DEPARTMENT OF ENVIRONMENTAL CONSERVATION
OWNER REQUESTED LIMIT

Owner Requested Limit: AQ1242ORL03 **Proposed Date – February 12, 2024**
Rescinds ORL: AQ1242ORL01

Owner/Operator: **Cook Inlet Natural Gas Storage Alaska, LLC**
PO Box 190989, Anchorage, Alaska 99519

Stationary Source: **CINGSA Facility**

Location: **Lat 60°32'37.34" N, Long 151°12'50.00" W**

Project: **Expansion Project**

ORL Contact: **Stan Saner, (907) 714-7581, stan.saner@cingsa.com**

The above-named owner/operator has submitted a complete request for an owner requested limit (ORL) under 18 AAC 50.225(b) for the CINGSA Facility. The Alaska Department of Environmental Conservation (Department) approves the ORL to restrict the stationary source's potential to emit (PTE). The ORL allows Cook Inlet Natural Gas Storage Alaska, LLC to avoid the requirements for a minor permit under 18 AAC 50.502(c)(1), a Title I major stationary source under 18 AAC 50.306(a), a Title V operating permit under 18 AAC 50.326(a), and a Title V hazardous air pollutant (HAP) major source under 18 AAC 50.316(a). The Department certifies that the ORL is effective as of the date noted below.

In accordance with 18 AAC 50.225(f), the owner/operator has agreed to the conditions listed in this ORL.

The owner/operator may revise the terms or conditions of this approval under 18 AAC 50.225 (h)(1) by submitting a request under 18 AAC 50.225(b). The owner/operator may request the Department revoke the limit in accordance with 18 AAC 50.225(h)(2). This limit remains in effect until the Department approves a new limit or revokes it.

I understand and agree to the terms and conditions of this approval.

_____ _____
Owner or Operator **Printed Name**

_____
Title

Department approval:

_____ _____
James R. Plosay, Program Manager **Owner Requested Limit Effective Date**
Air Permit Program

CONDITIONS:

1. Owner Requested Limit to avoid a Minor Permit for NOx under 18 AAC 50.502(c)(1). The owner/operator shall limit emissions of oxides of nitrogen (NO_x) to no more than 39.64 tons per 12-month period by complying with the following:

1.1 For EU IDs 1 and 2, limit the combined hours to no more than 5,500 hours per consecutive 12-month period. Monitor, record, and report as follows:

a. Equip each EU with either a dedicated, non-resettable hour meter or another Department approved methodology to monitor the monthly hours of operation;

b. Monitor and record the hours of operation for EU IDs 1 and 2 combined, by the end of each calendar month for the previous month.

c. Calculate and record, for the set of EU listed in Condition 1.1b, the sum of the last 12 consecutive records obtained in accordance with Condition 1.1b, by the end of each calendar month.

d. Report in the operating report described in Condition 3 the records obtained in accordance with Condition 1.1c.

e. If the total hours of operation exceed the limit in Condition 1.1, report as excess emissions and deviation as specified in Condition 5.

1.2 For EU ID 3, install a 3-way, non-selective catalytic reduction system. Monitor, record, and report as follows:

a. Equip the EU with either a dedicated, non-resettable hour meter or use another Department approved methodology to monitor the monthly hours of operation.

b. Monitor and record the daily inlet and outlet temperature of the catalytic reduction system on EU 3.

c. Remove and replace the 3-way, non-selective catalytic reduction system on EU ID 3 after 10,000 hours of operation from its last catalyst replacement.

(i) Record the hours on the 3-way, non-selective catalytic reduction system for EU 3 at the time of replacement.

d. Report in the operating report described in Condition 4 the hours on the 3-way, nonselective catalytic reduction system on EU ID 3 at the time of replacement recorded under Condition 1.2c(i). If a catalyst was not replaced during the reporting period, include in the report the total operating hours for EU ID 3 from the date and time operation began to the day before the report is submitted.

e. If the hours of operation recorded in Condition 1.2c(i) exceed catalyst hour limit in Condition 1.2c, report as excess emissions and deviation as specified in Condition 5.

2. Owner Requested Limit to avoid a Prevention of Serious Deterioration (PSD) Permit under 18 AAC 50.306(a) for CO, Title V Operating Permit under 18 AAC 50.326(a) for CO, and HAP Major Construction Permit under 18 AAC 50.316(a) for formaldehyde. The owner/operator shall limit emissions of CO to 30.73 tons, individual formaldehyde HAP to 1.69 tons, and individual BTEX constituents HAP to 9.5 tons per 12-month period by complying with the following:

2.1 For each EU IDs 1, 2, 10, and 11, install a catalytic oxidation system. Monitor, record, and report as follows:

a. Equip each EU with either a dedicated, non-resettable hour meter or use another Department approved methodology to monitor the monthly hours of operation.

b. Monitor and record the inlet and outlet temperature of the catalyst system on each EU ID 1, 2, 10, and 11 on a daily basis.

c. Remove and replace the selective oxidation catalyst system for each EU IDs 1, 2, 10, and 11 after 25,000 hours of operation from its last catalyst replacement.

(i) Record the hours on each oxidation catalyst system for EU IDs 1, 2, 10, and 11 at the time of replacement.

d. Report in the operating report described in Condition 4 the hours on each oxidation catalyst system for EU IDs 1, 2, 10, and 11 at the time of replacement recorded under Condition 2.1c(i). If a catalyst was not replaced during the reporting period, include in the report the total operating hours for the EU from the date and time operation began to the day before the report is submitted.

e. If the hours of operation recorded in Condition 2.1c(i) exceed the catalyst hour limit in Condition 2.1c, report as excess emissions and deviation as described in Condition 5.

2.2 Periodically determine the process vents' (EU IDs 7 and 14) HAP emissions. Monitor, record, and report as follows:

a. Sample the wet gas to be supplied to the gas dehydration systems (EU IDs 6 and 13) at the earliest of the following frequencies:

(i) Within 1 month of change in gas supply; or

(ii) Every 60 months.

b. Conduct a gas compositional analysis on the sampled gas that includes BTEX constituents.

c. Complete a new modeled analysis of emissions from the glycol dehydration systems using the GRI-GLYCalc program and the results of the new wet gas analysis.

d. Report in the operating report described in Condition 4 the results of the gas compositional analysis performed under Condition 2.2b and the GRI-GLYCalc analysis performed under Condition 2.2c covering the period.

(i) If the GRI-GLYCalc analysis estimates emissions from the process vents exceed 2.17 lb/hr of any BTEX constituent, emissions from EU IDs 7 and 14 may bypass the TOX (EU ID 8) for no more than 50 hours during the next consecutive 12 months.

(ii) If an additional gas composition analysis and GRI-GLYCalc analysis show emissions lower than 2.17 lb/hr, the permittee may operate EU IDs 7 and 14 bypassing the TOX and restart periodic testing as required under Condition 2.2a.

3. Recordkeeping Requirements. Unless otherwise specified in this authorization, keep all records required by this ORL for at least five years from the date of collection.

4. Annual Operating Reports. Submit one certified copy, of an **annual operating report** for the stationary source to the Department, in accordance with the submission instructions on the Department's Standard Permit Conditions web page https://dec.alaska.gov/air/air-permit/standard-conditions/standard-condition-xvii-submission-instructions/ by February 1 for the preceding calendar year. Certify the report as specified in 18 AAC 50.205 by having the responsible official sign after the following 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."* Attach copies of all excess emission and deviation forms submitted to Department during the reporting period pursuant to Condition 5.

5. Excess Emissions and Deviation Reports. Report excess emissions and deviations as follows:

5.1 **Excess Emissions Reporting**. Report all emissions or operations that exceed emissions limits of this ORL as follows:

a. In accordance with 18 AAC 50.240(c), as soon as possible report:

(i) excess emissions that present a potential threat to human health or safety; and

(ii) excess emissions believed to be unavoidable.

b. If a continuous or recurring excess emission is not corrected within 48 hours of discovery, report within 72 hours of discovery unless the Department provides written permission to report under Condition 5.1c.

c. Report all other excess emissions not described in Conditions 5.1a and 5.1b within 30 days after the end of the month during which the excess emissions occurred or as part of the next annual operating report in Condition 4, whichever is sooner.

d. If requested by the Department, provide a more detailed written report as requested to follow up an excess emissions report.

5.2 **Deviations Reporting.** For deviations that are not "excess emissions," as defined in 18 AAC 50.990, report within 30 days after the end of the month during which the deviation occurred or as part of the next annual operating report in Condition 4, whichever is sooner.

5.3 **Reporting Instructions.** When reporting either excess emissions or 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 Attachment A to 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/

Statement of Avoided Requirement:

The CINGSA Facility is an existing stationary source located in Kenai, Alaska owned and operated by Cook Inlet Natural Gas Storage Alaska, LLC (CINGSA). CINGSA previously operated under Owner Requested Limit AQ1242ORL01 effective December 3, 2010 for this stationary source. On February 13, 2019 the Department received an application requesting to rescind AQ1242ORL01 and add redundant equipment to the site. This application was withdrawn on May 16, 2019. On January 4, 2024, the Department received an application requesting to rescind AQ1242ORL01 and add an additional Train 2 to existing operations, while further limiting EU IDs 1 and 2 operating hours and utilizing catalysts for compressor and emergency engines. This change still allows CINGSA to keep the stationary source's NOx emissions below 40 tons per year (tpy) and emissions below 100 tpy for any criteria pollutant, thus, avoiding the need to obtain a Title I or Title V permit. This change additionally still allows CINGSA to keep the stationary source's individual hazardous air pollutant (HAP) emissions below 10 tpy and combined HAP emissions below 25 tpy, thus, avoiding the need to obtain a HAP major permit.

The owner requested limit AQ1242ORL01 contained a condition requiring emissions from the Tri-Ethylene Glycol (TEG) dehydration unit process vent to be routed to the Thermal Oxidizer (TOX) at all times except maintenance (bypassing the TOX <50 hours per year). The basis of this condition was BTEX emissions calculated using the glycol dehydration unit software GRI-GLYcalc. The software utilized gas composition inputs to determine TEG dehydration unit emissions both with and without control equipment such as the TOX.

Through discussion between the Department and CINGSA, the gas composition used as basis for the original TOX condition was determined to be abnormal and not indicative of regular HAP emission levels for the gas supply from the Cook Inlet Gas Basin. CINGSA supplied the Department with a current gas composition analysis that demonstrated significantly lower levels of BTEX constituents than the original ORL application. CINGSA requested in the new application to rescind the TOX condition. Therefore, the Department replaced the TOX condition with a requirement to periodically determine HAP emissions from the TEG process vents, EU IDs 7 and 14. Either within one month of changing gas supply, or every 60 months, the wet gas supply to the TEG shall be tested to verify that HAP emissions from the process vents will remain below HAP major thresholds.

Consistent with the definition of "potential to emit" listed in AS 46.14.990(22), the capacity of the stationary source to emit an air pollutant is verifiable through the monitoring, recordkeeping, and reporting contained in this approval. By limiting the potential to emit of EU IDs 1, 2, 3, 7, 10, 11, and 14 the owner/operator is avoiding the requirement to obtain a minor permit for the stationary source under 18 AAC 50.502, a Title V operating permit under 18 AAC 50.326, and a construction permit under 18 AAC 50.316(a) and AS 46.14.130(c).

Table 1 shows a list of emission units currently operating at the stationary source, as provided in the application. The Department verified the PTE of the stationary source with the ORLs applied, as provided in the application and as shown in Table 2.

Table 1 – EU inventory subject to limits

EU ID	Unit Name	Make	Model	Fuel	Max Rating
Train 1					
1	Gas Compressor 1	Caterpillar	G3608	Natural Gas	2,520 bhp
2	Gas Compressor 2	Caterpillar	G3608	Natural Gas	2,520 bhp
3	Emergency Generator	Caterpillar	G3412TA	Natural Gas	690 bhp
4	Auxiliary Heating Boiler	Parker	T3600LR	Natural Gas	3.6 MMBtu/hr
5	Withdrawal Gas Heater 1	FLAMECO Total Energy Resources, Inc.	FAH38-24BLN	Natural Gas	9.23 MMBtu/hr
6	TEG Dehydration Regenerator Boiler 1	FLAMECO Interstate Treating	SB40/18-14	Natural Gas	1.54 MMBtu/hr
7	TEG Dehydration Unit 1 Process Vents	Unknown	Unknown	N/A	150 MMscf/day
8	Thermal Oxidizer (TOX)	Tornado Combustion Technologies	TCTI-11440	Natural Gas	3 MMBtu/hr
9	Well Pad Emergency Generator	GENERAC	QT08054KNAX	Natural Gas	128 bhp
Train 2					
10	Gas Compressor 3	Caterpillar	G3608	Natural Gas	2,750 bhp
11	Gas Compressor 4	Caterpillar	G3608	Natural Gas	2,750 bhp
12	Withdrawal Gas Heater 2	Unknown	Unknown	Natural Gas	9.23 MMBtu/hr
13	TEG Dehydration Regenerator Boiler 2	Unknown	Unknown	Natural Gas	1.54 MMBtu/hr
14	Glycol Dehydration Unit 2 Process Vents	Unknown	Unknown	N/A	150 MMscf/day

Table 2 presents details of the EUs, their characteristics, and emissions. Potential emissions are estimated using maximum annual operation for all fuel burning equipment as defined in 18 AAC 50.990(39) subject to any operating limits.

Table 2 – Emissions Summary, in Tons per Year (TPY)

EU ID	Emissions Unit Description	Maximum Rating or Capacity		Annual Operating Hours	NO_x		CO		$PM_{2.5}$ / PM_{10}		VOC		SO_2 [1]
					EF	TPY	EF	TPY	EF	TPY	EF	TPY	TPY
1	Gas Compressor 1	2,520	bhp	5,500	0.70 g/bhp-hr [2]	10.69	2.50 g/bhp-hr [2]	3.82 [3]	0.17 lb/hr [4, 5]	0.47	0.64 g/bhp-hr [2]	0.98 [3]	0.07 [5, 6]
2	Gas Compressor 2	2,520	bhp										
3	Emergency Generator	690	bhp	500	21.7 g/bhp-hr [7]	0.41 [8]	1.6 g/bhp-hr [7]	0.06 [8]	0.10 lb/hr [9, 10]	0.02	0.29 g/bhp-hr [7]	0.01 [8]	0.002 [6, 10]
4	Aux. Heating Boiler	3.6	MMBtu/hr	8,760	0.10 lb/MMBtu [6, 11]	1.57	0.08 lb/MMBtu [6, 11]	1.32	7.6 lb/MMscf [11]	0.12 [6]	5.5 lb/MMscf [11]	0.09 [6]	0.02 [6]
5	Withdrawal Gas Heater 1	9.23	MMBtu/hr	8,760	0.10 lb/MMBtu [6, 11]	4.04	0.08 lb/MMBtu [6, 11]	3.39	7.6 lb/MMscf [11]	0.31 [6]	5.5 lb/MMscf [11]	0.22 [6]	0.06 [6]
6	TEG Regenerator Boiler 1	1.54	MMBtu/hr	8,760	0.10 lb/MMBtu [6, 11]	0.67	0.08 lb/MMBtu [6, 11]	0.57	7.6 lb/MMscf [11]	0.05 [6]	5.5 lb/MMscf [11]	0.04 [6]	0.01 [6]
7	TEG Unit 1 Process Vents	150	MMscf/day	8,760	N/A	0	N/A	0	N/A	0	[12]	2.87	0
8	Thermal Oxidizer	3.0	MMBtu/hr	8,760	0.10 lb/MMBtu [6, 11]	1.31	0.08 lb/MMBtu [6, 11]	1.10	7.6 lb/MMscf [11]	0.10 [6]	5.5 lb/MMscf [11]	0.07 [6]	0.02 [6]
9	Well Pad E. Generator	127.89	bhp	500	4.04 g/hp-hr [13]	0.28	72.91 g/hp-hr [13]	5.14	0.02 lb/MMBtu [9, 14]	0.01 [6]	1.39 g/bhp-hr [13]	0.10	0.0004 [14]
10	Gas Compressor 3	2,750	bhp	8,760	0.30 g/bhp-hr [15]	7.97	2.14 g/bhp-hr [15]	5.68 [3]	0.19 lb/hr [4, 16]	0.81	0.18 g/bhp-hr [15]	0.48 [3]	0.12 [6, 16]
11	Gas Compressor 4	2,750	bhp	8,760	0.30 g/bhp-hr [15]	7.97	2.14 g/bhp-hr [15]	5.68 [3]	0.19 lb/hr [4, 16]	0.81	0.18 g/bhp-hr [15]	0.48 [3]	0.12 [6, 16]
12	Withdrawal Gas Heater 2	9.23	MMBtu/hr	8,760	0.10 lb/MMBtu [6, 11]	4.04	0.08 lb/MMBtu [6, 11]	3.39	7.6 lb/MMscf [11]	0.31 [6]	5.5 lb/MMscf [11]	0.22 [6]	0.06 [6]
13	TEG Regenerator Boiler 2	1.54	MMBtu/hr	8,760	0.10 lb/MMBtu [6, 11]	0.67	0.08 lb/MMBtu [6, 11]	0.57	7.6 lb/MMscf [11]	0.05 [6]	5.5 lb/MMscf [11]	0.04 [6]	0.01 [6]
14	TEG Unit 2 Process Vents	150	MMscf/day	8,760	N/A	0	N/A	0	N/A	0	[12]	2.87	0
Total Potential to Emit						**39.64**		**30.73**		**3.53**		**8.46**	**0.43**

Table Notes

1 Mass Balance, 0.5 grain Sulfur/100 scf, 40 CFR 72.2
2 Cat G3608 Gas Engine Technical Data
3 90% catalyst control efficiency, Miratech ZCS-42x41-18 Manufacturer Data
4 0.01 lb/MMBtu AP-42, Table 3.2-2
5 6,761 Btu/bhp-hr Cat G3608 Gas Engine Technical Data, fuel consumption at 100% load
6 1001.2 Btu/scf Natural Gas gross heating value, Chandler Engineering Co., Model 292/2920 BTU Analyzer, 7/26/23
7 Cat G412 Gas Engine Technical Data
8 95% NO_x, 90% CO & VOC, 3-way catalyst control efficiency, CleanAir Assure™ TWC System Manufacturer Data
9 0.02 lb/MMBtu AP-42, Table 3.2-3
10 7,340 Btu/bhp-hr Cat G412 Gas Engine Technical Data, fuel consumption at 100% load
11 AP-42 Table 1.4-2
12 GRI-GLYCalc Version 4.0 Calculations Report
13 GENERAC QT080 Technical Data
14 1,252 scf/hr GENERAC QT080 Technical Data, fuel consumption at 100% load
15 Cat G3608 Gas Engine Technical Data, Q1220326
16 6,769 Btu/bhp-hr Cat G3608 Gas Engine Technical Data, Q1220326, fuel consumption at 100% load

Attachment A. Notification Form[1]

CINGSA Facility — **Stationary Source Name**

AQ1242ORL03 — **Air Quality ORL Number.**

Cook Inlet Natural Gas Storage Alaska, LLC

Company Name

When did you discover the Excess Emissions/ORL 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 "ORL deviations." However, use only Section 1 for events that involve excess emissions.

☐ Deviation from ORL Conditions - Complete Section 2 and Certify

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

☐ Deviation from COBC[2], CO[3], or Settlement Agreement - Complete Section 2 and Certify

1 Form based on SPC IV (revised as of July 22, 2020).
2 Compliance Order By Consent
3 Compliance Order

Section 1. Excess Emissions

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

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

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

(c) **Description**

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

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

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

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

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

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

(f) **Corrective Actions:**

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

(g) **Unavoidable Emissions:**

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

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

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

Section 2. ORL Deviations

(a) **ORL 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
- ☐ Other: _____

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

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

EU ID	EU Name	ORL 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_____