

EU ID	Unit ID/ Description	Maximum Rating or Capacity	Operating Limits	NO_x		CO		VOC		PM_{10}		SO_2
				EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	EF	PTE (tpy)	PTE (tpy)
127	Fuel Tank Quartermaster station[36]	25,948 Gallons							0.18			
128	Fuel Tank Quartermaster station[36]	25,948 Gallons							0.18			
Total Potential to Emit					**624.31**		**490.57**		**31.93**		**49.25**	**394.49**

Table Notes:

1. Source test AMTEST Air Quality LLC, September 2000
2. CEMS NO_x data for calendar year 2023 operations for each EU IDs 5A and 6A
3. Source test Alaska Source Testing LLC, 12/20/2021, average of three highest EFs for EU IDs 1-4
4. Higher of EFs for EU IDs 5A and 6A
5. EPA AP-42, Table 1.1-19
6. Average of three highest EFs for EU IDs 1-4, total filterable PM
7. Average of three highest EFs for EU IDs 1-4 soot blowers, operating 80 minutes per operational day (20 minutes*4 soot blowers)
8. Average of the EFs for EU IDs 5A and 6A, total filterable PM
9. Average of the EFs for EU IDs 5A and 6A soot blowers, operating 40 minutes per operational day (20 minutes*2 soot blowers)
10. Source test Alaska Source Testing, LLC, 11/15/2005
11. CEMS SO_2 data for calendar year 2023 for each EU IDs 5A and 6A
12. Liquid boilers emission factors from EPA AP-42. NO_x, SO_2, CO emission factors from Table 1.3-1 for distillate fired boilers < 100 MMBtu/hr.
    SO_2 emissions in Table 1.3-1 are calculated by weight percent sulfur in fuel.
    PM_{10} calculated from filterable plus condensable emissions: filterable from Table 1.3-1 for distillate fired boilers < 100 MMBtu/hr, condensable from Table 1.3-2.
    VOC from Table 1.3-3 for commercial/institutional/residential combustors, distillate oil fired. Non Methane Organic Compounds (NMOC) used as methane separate from VOC.
13. Fuel sulfur limit of 0.15 wt% for EU IDs 7-80, 112-125, and 129 from Minor Permit AQ0264MSS04 Condition 7.
14. EPA AP-42, Table 1.5-1
15. NO_x, PM_{10} emission factors from Tier 4 engine emission standards due to Johnson Matthey emissions control system, multiplied by 1.5 "Not-to-Exceed" (NTE) factor.
    CO and VOC emission factor from manufacturer.
16. Fuel sulfur limit of 0.0015 wt% for EU IDs 19A, 20-24A, 28A, 30A, 32A, 33, 35A-37A, 50, 55A, 56, 63, 64A, 64B, 72-75, 77-80, 82-84, 116, 118A, 119, 124, 125, and 129-132 subject to NSPS Subpart IIII requirement for engines < 30 liters/cylinder.
17. NO_x emission factor from source test AST, 11/27/2013 at 95% load
    CO emission factor from source test AST 12/8/2022 with oxidation catalyst
    PM_{10} emission factor from source test AMTEST Air Quality LLC, 9/14/2000 at 75% load
    VOC emission factor from EPA AP-42, Table 3.4-1

18. NO_x emission factor from source test AST, 11/27/2013 at 95% load
    CO emission factor from source test AST 9/5/2023 with oxidation catalyst
    PM_{10} emission factor from source test AMTEST Air Quality LLC, 9/14/2000 at 75% load
    VOC emission factor from EPA AP-42, Table 3.4-1
19. NO_x, PM_{10}, VOC emission factors from AP-42, Table 3.4-1. CO emission factor from source test AST 12/8/2022 with oxidation catalyst.
20. Emission factors from manufacturer
21. EPA AP-42, Table 3.3-1
22. EPA AP-42, Table 3.4-1
23. Emission factors from Tier 3 engine emission standards, multiplied by 1.25 NTE factor.
24. Emission factors from Tier 2 engine emission standards, multiplied by 1.25 NTE factor.
25. Emission factors from Table 2 to NSPS Subpart IIII
26. Fuel flow rate and emission factors from Air Emissions Guide for Air Force Stationary Sources, June 2023. EU ID 81 limited to 70 tests per year by Condition 10.
27. NO_x, CO, PM_{10} emission factors from manufacturer. VOC emission factor from AP-42, Table 3.3-1.
28. NO_x, CO, PM_{10}, VOC emission factors from Air Emissions Guide for Air Force Stationary Sources, June 2023. SO_2 emission factor from AP-42 Table 1.5-1.
29. EPA AP-42, Table 11.19.2-2, using wet suppression.
30. Total cumulative rating for Conveyer Transfer Points EU IDs 87, 88, 90-92, 94-96, 98-100, 102, and 103 is 1,500 tons per hour. Conservatively expressed as 115 tph across 13 conveyers for PTE calculation purposes.
31. EPA AP-42, Table 11.19.2-2 notes no emission data for Primary/Secondary Crushing activities.
32. Emission factors from Air Program Information Management System (APIMS). Potential emissions conservatively assumed 3x actual emissions.
33. EPA AP-42, Table 11.19.2-2. Coal processing system is entirely enclosed in a building with no emission point to atmosphere, with exception of Segment Crusher.
34. Source Test Alaska Source Testing LLC, 9/28/2022
35. TankESP software and TANKS 5.1 Tank Data and Routine Losses Reports. Emissions calculated from potential fuel turnovers per year.
36. EPA TANKS 5.1 Tank Data and Routine Losses Reports