AIR QUALITY EFFECTS ANALYSIS
FOR
PERMIT TO CONSTRUCT
ACP-18233 v1.0

Applicant:

Cerilon GTL ND Inc.
First Canadian Centre 350 7th Avenue SW, Suite 2900
Calgary, Alberta T2P 3N9
Canada

Facility Location:

Cerilon GTL North Dakota Project
14781 42nd St NW
Trenton, North Dakota 58853
Lat/Long: 48.03042666232021/-103.87404986719466
Sec. 25 & 36, T153N, R103W
Williams County

Introduction:

Cerilon GTL ND Inc. (Cerilon) submitted a permit to construct application to the North Dakota Department of Environmental Quality – Division of Air Quality (Department) on May 10, 2024. The application was for the construction of a new gas-to-liquid (GTL) processing facility (Cerilon GTL North Dakota Project or facility) to be located in Williams County, North Dakota.

The application was for the construction of two identical GTL plants to be located on the same site. The GTL plants will each have the capacity to convert 240 million standard cubic feet per day (scf/d) of natural gas to 24,000 barrels per day (bpd) of liquid hydrocarbons. Upon facility completion, both plants will result in a combined total of 480 million scf/d of natural gas to 48,000 bpd of liquid hydrocarbon products. The two GTL plants will each contain process equipment for converting natural gas to liquid hydrocarbons, electric energy generation resulting from excess heat and combusting off-gases from the conversion of natural gas to liquid hydrocarbons, and capture equipment for third-party off-site sequestration of CO_2.

The two GTL plants will be constructed in separate phases hereafter referred to as Phase 1 and Phase 2. Phase 1 will be constructed to produce ultra-low sulfur diesel (ULSD), naphtha, and Group III+ lubricant base oils. Phase 2 will be constructed with the same operations, emission sources, and capacity. The products of Phase 2 may be altered based on market conditions in the future.

Upon project completion, the facility will be a major source under federal New Source Review (NSR) Prevention of Significant Deterioration (PSD) regulations and under 40 CFR Part 63. The facility will also become a major source under the Title V Permit to Operate program.

Refer to ACP-18233 v1.0 Table 1-1 and Table 1-2 for complete list of the emission units (EUs), emission points (EPs), and air pollution control equipment associated with Phase 1 and Phase 2, respectively.

Facility Wide Emissions Profile
Potential to Emit (PTE)

Table 1 - Phase 1 PTE (tons per year) [A]

Emission Unit Description	Emission Unit (EU)	CO	NO_X	SO_2	VOCs	PM	PM_{10}	$PM_{2.5}$	Total HAPs	Highest Individual HAP (Hexane)
Package Boilers	1-B-01A & 1-B-01B	78.9	25.4	26.7	13.7	38.1	38.1	38.1	7.5	7.1
Autothermal Reformer Heaters	1-H-01 & 1-H-02	165.5	51.7	1.8	27.9	38.5	38.5	38.5	20.6	19.6
Hydrotreating Reaction Heater	1-H-03	6.1	5.9	2.1	1.1	1.5	1.5	1.5	0.6	0.3
Hydrotreating Fractionation Heater	1-H-04	19.0	18.4	6.4	3.3	4.6	4.6	4.6	1.8	1.7
Hydrotreating Vacuum Heater	1-H-05	2.3	3.0	0.8	0.4	0.6	0.6	0.6	0.2	0.2
Hydrocracking Reaction Heater	1-H-06	1.6	2.1	0.6	0.3	0.4	0.4	0.4	0.2	0.1
Diesel Dewaxing Reaction Heater	1-H-07	3.0	3.9	1.0	0.5	0.7	0.7	0.7	0.3	0.3
Diesel Dewaxing Product Heater	1-H-08	3.3	4.2	1.1	0.6	0.8	0.8	0.8	0.3	0.3
Base Oil Reaction Heater	1-H-09	4.5	5.8	1.5	0.8	1.1	1.1	1.1	0.4	0.4
Base Oil Fractionation Heater	1-H-10	6.1	5.9	2.1	1.1	1.5	1.5	1.5	0.6	0.6
Base Oil Vacuum Heater	1-H-11	0.5	0.7	0.2	0.1	0.1	0.1	0.1	0.1	0.0
High Pressure Flare	1-FL-01A	1,750.0	87.1	2.7	0.0	34.6	34.6	34.6	8.8	8.4
Low Pressure Flare	1-FL-01B	2.7	0.6	0.0	7.8	0.2	0.2	0.2	1.2	0.7
FT Wax Feed Tank	1-TK-01	-	-	-	TO [B]	-	-	-	-	-
Wax Slops Tank	1-TK-02	-	-	-	TO [B]	-	-	-	-	-
FT Condensate Tank	1-TK-03	-	-	-	TO [B]	-	-	-	-	-
3,4 cSt Waxy Base Oil Feed Tank	1-TK-04	-	-	-	0.2	-	-	-	-	-
8 cSt Base Oil Waxy Feed Tank	1-TK-05	-	-	-	0.2	-	-	-	-	-
Naphtha & Diesel Rework Tank	1-TK-06	-	-	-	TO [B]	-	-	-	-	-
Base Oil Rework Tank	1-TK-07	-	-	-	TO [B]	-	-	-	-	-
Slop Tank	1-TK-08	-	-	-	TO [B]	-	-	-	-	-

Emission Unit Description	Emission Unit (EU)	CO	NO_X	SO_2	VOCs	PM	PM_{10}	$PM_{2.5}$	Total HAPs	Highest Individual HAP (Hexane)
Spare Base Oil Tanks	1-TK-09A & 1-TK-09B	-	-	-	TO [B]	-	-	-	-	-
Vehicle Diesel Refueling Tank	1-TK-10	-	-	-	0.0	-	-	-	-	-
Fire Water Diesel Fuel Tanks	1-TK-11A & 1-TK-11B	-	-	-	0.0	-	-	-	-	-
Wastewater Treatment Plant	1-WW-01	-	-	0.0	3.3	-	-	-	1.7	0.0
Thermal Oxidizer	1-TO-01	29.6	27.6	0.3	7.8	3.4	3.4	3.4	2.9	0.8
Cooling Tower	1-CT-01	-	-	-	10.0	7.5	6.6	0.0	1.9	1.1
Emergency Generators	1-EG-0(1-6)	6.0	6.1	0.6	9.7	0.3	0.3	0.3	0.0	0.0
Emergency Firewater Pumps	1-FP-01/2	0.7	0.8	0.2	1.3	0.0	0.0	0.0	0.0	0.0
Fugitive Piping Components	1-FUG-01	26.7	-	-	204.3	-	-	-	2.7	0.0
Fugitive Haul Road Emissions	1-FUG-02	-	-	-	-	104.3	21.5	4.9	-	-
Total (without Fugitives):		**2,079.8**	**249.1**	**48.0**	**89.9**	**133.9**	**133.0**	**126.4**	**49.1**	**41.7**
Total (with Fugitives):		**2,106.5**	**249.1**	**48.0**	**294.2**	**238.2**	**154.5**	**131.3**	**51.8**	**41.7**

[A] Abbreviations:
PM: filterable and condensable particulate matter
$PM_{2.5}$: filterable and condensable particulate matter with an aerodynamic diameter less than or equal to 2.5 microns (≤2.5 μm)
PM_{10}: filterable and condensable particulate matter with an aerodynamic diameter less than or equal to 10 microns (≤10 μm) including $PM_{2.5}$
SO_2: sulfur dioxide
NO_X: oxides of nitrogen
CO: carbon monoxide
VOCs: volatile organic compounds
HAPs: hazardous air pollutants as defined in Section 112(b) of the Clean Air Act

[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).

Table 2 - Phase 2 PTE (tons per year) [A]

Emission Unit Description	Emission Unit (EU)	CO	NO_X	SO_2	VOCs	PM	PM_{10}	$PM_{2.5}$	Total HAPs	Highest Individual HAP (Hexane)
Package Boilers	2-B-01A & 2-B-01B	78.9	25.4	26.7	13.7	38.1	38.1	38.1	7.5	7.1
Autothermal Reformer Heaters	2-H-01 & 2-H-02	165.5	51.7	1.8	27.9	38.5	38.5	38.5	20.6	19.6
Hydrotreating Reaction Heater	2-H-03	6.1	5.9	2.1	1.1	1.5	1.5	1.5	0.6	0.3
Hydrotreating Fractionation Heater	2-H-04	19.0	18.4	6.4	3.3	4.6	4.6	4.6	1.8	1.7
Hydrotreating Vacuum Heater	2-H-05	2.3	3.0	0.8	0.4	0.6	0.6	0.6	0.2	0.2
Hydrocracking Reaction Heater	2-H-06	1.6	2.1	0.6	0.3	0.4	0.4	0.4	0.2	0.1
Diesel Dewaxing Reaction Heater	2-H-07	3.0	3.9	1.0	0.5	0.7	0.7	0.7	0.3	0.3
Diesel Dewaxing Product Heater	2-H-08	3.3	4.2	1.1	0.6	0.8	0.8	0.8	0.3	0.3
Base Oil Reaction Heater	2-H-09	4.5	5.8	1.5	0.8	1.1	1.1	1.1	0.4	0.4
Base Oil Fractionation Heater	2-H-10	6.1	5.9	2.1	1.1	1.5	1.5	1.5	0.6	0.6
Base Oil Vacuum Heater	2-H-11	0.5	0.7	0.2	0.1	0.1	0.1	0.1	0.1	0.0
High Pressure Flare	2-FL-01A	1,750.0	87.1	2.7	0.0	34.6	34.6	34.6	8.8	8.4
Low Pressure Flare	2-FL-01B	2.7	0.6	0.0	7.8	0.2	0.2	0.2	1.2	0.7
FT Wax Feed Tank	2-TK-01	-	-	-	TO [B]	-	-	-	-	-
Wax Slops Tank	2-TK-02	-	-	-	TO [B]	-	-	-	-	-
FT Condensate Tank	2-TK-03	-	-	-	TO [B]	-	-	-	-	-
3,4 cSt Waxy Base Oil Feed Tank	2-TK-04	-	-	-	0.2	-	-	-	-	-
8 cSt Base Oil Waxy Feed Tank	2-TK-05	-	-	-	0.2	-	-	-	-	-
Naphtha & Diesel Rework Tank	2-TK-06	-	-	-	TO [B]	-	-	-	-	-
Base Oil Rework Tank	2-TK-07	-	-	-	TO [B]	-	-	-	-	-
Slop Tank	2-TK-08	-	-	-	TO [B]	-	-	-	-	-

Emission Unit Description	Emission Unit (EU)	CO	NO_X	SO_2	VOCs	PM	PM_{10}	$PM_{2.5}$	Total HAPs	Highest Individual HAP (Hexane)
Spare Base Oil Tanks	2-TK-09A & 2-TK-09B	-	-	-	TO [B]	-	-	-	-	-
Vehicle Diesel Refueling Tank	2-TK-10	-	-	-	0.0	-	-	-	-	-
Wastewater Treatment Plant	2-WW-01	-	-	0.0	3.3	-			1.7	0.0
Thermal Oxidizer	2-TO-01	29.6	27.6	0.3	7.8	3.4	3.4	3.4	2.9	0.8
Cooling Tower	2-CT-01	-	-	-	10.0	7.5	6.6	0.0	1.9	1.1
Emergency Generators	2-EG-0(1-6)	6.0	6.1	0.6	9.7	0.3	0.3	0.3	0.0	0.0
Fugitive Piping Components	2-FUG-01	26.7	-	-	204.3	-	-	-	2.7	0.0
Fugitive Haul Road Emissions	2-FUG-02	-	-	-	-	51.3	9.6	2.8	-	-
Total (without Fugitives):		**2,079.1**	**248.3**	**47.9**	**88.6**	**133.8**	**132.9**	**126.4**	**49.1**	**41.7**
Total (with Fugitives):		**2,105.8**	**248.3**	**47.9**	**292.9**	**185.1**	**142.5**	**129.1**	**51.8**	**41.7**

[A] Abbreviations:
PM: filterable and condensable particulate matter
$PM_{2.5}$: filterable and condensable particulate matter with an aerodynamic diameter less than or equal to 2.5 microns (≤2.5 μm)
PM_{10}: filterable and condensable particulate matter with an aerodynamic diameter less than or equal to 10 microns (≤10 μm) including $PM_{2.5}$
SO_2: sulfur dioxide
NO_X: oxides of nitrogen
CO: carbon monoxide
VOCs: volatile organic compounds
HAPs: hazardous air pollutants as defined in Section 112(b) of the Clean Air Act

[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).

Table 3 – Facility PTE, PSD Major Source Thresholds, and Significant Emission Rates for Select Pollutants. Total and Largest Individual HAP also shown. [A]

Emission Unit Description	CO	NO_X	SO_2	VOCs	PM	PM_{10}	$PM_{2.5}$	CO_2e	Total HAPs	Hexane
Phase 1	2,106.5	249.1	48.0	294.2	238.2	154.5	131.3	2,132,213	51.8	41.7
Phase 2	2,105.8	248.3	47.9	292.9	185.1	142.5	129.1	2,132,070	51.8	41.7
Facility Total	4,212.3	497.5	95.9	587.1	423.3	297.0	260.4	4,264,283	103.6	83.3
PSD Major Source Thresholds	100	100	100	100	100	100	100	100,000	N/A	N/A
PSD Major Source Triggered	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	N/A	N/A
PSD Significant Emission Rate (SER) (tpy)	100	40	40	40	25	15	10	N/A	N/A	N/A
PSD SER Triggered	N/A	N/A	Yes	N/A	N/A	N/A	N/A	N/A	N/A	N/A
Project PSD Pollutant	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	N/A	N/A

[A] Abbreviations:
PM: filterable and condensable particulate matter
$PM_{2.5}$: filterable and condensable particulate matter with an aerodynamic diameter less than or equal to 2.5 microns (≤2.5 μm)
PM_{10}: filterable and condensable particulate matter with an aerodynamic diameter less than or equal to 10 microns (≤10 μm) including $PM_{2.5}$
SO_2: sulfur dioxide
NO_X: oxides of nitrogen
CO: carbon monoxide
VOCs: volatile organic compounds
CO_2e: Carbon Dioxide equivalent
HAPs: hazardous air pollutants as defined in Section 112(b) of the Clean Air Act

Rules Analysis
Potentially Applicable Rules and Expected Compliance Status

A. NDAC 33.1-15-01 – General Provisions:

Multiple topics are included in the General Provisions chapter: entry onto premises - authority, variances, circumvention, severability, land use plans and zoning regulations (only to provide air quality information), measurement of air contaminants, shutdown and malfunction of an installation - requirements for notification, time schedule for compliance, prohibition of air pollution, confidentiality of records, enforcement, and compliance certifications.

Applicability and Expected Compliance

Based on the review of the information provided, the facility will comply with all applicable sections of this rule.

B. NDAC 33.1-15-02 – Ambient Air Quality Standards:

The facility must comply with the North Dakota and Federal Ambient Air Quality Standards (AAQS). In addition to these standards, compliance with the "Criteria Pollutant Modeling Requirements for a Permit to Construct" guidelines[1] is required.

Applicability and Expected Compliance

The facility triggers the PSD program emissions thresholds which require air quality modeling. Therefore, preconstruction air quality modeling for this facility was required and completed. See NDAC 33.1-15-15 – Prevention of Significant Deterioration of Air Quality [40 CFR 52.21]: for discussion on PSD. Preconstruction air quality modeling was completed for PM_{10}, $PM_{2.5}$, CO, NO_2, and SO_2 to demonstrate compliance with Class II AAQS and PSD increment standards.

In addition, due to the project's proximity[2] to certain Class I areas in North Dakota (Theodore Roosevelt National Park and Lostwood Wilderness Area) and Montana (Medicine Lake Wilderness Area and Fort Peck Reservation), modeling was conducted to demonstrate compliance with Class I impact thresholds. The analysis evaluated four key impacts for each Class I area: ambient air quality, visibility, ozone, and deposition of nitrogen and sulfur. The Department engaged with the affected Federal Land Managers (FLMs), which included the National Park Service (NPS) and US Fish and Wildlife Service (USFWS), as required by NDAC 33.1-15-19 – Visibility Protection: and 40 CFR 52.21(p) to perform a visibility analysis to determine any expected adverse impacts on visibility in the Federal Class I area(s).[3]

[1] See October 6, 2014, Criteria Pollutant Modeling Requirements for a Permit to Construct. Available at: https://www.deq.nd.gov/publications/AQ/policy/Modeling/Criteria_Modeling_Memo.pdf
[2] Each of the Class I areas is within 100 kilometers (km) of the facility, except for Lostwood Wilderness Area which is approximately 121 km away. Lostwood was included for completeness since it is reasonably close to 100 km.
[3] FLMs have provided no feedback at the time of this draft. Pre-public comment period communications are in Appendix A.

The results of the preconstruction modeling demonstrate the potential emissions from the facility are not expected to cause or contribute to an exceedance of the Class I and Class II AAQS. Details regarding the preconstruction permit modeling analysis and results are discussed in the Air Quality Impacts Analysis (AQIA) associated with this permitting action. See "ACP-18233 v1.0_AQIA" for details.

C. NDAC 33.1-15-03 – Restriction of Emission of Visible Air Contaminants:

This chapter requires all non-flare sources from new facilities to comply with an opacity limit of 20% except for one six-minute period per hour when 40% opacity is permissible. This chapter also requires facility flares to comply with an opacity limit of 20% except for one six-minute period per hour when 60% opacity is permissible. Lastly, this chapter restricts the opacity of fugitive emissions transported off property to 40% except for one six-minute period per hour when 60% opacity is permissible. This chapter also contains exceptions under certain circumstances and provides the method of measurement to determine compliance with the referenced limits.

Applicability and Expected Compliance

Based on Department experience with similar non-flare sources and the implementation of best available control technology (BACT) on all emission units, visible air contaminants from the facility are expected to be minimal and able to comply with the 20%/40% opacity limits described above.

In lieu of the NDAC opacity requirements for flares, the flares (EUs 1-FL-01A, 1-FL-01B, 2-FL-01A, & 2-FL-01B) are expected to comply with the requirements in 40 CFR §63.11(b)[4] and 40 CFR §63.987[5]. See Condition 2.H of ACP-18233 v1.0.

D. NDAC 33.1-15-04 – Open Burning:

No person may dispose of refuse and other combustible material by open burning, or cause, allow, or permit open burning of refuse and other combustible material, except as provided for in Section 33.1-15-04-02 or 33.1-15-10-02, and no person may conduct, cause, or permit the conduct of a salvage operation by open burning.

Applicability and Expected Compliance

The facility is subject to this chapter and will comply with all open burning regulations.

E. NDAC 33.1-15-05 – Emissions of Particulates Matter Restricted:

This chapter establishes particulate matter emission limits and restrictions for industrial process equipment and fuel-burning equipment used for indirect heating.

Applicability and Expected Compliance

[4] https://www.ecfr.gov/current/title-40/part-63/section-63.11#p-63.11(b)
[5] https://www.ecfr.gov/current/title-40/section-63.987

Since the fuel-burning equipment used for indirect heating is fired on gaseous fuels, the particulate matter limits in this chapter do not apply. It should be noted that combustion of gaseous fuels in the units is expected to result in extremely low particulate matter emissions that are well below the allowable levels established by this chapter. There will be no industrial process equipment which emits particulate matter that would be subject to the requirements of this chapter.

F. NDAC 33.1-15-06 – Emissions of Sulfur Compounds Restricted:

This chapter applies to any installation in which fuel is burned and the SO_2 emissions are substantially due to the sulfur content of the fuel and in which the fuel is burned primarily to produce heat. This chapter is not applicable to installations which are subject to an SO_2 emission limit under Chapter 33.1-15-12, Standards for Performance for New Stationary Sources (NSPS), or installations which burn pipeline quality natural gas.

Applicability and Expected Compliance

The facility will have SO_2 emissions from fuel combustion from the package boilers (EUs 1-B-01A, 1-B-01B, 2-B-01A, 2-B-01B), process heaters (EUs 1-H-03 through 1-H-11 & 2-H-03 through 2-H-11), and emergency engines (EUs 1-EG-01 through 1-EG-06 & 2-EG-01 through 2-EG-06). These emission units are not subject to a NSPS that regulates SO_2 emissions, therefore, Chapter 33.1-15-12 requirements apply.[6]

The facility emission units (EUs 1-B-01A, 1-B-01B, 2-B-01A, 2-B-01B, 1-H-03 through 1-H-11, 2-H-03 through 2-H-11, 1-FL-01A, 1-FL-01B, 2-FL-01A, 2-FL-01B, 1-TO-01, & 2-TO-01) will comply by limiting the SO_2 emissions from each unit to less than or equal to 0.0105 lb SO_2/MMBtu. The proposed BACT emission rates are well below the 3.0 lb SO_2/MMBtu limit requirement and the facility is expected to comply with this chapter. Additionally, the emergency generator and diesel fire water pump engines (EUs 1-EG-01 through 1-EG-06, 2-EG-01 through 2-EG-06, 1-FP-01, & 1-FP-02) will comply with this chapter by running on ultra-low sulfur diesel (ULSD).

The Autothermal Reformer (ATR) heaters' (EUs 1-H01-01, 1-H01-02, 2-H01-01, & 2-H01-02) fuel will be inherently low sulfur due to intolerance of the catalysts within the processes which generate the fuel gas being intolerant to sulfur. Natural gas will be used as a startup fuel until the fuel gas begins being generated in sufficient quantities to fuel the heaters. Based on the proposed operation of these units, compliance with this chapter is expected.

The flare pilot(s) (EUs 1-FL-01A, 1-FL-01B, 2-FL-01A, & 2-FL-01B), and the thermal oxidizers (TOs) (EUs 1-TO-01 & 2-TO-01) pilot(s) will combust natural gas and are therefore exempt from this chapter.

G. NDAC 33.1-15-07 – Control of Organic Compounds Emissions:

[6] Package boilers (EUs 1-B-01A, 1-B-01B, 2-B-01A, 2-B-01B) are subject to NSPS Db but are exempt from the SO_2 requirements since they burn gaseous fuel below levels outlined in §60.42b(k)(2).

This chapter establishes requirements for the construction of organic compound facilities and the disposal of organic compounds gas and vapor generated as waste resulting from storage, refining, or processing operations at the facility.

Applicability and Expected Compliance

The facility will contain equipment subject to the design and operational requirements of this chapter.

The wastewater conveyance and treatment systems (EUs 1-WW-01 & 2-WW-01), storage tanks (EUs 1-TK-01 through 1-TK-03, 1-TK-06 through 1-TK-08, 1-TK-09A, 1-TK-09B, 2-TK-01 through 2-TK-03, 2-TK-06 through 2-TK-08, 2-TK-09A, & 2-TK-09B), flares (EUs 1-FL-01A, 1-FL-01B, 2-FL-01A, & 2-FL-01B), TOs (EUs 1-TO-01 & 2-TO-01), and pumps and compressors handling organic compounds are subject to the requirements of this chapter.

Tanks (EUs 1-TK-04, 1-TK-05, 1-TK-10, 1-TK-11A, 1-TK-11B, 2-TK-04, 2-TK-05, & 2-TK-10) are not expected to store organic material capable of producing significant volatile organic compounds (VOC) emissions and are exempt from this chapter's requirements.

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 tanks (EUs 1-TK-01 through 1-TK-03, 1-TK-06 through 1-TK-08, 1-TK-09A, 1-TK-09B, 2-TK-01 through 2-TK-03, 2-TK-06 through 2-TK-08, 2-TK-09A, & 2-TK-09B) will comply with this chapter by capturing the vapors in a closed vent system (CVS) with the recovered vapors (vapor recovery unit or VRU) being sent to the fuel gas system for combustion. If the VRU is down, vapors will be sent to the TOs (EUs 1-TO-01 & 2-TO-01), which act as a back-up control device for the CVS and VRU. The Phase 1 and Phase 2 steam strippers, API separators, and dissolved air flotation units within the wastewater conveyance and treatment systems, and tanks listed in this paragraph share the same control devices (CVS, VRU, and back-up TOs), respectively.

For the flares (EUs 1-FL-01A, 1-FL-01B, 2-FL-01A, & 2-FL-01B), the facility will comply with this chapter by equipping and operating an automatic igniter or a continuous burning pilot.

The facility will implement three leak detection and repair (LDAR) programs to manage fugitive emissions from various equipment (EUs 1-FUG-01 & 2-FUG-01). The three programs depend upon the material in the process stream. Process streams at the facility contain fluids which are categorized into four areas: in VOC service[7], in organic HAP service[8], in carbon monoxide (CO) service, and in methane (CH4) service.[9] Each of these streams may contain fluids in gas/vapor service, light liquid service, and/or heavy liquid service.[10] The three programs are as follows:

[7] 40 CFR 60.481b "In VOC service"
[8] 40 CFR 63.2550 "In organic HAP service"
[9] "In CO service" and "in CH_4 service" are not defined by any regulation. For 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.
[10] 40 CFR 60.481b "In gas/vapor service", "In light liquid service", "In heavy liquid service"

- Equipment in organic HAP service shall comply with the MACT FFFF equipment leak requirements at 40 CFR 63.2480.
- Equipment in VOC service, which 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.
- 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.

Compliance with the LDAR Programs will demonstrate compliance with this chapter's requirements. See Condition 2.F of ACP-18233 v1.0 for LDAR Program details.

Lastly, the facility will also comply with the pump and compressor provision by installing and maintaining appropriate seals for their service and operating conditions.

H. NDAC 33.1-15-08 – Control of Air Pollution from Vehicles and Other Internal Combustion Engines:

This chapter restricts the operation of internal combustion engines, which emit from any source unreasonable and excessive smoke, obnoxious or noxious gas, fumes, or vapor. This chapter also prohibits the removal or disabling of motor vehicle pollution control devices.

Applicability and Expected Compliance

The facility engines (EUs 1-EG-01 through 1-EG-06, 1-FP-01, 1-FP-02, & 2-EG-01 through 2-EG-06) are subject to opacity requirements under NDAC 33.1-15-03-02 and subject to the requirements of NSPS Subpart IIII and NESHAP Subpart ZZZZ. The facility will also have an on-site fleet of motor vehicles subject to the requirements of this chapter. As a result of expected compliance with these provisions, the engines, and motor vehicles are not expected to emit any unreasonable and excessive smoke, obnoxious or noxious gases, fumes, or vapor.

I. NDAC 33.1-15-09 – [repealed]

J. NDAC 33.1-15-10 – Control of Pesticides:

This chapter provides restrictions on pesticide use and restrictions on the disposal of surplus pesticides and empty pesticide containers.

Applicability and Expected Compliance

The facility is subject to this chapter and is expected to comply with all applicable requirements should pesticides be used.

K. NDAC 33.1-15-11 – Prevention of Air Pollution Emergency Episodes:

When an air pollution emergency episode is declared by the Department, the facility shall comply with the requirements in Chapter 33.1-15-11 of the North Dakota Air Pollution Control (NDAPC) rules.

As part of the project, the facility will prepare an abatement strategies plan to reduce the emission of air contaminants during periods of an air pollution alert, air pollution warning, and air pollution emergency following NDAC 33.15-15-11 Table 7 for chemical industries requirements. The facility shall submit this plan to the Department upon request within 30 days of receipt of such request for review.

L. NDAC 33.1-15-12 – Standards of Performance for New Stationary Sources [40 Code of Federal Regulations Part 60 (40 CFR Part 60)]:

This chapter adopts most of the Standards of Performance for NSPS under 40 CFR Part 60. The facility is subject to the following subparts under 40 CFR Part 60, which have been adopted by North Dakota as of July 1, 2019:

Subpart A – General Provisions

Subpart A contains general requirements for plan reviews, notification, recordkeeping, performance tests, reporting, monitoring and general control device requirements.

Applicability and Expected Compliance

The facility will comply with the general provisions of Subpart A through submission of timely notifications, performance testing, reporting, and following the general control device and work practice requirements under Subpart A. In addition, any changes to the facility after it is built will be evaluated with respect to this subpart as well as others.

Subpart Db – Standards of Performance for Industrial-Commercial-Institutional Steam Generating Units

This subpart details information on the applicability, definitions, standards, compliance, performance test methods, emission monitoring, and reporting and recordkeeping requirements for steam generating units. The subpart applies to each steam generating unit for which construction, modification, or reconstruction is commenced after June 19, 1984, and that has a maximum design heat input capacity of greater than 29 megawatts (MW) (100 million British thermal units per hour (MMBtu/h)).

Applicability and Expected Compliance

The facility's four package boilers (EUs 1-B-01A, 1-B-01B, 2-B-01A, & 2-B-01B) are subject to Subpart Db. The boilers are each rated at 290 MMBtu/hr, will produce steam for the facility which will, in part, be used to generate electricity. The electricity generated will be supplied to the electric grid via an interconnection and power purchase agreement with the local electric utility. Typically, "electric utility steam-generating units"[11] with

[11] See: https://www.ecfr.gov/current/title-40/part-60/subpart-Da#p-60.41Da(Electric%20utility%20steam-generating%20unit)

maximum rated heat input capacities exceeding 250 MMBtu/hr are regulated under Subpart Da. However, to not be classified as "electric utility steam-generating units," a federally enforceable limit restricting net-electric sales from the package boilers has been incorporated into the permit, see ACP-18233 v1.0 Condition 2.E. Other fuel combustion devices at the facility are not subject to Subpart Db since the equipment does not meet the definition of a "steam generating unit."

The package boilers (EUs 1-B-01A, 1-B-01B, 2-B-01A, & 2-B-01B) are subject to a NO_X emission limit of 0.10 lb NOx/MMBtu from §60.44b(a) for natural gas combustion.[12] The facility will demonstrate compliance with this requirement by complying with the BACT limit of 0.01 lb NOx/MMBtu. Compliance demonstration is achieved by equipping and operating a NO_X CEMS on the shared stack (EP 1-B-01 for Phase 1 and EP 2-B-02 for Phase 2). The boilers are not subject to SO_2 requirements since they burn gaseous fuel below levels outlined in §60.42b(k)(2) and through implementation of BACT. Fuel records shall be maintained to demonstrate the sulfur content is below the standard and in compliance with the BACT limit. The boilers are also not subject to PM requirements since they burn gaseous fuels per §60.43b(a)-(h).

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

Subpart Kc contains the applicability and designation of an affected facility, including definitions, standards, reporting, and recordkeeping requirements. This subpart applies to each storage tank with a capacity greater than 20,000 gallons used to store volatile organic liquids with a maximum true vapor pressure greater than or equal to 0.25 psia.

Applicability and Expected Compliance

Based on the above criteria, the facility tanks (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) are subject to NSPS Kc. The facility will comply with Subpart Kc through the operation of a CVS, routing the vapors to a VRU, and utilizing a TO as a back-up control device when the VRU is down.

Subpart IIII – Standards of Performance for Stationary Compressor Ignition Internal Combustion Engines

This subpart applies to manufacturers, owners, and operators of stationary compression ignition (CI) internal combustion engines. It covers provisions and requirements related to emission standards, certification, labeling and recordkeeping, performance tests, monitoring requirements, and compliance with standards and maintenance requirements. The subpart also includes definitions and general provisions that apply to the regulations.

Applicability and Expected Compliance

[12] The facility will combust fuel gas, which has a higher potential sulfur content and lower heating value than natural gas. As a result, the low heat release rate standard of 0.10 lb NOx per MMBtu is the applicable limit.

The emergency diesel generators (EUs 1-EG-01, 1-EG-02, 1-EG-03, 2-EG-01, 2-EG-02, & 2-EG-03) have a maximum rating capacity of 480 horsepower (hp) each and are subject to Subpart IIII. The emergency diesel generators (EUs 1-EG-04, 1-EG-05, 1-EG-06, 2-EG-04, 2-EG-05, & 2-EG-06) have a maximum rating capacity of 755 hp and are subject to Subpart IIII. The emergency diesel fire water pump engines (EUs 1-FP-01A & 1-FP-01B) have a maximum rating capacity of 249 hp and are subject to Subpart IIII. The facility will comply with NSPS IIII by purchasing Tier III emergency generators and pump engines, which comply with the applicable emission standards from NSPS IIII. Under §60.4207, the engines will burn ULSD to meet fuel requirements. An hour meter will be installed on each engine to track the unit's operation hours. The facility will operate and maintain the engines per manufacturer specifications and comply with the applicable notification, reporting, and recordkeeping requirements of §60.4214. The following NSPS IIII emission standards shall be met:

- NMHC + NOx of 4.0 g/KW-hr or 3.0 g/HP-hr
- CO: 3.5 g/KW-hr or 2.6 g/HP-hr
- PM: 0.20 g/KW-hr or 0.15 g/HP-hr

Non-Applicable standards based on incorporation of federally enforceable permit limitation:

- 40 CFR Part 60, Subpart Da – Standards of Performance for Electric Utility Steam Generating Units (NSPS Da)
- 40 CFR Part 60, Subpart TTTT – Standards of Performance for Greenhouse Gas Emissions for Electric Generating Units (NSPS TTTT)
- 40 CFR Part 60, Subpart TTTTa – Standards of Performance for Greenhouse Gas Emissions for Modified Coal-fired Steam Electric Generating Units and New Construction and Reconstruction Stationary Combustion Turbine Electric Generating Units (NSPS TTTTa)
- 40 CFR Parts 72 to 78 (Acid Rain Program)

Each of the above listed regulations have potential applicability to the facility, generally, and to the package boilers (EUs 1-B-01A, 1-B-01B, 2-B-01A, & 2-B-01B), specifically. Due to the age, size, and potential to generate electricity from the steam produced via the package boilers, applicability to one or more of the above listed regulations is possible.

The facility submitted a technical memorandum outlining the applicability of each of the regulations.[13] The Department has reviewed this memorandum and has concluded that it accurately characterizes the regulatory applicability and is supported by similar EPA applicability determinations for comparable situations.

The Department has incorporated Condition 2.E in ACP-18233 v1.0 to limit "net-electrical sales" from the package boilers to below the thresholds under NSPS Da, NSPS TTTT, and the Acid Rain Program.

[13] Memorandum "Cerilon GTL North Dakota Project – Applicability of Air Emission Regulations for Electricity Generation Units to the Package Boilers" received on September 13, 2024.

Based on the regulatory language in NSPS TTTTa, the package boilers are not considered affected facilities. For the remaining regulations, the power generation thresholds are similar, with each having 25 MW (25 MW x 8760 hours = 219,000 MW-hr/year) "net-electrical sales" trigger to be subject to the regulation. Since Condition 2.E restricts "net-electrical sales" to below 219,000 MW-hr/year for each of the package boilers, none of these regulations are applicable. Condition 2.E requires a steam system diagram and monitoring plan for monitoring steam production from many steam producing units, which are tied to the same steam headers as the package boilers as the mechanism to ensure compliance.

M. NDAC 33.1-15-13 – Emission Standards for Hazardous Air Pollutants [40 Code of Federal Regulations Part 61 (40 CFR Part 61)]:

This chapter discusses emission standards for hazardous air pollutants. It specifically incorporates a majority of the subparts and appendices of the National Emission Standards for Hazardous Air Pollutants (NESHAP) under 40 CFR Part 61 as of July 2, 2010.

Subpart FF – National Emission Standard for Benzene Waste Operations

Subpart FF applies to chemical manufacturing plants, coke by-product recovery plants, and petroleum refineries. This subpart establishes emission control standards for facilities that generate waste containing at least 10 megagrams per year (Mg/yr) of benzene.

Applicability and Expected Compliance

The facility is considered a chemical manufacturing plant and is subject to the recordkeeping and reporting requirements of Subpart FF; however, the emission control standards do not apply since the total annual benzene (TAB) from the facility waste will be below 10 Mg/yr. The facility will prepare an initial TAB calculation to demonstrate that emissions are below 1 Mg/yr per year. The facility will repeat the determination of TAB quantity from facility waste whenever there is a change in the process generating the waste that could cause the TAB quantity from facility waste to increase to 1 Mg/yr or more.

N. NDAC 33.1-15-14 – Designated Air Contaminant Sources, Permit to Construct, Minor Source Permit to Operate, Title V Permit to Operate:

This chapter designates that federally regulated sources are required to obtain a Permit to Construct (PTC) and a Permit to Operate (PTO) and comply with specific emission control and air quality standards.

Applicability and Expected Compliance

The facility has submitted an application for a permit to construct and has met all requirements necessary to obtain a permit to construct. The facility will be considered a major source under PSD. This source will also be a future major source under the Title V program and must submit an initial Title V permit application within one year of start-up (Condition 6.F of ACP-18233 v1.0).

The permit must undergo public comment per NDAC 33.1-15-14-02.6.c, and the public participation procedures under NDAC 33.1-15-15-01.2 shall be followed.

Once the facility completes construction and meets the PTC requirements, a facility inspection will be performed by the Department. After start-up of Phase 1, the facility will be required to submit a timely Title V PTO application.

O. NDAC 33.1-15-15 – Prevention of Significant Deterioration of Air Quality [40 CFR 52.21]:

This chapter adopts the federal provisions of the PSD program (40 CFR 52.21). A facility is subject to PSD review if it is classified as a "major stationary source" under Chapter 33.1-15-15.

Applicability and Expected Compliance

This facility is classified as a "major stationary source" under 40 CFR 52.21(b)(1)(i)(a) as a "chemical process plant" and is therefore subject to PSD review since emissions of a regulated new source review (NSR) pollutant[14] exceed 100 tpy (including fugitive emissions). The PTE for Phase 1, Phase 2, and the total facility are shown in Table 1, Table 2, and Table 3, respectively. As shown, the PTE is above the applicable PSD threshold for all pollutants shown in Table 3 except SO_2. As a result, PSD requires the installation of BACT; an air quality analysis (i.e., air dispersion modeling); an additional impacts analysis, and public involvement. Additionally, based on the location of the facility and proximity to Federal Class I areas, "sources impacting Federal Class I area" also applies.

BACT Review

The facility submitted a BACT analysis supporting the control equipment proposed for the facility on the emission sources listed in Table 4. The Department completed a detailed reviewed the proposed BACT limits and agrees with the information provided.[15] A summary of the information relevant to BACT is provided below.

A BACT analysis was completed for the species of NOx, SO_2, CO, particulate matter ($PM/PM_{10}/PM_{2.5}$), VOC, and greenhouse gases (GHGs). As shown in Table 3, each of these pollutants is either above the PSD major source thresholds or above the significant emissions rate (SER) threshold.

Table 4 lists all the equipment and NSR pollutants which were included in the BACT analysis.

[14] See 40 CFR 52.21(b)(50). Available at: https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-52/subpart-A/section-52.21#p-52.21(b)(50)

[15] See Application for a PSD Permit to Construct Cerilon GTL North Dakota Project from May 2024, Appendix E – BACT Analysis, (PDF page 386-672)

Table 4 – Summary of Emission Units and Pollutants Subject to BACT

Emission Unit Description	**NSR Pollutants Affected**
Package boilers (EUs 1-B-01A, 1-B-01B, 2-B-01A, & 2-B-01B)	NOx, SO_2, $PM/PM_{10}/PM_{2.5}$, CO, VOC, GHG
Autothermal reformer heaters (EUs 1-H-01, 1-H-02, 2-H-01, & 2-H-02)	NOx, SO_2, $PM/PM_{10}/PM_{2.5}$, CO, VOC, GHG
Hydrotreating reaction heaters (EUs 1-H-03 & 2-H-03)	NOx, SO_2, $PM/PM_{10}/PM_{2.5}$, CO, VOC, GHG
Hydrotreating fractionation heaters (EUs 1-H-04 & 2-H-04)	NOx, SO_2, $PM/PM_{10}/PM_{2.5}$, CO, VOC, GHG
Hydrotreating vacuum heaters (EUs 1-H-05 & 2-H-05)	NOx, SO_2, $PM/PM_{10}/PM_{2.5}$, CO, VOC, GHG
Hydrocracking reaction heaters (EUs 1-H-06 & 2-H-06)	NOx, SO_2, $PM/PM_{10}/PM_{2.5}$, CO, VOC, GHG
Diesel dewaxing reaction heaters (EUs 1-H-07 & 2-H-07)	NOx, SO_2, $PM/PM_{10}/PM_{2.5}$, CO, VOC, GHG
Diesel dewaxing product heaters (EUs 1-H-08 & 2-H-08)	NOx, SO_2, $PM/PM_{10}/PM_{2.5}$, CO, VOC, GHG
Base oil reaction heaters (EUs 1-H-09 & 2-H-09)	NOx, SO_2, $PM/PM_{10}/PM_{2.5}$, CO, VOC, GHG
Base oil fractionation heaters (EUs 1-H-10 & 2-H-10)	NOx, SO_2, $PM/PM_{10}/PM_{2.5}$, CO, VOC, GHG
Base oil vacuum heaters (EUs 1-H-11 & 2-H-11)	NOx, SO_2, $PM/PM_{10}/PM_{2.5}$, CO, VOC, GHG
Cooling towers (EUs 1-CT-01 & 2-CT-01) and heat exchange systems	$PM/PM_{10}/PM_{2.5}$, VOC
300 kW diesel emergency generators (EUs 1-EG-01 through 1-EG-03 & 2-EG-01 through 2-EG-03)	NOx, SO_2, $PM/PM_{10}/PM_{2.5}$, CO, VOC, GHG
500 kW diesel emergency generators (EUs 1-EG-04 through 1-EG-06 & 2-EG-04 through 2-EG-06)	NOx, SO_2, $PM/PM_{10}/PM_{2.5}$, CO, VOC, GHG
Emergency diesel fire water pump engines (EUs 1-FP-01 & 1-FP-02)	NOx, SO_2, $PM/PM_{10}/PM_{2.5}$, CO, VOC, GHG
Equipment leaks	CO, VOC, GHG
Process vents - Pressure Relief Devices (PRD)	VOC
Haul roads	$PM/PM_{10}/PM_{2.5}$
Wastewater conveyance and treatment systems (EUs 1-WW-01 & 2-WW-01)	VOC
FT wax feed tanks (EUs 1-TK-01 & 2-TK-01)	VOC
Wax slops tanks (EUs 1-TK-02 & 2-TK-02)	VOC

Emission Unit Description	NSR Pollutants Affected
FT condensate tanks (EUs 1-TK-03 & 2-TK-03)	VOC
3,4 cSt waxy base oil feed tanks (EUs 1-TK-04 & 2-TK-04)	VOC
8 cSt waxy base oil feed tanks (EUs 1-TK-05 & 2-TK-05)	VOC
Naphtha and diesel rework tanks (EUs 1-TK-06 & 2-TK-06)	VOC
Base oil rework tanks (EUs 1-TK-07 & 2-TK-07)	VOC
Slop tanks (EUs 1-TK-08 & 2-TK-08)	VOC
Spare base oil tank (EUs 1-TK-09A, 1-TK-09B, 2-TK-09A, & 2-TK-09B)	VOC
On-site vehicle diesel refueling tank (EUs 1-TK-10 & 2-TK-10)	VOC
Fire water pump diesel fuel storage tank (EUs 1-TK-11A & 1-TK-11B)	VOC

The submitted BACT analysis for the above units was reviewed and approved by the Department. BACT emissions limits are listed in Table 3-1 and Table 3-2 of ACP-18233 v1.0.

The facility will be constructed in two identical phases (Phase 1 and Phase 2). Per 40 CFR 52.21(j)(4)[16], the Department will review and modify, as appropriate, the determination of BACT no later than 18 months prior to commencement of construction of Phase 2. As a result, Table 3-2 of ACP-18233 v1.0 is subject to modification prior to commencement of Phase 2 construction.

Ambient Air Analysis

An ambient air quality analysis was completed to demonstrate that the facility's potential emissions will not cause or contribute to a violation of any applicable AAQS or PSD increment.[17] The Department has reviewed the air quality analysis and completed an independent analysis to verify the results. See "NDAC 33.1-15-02 – Ambient Air Quality Standards:" and "ACP-18233v1.0_AQIA" for details.

Additional Impacts Analysis

An additional impacts analysis was completed to assess the impacts of air, ground, and water pollution on soils, vegetation, and visibility caused by any increase in emissions of any regulated pollutant from the facility, and from associated growth. Associated growth is industrial, commercial, and residential growth that will occur in the area due to the source. The Department has reviewed the additional impacts analysis included in the May

[16] https://www.ecfr.gov/current/title-40/part-52/section-52.21#p-52.21(j)(4)
[17] See Application for a PSD Permit to Construct Cerilon GTL North Dakota Project from May 2024, Appendix F – Additional Impacts Analysis, (PDF page 674-699)

2024 application and believes it accurately assesses the additional impacts associated with the facility.[18]

Sources impacting Federal Class I area – additional requirements –

The facility was required to perform the analyses required under 40 CFR 52.21(p) since it has the potential to impact Federal Class I areas due to the proximity of this facility to the nearby Federal Class I areas.[19] Impacts to Federal Class I areas must be considered nearby if they are within 100 km of a proposed project subject to PSD review. The Class I areas included in the analysis are: Theodore Roosevelt National Park (TRNP) North Unit which is approximately 56 km from the facility; Fort Peck Indian Reservation (Fort Peck) which is approximately 54 km from the facility; and Medicine Lake National Wildlife Refuge (Medicine Lake) which is approximately 54 km from the facility. Conservatively, Lostwood Wilderness Area (Lostwood) was also analyzed even though it is approximately 121 km from the facility.

The modeled impacts were determined using CALPUFF since it is the preferred model for sources greater than 50 km away. CALPUFF was used to evaluate the expected impacts on ambient air quality, visibility, and deposition of nitrogen and sulfur. The modeling confirmed the facility is not expected to cause or contribute to a violation of the Class I ambient standards and will not exceed any applicable air quality related value (AQRV) screening thresholds. A summary of the AQRVs is presented in Section 7 of ACP-18233 v1.0_AQIA and Appendix H of the permit application.[20]

Public Participation

The permit must undergo public comment per NDAC 33.1-15-14-02.6.c and NDAC 33.1-15-15. See the "Summary:" section for details on the public comment period.

P. NDAC 33.1-15-16 – Restriction of Odorous Air Contaminants:

This chapter restricts the discharge of objectionable odorous air contaminants, which measures seven odor concentration units or greater outside the property boundary. The emission of hydrogen sulfide is also addressed with strict concentration limitations. The chapter also establishes the method of measurement using certified inspectors, scentometers, and other approved instruments.

Applicability and Expected Compliance

Based on Department experience with sources having similar emission units, processes, and low hydrogen sulfide concentrations, the facility is expected to comply with this chapter.

[18] See Application for a PSD Permit to Construct Cerilon GTL North Dakota Project from May 2024, Appendix G – Air Quality Modeling – Class II Areas, (PDF page 699-751)
[19] See Application for a PSD Permit to Construct Cerilon GTL North Dakota Project from May 2024, Appendix H – Air Quality Modeling – Class I Areas, (PDF page 752-781)
[20] See Application for a PSD Permit to Construct Cerilon GTL North Dakota Project from May 2024, Appendix H – Air Quality Modeling – Class I Areas, (PDF page 752-781)

Q. NDAC 33.1-15-17 – Restriction of Fugitive Emissions:

This Chapter restricts fugitive emissions from particulate matter or other visible air contaminants and gaseous emissions that would violate Chapter 2 (ambient air quality standards), Chapter 15 (PSD), Chapter 16 (odor), or Chapter 19 (visibility).

Applicability and Expected Compliance

The facility will be required to take reasonable precautions to prevent fugitive emissions in violation of the above referenced NDAC chapters. In addition, the gaseous fugitive emission sources and particulate matter sources at the facility are regulated by BACT. Specifically, gaseous fugitive emission sources will follow a LDAR program and haul roads at the facility will follow a fugitive dust control plan to control and reduce emissions of particulate matter. Compliance with BACT will result in compliance with this chapter.

R. NDAC 33.1-15-18 – Stack Heights:

This chapter restricts the use of stack heights above good engineering practices (GEP). The chapter primarily adopts federal regulations listed under 40 CFR 51.100(ii). This chapter also restricts the use of dispersion techniques to negatively affect the concentration of a pollutant in the ambient air. Demonstrations of GEP stack heights must be made available for review.

Applicability and Expected Compliance

The proposed stacks at the facility do not exceed GEP and will not use dispersion techniques to negatively affect the pollutant concentration in the ambient air.

The required stack heights at the facility are listed in Condition 5.C, Table 5-1 of ACP-18233 v1.0.

S. NDAC 33.1-15-19 – Visibility Protection:

This chapter outlines regulations regarding visibility protection and applies to new major stationary sources as defined in Section 33.1-15-15-01. It contains provisions regarding visibility impact analysis, visibility models, notification requirements for permit applications, review by federal land managers, permit issuance criteria, and visibility monitoring.

Applicability and Expected Compliance

The facility is a new major stationary source and, therefore, is subject to the requirements of this chapter. The Class I areas included in the analysis are: TRNP North Unit which is approximately 56 km from the facility; Fort Peck which is approximately 54 km from the facility; and Medicine Lake which is approximately 54 km from the facility. Conservatively, Lostwood was also analyzed even though it is approximately 121 km from the facility.

A visibility analysis was performed and included in Section 9.0 of the permit application.[21] The visibility modeling results demonstrated the expected impacts to each Class I area were below FLM thresholds, meaning no adverse impacts to visibility are expected. The Department has reviewed this analysis and agrees with the conclusions reached.

T. NDAC 33.1-15-20 – Control of Emissions from Oil and Gas Well Production Facilities:

The facility is not an oil or gas well facility and is therefore not subject to the requirements of this chapter.

U. NDAC 33.1-15-21 – Acid Rain Program:

This chapter adopts the acid rain provisions of the Clean Air Act specified under 40 CFR Parts 72-78. The facility is not subject to the acid rain provision as the potentially affected facilities combusting carbon fuels and generating electricity (the package boilers) are limited to selling < 219,000 MW-hr/year of net-electrical sales. See Condition 2.E of ACP-18233 v1.0.

V. NDAC 33.1-15-22 – Emissions Standards for Hazardous Air Pollutants for Source Categories [40 Code of Federal Regulations Part 63 (40 CFR Part 63)]:

This chapter adopts most of the National Emission Standards for Hazardous Air Pollutants (NESHAP) for Source Categories under 40 CFR Part 63. These standards typically apply to major sources of air pollution that are in a regulated source category. In addition to the major source requirements, some of the regulations have "area source" standards (for non-major sources).

Applicability

The facility is a major source of HAP as its potential HAP emissions are greater than 10 tpy of any single HAP and greater than 25 tpy for combined HAP[22]. N-hexane is the single largest HAP, with the potential to emit of approximately 83 tpy.[23] N-hexane accounts for about 80% of total facility HAP PTE, which is approximately 104 tpy.

Subpart A – General Provisions

Subpart A contains general requirements for prohibited activities and circumvention, preconstruction review and notification, standards and maintenance requirements, performance tests, monitoring, recordkeeping, reporting, and control device work practice requirements.

Applicability and Expected Compliance

[21] See Application for a PSD Permit to Construct Cerilon GTL North Dakota Project from May 2024, pdf pages 774-776.
[22] 40 CFR 63.2 "Major Source"
[23] N-hexane potential emissions are largely from fuel combustion. N-hexane emissions from fuel combustion were calculated using an emission factor from AP-42 Chapter 1.4, Table 1.4-3, which has an emission factor rating of "E", which is poor.

The facility will comply with the general provisions of Subpart A through submission of timely notifications, performance testing, monitoring, recordkeeping, reporting, and following the control device work practice requirements under Subpart A.

Subpart FFFF – National Emission Standards for Hazardous Air Pollutants: Miscellaneous Organic Chemical Manufacturing

Subpart FFFF establishes emission limitations and operating limitations for HAP for miscellaneous organic chemical manufacturing. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limits, operating limits, and work practice standards.

Note that Subpart EEEE does not apply because FFFF is applicable.

Applicability and Expected Compliance

The facility is a chemical manufacturing plant and will have chemical manufacturing process units subject to the requirements of this subpart. The facility is expected to comply with the applicable emission limits and work practice standards of Subpart FFFF for equipment leaks in organic HAP service (EUs 1-FUG-01 & 2-FUG-01), group 1 and 2 wastewater streams routed to the wastewater treatment and conveyance systems (EUs 1-WW-01 and 2-WW-01), group 1 storage tanks (EUs 1-TK-03, 1-TK-06, 1-TK-08, 2-TK-03, 2-TK-06, & 2-TK-08), heat exchange systems in organic HAP service for the cooling towers (EUs 1-CT-01 & 2-CT-01), and pressure relief devices in organic HAP service (PRDs).

Fugitive emissions from equipment leaks (EUs 1-FUG-01 & 2-FUG-01) for equipment in organic HAP service shall comply with the equipment leak requirements at 40 CFR 63.2480.

Emissions from group 1 wastewater streams will be mitigated by routing them through waste management units and treatment operations which meet the requirements of 40 CFR 63.2485. These requirements include, but are not limited to, emission control, monitoring, inspections, recordkeeping, and reporting.

A CVS, vapor recovery unit (VRU) and TOs control emissions from 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)[24]. This is considered a shared control device for the purposes of MACT FFFF and will be capable of controlling at least 98% of the vapors generated during normal operation. During normal operations, the recovered vapors shall be routed to the fuel gas

[24] Note that this list is of all tanks which will be controlled by the CVS, VRU, and TOs. Only EUs 1-TK-03, 1-TK-06, 1-TK-08, 2-TK-03, 2-TK-06, & 2-TK-08 are group 1 storage tanks subject to emission controls under Subpart FFFF.

system for combustion (i.e., emissions control) in the fuel gas combustion devices. The TOs will serve as back-up control devices (EUs 1-TO-01 & 2-TO-01) to the VRU during VRU downtime and malfunction events and will be designed to control at least 98% of the vapors.

The heat exchange systems in organic HAP service for the cooling towers (EUs 1-CT-01 & 2-CT-01) will be monitored for leaks following §63.2490(d).

Pressure relief devices (PRDs) in organic HAP service are routed to flares (EUs 1-FL-01A, 1-FL-01B, 2-FL-01A, & 2-FL-01B), which satisfies the requirements of 40 CFR 63.2480(e)(4). The facility will operate the PRD CVS and flare following the requirements of 40 CFR 63.982(b).

Based on the above, the facility is expected to comply with MACT FFFF.

Subpart ZZZZ – National Emissions Standards for Hazardous Air Pollutants for Stationary Reciprocating Internal Combustion Engines

Subpart ZZZZ establishes emission limitations and operating limitations for HAP emissions from stationary reciprocating internal combustion engines (RICE) located at major and area sources of HAP emissions. This subpart also establishes requirements to demonstrate initial and continuous compliance with the emission limitations and operating limitations.

Applicability and Expected Compliance

The facility has engines (EUs 1-EG-01 through 1-EG-06, 1-FP-01A, 1-FP-01B, & 2-EG-01 through 2-EG-06) subject to the requirements under this subpart. The requirements of Subpart ZZZZ for the engines are met by complying with the requirements of NDAC 33.1-15-12 [40 CFR 60], Subpart IIII.

Subpart DDDDD – National Emission Standards for Hazardous Air Pollutants for Major Sources: Industrial, Commercial, and Institutional Boilers and Process Heaters

Subpart DDDDD applies to major sources of HAPs and establishes emission limitations, work practice standards, and requirements to demonstrate initial and continuous compliance with the emission limitations and work practice standards for boilers and process heaters.

Applicability and Expected Compliance

The facility has boilers (EUs 1-B-01A, 1-B-01B, 2-B-01A, & 2-B-01B) and process heaters (EUs 1-H-01 through 1-H-11 & 2-H-01 through 2-H-11) subject to Subpart DDDDD. These emission units are subject to the work practice standards, periodic tune-ups, and burner inspection requirements of §63.7500. The boilers and heaters subject to this subpart

are units designed to burn gas 1 subcategory[25] fuel, which are not subject to any pollutant-specific emission limits.

W. NDAC 33.1-15-23 – Fees:

This chapter requires a filing fee of $325 for a permit to construct applications, plus any additional fees based on actual processing costs. The additional fees based on processing costs will be assessed upon issuance of the draft permit to construct. The annual operating Title V permit fees will also become applicable upon receipt of a Title V permit.

The applicant has paid the $325 filing fee and will be required to pay the additional fees associated with the permit to construct processing.

X. NDAC 33.1-15-24 – Standards for Lead-Based Paint Activities:

The facility will not perform any lead-based painting and is therefore not subject to this chapter.

Y. NDAC 33.1-15-25 – Regional Haze Requirements:

This chapter is specific to existing stationary sources or groups of sources which have the potential to "contribute to visibility impairment" as defined in Section 33.1-15-25-01.2. Existing stationary sources or groups of sources determined to contribute to visibility impairment may be required to implement emissions reduction measures to help the Department make reasonable progress toward North Dakota's reasonable progress goals established in accordance with 40 CFR 51.308.

Applicability and Expected Compliance

The facility is a new major stationary source; therefore, the chapter is not applicable to the facility. NDAC 33.1-15-19 – Visibility Protection: ensures emissions from the proposed facility will have impacts below levels of concern to the Class I areas' visibility and will not expect to interfere with North Dakota's reasonable progress goals.

[25] 40 CFR 63.7575 "Unit designed to burn gas 1 subcategory"

Summary:

A complete review of the proposed project indicates that the facility is expected to comply with the applicable federal and state air pollution rules and regulations. The Department will make a final recommendation on the issuance of a Permit to Construct for Cerilon GTL ND following completion of a 30-day public comment period. The public comment period will run from October 26, 2024, through November 25, 2024.

The Department will hold a public meeting followed by a public hearing in Williston, North Dakota on November 14, 2024, for interested parties. Upon completion of the public comment period, the Department will address all comments applicable to the state and federal air quality rules and regulations and make a final determination regarding the issuance of a Permit to Construct for the facility.

Update post comment period:
[Reserved]

Date of Draft Analysis: October 24, 2024
Date of Final Analysis: [Reserved]

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