British Columbia Energy Regulator

6534 100 Avenue, Fort St. John, B.C
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PERMIT
PA-110588

Under the Provisions of the Environmental Management Act

LNG Canada Development Inc.
Suite 4000, 500 Centre Street SE
Calgary, Alberta
T2G 1A6

is authorized to Discharge contaminants to the environment from the **LNG Canada Kitimat Liquified Natural Gas (LNG) Facility** located at a-005-B/103-I-02, subject to the conditions listed below. Contravention of any of these conditions is a violation of the *Environmental Management Act* and may result in prosecution.

1. DEFINITIONS

For the purpose of this permit, the following definitions apply:

1.1. ***BCAAQO*** means the Ambient Air Quality Objectives adopted by the province of British Columbia and as amended from time to time.

1.2. ***BCER*** means the British Columbia Energy Regulator.

1.3. ***Commissioning*** is defined as that period of time when Discharge from the authorized works commences and ending when the first cargo is shipped from LNG Train 1.

1.4. ***De-inerting*** means the process of purging LNG carrier cargo tanks of inert gas (nitrogen or a mixture of predominantly nitrogen and carbon dioxide) and cooling with LNG from the facility for the purposes of preparing for loading.

1.5. ***Discharge*** means the total mass of a solid, liquid or gaseous material introduced into the environment.

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1.6. ***Equipment Care Plan*** means the set of tasks defined to maintain equipment function and mitigate the risk of failure at optimal cost. It is defined by equipment categories and includes tasks to be executed by maintenance, operations and engineering departments with the minimum sparing requirements to execute these tasks.

1.7. ***Initial Performance Period*** means an initial interval of production performance from the gas turbine engines where modified combustion hardware, different from the original sets tested at the original equipment manufacturer facilities will be validated by collecting operating data including emissions over a wide range of ambient and operating conditions. The Initial Performance Period commences upon the completion of the initial performance test for LNG Train 1 and has a maximum duration of 36 months.

1.8. ***Operations*** means that period of time which follows Commissioning.

1.9. ***Permittee*** means LNG Canada Development Inc.

1.10. ***Qualified Professional*** means a person who has training, experience, and expertise in a discipline relevant to the area of practice set out in the condition, and who is registered with the appropriate professional organization in British Columbia, is acting under that organization's code of ethics and is subject to disciplinary action by that organization.

1.11. ***Regulator*** means a BCER employee authorized to exercise the powers of the BCER under Section 14 of the *Environmental Management Act*.

1.12. ***Standard Conditions*** means temperature = 293.15 K; pressure = 101.325 kPa; water vapour = zero.

1.13. ***90-day Rolling Average*** means the arithmetic average (calculated to 1 decimal place for the applicable units) of daily emissions from the specified sources for a consecutive 90-day period, which is calculated for any day by adding the emissions during that day to the emissions during the previous 89 days, and dividing the sum by the number of days excluding periods of time with zero emissions and zero flow or when emission rate limits are not applicable during the 90 day period (as per 2.1.6). A day starts at 00:00 hrs and ends at 24:00 hrs.

1.14. ***365-day Rolling Average*** means the arithmetic average (calculated to 1 decimal place for the applicable units) of daily emissions from the specified sources for a consecutive 365-day period, which is calculated for any day by adding the emissions during that day to the emissions during the previous 364 days, and

dividing the sum by the number of days excluding periods of time with zero emissions and zero flow during the 365 day period. A day starts at 00:00 hrs and ends at 24:00 hrs.

2. AUTHORIZED DISCHARGES

2.1. This subsection applies to the combined Discharge of air contaminants from **FOUR (4) GAS TURBINE ENGINES WITH WASTE HEAT RECOVERY UNITS (WHRU)**. The site reference number for this Discharge is E332991.

2.1.1. The authorized combined rate of Discharge shall not exceed 725.2 cubic metres per second (m^3/s) based on a daily average.

2.1.2. The authorized Discharge period is continuous.

2.1.3. LNG Canada will notify BCER upon the commencement of the Initial Performance Period.

2.1.4. The estimated characteristics of the combined Discharge are the emission products of the combustion of natural gas including oxides of sulphur (SO_x), oxides of nitrogen (NO_x), carbon monoxide (CO), fine particulate matter ($PM_{2.5}$), volatile organic compounds (VOCs) and total hydrocarbons (HC-T). Specific combined emission limits are:

- The combined NO_x Discharge rate shall not exceed 153.0 kilograms per hour (kg/hr), except for the Initial Performance Period during which the combined NO_x Discharge rate shall not exceed 181.4 (kg/hr).
- The combined CO Discharge rate shall not exceed 3.4 tonnes per day (t/d) based on a 90-day Rolling Average.
- The combined SO_2 Discharge rate shall not exceed:
    - 7.0 kilograms per day (kg/d) based on a 90-day Rolling Average. Notwithstanding the definition in Section 1.13, and for the purposes of this calculation only, the 90-day Rolling Average calculation may include periods of time with zero

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flow and zero emissions for the initial 12 months commencing with Operations.

- 1.2 kg/hr, except when feed gas is used as the fuel gas in the turbine engines during which the combined SO_2 Discharge rate shall not exceed 6.9 kg/hr.

2.1.5. The Discharge rate for the following parameters have been estimated using emission factors and will be verified by manual stack sampling as per Section 5.1.2. Specific combined emission estimates are:

Parameter	Estimated Discharge Rate
$PM_{2.5}$	1.5 kg/hr,
VOCs	3.5 kg/hr,
HC-T	231.2 kg/hr

2.1.6. The requirements of subsection 2.1.4. do not apply during Commissioning, conditions of starting-up, shutting-down, malfunction, and maintenance.

2.1.7. The authorized works are four (4) 110 MW LMS 100 gas turbine engines with waste heat recovery units, four (4) 60.0 metre stacks each with an internal diameter (id) of 3.85 metres, continuous emission monitoring equipment and related appurtenances approximately located as shown on the attached site plan.

2.1.8. The gas turbine engine waste heat recovery units are equipped with catalysts in order to meet the CO Discharge rate specified in Section 2.1.4. The turbine engine waste heat recovery unit catalysts shall be installed, operated, maintained, and inspected as per the associated Equipment Care Plan.

2.1.9. The location of the facilities from which the Discharge originates and the location of the four points of Discharge are described as (Lat/Long):

- 54.0252, -128.6814
- 54.0232, -128.6811
- 54.0250, -128.6846
- 54.0230, -128.6843

2.2. This subsection applies to the combined Discharge of air contaminants from **TWO (2) ACID GAS INCINERATORS (AGI)**. The site reference number for this Discharge is E333751.

2.2.1. The authorized combined rate of Discharge shall not exceed 36.9 m^3/s based on a monthly average.

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2.2.2. The authorized Discharge period is continuous.

2.2.3. The estimated characteristics of the combined Discharge are the emission products of the combustion of natural gas including SO_x, NO_x, CO, $PM_{2.5}$ and VOCs. Specific combined emission limits are:

- The combined NO_x Discharge rate shall not exceed 334.1 kg/d based on a 90-day Rolling Average.
- The combined CO Discharge rate shall not exceed 167.0 kg/d based on a 90-day Rolling Average.
- The combined SO_2 Discharge rate shall not exceed:
    - 872.9 kg/d based on a 365-day Rolling Average. Notwithstanding the definition in Section 1.14, and for the purposes of this calculation only, the 365-day Rolling Average calculation may include periods of time with zero flow and zero emissions for the initial 24 months commencing with Commissioning.
    - 139.8 kg/hr.

2.2.4. The authorized works are two (2) acid gas incinerators with stack heights of 50.0 metres, stack id of 3.35 metres each, continuous emission monitoring equipment and related appurtenances approximately located as shown on the attached site plan.

2.2.5. A minimum incinerator exit temperature of 982˚C shall be maintained when receiving acid gas.

2.2.6. The location of the facilities from which the Discharge originates and the location of the two points of Discharge are described as (Lat/Long)

- 54.0256, -128.6810
- 54.0254, -128.6842

2.3. This subsection applies to the Discharge of air contaminants from **ONE (1) WARM/WET FLARE**. The site reference number for this Discharge is E333771.

2.3.1. The authorized rate of Discharge for routine flaring shall not exceed 7.8 cubic metres per minute (m^3/min) based on a monthly average. Routine flaring for this flare includes the pilot, continuous purge, passing valves, manual sampling system, and online process analyzers.

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The authorized rate of Discharge for non-routine flaring is as required for non-routine events. Non-routine flaring includes start up, maintenance, process upset, and emergency scenarios.

2.3.2. The authorized Discharge period is continuous for routine flaring, and intermittent as required for non-routine flaring.

2.3.3. The estimated characteristics of the Discharge are the emission products of the combustion of natural gas including SO_x, NO_x, CO, $PM_{2.5}$ and VOCs.

2.3.4. The authorized work is one (1) warm/wet flare with a stack height of 122.0 metres, stack id of 1.42 metres, and related appurtenances approximately located as shown on the attached site plan.

2.3.5. The location of the facilities from which the Discharge originates and the location of the point of Discharge is described as (Lat/Long) 54.0180, -128.6774.

2.4. This subsection applies to the Discharge of air contaminants from **ONE (1) COLD/DRY FLARE**. The site reference number for this Discharge is E333772.

2.4.1. The authorized rate of Discharge for routine flaring shall not exceed 9.6 m^3/min based on a monthly average. Routine flaring for this flare includes the pilot, continuous purge, passing valves, manual sampling system, and online process analyzers.

The authorized rate of Discharge for non-routine flaring is as required for non-routine events. Non-routine flaring includes start up, maintenance, process upset, and emergency scenarios.

2.4.2. The authorized Discharge period is continuous for routine flaring, and intermittent as required for non-routine flaring.

2.4.3. The estimated characteristics of the Discharge are the emission products of the combustion of natural gas including SO_x, NO_x, CO, $PM_{2.5}$ and VOCs.

2.4.4. The authorized work is one (1) cold/dry flare with a stack height of 122.0 metres, stack id of 1.22 metres, and related appurtenances approximately located as shown on the attached site plan.

2.4.5. The location of the facilities from which the Discharge originates and the location of the point of Discharge is described as (Lat/Long) 54.0180, -128.6772.

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2.5. This subsection applies to the Discharge of air contaminants from **ONE (1) STORAGE AND LOADING FLARE**. The site reference number for this Discharge is E333773.

2.5.1. The authorized rate of Discharge for routine flaring shall not exceed 6.0 m^3/min based on a monthly average. Routine flaring for this flare includes the pilot, continuous purge, passing valves, seal gas vents, and online process analyzers.

The authorized rate of Discharge for non-routine flaring is as required for non-routine events. Non-routine flaring includes start up, maintenance, process upset, De-inerting LNG carriers, and emergency scenarios.

2.5.2. The authorized Discharge period is continuous for routine flaring, and intermittent as required for non-routine flaring.

2.5.3. The estimated characteristics of the Discharge are the emission products of the combustion of natural gas including oxides of SO_x, NO_x, CO, $PM_{2.5}$ and VOCs.

2.5.4. The authorized work is one (1) storage and loading flare with a stack height of 122.0 metres, stack id of 1.42 metres, and related appurtenances approximately located as shown on the attached site plan.

2.5.5. The location of the facilities from which the Discharge originates and the location of the point of Discharge is described as (Lat/Long) 54.0180, -128.6773.

2.6. This subsection applies to the Discharge of air contaminants from **ONE (1) SPARE FLARE**. The site reference number for this Discharge is E333774.

2.6.1. The authorized rate of Discharge for routine flaring shall not exceed 0.2 m^3/min based on a monthly average. Routine flaring is only when the pilot is in operation, acting as the “spare flare”.

Non-routine flaring includes anytime this flare operates as the applicable authorized flare (under Section 2.3 to 2.5) in a non-routine event. The authorized rate of Discharge for non-routine flaring is as required for non-routine events.

2.6.2. The authorized Discharge period is continuous for routine flaring, and intermittent as required for non-routine flaring.

2.6.3. The estimated characteristics of the Discharge are the emission products of the combustion of natural gas including SO_x, NO_x, CO, $PM_{2.5}$ and VOCs.

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2.6.4. The authorized work is one (1) spare flare with a stack height of 122.0 metres, stack id of 1.42 metres, and related appurtenances approximately located as shown on the attached site plan.

2.6.5. The location of the facilities from which the Discharge originates and the location of the point of Discharge is described as (Lat/Long) 54.0180, -128.6773.

2.7. This subsection applies to the Discharge of air contaminants from **ONE (1) LIQUID BURNER (STRUCTURE)**. The site reference number for this Discharge is E333775.

2.7.1. The authorized rate of Discharge for routine flaring shall not exceed 3.0 m^3/min based on a monthly average. Routine flaring for this flare includes the pilot.

The authorized rate of Discharge for non-routine flaring is as required for non-routine events. Non-routine flaring includes start up, maintenance, process upset, and emergency scenarios.

2.7.2. The authorized Discharge period is continuous for routine flaring, and intermittent as required for non-routine flaring.

2.7.3. The estimated characteristics of the Discharge are the emission products of the combustion of liquified natural gas and liquid components of natural gas including SO_x, NO_x, CO, $PM_{2.5}$ and VOCs.

2.7.4. The authorized work is one (1) liquid burner with a stack height of 60.0 metres, and related appurtenances approximately located as shown on the attached site plan. The liquid burner is comprised of 9 individual burners, three burners each with a stack id of 0.076 metres, and six burners each with a stack id of 0.15 metres.

2.7.5. The location of the facilities from which the Discharge originates and the location of the point of Discharge is described as (Lat/Long) 54.0190, -128.6765.

2.8. This subsection applies to the combined Discharge of air contaminants from **FIVE (5) EMERGENCY POWER GENERATORS.** The site reference number for this Discharge is E333776.

2.8.1. The authorized rate of Discharge shall not exceed 11.8 m^3/s per generator based on an hourly average.

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2.8.2. The authorized Discharge period is intermittent, as required for periods of power outage, maintenance, and testing purposes.

2.8.3. The estimated characteristics of the combined Discharge are the emission products of the combustion of diesel fuel gas including SO_x, NO_x, CO, $PM_{2.5}$ and non-methane hydrocarbons (NMHC).

2.8.4. The authorized works are five (5) 3500 kW Cummins C3500 D6e diesel generator drivers, five (5) horizontal Discharge stacks at heights of 8.8 metres, each with a stack id of 0.54 metres and related appurtenances approximately located as shown on the attached site plan.

2.8.5. The location of the facilities from which the Discharge originates and the location of the points of Discharge are described as (Lat/Long)

- 54.0203, -128.6844 (for 1 point of Discharge)
- 54.0203, -128.6845 (for 1 point of Discharge)
- 54.0203, -128.6846 (for 2 points of Discharge)
- 54.0203, -128.6847 (for 1 point of Discharge)

2.9. This subsection applies to the combined Discharge of air contaminants from **TWO (2) FIRE WATER DIESEL ENGINES**. The site reference number for this Discharge is E333777.

2.9.1. The authorized rate of Discharge shall not exceed 1.5 m^3/s per engine based on an hourly average.

2.9.2. The authorized Discharge period is intermittent, as required for emergency, maintenance, and testing purposes.

2.9.3. The estimated characteristics of the combined Discharge are the emission products of the combustion of diesel fuel including SO_x, NO_x, CO, $PM_{2.5}$ and NMHC.

2.9.4. The authorized works are two (2) 512 kW Cummins CFP15E-F70 diesel engines, with horizontal Discharge stacks at heights of 19.0 metres, each with a stack id of 0.20 metres and related appurtenances approximately located as shown on the attached site plan.

2.9.5. The location of the facilities from which the Discharge originates and the location of the points of Discharge is described as (Lat/Long) 54.0158, -128.6821.

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2.10. This subsection applies to the combined Discharge of air contaminants from **VENTS**. The site reference number for this Discharge is E334133.

2.10.1. Venting of hydrocarbons from the vents listed in Attachment 1 is authorized as required in routine and non-routine situations where the gas heating value, volume or flow rate is insufficient to support stable combustion or is critical for the integrity of equipment.

2.10.2. Any updates to Attachment 1 shall be submitted to the BCER.

2.10.3. The estimated characteristics of the combined Discharge are the emissions of hydrocarbons. The combined discharge rate shall not exceed 25 tonnes per year (t/yr) of HC-T based on a calendar year.

2.10.4. The location of the facilities from which the Discharge originates and the location of the point of Discharge is described as a-005-B/103-I-02.

2.11. This subsection applies to the combined Discharge of air contaminants from **ONE (1) CONDENSATE STORAGE TANK VENT STACK**. The site reference number for this Discharge is E334465.

2.11.1. Venting of hydrocarbons from the condensate storage tank vent stack is authorized in situations when the vapour recovery unit is not in service.

2.11.2. Venting of hydrocarbons from the condensate storage tank vent stack shall not exceed 1,250 m^3 per calendar month.

2.11.3. Venting from the condensate storage tank shall be limited to no more than 432 hours annually.

2.11.4. If any venting from the condensate storage tank is expected to last longer than five consecutive days, the Permittee shall submit an action plan outlining the circumstances of the venting and anticipated timelines to return the vapour recovery unit for the condensate storage tank to normal operation in writing to the BCER.

2.12. This subsection applies to the combined **FACILITY SO_2 EMISSION LIMIT**.

2.12.1. The cumulative authorized discharge rate of SO_2 from all authorized emission sources in Sections 2.1 to 2.7 shall not exceed 140 kg/hr.

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3.0 FLARING REQUIREMENTS

3.1 Flaring Measures

The Permittee is required to implement the flaring requirements identified under the LNG facility permit, issued by the BCER to the Permittee under the *LNG Facility Regulation.* This includes the BCER-approved Flaring Management Report, which documents the measures applied to design, construction and operation of the LNG Facility to minimize the flaring of gas and liquids and associated emissions.

3.2 Flaring Heating Value

While the flare is in service, the combined net or lower heating value for:

- Routine flaring shall be a minimum of 12 megajoules per cubic metre (MJ/m^3),
- Non-routine flaring shall be a minimum of 20 MJ/m^3.

Fuel gas make-up shall be specified by a Qualified Professional. Equipment controls shall be installed and operating procedures shall be documented to ensure minimum fuel gas make-up during routine and non-routine flaring.

3.3 De-Inerting LNG Carriers

Flaring resulting from the De-inerting process of LNG carriers shall be limited to a maximum of six (6) inert LNG carriers per year, commencing April 1st of each year until March 31st of the following year.

3.4 Flare Efficiency Validation

The Permittee will undertake flaring performance validation in the first year of Operations and submit a flaring performance report to the BCER (including measured efficiency) within the first year of Operations. At least 30 days prior to conducting the flaring performance validation, a plan shall be submitted to the Regulator for review and feedback.

3.5 Visual Flaring Records

The Permittee shall visually record all flaring activity. The records shall be dated, and time stamped and made available to the BCER upon request. The Permittee shall maintain those records for a minimum of 30 days.

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4.0 GENERAL REQUIREMENTS

4.1 Standard Conditions

All gaseous volumes described in this permit are at Standard Conditions and all volumes shall be reported at Standard Conditions.

4.2 Maintenance of Works

The Permittee shall inspect the authorized works regularly and maintain them in good working order. Records of inspection shall be maintained and made available to the BCER upon request.

4.3 Bypasses

The Discharge of contaminants that have bypassed the authorized works is prohibited unless the consent of the Regulator is obtained and confirmed in writing.

4.4 Heating, Ventilation, Air Conditioning, and Internal Combustion Engines

Any heating, ventilation, or air conditioning system for buildings under the jurisdiction of BCER and any internal combustion engine permanently located at the facility shall be maintained and operated to ensure good combustion of the fuel with minimum Discharge of air contaminants.

4.5 Process Modifications

The Permittee shall notify the BCER prior to implementing changes to any process that may significantly affect the quality or the quantity of an authorized Discharge.

4.6 Permittee Name Change or Transfer of the Facility

Any change to the name of the Permittee, such as the sale of the facility or a corporate name change shall be reported to the BCER in writing within 30 days of the transaction.

4.7 Sampling Procedures

Any sampling required under this permit shall be carried out in accordance with the procedures described in the most recent version of the “British Columbia Field Sampling Manual (BCFSM)” or by alternative procedures as authorized in writing by the Regulator.

4.8 Analytical Procedures

Any analyses required under this permit shall be carried out in accordance with procedures described in the most recent version of the "British Columbia Environmental Laboratory Manual" or by alternative procedures as authorized by the Regulator.

4.9 Permit Non-Compliances

Instances of permit non-compliance shall be self-disclosed upon discovery, as outlined within Chapter 3 of the BCER Compliance and Enforcement Manual; Waste.Management@bc-er.ca shall also be informed of the self-disclosure.

5.0 STACK MONITORING REQUIREMENTS

5.1 Turbine Engine Waste Heat Recovery Stacks

5.1.1 Continuous Emission Monitoring

The continuous emission monitoring system (CEMS) shall be developed by the Permittee in conformance with the Environment and Climate Change Canada protocol "Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Power Generation and Other Sources". The CEMS shall be operated and maintained as per the Quality Assurance Plan developed in conformance with the protocols, including the completion of the CEMS performance evaluations.

For the Discharge from each of the four 60 metre waste heat recovery stacks authorized in Section 2.1, the Permittee shall record the following with the CEMS:

a) the total CO, CO_2, O_2, NO_x, SO_2 analysis of the stack gases;
b) the temperature of the gases in the stack; and
c) the flow rate of the gases in the stack.

5.1.2 Stack Confirmatory Sampling

For the Initial Performance Period, the Permittee shall undertake manual stack sampling every six months for analyses of stack gas concentrations of $PM_{2.5}$, VOCs and HC-T. Manual stack sampling shall be conducted when the exhaust flows are able to sustain an accurate stack sample.

The Permittee shall provide sampling ports with nearby electrical and pneumatic outlets as well as approved access ladders and adequately sized

platforms to facilitate emission monitoring and external audits for the Discharges authorized in Section 2.1.

Manual stack sampling is exempt if there is no flow directed to the exhaust stack for more than 75% of the facility operating time in that six-month period, due to facility operation or maintenance activities. If manual stack sampling cannot be conducted in the required sampling period due to issues outside of the Permittee's control, the BCER shall be notified, and the stack survey conducted as early as reasonably possible in the next sampling period.

The manual stack sampling report shall follow the source emissions survey report format and information requirements specified within the BCFSM.

In the event that a manual stack sample indicates that an emission source is out of compliance where the emission sources is operated on a continuous basis, the Permittee shall conduct an additional manual stack sample within 14 calendar days of receiving the report.

5.2 Acid Gas Incinerator Waste Gas Stacks

5.2.1 Continuous Emission Monitoring

The CEMS shall be developed by the Permittee in conformance with the Environment and Climate Change Canada protocol "Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Power Generation and Other Sources". The CEMS shall be operated and maintained as per the Quality Assurance Plan developed in conformance with the protocols, including the completion of the CEMS performance evaluations.

For the Discharge from each of the two 50 metre acid gas incinerator stacks authorized in Section 2.2, the Permittee shall record the following with the CEMS:

a) the total CO, CO_2, O_2, NO_x, SO_2 analysis of the stack gases;
b) the temperature of the gases in the stack; and
c) the flow rate of the gases in the stack.

5.2.2 Stack Confirmatory Sampling

The Permittee shall undertake manual stack sampling for each incinerator, on a quarterly basis for one year. The manual stack sampling shall analyse

for concentrations of VOCs, Benzene, Toluene, Ethylbenzene, Xylene (BTEX), H_2S and HC-T.

The Regulator may direct the Permittee to complete additional manual stack sampling throughout Operations.

The Permittee shall provide sampling ports with nearby electrical and pneumatic outlets as well as approved access ladders and adequately sized platforms to facilitate emission monitoring and external audits for the Discharges authorized in Section 2.2.

Manual stack sampling is exempt if there is no flow directed to the exhaust stack for more than 75% of the facility operating time in that quarter, due to facility operation or maintenance activities. If stack surveys cannot be conducted in the required sampling period due to issues outside of the Permittee's control, the BCER shall be notified, and the stack survey conducted as early as reasonably possible in the next sampling period.

The manual stack sampling report shall follow the source emissions survey report format and information requirements specified within the BCFSM.

In the event that a manual stack sample indicates that an emission source is out of compliance where the emission source is operated on a continuous basis, the Permittee shall conduct an additional manual stack sample within 14 calendar days of receiving the report.

5.3 CEMS Performance Evaluations or Manual Stack Surveys

Any CEMS performance evaluations or manual stack surveys required under this permit shall be conducted while the equipment is operating at normal capacity while combusting the primary fuel for that unit.

The Permittee shall notify the BCER in writing a minimum of five working days prior to carrying out any emission compliance testing required under this permit.

5.4 Instrument Audits

Monitoring instruments required under this permit are subject to Instrument Audits by the Ministry of Environment & Climate Change Strategy (ENV) personnel on behalf of the Regulator. Instrument Audits are conducted on a cost recovery basis. Fees to enable cost recovery are established within the *Environmental Data Quality Assurance Regulation.* If there is no Instrument Audit procedure for a particular instrument it is exempt from this clause.

6.0 MONITORING

The ambient air quality shall be monitored in the Kitimat Valley to evaluate the potential impacts of the Permittee's emissions on ambient air and environmental quality. The monitoring shall consist of a network which uses continuous methods and non-continuous methods to measure air quality, meteorology, and precipitation chemistry.

6.1 Air Quality Detailed Monitoring Plan

Prior to Commissioning, the Permittee shall submit and implement an Air Quality Detailed Monitoring Plan (AQDMP).

After submission of the initial AQDMP, the Permittee shall submit and implement quarterly updates to the AQDMP that incorporates feedback provided by the Regulator. The quarterly submission shall include a summary of the feedback received, and how the feedback was taken into consideration with the updates. Quarterly updates are not required if no feedback has been provided by the Regulator and if there are no other changes to the AQDMP.

The AQDMP shall describe the details of the following:

- Configuration of the air quality and meteorological monitoring network;
- Collection of continuous air quality and meteorological data;
- Collection of non-continuous data including passive air quality and precipitation chemistry data;
- Collection of aquatic and terrestrial monitoring data to evaluate for eutrophication and acidification;
- Data management and data sharing with the BCER;
- Methods and actions for assessing effects on human health (via ambient air quality), terrestrial, and aquatic environments;
- Adaptive management approach, including the impact threshold criteria that if exceeded, would trigger investigation and management response;
- AQDMP distribution list;
- Implementation schedule; and
- Terms of reference for annual reporting.

6.2 Monitoring Stations

The Permittee shall install continuous ambient air monitoring equipment in monitoring stations in the Kitimat Valley to evaluate potential impacts of the Permittee's emissions on ambient air and environmental quality.

6.2.1 Location of the Monitoring Stations

The Permittee shall install monitoring equipment at a monitoring station located at or near each of the following sites (Latitude & Longitude NAD83):

- Site 1 (Kitamaat Village) 53.9732˚N, 128.6511˚W
- Site 2 (Riverlodge) 54.0537˚N, 128.6709˚W
- Site 3 (Riverlodge) or (Whitesail) as identified in the AQDMP
  -Whitesail is defined as (E223615) 54.066909˚N, 128.63913˚W

6.2.2 Collection of Continuous Air Quality Data

The Permittee shall conduct continuous monitoring of ambient air pollutant concentrations as outlined in Table 1.

Table 1. Required Continuous Ambient Air Quality Monitoring Parameters

Station	Parameters	Measure	Starting
Site 1	NO_2 O_3	ppb ppb	No later than 60 days after the start of Commissioning
Site 2	NO_2 O_3	ppb ppb	No later than 60 days after the start of Commissioning
Site 3	HC-T	ppm	Prior to Operations

6.2.3 Near Real-Time Data Access of Continuous Data

For each parameter that is continuously measured, according to Table 1, the Permittee shall ensure minute and hourly data are made available in near real time for collection by ENV data acquisition system, and where applicable, dissemination on provincial air quality websites and data portals. Instrument diagnostic data shall also be made available for collection in near real time.

For data which is collected and not yet available for collection by ENV data acquisition system, the Permittee shall make hourly monitored data outlined in Section 6.2.2 publicly available via the Permittee's website.

6.3 Collection of Continuous Meteorological Data

At each of the monitoring stations described in Section 6.2.1, the Permittee shall obtain or collect continuous monitoring data of meteorological parameters as outlined in Table 2 and in the AQDMP.

Table 2. Meteorological Monitoring Parameters

Station	Parameters	Measure	Starting
Site 1	Temperature Wind speed-scalar Wind direction – vector Standard deviation of wind direction	˚C $m \cdot s^{-1}$ degrees degrees	No later than 60 days after the start of Commissioning
Site 2	Temperature Wind speed-scalar Wind direction – vector Standard deviation of wind direction	˚C $m \cdot s^{-1}$ degrees degrees	No later than 60 days after the start of Commissioning
Site 3	Temperature Wind speed-scalar Wind direction – vector Standard deviation of wind direction	˚C $m \cdot s^{-1}$ degrees degrees	Prior to Operations

6.3.1 Near Real-Time Data Access of Continuous Data

For each parameter that is continuously measured, according to Table 2, the Permittee shall ensure minute and hourly data are made available in near real time for collection by ENV data acquisition system, and where applicable, dissemination on provincial air quality websites and data portals. Instrument diagnostic data shall also be made available for collection in near real time.

6.4 Collection of Passive Air Quality Data

Starting no later than 60 days after the start of Commissioning, the Permittee shall conduct passive monitoring of NO_2 concentrations until the completion of the Initial Performance Period at thirteen locations at or near the sites described in Table 3 and in the AQDMP.

Table 3. Passive NO_2 Monitoring Locations

Station	Measure	Number of Units
Kitamaat Village	ppb	two
Service Centre/ Industrial Ave	ppb	one
Riverlodge	ppb	one
Whitesail	ppb	one
Lakelse Lake	ppb	one
Site of Maximum Predicted NO_2 Concentration	ppb	one
Passive Samplers south of the LNG Facility in Kitimat Valley (west side of Douglas Channel)	ppb	two
Passive Samplers north of the LNG Facility within the Kitimat Valley	ppb	four

6.4.1 Submission of Non-Continuous Data

The Permittee shall upload the passive monitoring laboratory results to the ENV Environmental Monitoring System (EMS) or to the ENV Environmental Monitoring Results Database (EnMoDS) on a monthly frequency. All monthly reports shall be submitted within 30 days of the subject monitoring period and shall be reported using the appropriate EMS site codes for the monitoring stations.

6.5 Collection of Precipitation Chemistry Data

Starting no later than 60 days after the start of Commissioning, the Permittee shall collect data from precipitation sampling for the purpose of analysing its chemical constituents at or near the following locations:

- Site 2 (Riverlodge); and
- Co-located at two soil monitoring plots

6.5.1 Required Precipitation Chemistry Components

The Permittee shall analyse the following precipitation chemistry parameters: free acidity (H^+ as pH), conductance, calcium ($Ca2^+$), magnesium ($Mg2^+$), sodium (Na^+), potassium (K^+), sulfate ($SO42^-$), nitrate ($NO3^-$), chloride (Cl^-), and ammonium ($NH4^+$).

6.5.2 Submission of Non-Continuous Data

The Permittee shall upload the precipitation chemistry laboratory results to the ENV EMS or to the ENV EnMoDS semi-annually. The semi-annual reports shall be submitted within 30 days of the subject monitoring period and shall be reported using the appropriate EMS site codes for the monitoring stations.

6.6 Terrestrial and Aquatic Environment Baseline

Baseline data shall be collected for the aquatic and terrestrial ecosystem and shall be incorporated into an updated AQDMP, submitted by March 31, 2025.

7.0 NOTIFICATION

All notifications required to be made to the BCER shall be submitted to Waste.Management@bcer.ca.

7.1 Emission Monitoring Results

The Permittee shall notify the BCER as soon as practicable and no more than 24 hours following the discovery of any emission monitoring results, whether from a continuous emissions monitor or periodic testing, which exceed the quantity or quality authorized in Section 2 of this permit.

The Permittee shall immediately upon discovery of an emission in excess of a permit limit take reasonable steps to reduce the emission where practicable and subject to safety limitations. A report shall be prepared or reviewed by a Qualified Professional and submitted to the BCER within five days of discovery outlining the exceedance details and remedial steps taken or proposed. Ambient air quality

measurements from the ambient air monitoring network spanning the duration of the event plus at least four hours prior and after the exceedance shall be included.

7.2 Ambient Air Quality and Meteorological Instrumentation

The Permittee shall notify the BCER as soon as practicable and no more than 72 hours following the discovery of any interruption, damage or interference to any (i) continuous ambient air analyzer, (ii) meteorological sensor or (iii) related equipment required in Section 6 of this permit that is owned or operated by the Permittee, and that would cause the continuous ambient air analyzer or meteorological sensor to be offline for a period greater than 48 hours, or fail to measure a minimum of 18 hours of valid data per day for two consecutive days. The notification shall explain the reason for the absence of data.

7.3 Ambient Air Quality Readings

The Permittee shall notify the BCER, as soon as practicable and no more than 24 hours following an ambient measurement above the NO_2 or SO_2 BCAAQO metric recorded at any of the Riverlodge, Whitesail, and Kitamaat Village ambient air quality monitoring stations in the Kitimat Valley. The Permittee shall submit a written report prepared or reviewed by a Qualified Professional within 7 working days of an ambient measurement above the NO_2 or SO_2 BCAAQO metric describing activities at the facility, and any known contributing factors from authorized works affecting the NO_2 or SO_2 measurement(s), and any changes to the facility operations that may be appropriate to avoid future ambient measurements above the NO_2 or SO_2 BCAAQO metric.

7.4 Notification to First Nations

The Regulator may require the Permittee to submit electronic copies of reports and notifications required under Section 7, within the timelines identified in Section 7, to First Nations specified by the Regulator in writing. The Permittee may exclude proprietary information that may be exempt from disclosure if the reports were disclosed pursuant to a request under the *Freedom of Information and Protection of Privacy Act*.

8.0 GENERAL SUBMISSION

8.1 Submission of CEMS Quality Assurance Plan

Prior to Operations, the Permittee shall submit to the BCER the Quality Assurance Plan developed in conformance with the Environment and Climate Change Canada protocol “Protocols and Performance Specifications for Continuous Monitoring of Gaseous Emissions from Thermal Power Generation and Other Sources”. Any updates to the plan shall be submitted within 30 days.

8.2 Submission of Catalyst Equipment Care Plan

Prior to Operations, the Permittee shall submit the Equipment Care Plan for the turbine engine waste heat recovery unit catalysts to the BCER. Any updates to the Equipment Care Plan shall be submitted to the BCER within 30 days.

8.3 Facility Maintenance & Equipment Outage Plan

The Permittee shall develop and submit a plan at least one month in advance for planned facility maintenance and equipment outage(s) related to the authorized works or submit a notification to the BCER within 24 hours of an unscheduled maintenance or equipment outage related to the authorized works. The plan or notification shall include but is not limited to:

a) a list of maintenance and repair activities to be executed during the maintenance and equipment outage(s), and all associated temporary Discharges that are required to support the process of LNG production;

b) maintenance and equipment outage schedules including the proposed starting date or starting date range and duration of the maintenance and/or equipment outage(s);

c) for planned maintenance and equipment outage(s), a list and site plan depicting the location of all temporary Discharge sources that are required to support the process of LNG production;

d) for planned maintenance and equipment outages, a table of Discharge rates, stack parameters and fuel type for all temporary Discharge sources that are required to support the process of LNG production; and

e) performance metrics and best practices to follow during the maintenance turnaround and/or equipment outages(s).

Based on the review of the plan or notification, the Regulator may require the Permittee to conduct additional monitoring and implement mitigations or requirements as determined by the Regulator to protect the environment during the maintenance and equipment outage periods associated with the authorized works.

During the facility maintenance and equipment outage periods, all other terms and conditions of the permit, not covered under the submitted plan or notification, remain in effect.

9.0 REPORTING METHODOLOGIES

Where no measurement equipment, estimation methodologies, emission factors, equations or calculations have been specified in the permit for reporting, the Permittee shall determine air emissions for each authorized point of Discharge using any of the following methodologies:

a) continuous emission monitoring;
b) predictive emission monitoring;
c) source testing;
d) materials balance;
e) site-specific emission factors;
f) published or general emission factors;
g) emission estimation models;
h) engineering estimates;
i) speciation profiles; or
j) a method authorized in writing by the Regulator.

10.0 REPORTING REQUIREMENTS

The Regulator may alter the monitoring and reporting requirements as needed. The need for changes to the requirements will be based upon the results submitted as well as any other information obtained by the BCER and ENV in connection with the Discharges. All reports shall be prepared or reviewed by a Qualified Professional and shall be submitted in a manner and format acceptable to the Regulator.

All monthly reports required by this permit are to be compiled or submitted to the BCER on or before the end of the month following the month in which the information was collected, unless otherwise specified in this permit.

All quarterly reports required by this permit are to be compiled or submitted to the BCER on or before the end of the month following the last month of the quarter in which the information was collected, unless otherwise specified in this permit.

The Permittee shall submit all annual reports required by this permit to be compiled and submitted to the BCER on or before March 31st of the year following the year in which the information was collected, unless otherwise specified in this permit or authorized in writing by the Regulator.

10.1 Reporting to First Nations

The Regulator may require the Permittee to submit electronic copies of reports required under Section 10, within the timelines identified in Section 10, to First Nations specified by the Regulator in writing. The Permittee may exclude

proprietary information that may be exempt from disclosure if the reports were disclosed pursuant to a request under the *Freedom of Information and Protection of Privacy Act*.

10.2 Monthly Reporting

10.2.1 Fuel Gas Use (Commissioning Only)

During Commissioning, the monthly report shall identify and provide a summary of fuel gas use at the facility. The monthly report shall include the following information:

a) the daily volume of fuel gas combusted and vented;
b) the daily mass emissions of NO_x, SO_x, CO, $PM_{2.5}$, VOCs and HC-T, for the authorized works in Section 2.1 and 2.2; and
c) the quantification method (under Section 9) and representative calculations.

10.2.2 CEMS Zero and Span Reporting

During Operations, after the completion of the initial CEMS performance evaluation, the monthly report shall include a summary of all CEMS out of control calibration zero and span events that occurred during the month. The monthly report shall include the following information:

a) the (i) start date, (ii) start time, (iii) end date, and (iv) end time of the out-of-control zero-span events that occurred during the month;
b) identification of the source;
c) the CEMS station ID;
d) the full scale of the CEMS analyzer;
e) the zero criteria;
f) the zero reading from the CEMS analyzer during each event;
g) the zero referenced used;
h) the zero drift percentage during each zero and span event;
i) the span criteria;
j) the span reading from the CEMS analyzer during each zero and span event;
k) the span reference used;
l) the span drift percentage during each event;
m) the cause of each out-of-control period; and
n) identification of the corrective actions taken for each out-of-control period.

10.2.3 Continuous Emission Monitoring System Reporting

During Operations, after the completion of the initial CEMS performance evaluation, the Permittee shall provide a summary of CEMS data collected during the month.

The monthly report shall include the following information:

a) identification of the source;
b) identification of the CEMS station ID;
c) the number of stack exhaust hours for the month;
d) the date of the Quality Assurance Plan audit, if it occurred during the month;
e) identification of who performed the Quality Assurance Plan audit, if it occurred during the month;
f) identification of (i) name and (ii) reporting units of each pollutant and operational parameter monitored by each CEMS analyzer;
g) identification of the (i) make, (ii) model number, (iii) serial number of each CEMS analyzer, and (iv) location of each analyzer in the CEMS system;
h) identification of each dual range CEMS analyzer;
i) the (i) range and (ii) units of each CEMS analyzer;
j) control charts of daily drift for each analyzer;
k) identification of the monitoring (i) duration and (ii) interval of each CEMS analyzer;
l) identification of any changes made to CEMS parameterization or data acquisition system configurations;
m) the total operational hours of each CEMS analyzer;
n) the percent availability of each CEMS analyzer;
o) the (i) minimum, (ii) maximum and (iii) average daily reading for each parameter monitored;
p) the (i) minimum, (ii) maximum and (iii) average monthly reading for each parameter monitored;
q) the (i) minimum, (ii) maximum and (iii) average daily emission rate for each pollutant monitored;
r) the (i) minimum, (ii) maximum and (iii) average monthly emission rate for each pollutant monitored;
s) for all authorized sources in Section 2.1, for each day in the month, the maximum and average hourly volumetric discharge rates in m^3/s for each discharge point and cumulatively, with a comparison to the approved limit;
t) for all authorized sources in Section 2.1, for each day in the month, the maximum and average NO_x discharge rates in kg/hr for each discharge point and cumulatively with a comparison to the approved limit;
u) for all authorized sources in Section 2.1, for each day in the month, the CO discharge rates in t/d based on a 90-day Rolling Average for each discharge point and cumulatively with a comparison to the approved limit;

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v) for all authorized sources in Section 2.1, for each day in the month, the SO_2 discharge rates in kg/d based on a 90-day Rolling Average for each discharge point and cumulatively with a comparison to the approved limit;
w) for all authorized sources in Section 2.1, for each day in the month, the maximum and average hourly SO_2 discharge rates in kg/hr for each discharge point and cumulatively with a comparison to the approved limit;
x) for all authorized sources in Section 2.1, for each day of the month, the fraction of the day with zero cumulative flow and zero cumulative emissions;
y) for all authorized sources in Section 2.1, for each day of the month, the fraction of each day when the discharge rate limits are not applicable and the reason why;
z) the number of hours that the turbine engines are running on feed gas;
aa) for all authorized sources in Section 2.2, for each day of the month, the maximum and average hourly volumetric discharge rates in m^3/s for each discharge point and cumulatively with a comparison to the approved limit;
bb) for all authorized sources in Section 2.2, for each day of the month, the NO_x discharge rates in kg/d based on a 90-day Rolling Average for each discharge point and cumulatively with a comparison to the approved limit;
cc) for all authorized sources in Section 2.2, for each day of the month the NO_x discharge rates in kg/d for each discharge point and cumulatively;
dd) for all authorized sources in Section 2.2, for each day of the month, the CO discharge rates in kg/d based on a 90-day Rolling Average for each discharge point and cumulatively with a comparison to the approved limit;
ee) for all authorized sources in Section 2.2, for each day of the month, the SO_2 discharge rates in kg/d based on a 365-day Rolling Average for each discharge point and cumulatively with a comparison to the approved limit;
ff) for all authorized sources in Section 2.2, for each day of the month, the maximum and average hourly SO_2 discharge rates in kg/hr for each discharge point and cumulatively with a comparison to the approved limit;
gg) for all authorized sources in Section 2.2, for each day of the month, the fraction of the day with zero cumulative flow and zero cumulative emissions;
hh) the periods of time when authorized sources exceed the authorized discharge rates;
ii) the total daily mass emissions for each pollutant monitored;
jj) the total monthly mass emissions for each pollutant monitored;
kk) (i) identification and (ii) description of any missing data;
ll) identification of the method used to fill in missing data;
mm) identification of any performance tests carried out during the month;
nn) identification of the type of performance test carried out;
oo) system evaluation findings, observations, and recommendations; and
pp) summary of all corrective actions taken when the CEM system or analyzers were found to be out of control.

10.2.4 Flaring Activity Reporting

The Permittee is required to identify and provide a summary of all flaring activity carried out during the month at the facility.

The monthly report shall include the following information:

a) identification of the flare source;
b) description of the type of process gas sent to flare;
c) the volume of gas sent to the flare during each event;
d) the reason for the flaring event;
e) any external notifications sent out, if applicable;
f) the (i) daily and (ii) monthly volume of gas being flared for each source;
g) the (i) daily and (ii) monthly contaminant emission totals for each source, parameters include NO_x, CO, $PM_{2.5}$, SO_x, VOCs, and HC-T; and
h) the quantification method (under Section 9) and representative calculations.

10.2.5 Permit Contravention

The monthly report shall include a summary of all instances of permit non-compliances, including a description of the event (date, time, circumstances), a summary of the investigation findings, the completed and ongoing actions taken in response to the non-compliance event, and the date of self-disclosure notifications to the BCER.

10.2.6 Pollution Control Technologies

The monthly report shall include a discussion of any operational or performance issues with any pollution control technologies of the authorized works and equipment required by the permit, if applicable. The report shall include a discussion of any significant maintenance activities on any pollution control technologies and equipment required by the permit and a description of how this activity may influence ambient air quality. A significant maintenance activity would include any routine or non-routine maintenance activities that require the pollution control technology or equipment to be offline for an extended period, including, but not limited to, major repairs, unit shutdowns and turnarounds.

10.2.7 Ambient Air Monitoring Evaluation (Commissioning Only)

During Commissioning, the monthly report shall include the following information for NO_2, SO_2 and $PM_{2.5}$, where continuously monitored at Site 1, Site 2 (per Section 6.2.1) and Whitesail (E223615) where information is publicly available:

a) a comparison of the measured ambient air concentrations at each ambient air monitoring stations to the applicable numerical metrics of the BCAAQO;
b) (i) a description of any measured ambient air concentrations in excess of the numerical metrics of the BCAAQO, if applicable, (ii) a description of any known contributing factors from authorized works, and (iii) a description of action (if any) taken by the Permittee.

During Commissioning, the time series plot of the hourly average ambient air concentration of Ozone (O_3) data from these stations will also be provided in the monthly report.

10.2.8 Facility SO_2 Emission Limit

For all authorized sources in Sections 2.1 to 2.7, for each day of the month, provide the maximum hourly cumulative SO_2 discharge rate in kg/hr. Provide a percentage breakdown of the sources contributing to the maximum discharge rate of each day.

10.3 Quarterly Reporting

For the purposes of this section, the parameters required to be reported on at each continuous ambient air monitoring station are as detailed below.

10.3.1 Ambient Air Monitoring Data Issues

The quarterly report shall include the following information:

a) (i) identification of, (ii) description of, and (iii) reason(s) for any ambient air or meteorological monitoring data deletion or resubmission;
b) (i) identification of, (ii) description of, and (iii) reason(s) for any missed calibrations from ambient air analyzers that were required to be calibrated during the reporting period;
c) (i) identification and (ii) description of any other issues with the ambient air or meteorological monitoring data; and
d) if any passive monitor fails to collect a sample for one sample period, the Permittee shall include the reasons for the absence of data within the report.

10.3.2 Ambient Air Monitoring Results

The quarterly report shall include the following information for each parameter monitored by the Permittee (per Section 6):

a) the percentage of valid hourly data at each continuous ambient air monitoring station;

b) (i) a time series plot of the hourly average ambient air concentrations at each continuous ambient air monitoring station, and (ii) a discussion of the context around any data anomalies in the time series plot;
c) i) minimum, (ii) average, (iii) median and (iv) maximum ambient air concentrations at each continuous ambient air monitoring station for the period;
d) a monthly wind rose for each continuous ambient air monitoring station for the months being monitored generated using meteorological data collected at the ambient air monitoring station;
e) a summary of passive NO_2 monitoring analysis for each monitored location (based on available laboratory analysis results for that reporting period and include results from the previous reporting period(s) that were not included in previous summaries); and
f) a summary of precipitation monitoring chemistry for each monitored location (based on available laboratory analysis results for that reporting period and include results from the previous reporting period(s) that were not included in previous summaries).

10.3.3 Ambient Air Monitoring Evaluation

The quarterly report shall include the following information for NO_2, SO_2 and $PM_{2.5}$, continuously monitored at Site 1, Site 2 (per Section 6.2.1) and Whitesail (E223615) where information is publicly available:

a) a comparison of the measured ambient air concentrations at each ambient air monitoring stations to the applicable numerical metrics of the BCAAQO; and
b) (i) a description of any measured ambient air concentrations in excess of the numerical metrics of the BCAAQO, if applicable, (ii) a description of any known contributing factors from authorized works, and (iii) a description of action (if any) taken by the Permittee.

10.3.4 Source Testing Results

The quarterly report shall include the following information:

a) identification of the dates of any source sampling activities carried out during the reporting period;
b) identification of the testing company that carried out any source sampling activities during the reporting period;
c) a brief overview of any CEMS initial or re-certification tests carried out during the reporting period;
d) a brief overview of the results of any complete or incomplete (i) manual stack surveys, (ii) CEMS performance evaluation carried out during the period;

e) an explanation for stopping or aborting any incomplete (i) manual stack survey, (ii) CEMS performance evaluation;
f) a brief overview of any required corrective actions taken or planned in response to the source sampling activities; and
g) the manual stack source emissions survey reports and CEMS performance evaluation reports.

10.3.5 Inlet Gas Sulphur Report

The quarterly sulphur report shall include the following information:

a) daily percentage of hydrogen sulphide of the facility inlet gas; and
b) total estimated sulphur in the facility inlet gas, based on the analysis of the monthly gas samples.

10.4 Annual Reporting

Annual reports provide an overview and evaluation of the monitoring performed during the calendar year. They provide additional review of the data and present annual summaries that highlight overall performance, changes at the facility, seasonal patterns, annual trends, occurrences of ambient air quality readings above the BCAAQO metric, comparison to the BCAAQO and exceedances of permit limits.

The annual report shall include the following summary of information:

a) provide the reasons for any continuous ambient monitoring analyzers to be operational for less than 90% of the time over the year and were required to be operational for at least 90% of the time during the year;
b) identification of any previous correspondence related to the reporting of (i) ambient air concentration in excess of the applicable BCAAQO metrics, (ii) exceedances of permit emission limits, (iii) any unauthorized release, (iv) any accidental release, and (v) any instance of operating without required pollution controls that occurred during the reporting year;
c) identification of any changes to monitoring locations, monitoring methods or significant changes to monitoring equipment;
d) identification of any special air studies carried out for which data or results are being provided to the BCER;
e) identification of any reporting or monitoring irregularities or issues;
f) identification of and justification for any changes made after a monthly report or quarterly report was initially submitted;
g) a listing of all continuous ambient air monitoring stations that contributed data to the annual report;

h) a listing of all (i) passive and (ii) precipitation chemistry monitoring stations that contributed data to the annual report;
i) for any audit that occurred during the year, if not already included in the monthly or quarterly reports, a summary of any audit findings that affected data validity or resulted in a contravention of the terms and conditions of the permit, and the associated corrective actions taken;
j) identification and description of any deviations from the authorized monitoring methods;
k) identification and description of any conditions that may have affected the quality of the monitoring results, including the use of data qualifiers;
l) identification and description of numerical results for values outside of quantification limits; and
m) a discussion of the operating status of the facility and any irregularities that had an impact on source emissions or air quality.

10.4.1 Ambient Air Monitoring Data Issues

The annual report shall include the following information, if not already submitted or covered in a quarterly report:

a) (i) identification of, (ii) description of, and (iii) reason(s) for any ambient air monitoring data deletion or resubmission;
b) (i) identification of, (ii) description of, and (iii) reason(s) for any missed calibrations from ambient air analyzers that were required to be calibrated during the reporting period;
c) (i) identification and (ii) description of any other issues with the ambient air monitoring data; and
d) (i) identification and (ii) description of any other issues with the passive ambient air monitoring data and precipitation chemistry monitoring data.

10.4.2 Ambient Air Monitoring Results

The annual report shall include the following information for NO_2, SO_2 and $PM_{2.5}$, continuously monitored at Site 1, Site 2 (per Section 6.2.1) and Whitesail (E223615) where information is publicly available:

a) the percentage of valid hourly data at each continuous ambient air monitoring station;
b) the (i) maximum, (ii) 99th percentile, (iii) 98th percentile, (iv) 90th percentile, (v) average, (vi) median and (vii) minimum ambient air concentrations for each monitored parameter at each ambient air monitoring station for the year;
c) the (i) maximum, (ii) 99th percentile, (iii) 98th percentile, (iv) 90th percentile, (v) average, (vi) median and (vii) minimum and daily ambient air concentrations at each ambient air monitoring station for the year, for the

monitored parameters for which a BCAAQO exists for those averaging periods;

d) (i) a plot of the annual average ambient air concentrations over the last five years for each monitored parameter at each ambient air monitoring station identified in Section 6.2, and (ii) a discussion of the context behind changes in annual average concentration trends, if applicable and known;
e) an annual average spatial plot using data collected with passive samplers;
f) (i) an annual average spatial plot using precipitation chemistry monitoring data and (ii) a summary of precipitation chemistry monitoring data;
g) pollution roses for each of the monitored parameters showing the 90th percentile hourly concentrations and annual average concentrations by wind direction;
h) an annual wind rose for each continuous ambient air monitoring station for the year being reported, generated using meteorological data collected at the ambient air monitoring station; and
i) evaluation and trends analyses in accordance with the applicable BCAAQO (based on the BCAAQOs methodology); and if applicable, a description of the reasons that lead to an exceedance, if known.

10.4.3 CEMS Annual Summary

A summary of CEMS data in the annual reports shall summarize the annual performance of the continuous monitoring systems, providing an overview of:

a) identification of the source;
b) identification of the CEMS station ID;
c) the number of stack exhaust hours for the year;
d) the date of the Quality Assurance Plan audit;
e) summary of the Quality Assurance Plan audit;
f) identification of (i) name and (ii) reporting units of each pollutant and operational parameter monitored by each CEMS analyzer;
g) identification of the (i) make, (ii) model number, (iii) serial number of each CEMS analyzer, and (iv) location of each analyzer in the CEMS system;
h) identification of each dual range CEMS analyzer;
i) the (i) range and (ii) units of each CEMS analyzer;
j) identification of the monitoring (i) duration and (ii) interval of each CEMS analyzer;
k) identification of any changes made to CEMS parameterization or data acquisition system configurations;
l) the total operational hours of each CEMS analyzer;
m) the annual availability of each CEMS analyzer;
n) the (i) minimum, (ii) maximum and (iii) average monthly reading for each parameter monitored;

o) the (i) minimum, (ii) maximum and (iii) average monthly emission rate for each pollutant monitored (based on a Rolling Average period average period defined in Section 2);
p) the total monthly mass emissions for each pollutant monitored;
q) the applicable permit limit of each parameter and pollutant monitored, and associated compliance reporting timeframe identified in Section 2;
r) identification of the number of hours exceeding any permit limits;
s) (i) identification and (ii) description of any missing data;
t) identification of the method used to fill in missing data;
u) summary of any performance tests carried out during the year;
v) identification of the type of performance test carried out;
w) system evaluation findings, observations, and recommendations; and
x) summary of all corrective actions taken when the CEM system or analyzers were found to be out of control.

10.4.4 Source Emission Inventory

Annual source emission reports are required to identify and provide a summary of the individual source emissions. The annual source emission reports shall include the following information:

a) identification of each source;
b) for each source, identification of each pollutant per Section 2 and 5;
c) the annual hours of operation of each source;
d) identification of the quantification method (Section 9) used to determine the emission value and representative calculations;
e) the monthly emission value for the source and pollutant;
f) the annual emission value for the source and pollutant; and
g) the annual pollutant totals for the facility.

10.4.5 Air Quality Detailed Monitoring Report

The annual air quality detailed monitoring report shall contain the status and results of the monitoring as part of the AQDMP, including:

a) a summary of the data and the results from the receiving environment and any ecological effects monitoring related to three lines-of-evidence: human health (monitored through air), terrestrial and aquatics acidification and eutrophication that was conducted during the previous year including comparison to all applicable criteria;
b) recommendations based on the previous years learnings;
c) a description of the monitoring program planned for the present year; and

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d) a description of the Permittee's plans for consultation with other stakeholders during the present year regarding the design and results of the receiving environment monitoring program.

10.5 Internet Reporting Requirements

The Permittee shall make reported information available on the LNG Canada website related to Section 7.3, 10.2.3 t, u, v, w, bb, dd, ee & ff, 10.2.4, 10.2.7, 10.2.8, 10.3.3, 10.4.4 & 10.4.5 following the stipulated reporting cycle. The Permittee shall upload compliance indicators presented in line, bar graph or other suitable graphic with associated measurement units and permit limits. The results presented shall include the most recent 5 consecutive years (with the current year being partial in accordance to the monitoring reporting cycle). The Permittee may exclude proprietary information that may be exempt from disclosure if the reports were disclosed pursuant to a request under the *Freedom of Information and Protection of Privacy Act*. The Permittee must notify the Kitimat Airshed Group and any other party identified by the Regulator once the information is posted on its website.

Date Issued: July 15th, 2024

Devin Scheck, P.Ag
Supervisor, Environmental Stewardship

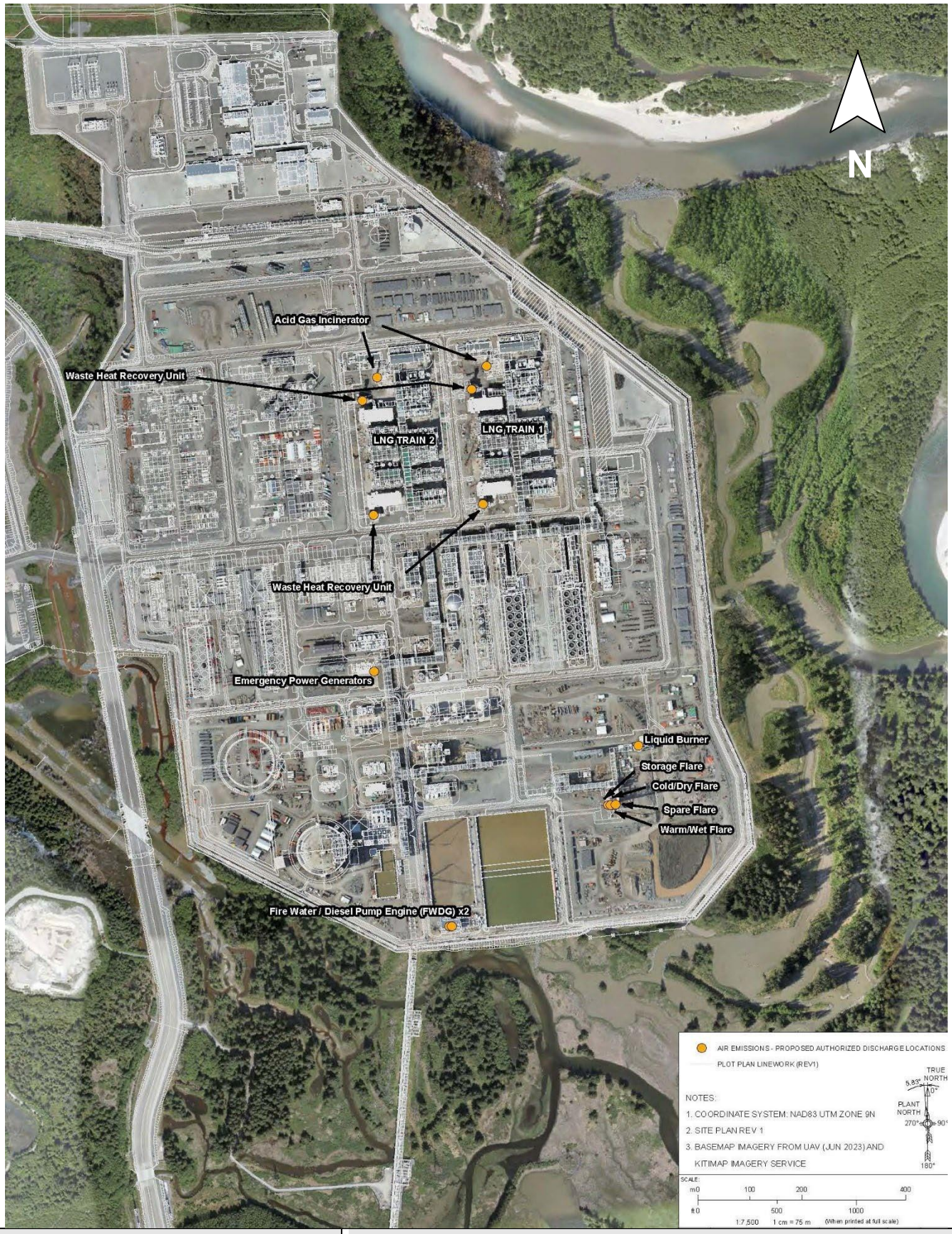
Location Map

AUTHORIZATION:
Date:

(Office Use Only)

for Director, *Environmental Management Act*
(Office Use Only)

Site Plan



AUTHORIZATION:
Date:

(Office Use Only)

for Director, *Environmental Management Act*
(Office Use Only)

Attachment 1

				INPUT
				Origin
Unit	Train 1 / Train 2 / Common	Equipment Tag From	Equipment Tag To	Description
1100	Train 1	1V-1103 Reflux Accumulator AGRU	To ATM at safe location	H2S Bleed at DBB (vent is after 11VV 0154-1)
1100	Train 2	2V-1103 Reflux Accumulator AGRU	To ATM at safe location	H2S Bleed at DBB (vent is after TBC)
1100	Train 1	1V-1103 Reflux Accumulator AGRU	To ATM at safe location	H2S Bleed at DBB (vent is after 11VV 0152-1)
1100	Train 2	2V-1103 Reflux Accumulator AGRU	To ATM at safe location	H2S Bleed at DBB (vent is after TBC)
1100	Train 1	1V-1103 Reflux Accumulator AGRU	To ATM at safe location	H2S Bleed at DBB (vent is after 11VV 0228-1)
1100	Train 2	2V-1103 Reflux Accumulator AGRU	To ATM at safe location	H2S Bleed at DBB (vent is after TBC)
1200	Train 1	1K-1201 Regeneration Gas Compressor	To ATM at safe location	Oil reservoir vent
1200	Train 2	2K-1201 Regeneration Gas Compressor	To ATM at safe location	Oil reservoir vent
1400	Train 1	AH111 Analyzer House	To ATM at safe location	Analyser vent
1400	Train 2	AH211 Analyzer House	To ATM at safe location	Analyser vent
1400	Train 1	AH112 Analyzer House	To ATM at safe location	Analyser vent
1400	Train 2	AH212 Analyzer House	To ATM at safe location	Analyser vent
1900	Train 1	1V-1901 Acid Gas KO Drum	To ATM at safe location	H2S Bleed at DBB (vent is after 19VV 0020-1)
1900	Train 2	2V-1901 Acid Gas KO Drum	To ATM at safe location	H2S Bleed at DBB (vent is after TBC)
1900	Train 1	1V-1901 Acid Gas KO Drum	To ATM at safe location	H2S Bleed at DBB (vent is after 19VV 0025-1)
1900	Train 2	2V-1901 Acid Gas KO Drum	To ATM at safe location	H2S Bleed at DBB (vent is after TBC)
1900	Train 1	1V-1901 Acid Gas KO Drum (Inlet)	To ATM at safe location	H2S Bleed at DBB (vent is after 19VV 0069-1)
1900	Train 2	2V-1901 Acid Gas KO Drum (Inlet)	To ATM at safe location	H2S Bleed at DBB (vent is after TBC)
1900	Train 1	119UZV-0305	To ATM at safe location	High point vent from fuel gas line
1900	Train 2	219UZV-0305	To ATM at safe location	High point vent from fuel gas line
1900	Train 1	AH113 Analyzer House	To ATM at safe location	Analyser vent
1900	Train 2	AH213 Analyzer House	To ATM at safe location	Analyser vent
2000	Train 1	1K-2012 Stabiliser Overhead Compressor	To ATM at safe location	Oil Reservoir Vent
2000	Train 2	2K-2012 Stabiliser Overhead Compressor	To ATM at safe location	Oil Reservoir Vent

				INPUT
				Origin
Unit	Train 1 / Train 2 / Common	Equipment Tag From	Equipment Tag To	Description
2000	Train 1	1K-2012 Stabiliser Overhead Compressor	To ATM at safe location	L/O Line Vent
2000	Train 2	2K-2012 Stabiliser Overhead Compressor	To ATM at safe location	L/O Line Vent
2000	Train 1	1K-2022 Stabiliser Overhead Compressor	To ATM at safe location	Oil Reservoir Vent
2000	Train 2	2K-2022 Stabiliser Overhead Compressor	To ATM at safe location	Oil Reservoir Vent
2000	Train 1	1K-2022 Stabiliser Overhead Compressor	To ATM at safe location	L/O Line Vent
2000	Train 2	2K-2022 Stabiliser Overhead Compressor	To ATM at safe location	L/O Line Vent
6400	Train 1	1T-6430 AGR Area CC Sump	To ATM at safe location	Sump Vent
6400	Train 2	2T-6430 AGR Area CC Sump	To ATM at safe location	Sump Vent
6400	Train 1	1T-6425 LNG Train CC Sump No. 1	To ATM at safe location	Sump Vent
6400	Train 2	2T-6425 LNG Train CC Sump No. 1	To ATM at safe location	Sump Vent
6400	Train 1	1T-6426 LNG Train CC Sump No. 2	To ATM at safe location	Sump Vent
6400	Train 2	2T-6426 LNG Train CC Sump No. 2	To ATM at safe location	Sump Vent
0000	Train 1	AH101 Analyzer House	To ATM at safe location	Analyser vent
0000	Train 2	AH201 Analyzer House	To ATM at safe location	Analyser vent
1400	Train 1	1S-1403 A/B Two Stages Scrubbers	To ATM at safe location	Fuel gas scrubbers atmospheric vent (String 1)
1400	Train 1	1S-1410 A/B Two Stages Scrubbers	To ATM at safe location	Fuel gas scrubbers atmospheric vent (String 2)
1400	Train 2	2S-1403 A/B Two Stages Scrubbers	To ATM at safe location	Fuel gas scrubbers atmospheric vent (String 1)
1400	Train 2	2S-1410 A/B Two Stages Scrubbers	To ATM at safe location	Fuel gas scrubbers atmospheric vent (String 2)
1400	Train 1	114-UZV-1631-VO	To ATM at safe location	LMS100 Enclosure Fuel Gas Line Depressurization external vent (String 1)
1400	Train 1	114-UZV-2631-VO	To ATM at safe location	LMS100 Enclosure Fuel Gas Line Depressurization external vent (String 2)
1400	Train 2	214-UZV-1631-VO	To ATM at safe location	LMS100 Enclosure Fuel Gas Line Depressurization external vent (String 1)
1400	Train 2	214-UZV-2631-VO	To ATM at safe location	LMS100 Enclosure Fuel Gas Line Depressurization external vent (String 2)
1400	Train 1	114-UZV-1603-VO	To ATM at safe location	Overboard vent from Fuel Gas Shutoff Valve (String 1)
1400	Train 1	114-UZV-2603-VO	To ATM at safe location	Overboard vent from Fuel Gas Shutoff Valve (String 2)
1400	Train 2	214-UZV-1603-VO	To ATM at safe location	Overboard vent from Fuel Gas Shutoff Valve (String 1)
1400	Train 2	214-UZV-2603-VO	To ATM at safe location	Overboard vent from Fuel Gas Shutoff Valve (String 2)
1400	Train 1	114-UZ-1605-VS	To ATM at safe location	LMS100 Enclosure Fuel Gas intervalve vent (String 1)

				INPUT
				Origin
Unit	Train 1 / Train 2 / Common	Equipment Tag From	Equipment Tag To	Description
1400	Train 1	114-UZ-2605-VS	To ATM at safe location	LMS100 Enclosure Fuel Gas intervalve vent (String 2)
1400	Train 2	214-UZ-1605-VS	To ATM at safe location	LMS100 Enclosure Fuel Gas intervalve vent (String 1)
1400	Train 2	214-UZ-2605-VS	To ATM at safe location	LMS100 Enclosure Fuel Gas intervalve vent (String 2)
1400	Train 1	114-UZ-1606-VS	To ATM at safe location	LMS100 Enclosure Fuel Gas intervalve vent (String 1)
1400	Train 1	114-UZ-2606-VS	To ATM at safe location	LMS100 Enclosure Fuel Gas intervalve vent (String 2)
1400	Train 2	214-UZ-1606-VS	To ATM at safe location	LMS100 Enclosure Fuel Gas intervalve vent (String 1)
1400	Train 2	214-UZ-2606-VS	To ATM at safe location	LMS100 Enclosure Fuel Gas intervalve vent (String 2)
1400	Train 1	114-UZ-1641-VS	To ATM at safe location	LMS100 Fuel Gas Manifold Emergency Venting (String 1)
1400	Train 1	114-UZ-2641-VS	To ATM at safe location	LMS100 Fuel Gas Manifold Emergency Venting (String 2)
1400	Train 2	214-UZ-1641-VS	To ATM at safe location	LMS100 Fuel Gas Manifold Emergency Venting (String 1)
1400	Train 2	214-UZ-2641-VS	To ATM at safe location	LMS100 Fuel Gas Manifold Emergency Venting (String 2)
1400	Train 1	114-UZ-1642-VS	To ATM at safe location	LMS100 Fuel Gas Manifold Emergency Venting (String 1)
1400	Train 1	114-UZ-2642-VS	To ATM at safe location	LMS100 Fuel Gas Manifold Emergency Venting (String 2)
1400	Train 2	214-UZ-1642-VS	To ATM at safe location	LMS100 Fuel Gas Manifold Emergency Venting (String 1)
1400	Train 2	214-UZ-2642-VS	To ATM at safe location	LMS100 Fuel Gas Manifold Emergency Venting (String 2)
1400	Train 1	114PRV-707	To ATM at safe location	Sample Probe PRV discharge (String 1)
1400	Train 1	114PRV-827	To ATM at safe location	Sample Probe PRV discharge (String 2)
1400	Train 2	214PRV-707	To ATM at safe location	Sample Probe PRV discharge (String 1)
1400	Train 2	214PRV-827	To ATM at safe location	Sample Probe PRV discharge (String 2)
1400	Train 1	114PRV-713	To ATM at safe location	Sample Probe PRV discharge (String 1)
1400	Train 1	114PRV-833	To ATM at safe location	Sample Probe PRV discharge (String 2)
1400	Train 2	214PRV-713	To ATM at safe location	Sample Probe PRV discharge (String 1)
1400	Train 2	214PRV-833	To ATM at safe location	Sample Probe PRV discharge (String 2)
1400	Train 1	114PRV-717	To ATM at safe location	Sample Probe PRV discharge (String 1)
1400	Train 1	114PRV-837	To ATM at safe location	Sample Probe PRV discharge (String 2)
1400	Train 2	214PRV-717	To ATM at safe location	Sample Probe PRV discharge (String 1)
1400	Train 2	214PRV-837	To ATM at safe location	Sample Probe PRV discharge (String 2)
1400	Train 1	114PRV-718	To ATM at safe location	Sample Probe PRV discharge (String 1)
1400	Train 1	114PRV-838	To ATM at safe location	Sample Probe PRV discharge (String 2)
1400	Train 2	214PRV-718	To ATM at safe location	Sample Probe PRV discharge (String 1)
1400	Train 2	214PRV-838	To ATM at safe location	Sample Probe PRV discharge (String 2)

				INPUT
				Origin
Unit	Train 1 / Train 2 / Common	Equipment Tag From	Equipment Tag To	Description
1400	Train 1	FG gas chromatograph unit #1	To ATM at safe location	Sample vent (String 1)
1400	Train 1	FG gas chromatograph unit #1	To ATM at safe location	Sample vent (String 2)
1400	Train 2	FG gas chromatograph unit #1	To ATM at safe location	Sample vent (String 1)
1400	Train 2	FG gas chromatograph unit #1	To ATM at safe location	Sample vent (String 2)
1400	Train 1	FG gas chromatograph unit #2	To ATM at safe location	Sample vent (String 1)
1400	Train 1	FG gas chromatograph unit #2	To ATM at safe location	Sample vent (String 2)
1400	Train 2	FG gas chromatograph unit #2	To ATM at safe location	Sample vent (String 1)
1400	Train 2	FG gas chromatograph unit #2	To ATM at safe location	Sample vent (String 2)
1400	Train 1	PSV for Calibration Gases	To ATM at safe location	Calibration Gas PRV discharge (String 1)
1400	Train 1	PSV for Calibration Gases	To ATM at safe location	Calibration Gas PRV discharge (String 2)
1400	Train 2	PSV for Calibration Gases	To ATM at safe location	Calibration Gas PRV discharge (String 1)
1400	Train 2	PSV for Calibration Gases	To ATM at safe location	Calibration Gas PRV discharge (String 2)
1400	Train 1	Wobbe index meter cabinet PSV and Calibration/Warm-up line vent	To ATM at safe location	Wobbe index meter cabinet PSV and sample line vent (String 1)
1400	Train 1	Wobbe index meter cabinet PSV and Calibration/Warm-up line vent	To ATM at safe location	Wobbe index meter cabinet PSV and sample line vent (String 2)
1400	Train 2	Wobbe index meter cabinet PSV and Calibration/Warm-up line vent	To ATM at safe location	Wobbe index meter cabinet PSV and sample line vent (String 1)
1400	Train 2	Wobbe index meter cabinet PSV and Calibration/Warm-up line vent	To ATM at safe location	Wobbe index meter cabinet PSV and sample line vent (String 2)
1400	Train 1	Turbine skid vent	To ATM at safe location	Gas Turbine overflows and cavities tell-tale drain system vent (String 1)
1400	Train 1	Turbine skid vent	To ATM at safe location	Gas Turbine overflows and cavities tell-tale drain system vent (String 2)
1400	Train 2	Turbine skid vent	To ATM at safe location	Gas Turbine overflows and cavities tell-tale drain system vent (String 1)
1400	Train 2	Turbine skid vent	To ATM at safe location	Gas Turbine overflows and cavities tell-tale drain system vent (String 2)
1400	Train 1	1S-1419 Roof Skid Demister	To ATM at safe location	SLO Demister vent (String 1)
1400	Train 1	1S-1435 Roof Skid Demister	To ATM at safe location	SLO Demister vent (String 2)
1400	Train 2	2S-1419 Roof Skid Demister	To ATM at safe location	SLO Demister vent (String 1)

				INPUT
				Origin
Unit	Train 1 / Train 2 / Common	Equipment Tag From	Equipment Tag To	Description
1400	Train 2	2S-1435 Roof Skid Demister	To ATM at safe location	SLO Demister vent (String 2)
1400	Train 1	1K-1429A/B Synthetic Oil Mist Eliminator Extractor Fans	To ATM at safe location	Oil mist eliminator extractor fans (String 1)
1400	Train 1	1K-1441A/B Synthetic Oil Mist Eliminator Extractor Fans	To ATM at safe location	Oil mist eliminator extractor fans (String 2)
1400	Train 2	2K-1429A/B Synthetic Oil Mist Eliminator Extractor Fans	To ATM at safe location	Oil mist eliminator extractor fans (String 1)
1400	Train 2	2K-1441A/B Synthetic Oil Mist Eliminator Extractor Fans	To ATM at safe location	Oil mist eliminator extractor fans (String 2)
1400	Train 1	1S-1404A/B Mineral Oil Vapor Separator	To ATM at safe location	Oil mist eliminator fans (String 1)
1400	Train 1	1S-1411A/B Mineral Oil Vapor Separator	To ATM at safe location	Oil mist eliminator fans (String 2)
1400	Train 2	2S-1404A/B Mineral Oil Vapor Separator	To ATM at safe location	Oil mist eliminator fans (String 1)
1400	Train 2	2S-1411A/B Mineral Oil Vapor Separator	To ATM at safe location	Oil mist eliminator fans (String 2)
1400	Train 1	1S-1432A/B PMR Seal Gas Filters	To ATM at safe location	PMR Coalescer modular filter maintenance vent (String 1)
1400	Train 1	1S-1447A/B PMR Seal Gas Filters	To ATM at safe location	PMR Coalescer modular filter maintenance vent (String 2)
1400	Train 2	2S-1432A/B PMR Seal Gas Filters	To ATM at safe location	PMR Coalescer modular filter maintenance vent (String 1)
1400	Train 2	2S-1447A/B PMR Seal Gas Filters	To ATM at safe location	PMR Coalescer modular filter maintenance vent (String 2)
1400	Train 1	Instrument Manifold Vent (PMR Seal Gas System)	To ATM at safe location	Instrument Manifold vent for PMR Seal Gas system (String 1)
1400	Train 1	Instrument Manifold Vent (PMR Seal Gas System)	To ATM at safe location	Instrument Manifold vent for PMR Seal Gas system (String 2)
1400	Train 2	Instrument Manifold Vent (PMR Seal Gas System)	To ATM at safe location	Instrument Manifold vent for PMR Seal Gas system (String 1)
1400	Train 2	Instrument Manifold Vent (PMR Seal Gas System)	To ATM at safe location	Instrument Manifold vent for PMR Seal Gas system (String 2)
1400	Train 1	PMR Primary Vent Flare Bypass	To ATM at safe location	PMR Primary Vent Flare Bypass (String 1)
1400	Train 1	PMR Primary Vent Flare Bypass	To ATM at safe location	PMR Primary Vent Flare Bypass (String 2)
1400	Train 2	PMR Primary Vent Flare Bypass	To ATM at safe location	PMR Primary Vent Flare Bypass (String 1)
1400	Train 2	PMR Primary Vent Flare Bypass	To ATM at safe location	PMR Primary Vent Flare Bypass (String 2)
1400	Train 1	1S-1454A/B MR Seal Gas Filters	To ATM at safe location	MR Coalescer modular filter maintenance vent (String 1)
1400	Train 1	1S-1464A/B MR Seal Gas Filters	To ATM at safe location	MR Coalescer modular filter maintenance vent (String 2)
1400	Train 2	2S-1454A/B MR Seal Gas Filters	To ATM at safe location	MR Coalescer modular filter maintenance vent (String 1)
1400	Train 2	2S-1464A/B MR Seal Gas Filters	To ATM at safe location	MR Coalescer modular filter maintenance vent (String 2)
1400	Train 1	Instrument Manifold Vent (PMR Seal Gas System)	To ATM at safe location	Instrument Manifold vent for MR Seal Gas system (String 1)

				INPUT
				Origin
Unit	Train 1 / Train 2 / Common	Equipment Tag From	Equipment Tag To	Description
1400	Train 1	Instrument Manifold Vent (PMR Seal Gas System)	To ATM at safe location	Instrument Manifold vent for MR Seal Gas system (String 2)
1400	Train 2	Instrument Manifold Vent (PMR Seal Gas System)	To ATM at safe location	Instrument Manifold vent for MR Seal Gas system (String 1)
1400	Train 2	Instrument Manifold Vent (PMR Seal Gas System)	To ATM at safe location	Instrument Manifold vent for MR Seal Gas system (String 2)
1400	Train 1	MR Primary Vent Flare Bypass	To ATM at safe location	MR Primary Vent Flare Bypass (String 1)
1400	Train 1	MR Primary Vent Flare Bypass	To ATM at safe location	MR Primary Vent Flare Bypass (String 2)
1400	Train 2	MR Primary Vent Flare Bypass	To ATM at safe location	MR Primary Vent Flare Bypass (String 1)
1400	Train 2	MR Primary Vent Flare Bypass	To ATM at safe location	MR Primary Vent Flare Bypass (String 2)
1200	Train 1	1K-1201 Regeneration Gas Compressor	To ATM at safe location	Seal Gas Filter Vent
1200	Train 2	2K-1201 Regeneration Gas Compressor	To ATM at safe location	Seal Gas Filter Vent
1400	Train 1	114VV-0413	To ATM at safe location	Anti-ice system vent (String 1)
1400	Train 1	114VV-0813	To ATM at safe location	Anti-ice system vent (String 2)
1400	Train 2	214VV-0413	To ATM at safe location	Anti-ice system vent (String 1)
1400	Train 2	214VV-0813	To ATM at safe location	Anti-ice system vent (String 2)
1900	Train 1	119UZV-0312	To ATM at safe location	High point vent from fuel gas line
1900	Train 2	219UZV-0312	To ATM at safe location	High point vent from fuel gas line
1200	Train 1	1K-1201 Regeneration Gas Compressor	To ATM at safe location	Rupture disk on Lube Oil Tank
1200	Train 2	2K-1201 Regeneration Gas Compressor	To ATM at safe location	Rupture disk on Lube Oil Tank
1100	Train 1	111SC1-008	To ATM at safe location	High point vent from inert gas
1100	Train 2	211SC1-008	To ATM at safe location	High point vent from inert gas
1100	Train 1	111SC2-003	To ATM at safe location	Sampler Vent
1100	Train 2	211SC2-003	To ATM at safe location	Sampler Vent
1100	Train 2	211SC2-003	To ATM at safe location	Sampler Vent
1100	Train 1	111SC2-002	To ATM at safe location	Sampler Vent
1100	Train 2	211SC2-002	To ATM at safe location	Sampler Vent
1100	Train 1	111SC2-001	To ATM at safe location	Sampler Vent
1100	Train 2	211SC2-001	To ATM at safe location	Sampler Vent
1100	Train 1	111SC1-003	To ATM at safe location	Sampler Vent
1100	Train 2	211SC1-003	To ATM at safe location	Sampler Vent
2500	Common	0K-2501 LO / Bearing Vent	To ATM at safe location	L/O Bearing vent
2500	Common	0K-2501 Residue Vapours Compressor	To ATM at safe location	Secondary vent
3400	Common	0P-3403A LNG Drain Pumps	To ATM at safe location	Pump Maintenance Vent
3400	Common	0P-3403B LNG Drain Pumps	To ATM at safe location	Pump Maintenance Vent
3400	Common	0T-3101 LNG Storage Tank	To ATM at safe location	PRV Discharge (vent is after 034PRV-131U)

				INPUT
				Origin
Unit	Train 1 / Train 2 / Common	Equipment Tag From	Equipment Tag To	Description
3400	Common	0T-3101 LNG Storage Tank	To ATM at safe location	PRV Discharge (vent is after 034PRV-131A to 131Q)
3400	Common	0K-3401 LO / Bearing Vent	To ATM at safe location	L/O Bearing vent
3400	Common	0K-3402 LO / Bearing Vent	To ATM at safe location	L/O Bearing vent
3600	Common	0T-3301A Condensate Storage Tank	To ATM at safe location	PVV discharge (from 036PVV-101A)
3600	Common	0T-3301A Condensate Storage Tank	To ATM at safe location	PVV discharge (from 036PVV-101B)
3600	Common	Condensate Vapor Return Line	To ATM at safe location	036UZU-0352
3600	Common	Condensate Vapor Return Line	To ATM at safe location	PRV discharge (from 036PRV-001A)
3600	Common	0V-3601 Condensate Vapour Blower Suction Drum	To ATM at safe location	PRV discharge (from 036PRV-002A)
4200	Train 1	1E-4201A Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 1	1E-4201B Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 1	1E-4201C Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 1	1E-4201D Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 1	1E-4201E Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 1	1E-4201F Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 1	1E-4201G Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 1	1E-4201H Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 1	1E-4201J Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 1	1E-4201K Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 1	1E-4201L Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 1	1E-4201M Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 1	1E-4201N Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 1	1E-4201P Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 1	1E-4201R Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 1	1E-4201T Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 2	2E-4201A Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 2	2E-4201B Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 2	2E-4201C Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 2	2E-4201D Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 2	2E-4201E Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 2	2E-4201F Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 2	2E-4201G Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 2	2E-4201H Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 2	2E-4201J Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 2	2E-4201K Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 2	2E-4201L Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 2	2E-4201M Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 2	2E-4201N Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 2	2E-4201P Cooling Tower Cell	To ATM at safe location	Stand Pipe

				INPUT
				Origin
Unit	**Train 1 / Train 2 / Common**	**Equipment Tag From**	**Equipment Tag To**	**Description**
4200	Train 2	2E-4201R Cooling Tower Cell	To ATM at safe location	Stand Pipe
4200	Train 2	2E-4201T Cooling Tower Cell	To ATM at safe location	Stand Pipe
6400	Train 1	1T-6430 AGR Area AC Sump	To ATM at safe location	Sump Vent
6400	Train 2	2T-6430 AGR Area AC Sump	To ATM at safe location	Sump Vent
3600	Common	Rail Truck	To ATM at safe location	Rail car internal volume venting prior to fitting filling nozzle with level probe.