DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR QUALITY CONTROL MINOR PERMIT

Minor Permit: AQ0181MSS10 Revision 1 **Preliminary Date – November 15, 2024**
Revises Permit: AQ0181MSS10

The Alaska Department of Environmental Conservation (Department), under the authority of AS 46.14 and 18 AAC 50, issues Air Quality Control Minor Permit AQ0181MSS10 Revision 1 to the Permittee listed below.

Permittee:	**Hilcorp Alaska, LLC** 3800 Centerpoint Drive, Suite 1400, Anchorage, AK 99503
Stationary Source:	**Endicott Production Facility**
Location:	70.351921° N, 147.954017° W
Project:	Short-term H_2S Limit Increase Project
Permit Contact:	Drew Anderson, (907) 777-8488, ananderson@hilcorp.com

The Permittee submitted an application for Minor Permit AQ0181MSS10 Revision 1 under 18 AAC 50.508(6) in order to revise the terms and conditions of a Title I permit. This permit satisfies the obligation of the Permittee to obtain a minor permit under 18 AAC 50. 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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Abbreviations and Acronyms

AAAQS .....Alaska Ambient Air Quality Standards
AAC.....Alaska Administrative Code
ADEC .....Alaska Department of Environmental Conservation
AOS .....Air Online Services
AS .....Alaska Statutes
ASTM .....American Society for Testing and Materials
BACT .....best available control technology
bhp .....brake horsepower
C.F.R. .....Code of Federal Regulations
CAA.....Clean Air Act
CO .....carbon monoxide
Department .....Alaska Department of Environmental Conservation
dscf .....dry standard cubic foot
EPA .....US Environmental Protection Agency
EU.....emissions unit
g/hp-hr .....grams per horsepower hour
gr/dscf.....grain per dry standard cubic foot (1 pound = 7000 grains)
HAPs .....hazardous air pollutants [as defined in AS 46.14.990]
hp .....horsepower
ID.....emissions unit identification number
LHV.....lower heating value
m.....meter(s)
MMBtu .....million British thermal units
MMscf .....million standard cubic feet
MR&R .....monitoring, recordkeeping, and reporting
NGL.....natural gas liquid
NO_x.....nitrogen oxides
NRE.....nonroad engine
NSPS .....New Source Performance Standards [as contained in 40 C.F.R. 60]
O_2.....oxygen
PAL .....plantwide applicability limitation
PM_{10} .....particulate matter less than or equal to a nominal 10 microns in diameter
$PM_{2.5}$.....particulate matter less than or equal to a nominal 2.5 microns in diameter
ppm .....parts per million
ppmv, ppmvd.....parts per million by volume on a dry basis
PSD .....prevention of significant deterioration
PTE.....potential to emit
SPC.....Standard Permit Condition or Standard Operating Permit Condition
SO_2 .....sulfur dioxide
TEG .....triethylene glycol
The Act.....Clean Air Act
TPY .....tons per year
VOC .....volatile organic compound [as defined in 40 C.F.R. 51.100(s)]
VOL.....volatile organic liquid [as defined in 40 C.F.R. 60.111b, Subpart Kb]
vol% .....volume percent
wt% .....weight percent
$wt\%S_{fuel}$ .....weight percent of sulfur in fuel

Section 1 Emissions Unit Inventory

Emissions Unit (EU) Authorization. The Permittee is authorized to operate the EUs listed in Table 1 in accordance with the terms and conditions of this permit. The information in Table 1 is for identification purposes only, unless otherwise noted in the permit. The specific EU descriptions do not restrict the Permittee from replacing an EU identified in Table 1.

Table 1 – EU Inventory[1]

EU ID	EU Description	Make/Model	Rating/Max Capacity	Construction/Startup or Modification Date
1	Gas-fired Main Gas Compressor Turbines	Nuovo-Pignone Frame 5D	43,000 bhp ISO	Upgrade 1999
2			43,000 bhp ISO	Upgrade 1999
3	Gas-fired NGL Compressor Turbine	Nuovo-Pignone Frame 1	5,400 bhp ISO	1986-87
4	Gas-fired Water Injection Pump Turbines	Ruston Tornado	8,485 bhp ISO	1986-87
5		Ruston Tornado	8,485 bhp ISO	1986-87
6	Gas-fired Generator Turbines	Ruston Tornado	8,717 bhp ISO	1986-87
7		Ruston Tornado	8,717 bhp ISO	1986-87
8		Ruston Tornado	8,717 bhp ISO	1986-87
9		Ruston Tornado	8,717 bhp ISO	1986-87
11	Gas-fired Utility/Process Heater	Claudius Peters	97.9 MMBtu/hr [heat input (maximum) LHV]	1986-87
12	Gas-fired Building Heat Medium Heater	ENTECH	40.5 MMBtu/hr [heat input (maximum) LHV]	1986-87
14	Gas-fired TEG Reboiler	BS&B	7.0 MMBtu/hr heat input, LHV	New Burner 1997
15	Gas-fired NGL Reboiler	CE NATCO	27.0 MMBtu/hr heat input, LHV	1986-87
17	Liquid fuel-fired Emergency Generators	Fairbanks Morse	4,168 bhp	1986-87
18		Fairbanks Morse	4,168 bhp	1986-87
24	Liquid fuel-fired Emergency Fire Water Pump	Cummins Diesel 378F2	137 bhp	1986-87
25	High Pressure Flare	GKN Birwelco LTD	500 MMscf/day	Modified 1999
26	Low Pressure Flare	GKN Birwelco LTD	25 MMscf/day	1986-87
27	Portable Flare	Halliburton	25 MMscf/day	1986-87
75	Gasoline Dispensing Facility	Storage tanks	<10,000 gal/month	On or before Nov 2006
76	Backup Diesel Generators	Various	2,800 bhp, total	Installed 2016
77	Diesel Mud Pump	Caterpillar 3408	425 bhp	Installed 2016
78	Emergency Diesel ICE	Caterpillar C27	1150 hp	Relocated 2023

Notes:

1. This table includes all EUs that are currently existing at the stationary source, as of the issuance date of this permit.
2. Hilcorp requested deletion of EU IDs 10, 19, and 20 in the Title V operating permit renewal application for AQ0181TVP03 because these EUs are no longer in service and have been abandoned in place.
3. EU ID 10A (7,500 kW Liberty Solar Turbine) was never installed and was removed from the source's EU inventory through an Off Permit Change Notification, dated March 18, 2016.
4. EU IDs 76 and 77 were authorized in Minor Permits AQ0181MSS06 (issued 6/21/2016) and AQ0181MSS07 (issued 7/15/2016), respectively.
5. EU ID 78 is new in this permit; it was added in an off-permit change notification dated June 21, 2023.

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**.**

Section 2 Fee Requirements

2. Conditions 2 through 4 of Minor Permit AQ0181MSS10 are rescinded and replaced by Conditions 3 through 5 of Minor Permit AQ0181MSS10 Revision 1.

3. **Fee Requirements.** The Permittee shall pay to the Department all assessed permit fees. Fee rates are set out in 18 AAC 50.400 – 499.

4. **Assessable Emissions**. For each period from July 1 through the following June 30, 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 Department will assess fees per ton of each air pollutant that the stationary source emits or has the potential to emit. The quantity for which fees will be assessed is the lesser of the stationary source's

4.1 potential to emit of 4,822 TPY; or

4.2 projected annual rate of emissions, in TPY, based upon actual annual emissions for the most recent calendar year, or another 12 month period approved in writing by the Department, when demonstrated by credible evidence of actual emissions, based upon the most representative information available from 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; or

d. other methods and calculations approved by the Department, including appropriate vendor-provided emissions factors when sufficient documentation is provided.

5. **Assessable Emission Estimates.** The Permittee shall comply 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 as determined in Condition 4.2. Submit actual emissions estimates in accordance with the submission instructions on the Department's Standard Permit Conditions web page at http://dec.alaska.gov/air/air-permit/standard-conditions/standard-condition-i-submission-instructions/.

5.2 The Permittee shall include with the assessable emissions report all of the assumptions and calculations used to estimate the assessable emissions in sufficient detail so the Department can verify the estimates.

Section 3 Revisions to Previous Permit Actions

Ambient Air Quality Protection Requirements

6. SO_2 AAAQS and Increments Protection. The Permittee shall protect the 3-hour, 24-hour, and annual SO_2 AAAQS, and the 3-hour, 24-hour, and annual Class II increments, as follows:

6.1 Condition 5.1 (in its entirety) of Minor Permit AQ0181MSS10 is rescinded and replaced by Conditions 6.2 and 6.3 of Minor Permit AQ0181MSS10 Revision 1.

6.2 Limit the short-term H_2S content of the fuel gas burned in EU IDs 1 through 9, 11, 12, 14, 15 and 25 through 27 to no more than 520 ppmv.

a. Monitor in accordance with the Test Methods and Procedures described under the applicable NSPS Subpart GG Sulfur Standard provisions (40 CFR 60.334(h)(1) and 60.335(b)(10)) listed in the applicable operating permit issued for the stationary source under AS 46.14 and 18 AAC 50.

(i) Sampling frequency is determined by Table 2, starting with level 1 at once a month.

Table 2 - Sampling Frequency Based on Predicted Future Sample Concentration

Sampling Frequency Level	Sampling Frequency	Predicted Future Sample Concentration	Sampling Frequency Test Basis [1]
1	Once a month	< 468 ppmv (<90% of the short-term limit)	The probability is less than 10% that future samples will exceed 90% of the short-term limit based on the most recent 24 samples.
2	Every two weeks	≥ 468 ppmv and ≤ 494 ppmv (≥90% - ≤95% of the short-term limit)	The probability is less than 10% that future samples will be between 90% and 95% of the short-term limit based on the most recent 24 samples.
3	Weekly	> 494 ppmv (>95% of the short-term limit)	The probability is less than 10% that future samples will exceed 95% of the short-term limit based on the most recent 24 samples.

(ii) After each sample is taken, predict the future sample concentration using the following relationship:

[1] Ambient Air Monitoring Network Assessment Guidance, Analytical Techniques for Technical Assessments of Ambient Air Monitoring Networks, EPA-454/D-07-001. U.S. Environmental Protection Agency Office of Air Quality Planning and Standards Air Quality Assessment Division Research Triangle Park, North Carolina. February 2007. Page 4-1.

$$Future\ Sample\ Concentration\ = \bar{X} + \frac{t * s}{\sqrt{n}}$$

Where:

$\bar{X}$	=	the average H_2S content for the last 24 samples
t	=	1.319, the critical value of the student's t distribution for n-1 degrees of freedom (23, in this case) at the 90% confidence level using a 2-tailed distribution[2]
s	=	the standard deviation of the last 24 samples
n	=	24, the number of samples

(A) If the predicted future sample concentration corresponds to a sampling frequency level one above the level corresponding to the current sampling frequency, the sampling frequency is increased by one level.

(B) If the predicted future sample concentration corresponds to the sampling frequency level of the current sampling frequency, and has remained that way for a full calendar month, the sampling frequency is reduced by one level, with a minimum of monthly samples.

b. For each month of the reporting period, include in the operating report required by the applicable operating permit issued for the stationary source under AS 46.14 and 18 AAC 50:

(i) the concentration of H_2S (in ppmv) measured in the representative fuel gas for each sample taken,

(ii) any change in the type of fuel and tests or analyses performed, and

(iii) the predicted future sample concentration determined for each sample taken, the sampling frequency level corresponding to the sample taken, and the sampling frequency level for the next sample as determined under Conditions 6.2a(i) and 6.2a(ii).

c. Report as excess emissions and permit deviations as described in the applicable operating permit issued for the stationary source under AS 46.14 and 18 AAC 50 if a sample exceeds the limit in Condition 6.2, or if Conditions 6.2a or 6.2b are not met.

6.3 Limit the long-term H_2S content of the fuel gas burned in EU IDs 1 through 9, 11, 12, 14, 15, and 25 through 27, based on a rolling 12-month average period, to no more than 425 ppmv.

a. Calculate the average concentration of H_2S for the rolling 12-month period at the end of each month.

[2] Reference: https://www.itl.nist.gov/div898/handbook/eda/section3/eda3672.htm

b. Report the H_2S concentration calculated in Condition 6.3a in the operating report required by the applicable operating permit issued for the stationary source under AS 46.14 and 18 AAC 50 for each month of the reporting period.

c. Report as excess emissions and permit deviations as described in the applicable operating permit issued for the stationary source under AS 46.14 and 18 AAC 50 if the average H_2S concentration calculated in Condition 6.3a exceeds the limit in Condition 6.3, or if Conditions 6.3a or 6.3b are not met.

6.4 For EU ID 76, burn only liquid fuel that meets the ULSD specifications (0.0015 percent sulfur by weight). Monitor, record, and report as follows:

a. Obtain and keep certified receipts from fuel suppliers that confirm all diesel fuel combusted in the engines operated as EU ID 76 meets the specifications of ULSD;

b. Include in the operating report required by the applicable operating permit issued for the stationary source under AS 46.14 and 18 AAC 50 a statement indicating whether all fuel combusted in the engines operated as EU ID 76 during the reporting period is ULSD; and

c. Report as excess emissions and permit deviations as described in the applicable operating permit issued for the stationary source under AS 46.14 and 18 AAC 50 if any fuel combusted in the engines operated as EU ID 76 did not meet the ULSD specifications, or if Conditions 6.4a or 6.4b are not met.

7. Stack Configuration. The Permittee shall comply with the following stack configuration requirements:

7.1 Maintain vertical, uncapped exhaust stacks on all EUs listed in Table 1, except as follows:

a. EU ID 12 may use capped releases; and

b. All EUs may use flapper-style rain covers, or other similar designs, that do not hinder the vertical momentum of their exhaust plume.

7.2 Report, in the first operating report required by the applicable operating permit issued for the stationary source under AS 46.14 and 18 AAC 50 that would be due following the issuance of this permit, a statement that the exhaust stack for all EUs listed in Table 1 complies with Condition 7.1; and

7.3 Report, as described in Excess Emissions and Permit Deviation report required in the applicable operating permit issued for the stationary source under AS 46.14 and 18 AAC 50, if the exhaust stack for any of the EUs listed in Table 1 is not constructed in accordance with the configuration requirements of Condition 7.1.

8. Stack Heights. The Permittee shall comply with the following:

8.1 Maintain the following minimum EU exhaust stack heights:

a. 44.8 meters (m) for EU ID 11;

b. 19.9 m for EU ID 12;

c. 30.6 m for EU ID 14; and

d. 38.3 m for EU ID 15.

8.2 Include, in the first operating report required by the applicable operating permit issued for the stationary source under AS 46.14 and 18 AAC 50 that would be due following the issuance of this permit, as-built drawings, photographs, or other information sufficient to demonstrate that each exhaust stack listed under Condition 8.1 complies with the minimum stack height requirements listed in Condition 8.1; and

8.3 Report, as described in Excess Emissions and Permit Deviation report required in the applicable operating permit issued for the stationary source under AS 46.14 and 18 AAC 50, if a minimum stack height requirement under Condition 8.1 is not met.

Section 4 Recordkeeping, Reporting, and Certification Requirements

9. Section 6 (Recordkeeping, Reporting, and Certification Requirements) of Minor Permit AQ0181MSS10 is rescinded (in its entirety) and replaced by Section 4 of Minor Permit AQ0181MSS10 Revision 1.

10. Certification. The Permittee shall certify any permit application, report, affirmation, or compliance certification submitted to the Department and required under the permit by including the signature of a responsible official for the permitted stationary source following the statement: "*Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete.*" Excess emissions reports must be certified either upon submittal or with an operating report required for the same reporting period. All other reports and other documents must be certified upon submittal.

10.1 The Department may accept an electronic signature on an electronic application or other electronic record required by the Department if the person providing the electronic signature

a. uses a security procedure, as defined in AS 09.80.190, that the Department has approved; and

b. accepts or agrees to be bound by an electronic record executed or adopted with that signature.

11. Submittals. Unless otherwise directed by the Department or this permit, the Permittee shall submit to the Department one certified copy of reports, compliance certifications, and/or other submittals required by this permit. The Permittee may submit the documents electronically or by hard copy.

11.1 Submit the certified copy of reports, compliance certifications, and/or other submittals in accordance with the submission instructions on the Department's Standard Permit Conditions web page at http://dec.alaska.gov/air/air-permit/standard-conditions/standard-condition-xvii-submission-instructions/.

Section 5 Standard Permit Conditions

12. The Permittee must comply with each permit term and condition. Noncompliance with a permit term or condition constitutes a violation of AS 46.14, 18 AAC 50, and, except for those terms or conditions designated in the permit as not federally enforceable, the Clean Air Act, and is grounds for

12.1 an enforcement action; or

12.2 permit termination, revocation and reissuance, or modification in accordance with AS 46.14.280.

13. 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.

14. 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.

15. 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.

16. The permit does not convey any property rights of any sort, nor any exclusive privilege.

17. The Permittee shall allow the Department or an inspector authorized by the Department, upon presentation of credentials and at reasonable times with the consent of the owner or operator to

17.1 enter upon the premises where an emissions unit subject to this permit is located or where records required by the permit are kept;

17.2 have access to and copy any records required by this permit;

17.3 inspect any stationary source, equipment, practices, or operations regulated by or referenced in the permit; and

17.4 sample or monitor substances or parameters to assure compliance with the permit or other applicable requirements.

Section 6 Permit Documentation

Date	Document Details
November 7, 2023	Application Received
December 20, 2023	Response received from Permittee regarding additional application information.
August 14, 2024	Preliminary draft permit and TAR sent to Permittee for technical review.
August 29, 2024	Comments and suggested changes received from technical review.

Section 7 Notification Form[3]

Endicott Production Facility	**AQ0181MSS10 Revision 1**
Stationary Source Name	**Air Quality Permit Number**

Hilcorp Alaska, LLC
Company Name

When did you discover the Excess Emissions/Permit Deviation?

Date: ____/____/____ Time: ____:____

When did the event/deviation occur?

Begin: Date: ____/____/____ Time: ____:____ (please use 24-hr clock)

End: Date: ____/____/____ Time: ____:____ (please use 24-hr clock)

What was the duration of the event/deviation? ____:____ (hrs:min) or ____days

(total # of hrs, min, or days, if intermittent then include only the duration of the actual emissions/deviation)

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

☐ Excess Emissions - Complete Section 1 and Certify

Note: All "excess emissions" are also "permit deviations." However, use only Section 1 for events that involve excess emissions.

☐ Deviation from Permit Conditions - Complete Section 2 and Certify

Note: Use only Section 2 for permit deviations that do not involve excess emissions.

☐ Deviation from COBC[4], CO[5], or Settlement Agreement - Complete Section 2 and Certify

[3] Revised as of July 22, 2020.
[4] Compliance Order By Consent
[5] Compliance Order

Section 1. Excess Emissions

(a) **Was the exceedance** ☐Intermittent or ☐Continuous

(b) **Cause of Event** (Check one that applies. Complete a separate form for each event, as applicable.):

☐Start Up/Shut Down
☐Natural Cause (weather/earthquake/flood)
☐Control Equipment Failure
☐Scheduled Maintenance/Equipment Adjustments
☐Bad fuel/coal/gas
☐Upset Condition
☐Other _____

(c) **Description**

Describe briefly what happened and the cause. Include the parameters/operating conditions exceeded, limits, monitoring data and exceedance. Attach supporting information if necessary.

(d) **Emissions Units (EU) Involved:**

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

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

(e) **Type of Incident:** (Please check all that apply and provide the value requested, if any):

- ☐ Opacity _____%
- ☐ Control Equipment Down
- ☐ Emission Limit Exceeded
- ☐ Flaring
- ☐ Other**:** _____
- ☐ Venting _____(gas/scf)
- ☐ Fugitive Emissions
- ☐ Marine Vessel Opacity

(f) **Corrective Actions:**

Describe actions taken to restore the system to normal operation and to minimize or eliminate chances of a recurrence. Attach supporting information if necessary.

(g) **Unavoidable Emissions:**

Do you intend to assert that these excess emissions were unavoidable? ☐ YES ☐ NO

Do you intend to assert the affirmative defense of 18 AAC 50.235? ☐ YES ☐ NO

Certify Report (<u>go to end of form</u>)

Section 2. Permit Deviations

(a) **Permit Deviation Type:** (Check all boxes that apply per event. Complete a separate form for each event, as applicable.)

- ☐ Emissions Unit-Specific Requirements
- ☐ Stationary Source-Wide Specific Requirements
- ☐ Monitoring/Recordkeeping/Reporting Requirements
- ☐ General Source Test Requirements
- ☐ Compliance Certification Requirements
- ☐ Standard/Generally Applicable Requirements
- ☐ Insignificant Emissions Unit Requirements
- ☐ Other: _____

(b) **Emissions Units (EU) Involved:**

Identify the emissions units involved in the event, using the same identification number and name as in the permit. List the corresponding permit condition and the deviation.

EU ID	EU Name	Permit Condition /Potential Deviation

(c) **Description of Potential Deviation:**

Describe briefly what happened and the cause. Include the parameters/operating conditions and the potential deviation. Attach supporting information if necessary.

(d) **Corrective Actions:**

Describe actions taken to correct the deviation or potential deviation and to prevent future recurrence. Attach supporting information if necessary.

Certification:

Based on information and belief formed after reasonable inquiry, I certify that the statements and information in and attached to this document are true, accurate, and complete.

Printed Name:_____Title_____Date _____

Signature:_____ Phone number_____

NOTE: *This document must be certified in accordance with 18 AAC 50.345(j). Read and sign the certification in the bottom of the form above. (See Condition 10.)*

Beginning September 7, 2023, Excess Emissions and Permit Deviations must be submitted through the AOS Permittee Portal at http://dec.alaska.gov/applications/air/airtoolsweb/.

This Notification Form may only be used to satisfy the reporting requirements if the Department has approved alternative reporting options in writing prior to submittal.

[18 AAC 50.346(b)(3)]