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Suite 1400
Anchorage, AK 99503

Phone: 907/777-8300
Fax: 907/777-8301

September 5, 2025

Alaska Department of Environmental Conservation
Air Permit Program
ATTN: Permit Intake Clerk
555 Cordova Street
Anchorage, AK 99501

Subject: Hilcorp North Slope, LLC – Omega Pad
Minor Permit Application to Revise Terms and Conditions of a Title I Permit

Dear Permit Intake Clerk,

Hilcorp North Slope, LLC (Hilcorp) submits the enclosed minor permit application for Omega Pad. The application is classified under 18 Alaska Administrative Code (AAC) 50.508(6) to revise or rescind Title I permit conditions in existing Minor Permit No. AQ1854MSS01. Construction of the Omega Pad stationary source is anticipated to commence in first quarter 2027, as a result, Hilcorp is evaluating project design changes against the thresholds in 18 AAC 50.502(c)(1) that apply to a new stationary source. Under this approach, the stationary source potential to emit direct particulate matter less than 2.5 microns (PM_{2.5}) will exceed the minor air quality permitting threshold under 18 AAC 50.502(c)(1)(F).

Hilcorp expects the Alaska Department of Environmental Conservation (ADEC) to charge an hourly permit administration fee for the processing of this application per 18 AAC 50.400(h).

Please contact Kaley Volper at (907) 564-4332 or kaley.volper@hilcorp.com with any questions or concerns.

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.

Sincerely,

A handwritten signature in black ink, appearing to read 'V. Hughes', with a long horizontal stroke extending to the right.

Vanessa Hughes
Asset Lead
Hilcorp North Slope, LLC

Enclosure: Title I Minor Permit Application for Omega Pad
cc: Jeanette Brena, Boreal, jbrena@boreal-services.com



Omega Pad

Application for an Air Quality Minor Permit

Prepared for:
Hilcorp North Slope, LLC

September 2025



Omega Pad

Application for an Air Quality Minor Permit

Prepared for:

Hilcorp North Slope, LLC

3800 Centerpoint Drive, Suite 1400
Anchorage, AK 99503

Prepared by:

Boreal Environmental Services

4300 B Street, Suite 510
Anchorage, AK 99503



SUMMARY OF REQUIRED APPLICATION ELEMENTS

Hilcorp North Slope, LLC (Hilcorp) requests revisions to Title I Minor Permit No. AQ1854MSS01 for Omega Pad under 18 Alaska Administrative Code (AAC) 50.508(6). Construction of the Omega Pad stationary source is anticipated to commence in the first quarter of 2027, as a result, Hilcorp is evaluating project design changes against the thresholds in 18 AAC 50.502(c)(1) that apply to a new stationary source. Under this approach, the stationary source potential to emit direct particulate matter less than 2.5 microns (PM_{2.5}) will exceed the minor air quality permitting threshold under 18 AAC 50.502(c)(1)(F). The following table provides a summary of required elements to obtain a minor permit under 18 AAC 50.502(c)(1) and 18 AAC 50.508(6).

Required Application Elements

Regulatory Citation	Requirement	Application Section
18 AAC 50.502(c)(1)		
18 AAC 50.540(b)	Stationary Source Identification Form	Before Attachment A
18 AAC 50.540(c)(1)(A)	Emissions Unit Information Form	Before Attachment A
18 AAC 50.540(c)(1)(B)	Emissions Summary Form	Before Attachment A
18 AAC 50.540(c)(2)(A)	Ambient demonstration for each pollutant for which a permit is required under 18 AAC 50.502(c)(1)	Attachment E
18 AAC 50.508(6)		
18 AAC 50.540(b)	Stationary Source Identification Form	Before Attachment A
18 AAC 50.540(k)(1)	Copy of the Title I permit that established the permit term or condition	Attachment F
18 AAC 50.540(k)(2)	Explanation of why the permit term or condition should be revised or rescinded	Attachment D
18 AAC 50.540(k)(3)	Effect of revising or revoking the permit term or condition on emissions, other permit terms, underlying ambient demonstration if any, and compliance monitoring	Attachments A, D, and E
18 AAC 50.540(k)(4)	Explanation of the conditions' effect on avoiding a permit classification	Attachment D

**Alaska Department of Environmental Conservation
Air Quality Minor Permit Application**



STATIONARY SOURCE IDENTIFICATION FORM

Section 1 Stationary Source Information

Name: Omega Pad			SIC: 1311		
Project Name (if different):			Contact: Kaley Volper / Environmental Specialist		
Physical Address: Prudhoe Bay, Alaska			City:		State: AK
			Telephone: 907-564-4332		Zip:
			E-Mail Address: kaley.volper@hilcorp.com		
UTM Coordinates (m) or Latitude/Longitude:			Northing:		Zone:
			Latitude: 70.349346		Longitude: -149.362233

Section 2 Legal Owner

Section 3 Operator (if different from owner)

Name: Please see attached sheet			Name: Hilcorp North Slope, LLC		
Mailing Address:			Mailing Address: 3800 Centerpoint Drive, Suite 1400		
City:	State: AK	Zip:	City: Anchorage	State: AK	Zip: 99503
Telephone #:			Telephone #:		
E-Mail Address:			E-Mail Address:		

Section 4 Designated Agent (for service of process)

Section 5 Billing Contact Person (if different from owner)

Name: CT Corporation Systems			Name: Hilcorp North Slope, LLC / Accounts Payable		
Mailing Address: 9360 Glacier Hwy, Suite 202			Mailing Address: 3800 Centerpoint Drive, Suite 1400		
City: Juneau	State: AK	Zip: 99801	City: Anchorage	State: AK	Zip: 99503
Telephone #:			Telephone #:		
E-Mail Address:			E-Mail Address:		

Section 6 Application Contact

Name: Kaley Volper / Environmental Specialist			
Mailing Address: 3800 Centerpoint Drive, Suite 1400		City: Anchorage	State: AK
		Telephone: 907-564-4332	Zip: 99503
E-Mail Address: kaley.volper@hilcorp.com			

Section 7 Desired Process Method (Check only one – see 18 AAC 50.542(a) for process descriptions and restrictions)

- Fast track for a permit classification under 18 AAC 50.502 [18 AAC 50.542(b)]
 Public comment [18 AAC 50.542(d)]

STATIONARY SOURCE IDENTIFICATION FORM

Section 8 Source Classification(s) (Check all that apply)

[18 AAC 50.502(b)]

- Asphalt Plant [≥ 5 ton per hour]
- Thermal Soil Remediation Unit [≥ 5 ton per hour]
- Rock Crusher [≥ 5 ton per hour]
- Incinerator(s) [total rated capacity ≥ 1000 lb/hour]
- Coal Preparation Plant
- Port of Anchorage Facility

If you checked any of the above, is (are) the emission unit(s) new, relocated*, or existing?

[18 AAC 50.502(c)(1)]

New or relocated* stationary source with potential emissions greater than:

- 40 tons per year (tpy) NOx
- 40 tpy SO₂
- 15 tpy PM-10
- 10 tpy PM-2.5
- 0.6 tpy lead
- 100 tpy CO in a nonattainment area

[18 AAC 50.502(c)(2)]

Construction or relocation* of a:

- Portable oil and gas operation
- ≥ 10 MMBtu/hr fuel burning equipment in a SO₂ special protection area

* Relocation does NOT include moving equipment from one place to another within your current stationary source boundary.

Section 9 Modification Classification(s) (Check all that apply)

[18 AAC 50.502(c)(3)]

- NOx Increase > 10 tpy [and existing PTE > 40 tpy]
- SO₂ Increase > 10 tpy [and existing PTE > 40 tpy]
- PM-10 Increase > 10 tpy [and existing PTE > 15 tpy]
- PM-2.5 Increase > 10 tpy [and existing PTE > 10 tpy]
- CO Increase > 100 tpy [and existing PTE > 100 tpy in a nonattainment area]

[18 AAC 50.502(c)(4)]

- NOx Increase > 40 tpy [and existing PTE ≤ 40 tpy]
- SO₂ Increase > 40 tpy [and existing PTE ≤ 40 tpy]
- PM-10 Increase > 15 tpy [and existing PTE ≤ 15 tpy]
- PM-2.5 Increase > 10 tpy [and existing PTE ≤ 10 tpy]
- CO Increase > 100 tpy [and Existing PTE ≤ 100 tpy in a nonattainment area]

Basis for calculating modification:

- Projected actual emissions minus baseline actual emissions
- New potential emissions minus existing potential emissions

Section 10 Permit Action Request (Check all that apply)

[18 AAC 50.508]

- Establish Plant-wide Applicability Limitation (PAL)
- Establish emission reductions to offset nonattainment pollutant
- Owner Requested Limit* (ORL)
- Revise or Rescind Title I Permit Conditions *

Permit Number: AQ1854MSS01; Condition No. See Attachment D

Date: 7/17/2025

*Which to use? See <http://www.dec.state.ak.us/air/ap/docs/orlrtc.pdf>

Section 11 Existing Permits and Limits

For an existing stationary source, do you have an existing: (Check all that apply)

- Air quality permit Number(s)*: AQ1854MSS01

- Owner Requested Limit(s) Permit Number(s):
- Pre-Approved Emission Limit (PAEL) Number(s)**:

* All active construction, Title V, and minor permit numbers.

**Optional. Please provide this number if possible.

<http://dec.alaska.gov/Applications/Air/airtoolsweb/>

STATIONARY SOURCE IDENTIFICATION FORM

Section 12 Project Description

Provide a short narrative describing the project. Discuss the purpose for conducting this project, what emission units/activities will be added/modified under this project (i.e., project scope), and the project timeline. If the project is a modification to an existing stationary source, describe how this project will affect the existing process. Include any other discussion that may assist the Department in understanding your project or processing your application. Include a schedule of construction.

Please use additional copies of this sheet if necessary.

Hilcorp North Slope, LLC (Hilcorp) requests revisions to Title I Minor Permit No. AQ1854MSS01 for Omega Pad under 18 Alaska Administrative Code (AAC) 50.508(6). Construction of the Omega Pad stationary source is anticipated to commence in the first quarter of 2027, as a result, Hilcorp is evaluating project design changes against the thresholds in 18 AAC 50.502(c)(1) that apply to a new stationary source. Under this approach, the stationary source potential to emit direct particulate matter less than 2.5 microns (PM_{2.5}) will exceed the minor air quality permitting threshold under 18 AAC 50.502(c)(1)(F).

Application Information

The application includes the *Stationary Source Identification Form*, *Emissions Unit Information Form*, *Emissions Summary Form* and the following attachments as required by 18 AAC 50.540:

- Attachment A provides an air quality permit applicability summary and potential to emit calculations.
- Attachment B provides vendor data in support of the information in this application.
- Attachment C provides a demonstration of compliance with the state of Alaska emissions standards under 18 AAC 50, per Section 8 of the *Emissions Unit Information Form*.
- Attachment D provides information under Section 12 of this form pertaining to revising a Title I permit condition.
- Attachment E provides the ambient demonstration (dispersion modeling analysis) as required under 18 AAC 50.540(c)(2)(A).
- Attachment F provides a copy of Minor Permit No. AQ1854MSS01 as required by 18 AAC 50.540(k)(1).
- Attachment G provides supporting electronic files.

STATIONARY SOURCE IDENTIFICATION FORM

Section 12 Project Description Continued

For **PALs under Section 10** of this application, include the information listed in 40 C.F.R. 52.21(aa)(3), adopted by reference in 18 AAC 50.040 [18 AAC 50.540(h)].

Not applicable.

For a **limit to establish offsetting emissions under Section 10** of this application, specify the physical or operational limitations necessary to provide actual emission reductions of the nonattainment air pollutant; including [18 AAC 50.540(i)]:

- A calculation of the expected reduction in actual emissions; and

Not applicable.

- The emission limitation representing that quantity of emission reduction.

Not applicable.

STATIONARY SOURCE IDENTIFICATION FORM

Section 12 Project Description Continued

For **ORLs under Section 10** of this application [18 AAC 50.540(j)], include:

A description of each proposed limit, including for each air pollutant a calculation of the effect the limit will have on the stationary source's potential to emit and the allowable emissions [18 AAC 50.225(b)(4)];

Not applicable.

A description of a verifiable method to attain and maintain each limit, including monitoring and recordkeeping requirements [18 AAC 50.225(b)(5)];

Not applicable.

Citation to each requirement that the person seeks to avoid, including an explanation of why the requirement would apply in the absence of the limit and how the limit allows the person to avoid the requirement [18 AAC 50.225(b)(6)];

Not applicable.

A statement that the owner or operator of the stationary source will be able to comply with each limit [18 AAC 50.225(b)(8)];

Not applicable.

STATIONARY SOURCE IDENTIFICATION FORM

Section 12 Project Description Continued

For revising or rescinding Title I permit conditions under Section 10 of this application [18 AAC 50.540(k)], include:

An explanation of why the permit term or condition should be revised or rescinded [18 AAC 50.540(k)(2)];

See Attachment D.

The effect of revising or revoking the permit term or condition on [18 AAC 50.540(k)(3)]:

- Emissions;

See Attachments A and D.

- Other permit terms;

See Attachment D.

- The underlying ambient demonstration, if any;

See Attachment E.

- Compliance monitoring; and

See Attachment D.

For revising a condition that allows avoidance of a permit classification, the information required for that type of permit, unless the revised condition would also allow the owner or operator to avoid the classification. [18 AAC 50.540(k)(4)]

See Attachment D.

STATIONARY SOURCE IDENTIFICATION FORM

Section 13 Other Application Material

The information listed below must be included in your air quality control minor permit application. *Note: These must be attached in order for your application to be complete.*

If required to submit an analysis of ambient air quality under 18 AAC 50.540(c)(2), or if otherwise requested by the Department:

- Attached are maps, plans, and/or aerial photographs as necessary to show the locations and distances of
 - emissions units, buildings, emitting activities and boundaries of the associated with the stationary source, and
 - nearby or adjacent residences, roads, other occupied structures and general topography within 15 kilometers.

(Indicate compass direction and scale on each.)

- Attached is a document (e.g., spreadsheet) showing coordinates and elevations of each modeled unit, along with parameters necessary to characterize each unit for dispersion modeling.

- Attached is an electronic copy of all modeling files.

Section 14 Certification

This certification applies to the Air Quality Control Minor Permit Application for the Omega Pad submitted to the Department on: (see date below) (Stationary Source Name)

Type of Application

- Initial Application
- Change to Initial Application

The application is **NOT** complete unless the certification of truth, accuracy, and completeness on this form bears the signature of a **Responsible Official**. Responsible Official is defined in 18 AAC 50.990. (18 AAC 50.205)

CERTIFICATION OF TRUTH, ACCURACY, AND COMPLETENESS

“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.”

Signature: 	Date: 9/5/25
Printed Name: Vanessa Hughes	Title: Asset Lead

Section 15 Attachments

- Attachments Included.
 - Attachment A – Emissions Unit Information and Potential to Emit Calculations
 - Attachment B – Vendor Data
 - Attachment C – Compliance Demonstration
 - Attachment D – Revise or Rescind a Title I Permit Condition
 - Attachment E – Ambient Demonstration
 - Attachment F – Minor Permit No. AQ1854MSS01
 - Attachment G – Electronic Files

STATIONARY SOURCE IDENTIFICATION FORM

Section 16 Mailing Address

Submit the minor permit application to the Permit Intake Clerk in the Department's Anchorage office. Submitting to a different office will delay processing. The mailing address and phone number for the Anchorage office is:

Alaska Department of Environmental Conservation
Air Permit Program
555 Cordova Street
Anchorage, Alaska 99501
(907) 269-4718

STATIONARY SOURCE IDENTIFICATION FORM

Section 2 Legal Owner

Hilcorp North Slope, LLC
3800 Centerpoint Drive, Suite 1400
Anchorage, AK 99503

ConocoPhillips Alaska, Inc.
700 G Street (zip 99501)
P.O. Box 100360
Anchorage, AK 99510-0360

ExxonMobil Alaska Production, Inc.
3301 C Street, Suite 400 (zip 99503)
P.O. Box 196601
Anchorage, AK 99519-6601

**Alaska Department of Environmental Conservation
Air Quality Control Minor Permit Application**



**EMISSIONS SUMMARY FORM
NEW STATIONARY SOURCE**

Section 1 Stationary Source Information

Stationary Source Name: Omega Pad

Section 2 Potential to Emit (PTE) for the Entire Stationary Source

EU ID No.	PTE (tpy)									
	CO	NOx ⁴	PM-2.5 ¹	PM-10 ¹	PM	SO ₂	VOC ²	Fugitive VOC ³	Fugitive PM ³	Lead
1	10.93	10.77	3.36	3.36	3.36	12.88	5.16	0.0	0.0	1.5E-04
2	10.93	10.77	3.36	3.36	3.36	12.88	5.16	0.0	0.0	1.5E-04
3	10.93	10.77	3.36	3.36	3.36	12.88	5.16	0.0	0.0	1.5E-04
5a	0.04	2.23	0.18	0.18	0.18	3.4E-02	0.18	0.0	0.0	0.0
5b	0.04	2.23	0.18	0.18	0.18	3.4E-02	0.18	0.0	0.0	0.0
6-10 (tanks)	0.00	0.00	0.00	0.00	0.00	0.00	9.3E-02	0.0	0.0	0.0
Total tpy	32.89	36.79	10.43	10.43	10.43	38.71	15.92	0.0	0.0	4.6E-04

Detailed Excel spreadsheet emissions calculations are attached. *These must be attached in order for your application to be complete. Include multiple copies of this page if more space is required.*

Check this box if fugitive emissions are included in permit applicability under 18 AAC 50.502(i).

Brief description of why fugitive emissions are included in permit applicability:

Notes:

¹ Include condensable particulate matter for PM-10 and PM-2.5.

² If total PTE for volatile organic compounds (VOCs) is at least 10 tpy, include a separate Excel spreadsheet that shows the HAP emissions.

³ Fugitive VOC and PM emissions are included as assessable emissions regardless of permit applicability.

⁴ Fugitive NOx emissions from blasting should be included in the PTE column for NOx.



Have you completed Section 2, above? Yes No

If not, please explain:

**Alaska Department of Environmental Conservation
Air Quality Control Minor Permit Application**



MINOR PERMIT APPLICATION – EMISSION UNIT INFORMATION

FOR A NEW STATIONARY SOURCE: Complete this form for all emissions units.

FOR A MODIFICATION TO AN EXISTING STATIONARY SOURCE:

IF YOU HAVE A TITLE V PERMIT: Complete this form for each emissions unit that is new or that is affected by a physical change or change in the method of operation.

IF YOU DO NOT HAVE A TITLE V PERMIT or APPLICATION CLASSIFIED UNDER 18 AAC 50.508(5): Complete this form for all emissions units.

Section 1 Stationary Source Information

Stationary Source Name: Omega Pad

Section 2 Emissions Unit (EU) Identification (ID) and Description

Note: Do not use this section for emission units associated with asphalt plants, soil remediation, and rock crushers. Use the Supplementary Forms for these units.

EU ID No.	Description	Const. Date	Make / Model	Serial No.	Requested Limit* (specify units)	Max. Rated Capacity or Design Throughput
1	Hot Oil Heater	TBD	Tulsa Heater SHO5000	TBD	N/A	61.34 MMBtu/hr (LHV)
2	Hot Oil Heater	TBD	Tulsa Heater SHO5000	TBD	N/A	61.34 MMBtu/hr (LHV)
3	Hot Oil Heater	TBD	Tulsa Heater SHO5000	TBD	N/A	61.34 MMBtu/hr (LHV)
5a	Standby Engine	TBD	Caterpillar C18	TBD	N/A	779 bhp
5b	Standby Engine	TBD	Caterpillar C18	TBD	N/A	779 bhp
6-10	Tanks	TBD	TBD	TBD	N/A	See Table A-3

**If no annual limit is applicable (e.g., hours, fuel), then specify not applicable (N/A).*

Please use additional copies of this sheet if necessary.



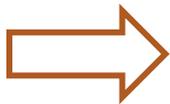
Have you identified each emission unit (if you do not have a Title V permit), or each new or affected emission unit (if you have an existing Title V permit) in Section 2 above? Yes No

If not, please explain:

Section 3 Emissions Unit Use

EU ID No.	Is unit portable?		Is the unit:				Is this unit a:		If limited operation, is the unit:		
	Yes	No	a nonroad engine? Yes No	an intermittently used oil field support equipment per Policy 04.02.105 ? Yes No	an oil field construction unit per Policy 04.02.104 ? Yes No	primary (base load) unit?	or limited operation unit?	emergency or black start unit?	subject to a permit limit?	or other (specify)?	
[List same EUs as in Section 2.]											
1	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
2	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
3	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5a	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
5b	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
6-10 tanks	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Please use additional copies of this sheet if necessary.



Have you specified the use of each emission unit in Section 3 above? Yes No

If not, please explain:

Section 4 Fuel Information

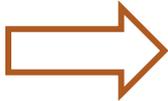
Complete Section 4a or 4b for each emissions unit, as appropriate.

Section 4a Fuel Burning Equipment not Including Flares

EU ID No.	Fuel type(s)	Maximum fuel sulfur content	Fuel density (lb/gal) (if liquid fuel)	Higher heating value*	Maximum fuel consumption rate (gallons/hour or MMscf/hour)
1	Fuel Gas	250 <input type="checkbox"/> wt. % S <input checked="" type="checkbox"/> ppmv H ₂ S	N/A	972 <input type="checkbox"/> Btu/gal <input checked="" type="checkbox"/> Btu/dscf Other	0.0698 MMscf/hr
2	Fuel Gas	250 <input type="checkbox"/> wt. % S <input checked="" type="checkbox"/> ppmv H ₂ S	N/A	972 <input type="checkbox"/> Btu/gal <input checked="" type="checkbox"/> Btu/dscf Other	0.0698 MMscf/hr
3	Fuel Gas	250 <input type="checkbox"/> wt. % S <input checked="" type="checkbox"/> ppmv H ₂ S	N/A	972 <input type="checkbox"/> Btu/gal <input checked="" type="checkbox"/> Btu/dscf Other	0.0698 MMscf/hr
5a	ULSD	0.0015 <input checked="" type="checkbox"/> wt. % S <input type="checkbox"/> ppmv H ₂ S	7	137,000 <input checked="" type="checkbox"/> Btu/gal <input type="checkbox"/> Btu/dscf Other	36.5 gal/hr
5b	ULSD	0.0015 <input checked="" type="checkbox"/> wt. % S <input type="checkbox"/> ppmv H ₂ S	7	137,000 <input checked="" type="checkbox"/> Btu/gal <input type="checkbox"/> Btu/dscf Other	36.5 gal/hr

*Use British thermal unit (Btu) per gallon (gal) for liquid fuels. Use Btu per dry standard cubic foot (dscf) for gaseous fuels.

Please use additional copies of this sheet if necessary.



Have you provided the fuel details for each fuel-burning emission unit (excluding flares) in Section 4a above? Yes No

If not, please explain:

Section 4b Flares

Complete this section if the project/stationary source contains a flare.

Do you own or operate a flare? Yes No (If not skip this section)

EU ID No:	Heat release rate for pilot / purge operation (MMBtu/hr)	Maximum heat release rate (MMBtu/hr)	Flare gas heat content (Btu/scf)	Flare gas H ₂ S content (ppmv)
N/A				

Please use additional copies of this sheet if necessary.

Include additional notes as warranted.

--



Have you provided the fuel use details for all flares in Section 4b above? Yes No

If not, please explain:

Section 5 Materials Processed and Methods of Operation

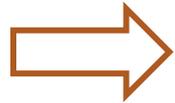
Complete this section if the project/stationary source contains a materials-handling process.

EU ID No.	Materials processed	Maximum material processing rate	Describe method of operation
N/A			

Please use additional copies of this sheet if necessary.

Include additional notes as warranted.

--



Have you specified the material processing details in Section 5 above? Yes No

If not, please explain:

Section 6 Emission Control Information (if applicable)

Complete this section if the project/stationary source contains emission control equipment.

Do you own or operate emission control equipment? Yes No (If not, note below and skip this section.)

EU ID No.	Control equipment	Pollutant(s) controlled:	Description of the control equipment	Description of significant operating parameters and set points for the control equipment	The control equipment is necessary:		
					To comply with an emission standard	To avoid a project classification	Other – give purpose of control equipment
N/A					<input type="checkbox"/>	<input type="checkbox"/>	

Please use additional copies of this sheet if necessary.

Include additional notes as warranted.



Have you specified the details of any emission controls in Section 6 above? Yes No

If not, please explain:

Not Applicable – all control equipment are inherent to the design of the unit:

- Heaters, EU IDs 1 through 3, are equipped with low NO_x burners; and
- Standby Engines, EU IDs 5a and 5b, have controls inherent to engine design for Tier 4 certification.

Section 7 Emission Factors

Give exact citations of emission factor sources.

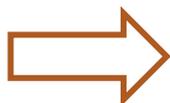
EU ID No.	Emission Factors								
	NOx	CO	PM-2.5	PM-10	PM	SO ₂	VOC	HAPs	Lead
1	0.0401 lb/MMBtu	0.0407 lb/MMBtu	0.0125 lb/MMBtu	0.0125 lb/MMBtu	0.0125 lb/MMBtu	250 ppmv H ₂ S	0.0192 lb/MMBtu	Variable	5.0E-04 lb/MMscf
2	0.0401 lb/MMBtu	0.0407 lb/MMBtu	0.0125 lb/MMBtu	0.0125 lb/MMBtu	0.0125 lb/MMBtu	250 ppmv H ₂ S	0.0192 lb/MMBtu	Variable	5.0E-04 lb/MMscf
3	0.0401 lb/MMBtu	0.0407 lb/MMBtu	0.0125 lb/MMBtu	0.0125 lb/MMBtu	0.0125 lb/MMBtu	250 ppmv H ₂ S	0.0192 lb/MMBtu	Variable	5.0E-04 lb/MMscf
5a	0.51 lb/hr	0.01 lb/hr	0.04 lb/hr	0.04 lb/hr	0.04 lb/hr	0.0015 w%S	0.04 lb/hr	Variable	N/A
5b	0.51 lb/hr	0.01 lb/hr	0.04 lb/hr	0.04 lb/hr	0.04 lb/hr	0.0015 w%S	0.04 lb/hr	Variable	N/A
6-10	N/A	N/A	N/A	N/A	N/A	N/A	Variable	Variable	N/A

EU ID No.	Sources and References for Emission Factors								
	NOx	CO	PM-2.5	PM-10	PM	SO ₂	VOC	HAPs	Lead
1	Vendor Data	Vendor Data	Vendor Data	Vendor Data	Vendor Data	Mass Balance	Vendor Data	AP-42 Tables 1.4-2, 3, 4	AP-42 Table 1.4-2
2	Vendor Data	Vendor Data	Vendor Data	Vendor Data	Vendor Data	Mass Balance	Vendor Data	AP-42 Tables 1.4-2, 3, 4	AP-42 Table 1.4-2
3	Vendor Data	Vendor Data	Vendor Data	Vendor Data	Vendor Data	Mass Balance	Vendor Data	AP-42 Tables 1.4-2, 3, 4	AP-42 Table 1.4-2
5a	Vendor Data	Vendor Data	Vendor Data	Vendor Data	Vendor Data	Mass Balance	Vendor Data	AP-42 Tables 3.4-3, 4	N/A
5b	Vendor Data	Vendor Data	Vendor Data	Vendor Data	Vendor Data	Mass Balance	Vendor Data	AP-42 Tables 3.4-3, 4	N/A
6-10	N/A	N/A	N/A	N/A	N/A	N/A	AP-42 Section 7.1	Variable	N/A

Please use additional copies of this sheet if necessary.

Include additional notes as warranted.

See attached emissions spreadsheet (Attachment A) for variable information.



Have you specified all emission factors and reference sources in Section 7 above? Yes No

If not, please explain:

Section 8 Applicable State Emission Limits (listed in 18 AAC 50.050 through 18 AAC 50.090)

Complete this section for emissions units that are new or are affected by the physical change or change in operation.

EU ID No.	Emission Limit or Standard	Regulation Citation	Compliance Method
1-3, 5a & 5b	Visible Emissions, excluding condensed water vapor, from an industrial process or fuel burning equipment may not reduce visibility through the exhaust effluent by more than 20 percent averaged over any six minutes.	18 AAC 50.055(a)(1)	40 CFR 60 Appendix A, Method 9; see Attachment C.
1-3, 5a & 5b	Particulate matter emitted from an industrial process or fuel burning equipment may not exceed, 0.05 grains per cubic foot of exhaust gas corrected to standard conditions and averaged over three hours.	18 AAC 50.055(b)(1)	See Attachment C.
1-3, 5a & 5b	Sulfur-compound emissions, expressed as sulfur dioxide, from an industrial process or from fuel burning equipment may not exceed 500 ppm averaged over three hours.	18 AAC 50.055(c)(1)	See Attachment C.

Please use additional copies of this sheet if necessary.



Have you specified all applicable state emission limits in Section 8 above?

Yes No

Have you specified a demonstration of compliance for each emission limit or standard?

Yes No

If you answered “no” to either question, please explain:

Section 9 Incinerators

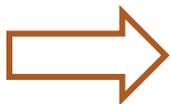
Complete this section if the project/stationary source contains an incinerator.

Do you own or operate an incinerator? Yes No (If not, skip this section.)

EU ID No.	Fuels Burned (type and consumption rate)	Rated capacity in pounds per hour	Type of waste burned
N/A			

Please use additional copies of this sheet if necessary.

Include additional notes as warranted.



Have you specified the details of all incinerators in Section 9 above? Yes No

If not, please explain:



Attachment A

Emissions Unit Information and Potential to Emit Calculations

Table A-1a. Title I Permit Applicability Summary for a New Stationary Source ¹
Hilcorp North Slope, LLC - Omega Pad

Pollutant	Modified Stationary Source Potential to Emit	PSD Major Stationary Source Applicability Threshold ²	PSD Permit Required?	Minor Air Quality Permit Applicability Threshold ³	Minor Source Permit Required?
NO _x	36.79 tpy	250 tpy	No	40 tpy	No
CO	32.89 tpy	250 tpy	No	--- ⁴	---
PM	10.43 tpy	---	---	---	---
PM ₁₀	10.43 tpy	250 tpy	No	15 tpy	No
PM _{2.5}	10.43 tpy	250 tpy	No	10 tpy	Yes
VOC	15.92 tpy	250 tpy	No	---	---
SO ₂	38.71 tpy	250 tpy	No	40 tpy	No
Pb	4.6E-04 tpy	250 tpy	No	0.6 tpy	No
GHG (CO ₂ e)	112,273 tpy	--- ⁵	---	---	---

Notes:

- ¹ Because construction has not commenced, Hilcorp is evaluating project design changes against the thresholds in 18 AAC 50.502(c)(1) that apply to a new stationary source.
- ² Prevention of Significant Deterioration (PSD) major source thresholds for a new stationary source that is not a source listed in 40 CFR 52.21(b)(1)(i)(a) (40 CFR 52.21(b)(1)(i)(b)).
- ³ Minor air permit thresholds for a new stationary source under 18 AAC 50.502(c)(1).
- ⁴ Not applicable.
- ⁵ Not applicable. Greenhouse gases (GHGs) are subject to regulation if the source is a new major stationary source for a regulated pollutant that is not a GHG and will also have the potential to emit 75,000 tpy CO₂e or more (40 CFR 52.21(b)(49)(iv)(a)).

Table A-1b. Title I Air Permit Applicability Summary for a Modification to an Existing Stationary Source ¹
Hilcorp North Slope, LLC - Omega Pad

Pollutant	Existing Stationary Source Potential to Emit ²	Modified Stationary Source Potential to Emit	Change in Emissions	Minor Air Quality Permit Applicability Threshold ³	Minor Source Permit Required?
NO _x	212.25 tpy	36.79 tpy	-175.46 tpy	10 tpy	No
CO	216.48 tpy	32.89 tpy	-183.59 tpy	--- ³	---
PM	15.63 tpy	10.43 tpy	-5.20 tpy	---	---
PM ₁₀	15.63 tpy	10.43 tpy	-5.20 tpy	10 tpy	No
PM _{2.5}	15.63 tpy	10.43 tpy	-5.20 tpy	10 tpy	No
VOC	14.11 tpy	15.92 tpy	1.81 tpy	---	---
SO ₂	84.00 tpy	38.71 tpy	-45.29 tpy	10 tpy	No
Pb	1.0E-03 tpy	4.6E-04 tpy	-5.4E-04 tpy	---	---
GHG (CO ₂ e)	243,733 tpy	112,273 tpy	-131,460 tpy	---	---

Notes:

- ¹ Provided for informational purposes only to demonstrate a conservative permitting approach as a new source stationary source and not an existing modified source.
- ² Existing stationary source potential emissions are based on the minor permit application and Table 1 of the TAR for Minor Permit No. AQ1854MSS01.
- ³ Minor air permit thresholds for an existing stationary source under 18 AAC 50.502(c)(3).
- ⁴ Not applicable.

**Table A-2. Hazardous Air Pollutant (HAP) Air Permit Applicability Summary
Hilcorp North Slope, LLC - Omega Pad**

Pollutant	Stationary Source Potential to Emit HAPs	HAP Major Source Permit Applicability ¹	HAP Major Source Permit Required?
Total HAPs	1.86 tpy	25 tpy	No
Single Largest HAP (n-Hexane)	1.65 tpy	10 tpy	No

Notes:

¹ HAPs major thresholds under 42 USC §7412(a)(1)); a major stationary source of HAPs subject to a standard under 40 CFR 63 must obtain a construction permit, per 18 AAC 50.316(a)(1).

Table A-3. Stationary Source Emissions Unit Inventory
Hilcorp North Slope, LLC - Omega Pad

EU ID	Description	Make/Model	Fuel Type	Rating/Size	Maximum Operation
1	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr ¹	8,760 hr/yr
2	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr ¹	8,760 hr/yr
3	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr ¹	8,760 hr/yr
5a	Standby Engine	Caterpillar C18 (Tier 4)	Diesel	779 bhp	8,760 hr/yr
5b	Standby Engine	Caterpillar C18 (Tier 4)	Diesel	779 bhp	8,760 hr/yr
6	Emulsion Breaker Tank	TBD	N/A	2,300 gallons	8,760 hr/yr
7	Anti Foam Tank	TBD	N/A	2,300 gallons	8,760 hr/yr
8	Pad Buster Tank	TBD	N/A	2,300 gallons	8,760 hr/yr
9	Corrosion Inhibitor Tank	TBD	N/A	14,000 gallons	8,760 hr/yr
10	ULSD Tank	TBD	N/A	5,000 gallons	8,760 hr/yr

Notes:

¹ The rating for EU IDs 1 through 3 is based on a fuel lower heating value (LHV) basis.

**Table A-4. Oxides of Nitrogen (NO_x) Emissions Summary
Hilcorp North Slope, LLC - Omega Pad**

EU ID	Description	Make/Model	Fuel Type	Rating/Size	Maximum Operation	Emission Factor	Reference	Potential Annual NO _x Emissions
1	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	0.0401 lb/MMBtu	Vendor Data ¹	10.77 tpy
2	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	0.0401 lb/MMBtu	Vendor Data ¹	10.77 tpy
3	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	0.0401 lb/MMBtu	Vendor Data ¹	10.77 tpy
5a	Standby Engine	Caterpillar C18 (Tier 4)	Diesel	779 bhp	8,760 hr/yr	0.51 lb/hr	Vendor Data	2.23 tpy
5b	Standby Engine	Caterpillar C18 (Tier 4)	Diesel	779 bhp	8,760 hr/yr	0.51 lb/hr	Vendor Data	2.23 tpy
6	Emulsion Breaker Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	N/A	N/A	0 tpy
7	Anti Foam Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	N/A	N/A	0 tpy
8	Pad Buster Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	N/A	N/A	0 tpy
9	Corrosion Inhibitor Tank	TBD	N/A	14,000 gallons	8,760 hr/yr	N/A	N/A	0 tpy
10	ULSD Tank	TBD	N/A	5,000 gallons	8,760 hr/yr	N/A	N/A	0 tpy
Total Potential NO_x Emissions								36.79 tpy

Notes:

¹ Vendor provided emission guarantees for EU IDs 1 through 3 are provided on an LHV basis to coordinate with the rating.

Table A-5. Carbon Monoxide (CO) Emissions Summary
Hilcorp North Slope, LLC - Omega Pad

EU ID	Description	Make/Model	Fuel Type	Rating/Size	Maximum Operation	Emission Factor	Reference	Potential Annual CO Emissions
1	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	0.0407 lb/MMBtu	Vendor Data ¹	10.93 tpy
2	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	0.0407 lb/MMBtu	Vendor Data ¹	10.93 tpy
3	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	0.0407 lb/MMBtu	Vendor Data ¹	10.93 tpy
5a	Standby Engine	Caterpillar C18 (Tier 4)	Diesel	779 bhp	8,760 hr/yr	0.01 lb/hr	Vendor Data	0.04 tpy
5b	Standby Engine	Caterpillar C18 (Tier 4)	Diesel	779 bhp	8,760 hr/yr	0.01 lb/hr	Vendor Data	0.04 tpy
6	Emulsion Breaker Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	N/A	N/A	0 tpy
7	Anti Foam Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	N/A	N/A	0 tpy
8	Pad Buster Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	N/A	N/A	0 tpy
9	Corrosion Inhibitor Tank	TBD	N/A	14,000 gallons	8,760 hr/yr	N/A	N/A	0 tpy
10	ULSD Tank	TBD	N/A	5,000 gallons	8,760 hr/yr	N/A	N/A	0 tpy
Total Potential CO Emissions								32.89 tpy

Notes:

¹ Vendor provided emission guarantees for EU IDs 1 through 3 are provided on an LHV basis to coordinate with the rating.

**Table A-6. Particulate Matter (PM/PM₁₀/PM_{2.5}) Emissions Summary
Hilcorp North Slope, LLC - Omega Pad**

EU ID	Description	Make/Model	Fuel Type	Rating/Size	Maximum Operation	Emission Factor	Reference	Potential Annual PM Emissions
1	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	0.0125 lb/MMBtu	Vendor Data ¹	3.36 tpy
2	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	0.0125 lb/MMBtu	Vendor Data ¹	3.36 tpy
3	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	0.0125 lb/MMBtu	Vendor Data ¹	3.36 tpy
5a	Standby Engine	Caterpillar C18 (Tier 4)	Diesel	779 bhp	8,760 hr/yr	0.04 lb/hr	Vendor Data	0.18 tpy
5b	Standby Engine	Caterpillar C18 (Tier 4)	Diesel	779 bhp	8,760 hr/yr	0.04 lb/hr	Vendor Data	0.18 tpy
6	Emulsion Breaker Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	N/A	N/A	0 tpy
7	Anti Foam Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	N/A	N/A	0 tpy
8	Pad Buster Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	N/A	N/A	0 tpy
9	Corrosion Inhibitor Tank	TBD	N/A	14,000 gallons	8,760 hr/yr	N/A	N/A	0 tpy
10	ULSD Tank	TBD	N/A	5,000 gallons	8,760 hr/yr	N/A	N/A	0 tpy
Total Potential PM Emissions								10.43 tpy

Notes:

¹ Vendor provided emission guarantees for EU IDs 1 through 3 are provided on an LHV basis to coordinate with the rating.

Table A-7. Volatile Organic Compounds (VOC) Emissions Summary
Hilcorp North Slope, LLC - Omega Pad

EU ID	Description	Make/Model	Fuel Type	Rating/Size	Maximum Operation	Emission Factor	Reference	Potential Annual VOC Emissions
1	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	0.0192 lb/MMBtu	Vendor Data ¹	5.16 tpy
2	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	0.0192 lb/MMBtu	Vendor Data ¹	5.16 tpy
3	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	0.0192 lb/MMBtu	Vendor Data ¹	5.16 tpy
5a	Standby Engine	Caterpillar C18 (Tier 4)	Diesel	779 bhp	8,760 hr/yr	0.04 lb/hr	Vendor Data	0.18 tpy
5b	Standby Engine	Caterpillar C18 (Tier 4)	Diesel	779 bhp	8,760 hr/yr	0.04 lb/hr	Vendor Data	0.18 tpy
6	Emulsion Breaker Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	0.02 tpy	Table A-8	1.9E-02 tpy
7	Anti Foam Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	0.02 tpy	Table A-8	1.9E-02 tpy
8	Pad Buster Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	0.02 tpy	Table A-8	1.9E-02 tpy
9	Corrosion Inhibitor Tank	TBD	N/A	14,000 gallons	8,760 hr/yr	0.03 tpy	Table A-8	3.5E-02 tpy
10	ULSD Tank	TBD	N/A	5,000 gallons	8,760 hr/yr	1.6E-04 tpy	Table A-8	1.6E-04 tpy
Total Potential VOC Emissions								15.92 tpy

Notes:

¹ Vendor provided emission guarantees for EU IDs 1 through 3 are provided on an LHV basis to coordinate with the rating.

Table A-8. Volatile Organic Compounds (VOCs) - Tanks
Hilcorp North Slope, LLC - Omega Pad

Tank Emission Calculations ¹						
Parameter	Emulsion Breaker Tank	Anti Foam Tank	Pad Buster Tank	Corrosion Inhibitor Tank	ULSD Tank	Equation
Standing Loss (Ls) Calculations						
Vapor Space Expansion Factor, K_E	0.023	0.023	0.023	0.023	0.023	Eq. 1-12
Roof Outage, H_{RO} (ft)	0.07	0.07	0.07	0.14	0.09	Eq. 1-17
Vapor Space Outage, H_{VO} (ft)	4.98	4.98	4.98	8.39	1.09	Eq. 1-16
Average Daily Temp, T_{AA} (°R)	477.77	477.77	477.77	477.77	477.77	Eq. 1-30
Liquid Bulk Temp, T_B (°R)	478.20	478.20	478.20	478.20	478.20	Eq. 1-31
Average Daily Liquid Temp, T_{LA} (°R)	478.74	478.74	478.74	478.74	478.74	Eq. 1-28
Vapor Pressure, P_{VA} (psia)	0.4895	0.489	0.49	0.37	0.001	Eq. 1-25
Vented Vapor Sat Factor, K_S	0.89	0.89	0.89	0.86	1.00	Eq. 1-21
Average Vapor Temp, T_V (°R)	479.18	479.18	479.18	479.18	479.18	Eq. 1-33
Vapor Density, W_V (lb/ft ³)	7.62E-03	7.62E-03	7.62E-03	2.28E-03	0.000	Eq. 1-22
Vapor Space Volume, V_V (ft ³)	191.63	191.63	191.63	1,113.69	61.77	Eq. 1-3
Standing Loss, L_S (lb/yr)	10.86	10.86	10.86	18.34	0.02	Eq. 1-2
Working Loss (Lw) Calculations						
Annual Sum Liquid, ΣH_{OL} (ft/yr)	95.86	95.86	95.86	169.18	141.33	Eq. 1-37
Maximum Liquid Height, H_{LX} (ft)	8.00	8.00	8.00	14.00	11.00	Eq. 1-36
Minimum Liquid Height, H_{LN} (ft)	1	1	1	1	1	Eq. 1-36
Number of Turnovers, N	14	14	14	13	14	Eq. 1-36
Factors, K_N, K_B	1.0	1.0	1.0	1.0	1.0	Eq. 1-35
Factor, K_P	1.0	1.0	1.0	1.0	1.0	Eq. 1-35
Net Working Loss, V_G (ft ³ /yr)	3,689	3,689	3,689	22,456	8,020	Eq. 1-39
Working Loss, L_W (lb/yr)	28.10	28.10	28.10	51.18	0.30	Eq. 1-35
Potential Emissions (tpy)						
Total VOCs	1.9E-02	1.9E-02	1.9E-02	3.5E-02	1.6E-04	Eq. 1-1
Benzene	0	5.0E-04	0	0	4.2E-06	--
Cumene	1.9E-04	9.7E-06	1.9E-04	0	8.1E-08	--
Ethylbenzene	9.7E-04	2.6E-04	1.9E-03	0	5.2E-07	--
Hexane	0	1.1E-03	0	0	9.1E-06	--
Methanol	0	0	0	3.5E-02	0	--
Naphthalene	1.9E-04	9.7E-04	0	0	0	--
Toluene	1.9E-04	4.0E-04	1.9E-04	0	3.3E-06	--
1,2,4-Trimethylbenzene	5.8E-03	0	0	0	0	--
Xylenes	9.7E-04	2.5E-05	9.7E-04	0	2.1E-07	--

Notes:

¹ Reference: AP-42 Section 7.1.

² AP-42 Tables 7.1-2 and 7.1-3. Units for constants B and C in Table 7.1-2 are °R and Table 7.1-3 are °C.

³ Assumes vapor mass fraction is equivalent to liquid mass fraction. Information is from Safety Data Sheets.

⁴ Corrosion inhibitor is primarily methanol.

⁵ EPA SPECIATE online profiles.

Tank Information					
Parameter	Emulsion Breaker Tank	Anti Foam Tank	Pad Buster Tank	Corrosion Inhibitor Tank	ULSD Tank
Tank Contents	EMBR11677A	AFMR19017A	Tretolite	Inhibitor	ULSD
Tank Capacity (gal)	2,300	2,300	2,300	14,000	5,000
Orientation	Vertical	Vertical	Vertical	Vertical	Vertical
Diameter (ft)	7	7	7	13	8.5
Length/Height (ft)	9	9	9	15	12
Color	White	White	White	White	White
Diesel Throughput (gal/yr)	27,600	27,600	27,600	168,000	60,000
Paint Condition	New	New	New	New	New
Roof Type	Dome	Dome	Dome	Dome	Dome
Paint Solar Absorptance, α	0.17	0.17	0.17	0.17	0.17

Meteorological Inputs (Deadhorse, AK)		
Average Daily Max Temp, T_{AX}	25.2 °F	484.9 °R
Average Daily Min Temp, T_{AN}	11.0 °F	470.7 °R
Insolation Factor, i	838 Btu/ft ² -d	

Fuel Constants ²					
Parameter	EMBR11677A	AFMR19017A	Tretolite	Inhibitor	ULSD
Vapor Mol. Wt, M_V (lb/lb-mol)	80	80	80	32.04	130
Vapor Pressure Constant, A	11.368	11.368	11.368	8.079	12.101
Vapor Press. Constant, B	5,784.3	5,784.3	5,784.3	1,581.3	8,907.0
Vapor Press. Constant, C	N/A	N/A	N/A	239.7	N/A

Component Vapor Mass Fraction					
Component	EMBR11677A ³	AFMR19017A ^{3,5}	Tretolite ³	Inhibitor ⁴	ULSD ⁵
Benzene	0	2.6E-02	0	0	2.6E-02
Cumene	1.0E-02	5.0E-04	1.0E-02	0	5.0E-04
Ethylbenzene	5.0E-02	1.3E-02	0.10	0	3.2E-03
Hexane	0	5.6E-02	0	0	5.6E-02
Methanol	0	0	0	1.00	0
Naphthalene	1.0E-02	5.0E-02	0	0	0
Toluene	1.0E-02	2.1E-02	1.0E-02	0	2.1E-02
1,2,4-Trimethylbenzene	0.30	0	0	0	0
Xylenes	5.0E-02	1.3E-03	5.0E-02	0	1.3E-03

**Table A-9. Sulfur Dioxide (SO₂) Emissions Summary
Hilcorp North Slope, LLC - Omega Pad**

EU ID	Description	Make/Model	Fuel Type	Rating/Size	Maximum Operation	Emission Factor	Reference	Potential Annual SO ₂ Emissions ¹
1	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	250 ppmv H ₂ S ²	Mass Balance	12.88 tpy
2	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	250 ppmv H ₂ S ²	Mass Balance	12.88 tpy
3	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	250 ppmv H ₂ S ²	Mass Balance	12.88 tpy
5a	Standby Engine	Caterpillar C18 (Tier 4)	Diesel	779 bhp	8,760 hr/yr	0.0015 wt. % S ³	Mass Balance	3.4E-02 tpy
5b	Standby Engine	Caterpillar C18 (Tier 4)	Diesel	779 bhp	8,760 hr/yr	0.0015 wt. % S ³	Mass Balance	3.4E-02 tpy
6	Emulsion Breaker Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	N/A	N/A	0 tpy
7	Anti Foam Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	N/A	N/A	0 tpy
8	Pad Buster Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	N/A	N/A	0 tpy
9	Corrosion Inhibitor Tank	TBD	N/A	14,000 gallons	8,760 hr/yr	N/A	N/A	0 tpy
10	ULSD Tank	TBD	N/A	5,000 gallons	8,760 hr/yr	N/A	N/A	0 tpy
Total Potential SO₂ Emissions								38.71 tpy

Notes:

¹ Parameters and Conversions:

Fuel Gas Heat Value:	879 Btu/scf (LHV)
Diesel Fuel Density:	7 lb/gal
Caterpillar C18 Fuel Consumption:	36.5 gal/hr

² A conservative fuel gas hydrogen sulfide (H₂S) concentration of 250 ppmv is assumed as worst-case (i.e., source of fuel gas is GC-1 annex gas which is limited to 200 ppmv).

³ Ultra low sulfur diesel (0.0015 wt. % S) is required pursuant to 40 CFR 60 Subpart IIII.

Table A-10. Greenhouse Gas (GHG) Emissions Summary
Hilcorp North Slope, LLC - Omega Pad

EU ID	Description	Make/Model	Fuel Type	Rating/Size	Maximum Operation	Emission Factor	Reference	Potential Annual CO ₂ e Emissions ¹
1	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	53.11 kg/MMBtu	40 CFR 98, C-1 & C-2	34,820 tpy
2	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	53.11 kg/MMBtu	40 CFR 98, C-1 & C-2	34,820 tpy
3	Hot Oil Heater	Tulsa Heater SHO5000	Fuel Gas	61.34 MMBtu/hr	8,760 hr/yr	53.11 kg/MMBtu	40 CFR 98, C-1 & C-2	34,820 tpy
5a	Standby Engine	Caterpillar C18 (Tier 4)	Diesel	779 bhp	8,760 hr/yr	74.20 kg/MMBtu	40 CFR 98, C-1 & C-2	3,907 tpy
5b	Standby Engine	Caterpillar C18 (Tier 4)	Diesel	779 bhp	8,760 hr/yr	74.20 kg/MMBtu	40 CFR 98, C-1 & C-2	3,907 tpy
6	Emulsion Breaker Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	N/A	N/A	0 tpy
7	Anti Foam Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	N/A	N/A	0 tpy
8	Pad Buster Tank	TBD	N/A	2,300 gallons	8,760 hr/yr	N/A	N/A	0 tpy
9	Corrosion Inhibitor Tank	TBD	N/A	14,000 gallons	8,760 hr/yr	N/A	N/A	0 tpy
10	ULSD Tank	TBD	N/A	5,000 gallons	8,760 hr/yr	N/A	N/A	0 tpy
Total Potential GHG Emissions								112,273 tpy

Notes:

¹ Parameters and Conversions:

Fuel Gas Heat Value:	972 Btu/scf (HHV)
Fuel Gas Heat Value:	879 Btu/scf (LHV)
Diesel Engine Heat Rate:	7,000 Btu/hp-hr

**Table A-11. Hazardous Air Pollutants (HAPs) Emissions Summary
Hilcorp North Slope, LLC - Omega Pad**

Hazardous Air Pollutant	Gas-Fired Heaters	Diesel-Fired Engines	Tanks	Potential Annual HAP Emissions ¹
1,4-Dichlorobenzene(p)	1.1E-03 tpy	----	----	1.1E-03 tpy
1,2,4-Trimethylbenzene	----	----	5.8E-03 tpy	5.8E-03 tpy
Acetaldehyde	----	1.2E-03 tpy	----	1.2E-03 tpy
Acrolein	----	3.8E-04 tpy	----	3.8E-04 tpy
Arsenic Compounds	1.8E-04 tpy	----	----	1.8E-04 tpy
Benzene	1.9E-03 tpy	3.7E-02 tpy	5.0E-04 tpy	3.9E-02 tpy
Beryllium Compounds	1.1E-05 tpy	----	----	1.1E-05 tpy
Cadmium Compounds	1.0E-03 tpy	----	----	1.0E-03 tpy
Chromium Compounds	1.3E-03 tpy	----	----	1.3E-03 tpy
Cobalt Compounds	7.7E-05 tpy	----	----	7.7E-05 tpy
Cumene	----	----	4.0E-04 tpy	4.0E-04 tpy
Ethylbenzene	----	----	3.2E-03 tpy	3.2E-03 tpy
Formaldehyde	6.9E-02 tpy	3.8E-03 tpy	----	0.07 tpy
Lead Compounds	4.6E-04 tpy	----	----	4.6E-04 tpy
Manganese Compounds	3.5E-04 tpy	----	----	3.5E-04 tpy
Mercury Compounds	2.4E-04 tpy	----	----	2.4E-04 tpy
Methanol	----	----	3.5E-02 tpy	3.5E-02 tpy
Naphthalene	5.6E-04 tpy	----	1.2E-03 tpy	1.7E-03 tpy
n-Hexane	1.65 tpy	----	1.1E-03 tpy	1.65 tpy
Nickel Compounds	1.9E-03 tpy	----	----	1.9E-03 tpy
Polycyclic Organic Matter	8.1E-05 tpy	1.0E-02 tpy	----	1.0E-02 tpy
Selenium Compounds	2.2E-05 tpy	----	----	2.2E-05 tpy
Toluene	3.1E-03 tpy	1.3E-02 tpy	7.9E-04 tpy	1.7E-02 tpy
Xylenes	----	9.2E-03 tpy	2.0E-03 tpy	1.1E-02 tpy
Total Potential HAP Emissions	1.73 tpy	7.5E-02 tpy	5.0E-02 tpy	1.86 tpy

Notes:

¹ See Tables A-8, A-12 and A-13 for detailed HAP emissions calculations.

**Table A-12. Hazardous Air Pollutants (HAPs) - Gas-Fired Heaters
Hilcorp North Slope, LLC - Omega Pad**

Section 112 Hazardous Air Pollutants		Source Category Emission Calculations	
CAS No.	Chemical Name	Emission Factor ¹	Potential Annual HAP Emissions ^{2,3}
106-46-7	1,4-Dichlorobenzene(p)	1.2E-03 lb/MMscf	1.1E-03 tpy
N/A	Arsenic Compounds	2.0E-04 lb/MMscf	1.8E-04 tpy
71-43-2	Benzene	2.1E-03 lb/MMscf	1.9E-03 tpy
N/A	Beryllium Compounds	1.2E-05 lb/MMscf	1.1E-05 tpy
N/A	Cadmium Compounds	1.1E-03 lb/MMscf	1.0E-03 tpy
N/A	Chromium Compounds	1.4E-03 lb/MMscf	1.3E-03 tpy
N/A	Cobalt Compounds	8.4E-05 lb/MMscf	7.7E-05 tpy
50-00-0	Formaldehyde	7.5E-02 lb/MMscf	6.9E-02 tpy
110-54-3	Hexane	1.8E+00 lb/MMscf	1.65 tpy
N/A	Lead Compounds	5.0E-04 lb/MMscf	4.6E-04 tpy
N/A	Manganese Compounds	3.8E-04 lb/MMscf	3.5E-04 tpy
N/A	Mercury Compounds	2.6E-04 lb/MMscf	2.4E-04 tpy
91-20-3	Naphthalene	6.1E-04 lb/MMscf	5.6E-04 tpy
N/A	Nickel Compounds	2.1E-03 lb/MMscf	1.9E-03 tpy
N/A	Polycyclic Organic Matter	8.82E-05 lb/MMscf	8.1E-05 tpy
N/A	Selenium Compounds	2.4E-05 lb/MMscf	2.2E-05 tpy
108-88-3	Toluene	3.4E-03 lb/MMscf	3.1E-03 tpy
Total Potential HAP Emissions			1.73 tpy

Notes:

¹ Reference: AP-42, Tables 1.4-2, 1.4-3, and 1.4-4.

² Total fuel rate calculated as noted below:

<u>EU ID</u>	<u>Description</u>	<u>Heat Rate</u>	
1	Hot Oil Heater	611.7 MMscf/yr @	8,760 hr/yr
2	Hot Oil Heater	611.7 MMscf/yr @	8,760 hr/yr
3	Hot Oil Heater	611.7 MMscf/yr @	8,760 hr/yr
Total:		1,835.0 MMscf/yr	

³ Parameters and Conversions:

Fuel Gas Heat Value: 879 Btu/scf (LHV)

**Table A-13. Hazardous Air Pollutants (HAPs) - Diesel-Fired Engines > 600 hp
Hilcorp North Slope, LLC - Omega Pad**

Section 112 Hazardous Air Pollutants		Source Category Emission Calculations	
CAS No.	Chemical Name	Emission Factor ¹	Potential Annual HAP Emissions ^{2,3}
75-07-0	Acetaldehyde	2.52E-05 lb/MMBtu	1.2E-03 tpy
107-02-8	Acrolein	7.88E-06 lb/MMBtu	3.8E-04 tpy
71-43-2	Benzene	7.76E-04 lb/MMBtu	3.7E-02 tpy
50-00-0	Formaldehyde	7.89E-05 lb/MMBtu	3.8E-03 tpy
N/A	Polycyclic Organic Matter	2.12E-04 lb/MMBtu	1.0E-02 tpy
108-88-3	Toluene	2.81E-04 lb/MMBtu	1.3E-02 tpy
1330-20-7	Xylenes (isomers and mixture)	1.93E-04 lb/MMBtu	9.2E-03 tpy
Total Potential HAP Emissions			7.5E-02 tpy

Notes:

¹ Reference: AP-42, Tables 3.4-3 and 3.4-4.

² Total heat rate calculated as noted below:

<u>EU ID</u>	<u>Description</u>	<u>Heat Rate</u>	
5a	Caterpillar C18 (Tier 4)	47,768.3 MMBtu/yr @	8,760 hr/yr
5b	Caterpillar C18 (Tier 4)	47,768.3 MMBtu/yr @	8,760 hr/yr
	Total:	95,536.6 MMBtu/yr	

³ Parameters and Conversions:

Diesel Engine Heat Rate: 7,000 Btu/hp-hr



Attachment B

Vendor Data

1	Owner:	Hilcorp	Owner Ref.:	H-101
2	Purchaser:	Hilcorp	Purchaser Ref.:	TBD
3	Manufacturer:	Tulsa Heaters Midstream	THM Ref.:	P25-0410
4	Service:	Heat Medium Heater	Project:	Omega Pad
5	Number:	1	Location:	Alaska
6	SHO Duty:	53.70 MMBTU/ hr	SHO Model:	SHO5000
7				
8				

Guarantees:

NOx	0.0401	Lb/MMBTU	30	ppm
SOx	no quote	Lb/MMBTU	-	ppm
CO	0.0407	Lb/MMBTU	50	ppm
VOC	0.0192	Lb/MMBTU	15	ppm
UHC	0.007	Lb/MMBTU	15	ppm
SPM	0.0125	Lb/MMBTU	14	ppm

Design Case

Heat Release	LHV Basis	61.34	MMBTU/hr
	HHV Basis	67.87	MMBTU/hr
Products of Combustion	MW		
O2	32.00	1,710	Lbm/ hr
N2 + Ar	28.15	43,325	Lbm/ hr
CO2	44.01	9,012	Lbm/ hr
H2O	18.02	6,525	Lbm/ hr
NOx	46.01	2.46	Lbm/ hr / 30 ppm
SOx	64.06	0.00	Lbm/ hr / 0 ppm
CO	28.01	2.49	Lbm/ hr / 50 ppm
VOC	44.10	1.18	Lbm/ hr / 15 ppm
UHC	16.04	0.43	Lbm/ hr / 15 ppm
SPM		0.77	Lbm/ hr / 14 ppm
Total		60,580	Lbm/ hr
Flue Gas Exit Temp.		461	°F
Flue Gas Exit Velocity		32.8	Ft/sec
Stack Height		32.6	ft
Stack ID		48	in

NOTE:

THM emissions guarantees applicable between 50-100% of Design Case combustion conditions w/ 15% excess air.

THM emissions guarantees applicable for firebox temperatures above 1100°F.

Emissions above are for Design Case operation with air and fuel in ratio control. Upset conditions, such as operation outside the design, high turndown or start-up are not considered as guaranteed emissions cases.

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64	revision	date	description	by	chk'd appv'd



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EMISSIONS PERMIT DATA SHEET
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P25-0410-EMISSIONSDS

Pg 1 of 1

PERFORMANCE DATA [C18DE9D]

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SALES MODEL:	C18	COMBUSTION:	DIRECT INJECTION
BRAND:	CAT	ENGINE SPEED (RPM):	1,800
MACHINE SALES MODEL:		HERTZ:	60
ENGINE POWER (BHP):	779	FAN POWER (HP):	32.2
GEN POWER WITH FAN (EKW):	500.0	ADDITIONAL PARASITICS (HP):	2.7
COMPRESSION RATIO:	16.1	ASPIRATION:	TA
RATING LEVEL:	STANDBY	AFTERCOOLER TYPE:	ATAAC
PUMP QUANTITY:	1	AFTERCOOLER CIRCUIT TYPE:	JW+OC, ATAAC
FUEL TYPE:	DIESEL	INLET MANIFOLD AIR TEMP (F):	127
MANIFOLD TYPE:	DRY	JACKET WATER TEMP (F):	192.2
GOVERNOR TYPE:	ELEC	TURBO CONFIGURATION:	SINGLE
ELECTRONICS TYPE:	ADEM4	TURBO QUANTITY:	1
CAMSHAFT TYPE:	STANDARD	TURBOCHARGER MODEL:	S430S 0.88 A/R VOF
IGNITION TYPE:	CI	CERTIFICATION YEAR:	2015
INJECTOR TYPE:	EUI	PISTON SPD @ RATED ENG SPD (FT/MIN):	2,161.4
REF EXH STACK DIAMETER (IN):	6		
MAX OPERATING ALTITUDE (FT):	3,002		

INDUSTRY	SUB INDUSTRY	APPLICATION
ELECTRIC POWER	STANDARD	PACKAGED GENSET

General Performance Data [Top](#)

Note(s)

INLET MANIFOLD AIR TEMPERATURE ("INLET MFLD TEMP") FOR THIS CONFIGURATION IS MEASURED AT THE OUTLET OF THE AFTERCOOLER.

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	ISO BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	ISO VOL FUEL CONSUMPTN (VFC)	ELEC SPEC FUEL CONSUMPTN (ESFC)	ISO ELEC SPEC FUEL CONSUMPTN (ESFC)
EKW	%	BHP	PSI	LB/BHP-HR	LB/BHP-HR	GAL/HR	GAL/HR	LB/EKW-HR	LB/EKW-HR
500.0	100	744	296	0.348	0.345	36.5	36.2	0.518	0.513
450.0	90	673	267	0.349	0.345	33.0	32.7	0.521	0.516

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	BRAKE MEAN EFF PRES (BMEP)	BRAKE SPEC FUEL CONSUMPTN (BSFC)	ISO BRAKE SPEC FUEL CONSUMPTN (BSFC)	VOL FUEL CONSUMPTN (VFC)	ISO VOL FUEL CONSUMPTN (VFC)	ELEC SPEC FUEL CONSUMPTN (ESFC)	ISO ELEC SPEC FUEL CONSUMPTN (ESFC)
400.0	80	601	239	0.348	0.345	29.5	29.2	0.523	0.518
375.0	75	566	225	0.349	0.345	27.8	27.6	0.526	0.521
350.0	70	530	211	0.350	0.347	26.2	25.9	0.530	0.525
300.0	60	460	183	0.354	0.350	22.9	22.7	0.542	0.537
250.0	50	390	155	0.360	0.357	19.8	19.6	0.562	0.556
200.0	40	321	128	0.370	0.366	16.7	16.6	0.594	0.588
150.0	30	252	100	0.386	0.383	13.8	13.6	0.650	0.644
125.0	25	218	87	0.400	0.396	12.3	12.1	0.696	0.689
100.0	20	182	73	0.419	0.415	10.8	10.7	0.765	0.758
50.0	10	110	44	0.506	0.501	7.8	7.8	1.111	1.100

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	INLET MFLD PRES	INLET MFLD TEMP	EXH MFLD TEMP	EXH MFLD PRES	ENGINE OUTLET TEMP	COMPRESSOR OUTLET PRES	COMPRESSOR OUTLET TEMP
EKW	%	BHP	IN-HG	DEG F	DEG F	IN-HG	DEG F	IN-HG	DEG F
500.0	100	744	69.3	122.2	1,261.4	86.5	836.8	76	401.6
450.0	90	673	63.8	122.1	1,208.5	79.6	799.7	70	382.0
400.0	80	601	57.8	122.1	1,152.4	72.0	761.9	64	360.3
375.0	75	566	54.7	122.1	1,125.7	68.2	744.2	60	349.3
350.0	70	530	51.5	122.1	1,100.2	64.4	727.6	57	338.1
300.0	60	460	45.2	122.0	1,048.6	56.7	694.6	50	315.1
250.0	50	390	38.6	122.0	993.0	49.1	659.8	43	290.8
200.0	40	321	31.6	121.7	930.1	41.7	620.8	36	261.7
150.0	30	252	24.9	121.2	856.8	34.2	576.1	29	232.7
125.0	25	218	21.8	120.9	815.8	30.5	551.4	25	218.8
100.0	20	182	18.9	120.0	769.5	27.2	523.9	22	205.9
50.0	10	110	14.1	114.9	654.1	23.6	456.8	18	183.4

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	WET INLET AIR VOL FLOW RATE	ENGINE OUTLET WET EXH GAS VOL FLOW RATE	WET INLET AIR MASS FLOW RATE	WET EXH GAS MASS FLOW RATE	WET EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)	DRY EXH VOL FLOW RATE (32 DEG F AND 29.98 IN HG)
EKW	%	BHP	CFM	CFM	LB/HR	LB/HR	FT3/MIN	FT3/MIN
500.0	100	744	1,340.0	2,465.3	5,817.5	6,076.5	934.9	843.1
450.0	90	673	1,282.0	2,350.9	5,554.9	5,788.7	917.8	831.6
400.0	80	601	1,211.3	2,221.8	5,237.0	5,446.2	894.3	813.8
375.0	75	566	1,173.9	2,156.0	5,069.8	5,267.1	880.5	802.8
350.0	70	530	1,135.6	2,089.2	4,899.2	5,084.7	865.2	790.2
300.0	60	460	1,056.3	1,949.9	4,547.3	4,709.8	830.6	761.4
250.0	50	390	972.6	1,801.9	4,177.8	4,318.1	791.4	728.3
200.0	40	321	871.7	1,621.2	3,735.6	3,854.2	737.7	682.0
150.0	30	252	780.5	1,440.5	3,336.9	3,434.4	683.8	635.7
125.0	25	218	742.6	1,354.0	3,171.5	3,258.4	658.4	614.1
100.0	20	182	714.2	1,274.2	3,047.2	3,123.6	637.0	596.4
50.0	10	110	688.2	1,136.5	2,933.1	2,988.7	609.7	577.6

Heat Rejection Data [Top](#)

GENSET POWER WITH FAN	PERCENT LOAD	ENGINE POWER	REJECTION TO JACKET WATER	REJECTION TO ATMOSPHERE	REJECTION TO EXH	EXHAUST RECOVERY TO 350F	FROM OIL COOLER	FROM AFTERCOOLER	WORK ENERGY	LOW HEAT VALUE ENERGY	HIGH HEAT VALUE ENERGY
EKW	%	BHP	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN	BTU/MIN
500.0	100	744	16,038	5,739	24,758	12,589	4,231	6,509	31,568	79,429	84,612
450.0	90	673	14,560	5,356	22,331	11,023	3,827	5,781	28,519	71,857	76,546
400.0	80	601	13,203	4,843	19,835	9,453	3,419	4,995	25,499	64,187	68,376
375.0	75	566	12,567	4,609	18,654	8,732	3,222	4,613	23,998	60,493	64,440
350.0	70	530	11,954	4,397	17,522	8,056	3,030	4,239	22,495	56,894	60,607
300.0	60	460	10,771	3,992	15,335	6,779	2,656	3,515	19,509	49,869	53,123
250.0	50	390	9,626	3,651	13,207	5,563	2,292	2,825	16,539	43,040	45,848
200.0	40	321	8,495	3,583	10,986	4,318	1,939	2,095	13,629	36,413	38,788
150.0	30	252	7,376	3,338	8,946	3,194	1,593	1,490	10,707	29,906	31,858
125.0	25	218	6,818	3,097	8,025	2,691	1,421	1,243	9,230	26,674	28,414
100.0	20	182	6,239	2,779	7,179	2,218	1,249	1,048	7,733	23,449	24,979
50.0	10	110	4,839	2,191	5,647	1,288	907	804	4,660	17,030	18,141

Emissions Data [Top](#)

Units Filter ▼

DIESEL

RATED SPEED NOMINAL DATA: 1800 RPM

GENSET POWER WITH FAN	EKW	500.0	375.0	250.0	125.0	50.0
ENGINE POWER	BHP	744	566	390	218	110
PERCENT LOAD	%	100	75	50	25	10
NON-ETHANE HC (CORR 15% O2)	PPM	2.4233763	1.2835633	0.0	0.0	0.0
TOTAL NOX (AS NO2)	G/HR	161	156	48	15	37
TOTAL CO	G/HR	0	0	0	0	0
TOTAL HC	G/HR	9	4	0	0	0
TOTAL CO2	KG/HR	375	285	203	125	80
PART MATTER	G/HR	4.3	2.0	1.3	0.8	0.6
TOTAL NOX (AS NO2) (CORR 5% O2)	MG/NM3	100.5	127.4	55.8	31.4	130.7
TOTAL CO (CORR 5% O2)	MG/NM3	0.0	0.0	0.0	0.0	0.0
TOTAL HC (CORR 5% O2)	MG/NM3	4.9	2.5	0.0	0.0	0.0
PART MATTER (CORR 5% O2)	MG/NM3	2.2	1.4	1.3	1.4	1.5
TOTAL NOX (AS NO2) (CORR 15% O2)	MG/NM3	37.3	47.3	20.7	11.7	48.5
TOTAL CO (CORR 15% O2)	MG/NM3	0.0	0.0	0.0	0.0	0.0
TOTAL HC (CORR 15% O2)	MG/NM3	1.8	0.9	0.0	0.0	0.0
PART MATTER (CORR 15% O2)	MG/NM3	0.8	0.5	0.5	0.5	0.6
TOTAL NOX (AS NO2) (CORR 5% O2)	PPM	49	62	27	15	64
TOTAL CO (CORR 5% O2)	PPM	0	0	0	0	0
TOTAL HC (CORR 5% O2)	PPM	9	5	0	0	0
FORMALDEHYDE (CORR 5% O2)	PPM	0.00	0.00	0.00	0.08	0.03
ACROLEIN (CORR 5% O2)	PPM	0.27	0.42	1.53	0.94	1.68

GENSET POWER WITH FAN		EKW	500.0	375.0	250.0	125.0	50.0
ENGINE POWER		BHP	744	566	390	218	110
PERCENT LOAD		%	100	75	50	25	10
ACETALDEHYDE	(CORR 5% O2)	PPM	0.42	0.86	1.13	0.28	1.91
METHANOL	(CORR 5% O2)	PPM	0.00	0.20	0.09	0.01	0.00
NON-METHANE HC	(CORR 5% O2)	PPM	6.53	3.46	0.00	0.00	0.00
NON-ETHANE HC	(CORR 5% O2)	PPM	6.53	3.46	0.00	0.00	0.00
TOTAL NOX (AS NO2)	(CORR 15% O2)	PPM	18	23	10	6	24
TOTAL CO	(CORR 15% O2)	PPM	0	0	0	0	0
TOTAL HC	(CORR 15% O2)	PPM	3	2	0	0	0
TOTAL NOX (AS NO2)		G/HP-HR	0.22	0.28	0.13	0.07	0.34
TOTAL CO		G/HP-HR	0.00	0.00	0.00	0.00	0.00
TOTAL HC		G/HP-HR	0.01	0.01	0.00	0.00	0.00
PART MATTER		G/HP-HR	0.01	0.00	0.00	0.00	0.01
TOTAL NOX (AS NO2)		G/KW-HR	0.30	0.38	0.17	0.09	0.46
TOTAL CO		G/KW-HR	0.00	0.00	0.00	0.00	0.00
TOTAL HC		G/KW-HR	0.02	0.01	0.00	0.00	0.00
PART MATTER		G/KW-HR	0.01	0.00	0.00	0.01	0.01
TOTAL NOX (AS NO2)		LB/HR	0.36	0.34	0.11	0.03	0.08
TOTAL CO		LB/HR	0.00	0.00	0.00	0.00	0.00
TOTAL HC		LB/HR	0.02	0.01	0.00	0.00	0.00
TOTAL CO2		LB/HR	826	628	447	275	176
PART MATTER		LB/HR	0.01	0.00	0.00	0.00	0.00
OXYGEN IN EXH		%	7.6	9.5	11.1	13.2	15.7

RATED SPEED POTENTIAL SITE VARIATION: 1800 RPM

GENSET POWER WITH FAN		EKW	500.0	375.0	250.0	125.0	50.0
ENGINE POWER		BHP	744	566	390	218	110
PERCENT LOAD		%	100	75	50	25	10
TOTAL NOX (AS NO2)		G/HR	232	225	70	22	53
TOTAL CO		G/HR	0	0	0	0	0
TOTAL HC		G/HR	20	8	0	0	0
PART MATTER		G/HR	16.6	7.8	5.0	3.2	2.1
TOTAL NOX (AS NO2)	(CORR 5% O2)	MG/NM3	144.8	183.4	80.3	45.3	188.2
TOTAL CO	(CORR 5% O2)	MG/NM3	0.0	0.0	0.0	0.0	0.1
TOTAL HC	(CORR 5% O2)	MG/NM3	10.5	5.4	0.0	0.0	0.0
PART MATTER	(CORR 5% O2)	MG/NM3	8.3	5.3	4.9	5.3	5.8
TOTAL NOX (AS NO2)	(CORR 15% O2)	MG/NM3	53.7	68.1	29.8	16.8	69.8
TOTAL CO	(CORR 15% O2)	MG/NM3	0.0	0.0	0.0	0.0	0.0
TOTAL HC	(CORR 15% O2)	MG/NM3	3.9	2.0	0.0	0.0	0.0
PART MATTER	(CORR 15% O2)	MG/NM3	3.1	2.0	1.8	2.0	2.2
TOTAL NOX (AS NO2)	(CORR 5% O2)	PPM	71	89	39	22	92
TOTAL CO	(CORR 5% O2)	PPM	0	0	0	0	0
TOTAL HC	(CORR 5% O2)	PPM	20	10	0	0	0
TOTAL NOX (AS NO2)	(CORR 15% O2)	PPM	26	33	15	8	34
TOTAL CO	(CORR 15% O2)	PPM	0	0	0	0	0
TOTAL HC	(CORR 15% O2)	PPM	7	4	0	0	0
TOTAL NOX (AS NO2)		G/HP-HR	0.31	0.40	0.18	0.10	0.49
TOTAL CO		G/HP-HR	0.00	0.00	0.00	0.00	0.00
TOTAL HC		G/HP-HR	0.03	0.01	0.00	0.00	0.00
PART MATTER		G/HP-HR	0.02	0.01	0.01	0.01	0.02
TOTAL NOX (AS NO2)		G/KW-HR	0.43	0.54	0.24	0.14	0.66
TOTAL CO		G/KW-HR	0.00	0.00	0.00	0.00	0.00
TOTAL HC		G/KW-HR	0.04	0.02	0.00	0.00	0.00
PART MATTER		G/KW-HR	0.03	0.02	0.02	0.02	0.03
TOTAL NOX (AS NO2)		LB/HR	0.51	0.50	0.15	0.05	0.12
TOTAL CO		LB/HR	0.00	0.00	0.00	0.00	0.00
TOTAL HC		LB/HR	0.04	0.02	0.00	0.00	0.00
PART MATTER		LB/HR	0.04	0.02	0.01	0.01	0.00

Regulatory Information [Top](#)

EPA TIER 4 FINAL

2015 - ----

GASEOUS EMISSIONS DATA MEASUREMENTS PROVIDED TO THE EPA ARE CONSISTENT WITH THOSE DESCRIBED IN EPA 40 CFR PART 1039 SUBPART F AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. THE "MAX LIMITS" SHOWN BELOW ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality U.S. (INCL CALIF)	Agency EPA	Regulation NON-ROAD GENSET	Tier/Stage TIER 4 FINAL	Max Limits - G/BKW - HR CO: 3.5 NOx: 0.67 HC: 0.19 PM: 0.03
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EU STAGE V

2019 - ----

GASEOUS EMISSION DATA MEASUREMENTS ARE CONSISTENT WITH THOSE DESCRIBED IN EU 2016/1628, ECE REGULATION NO. 96 AND ISO 8178 FOR MEASURING HC, CO, PM, AND NOX. GASEOUS EMISSION VALUES ARE WEIGHTED CYCLE AVERAGES AND ARE IN COMPLIANCE WITH THE NON-ROAD REGULATIONS.

Locality EUROPE	Agency EU	Regulation GENSET	Tier/Stage STAGE V	Max Limits - G/BKW - HR CO: 3.5 NOx: 0.67 HC: 0.19 PM: 0.035
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Altitude Derate Data [Top](#)

STANDARD

ALTITUDE CORRECTED POWER CAPABILITY (BHP)

AMBIENT OPERATING TEMP (F)	50	60	70	80	90	100	110	120	130	140	NORMAL
ALTITUDE (FT)											
0	779	779	779	779	777	774	771	768	576	516	779
1,000	779	779	779	777	774	771	768	699	557	511	778
2,000	779	778	776	774	771	751	719	593	529	501	776
3,000	777	775	773	770	751	651	571	543	516	489	773
4,000	773	771	769	754	674	582	552	526	501	476	770
5,000	769	761	736	669	602	557	533	509	485	462	765
6,000	725	679	653	604	560	536	514	492	470	449	704
7,000	648	592	577	560	537	515	495	474	454	435	648
8,000	585	567	553	538	516	495	475	456	437	418	595
9,000	557	544	531	516	496	476	456	436	418	400	573
10,000	533	522	508	494	474	454	431	404	380	362	555
11,000	514	503	495	487	462	431	398	373	358	357	534
12,000	495	485	483	471	445	417	384	372	371	369	514
13,000	473	463	461	444	412	381	379	378	376	374	495
14,000	449	434	420	392	381	379	378	376	374	372	470
15,000	397	379	367	381	379	377	376	374	372	370	442

Cross Reference [Top](#)

Test Spec	Setting	Engine Arrangement	Engineering Model	Engineering Model Version	Start Effective Serial Number	End Effective Serial Number
4150867	PP7129	4190902	PS072	LS	CM800001	
4150867	PP7129	4190904	GS759	LS	CM800001	
4150867	PP7129	5194410	PS072	LS	CM800001	
5526359	PP7990	5424853	EE545	-	TC400001	

Performance Parameter Reference [Top](#)

Parameters Reference: DM9600 - 14

PERFORMANCE DEFINITIONS

PERFORMANCE DEFINITIONS DM9600

APPLICATION: Engine performance tolerance values below are representative of a typical production engine tested in a calibrated dynamometer test cell at SAE J1995 standard reference conditions. Caterpillar maintains ISO9001:2000 certified quality management systems for engine test Facilities to assure accurate calibration of test equipment. Engine test data is corrected in accordance with SAE J1995. Additional reference material SAE J1228, J1349, ISO 8665, 3046-1:2002E, 3046-3:1989, 1585, 2534, 2288, and 9249 may apply in part or are similar to SAE J1995. Special engine rating request (SERR) test data shall be noted.

PERFORMANCE PARAMETER TOLERANCE FACTORS: Power +/- 3% Torque +/- 3% Exhaust stack temperature +/- 8% Inlet airflow +/- 5% Intake manifold pressure-gage +/- 10% Exhaust flow +/- 6% Specific fuel consumption +/- 3% Fuel rate +/- 5% Specific DEF consumption +/- 3% DEF rate +/- 5% Heat rejection +/- 5% Heat rejection exhaust only +/- 10% Heat rejection CEM only +/- 10% Heat Rejection values based on using treated water.

Torque is included for truck and industrial applications, do not use for Gen Set or steady state applications.

On C7 - C18 engines, at speeds of 1100 RPM and under these values are provided for reference only, and may not meet the tolerance listed.

On 3500 and C175 engines, at speeds below Peak Torque these values are provided for reference only, and may not meet the tolerance listed.

These values do not apply to C280/3600. For these models, see the tolerances listed below.

C280/3600 HEAT REJECTION TOLERANCE FACTORS: Heat rejection +/- 10% Heat rejection to Atmosphere +/- 50% Heat rejection to Lube Oil +/- 20% Heat rejection to Aftercooler +/- 5%

TEST CELL TRANSDUCER TOLERANCE FACTORS: Torque +/- 0.5% Speed +/- 0.2% Fuel flow +/- 1.0% Temperature +/- 2.0 C degrees Intake manifold pressure +/- 0.1 kPa

OBSERVED ENGINE PERFORMANCE IS CORRECTED TO SAE J1995 REFERENCE AIR AND FUEL CONDITIONS.

REFERENCE ATMOSPHERIC INLET AIR FOR 3500 ENGINES AND SMALLER SAE J1228 AUG2002 for marine engines, and J1995 JAN2014 for other engines, reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity at the stated aftercooler water temp, or inlet manifold temp.

FOR 3600 ENGINES Engine rating obtained and presented in accordance with ISO 3046/1 and SAE J1995 JANJAN2014 reference atmospheric pressure is 100 KPA (29.61 in hg), and standard temperature is 25deg C (77 deg F) at 30% relative humidity and 150M altitude at the stated aftercooler water temperature.

MEASUREMENT LOCATION FOR INLET AIR TEMPERATURE Location for air temperature measurement air cleaner inlet at stabilized operating conditions.

REFERENCE EXHAUST STACK DIAMETER The Reference Exhaust Stack Diameter published with this dataset is only used for the calculation of Smoke Opacity values displayed in this dataset. This value does not necessarily represent the actual stack diameter of the engine due to the variety of exhaust stack adapter options available. Consult the price list, engine order or general dimension drawings for the actual stack diameter size ordered or options available.

REFERENCE FUEL DIESEL Reference fuel is #2 distillate diesel with a 35API gravity; A lower heating value is 42,780 KJ/KG (18,390 BTU/LB) when used at 15 deg C (59 deg F), where the density is 850 G/Liter (7.0936 Lbs/Gal).

GAS Reference natural gas fuel has a lower heating value of 33.74 KJ/L (905 BTU/CU Ft). Low BTU ratings are based on 18.64 KJ/L (500 BTU/CU FT) lower heating value gas. Propane ratings are based on 87.56 KJ/L (2350 BTU/CU Ft) lower heating value gas.

ENGINE POWER (NET) IS THE CORRECTED FLYWHEEL POWER (GROSS) LESS EXTERNAL AUXILIARY LOAD Engine corrected gross output includes the power required to drive standard equipment; lube oil, scavenge lube oil, fuel transfer, common rail fuel, separate circuit aftercooler and jacket water pumps. Engine net power available for the external (flywheel) load is calculated by subtracting the sum of auxiliary load from the corrected gross flywheel output power. Typical auxiliary loads are radiator cooling fans, hydraulic pumps, air compressors and battery charging alternators. For Tier 4 ratings additional Parasitic losses would also include Intake, and Exhaust Restrictions.

ALTITUDE CAPABILITY Altitude capability is the maximum altitude above sea level at standard temperature and standard pressure at which the engine could develop full rated output power on the current performance data set.
Standard temperature values versus altitude could be seen on TM2001.
When viewing the altitude capability chart the ambient temperature is the inlet air temp at the compressor inlet.
Engines with ADEM MEUI and HEUI fuel systems operating at conditions above the defined altitude capability derate for atmospheric pressure and temperature conditions outside the values defined, see TM2001.
Mechanical governor controlled unit injector engines require a setting change for operation at conditions above the altitude defined on the engine performance sheet. See your Caterpillar technical representative for non standard ratings.

REGULATIONS AND PRODUCT COMPLIANCE TMI Emissions information is presented at 'nominal' and 'Potential Site Variation' values for standard ratings. No tolerances are applied to the emissions data. These values are subject to change at any time. The controlling federal and local emission requirements need to be verified by your Caterpillar technical representative.
Customer's may have special emission site requirements that need to be verified by the Caterpillar Product Group engineer.

EMISSION CYCLE LIMITS: Cycle emissions Max Limits apply to cycle-weighted averages only. Emissions at individual load points may exceed the cycle-weighted limit.

WET & DRY EXHAUST/EMISSIONS DESCRIPTION: Wet - Total exhaust flow or concentration of total exhaust flow Dry - Total exhaust flow minus water vapor or concentration of exhaust flow with water vapor excluded

EMISSIONS DEFINITIONS: Emissions : DM1176

EMISSION CYCLE DEFINITIONS

1. For constant-speed marine engines for ship main propulsion, including,diesel-electric drive, test cycle E2 shall be applied, for controllable-pitch propeller sets test cycle E2 shall be applied.
2. For propeller-law-operated main and propeller-law-operated auxiliary engines the test cycle E3 shall be applied.
3. For constant-speed auxiliary engines test cycle D2 shall be applied.
4. For variable-speed, variable-load auxiliary engines, not included above, test cycle C1 shall be applied.

HEAT REJECTION DEFINITIONS: Diesel Circuit Type and HHV Balance : DM9500

HIGH DISPLACEMENT (HD) DEFINITIONS: 3500: EM1500

RATING DEFINITIONS: Agriculture : TM6008

Fire Pump : TM6009
Generator Set : TM6035
Generator (Gas) : TM6041
Industrial Diesel : TM6010
Industrial (Gas) : TM6040
Irrigation : TM5749
Locomotive : TM6037
Marine Auxiliary : TM6036
Marine Prop (Except 3600) : TM5747
Marine Prop (3600 only) : TM5748
MSHA : TM6042
Oil Field (Petroleum) : TM6011
Off-Highway Truck : TM6039
On-Highway Truck : TM6038

SOUND DEFINITIONS: Sound Power : DM8702
Sound Pressure : TM7080

Date Released : 10/27/21

Jeanette Brena

From: Francesca Risse - (C) <francesca.risse@hilcorp.com>
Sent: Tuesday, September 2, 2025 8:18 AM
To: Jeanette Brena
Cc: Stephanie Dow
Subject: FW: [EXTERNAL] RE: Hilcorp Omega Pad C18 Engines Emissions

Jeanette,

See below.

From: Erick Pomrenke <EPomrenke@NCPowerSystems.com>
Sent: Tuesday, September 2, 2025 8:15 AM
To: Francesca Risse - (C) <francesca.risse@hilcorp.com>
Subject: RE: [EXTERNAL] RE: Hilcorp Omega Pad C18 Engines Emissions

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Francesca,

I've looked through all our Tier 4 Final products and they all show 0 for CO.

It would be more than safe to say 0.01lb/hr CO would be a high field estimate.

Thank you

Erick Pomrenke

**NC POWER SYSTEMS
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1-907-632-6700 CELL
1-907-786-7567 FAX**



From: Francesca Risse - (C) <francesca.risse@hilcorp.com>
Sent: Friday, August 29, 2025 3:59 PM
To: Erick Pomrenke <EPomrenke@NCPowerSystems.com>
Subject: RE: [EXTERNAL] RE: Hilcorp Omega Pad C18 Engines Emissions

Erick,

Is there any data that shows the next digit by chance, 0.00X? Or can you confirm in writing that, yes, 0.01 lb/hr CO would be a high field estimate since the performance data shows otherwise?

Thanks,
Francesca

From: Erick Pomrenke <EPomrenke@NCPowerSystems.com>
Sent: Friday, August 29, 2025 3:48 PM
To: Francesca Risse - (C) <francesca.risse@hilcorp.com>
Subject: RE: [EXTERNAL] RE: Hilcorp Omega Pad C18 Engines Emissions

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Francesca,

I've checked both and they all show zero for CO.

Thank you

Erick Pomrenke

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1-907-786-7567 FAX**



From: Francesca Risse - (C) <francesca.risse@hilcorp.com>
Sent: Friday, August 29, 2025 3:45 PM
To: Erick Pomrenke <EPomrenke@NCPowerSystems.com>
Subject: RE: [EXTERNAL] RE: Hilcorp Omega Pad C18 Engines Emissions

Erick,

These would be new engines. We can use mobile engines, however they won't need to move anywhere so a stationary could also work.

Francesca

From: Erick Pomrenke <EPomrenke@NCPowerSystems.com>
Sent: Friday, August 29, 2025 3:40 PM
To: Francesca Risse - (C) <francesca.risse@hilcorp.com>
Subject: [EXTERNAL] RE: Hilcorp Omega Pad C18 Engines Emissions

CAUTION: External sender. DO NOT open links or attachments from UNKNOWN senders.

Francesca,

New or used?

Mobile or stationary?

Thank you

Erick Pomrenke

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1-907-786-7567 FAX**



From: Francesca Risse - (C) <francesca.risse@hilcorp.com>

Sent: Friday, August 29, 2025 3:33 PM

To: Erick Pomrenke <EPomrenke@NCPowerSystems.com>

Subject: Hilcorp Omega Pad C18 Engines Emissions

Hi Erick,

We're looking at a couple C18 engines for Hilcorp's Omega Pad project in the future, and I need some help with the emissions data we have, attached. As shown below, the emissions data for CO shows 0.00 lb/hr, but we need some non-zero number for our air permitting. Do you know if a conservative estimate like 0.005 lb/hr or 0.01 lb/hr CO would be appropriate for this engine?

**GENSET POWER WITH FAN
ENGINE POWER
PERCENT LOAD**

TOTAL NOX (AS NO2)	
TOTAL CO	
TOTAL HC	
PART MATTER	
TOTAL NOX (AS NO2)	(CORR 5% O2)
TOTAL CO	(CORR 5% O2)
TOTAL HC	(CORR 5% O2)
PART MATTER	(CORR 5% O2)
TOTAL NOX (AS NO2)	(CORR 15% O2)
TOTAL CO	(CORR 15% O2)
TOTAL HC	(CORR 15% O2)
PART MATTER	(CORR 15% O2)
TOTAL NOX (AS NO2)	(CORR 5% O2)
TOTAL CO	(CORR 5% O2)
TOTAL HC	(CORR 5% O2)
TOTAL NOX (AS NO2)	(CORR 15% O2)
TOTAL CO	(CORR 15% O2)
TOTAL HC	(CORR 15% O2)
TOTAL NOX (AS NO2)	
TOTAL CO	
TOTAL HC	
PART MATTER	
TOTAL NOX (AS NO2)	
TOTAL CO	
TOTAL HC	
PART MATTER	
TOTAL NOX (AS NO2)	
TOTAL CO	
TOTAL HC	
PART MATTER	

Thanks,

Francesca Risse

Environmental Specialist | Hilcorp Alaska, LLC

Office: 907.777.8483

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Attachment C

Compliance Demonstration

ATTACHMENT C: EMISSIONS STANDARDS COMPLIANCE DEMONSTRATION

18 AAC 50.055(a)(1) – Visible Emissions Standard

All stationary fuel-burning equipment are subject to the visible emissions requirement of 18 Alaska Administrative Code (AAC) 50.055(a)(1). This rule requires that visibility through the exhaust effluent not be reduced by visible emissions, excluding condensed water vapor, by more than 20 percent averaged over any six consecutive minutes.

Although visibility information is not available for the fuel-burning equipment that will be installed at Omega Pad, operating experience with similar equipment installed at locations on the Alaska North Slope has shown compliance with this standard when the equipment is properly operated and maintained.

18 AAC 50.055(b)(1) – Particulate Matter Emissions Standard

All stationary fuel-burning equipment is subject to the particulate matter emissions requirement of 18 AAC 50.055(b)(1). This rule requires that particulate matter emissions from industrial processes and fuel-burning equipment not exceed 0.05 grains per cubic foot of exhaust gas corrected to standard conditions (gr/scf) and averaged over three hours.

Emissions Units: Gas-Fired Heaters

- From Vendor Data, PM Emission Factor = 0.0125 lb/MMBtu, LHV (0.0138 lb/MMBtu, HHV)
- From 40 CFR 60, Method 19, Equation 19-1:

$$E = CF \frac{20.9}{(20.9 - \%O_2)}$$

Where:

E	=	Pollutant emission rate (lb/MMBtu)
C	=	Pollutant concentration in stack gas (lb/scf)
F	=	F-factor (scf/MMBtu)
O ₂	=	Percent oxygen by weight in fuel

- Solving for C and converting to gr/scf:

Where:

E	=	0.0138 lb/MMBtu
F	=	8,710 scf/MMBtu (factor for natural gas combustion)
O ₂	=	5 percent

$$C = \frac{0.0138 \text{ lb}}{\text{MMBtu}} \times \frac{\text{MMBtu}}{8,710 \text{ scf}} \times \frac{(20.9 - 5)}{20.9} \times \frac{7,000 \text{ gr}}{\text{lb}} = 0.0084 \frac{\text{gr}}{\text{scf}}$$

The PM emission rate for gas-fired heaters is less than 0.05 gr/scf, so the resulting emissions will comply with the grain loading standard of 18 AAC 50.055(b)(1).

Emissions Units: Standby Diesel-Fired Engine(s)

- From Vendor Data, PM Emission Factor = 0.04 lb/hr = 0.007 lb/MMBtu (brake-specific fuel consumption rate = 7,000 Btu/hp-hr; engine rating = 779 bhp)
- From 40 CFR 60, Method 19, Equation 19-1:

$$E = CF \frac{20.9}{(20.9 - \%O_2)}$$

Where: E = Pollutant emission rate (lb/MMBtu)
 C = Pollutant concentration in stack gas (lb/scf)
 F = F-factor (scf/MMBtu)
 O₂ = Percent oxygen by weight in fuel

- Solving for C and converting to gr/scf:

Where: E = 0.007 lb/MMBtu
 F = 9,190 scf/MMBtu (factor for liquid fuel combustion)
 O₂ = 15 percent for diesel-fired RICE

$$C = \frac{0.007 \text{ lb}}{\text{MMBtu}} \times \frac{\text{MMBtu}}{9,190 \text{ scf}} \times \frac{(20.9 - 15)}{20.9} \times \frac{7,000 \text{ gr}}{\text{lb}} = 0.0015 \frac{\text{gr}}{\text{scf}}$$

The PM emission rate for diesel-fired engines is less than 0.05 gr/scf, so the resulting emissions will comply with the grain loading standard of 18 AAC 50.055(b)(1).

18 AAC 50.055(c) – Sulfur Compound Emissions Standard

All stationary fuel-burning equipment is subject to the sulfur compound emissions requirement of 18 AAC 50.055(c). This rule requires that sulfur compound emissions from fuel-burning equipment not exceed 500 parts per million (ppm) averaged over three hours.

Emissions Units: Gas-Fired Equipment

- Convert ppm SO₂ in stack gas to ppmv S (as H₂S) in fuel (fuel gas heat value = 972 Btu/scf (HHV); F-factor for natural gas combustion = 8,710 scf/MMBtu):

$$500 \text{ ppm SO}_2 = \frac{500 \text{ scf SO}_2}{10^6 \text{ scf}}$$

$$\frac{500 \text{ scf SO}_2}{10^6 \text{ scf}} \times \frac{8,710 \text{ scf}}{10^6 \text{ Btu}} \times \frac{972 \text{ Btu}}{\text{scf fuel}} = \frac{0.0042 \text{ scf SO}_2}{\text{scf fuel}}$$

$$\frac{0.0042 \text{ scf SO}_2}{\text{scf fuel}} \times \frac{\text{mol SO}_2}{379 \text{ scf SO}_2} \times \frac{\text{mol H}_2\text{S}}{\text{mol SO}_2} = \frac{1.12 \times 10^{-5} \text{ mol H}_2\text{S}}{\text{scf fuel}}$$

$$\frac{1.12 \times 10^{-5} \text{ mol H}_2\text{S}}{\text{scf fuel}} \times \frac{379 \text{ scf H}_2\text{S}}{\text{mol H}_2\text{S}} = \frac{4.23 \times 10^{-3} \text{ scf H}_2\text{S}}{\text{scf fuel}}$$

$$\frac{4.23 \times 10^{-3} \text{ scf H}_2\text{S}}{\text{scf fuel}} \times 10^6 = 4,233 \text{ ppmv}$$

The fuel sulfur content of the fuel gas fired at Omega Pad will be less than 4,233 ppmv, so the resulting SO₂ stack gas concentration will comply with the sulfur compound emission standard of 18 AAC 50.055(c).

Emissions Units: Diesel-Fired Equipment

- Convert ppm SO₂ in stack gas to weight percent S in fuel (F-factor for liquid fuel combustion = 9,190 scf/MMBtu; diesel heating value = 19,400 Btu/lb):

$$500 \text{ ppm SO}_2 \times \frac{1.66 \times 10^{-7} \text{ lb SO}_2/\text{scf}}{1 \text{ ppm SO}_2} = \frac{8.3 \times 10^{-5} \text{ lb SO}_2}{\text{scf fuel}}$$

$$\frac{8.3 \times 10^{-5} \text{ lb SO}_2}{\text{scf fuel}} \times \frac{9,190 \text{ scf fuel}}{10^6 \text{ Btu}} \times \frac{19,400 \text{ Btu}}{\text{lb fuel}} = \frac{0.0148 \text{ lb SO}_2}{\text{lb fuel}}$$

$$\frac{0.0148 \text{ lb SO}_2}{\text{lb fuel}} \times \frac{\text{mol SO}_2}{64 \text{ lb SO}_2} \times \frac{\text{mol S}}{\text{mol SO}_2} \times \frac{32 \text{ lb S}}{\text{mol S}} = \frac{0.0074 \text{ lb S}}{\text{lb fuel}}$$

$$\frac{0.0074 \text{ lb S}}{\text{lb fuel}} = 0.74 \text{ wt. pct. S}$$

The fuel sulfur content of the liquid fuel fired at Omega Pad will be less than 0.74 percent by weight, so the resulting SO₂ stack concentration will comply with the sulfur compound emission standard of 18 AAC 50.055(c).



Attachment D

Revise or Rescind a Title I Permit Condition

ATTACHMENT D: REVISE OR RESCIND A TITLE I PERMIT CONDITION

Hilcorp requests revisions to Title I Minor Permit No. AQ1854MSS01 for Omega Pad under 18 AAC 50.508(6). Per 18 AAC 50.540(k), an application for a minor air quality permit to revise terms or conditions of a Title I permit under 18 AAC 50.508(6) must include the information required in 18 AAC 50.540(k)(1) through (4). Each required element is addressed below.

18 AAC 50.540(k)(1)

Per 18 AAC 50.540(k)(1), a copy of Minor Permit No. AQ1854MSS01 is included in Attachment F.

18 AAC 50.540(k)(2)

Per 18 AAC 50.540(k)(2), an explanation of why the permit term or condition should be revised is detailed below.

Hilcorp is proposing to update the Omega Pad emissions unit inventory in Table 1 of Permit No. AQ1854MSS01 as follows to accommodate design changes to the stationary source:

EU ID	Requested Revisions to Table 1 of Permit No. AQ1854MSS01
1	Change the make/model to Tulsa Heater SHO5000 (Therminol); and change the rating to 61.34 MMBtu/hr (LHV).
2	Change the make/model to Tulsa Heater SHO5000 (Therminol); and change the rating to 61.34 MMBtu/hr (LHV).
3	Change the make/model to Tulsa Heater SHO5000 (Therminol); and change the rating to 61.34 MMBtu/hr (LHV).
4	Delete unit.
5	Change to two Standby Engines, EU ID 5a and 5b, where each is a Caterpillar C18 (Tier 4) rated at 779 bhp; remove Table Note 1 and the one Cummins engine option.

In addition to these design changes, Hilcorp requests that the following conditions of Permit No. AQ1854MSS01 be revised as noted below:

Condition No.	Requested Revisions to Conditions of Permit No. AQ1854MSS01
Throughout Permit	Remove reference to EU ID 4, which was removed from the emissions unit inventory as noted in the table above.

Condition No.	Requested Revisions to Conditions of Permit No. AQ1854MSS01
Throughout Permit	Change all references of EU ID 5 to EU IDs 5a and 5b per the updated emissions unit inventory noted in the table above.
4.1	Update the potential to emit for assessable emissions to 134.73 tons per year (tpy) per Attachment A, Table A-1a.
9	<p>Ambient Air Quality Protection Requirements are only required for 24-hour and annual particulate matter with an aerodynamic diameter less than or equal to 2.5 microns (PM_{2.5}) consistent with the redesigned stationary source potential to emit as shown in Attachment A, Table A-1a and as noted in the updated ambient demonstration in Attachment E. As a result, revise Condition 9 as follows:</p> <p style="padding-left: 40px;">The Permittee shall protect the 24-hour and annual average particulate matter with an aerodynamic diameter less than or equal to 2.5 microns (PM_{2.5}) Alaska Ambient Air Quality Standards (AAAQS) as follows:</p>
9.1	Delete Condition 9.1. EU IDs 1 through 3 and 5a and 5b should have no stack configuration requirements with the ability to use horizontal and/or capped vertical releases. The updated ambient demonstration in Attachment E does not depict any unit with vertical, uncapped stacks, which are considered less stringent configurations that may have a lesser impact on near-field ambient air quality. Deleting this requirement would be consistent with the Department's response to comments for Minor Permit No. AQ1564MSS03.
9.2	Revise the minimum stack height for EU IDs 1 through 3 from 15.2 meters to 11.3 meters consistent with the updated ambient demonstration.
9.3	<p>Ambient Air Quality Protection Requirements are only required for 24-hour and annual particulate matter with an aerodynamic diameter less than or equal to 2.5 microns (PM_{2.5}) consistent with the redesigned stationary source potential to emit as shown in Attachment A, Table A-1a and as noted in the updated ambient demonstration in Attachment E. As a result, revise Condition 9.3 as follows:</p> <p style="padding-left: 40px;">EPA's Nonroad Tier 4 Emission Standards. The Permittee shall protect the 24-hour and annual average PM_{2.5} AAAQS by operating EPA Tier 4 compliant engines as EU ID 5a and 5b.</p>
10	Delete Condition 10. As redesigned, the stationary source does not trigger an ambient demonstration for sulfur dioxide (SO ₂) and therefore this condition is not needed to protect ambient air quality.
17	Delete Condition 17. As redesigned, the stationary source no longer triggers the requirements for a Title V operating permit.

18 AAC 50.540(k)(3)

Per 18 AAC 50.540(k)(3), an explanation of the effect of revising the permit term or condition on the elements listed below are detailed below:

- Emissions: As a result of design changes, the stationary source emissions have been reduced as shown in Attachment A. Evaluating project changes against the thresholds in 18 AAC 50.502(c)(1) that apply to a new stationary source, the stationary source potential to emit direct particulate matter less than 2.5 microns (PM_{2.5}) will exceed the minor air quality permitting thresholds under 18 AAC 50.502(c)(1)(F).
- Other Permit Terms: No other permit terms are affected by these revisions other than condition numbering that will need to be updated.
- Underlying Ambient Air Quality Demonstration: An updated ambient air quality demonstration is provided in Attachment E.
- Compliance Monitoring: Compliance monitoring is not affected by these revisions.

18 AAC 50.540(k)(4)

Per 18 AAC 50.540(k)(4), an explanation of the conditions' effect on avoiding a permit classification is detailed below.

Not applicable; the stationary source has no owner requested limits to avoid permit classifications.



Attachment E

Ambient Demonstration

ATTACHMENT E: AMBIENT DEMONSTRATION

1.0 OVERVIEW

Hilcorp North Slope, LLC (Hilcorp) is planning to construct and operate Omega Pad, a new stationary source located within the Western Operating Area of the Prudhoe Bay Unit (PBU). The Omega Pad project will include a production pad, wells, a processing facility, and tie-ins to existing production transport pipelines and gas lift pipelines. The project emissions unit (EU) inventory includes three hot oil heaters, two standby generator engines, and five storage tanks. Figure 1-1 shows an aerial image of the stationary source location. The project triggers air quality minor permitting requirements under Title 18 Alaska Administrative Code (18 AAC) 50.502(c)(1) for a new stationary source that has the potential to emit greater than 10 tons per year (tpy) of particulate matter with a diameter less than or equal to 2.5 microns ($PM_{2.5}$). Per 18 AAC 50.540(c)(2)(A), dispersion modeling is required to demonstrate that the stationary source will not cause or contribute to an exceedance of the 24-hour and annual average $PM_{2.5}$ Alaska Ambient Air Quality Standards (AAAQS). The procedures and results of the dispersion modeling analysis are described below. The dispersion modeling results demonstrate that the facility will not cause or contribute to violations of the AAAQS.

Figure 1-1. Project Location Map



2.0 MODELING METHODOLOGY

Dispersion modeling was conducted to estimate the potential ambient air quality impacts from emissions sources at Omega Pad. The modeling analysis is based on the latest version of the AERMOD (24142) air dispersion model, per Title 40 Code of Federal Regulations (40 CFR) 51, Appendix W. The latest version of AERMET (24142) was used to prepare meteorological data and atmospheric stability parameters for use in AERMOD. The most recent version of the Building Profile Input Program with Plume Rise Model Enhancements (BPIP/PRM 04274) was used to model the effects of building downwash on the dispersion of emissions. The AERMOD terrain data pre-processor, AERMAP, was not used to process source elevations, receptor elevations, and hill height scales because the model domain is flat.

2.1 MODEL EMISSIONS UNIT INPUT PARAMETERS

Project construction and operation activities are not expected to overlap. Hilcorp anticipates construction to commence in the first quarter of 2027 with the installation of vertical support members. This is expected to be followed by facility construction in the second and third quarters of 2027. Hilcorp anticipates operations to commence in the fourth quarter of 2027 or the first quarter of 2028. Emissions from construction activities (i.e., predominately from fuel-fired highway engines, small nonroad engines, and small portable heaters) are anticipated to occur over a short duration and will be negligible in comparison to emissions from Omega Pad during operations. As such, the dispersion modeling analysis is based on the stationary source operations scenario.

Table 2-1 provides the locations and exhaust stack parameters for the modeled EUs. Supporting calculations used to develop these parameters are provided in Attachment G. All modeled EUs and structures were referenced to the Universal Transverse Mercator (UTM) coordinate system. Each modeled EU and structure base elevation was set equal to 1.52 meters (m) (5 feet) based on the Omega Pad grade elevation with respect to the surrounding area. The heaters were each modeled as a point source with a vertical exhaust stack with a rain cap. The standby engines were each modeled as a point source with a horizontal exhaust stack. Table 2-2 provides the respective PM_{2.5} emission rates. No EUs were modeled with vertical, uncapped stacks, which are considered less stringent configurations that may have a lesser impact on near-field ambient air quality.

Table 2-1. Modeled EU Exhaust Stack Parameters

Emissions Unit		Exhaust Stack Location UTM			Exhaust Stack Parameters			
Model ID	Description	X (m)	Y (m)	Z (m)	Height (m)	Temp. (K)	Velocity (m/s)	Diameter (m)
HEATER01	Hot Oil Heater 1	411,391	7,806,805	1.52	11.3	511	10.0	1.2
HEATER02	Hot Oil Heater 2	411,434	7,806,798	1.52	11.3	511	10.0	1.2
HEATER03	Hot Oil Heater 3	411,478	7,806,790	1.52	11.3	511	10.0	1.2
ENGINE01	Standby Engine 1	411,647	7,806,706	1.52	4.6	720	63.8	0.15
ENGINE02	Standby Engine 2	411,467	7,806,705	1.52	4.6	720	63.8	0.15

Table 2-2. Modeled EU Emission Rates

Emissions Unit		Emissions Rates (g/s)
Model ID	Description	PM _{2.5}
HEATER01	Hot Oil Heater 1	9.66E-02
HEATER02	Hot Oil Heater 2	9.66E-02
HEATER03	Hot Oil Heater 3	9.66E-02
ENGINE01	Standby Engine 1	5.04E-03
ENGINE02	Standby Engine 2	5.04E-03

2.2 OFFSITE MODEL EMISSIONS UNIT INVENTORY

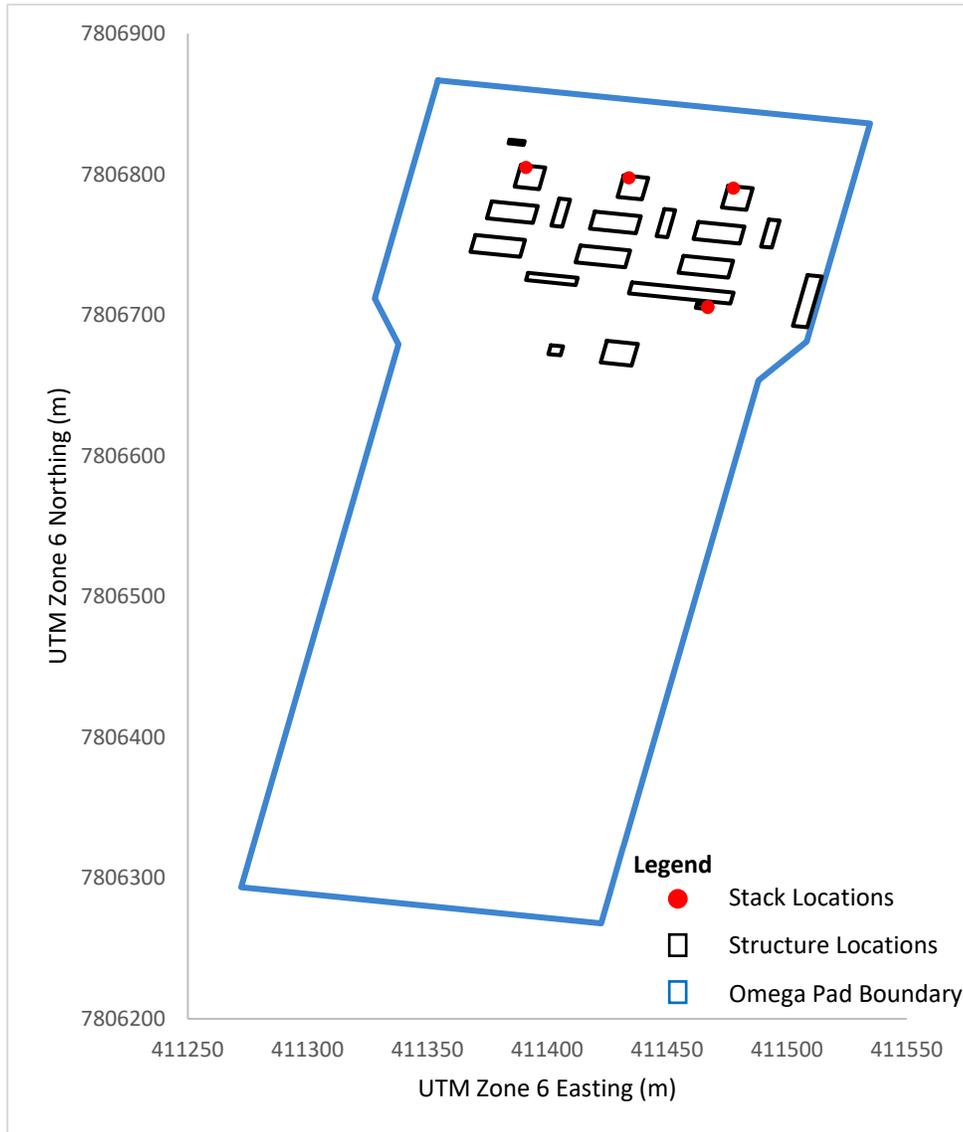
For a cumulative ambient air quality impact assessment, the potential emissions from the proposed project EU inventory and offsite stationary sources are modeled to compute a cumulative impact. Section 8.3 of 40 CFR 51, Appendix W, indicates that offsite sources that will cause a significant concentration gradient in the vicinity of the proposed stationary source should be explicitly modeled. Omega Pad will not be located near any sources that will cause a significant concentration gradient in the area around the pad. As a result, no offsite sources were explicitly modeled.

2.3 BUILDING DOWNWASH ANALYSIS

The modeling analysis follows the guidance provided in the United States Environmental Protection Agency (EPA) *Guidelines for Determination of Good Engineering Practice Stack Height* (EPA-450/4-80-023R, June 1985). The latest version of BPIPFRM (04274) was used to process building downwash parameters. Building coordinates and heights for each structure that could influence a modeled EU were entered into BPIPFRM and the output dimensions were used to ensure that no stack exceeds good engineering practice stack height and to provide the direction-specific downwash dimensions to the AERMOD model.

Figure 2-1 depicts the proposed Omega Pad layout. The modeled structures are outlined in black and the modeled EU exhaust stack locations are depicted with red circles. BPIPFRM input and output files prepared for the modeling analysis are provided in Attachment G.

Figure 2-1. Modeled EU Stack and Building Locations



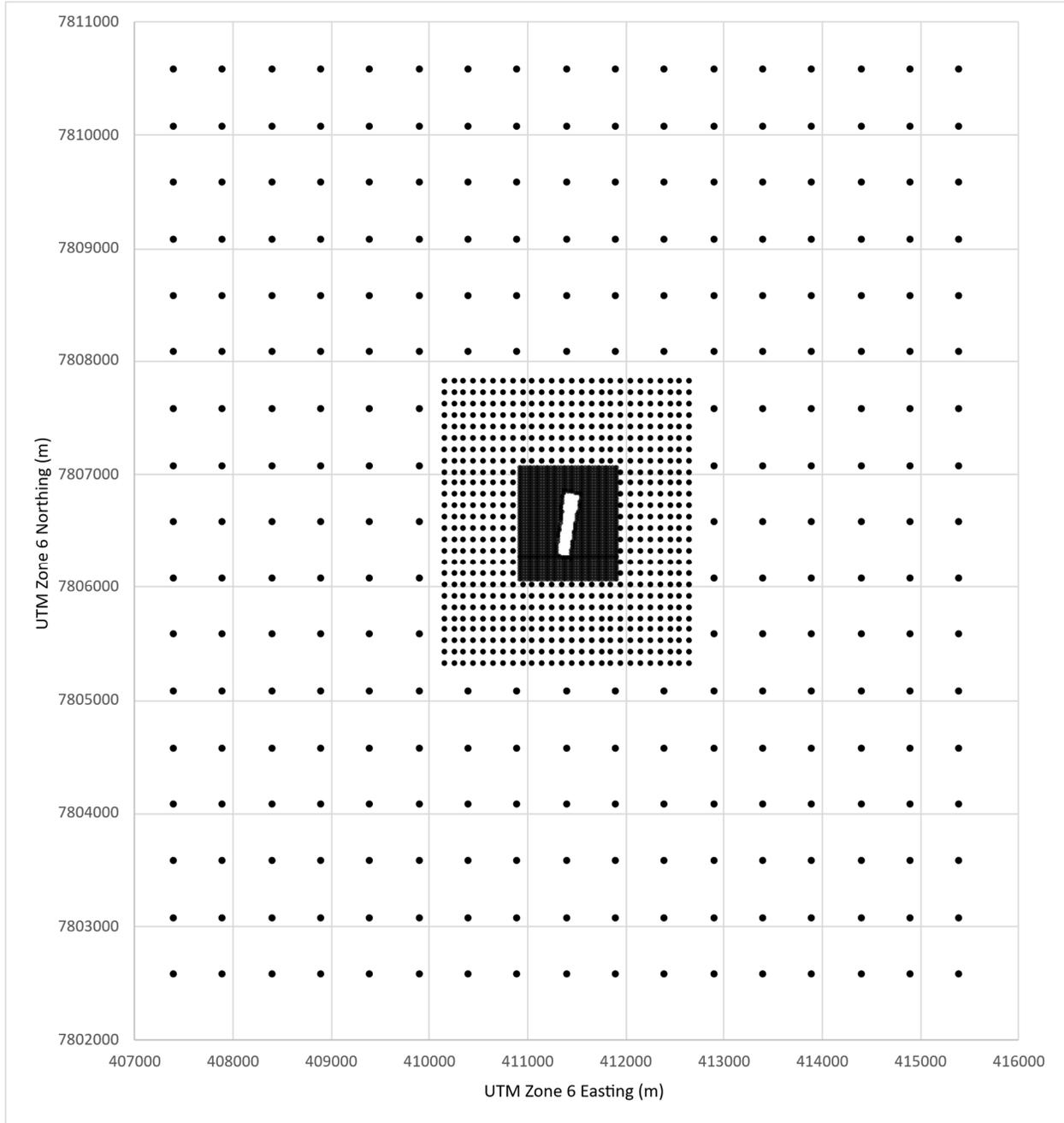
2.4 MODEL RECEPTORS AND TERRAIN

Ambient air is defined as that portion of the atmosphere, external to buildings, to which the general public has access, per 40 CFR 50.1(e), adopted by reference in 18 AAC 50.990(9). Per Alaska Department of Environmental Conservation (ADEC) guidance (ADEC 2018), model receptors were placed along the Omega Pad edges to represent the ambient air boundary. There will not be any worker housing at Omega Pad and, as such, no model receptors were placed over the Omega Pad.

Figure 2-2 depicts all receptor fields used for the modeling analyses. The receptor fields were developed to capture maximum impacts and to evaluate impacts at locations at and outward from the Omega Pad ambient air boundary. The near field receptors are spaced apart by 25 m within a 1 square kilometer (km²) area centered over the Omega Pad. The mid field receptors are spaced

apart by 100 m within a 6.2 km² area. The far field receptors are spaced apart by 500 m within a 64 km² area. All receptor elevations and hill height scales were set equal to 0 m because the area surrounding the proposed project is flat.

Figure 2-2. Full Model Receptor Grid



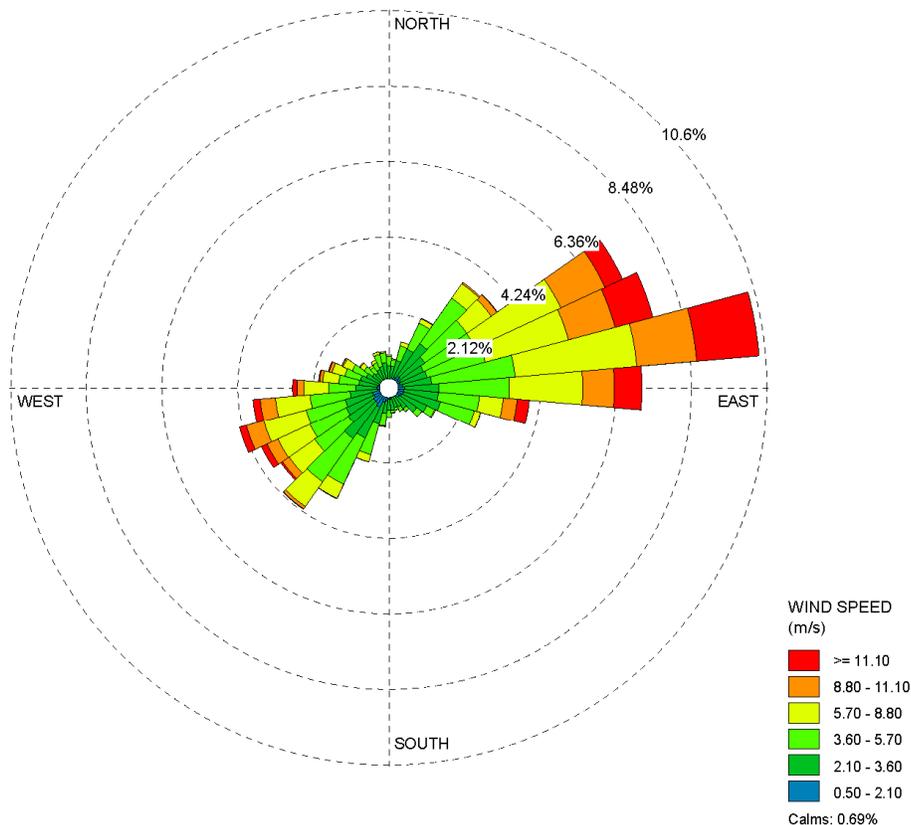
2.5 AERMET METEOROLOGICAL DATA

Following EPA guidance in 40 CFR 51, Appendix W, representative site-specific meteorological data were used to estimate air pollutant impacts due to potential emissions from Omega Pad

sources. Publicly available hourly surface meteorological data collected during 2014, 2015, 2016, 2019, and 2020 at the A-Pad station and concurrent twice-daily upper air meteorological data collected by the National Weather Service at Utqiagvik, Alaska were processed using AERMET (24142). The ADEC has reviewed the data and determined that the surface meteorological data collected during 2014, 2015, 2016, 2019, and 2020 at the A-Pad station meets the requirements in 40 CFR 51, Appendix W. The A-Pad station meteorological data are representative of meteorological conditions at the facility based on the proximity of the A-Pad station to the proposed Omega Pad location, relatively consistent meteorological conditions across the Alaska North Slope coastal plain, and because the data were recently collected. For these reasons, ADEC determined that the A-Pad meteorological data are representative of the project area as part of ADEC’s review of the ambient demonstration prepared for Permit No. AQ1854MSS01.

The A-Pad station meteorological data are comprised of hourly averages of Prevention of Significant Deterioration (PSD) meteorological monitoring parameters including horizontal wind speed, horizontal wind direction, standard deviation of the horizontal wind direction (sigma-theta), ambient 2-m temperature, ambient 10-m temperature, vertical temperature difference (10-m temperature minus 2-m temperature, “Delta T”), solar radiation, and standard deviation of vertical wind speed (sigma-W). Figure 2-3 provides a wind rose based on the wind data collected at the A-Pad station during the 2014, 2015, 2016, 2019, and 2020 monitoring years.

**Figure 2-3. A-Pad Monitoring Station Wind Rose
Calendar Years 2014, 2015, 2016, 2019, and 2020**



The AERMET algorithms process upper air and surface meteorological data with site-specific geophysical inputs to calculate the atmospheric boundary layer parameters that are then supplied to AERMOD for use in the air dispersion model algorithms. The geophysical parameters are albedo, Bowen ratio, and surface roughness length.

The AERMET geophysical input parameters are also seasonally dependent. AERMET uses a significantly different definition of the monthly make-up of the seasons than the conditions experienced on the Alaska North Slope. These geophysical parameters were input in AERMET per month to reflect the seasonal patterns of the Alaska North Slope. The following definitions of the seasons are based on climate records for Deadhorse, Alaska, have been approved by the ADEC for prior air quality permitting activities, and are described in the *ADEC Modeling Review Procedures Manual* (October 8, 2018).

- Summer (June through September): vegetation is emerging or partially green, the period when the mean daily high temperatures rise above 32 degrees Fahrenheit (°F) or 0 degrees Celsius (°C).
- Winter (October through May): mean daily high temperatures rarely exceed 32 °F and the surface is covered with snow and ice.

Table 2-3 provides a summary of geophysical parameters for the Alaska North Slope, separated by season and land use classification, provided in the *ADEC Modeling Review Procedures Manual* (October 8, 2018) that were used for this modeling analysis.

Table 2-3. Alaska North Slope Geophysical Parameters

Land Use Classification	Season ¹	Albedo	Bowen Ratio	Surface Roughness Length (m)
North Slope (Onshore)	Summer (June through September)	0.18	0.80	0.020
	Winter (October through May)	0.80	1.50	0.004

Notes:

¹ Seasons are defined as: Summer (June through September), Winter (October through May).

2.6 BACKGROUND AMBIENT AIR DATA

Background ambient air quality data are required in a cumulative impact analysis to represent the contribution of ambient air pollutant concentrations from non-modeled sources (40 CFR 51, Appendix W, Section 8.3.1). The ambient air pollutant concentrations from the most recent PBU Central Compressor Plant (CCP) PSD-quality ambient air data (monitoring year 2021) were used to represent the contribution of ambient PM_{2.5} levels due to non-modeled sources. ADEC has previously determined that this ambient air quality data set is representative of background ambient air pollutant levels in the project area as part of ADEC's review of the ambient demonstration prepared for Permit No. AQ1854MSS01. The background ambient PM_{2.5} concentrations at the CCP station are summarized in Table 2-4.

Table 2-4. Summary of Ambient Background Concentrations

Pollutant	Averaging Period	Background Concentration (µg/m ³)	AAQs (µg/m ³)
PM _{2.5}	24-Hour	7.0 ¹	35
	Annual	2.3	12

Notes:

¹ Based on the 98th percentile of 24-hour average PM_{2.5} values during the monitoring year.

3.0 RESULTS

Table 3-1 provides the maximum ambient air quality impacts for all modeled scenarios. The ambient background concentrations provided in Table 2-4 were added to the modeled impacts to estimate cumulative ambient air quality impacts for comparison to the applicable AAQs. The results in Table 3-1 show that the modeled impacts, when added to background ambient air levels, are well below the 24-hour and annual PM_{2.5} AAQs.

Table 3-1. Facility Cumulative Impact Analysis Results

Air Pollutant	Averaging Period	Maximum Modeled Impact (µg/m ³)	Background Concentration (µg/m ³)	Maximum Cumulative Impact (µg/m ³)	AAQs (µg/m ³)	Percent of AAQs
PM _{2.5}	24-Hour	21.2 ¹	7.0	28.2	35	80%
	Annual	4.4	2.3	6.7	12	56%

Notes:

¹ Based on the maximum five-year average of the highest-eighth high (H8H) 24-hour average PM_{2.5} values.

4.0 REFERENCES

ADEC, Title 18 Alaska Administrative Code, Chapter 50, Air Quality Control, as amended through December 14, 2024.

ADEC, *ADEC Modeling Review Procedures Manual*, October 8, 2018.

EPA, *User's Guide for the AMS/EPA Regulatory Model (AERMOD)*, EPA-454/B-24-007, Office of Air Quality Planning and Standards, Research Triangle Park, N.C., November 2024.

EPA, *User's Guide for the AERMOD Meteorological Preprocessor (AERMET)*, EPA-454/B-24-004. Office of Air Quality Planning and Standards, Research Triangle Park, N.C., November 2024.

EPA, *Revision to the Guideline on Air Quality Model: Enhancements to the AERMOD Dispersion Modeling System and Incorporation of Approaches to Address Ozone and Fine Particulate Matter*, Final Rule, 40 CFR 51, Appendix W, January 2017.

EPA, *Guidelines for Determination of Good Engineering Practice Stack Height*, EPA-450/4-80-023R, Office of Air Quality Planning and Standards, Research Triangle Park, N.C., June 1985.



Attachment F

Minor Permit No. AQ1854MSS01

DEPARTMENT OF ENVIRONMENTAL CONSERVATION
AIR QUALITY CONTROL MINOR PERMIT

Minor Permit No.: AQ1854MSS01

Final Date – July 17, 2025

The Alaska Department of Environmental Conservation (Department), under the authority of AS 46.14 and 18 AAC 50, issues Air Quality Control Minor Permit No. AQ1854MSS01 to the Permittee listed below.

Permittee: **Hilcorp North Slope, LLC**
3800 Centerpoint Drive, Suite 1400
Anchorage, AK 99503

Stationary Source: **Omega Pad**

Location: Latitude: 70.352586 / Longitude: -149.360722

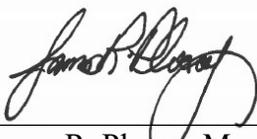
Project: Minor Permit for New Stationary Source (Omega Pad)

Permit Contact: Drew Anderson, (907) 777-8488, ananderson@hilcorp.com

The Permittee submitted an application for Minor Permit No. AQ1854MSS01 under 18 AAC 50.502(c)(1) for a new source that has the potential to emit greater than 40 tons per year (TPY) of oxides of nitrogen (NO_x), 40 TPY of sulfur dioxide (SO₂), 10 TPY of particulate matter less than or equal to a nominal 2.5 microns in diameter (PM_{2.5}), and 15 TPY of particulate matter less than or equal to a nominal 10 microns in diameter (PM₁₀). 18 AAC 50.502(c)(1) requires the Permittee to obtain a minor permit before beginning actual construction of a new stationary source with a potential to emit greater than the thresholds listed under 18 AAC 50.502(c)(1).

On November 27, 2024, the Department remanded Minor Permit No. AQ1854MSS01, issued on November 1, 2024, under 18 AAC 15.185(d)(2) for further consideration, due to the informal review request submitted by the Permittee on November 20, 2024. The Department is reissuing this minor permit to address the issues raised in the informal review request.

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	N/A	not applicable
AAC	Alaska Administrative Code	NO _x	nitrogen oxides
ADEC	Alaska Department of Environmental Conservation	NMHC	non-methane hydrocarbons
AOS	Air Online Services	NRE	nonroad engine
AS	Alaska Statutes	PM ₁₀	particulate matter less than or equal to a nominal 10 microns in diameter
ASTM	American Society for Testing and Materials	PM _{2.5}	particulate matter less than or equal to a nominal 2.5 microns in diameter
bhp	brake horsepower	ppm	parts per million
C.F.R.	Code of Federal Regulations	ppmv, ppmvd.....	parts per million by volume on a dry basis
CO	carbon monoxide	PSD	prevention of significant deterioration
Department	Alaska Department of Environmental Conservation	PTE.....	potential to emit
dscf	dry standard cubic foot	SIC.....	Standard Industrial Classification
EPA	US Environmental Protection Agency	SIP	State Implementation Plan
EU.....	emissions unit	SPC.....	Standard Permit Condition or Standard Operating Permit Condition
gr/dscf.....	grain per dry standard cubic foot (1 pound = 7000 grains)	SO ₂	sulfur dioxide
HAPs	hazardous air pollutants [as defined in AS 46.14.990]	TBD.....	to be determined
hp	horsepower	TPY	tons per year
H ₂ S.....	hydrogen sulfide	ULSD	ultra-low sulfur diesel
ID.....	emissions unit identification number	VOC	volatile organic compound [as defined in 40 C.F.R. 51.100(s)]
MMBtu/hr.....	million British thermal units per hour	vol%	volume percent
MR&R.....	monitoring, recordkeeping, and reporting	wt%	weight percent
		wt% _{fuel}	weight percent of sulfur in fuel

Section 1 Emissions Unit Inventory

Emissions Unit (EU) Authorization. The Permittee is authorized to install and 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

EU ID	EU Description	Make/Model	Fuel	Rating/Max Capacity	Installation Date
1	Hot Oil Heater	Tulsa Heater (Therminol)	Fuel Gas	115 MMBtu/hr	TBD
2	Hot Oil Heater	Tulsa Heater (Therminol)	Fuel Gas	115 MMBtu/hr	TBD
3	Hot Oil Heater	Tulsa Heater (Therminol)	Fuel Gas	115 MMBtu/hr	TBD
4	Hot Oil Heater	Tulsa Heater (Therminol)	Fuel Gas	115 MMBtu/hr	TBD
5	Standby Engine(s) ¹	One Cummins QST30-G17 (Tier 4)	ULSD	1,490 bhp	TBD
		Two Caterpillar C18 (Tier 4)		779 bhp, each	
6	Emulsion Breaker Tank	TBD	N/A	2,300 gallons	TBD
7	Anti Foam Tank	TBD	N/A	2,300 gallons	TBD
8	Pad Buster Tank	TBD	N/A	2,300 gallons	TBD
9	Corrosion Inhibitor Tank	TBD	N/A	14,000 gallons	TBD
10	ULSD Tank	TBD	N/A	5,000 gallons	TBD

Notes:

¹. As of issuance of this permit, Hilcorp has yet to identify the actual engine or engines that will be installed as EU ID 5. EU ID 5 will either be one Cummins QST30-G17 engine or two Caterpillar C18 engines.

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

Section 2 *Fee Requirements*

3. **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 542.47 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.
 - 5.3 If the stationary source has not commenced construction or operation on or before March 31st, the Permittee may submit to the Department’s Anchorage office a waiver letter certified under 18 AAC 50.205 that states the stationary source’s actual annual emissions for the previous calendar year are zero TPY and provides estimates for when construction or operation will commence.

- 5.4 If no estimate or waiver letter is submitted on or before March 31 of each year, emission fees for the next fiscal year will be based on the potential to emit set out in Condition 4.1.

Section 3 State Emission Standards

- 6. Visible Emissions for Industrial Process and Fuel-Burning Equipment.** The Permittee shall not cause or allow visible emissions, excluding condensed water vapor, emitted from EU IDs 1 – 5, listed in Table 1, to reduce visibility through the exhaust effluent by more than 20 percent averaged over any six consecutive minutes.
- 6.1 For EU IDs 1 – 4, burn only fuel gas as fuel. In each operating report under Condition 16, indicate whether each of EU IDs 1 – 4 burned only fuel gas during the period covered by the report.
- 6.2 For each engine installed as EU ID 5, perform an initial Method 9 observation within 60 days of initial startup of the EU.
- a. Record the date of initial startup of each engine installed as EU ID 5.
- b. Report the results of the Method 9 observation(s) required by Condition 6.2 in the first operating report required by Condition 16 due after performing the observation(s).
- 6.3 Report as an excess emission or permit deviation as described in Condition 15 if visible emissions from any of EU IDs 1 – 5 exceed the opacity standard in Condition 6 or if any requirement in Conditions 6.1 through 6.2 is not met.
- 7. Particulate Matter (PM) for Industrial Process and Fuel-Burning Equipment.** The Permittee shall not cause or allow particulate matter emitted from EU IDs 1 – 5, listed in Table 1, to exceed 0.05 grains per dry standard cubic foot of exhaust gas corrected to standard conditions and averaged over three hours.
- 7.1 For EU IDs 1 – 4, demonstrate compliance with the PM standard by complying with Condition 6.1.
- 7.2 For EU ID 5, demonstrate compliance with the PM standard by complying with Condition 6.2.
- 8. Sulfur Compound Emissions.** The Permittee shall not cause or allow sulfur compound emissions, expressed as SO₂, from EU IDs 1 – 5, listed in Table 1, to exceed 500 parts per million (ppm) averaged over three hours.
- 8.1 For EU IDs 1 – 4, to demonstrate compliance with Condition 8, the Permittee shall comply with the fuel hydrogen sulfide (H₂S) concentration limit in Condition 10.1 and the associated MR&R requirements in Conditions 10.1a through 10.1d.
- 8.2 For EU ID 5, to demonstrate compliance with Condition 8, the Permittee shall comply with the fuel sulfur content limit in Condition 10.2 and the associated MR&R requirements under Conditions 10.2a through 10.2c.

Section 4 Ambient Air Quality Protection Requirements

9. The Permittee shall protect the annual average nitrogen dioxide (NO₂); 1-hour, 3-hour, 24-hour, and annual average sulfur dioxide (SO₂); 24-hour and annual average particulate matter with an aerodynamic diameter less than or equal to 2.5 microns (PM_{2.5}); and 24-hour average particulate matter with an aerodynamic diameter less than or equal to 10 microns (PM₁₀) Alaska Ambient Air Quality Standards (AAAQS), as follows:

9.1 **Stack Configuration.** Comply with the following stack configuration requirements:

- a. Construct and maintain vertical, uncapped exhaust stacks for EU IDs 1 – 5, except
 - (i) EU IDs 1 – 4 may use capped releases;
 - (ii) EU ID 5 may use horizontal releases; and
 - (iii) All EUs may use flapper-style rain covers or other similar designs that do not hinder the vertical momentum of their exhaust plume.
- b. Report in the first operating report required by Condition 16 due following installation of each of EU IDs 1 – 5, a statement that the exhaust stack for that EU is constructed in accordance with the configuration requirements of Condition 9.1a.
- c. Report as an excess emission or permit deviation as described in Condition 15 if the exhaust stack for any of EU IDs 1 – 5 is not constructed in accordance with the configuration requirements of Condition 9.1a.

9.2 **Stack Heights.** Construct and maintain the exhaust stacks for the EUs listed in Table 2 so that the height above grade¹ equals or exceeds the minimum height listed for that EU.

Table 2 – Minimum Stack Height Requirements

EU ID	Description	Min. Stack Height (m)
1	Hot Oil Heater	15.2
2	Hot Oil Heater	15.2
3	Hot Oil Heater	15.2
4	Hot Oil Heater	15.2

- a. Provide as-built drawings, photographs, or other information sufficient to demonstrate that each exhaust stack listed in Table 2 complies with the minimum stack height requirements in the first operating report required by Condition 16 due after installation of the given EU.
- b. Report as an excess emission or permit deviation as described in Condition 15 if any requirement under Condition 9.2 is not met.

¹ or as otherwise measured from the stack base, e.g., from above a pad or platform surface.

9.3 EPA's Nonroad Tier 4 Emission Standards. The Permittee shall protect the annual average NO₂, 24-hour and annual average PM_{2.5}, and 24-hour PM₁₀ AAAQS by operating EPA Tier 4 compliant engine(s) as EU ID 5.

- a. For each engine installed as EU ID 5, obtain a certified manufacturer's guarantee, photograph of the engine nameplate, or copy of the EPA certificate of conformity that indicates that EU ID 5 complies with EPA's Tier 4 emissions standards found in Table 1 of 40 C.F.R. 1039.101.
- b. Submit a copy of any of the records required in Condition 9.3a as proof of EU ID 5's conformity with EPA's Tier 4 emissions standards in the first operating report required by Condition 16 after EU ID 5 becomes fully operational.
- c. Report as excess emissions and/or permit deviation as described in Condition 15, if any requirement under Condition 9.3 is not met.

10. Fuel Sulfur Content Limits. The Permittee shall protect the 1-hour, 3-hour, 24-hour, and annual SO₂ AAAQS as follows:

10.1 Limit the H₂S concentration of the fuel gas fired in EU IDs 1 – 4 to no more than 250 ppmv at any time.

- a. Determine compliance with the fuel gas H₂S concentration limit as follows:
 - (i) Obtain a semiannual statement from the fuel supplier of the fuel H₂S sulfur level in ppm; or
 - (ii) Determine the fuel gas H₂S concentration of the fuel no less than once a month using ASTM D4084, D5504, D4810, D6228 or GPA Standard 2377, or other listed method approved in 18 AAC 50.035(b)-(c) or 40 C.F.R. 60.17 incorporated by reference in 18 AAC 50.040(a)(1). The fuel gas H₂S analysis required under this condition may be performed by the owner or operator, a service contractor retained by the owner or operator, or the fuel vendor.
- b. Keep records of the statement from the fuel supplier or the H₂S analysis conducted under Condition 10.1a(i) or 10.1a(ii).
- c. Include in each operating report required by Condition 16, copies of the records required by Condition 10.1b for the period covered by the report.
- d. Report as an excess emission or permit deviation as described in Condition 15, whenever the fuel gas H₂S concentration exceeds the limit in Condition 10.1 or if any requirement in Conditions 10.1a through 10.1c is not met.

10.2 Combust only liquid fuel that meets the specifications of ultra-low sulfur diesel (ULSD) (i.e., 0.0015 percent sulfur by weight (wt%_{S_{fuel}}) or less) in EU ID 5. Monitor, record, and report as follows:

- a. Obtain and keep certified receipts from fuel suppliers that confirm diesel fuel combusted in EU ID 5 meets the fuel sulfur limit in Condition 10.2.

- b. In the operating report required by Condition 16, include a statement indicating whether all fuel combusted in EU ID 5 during the reporting period met the specifications of ULSD.
- c. Report as excess emissions and/or permit deviation, as described in Condition 15, if any fuel combusted in EU ID 5 exceeds the fuel sulfur content limit in Condition 10.2 or if any of the requirements under Condition 10.2 are not met.

Section 5 Recordkeeping, Reporting, and Certification Requirements

- 11. Recordkeeping Requirements.** The Permittee shall keep all records required by this permit for at least five years after the date of collection, including:
- 11.1 copies of all reports and certifications submitted pursuant to this section of the permit; and
 - 11.2 records of all monitoring required by this permit, and information about the monitoring including:
 - a. the date, place, and time of sampling or measurements;
 - b. the date(s) analyses were performed;
 - c. the company or entity that performed the sampling and analyses;
 - d. the analytical techniques or methods used in the analyses;
 - e. the results of the analyses; and
 - f. the operating conditions that existed at the time of sampling or measurement
- 12. 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.
- 12.1 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.
- 13. 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.
- 13.1 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/>.

14. Information Requests. The Permittee shall furnish to the Department, within a reasonable time, any information the Department requests in writing to determine whether cause exists to modify, revoke, reissue, or terminate the permit or to determine compliance with the permit. Upon request, the Permittee shall furnish to the Department copies of records required to be kept by the permit. The Department may require the Permittee to furnish copies of those records directly to the federal administrator.

15. Excess Emissions and Permit Deviation Reports. The Permittee shall report excess emissions and permit deviations as follows:

15.1 Excess Emissions Reporting. Except as provided in Condition 18, the Permittee shall report all emissions or operations that exceed emissions standards or limits of this permit as follows:

- a. In accordance with 18 AAC 50.240(c), as soon as possible after the event commenced or is discovered, report
 - (i) excess emissions that present a potential threat to human health or safety; and
 - (ii) excess emissions that the Permittee believes to be unavoidable.
- b. In accordance with 18 AAC 50.235(a), within two working days after the event commenced or was discovered, report an unavoidable emergency, malfunction, or nonroutine repair that causes emissions in excess of a technology-based emissions standard.
- c. If a continuous or recurring excess emissions is not corrected within 48 hours of discovery, report within 72 hours of discovery unless the Department provides written permission to report under Condition 15.1d.
- d. Report all other excess emissions not described in Conditions 15.1a, 15.1b, and 15.1c within 30 days after the end of the month during which the excess emissions occurred or as part of the next routine operating report in Condition 16 for excess emissions that occurred during the period covered by the report, whichever is sooner.
- e. If requested by the Department, the Permittee shall provide a more detailed written report to follow up on an excess emissions report.

[18 AAC 50.235(a)(2), 50.240(c), 50.326(j)(3), & 50.346(b)(2)]

15.2 Permit Deviations Reporting. For permit deviations that are not “excess emissions,” as defined under 18 AAC 50.990:

- a. Report all other permit deviations within 30 days after the end of the month during which the deviation occurred or as part of the next routine operating report in Condition 16 for permit deviations that occurred during the period covered by the report, whichever is sooner.

- 15.3 **Reporting Instructions.** When reporting either excess emissions or permit deviations, the Permittee shall report using the Department’s online form for all such submittals, beginning no later than September 7, 2023. The form can be 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. Alternatively, upon written Department approval, the Permittee may submit the form contained in Section 9 of this permit. The Permittee must provide all information called for by the form that is used. Submit the report in accordance with the submission instructions on the Department’s Standard Permit Conditions webpage found at <http://dec.alaska.gov/air/air-permit/standard-conditions/standard-conditions-iii-and-iv-submission-instructions/>.
16. **Operating Reports.** During the life of this permit², the Permittee shall submit to the Department an operating report in accordance with Conditions 12 and 13 by August 1 for the period January 1 to June 30 of the current year and by February 1 for the period July 1 to December 31 of the previous year.
- 16.1 The operating report must include all information required to be in operating reports by other conditions of this permit, for the period covered by the report.
- 16.2 When excess emissions or permit deviations that occurred during the reporting period are not included with the operating report under Condition 16.1, the Permittee shall identify
- a. the date of the excess emissions or permit deviation;
 - b. the equipment involved;
 - c. the permit condition affected;
 - d. a description of the excess emissions or permit deviation; and
 - e. any corrective action or preventive measures taken and the date(s) of such actions; or
- 16.3 When excess emissions or permit deviation reports have already been reported under Condition 15 during the period covered by the operating report, the Permittee shall either
- a. include a copy of those excess emissions or permit deviation reports with the operating report; or
 - b. cite the date(s) of those reports.

² *Life of this permit* is defined as the permit effective dates, including any periods of reporting obligations that extend beyond the permit effective dates. For example, if a permit expires prior to the end of a calendar year, there is still a reporting obligation to provide operating reports for the periods when the permit was in effect.

17. Title V Major Source Application Submittal Date. For a stationary source that directly emits, or has the potential to emit, 100 TPY or more of any air pollutant subject to regulation, the Permittee shall file a complete application to obtain the Part 70 Title V Operating Permit within 12 months after commencing operation or reaching the 100 TPY threshold.

18. Air Pollution Prohibited. No person may permit any emission which is injurious to human health or welfare, animal or plant life, or property, or which would unreasonably interfere with the enjoyment of life or property.

18.1 Monitoring. The Permittee shall monitor as follows:

- a. As soon as practicable after becoming aware of a complaint that is attributable to emissions from the stationary source, the Permittee shall investigate the complaint to identify emissions that the Permittee believes have caused or are causing a violation of Condition 18.
- b. The Permittee shall initiate and complete corrective action necessary to eliminate any violation identified by a complaint or investigation as soon as practicable if
 - (i) after an investigation because of a complaint or other reason, the Permittee believes that emissions from the stationary source have caused or are causing a violation of Condition 18; or
 - (ii) the Department notifies the Permittee that it has found a violation of Condition 18.

18.2 Recordkeeping. The Permittee shall keep records of

- a. the date, time, and nature of all emissions complaints received;
- b. the name of the person or persons that complained, if known;
- c. a summary of any investigation, including reasons the Permittee does or does not believe the emissions have caused a violation of Condition 18; and
- d. any corrective actions taken or planned for complaints attributable to emissions from the stationary source.

18.3 Reporting. The Permittee shall report as follows:

- a. With each stationary source operating report under Condition 16, the Permittee shall include a brief summary report which must include the following for the period covered by the report:
 - (i) the number of complaints received;
 - (ii) the number of times the Permittee or the Department found corrective action necessary;

- (iii) the number of times action was taken on a complaint within 24 hours; and
 - (iv) the status of corrective actions the Permittee or Department found necessary that were not taken within 24 hours.
 - b. The Permittee shall notify the Department of a complaint that is attributable to emissions from the stationary source within 24 hours after receiving the complaint, unless the Permittee has initiated corrective action within 24 hours of receiving the complaint.
 - c. If emissions present a potential threat to human health or safety, the Permittee shall report any such emissions according to Condition 15.
- 19. Triennial Emission Inventory Reporting.** Every third year by April 30, the Permittee shall submit to the Department reports of actual emissions for the previous calendar year, by emissions unit, of CO, NH₃, NO_x, PM₁₀, PM_{2.5}, SO₂, VOC and lead (Pb) and lead compounds, as follows:
 - 19.1 The Permittee shall report the annual emissions and the required data elements under Condition 19.2 every third year for the previous calendar year as scheduled by the EPA.³
 - 19.2 For each emissions unit and the stationary source, include in the report the required data elements⁴ contained within the form included in the Emission Inventory Instructions available at the Department's AOS system on the Point Source Emission Inventory webpage at <http://dec.alaska.gov/Applications/Air/airtoolsweb/PointSourceEmissionInventory>.
 - 19.3 Submit the report in accordance with the submission instructions on the Department's Standard Permit Conditions webpage at <http://dec.alaska.gov/air/air-permit/standard-conditions/standard-conditions-xv-and-xvi-submission-instructions/>.
- 20. Consistency of Reporting Methodologies.** Regardless of permit classification, as of September 7, 2022, all stationary sources operating in the state shall report actual emissions to the Department, either upon request or to meet individual permit requirements, in order for the state to meet federal reporting requirements under 40 C.F.R. Part 51, Subpart A.
 - 20.1 For the purposes of reporting actual or assessable emissions required under Condition 19 and Condition 4.2, the Permittee shall use consistent pollutant-specific emission factors and calculation methods for all reporting requirements for the stationary source.

³ The calendar years for which reports are required are based on the triennial reporting schedule in 40 C.F.R. 51.30(b)(1), which requires states to report emissions data to the EPA for inventory years 2011, 2014, 2017, 2020, and every 3rd year thereafter. Therefore, the Department requires Permittees to report emissions data for the same inventory years by April 30 of the following year (e.g., triennial emission inventory report for 2020 is due April 30, 2021, triennial emission inventory report for 2023 is due April 30, 2024, etc.).

⁴ The required data elements to be reported to the EPA are outlined in 40 C.F.R. 51.15 and Tables 2a and 2b to Appendix A of 40 C.F.R. 51 Subpart A.

Section 6 *Standard Permit Conditions*

- 21.** 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
 - 21.1 an enforcement action; or
 - 21.2 permit termination, revocation and reissuance, or modification in accordance with AS 46.14.280.
- 22.** 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.
- 23.** 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.
- 24.** 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.
- 25.** The permit does not convey any property rights of any sort, nor any exclusive privilege.
- 26.** 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
 - 26.1 enter upon the premises where an emissions unit subject to this permit is located or where records required by the permit are kept;
 - 26.2 have access to and copy any records required by this permit;
 - 26.3 inspect any stationary source, equipment, practices, or operations regulated by or referenced in the permit; and
 - 26.4 sample or monitor substances or parameters to assure compliance with the permit or other applicable requirements.

Section 7 *Permit Documentation*

<u>Date</u>	<u>Document Details</u>
December 21, 2023	Application Received
February 21, 2024	Hilcorp Response to February 2, 2024 ADEC Information Request.
June 3, 2024	Hilcorp Response to May 23, 2024 ADEC Information Request.
July 3, 2024	Hilcorp submitted comments for pre-public notice review for Minor Permit No. AQ1854MSS01.
August 29, 2024	Hilcorp submitted comments for public notice review for Minor Permit No. AQ1854MSS01.
November 1, 2024	The Department issued Minor Permit No. AQ1854MSS01.
November 20, 2024	Hilcorp submitted an informal review request contesting Condition 3 of Minor Permit No. AQ1854MSS01.
November 27, 2024	The Department remanded Minor Permit No. AQ1854MSS01.
June 4, 2025	Hilcorp submitted comments for pre-public notice review for the second issuance of Minor Permit No. AQ1854MSS01.
June 23, 2025	Email stating that Hilcorp has no comments for second public notice review for Minor Permit No. AQ1854MSS01.
July 17, 2025	The Department reissued Minor Permit No. AQ1854MSS01.

Section 8 Visible Emissions Form

VISIBLE EMISSIONS OBSERVATION FORM

This form is designed to be used in conjunction with EPA Method 9, “Visual Determination of the Opacity of Emissions from Stationary Sources.” Temporal changes in emission color, plume water droplet content, background color, sky conditions, observer position, etc. should be noted in the comments section adjacent to each minute of readings. Any information not dealt with elsewhere on the form should be noted under Additional Information. The following are brief descriptions of the type of information that needs to be entered on the form. For a more detailed discussion of each part of the form, refer to “Instructions for Use of Visible Emission Observation Form” (a copy is available in <https://www3.epa.gov/ttnemc01/methods/webinar8.pdf>).

- Source Name: full company name, parent company or division or subsidiary information, if necessary.
- Address: street (not mailing or home office) address of facility where visible emissions observation is being made.
- Phone (Key Contact): number for appropriate contact.
- Stationary Source ID Number: number from NEDS, agency file, etc.
- Process Equipment, Operating Mode: brief description of process equipment (include type of facility) and operating rate, % capacity, and/or mode (e.g., charging, tapping, shutdown).
- Control Equipment, Operating Mode: specify type of control device(s) and % utilization, control efficiency.
- Describe Emission Point: for identification purposes, stack or emission point appearance, location, and geometry; and whether emissions are confined (have a specifically designed outlet) or unconfined (fugitive).
- Height Above Ground Level: stack or emission point height relative to ground level; can use engineering drawings, Abney level, or clinometer.
- Height Relative to Observer: indicate height of emission point relative to the observation point.
- Distance from Observer: distance to emission point; can use rangefinder or map.
- Direction from Observer: direction plume is traveling from observer.
- Describe Emissions and Color: include physical characteristics, plume behavior (e.g., looping, lacy, condensing, fumigating, secondary particle formation, distance plume visible, etc.), and color of emissions (gray, brown, white, red, black, etc.). Note color changes in comments section.
- Visible Water Vapor Present? check “yes” if visible water vapor is present.
- If Present, note in the Comments column whether the Plume is “attached” if water droplet plume forms prior to exiting stack, and “detached” if water droplet plume forms after exiting stack.
- Point in Plume at Which Opacity was Determined: describe physical location in plume where readings were made (e.g., 1 ft above stack exit or 10 ft. after dissipation of water plume).
- Describe Plume Background: object plume is read against, include texture and atmospheric conditions (e.g., hazy).
- Background Color: sky blue, gray-white, new leaf green, etc.
- Sky Conditions: indicate color of clouds and cloud cover by percentage or by description (clear, scattered, broken, overcast).
- Wind Speed: record wind speed; can use Beaufort wind scale or hand-held anemometer to estimate.
- Wind Direction From: direction from which wind is blowing; can use compass to estimate to eight points.
- Ambient Temperature: in degrees Fahrenheit or Celsius.
- Wet Bulb Temperature: can be measured using a sling psychrometer.
- RH Percent: relative humidity measured using a sling psychrometer; use local US Weather Bureau measurements only if nearby.
- Source Layout Sketch: include wind direction, sun position, associated stacks, roads, and other landmarks to fully identify location of emission point and observer position.
- Draw North Arrow: to determine, point line of sight in direction of emission point, place compass beside circle, and draw in arrow parallel to compass needle.
- Sun’s Location: point line of sight in direction of emission point, move pen upright along sun location line, mark location of sun when pen’s shadow crosses the observer’s position.
- Observation Date: date observations conducted.
- Start Time, End Time: beginning and end times of observation period (e.g., 1635 or 4:35 p.m.).
- Data Set: percent opacity to nearest 5%; enter from left to right starting in left column. Use a second (third, etc.) form, if readings continue beyond 30 minutes. Use dash (-) for readings not made; explain in adjacent comments section.
- Comments: note changing observation conditions, plume characteristics, and/or reasons for missed readings.
- Range of Opacity: note highest and lowest opacity number.
- Observer’s Name: print in full.
- Observer’s Signature, Date: sign and date after performing VE observation.
- Observer’s Affiliation: observer’s employer.
- Certifying Organization, Certified By, Date: name of “smoke school,” certifying observer, and date of most recent certification.

Section 9 Notification Form⁵

Omega Pad
Stationary Source Name
Hilcorp North Slope, LLC
Company Name

AQ1854MSS01
Air Quality Permit Number

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 COBC⁶, CO⁷, or Settlement Agreement - Complete Section 2 and Certify

⁵ Revised as of July 22, 2020.

⁶ Compliance Order by Consent

⁷ 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.):

- | | |
|----------------------------------------------------|----------------------------------------------------------------------|
| <input type="checkbox"/> Start Up/Shut Down | <input type="checkbox"/> Natural Cause (weather/earthquake/flood) |
| <input type="checkbox"/> Control Equipment Failure | <input type="checkbox"/> Scheduled Maintenance/Equipment Adjustments |
| <input type="checkbox"/> Bad fuel/coal/gas | <input type="checkbox"/> Upset Condition |
| <input type="checkbox"/> 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 _____%

Venting _____(gas/scf)

Control Equipment Down

Fugitive Emissions

Emission Limit Exceeded

Marine Vessel Opacity

Flaring

Other: _____

(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 (go to end of form)

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 12.)*

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)]



Attachment G

Electronic Files