AIR POLLUTION CONTROL PERMIT TO CONSTRUCT

Permittee: **Name**: Cerilon GTL ND Inc. **Address**: First Canadian Centre 350 7th Avenue SW, Suite 2900 Calgary, Alberta T2P 3N9 Canada	**Permit Number**: ACP-18233 v 1.0 **Permit Description**: PSD Major; HAP Major; Future Title V
Source Name & Location: Cerilon GTL North Dakota Project 14781 42nd St NW Trenton, North Dakota 58853 Sec. 25 & 36, T153N, R103W Williams County	**Source Type**: Natural Gas to Liquids Processing Facility
Date of Application: May 10, 2024	

Pursuant to Chapter 23.1-06 of the North Dakota Century Code (NDCC), and the Air Pollution Control Rules of the State of North Dakota (Article 33.1-15 of the North Dakota Administrative Code or NDAC), and in reliance on statements and representations heretofore made by the permittee (i.e., owner) designated above, a Permit to Construct is hereby issued authorizing such permittee to construct and initially operate the source unit(s) at the location designated above. This Permit to Construct is subject to all applicable rules and orders now or hereafter in effect of the North Dakota Department of Environmental Quality (Department) and to any conditions specified below:

Date: _____

James L. Semerad
Director
Division of Air Quality

1. Project and Facility Emissions Units:

This Permit to Construct allows the construction and initial operation of the herein-mentioned new equipment at the source. The source may be operated under this Permit to Construct until a Permit to Operate is issued unless this permit is suspended or revoked. The source is subject to all applicable rules, regulations, and orders now or hereafter in effect of the North Dakota Department of Environmental Quality and to the conditions specified herein.

Table 1-1 lists the new emissions units associated with Phase 1 of the Project.

Table 1-2 lists the new emissions units associated with Phase 2 of the Project.

Emission units labeled as "EU 1-" are associated with Phase 1.

Emission units labeled as "EU 2-" are associated with Phase 2.

Table 1-1: Phase 1 Project Emissions Units

Emission Unit Description [A]	**Emission Unit (EU)**	**Emission Point (EP)**	**Air Pollution Control Equipment**
Package boiler rated 290 MMBtu/hr (NSPS Db) (MACT DDDDD)	1-B-01A	1-B-01	Ultra-low NO_X burners (ULNB) & selective catalytic reduction (SCR)
Package boiler rated 290 MMBtu/hr (NSPS Db) (MACT DDDDD)	1-B-01B		ULNB & SCR
Autothermal reformer (ATR) heater rated 590 MMBtu/hr (MACT DDDDD)	1-H-01	1-H-01	ULNB & SCR
Autothermal reformer (ATR) heater rated 590 MMBtu/hr (MACT DDDDD)	1-H-02	1-H-02	ULNB & SCR
Hydrotreating reaction heater rated 45 MMBtu/hr (MACT DDDDD)	1-H-03	1-H-03	ULNB
Hydrotreating fractionation heater rated 140 MMBtu/hr (MACT DDDDD)	1-H-04	1-H-04	ULNB
Base oil fractionation heater rated 45 MMBtu/hr (MACT DDDDD)	1-H-10	1-H-10	ULNB
Hydrotreating vacuum heater rated 17 MMBtu/hr (MACT DDDDD)	1-H-05	1-H-05	Low NO_X burners (LNB)
Hydrocracking reaction heater rated 12 MMBtu/hr (MACT DDDDD)	1-H-06	1-H-06	LNB
Diesel dewaxing reaction heater rated 22 MMBtu/hr (MACT DDDDD)	1-H-07	1-H-07	LNB
Diesel dewaxing product heater rated 24 MMBtu/hr (MACT DDDDD)	1-H-08	1-H-08	LNB

Emission Unit Description [A]	Emission Unit (EU)	Emission Point (EP)	Air Pollution Control Equipment
Base oil reaction heater rated 33 MMBtu/hr (MACT DDDDD)	1-H-09	1-H-09	LNB
Base oil vacuum heater rated 4 MMBtu/hr (MACT DDDDD)	1-H-11	1-H-11	LNB
High pressure (HP) flare (MACT FFFF)	1-FL-01A	1-FL-01	N/A
Low pressure (LP) flare (MACT FFFF)	1-FL-01B	1-FL-01	N/A
Fischer-Tropsch (FT) wax feed tank 52,480-bbl (NSPS Kc)	1-TK-01	1-TO-01	Closed vent system (CVS) & thermal oxidizer (TO) [B]
Wax slops tank 18,240-bbl (NSPS Kc)	1-TK-02	1-TO-01	CVS & TO [B]
FT light hydrocarbon condensate tank 74,000-bbl (NSPS Kc) (MACT FFFF Group 1 tank)	1-TK-03	1-TO-01	CVS & TO [B]
3,4 cSt waxy base oil feed tank 138,570-bbl	1-TK-04	1-TK-04	None
8 cSt base oil waxy feed tank 138,570-bbl	1-TK-05	1-TK-05	None
Naphtha & diesel rework tank 42,510-bbl (NSPS Kc) (MACT FFFF Group 1 tank)	1-TK-06	1-TO-01	CVS & TO [B]
Base oil rework tank 27,110-bbl	1-TK-07	1-TO-01	CVS & TO [B]
Slop tank 2,440-bbl (NSPS Kc) (MACT FFFF Group 1 tank)	1-TK-08	1-TO-01	CVS & TO [B]
Spare base oil tank 10,858-bbl	1-TK-09A	1-TO-01	CVS & TO [B]
Spare base oil tank 10,858-bbl	1-TK-09B	1-TO-01	CVS & TO [B]
On-site vehicle diesel refueling tank 11.9-bbl	1-TK-10	1-TK-10	None
Fire water pump diesel fuel storage tank 35.71-bbl	1-TK-11A	1-TK-11A	None
Fire water pump diesel fuel storage tank 35.71-bbl	1-TK-11B	1-TK-11B	None
Wastewater conveyance and treatment systems (MACT FFFF)	1-WW-01	1-TO-01	CVS & TO [B, G]
Thermal oxidizer rated 105 MMBtu/hr (NSPS Kc) (MACT FFFF)	1-TO-01	1-TO-01	N/A
Cooling tower (MACT FFFF) [C]	1-CT-01	1-CT-01	High-efficiency drift eliminators & MON exchanger monitoring & repair [D]

Emission Unit Description [A]	Emission Unit (EU)	Emission Point (EP)	Air Pollution Control Equipment
Emergency diesel generator rated 480 hp (NSPS IIII & MACT ZZZZ)	1-EG-01	1-EG-01	NSPS IIII compliant & ultra-low sulfur diesel (ULSD)
Emergency diesel generator rated 480 hp (NSPS IIII & MACT ZZZZ)	1-EG-02	1-EG-02	NSPS IIII compliant & ULSD
Emergency diesel generator rated 480 hp (NSPS IIII & MACT ZZZZ)	1-EG-03	1-EG-03	NSPS IIII compliant & ULSD
Emergency diesel generator rated 755 hp (NSPS IIII & MACT ZZZZ)	1-EG-04	1-EG-04	NSPS IIII compliant & ULSD
Emergency diesel generator rated 755 hp (NSPS IIII & MACT ZZZZ)	1-EG-05	1-EG-05	NSPS IIII compliant & ULSD
Emergency diesel generator rated 755 hp (NSPS IIII & MACT ZZZZ)	1-EG-06	1-EG-06	NSPS IIII compliant & ULSD
Emergency diesel fire water pump rated 249 hp (NSPS IIII & MACT ZZZZ)	1-FP-01	1-FP-01	NSPS IIII compliant & ULSD
Emergency diesel fire water pump rated 249 hp (NSPS IIII & MACT ZZZZ)	1-FP-02	1-FP-02	NSPS IIII compliant & ULSD
Fugitive piping components (MACT FFFF [E]) [F]	1-FUG-01	1-FUG-01	Leak detection and repair (LDAR) monitoring program & enhanced equipment design
Fugitive haul road emissions	1-FUG-02	1-FUG-02	Paving and fugitive dust control plan
Process CO_2 through carbon capture system	1-CO2-01	1-CO2-01	N/A

[A] All emission unit ratings are considered nominal ratings. All emission units are also subject to BACT, with the exception of EU 1-CO2-01.

[B] During normal operations vapors are routed to the closed vent system (CVS) for recovery and use as fuel gas. During CVS downtime vapors are combusted in the thermal oxidizer (EU 1-TO-01).

[C] The heat exchange systems associated with EU 1-CT-01 are subject to MACT FFFF, not the cooling tower itself.

[D] High-efficiency drift eliminators reduce PM emissions. Miscellaneous Organic NESHAP (MON) work practice standards reduce VOC emissions through implementation of a heat exchange system exchanger monitoring and repair program.

[E] Only components "in organic HAP service" are subject to MACT FFFF. Other components are required follow LDAR program per Condition 2.F.2 and 2.F.3.

[F] Fugitive components are also subject to BACT for VOC, CO, and GHGs. BACT for VOC is following NSPS VVb. BACT for CO and GHG is following 40 CFR Part 60 Appendix K.

Emission Unit Description [A]	Emission Unit (EU)	Emission Point (EP)	Air Pollution Control Equipment

[G] The steam stripper, API separator, and dissolved air flotation systems are controlled by the CVS and TO. Emissions from all other components of the wastewater conveyance and treatment systems will be controlled as required by 40 CFR 63.2485.

Table 1-2: Phase 2 Project Emissions Units

Emission Unit Description [A]	Emission Unit (EU)	Emission Point (EP)	Air Pollution Control Equipment
Package boiler rated 290 MMBtu/hr (NSPS Db) (MACT DDDDD)	2-B-01A	2-B-01	Ultra-low NO_X burners (ULNB) & selective catalytic reduction (SCR)
Package boiler rated 290 MMBtu/hr (NSPS Db) (MACT DDDDD)	2-B-01B		ULNB & SCR
Autothermal reformer (ATR) heater rated 590 MMBtu/hr (MACT DDDDD)	2-H-01	2-H-01	ULNB & SCR
Autothermal reformer (ATR) heater rated 590 MMBtu/hr (MACT DDDDD)	2-H-02	2-H-02	ULNB & SCR
Hydrotreating reaction heater rated 45 MMBtu/hr (MACT DDDDD)	2-H-03	2-H-03	ULNB
Hydrotreating fractionation heater rated 140 MMBtu/hr (MACT DDDDD)	2-H-04	2-H-04	ULNB
Base oil fractionation heater rated 45 MMBtu/hr (MACT DDDDD)	2-H-10	2-H-10	ULNB
Hydrotreating vacuum heater rated 17 MMBtu/hr (MACT DDDDD)	2-H-05	2-H-05	Low NO_X burners (LNB)
Hydrocracking reaction heater rated 12 MMBtu/hr (MACT DDDDD)	2-H-06	2-H-06	LNB
Diesel dewaxing reaction heater rated 22 MMBtu/hr (MACT DDDDD)	2-H-07	2-H-07	LNB
Diesel dewaxing product heater rated 24 MMBtu/hr (MACT DDDDD)	2-H-08	2-H-08	LNB
Base oil reaction heater rated 33 MMBtu/hr (MACT DDDDD)	2-H-09	2-H-09	LNB
Base oil vacuum heater rated 4 MMBtu/hr (MACT DDDDD)	2-H-11	2-H-11	LNB
High pressure (HP) flare (MACT FFFF)	2-FL-01A	2-FL-01	N/A
Low pressure (LP) flare (MACT FFFF)	2-FL-01B	2-FL-01	N/A

Emission Unit Description [A]	Emission Unit (EU)	Emission Point (EP)	Air Pollution Control Equipment
Fischer-Tropsch (FT) wax feed tank 52,480-bbl (NSPS Kc)	2-TK-01	2-TO-01	Closed vent system (CVS) & thermal oxidizer (TO) [B]
Wax slops tank 18,240-bbl (NSPS Kc)	2-TK-02	2-TO-01	CVS & TO [B]
FT light hydrocarbon condensate tank 74,000-bbl (NSPS Kc) (MACT FFFF Group 1 tank)	2-TK-03	2-TO-01	CVS & TO [B]
3,4 cSt waxy base oil feed tank 138,570-bbl	2-TK-04	2-TK-04	None
8 cSt base oil waxy feed tank 138,570-bbl	2-TK-05	2-TK-05	None
Naphtha & diesel rework tank 42,510-bbl (NSPS Kc) (MACT FFFF Group 1 tank)	2-TK-06	2-TO-01	CVS & TO [B]
Base oil rework tank 27,110-bbl	2-TK-07	2-TO-01	CVS & TO [B]
Slop tank 2,440-bbl (NSPS Kc) (MACT FFFF Group 1 tank)	2-TK-08	2-TO-01	CVS & TO [B]
Spare base oil tank 10,858-bbl	2-TK-09A	2-TO-01	CVS & TO [B]
Spare base oil tank 10,858-bbl	2-TK-09B	2-TO-01	CVS & TO [B]
On-site vehicle diesel refueling tank 11.9-bbl	2-TK-10	2-TK-10	None
Wastewater conveyance and treatment systems (MACT FFFF)	2-WW-01	2-TO-01	CVS & TO [B, G]
Thermal oxidizer rated 105 MMBtu/hr (NSPS Kc) (MACT FFFF)	2-TO-01	2-TO-01	N/A
Cooling tower (MACT FFFF) [C]	2-CT-01	2-CT-01	High-efficiency drift eliminators & MON exchanger monitoring & repair [D]
Emergency diesel generator rated 480 hp (NSPS IIII & MACT ZZZZ)	2-EG-01	2-EG-01	NSPS IIII compliant & ultra-low sulfur diesel (ULSD)
Emergency diesel generator rated 480 hp (NSPS IIII & MACT ZZZZ)	2-EG-02	2-EG-02	NSPS IIII compliant & ULSD
Emergency diesel generator rated 480 hp (NSPS IIII & MACT ZZZZ)	2-EG-03	2-EG-03	NSPS IIII compliant & ULSD
Emergency diesel generator rated 755 hp (NSPS IIII & MACT ZZZZ)	2-EG-04	2-EG-04	NSPS IIII compliant & ULSD
Emergency diesel generator rated 755 hp (NSPS IIII & MACT ZZZZ)	2-EG-05	2-EG-05	NSPS IIII compliant & ULSD

Emission Unit Description [A]	Emission Unit (EU)	Emission Point (EP)	Air Pollution Control Equipment
Emergency diesel generator rated 755 hp (NSPS IIII & MACT ZZZZ)	2-EG-06	2-EG-06	NSPS IIII compliant & ULSD
Fugitive piping components (MACT FFFF [E]) [F]	2-FUG-01	2-FUG-01	Leak detection and repair (LDAR) monitoring program & enhanced equipment design
Fugitive haul road emissions	2-FUG-02	2-FUG-02	Paving and fugitive dust control plan
Process CO_2 through carbon capture system	2-CO2-01	2-CO2-01	N/A

[A] All emission unit ratings are considered nominal ratings. All emission units are also subject to BACT, with the exception of EU 2-CO2-01.

B During normal operations vapors are routed to the closed vent system (CVS) for recovery and use as fuel gas. During CVS downtime vapors are combusted in the thermal oxidizer (EU 2-TO-01).

[C] The heat exchange systems associated with EU 2-CT-01 are subject to MACT FFFF, not the cooling tower itself.

[D] High-efficiency drift eliminators reduce PM emissions. Miscellaneous Organic NESHAP (MON) work practice standards reduce VOC emissions through implementation of a heat exchange system exchanger monitoring and repair program.

[E] Only components "in organic HAP service" are subject to MACT FFFF. Other components are required follow LDAR program per Condition 2.F.2 and 2.F.3.

[F] Fugitive components are also subject to BACT for VOC, CO, and GHGs. BACT for VOC is following NSPS VVb. BACT for CO and GHG is following 40 CFR Part 60 Appendix K.

[G] The steam stripper, API separator, and dissolved air flotation systems are controlled by the CVS and TO. Emissions from all other components of the wastewater conveyance and treatment systems will be controlled as required by 40 CFR 63.2485.

2. Applicable Standards, Restrictions and Miscellaneous Conditions:

A. New Source Performance Standards (NSPS):

The permittee shall comply with all applicable requirements of the following NSPS subparts, in addition to Subpart A, as referenced in Chapter 33.1-15-12 of the North Dakota Air Pollution Control Rules and 40 CFR 60.

1) Subpart Db – Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units (EUs 1-B-01A, 1-B-01B, 2-B-01A, & 2-B-01B)

2) Subpart Kc – Standards of Performance for Volatile Organic Liquid Storage

Vessels (Including Petroleum Liquid Storage Vessels) for Which Construction, Reconstruction, or Modification Commenced After October 4, 2023 (EUs 1-TK-01, 1-TK-02, 1-TK-03, 1-TK-06, 1-TK-08, 2-TK-01, 2-TK-02, 2-TK-03, 2-TK-06, & 2-TK-08)

3) Subpart IIII – Standards of Performance for Stationary Compression Ignition Internal Combustion Engines (EUs 1-EG-01 through 1-EG-06, 1-FP-01, 1-FP-02, & 2-EG-01 through 2-EG-06)

B. National Emissions Standards for Hazardous Air Pollutants (NESHAP):

The permittee shall comply with all applicable requirements of the following NESHAP subparts, in addition to Subpart A, as referenced in Chapter 33.1-15-13 of the North Dakota Air Pollution Control Rules and 40 CFR 61.

1) Subpart FF – National Emission Standard for Benzene Waste Operations (EUs 1-WW-01 & 2-WW-01)

C. National Emissions Standards for Hazardous Air Pollutants (NESHAP) for Source Categories/Maximum Achievable Control Technology (MACT):

The permittee shall comply with all applicable requirements of the following MACT subparts, in addition to Subpart A, as referenced in Chapter 33.1-15-22 of the North Dakota Air Pollution Control Rules and 40 CFR 63.

1) MACT FFFF – National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing

a) Equipment leaks in organic HAP service: 1-FUG-01 & 2-FUG-01

b) Pressure relief devices (PRDs) in organic HAP service routed to flares: EUs 1-FL-01A, 1-FL-01B, 2-FL-01A, & 2-FL-01B

c) Heat exchange systems in organic HAP service for EUs 1-CT-01 & 2-CT-01

d) Group 1 storage tanks: EUs 1-TK-03, 1-TK-06, 1-TK-08, 2-TK-03, 2-TK-06, & 2-TK-08:

1] Emissions shall be routed to the closed vent system (CVS) and back-up thermal oxidizers (EUs 1-TO-01 & 2-TO-01).

e) Group 1 and 2 wastewater streams routed to the wastewater conveyance and treatment systems: EUs 1-WW-01 & 2-WW-01

1] Waste management units that manage group 1 wastewater streams shall meet the emission control requirements of 40 CFR 63.2485.

2] Emissions from the steam strippers, API separators, and

dissolved air flotation units within the wastewater conveyance and treatment systems shall be routed to the closed vent system (CVS) and back-up thermal oxidizers (EUs 1-TO-01 & 2-TO-01).

2) MACT ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines (EUs 1-EG-01 through 1-EG-06, 1-FP-01, 1-FP-02, & 2-EG-01 through 2-EG-06)

3) MACT DDDDD – National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters (EUs 1-B-01A, 1-B-01B, 2-B-01A, 2-B-01B, 1-H-01 through 1-H-11, & 2-H-01 through 2-H-11)

D. Fuel Restrictions:

1) All fuel gas combustion devices, with an exception for the Autothermal Reformer (ATR) heaters (EUs 1-H01-01, 1-H01-02, 2-H01-01, & 2-H01-02), are restricted to combusting gaseous fuels containing no more than 40 parts per million by volume sulfur (ppmv) on a 365-day rolling average (r.a.). The permittee shall use detector tubes following the "Gas Processors Association Standard 2377-86" or "ASTM D4810-88", or an alternative methodology approved by the Department, to take daily grab samples to ensure compliance with this condition.[1] The permittee may submit a request for reduced sampling frequency, for the Department's approval, upon providing sufficient demonstration that the proposed frequency is sufficient to demonstrate compliance with the standard.

2) ATR heaters (EUs 1-H01-01, 1-H01-02, 2-H01-01, & 2-H01-02) are restricted to combusting inherently low sulfur gaseous fuels generated from process operations or pipeline quality natural gas containing no more than 2 grains of sulfur per 100 standard cubic feet (~32 ppmv).

3) All emergency engines are restricted to combusting ultra-low sulfur diesel (ULSD) fuel containing no more than 0.0015 percent sulfur by weight (15 ppmw).

E. Package Boilers Electrical Generating Units Net-Electric Sales Limitation:

Each package boiler (EUs 1-B-01A, 1-B-01B, 2-B-01A, & 2-B-01B) is limited in annual net-electric sales[2] to no more than 219,000 megawatt hours per year (MW-hr/yr) on a 12-month rolling total basis.

[1] 40 CFR 60.17(h)(174) and 40 CFR 60.17(m)(6) incorporate these standards by reference to determine H_2S in natural gas using length of stain tubes.

[2] 40 CFR 60.5580a "Net-Electric Sales".

The following equation shall be utilized to properly account for power generation attributable to each package boiler:

$$MWh_{Boiler} = MWh_{Total}\frac{Q_{Boiler}H_{Boiler}}{\sum Q_i H_i}$$

Where:

MWh_{Boiler} = The power generation attributable to a package boiler, MW-hr.

MWh_{Total} = The total power generated by the facility as determined from invoices of electricity sold, MW-hr.

Q_{Boiler} = Steam generated by a package boiler as determined by continuous monitoring on the inlet to the steam header (1,000 lbs).

H_{Boiler} = Enthalpy of steam generated by a package boiler as determined by reference steam tables or process modeling (Btu/1,000 lbs).

Q_i = Steam generated by a contributor to electricity generation in each facility as determined by continuous monitoring on the inlet to the steam header (1,000 lbs).

H_i = Enthalpy of steam generated by a contributor to electricity generation as determined by reference steam tables or process modeling (Btu/1,000 lbs).

i = A steam generator which contributes to electricity generation. These include the very high pressure (VHP) steam producers, high pressure (HP) steam producers, medium pressure (MP) steam producers, and package boilers that can contribute steam to the VHP and MP steam turbines. Steam producers that do not have a feasible pathway to contribute to electricity generation are excluded.

Due to the complexity of the steam and electricity generation systems, steam and electrical power generation monitoring is required. To accomplish this, the facility shall continuously monitor the steam production from all units and processes which contribute to the steam system and can feasibly contribute to the electrical generation system. Monitoring data of steam production and invoices of electricity generated by the facility and sold to the utility shall be kept for a period of five years.

Within 30 days of start-up of the first package boiler, the facility shall submit an operations, maintenance, and monitoring plan, which will be used to demonstrate compliance with this limitation. The plan shall identify each variable in the equation above and the data source(s) that contribute to them. Revisions to this plan shall be submitted 30 days prior to making substantive changes to the steam system design, maintenance procedures, monitoring methodologies, or calculation methodologies.

F. Leak Detection and Repair (LDAR) Program:

The permittee shall operate a leak detection and repair (LDAR) program to identify and repair leaks from equipment in a timely manner. Equipment which may generate fugitive emissions includes valves, pumps, compressors, connectors, pressure relief devices, and other miscellaneous equipment. Process streams at the facility contain fluids which are categorized into four areas: in volatile organic compound (VOC) service[3], in organic Hazardous Air Pollutant (HAP) service[4], in carbon monoxide (CO) service, and in methane (CH_4) service.[5] Each of these streams may contain fluids in gas/vapor service, light liquid service, and/or heavy liquid service.[6]

1) All equipment in organic HAP service shall comply with the MACT FFFF equipment leak requirements at 40 CFR 63.2480.

   Process units/streams expected to be in organic HAP service include: gas/vapor and light liquid equipment in the naphtha stabilizer, and light liquid equipment in the Fischer-Tropsch unit.

2) All equipment in VOC service, that is not in organic HAP service, shall comply with the NSPS VVb equipment leak standards of 40 CFR 60.482-1b through 60.483-2b.

   Process units/streams expected to be in VOC service include gas/vapor equipment in the fuel gas system, gas/vapor and heavy liquid equipment in the diesel dewaxing unit, gas/vapor and heavy liquid equipment in the base oil dewaxing and hydrofinishing unit, liquefied petroleum gas generated in various process units, and heavy liquid equipment in the Fischer-Tropsch unit.

   Note: gas/vapor and light liquid equipment in the naphtha stabilizer and light liquid equipment in the Fischer-Tropsch unit are both in organic HAP service and in VOC service. Compliance shall be demonstrated following MACT FFFF requirements.

3) All equipment in CO service and in CH_4 service, which is not in organic HAP service or in VOC service, shall follow the optical gas imaging (OGI) monitoring requirements of 40 CFR Part 60 Appendix K – Determination of Volatile Organic Compound and Greenhouse Gas Leaks Using Optical Gas Imaging.

[3] 40 CFR 60.481b "In VOC service"

[4] 40 CFR 63.2550 "In organic HAP service"

[5] "In CO service" and "in CH_4 service" are not currently defined by an EPA standard of performance regulation. For purposes of this permit and the source's applicability to the LDAR program, a stream containing at least 10% CO or CH_4 is considered "in CO service" or "in CH_4 service", respectively.

[6] 40 CFR 60.481b "In gas/vapor service", "In light liquid service", "In heavy liquid service"

Process units/streams expected to be in CO service and/or in CH_4 service include: gas/vapor equipment in the natural gas feed and treatment system *(in CH_4 service)*, gas/vapor equipment in the tail gas system *(in CO and CH_4 service)*, gas/vapor equipment in the liquefied petroleum gas unit *(in CO and CH_4 service)*, gas/vapor equipment in the ATR unit *(in CO service)*, and gas/vapor equipment in the Fischer-Tropsch unit *(in CO and CH_4 service)*.

Note: gas/vapor equipment in the fuel gas system is in VOC service, in CO service, and in CH_4 service. Compliance shall be demonstrated following NSPS VVb standards.

G. Closed Vent System (CVS) for Vapor Recovery and Thermal Oxidizer (TO), Design and Operational Requirements:

The CVS, vapor recovery unit (VRU), and TOs for the steam strippers, API separators, and dissolved air flotation units within the wastewater conveyance and treatment systems, and certain storage vessels are considered shared control devices for the purposes of NSPS Kc and MACT FFFF.

1) The permittee shall design the steam strippers, API separators, and dissolved air flotation units within the wastewater conveyance and treatment systems (EUs 1-WW-01 & 2-WW-01) and storage vessels containing volatile organic liquids (EUs 1-TK-01, 1-TK-02, 1-TK-03, 1-TK-06, 1-TK-07, 1-TK-08, 1-TK-09A, 1-TK-09B, 2-TK-01, 2-TK-02, 2-TK-03, 2-TK-06, 2-TK-07, 2-TK-08, 2-TK-09A, & 2-TK-09B) with a CVS and VRU which routes emissions to the fuel gas system for combustion (i.e., emissions control) in the fuel gas combustion devices.

   a) The storage vessels and wastewater equipment identified in Condition 2.G.1) must be designed and operated to route emissions through a closed vent system to the fuel gas system at all times the equipment is in-service without venting to the atmosphere. Any vacuum breaking device on the storage vessel must close while the storage vessel is still under vacuum of at least 0.1 inches of water (–0.0036 psig or –0.025 kPa gauge).

   b) The VRU must be designed and operated to maintain the pressure in each storage vessel or wastewater equipment below the venting pressure of that storage vessel.

   c) Each pressure relief device and vacuum breaking device on the controlled storage vessels, controlled wastewater equipment, and CVS must be equipped with a device(s) or use a monitoring system that is capable of identifying a pressure release, recording the time and duration of each pressure release, and notifying operators immediately that a pressure release is occurring. The device or

monitoring system must be either specific to the pressure relief device or vacuum breaking device itself or must be associated with each storage vessel or wastewater equipment to indicate a pressure release to the atmosphere. Examples of these types of devices and systems include, but are not limited to, a rupture disk indicator, magnetic sensor, motion detector on the pressure relief valve stem, flow monitor, or pressure monitor.

d) The closed vent system must be designed to collect all VOC vapors and gases discharged from the storage vessel and operated with no detectable emissions as indicated by an instrument reading of less than 500 parts per million by volume (ppmv) above background, as determined using annual Method 21 monitoring and quarterly visible, audible, and olfactory inspections for indication of leaks.

e) The fuel gas system or process must be operating at all times when emissions from an affected storage vessel or wastewater equipment are routed to it.

2) In the event of VRU malfunction or downtime, vapors shall be routed to the TOs (EUs 1-TO-01 & 2-TO-01) for emissions control.

a) The lines which bypass emissions from the fuel gas system to the TOs shall be equipped with properly installed, maintained, and operated flow indicators that are capable of taking readings at least once every 15 minutes. This monitoring will verify when emissions are routed to the TOs for emission control instead of the VRU.

b) TOs shall be designed and operated to reduce inlet VOC and organic HAP emissions by 98% or greater.

c) TOs shall be equipped with an interlock that will not allow CVS vapors to vent the TOs until the TOs are at the minimum combustion chamber temperature to ensure adequate destruction efficiency of the CVS vapors in the event of unplanned VRU downtime. The minimum combustion chamber temperature shall be established during the initial testing required by Condition 4.A, Table 4-1.

d) When necessary to operate the TOs during VRU downtime, all precautions shall be taken to minimize emissions and maintain compliance with the applicable ambient air quality standards as outlined in NDAC 33.1-15-02.

e) At all times, the TOs shall operate with no visible emissions except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

H. High Pressure (HP) and Low Pressure (LP) Flare Restrictions:

The HP flares (EUs 1-FL-01A & 2-FL-01A) and the LP flares (EUs 1-FL-01B & 2-FL-01B) shall be used to control vapors from pressure relief devices (PRDs) during start-up, shutdown, and emergency situations. Routing the PRDs to a control device satisfies the requirements of 40 CFR 63.2480(e)(4).

The permittee shall operate the PRD CVS and flare following the requirements of 40 CFR 63.982(b).

1) All PRDs shall be routed to the HP or LP flares.

2) The HP and LP flares shall comply with the provision of 40 CFR 63.11(b) and shall be operated at all times when emissions may be vented to them.

a) The HP and LP flares shall be designed for and operated with no visible emissions, except for periods not to exceed a total of 5 minutes during any 2 consecutive hours. Test Method 22 in Appendix A of Part 60 of this chapter shall be used to determine the compliance of flares with the visible emission provisions of this part. The observation period is 2 hours and shall be conducted according to Method 22.

b) The HP and LP flares shall be operated with a flame present at all times. The presence of a flare pilot flame shall be monitored using a thermocouple or any other equivalent device to detect the presence of a flame.

c) When necessary to operate the HP and LP flares during start-up, shutdown, and emergency situations, all precautions shall be taken to minimize emissions and maintain compliance with the applicable ambient air quality standards as outlined in NDAC 33.1-15-02.

I. Cooling Towers (EUs 1-CT-01 & 2-CT-01) and Heat Exchange Systems, Design and Operational Requirements:

1) Particulate matter ($PM/PM_{10}/PM_{2.5}$) emissions control: The cooling towers shall be equipped with and operated with mist eliminators that are guaranteed to limit drift to 0.0005% or less of the circulating flow.

2) VOC and HAP emissions control: Heat exchange systems for EUs 1-CT-01 & 2-CT-01 shall be monitored for leaks following the requirements of 40 CFR 63.2490(d).

J. Wastewater Conveyance and Treatment System Requirements:

1) The permittee shall maintain records of all wastewater streams, including identification of all Group 1 wastewater streams and Group 2 wastewater streams in accordance with MACT FFFF.

2) All Group 1 wastewater streams shall be routed through waste management units which meet the emission control and treatment standards of 40 CFR 63.2485.

a) Comply with the requirements of 40 CFR 63.132 through 63.148 and the requirements referenced therein, except as specified in 63.2485.

b) The steam strippers shall meet the specifications of 40 CFR 63.138(d).

K. Emergency Engines Operational Restriction:

For engines to be considered emergency stationary reciprocating internal combustion engines (RICE) under the RICE rules, engine operations must comply with the non-emergency operating hour limits as specified in 40 CFR 60, Subpart IIII. There is no time limit on the use of emergency stationary RICE in emergency situations. The potential to emit for an emergency stationary RICE is based on operating no more hours per year than is allowed by 40 CFR 60, Subpart IIII, except for emergency situations.

3. Emission Unit Limits:

Emission limits from the operation of the source unit(s) identified in Table 1-1 and Table 1-2 of this Permit to Construct (hereafter referred to as "permit") are as follows. Source units not listed are subject to the applicable emission limits specified in the North Dakota Air Pollution Control Rules.

Table 3-1: Permit Emissions Limits for Phase 1

Emission Unit Description	Emission Unit (EU)	Emission Point (EP)	Pollutant / Parameter	Emission Limit [A]
Package boilers	1-B-01A & 1-B-01B	1-B-01 [F]	NO_X	0.01 lb/MMBtu (30-day r.a.)
			CO	0.03 lb/MMBtu [B]
			SO_2	40 ppm H_2S fuel gas (365-day r.a.)
			$PM/PM_{10}/PM_{2.5}$	0.015 lb/MMBtu [B]
			VOC	0.005 lb/MMBtu [B]
			Net-Electric Sales	≤219,000 MW-hr/yr (12-month r.a.) Condition 2.E
			Opacity	20% [C]
Autothermal reformer heaters	1-H-01 & 1-H-02	1-H-01 & 1-H-02	NO_X	0.01 lb/MMBtu (30-day r.a.)
			CO	0.03 lb/MMBtu [B]
			SO_2	N/A [D]

Emission Unit Description	Emission Unit (EU)	Emission Point (EP)	Pollutant / Parameter	Emission Limit [A]
			$PM/PM_{10}/PM_{2.5}$	0.007 lb/MMBtu [B]
			VOC	0.005 lb/MMBtu [B]
			Opacity	20% [C]
Hydrotreating fractionation heater	1-H-04	1-H-04	NO_X	0.03 lb/MMBtu (30-day r.a.)
			CO	0.03 lb/MMBtu [B]
			SO_2	40 ppm H_2S fuel gas (365-day r.a.)
			$PM/PM_{10}/PM_{2.5}$	0.007 lb/MMBtu [B]
			VOC	0.005 lb/MMBtu [B]
			Opacity	20% [C]
Hydrotreating reaction heater & base oil fractionation feed heater	1-H-03 & 1-H-10	1-H-03 & 1-H-10	NO_X	0.03 lb/MMBtu [B]
			CO	0.03 lb/MMBtu [B]
			SO_2	40 ppm H_2S fuel gas (365-day r.a.)
			$PM/PM_{10}/PM_{2.5}$	0.007 lb/MMBtu [B]
			VOC	0.005 lb/MMBtu [B]
			Opacity	20% [C]
Hydrotreating vacuum heater, hydrocracking reaction heater, diesel dewaxing reaction heater, diesel dewaxing product heater, base oil reaction heater, & base oil vacuum heater	1-H-05, 1-H-06, 1-H-07, 1-H-08, 1-H-09, & 1-H-11	1-H-05, 1-H-06, 1-H-07, 1-H-08, 1-H-09, & 1-H-11	NO_X	0.04 lb/MMBtu [B]
			CO	0.03 lb/MMBtu [B]
			SO_2	40 ppm H_2S fuel gas (365-day r.a.)
			$PM/PM_{10}/PM_{2.5}$	0.007 lb/MMBtu [B]
			VOC	0.005 lb/MMBtu [B]
			Opacity	20% [C]
Thermal oxidizer	1-TO-01	1-TO-01	Design/Operation	Condition 2.G.2
			Opacity	0% [E]
Wastewater conveyance and treatment systems	1-WW-01	1-TO-01[G]	Design/Operation	Condition 2.G and Condition 2.J
Cooling tower	1-CT-01	1-CT-01	Design	Condition 2.I.1
			Operation	Condition 2.I.2
	1-FL-01A	1-FL-01	Design/Operation	Condition 2.H.2

Emission Unit Description	Emission Unit (EU)	Emission Point (EP)	Pollutant / Parameter	Emission Limit [A]
High pressure (HP) flare			Opacity	0% [E]
Low pressure (LP) flare	1-FL-01B	1-FL-01	Design/Operation Opacity	Condition 2.H.2 0% [E]
Equipment leaks	1-FUG-01	1-FUG-01	Operation	Condition 2.F
Haul roads	1-FUG-02	1-FUG-02	Operation	Condition 5.G
All diesel emergency generators & diesel emergency fire water pump engines	1-EG-01 through 1-EG-06, 1-FP-01, & 1-FP-02	1-EG-01 through 1-EG-06, 1-FP-01, & 1-FP-02	NO_X CO SO_2 $PM/PM_{10}/PM_{2.5}$ VOC Opacity Operation	4.0 g/kW-hr 3.5 g/kW-hr 15 ppmw sulfur in fuel 0.2 g/kW-hr 6.4 g/kW-hr 20% [C] Condition 2.K
Greenhouse Gases (GHGs) Facility Limit	Facility Wide	Facility Wide	CO_2e	2,132,213 tons per calendar year Condition 3.E.1

[A] Limits apply to each individual unit unless otherwise stated. Fuel gas combustion devices having a common source of fuel gas may be sampled at only one location if the location accurately represents the concentration of H_2S in the fuel gas being burned in the respective fuel gas combustion devices.

[B] Initial compliance demonstrated via emissions testing.

[C] 40% opacity is permissible for not more than one six-minute period per hour.

[D] Natural gas is used to start the production process. Once a sufficient supply of fuel gas is generated, the fuel gas, an inherently low sulfur fuel, will be used in the heaters.

[E] Except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

[F] The package boilers share a common stack. Each boiler is subject to the emission limits specified. Compliance will be determined for both boilers at the shared stack.

[G] The steam stripper, API separator, and dissolved air flotation systems are controlled by the CVS and TO. Emissions from all other components of the wastewater conveyance and treatment systems will be controlled as required by 40 CFR 63.2485.

Table 3-2: Permit Emissions Limits for Phase 2

Emission Unit Description	Emission Unit (EU)	Emission Point (EP)	Pollutant / Parameter	Emission Limit [A]
Package boilers	2-B-01A & 2-B-01B	2-B-01 [F]	NO_X	0.01 lb/MMBtu (30-day r.a.)
			CO	0.03 lb/MMBtu [B]
			SO_2	40 ppm H_2S fuel gas (365-day r.a.)
			$PM/PM_{10}/PM_{2.5}$	0.015 lb/MMBtu [B]
			VOC	0.005 lb/MMBtu [B]
			Net-Electric Sales	≤219,000 MW-hr/yr (12-month r.a.) Condition 2.E
			Opacity	20% [C]
Autothermal reformer heaters	2-H-01 & 2-H-02	2-H-01 & 2-H-02	NO_X	0.01 lb/MMBtu (30-day r.a.)
			CO	0.03 lb/MMBtu [B]
			SO_2	N/A [D]
			$PM/PM_{10}/PM_{2.5}$	0.007 lb/MMBtu [B]
			VOC	0.005 lb/MMBtu [B]
			Opacity	20% [C]
Hydrotreating fractionation heater	2-H-04	2-H-04	NO_X	0.03 lb/MMBtu (30-day r.a.)
			CO	0.03 lb/MMBtu [B]
			SO_2	40 ppm H_2S fuel gas (365-day r.a.)
			$PM/PM_{10}/PM_{2.5}$	0.007 lb/MMBtu [B]
			VOC	0.005 lb/MMBtu [B]
			Opacity	20% [C]
Hydrotreating reaction heater & base oil fractionation feed heater	2-H-03 & 2-H-10	2-H-03 & 2-H-10	NO_X	0.03 lb/MMBtu [B]
			CO	0.03 lb/MMBtu [B]
			SO_2	40 ppm H_2S fuel gas (365-day r.a.)
			$PM/PM_{10}/PM_{2.5}$	0.007 lb/MMBtu [B]
			VOC	0.005 lb/MMBtu [B]
			Opacity	20% [C]
Hydrotreating vacuum heater, hydrocracking	2-H-05, 2-H-06, 2-H-07,	2-H-05, 2-H-06, 2-H-07,	NO_X	0.04 lb/MMBtu [B]
			CO	0.03 lb/MMBtu [B]

Emission Unit Description	Emission Unit (EU)	Emission Point (EP)	Pollutant / Parameter	Emission Limit [A]
reaction heater, diesel dewaxing reaction heater, diesel dewaxing product heater, base oil reaction heater, & base oil vacuum heater	2-H-08, 2-H-09, & 2-H-11	2-H-08, 2-H-09, & 2-H-11	SO_2 $PM/PM_{10}/PM_{2.5}$ VOC Opacity	40 ppm H_2S fuel gas (365-day r.a.) 0.007 lb/MMBtu [B] 0.005 lb/MMBtu [B] 20% [C]
Thermal oxidizer	2-TO-01	2-TO-01	Design/Operation Opacity	Condition 2.G.2 0% [E]
Wastewater conveyance and treatment systems	2-WW-01	2-TO-01[G]	Design/Operation	Condition 2.G and Condition 2.J
Cooling tower	2-CT-01	2-CT-01	Design Operation	Condition 2.I.1 Condition 2.I.2
High pressure (HP) flare	2-FL-01A	2-FL-01	Design/Operation Opacity	Condition 2.H.2 0% [E]
Low pressure (LP) flare	2-FL-01B	2-FL-01	Design/Operation Opacity	Condition 2.H.2 0% [E]
Equipment leaks	2-FUG-01	2-FUG-01	Operation	Condition 2.F
Haul roads	2-FUG-02	2-FUG-02	Operation	Condition 5.G
All diesel emergency generators	2-EG-01 through 2-EG-06	2-EG-01 through 2-EG-06	NO_X CO SO_2 $PM/PM_{10}/PM_{2.5}$ VOC Opacity Operation	4.0 g/kW-hr 3.5 g/kW-hr 15 ppmw sulfur in fuel 0.2 g/kW-hr 6.4 g/kW-hr 20% [C] Condition 2.K
Greenhouse Gases (GHGs) Facility Limit	Facility Wide	Facility Wide	CO_2e	4,264,283 tons per calendar year Condition 3.E.2

[A] Limits apply to each individual unit unless otherwise stated. Fuel gas combustion devices having a common source of fuel gas may be sampled at only one location if the location accurately represents the concentration of H_2S in the fuel gas being burned in the respective fuel gas combustion devices.

Emission Unit Description	Emission Unit (EU)	Emission Point (EP)	Pollutant / Parameter	Emission Limit [A]

[B] Initial compliance demonstrated via emissions testing.

[C] 40% opacity is permissible for not more than one six-minute period per hour.

[D] Natural gas is used to start the production process. Once a sufficient supply of fuel gas is generated, the fuel gas, an inherently low sulfur fuel, will be used in the heaters.

[E] Except for periods not to exceed a total of 5 minutes during any 2 consecutive hours.

[F] The package boilers share a common stack. Each boiler is subject to the emission limits specified. Compliance will be determined for both boilers at the shared stack.

[G] The steam stripper, API separator, and dissolved air flotation systems are controlled by the CVS and TO. Emissions from all other components of the wastewater conveyance and treatment systems will be controlled as required by 40 CFR 63.2485.

The following limits apply for Phase 1 of the Project and are expected to apply for Phase 2 of the Project. Due to the phased construction of the Project, the Department is required to reevaluate the limits associated with Phase 2 no later than 18 months prior to commencement of construction of Phase 2. At such time, the permittee of the facility may be required to demonstrate the adequacy of any previous determination of the best available control technology (BACT) for Phase 2 of the Project.

A. NOx Emissions Limits:

1) EUs 1-B-01A, 1-B-01B, 1-H-01, 1-H-02, 2-B-01A, 2-B-01B, 2-H-01, & 2-H-02 shall not discharge to the atmosphere any emissions of NO_X in excess of 0.01 lb/MMBtu determined on a 30-day rolling average (r.a.) through operation of a continuous emissions monitoring system (CEMS).

2) EUs 1-H-04 & 2-H-04 shall not discharge to the atmosphere any emissions of NO_X in excess of 0.03 lb/MMBtu determined on a 30-day r.a. through operation of a CEMS.

3) EUs 1-H-03, 1-H-10, 2-H-03, & 2-H-10 shall not discharge to the atmosphere any emissions of NO_X in excess of 0.03 lb/MMBtu determined through initial compliance testing in accordance with Condition 4.A. Percent oxygen (O_2) shall be monitored during NO_X testing. The average percent O_2 observed during the most recent performance test shall become an operating limit which shall not be exceeded on a daily average basis. Future testing will be required twice per operating permit term separated by a period of at least 12 months.

4) EUs 1-H-05, 1-H-06, 1-H-07, 1-H-08, 1-H-09,1-H-11, 2-H-05, 2-H-06, 2-H-07, 2-H-08, 2-H-09, & 2-H-11 shall not discharge to the atmosphere any emissions of NO_X in excess of 0.04 lb/MMBtu determined through initial compliance testing in accordance with Condition 4.A. Future testing will be required once per operating permit term.

5) EUs 1-EG-01 through 1-EG-06, 1-FP-01, 1-FP-02, & 2-EG-01 through 2-EG-06 shall not discharge to the atmosphere any emissions of NO_X in excess of 4 grams per kilowatt-hour (g/kW-hr). Compliance will be demonstrated through the use of NSPS IIII compliant Tier 3 engines. Appropriate records shall be maintained.

B. CO Emissions Limits:

1) All fuel gas combustion devices (EUs 1-B-01A, 1-B-01B, 1-H-01 through 1-H-11, 2-B-01A, 2-B-01B, & 2-H-01 through 2-H-11) shall not discharge to the atmosphere any emissions of CO in excess of 0.03 lb/MMBtu determined through initial compliance testing in accordance with Condition 4.A. Future testing will be required once per operating permit term.

2) EUs 1-EG-01 through 1-EG-06, 1-FP-01, 1-FP-02, & 2-EG-01 through 2-EG-06 shall not discharge to the atmosphere any emissions of CO in excess of 3.5 g/kW-hr. Compliance will be demonstrated through the use of NSPS IIII compliant Tier 3 engines. Appropriate records shall be maintained.

C. $PM/PM_{10}/PM_{2.5}$ Emissions Limits:

1) Package boilers (EUs 1-B-01A, 1-B-01B, 2-B-01A, & 2-B-01B) shall not discharge to the atmosphere any emissions of $PM/PM_{10}/PM_{2.5}$ in excess of 0.015 lb/MMBtu determined through initial compliance testing in accordance with Condition 4.A. Future testing will be required once per operating permit term.

2) Fuel gas combustion devices (EUs 1-H-01 through 1-H-11 & 2-H-01 through 2-H-11) shall not discharge to the atmosphere any emissions of $PM/PM_{10}/PM_{2.5}$ in excess of 0.007 lb/MMBtu determined through initial compliance testing in accordance with Condition 4.A. Future testing will be required once per operating permit term.

3) EUs 1-EG-01 through 1-EG-06, 1-FP-01, 1-FP-02, & 2-EG-01 through 2-EG-06 shall not discharge to the atmosphere any emissions of $PM/PM_{10}/PM_{2.5}$ in excess of 0.2 g/kW-hr. Compliance will be demonstrated through the use of NSPS IIII compliant Tier 3 engines. Appropriate records shall be maintained.

D. VOC Emissions Limits:

1) All fuel gas combustion devices (EUs 1-B-01A, 1-B-01B, 1-H-01 through 1-H-11, 2-B-01A, 2-B-01B, & 2-H-01 through 2-H-11) shall not discharge to the atmosphere any emissions of VOC in excess of 0.005 lb/MMBtu determined through initial compliance testing in accordance with Condition 4.A. Future testing will be required once per operating permit term.

2) EUs 1-EG-01 through 1-EG-06, 1-FP-01, 1-FP-02, & 2-EG-01 through 2-EG-06 shall not discharge to the atmosphere any emissions of VOC in

excess of 6.4 g/kW-hr. Compliance will be demonstrated through the use of NSPS IIII compliant Tier 3 engines. Appropriate records shall be maintained.

E. GHG Facility Wide Limits:

The combustion of clean fuels in the form of natural gas and fuel gas has been determined to be BACT for GHGs. Combustion of clean fuels results in lower CO_2 emissions per unit of fuel combusted.

1) Phase 1 is limited to releasing 2,132,213 tons of carbon dioxide equivalent (CO_2e)[7] per calendar year.

2) Upon completion of Phase 2, the facility is limited to releasing 4,264,283 tons of CO_2e per calendar year.

3) The facility shall demonstrate compliance with the above limit following the procedures set forth in 40 CFR Part 98 – Mandatory Greenhouse Gas Reporting.[8]

4. Emission Testing Requirements:

A. Initial testing:

All initial testing will require a minimum of three runs, one hour each unless otherwise specified in a federal subpart.

Table 4-1: Initial Emissions Testing for Phase 1

Emission Unit Description	Emission Point (EP) [A]	Pollutant / Parameter	Method [B]
Package boilers	1-B-01	NO_X	Method 7E, Continuous emissions monitoring system (CEMS)
		CO	Method 10
		SO_2	H_2S fuel sampling [C]
		$PM/PM_{10}/PM_{2.5}$	Method 5 and Method 202 [D]
		VOC	Method 25A
		Opacity	Method 9 [E]
Autothermal reformer heaters	1-H-01 & 1-H-02	NO_X	Method 7E, CEMS
		CO	Method 10
		SO_2	N/A

[7] CO_2e is primarily comprised of CO_2, CH_4, and N_2O.
[8] See: https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-98?toc=1

Emission Unit Description	Emission Point (EP) [A]	Pollutant / Parameter	Method [B]
		$PM/PM_{10}/PM_{2.5}$	Method 5 and Method 202 [D]
		VOC	Method 25A
		Opacity	Method 9 [E]
Hydrotreating fractionation heater	1-H-04	NO_X	Method 7E, CEMS
		CO	Method 10
		SO_2	H_2S fuel sampling [C]
		$PM/PM_{10}/PM_{2.5}$	Method 5 and Method 202 [D]
		VOC	Method 25A
		Opacity	Method 9 [E]
Hydrotreating reaction heater & base oil fractionation feed heater	1-H-03 & 1-H-10	NO_X	Method 7E
		CO	Method 10
		SO_2	H_2S fuel sampling [C]
		$PM/PM_{10}/PM_{2.5}$	Method 5 and Method 202 [D]
		VOC	Method 25A
		Opacity	Method 9 [E]
Hydrotreating vacuum heater, hydrocracking reaction heater, diesel dewaxing reaction heater, diesel dewaxing product heater, base oil reaction heater, & base oil vacuum heater	1-H-05, 1-H-06, 1-H-07, 1-H-08, 1-H-09, & 1-H-11	NO_X	Method 7E [F]
		CO	Method 10 [F]
		SO_2	H_2S fuel sampling [C]
		$PM/PM_{10}/PM_{2.5}$	Method 5 and Method 202 [D, F]
		VOC	Method 25A [F]
		Opacity	Method 9 [E, F]
Thermal oxidizer	1-TO-01	Destruction Efficiency	Method 25A
HP flare	1-FL-01	Assessment	40 CFR 63.987(b) - Flare compliance assessment.
LP flare	1-FL-01	Assessment	40 CFR 63.987(b) - Flare compliance assessment.

[A] Testing requirement applies to each individual emission point unless otherwise stated.
[B] Equivalent reference methods approved by the Department may be used.
[C] Fuel gas combustion devices having a common source of fuel gas may be sampled at only one location if the location accurately represents the concentration of H_2S in the fuel gas being burned in the respective fuel gas combustion devices.
[D] Method 201A may be used if breakdown between $PM/PM_{10}/PM_{2.5}$ is desired.

Emission Unit Description	Emission Point (EP) [A]	Pollutant / Parameter	Method [B]

[E] Compliance with PM limit (Method 5/202 testing) may be used to demonstrate compliance with opacity limit.

[F] Compliance with the emission limits for 1-H-05, 1-H-06, 1-H-07, 1-H-08, 1-H-09, & 1-H-11 shall be demonstrated via testing of specific heaters which are representative of other heaters within the group (e.g., functionally similar burner design). The specific heaters to be tested must be identified in the notification required by Condition 4.A.2).

Table 4-2: Initial Emissions Testing for Phase 2

Emission Unit Description	Emission Point (EP) [A]	Pollutant / Parameter	Method [B]
Package boilers	2-B-01	NO_X	Method 7E, Continuous emissions monitoring system (CEMS)
		CO	Method 10
		SO_2	H_2S fuel sampling [C]
		$PM/PM_{10}/PM_{2.5}$	Method 5 and Method 202 [D]
		VOC	Method 25A
		Opacity	Method 9 [E]
Autothermal reformer heaters	2-H-01 & 2-H-02	NO_X	Method 7E, CEMS
		CO	Method 10
		SO_2	N/A
		$PM/PM_{10}/PM_{2.5}$	Method 5 and Method 202 [D]
		VOC	Method 25A
		Opacity	Method 9 [E]
Hydrotreating fractionation heater	2-H-04	NO_X	Method 7E, CEMS
		CO	Method 10
		SO_2	H_2S fuel sampling [C]
		$PM/PM_{10}/PM_{2.5}$	Method 5 and Method 202 [D]
		VOC	Method 25A
		Opacity	Method 9 [E]
Hydrotreating reaction heater & base oil fractionation feed heater	2-H-03 & 2-H-10	NO_X	Method 7E
		CO	Method 10
		SO_2	H_2S fuel sampling [C]
		$PM/PM_{10}/PM_{2.5}$	Method 5 and Method 202 [D]
		VOC	Method 25A

Emission Unit Description	Emission Point (EP) [A]	Pollutant / Parameter	Method [B]
		Opacity	Method 9 [E]
Hydrotreating vacuum heater, hydrocracking reaction heater, diesel dewaxing reaction heater, diesel dewaxing product heater, base oil reaction heater, & base oil vacuum heater	2-H-05, 2-H-06, 2-H-07, 2-H-08, 2-H-09, & 2-H-11	NO_X	Method 7E [F]
		CO	Method 10 [F]
		SO_2	H_2S fuel sampling [C]
		$PM/PM_{10}/PM_{2.5}$	Method 5 and Method 202 [D, F]
		VOC	Method 25A [F]
		Opacity	Method 9 [E, F]
Thermal oxidizer	2-TO-01	Destruction Efficiency	Method 25A
HP flare	2-FL-01	Assessment	40 CFR 63.987(b) - Flare compliance assessment.
LP flare	2-FL-01	Assessment	40 CFR 63.987(b) - Flare compliance assessment.

A Testing requirement applies to each individual emission point unless otherwise stated.

B Equivalent reference methods approved by the Department may be used.

C Fuel gas combustion devices having a common source of fuel gas may be sampled at only one location if the location accurately represents the concentration of H_2S in the fuel gas being burned in the respective fuel gas combustion devices.

D Method 201A may be used if breakdown between $PM/PM_{10}/PM_{2.5}$ is desired.

E Compliance with PM limit (Method 5/202 testing) may be used to demonstrate compliance with opacity limit.

F Compliance with the emission limits for 2-H-05, 2-H-06, 2-H-07, 2-H-08, 2-H-09, & 2-H-11 shall be demonstrated via testing of specific heaters which are representative of other heaters within the group (e.g., functionally similar burner design). The specific heaters to be tested must be identified in the notification required by Condition 4.A.2).

A signed copy of the test results shall be furnished to the Department within 60 days of the test date. The basis for this condition is NDAC 33.1-15-01-12, which is hereby incorporated into this permit by reference. To facilitate preparing for and conducting such tests and reporting the test results to the Department, the permittee shall follow the procedures and formats in the Department's Emission Testing Guideline.[9]

1) Test:

[9] See February 7, 2020, North Dakota Department of Environmental Quality Division of Air Quality Emissions Testing Guidelines. Available at: https://www.deq.nd.gov/publications/AQ/policy/PC/Emission_Testing_Guide.pdf

Within 180 days after initial startup[10], the permittee shall conduct emissions tests at the emission units listed in Table 4-1 and Table 4-2 using an independent testing firm to determine the compliance status of the facility with respect to the emission limits specified in Table 3-1 and Table 3-2. Emissions testing shall be conducted for the pollutant(s) listed above in accordance with EPA Reference Methods listed in 40 CFR 60, Appendix A. Test methods other than those listed above may be used upon approval by the Department.

2) Notification:

The permittee shall notify the Department using the form in the Emission Testing Guideline, or its equivalent, at least 30 calendar days in advance of any tests of emissions of air contaminants required by the Department. If the permittee is unable to conduct the performance test on the scheduled date, the permittee shall notify the Department at least five days prior to the scheduled test date and coordinate a new test date with the Department.

3) Sampling Ports/Access:

Sampling ports shall be provided downstream of all emission control devices and in a flue, conduit, duct, stack, or chimney arranged to conduct emissions to the ambient air. The ports shall be located to allow for reliable sampling and shall be adequate for test methods applicable to the facility. Safe sampling platforms and safe access to the platforms shall be provided. Plans and specifications showing the size and location of the ports, platform, and utilities shall be submitted to the Department for review and approval.

4) Other:

a) The Department may require the permittee to have tests conducted to determine the emission of air contaminants from any source, whenever the Department has reason to believe that an emission of a contaminant not addressed by the permit applicant is occurring, or the emission of a contaminant in excess of that allowed by this permit is occurring. The Department may specify testing methods to be used in accordance with good professional practice. The Department may observe the testing. All tests shall be conducted by reputable, qualified personnel. A signed copy of the test results shall be furnished to the Department within 60 days of the test date.

All tests shall be made available, and the results calculated in accordance with test procedures approved by the Department. All tests shall be conducted under the direction of persons qualified by training or experience in the field of air pollution control as approved by the Department.

b) The Department may conduct tests of emissions of air contaminants

[10] With respect to startup of Phase 1 and of Phase 2.

from any source. Upon request of the Department, the permittee shall provide necessary holes in stacks or ducts and such other safe and proper sampling and testing facilities, exclusive of instruments and sensing devices, as may be necessary for proper determination of the emission of air contaminants.

B. Sampling and Testing:

The Department may require the permittee to conduct tests to determine the emission rate of air contaminants from the source. The Department may observe the testing and may specify testing methods to be used. A signed copy of the test results shall be furnished to the Department within 60 days of the test date. The basis for this condition is NDAC 33.1-15-01-12, which is hereby incorporated into this permit by reference. To facilitate preparing for and conducting such tests and reporting the test results to the Department, the permittee shall follow the procedures and formats in the Department's Emission Testing Guideline.

5. General Conditions (Equipment):

A. Best Management Practices:

At all times, including periods of startup, shutdown, and malfunction, the permittee shall, to the extent practicable, maintain and operate any affected facility, including associated air pollution control equipment, in a manner consistent with good air pollution control practices for minimizing emissions.

B. Operation of Air Pollution Control Equipment:

The permittee shall maintain and operate all air pollution control equipment in a manner consistent with good air pollution control practices for minimizing emissions.

C. Stack Heights:

Emissions shall be vented through stacks that meet the following height requirements. Stack heights may be no less than those listed in the table below without prior approval from the Department.

Table 5-1: Stack Heights

Phase 1		**Phase 2**	
Emission Point (EP)	**Stack Height (Feet)**	**Emission Point (EP)**	**Stack Height (Feet)**
1-B-01	98	2-B-01	98
1-H-01	98	1-H-02	98
2-H-01	98	2-H-02	98
1-H-03	50	2-H-03	50
1-H-04	75	2-H-04	75

Phase 1		Phase 2	
Emission Point (EP)	**Stack Height (Feet)**	**Emission Point (EP)**	**Stack Height (Feet)**
1-H-05	50	2-H-05	50
1-H-06	50	2-H-06	50
1-H-07	50	2-H-07	50
1-H-08	50	2-H-08	50
1-H-09	50	2-H-09	50
1-H-10	50	2-H-10	50
1-H-11	50	2-H-11	50
1-FL-01	250	2-FL-01	250
1-TO-01	100	2-TO-01	100

D. Like-Kind Engine Replacement:

This permit allows the permittee to replace an existing engine with a like-kind unit. Replacement is subject to the following conditions:

1) The Department must be notified within 10 days after change-out of the unit.

2) The replacement unit shall operate in the same manner, provide no increase in throughput, and have equal or less emissions than the unit it is replacing.

3) The date of manufacture of the replacement unit must be included in the notification. The facility must comply with any applicable federal standards (e.g., NSPS, MACT) triggered by the replacement.

4) The replacement unit is subject to the same state emission limits as the existing unit in addition to any NSPS or MACT emission limit that is applicable. Testing shall be conducted to confirm compliance with the emission limits within 180 days after start-up of the unit.

E. Organic Compound Emissions:

The permittee shall comply with all applicable requirements of NDAC 33.1-15-07 – Control of Organic Compounds Emissions.

F. Air Pollution from Internal Combustion Engines:

The permittee shall comply with all applicable requirements of NDAC 33.1-15-08-01 – Internal Combustion Engine Emissions Restricted.

G. Fugitive Emissions:

The release of fugitive emissions shall comply with the applicable requirements in NDAC 33.1-15-17. The permittee shall implement a fugitive dust control plan (FDCP) to minimize particulate emissions from facility haul roads.

6. General Conditions (Procedural):

A. Construction:

Construction of the above-described facility shall be in accordance with information provided in the permit application as well as any plans, specifications, and supporting data submitted to the Department. The Department shall be notified 10 days in advance of any significant deviations from the specifications furnished. The issuance of this Permit to Construct may be suspended or revoked if the Department determines that a significant deviation from the plans and specifications furnished has been or is to be made.

Any violation of a condition issued as part of this permit to construct, as well as any construction which proceeds in variance with any information submitted in the application, is regarded as a violation of construction authority and is subject to enforcement action.

B. Startup Notice:

A notification of the actual date of initial startup shall be submitted to the Department within 15 days after the date of initial startup. Independent start-up notices are required for Phase 1 and Phase 2.

C. Permit Invalidation:

This permit shall become invalid if construction is not commenced within 36 months after issuance of such permit, if construction is discontinued for a period of 18 months or more; or if construction is not completed within a reasonable time.

D. Source Operations:

Operations at the installation shall be in accordance with statements, representations, procedures, and supporting data contained in the initial application, as well as any supplemental information or application(s) submitted thereafter. Any operations not listed in this permit are subject to all applicable North Dakota Air Pollution Control Rules.

E. Alterations, Modifications, or Changes:

Any alteration, repairing, expansion, or change in the method of operation of the source which results in the emission of an additional type or greater amount of air contaminants or which results in an increase in the ambient concentration of any air contaminant must be reviewed and approved by the Department prior to the start of such alteration, repairing, expansion or change in the method of operation.

F. Title V Permit to Operate:

Within one year after startup of the units covered by this permit, the permittee shall submit a permit application for a Title V Permit to Operate for the facility.

G. Recordkeeping:

The permittee shall maintain any compliance monitoring records required by this permit or applicable requirements. The permittee shall retain records of all required monitoring data and support information for a period of at least five years from the date of the monitoring sample, measurement, report, or application. Support information may include all calibration and maintenance records and all original strip-chart recordings/computer printouts for continuous monitoring instrumentation, and copies of all reports required by the permit.

H. Annual Emission Inventory/Annual Production Reports:

The permittee shall submit an annual emission inventory report and/or an annual production report upon Department request, on forms supplied or approved by the Department.

I. Malfunction Notification:

The permittee shall notify the Department of any malfunction which can be expected to last longer than twenty-four hours and can cause the emission of air contaminants in violation of applicable rules and regulations.

J. Nuisance or Danger:

This permit shall in no way authorize the maintenance of a nuisance or a danger to public health or safety.

K. Transfer of Permit to Construct:

The holder of a permit to construct may not transfer such permit without prior approval from the Department.

L. Right of Entry:

Any duly authorized officer, employee, or agent of the North Dakota Department of Environmental Quality may enter and inspect any property, premise, or place at which the source listed in Condition 1 of this permit is located at any time for the purpose of ascertaining the state of compliance with the North Dakota Air Pollution Control Rules. The Department may conduct tests and take samples of air contaminants, fuel, processing material, and other materials which affect or may affect emissions of air contaminants from any source. The Department shall have the right to access and copy any records required by the Department's rules and to inspect monitoring equipment located on the premises.

M. Other Regulations:

The permittee of the source unit(s) described in Condition 1 of this permit shall comply with all applicable State and Federal environmental laws and rules. In addition, the permittee shall comply with all applicable local burning, fire, zoning, and other applicable ordinances, codes, rules, and regulations.

N. Permit Issuance:

This permit is issued in reliance upon the accuracy and completeness of the information set forth in the application. Notwithstanding the tentative nature of this information, the conditions of this permit herein become, upon the effective date of this permit, enforceable by the Department pursuant to any remedies it now has, or may in the future have, under the North Dakota Air Pollution Control Law, NDCC Chapter 23.1-06.

7. State Enforceable Only Conditions (not Federally enforceable)

A. Odor Restrictions:

The permittee shall not discharge into the ambient air any objectionable odorous air contaminant which is in excess of the limits established in NDAC 33.1-15-16.