

Alaska Department of Environmental Conservation
Air Permits Program

TECHNICAL ANALYSIS REPORT
For the terms and conditions of
Minor Permit AQ0982MSS10 Revision 1

Issued to Furie Operating Alaska, LLC
For the Kitchen Lights Unit

Preliminary – August 14, 2024

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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 AQ0982MSS10 Revision 1 to Furie Operating Alaska, LLC (Furie) for the Kitchen Lights Unit (KLU) Drill Rig 151 (formally known as the Spartan 151 Drilling Rig). The Department is issuing this permit under 18 AAC 50.508(6) in order to revise the terms or conditions previously established in Minor Permit AQ0982MSS10.

2. STATIONARY SOURCE DESCRIPTION

The existing KLU stationary source includes the Drill Rig 151 (authorized by Minor Permit AQ0982MSS10) and the Julius R. Platform (authorized by Minor Permit AQ0982MSS11). The emissions unit (EU) inventory consists of combustion units (rig engines, crane engines, and temporary well testing flare), temporary well servicing and testing equipment (pumps, power packs, pump skids, well test equipment boilers/heaters, and cement pumps), storage tanks, and two lifeboat engines, all of which are listed in Table 1 of this permit.

3. PERMIT HISTORY RELEVANT TO PROJECT

Minor Permit No. AQ0982MSS08 established the cumulative drill rig NRE limit of 7,500 bhp for the Yost Rig to protect the Alaska Ambient Air Quality Standards (AAAQS). This limit was then revised in Minor Permit No. AQ0982MSS10 to 7,635 bhp for the replacement of the Yost Rig with the Drill Rig 151 (formerly called Spartan 151 Drill Rig), as well as expanding the limit to apply to all NREs in the permit.

4. APPLICATION DESCRIPTION

Furie submitted a minor permit application under 18 AAC 50.508(6) on June 6, 2024 to revise terms and conditions of Minor Permit AQ0982MSS10. The requested changes are as follows:

- In a memo to the Department, dated April 19, 2024, Furie proposes to modify Condition 11.1b by introducing requirements to provide records of when each activity (drilling, testing/casing, and cementing) is conducted as evidence that the NRE limit in Condition 11.1 is not exceeded. The basis being that Furie has provided evidence that each of these operating scenarios would require different sets of engines to be operated, and in each of these operating scenarios, the sets of engines being operated do not exceed the NRE limit. In Furie's proposal, during activities that do not fall under the three operating scenarios (drilling, support (testing/casing), and cementing), the Permittee will revert to the original monitoring and recordkeeping requirements found in Condition 11.1b of Minor Permit AQ0982MSS10.
- In its application for Minor Permit AQ0982MSS10 Rev. 1, Furie requested editorial revisions to the emissions unit inventory in Table 1 and to change the drill rig's name from "Spartan 151 Drill Rig" to "Drill Rig 151", consistent with Hilcorp's naming of the drill rig.

5. CLASSIFICATION FINDINGS

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

1. Minor Permit AQ0982MSS10 Revision 1 is classified under 18 AAC 50.508(6) to revise or rescind terms and conditions of a Title I permit.

6. APPLICATION REVIEW FINDINGS

Following are the Department's findings based on the review of the minor permit application:

1. Furie's minor permit application for the KLU contains the elements listed in 18 AAC 50.540.
2. In a correspondence to the Department on August 8, 2024, Furie requested a change on the source's name from "Kitchen Lights Unit Exploration" to "Kitchen Lights Unit." The Department included the requested revision with this minor permit action as an administrative amendment.
3. The Department has updated the emissions unit inventory in Table 1, to reflect the current EUs operating at the stationary source. This EU inventory table replaces Table 1 from Minor Permit AQ0982MSS10.
4. The revisions introduced in this permit will not result in any changes to the stationary source's potential-to-emit (PTE). The ambient demonstration originally submitted in support of Minor Permit AQ0982MSS08, which was also used in support of Minor Permit AQ0982MSS10, is still valid for this stationary source, as of issuance of this permit.
5. The cumulative operating NRE horsepower limit remains unchanged from the limit established in Condition 11.1 of Minor Permit AQ0982MSS10, established to protect the AAAQS. As currently stated in Condition 8.1, "the cumulative NRE rating shall not exceed 7,635 operating brake horsepower (bhp) except during startup, shutdown, and maintenance activities for periods not to exceed one hour per calendar day."
6. The PTE in AQ0982MSS10 consists of the Drill Rig 151 and Julius R. Platform EUs (AQ0982MSS06). The Department recalculated the assessable emissions by calculating the combined PTE from AQ0982MSS11 with the Drill Rig 151 (AQ0982MSS10).
7. As part of its request to revise the monitoring and recordkeeping associated with the cumulative operating NRE horsepower limit, Furie provided estimates of the cumulative operating NRE horsepower on board during each of three operating scenarios: drilling, support (testing/casing), and cementing operations. Furie estimated that the cumulative operating NRE horsepower on board the drill rig would be 6,665 bhp during drilling operations, 6,788 bhp during cementing operations, and 4,895 bhp during support (testing/casing) operations. These estimates were based off the engines that Furie identified would be operated during each of these three operating scenarios.
8. In a correspondence to the Department on July 26, 2024, Furie provided the corrected cumulative operating NRE horsepower for drilling and support operations at the KLU as 6,737 bhp and 5,995 bhp, respectively.
9. The Department revised Condition 11.1 of Minor Permit AQ0982MSS10 (now Condition 8.1 of Minor Permit AQ0982MSS10 Rev. 1) by adding Condition 8.1a(i) requiring the Permittee, during drilling, support (testing/casing), or cementing operations, to record the type of operation, the start time and date of the operations, and the stop time and date of the operations. During operations not defined as drilling, testing/casing, or cementing operations, the Permittee shall revert to tracking the operational status of every engine onboard as described in Condition 8.1a(ii) of this permit.

7. EMISSIONS SUMMARY AND PERMIT

Table 2 shows the emissions summary with assessable emissions from the stationary source. The Department notes that the KLU’s PTE for criteria pollutants remain unchanged from AQ0982MSS11. See Table 2 below.

Table 2 – Emissions Summary and Permit Applicability, tons per year (TPY)

Parameter	NO _x	CO	VOC	PM _{2.5}	PM ₁₀	SO ₂
Assessable Emissions from Drill Rig 151 (AQ0982MSS10)	12.12	41.49	74.87	3.99	3.99	5.61
Assessable Emissions from Julius R. Platform (AQ0982MSS11)	23.82	18.69	5.39	0.72	0.72	0.04
Assessable Emissions ^{1,2,3}	35.94	60.18	80.26	4.71 ³		5.65
Total Assessable ^{1,2,3}	186.74					

Notes:

1. Assessable emissions include fugitive emissions but do not include nonroad engines. Fugitive emissions are not included in the table because the stationary source does not engage in major fugitive-emitting operations.
2. The assessable emissions are the sum of the stationary engines consisting of the Drill Rig 151 (AQ0982MSS10) and the emissions from the Julius R. Platform (AQ0982MSS11).
3. PM₁₀ emissions include PM_{2.5} emissions. Therefore, PM_{2.5} is not counted in total assessable emissions.

8. REVISIONS TO PERMIT CONDITIONS

Table 3 below lists the requirements carried over from Minor Permit AQ0982MSS10 into Minor Permit AQ0982MSS10 Revision 1.

Table 3 – Comparison of AQ0982MSS10 to AQ0982MSS10 Revision 1 Conditions⁸

Permit AQ0982MSS10 Condition No.	Description of Requirement	Permit AQ0982MSS10 Revision 1 Condition No.	How Condition was Revised
Section 1	Emissions Unit Inventory	Section 1	Renamed “Spartan 151 Drill Rig” to “Drill Rig 151”. Rating of EU IDs 57 and 58 updated to 970 hp (from 1100 hp), and EU IDs 62 and 63 to 1100 hp (from 970 hp). Added Cement Pump 3 as EU ID 80. Added manufacturer for EU IDs 75, 76, 78, and 79. Added Other Third-Party Engines as EU IDs 81 through 84.
Section 2	Fee Requirements	Section 2	Updated Administration Fees to latest citations in 18 AAC 50. Updated SPC I, per latest revision on 9/7/22. Corrected total assessable PTE typo consisting of the Drill Rig 151

⁸ This table does not include all standard and general conditions.

Permit AQ0982MSS10 Condition No.	Description of Requirement	Permit AQ0982MSS10 Revision 1 Condition No.	How Condition was Revised
			and the Julius R. Platform to 186.74 TPY.
None	Visible Emissions MR&R for EU ID 73	6.1	Added gap-fill requirement for EU ID 73, an insignificant emission unit (IEU) that was left out of AQ0982MSS10.
None	PM Emissions MR&R for EU ID 73	6.2	Added gap-fill requirement for EU ID 73 (IEU) that was left out of AQ0982MSS10.
11	NRE MR&R to protect the AAAQS	8	Revised bolded condition title in Condition 8.1 to “Cumulative Nonroad Engine (NRE) for clarity. Added MR&R scenario for drilling, testing/casing, or cementing operations as Condition 8.1a. NRE MR&R in Condition 8.1a(ii) for operations not classified under Condition 8.1a streamlined for clarity. Added “or the requirements of Conditions 8.1a through 8.1c are not met” in Condition 8.1d as gap-filling excess emissions/permit deviation reporting requirement.
Section 6	Recordkeeping, Reporting, and Certification Requirements	Section 4	Updated SPC XVII, per latest revision on 7/22/20.
None	Emission Inventory Reporting and Consistency of Reporting Methodologies	18 & 19	Added SPC XV, applicable to all permits.

9. PERMIT ADMINISTRATION

As requested by the Permittee, the Department rescinds Condition 11.1 of Minor Permit AQ0982MSS10 and replaces it with Condition 8 in Minor Permit AQ0982MSS10 Revision 1. Furie Operating Alaska, LLC may therefore operate in accordance with Minor Permit AQ0982MSS10 Revision 1 upon issuance.

10. PERMIT CONDITIONS

The bases for the standard and general conditions imposed in Minor Permit AQ0982MSS10 Revision 1 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.

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 AQ0982MSS10 Revision 1. 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.

Condition 2 rescinds Conditions 4 through 6 of Minor Permit AQ0982MSS10 to update the citations for the administration fees (Condition 3) and latest revisions to SPC I (Conditions 4 and 5).

Section 3: Revisions to Previous Permit Actions

Condition 6, Gap-fill MR&R for EU ID 73

The Department included gap-fill MR&R for EU ID 73 in Conditions 6.1 and 6.2. EU ID 73 consists of small well test boilers/heaters deemed to be insignificant emissions units. As such, more extensive MR&R is not required. However, the Permittee must certify compliance for EU ID 73 with the visible emission and PM emission standards based on reasonable inquiry.

Condition 7

Condition 7 authorizes the rescission of Minor Permit AQ0982MSS10 Condition 11 in its entirety and replacing the condition with Condition 8 of Minor Permit AQ0982MSS10 Revision 1.

Condition 8, Cumulative NRE limit

18 AAC 50.544(a)(6) requires the Department to include conditions to protect air quality, when warranted. Minor Permit AQ0982MSS10 Rev. 1 did not introduce any operational changes to the stationary source. Therefore, the ambient air quality analysis used in support of Minor Permit AQ0982MSS10 is still valid for this permit. Minor Permit AQ0982MSS10 Rev. 1 modifies the monitoring and recordkeeping requirements for the cumulative operating NRE rating limit (Condition 8.1 of Minor Permit AQ0982MSS10 Rev. 1), as discussed in Application Review Findings section of this TAR.

Section 4: General Recordkeeping, Reporting, and Certification Requirements

Condition 9

Condition 9 rescinds Section 6 (Recordkeeping, Reporting, and Certification Requirements) of Minor Permit AQ0982MSS10 and updates it with Section 4, to incorporate the latest revisions to SPC XVII.

Condition 10, Recordkeeping Requirements

The condition restates the regulatory requirements for recordkeeping, and supplements the recordkeeping defined for specific conditions in the permit. The records being kept provide evidence of compliance with this requirement.

Condition 11, 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 12, Submittals

Condition 12 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 13, 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 AQ0982MSS10 Revision 1.

Condition 14 and Section 7, Excess Emission and Permit Deviation Reports

This condition reiterates the notification requirements in 18 AAC 50.235(a)(2) and 18 AAC 50.240 regarding unavoidable emergencies, malfunctions, and excess emissions. Also, the Permittee is required to notify the Department when emissions or operations deviate from the requirements of the permit. The Department used the language in SPCs III and IV, except as follows:

The Department has modified Condition 14.3 and the Notification Form in Section 7 to reflect the electronic submittal requirements in 18 AAC 50.270 using the Department's online form to submit notification of excess emissions and permit deviations beginning September 7, 2023. The electronic notification form is found at the Division of Air Quality's Air Online Services (AOS) system webpage <http://dec.alaska.gov/applications/air/airtoolsweb> using the Permittee Portal option. Submittal through other methods may be allowed only upon written Department approval. Beyond as noted, the Department has determined that the standard conditions adequately meet the requirements of 40 C.F.R. 71.6(a)(3).

Condition 15, Operating Reports

The Department mostly used the SPC VII language for the operating report condition. However, the Department modified or eliminated the Title V only aspects in order to make the language applicable for a minor permit.

Condition 16, Annual Affirmation

The Permittee shall submit to the Department by March 31 of each year an affirmation certified according to Condition 11 of whether the stationary source is still accurately described by the application and this permit, and whether any changes have been made to the stationary source that would trigger the requirement for a new permit under 18 AAC 50.

Condition 17, Air Pollution Prohibited

18 AAC 50.110 prohibits 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. Condition 17 reiterates this prohibition as a permit condition. The Department used the SPC II language for Minor Permit AQ0982MSS10 Revision 1.

Condition 18, Triennial Emission Inventory Reporting

This condition requires the Permittee to submit emissions data to the state so the state is able to satisfy the federal requirement to submit emission inventory data from point sources to the EPA as required under 40 C.F.R. 51.15 and 51.321. The federal emission inventory requirement applies to sources defined as point sources in 40 C.F.R. 51.50. Under 18 AAC 50.275, the state also requires reporting of emissions triennially for stationary sources with an air quality permit, regardless of permit classification. This includes sources that do not meet the federal emission thresholds in Table 1 to Appendix A of 40 C.F.R. 51 Subpart A. The state must report emissions data as described in 40 C.F.R. 51.15 and the data elements in Tables 2a and 2b to Appendix A of 40 C.F.R. 51 Subpart A to EPA.

The Department modified the language in SPC XV for the permit condition by lowering the thresholds that require reporting to include all stationary sources regardless of permit classification (excluding ORLs and PAELs) to capture the new requirements found in 18 AAC 50.275, effective September 7, 2022.

As of the issue date of this permit, the KLU is required to report triennially.

Condition 19, Consistency of Reporting Methodologies

Condition 19 is from 18 AAC 50.275(a) and requires all stationary sources, regardless of permit classification (with the exception of owner requested limits (ORLs) issued under 18 AAC 50.225 and preapproved emission limits (PAELs) issued under 18 AAC 50.230), to report actual emissions to the state so that the state can meet its obligation under 40 C.F.R. 51. Condition 19.1 is from 18 AAC 50.275(b) and requires consistency on the stationary sources' actual emissions reports submitted for NEI and the state's assessable emissions.

The regulation was added to 18 AAC 50 on September 7, 2022, to include all stationary sources required to report actual emissions for the purpose of federal emissions inventory and to avoid inconsistencies in actual emissions reports submitted. When reporting actual emissions under Condition 18 or assessable emissions under Condition 4.2, consistent

emission factors and calculation methods shall be used for all reporting requirements for the stationary source.

Section 5: Standard Permit Conditions

Conditions 20 – 25, 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 the minor permit-related standard conditions of 18 AAC 50.345 in Minor Permit AQ0982MSS10 Revision 1. The Department incorporated these standard conditions as follows:

- 18 AAC 50.345(c)(1) and (2) is incorporated as Condition 20 of Section 5 (Standard Permit Conditions);
- 18 AAC 50.345(d) through (h) is incorporated as Conditions 21 through 25, respectively, of Section 5 (Standard Permit Conditions);
- As previously discussed, 18 AAC 50.345(i) is incorporated as Condition 13 and 18 AAC 50.345(j) is incorporated as Condition 9 of Section 4 (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	EU Description	Rating	Max Allowable Operation		NO _x ,CO EF Units	NO _x		CO		VOC EF Units	VOC		PM _{2.5} , PM ₁₀ EF Units	PM _{2.5} / PM ₁₀		SO ₂
						EF ¹	PTE	EF ¹	PTE		EF ²	PTE		EF ³	PTE	PTE ⁴
Julius R. Platform Units (AQ0982MSS11)																
1a	Generator	402 hp	2.80E-06	MMscf/hr	g/hp-hr	0.5	1.94	1	3.87	g/hp-hr	0.31	1.20	lb/MM Btu	7.7 E-05	4E-04	0.01
2a	Generator	402 hp	2.80E-06	MMscf/hr	g/hp-hr	0.5	1.94	1	3.87	g/hp-hr	0.31	1.20	lb/MM Btu	7.7 E-05	4E-04	0.01
3a	Auxiliary Generator	274 kW	4000	hrs/yr	lb/hr	5.02	10.04	1.16	2.32	lb/hr	0.13	0.26	lb/hr	0.1	0.20	0.01
4	Heater	1.2 MMBtu/hr	8760	hrs/yr	lb/MMscf	100	0.52	84	0.43	lb/MMscf	5.5	0.03	lb/MMscf	7.6	0.04	1.47E-03
5	Heater	1.2 MMBtu/hr	8760	hrs/yr	lb/MMscf	100	0.52	84	0.43	lb/MMscf	5.5	0.03	lb/MMscf	7.6	0.04	1.47E-03
6	Platform Crane	403 kW	4000	hrs/yr	g/kWh	5	8.88	4.38	7.76	g/hp-hr	2.47 E-03	2.67	g/kWh	0.25	0.44	0.01
PTE of Julius R. Platform Units⁶							23.82		18.69			5.39			0.72	0.04
Drill Rig 151 Units (AQ0982MSS10)																
66	Temporary Well Flare	160 MMscf	250	MMscf/yr	lb/MMBtu	0.068	8.93	0.31	40.69	lb/MMBtu	0.57	74.81	lb/MM Btu	0.0264	3.47	5.57
73	Well Test Equipment Boilers/Heaters	5 MMBtu/hr	319,648 ⁵	gal/yr	lb/kgal	20	3.20	5	0.80	lb/kgal	3.40 E-01	0.05	lb/kgal	3.3	0.53	0.03
PTE of Drill Rig 151 Units⁶							12.12		41.49			74.87			3.99	5.61
Total PTE⁶							35.94		60.18			80.26			4.71	5.65
Total Overall PTE⁶						186.74										

Notes:

- 1 NOx and CO Emissions Factors (EFs) are from the following: a) Vendor data for EU IDs 1a through 3a; b) EPA AP-42 Table 1.4-1 for EU IDs 4 and 5; c) Table 3 to Appendix I 40 C.F.R. 1039 (Tier 3) with 1.25 not-to-exceed (NRE) for EU ID 6; and d) EPA AP-42 Table 13.5-1 and Table 1.3-1 for EU IDs 66 and 73, respectively.
- 2 VOC EFs are from the following: a) Vendor data for EU IDs 1a through 3a ; b) EPA AP-42 Table 1.4-2 for EU IDs 4 and 5; c) EPA AP-42 Table 3.3-1; d) EPA AP-42 Table 1.1-3 for EU ID 66; and e) EPA AP-42 Table 1.3-3 for EU ID 73.
- 3 PM₁₀/PM_{2.5} EFs are from the following: a) EPA AP-42 Table 3.2-2 for EU IDs 1a and 2a; b) Vendor data for EU ID 3a; c) EPA AP-42 Table 1.4-2 for EU IDs 4 and 5; d) Table 3 to Appendix I 40 C.F.R. 1039 (Tier 3) with 1.25 NRE for EU ID 6; e) EPA AP-42 Table 13.5-2 for EU ID 66; and f) EPA AP-42 Table 1.3-2 (Condensable PM, No. 2 oil – 1.3 lb/kgal), 7 (Filterable PM, Distillate Oil – 2 lb/kgal) for EU ID 73.
- 4 SO₂ EFs are from the following: a) 2000 grains/MMscf natural gas sulfur content for EU IDs 1a and 2a; b) Mass balance (15 ppmw S (ULSD)) for EU IDs 3a and 6, and 420A; c) EPA AP-42 Table 1.4-2 for EU IDs 4 and 5; d) EPA AP-42 Table 1.1-3 for EU ID 66; and e) EPA AP-42 Table 1.3-1 for EU ID 73 (ULSD).
- 5 Assumes 137,030 Btu/gal diesel, 1,000,000 Btu/MMBtu, and operations of 8,760 hrs/yr.
- 6 PTE does not include non-road engines.