

**AIR QUALITY EFFECTS ANALYSIS
FOR
PERMIT TO CONSTRUCT
ACP-18259 v1.0**

Applicant:

Hess North Dakota Pipelines LLC
3015 16th St. SW, Suite 20
Minot, North Dakota 58701

Facility Location:

Blue Buttes Compressor Station 2
Lat/Long: 47.86373/-102.87478
SW ¼, Sec. 29, T151N, R96W
McKenzie County, North Dakota

Introduction:

Hess North Dakota Pipelines LLC (Hess) submitted a permit to construct application to the North Dakota Department of Environmental Quality – Division of Air Quality (Department) on July 31, 2024. The application was for the existing natural gas pipeline compressor station (Blue Buttes Compressor Station 2 or facility) located in McKenzie County, North Dakota.

Blue Buttes Compressor Station 2 currently operates under Title V Air Permit to Operate No. AOP-28517 v1.0 which expires on August 9, 2028. The facility has a nameplate processing capacity of 65 MMscfd. The facility consists of ten 6.5 MMscfd electric-driven compressors, inlet separation, and dehydration facilities.

The application requested (Project) the removal of the line heater (EU LH-1) and the addition of a NGL handling skid as part of an emissions reduction project. There are no new emission units or emission points proposed with the Project. The NGL handling skid serves to collect additional hydrocarbon liquids which currently flash off in the onsite tanks and are then combusted in the thermal oxidizer. Additionally, various updates to emission unit descriptions and emission unit identifications were also requested.

Upon Project completion, the emissions from the facility will decrease to below Title V thresholds, and the facility will no longer be considered a major source for Title V.

Table 1 lists the emissions units removed with the Project. Table 2 lists all the emissions units at Blue Buttes Compressor Station 2 upon Project completion.

Table 1 – Emissions Units Removed with the Project.

Emission Unit Description ^A	Emission Unit (EU)	Emission Point (EP)	Air Pollution Control Equipment
Natural gas-fired line heater rated at 1.5×10^6 Btu/hr	LH-1	LH-1	None

^A All emission unit ratings are considered nominal ratings.

Table 2 – Source-wide Permitted Equipment.

Emission Unit Description ^A	Emission Unit (EU)	Emission Point (EP)	Air Pollution Control Equipment
Triethylene glycol (TEG) dehydration unit rated at 65 MMscfd (MACT HH)	STILLVNT ^B	TO-1 (S-795003)	TO-1 (S-795003)
Glycol reboiler rated at 0.512×10^6 Btu/hr	GLYRBLR (E-794090) ^B	GLYRBLR (E-794090)	None
Two 400-bbl slop storage tanks	SLOPST ^B (TK-791301 & TK-791401)	TO-1 (S-795003)	Submerged Fill Pipe (SFP) & TO-1 (S-795003)
Four 400-bbl oil storage tanks	OILST ^B (TK-791302, TK- 791402, TK- 791502, & TK- 791602)	TO-1 (S-795003)	SFP & TO-1
400-bbl water storage tank	WTRST ^B (TK-791701)	TO-1 (S-795003)	SFP & TO-1
400-bbl triazene storage tank	MAKEUPTNK (TK-796002) ^C	MAKEUPTNK (TK-796002)	None
150-bbl methanol storage tank	MeOHST (TK-796004) ^C	MeOHST (TK-796004)	SFP
150-bbl TEG storage tank	GLYST (TK-796003) ^C	GLYST (TK-796003)	None
200-bbl spent triazene storage tank	SPNTCHMTNK (TK-794110) ^C	SPNTCHMTNK (TK-794110)	TO-1 (S-795003)
High pressure (HP) flare	HPFLARE (S-795101) ^B	HPFLARE (S-795101)	None

Emission Unit Description^A	Emission Unit (EU)	Emission Point (EP)	Air Pollution Control Equipment
Thermal oxidizer (NSPS OOOOa)	TO-1 (S-795003) ^B	TO-1 (S-795003)	None
Truck loading oil	LOADOIL ^{C, D}	LOADOIL	None
Fugitive emissions (NSPS OOOOa)	FUG ^C	FUG	Leak Detection & Repair (LDAR) Program
Ten electric-driven compressors (NSPS OOOOa)	EC-1 through EC-10 ^{C, D}	EC-1 through EC-10	NSPS OOOOa

^A All emission unit ratings are considered nominal ratings.

^B Emission unit description modified with this permit action. No physical modifications or regulatory applicability changes to these emission units with this permit action.

^C Insignificant or fugitive emission sources (no specific emission limit).

^D Existing emission unit(s) incorporated with this permit action. There are no physical modifications or regulatory applicability changes to the emission unit(s) with this permit action.

Facility Wide Emissions Profile
Potential to Emit (PTE)

Table 3 - PTE (tons per year) ^A

Emission Unit Description	Emission Unit (EU)	Emission Point (EP)	CO	NO _x	SO ₂	VOCs	PM	PM ₁₀	PM _{2.5}	Total HAPs
TEG dehydration unit	STILLVNT	TO-1	-	-	-	5.06	-	-	-	0.97
Glycol reboiler	GLYRBLR	GLYRBLR	0.18	0.21	0.00	0.01	0.02	0.02	0.02	0.00
Two slop storage tanks	SLOPST	TO-1	-	-	-	0.45	-	-	-	-
Four oil storage tanks	OILST									
Water storage tank	WTRST									
Methanol storage tank	MeOHST	MeOHST	-	-	-	0.03	-	-	-	0.03
TEG storage tank	GLYST	GLYST	-	-	-	0.002	-	-	-	-
HP flare	HPFLARE	HPFLARE	5.26	1.15	0.02	6.31	-	-	-	-
Thermal oxidizer	TO-1	TO-1	3.23	11.55	0.00	2.14	-	-	-	-
Truck loading	LOADOIL	LOADOIL	-	-	-	0.06	-	-	-	-
Fugitive emissions	FUG	FUG	-	-	-	25.36	-	-	-	1.08
Total (without Fugitives):			8.7	12.9	0.0	14.1	0.0	0.0	0.0	1.0
Total (with Fugitives):			8.7	12.9	0.0	39.4	0.0	0.0	0.0	2.1

^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 ($\leq 2.5 \mu\text{m}$)

PM₁₀: filterable and condensable particulate matter with an aerodynamic diameter less than or equal to 10 microns ($\leq 10 \mu\text{m}$) including PM_{2.5}

SO₂: 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

As shown in Table 3, the facility PTE upon Project completion will be below 100 tons per year (tpy) for all criteria air pollutants, below 10 tpy for any single hazardous air pollutant (HAP), and below 25 tpy for the combined HAP emissions. Detailed calculations have been provided in the permit application received on July 31, 2024. The Department has reviewed these calculations and believes they accurately represent the proposed facility operations upon Project completion.

The facility PTE is based on emissions restrictions put in place on the tank battery (EUs SLOPST, OILST, & WTRST) to limit the allowable amount of VOC emissions to less than 6 tpy by establishing a legally and practicably enforceable limit. This restriction means the facility is a synthetic minor source of air pollution.

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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 complies 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” guidelines¹.

Applicability and Expected Compliance

The facility is not subject to PSD nor does the facility’s PTE trigger the modeling thresholds listed in the “Criteria Pollutant Modeling Requirements for a Permit to Construct”, therefore, preconstruction modeling for this facility was not required. Based on the facility PTE and proposed stack heights, compliance with the ambient air quality standards is expected to be maintained.

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.

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

Applicability and Expected Compliance

The Project does not affect applicability to this chapter, and the facility will continue to comply with the applicable requirements of this chapter.

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 continue to 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

The Project does not affect applicability to this chapter, and the facility will continue to comply with the applicable 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 SO₂ 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 SO₂ emission limit under Chapter 33.1-15-12, Standards for Performance for New Stationary Sources, or installations which burn pipeline quality natural gas.

Applicability and Expected Compliance

All the combustion equipment at the facility not subject to an NSPS burns natural gas or inherently low sulfur gaseous fuels and thus are compliant with sulfur restrictions in this chapter as part of its physical and operational design. The Project does not affect applicability to this chapter, and the facility will continue to comply with the applicable requirements of this chapter.

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

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

For leak detection and repair of equipment in VOC service (EU FUG), the facility complies with the applicable requirements under New Source Performance Standard (NSPS) Subpart OOOOa – Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015. The facility also complies with the pump and compressor provision by installing and maintaining appropriate seals for their service and operating conditions.

The stationary storage tanks (EUs SLOPST, OILST, & WTRST) will comply with this chapter by routing the vapors to the thermal oxidizer (EU TO-1) designed to limit the tank battery VOC emissions to below 6 tpy. See ACP-18259 v1.0 Condition 3.A.

The truck loading oil (EU LOADOIL) throughput is well below 20,000 gallons per day and is not subject to the requirements of this chapter.

Facility compliance with this chapter is not affected with this Project.

- 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 equipment associated with the facility is not expected to emit any unreasonable and excessive smoke, obnoxious or noxious gases, fumes, or vapor. The Project does not affect applicability to this chapter, and the facility will continue to comply with the applicable requirements of this chapter.

- 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.

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 New Stationary Sources (NSPS) under 40 CFR Part 60. The Blue Buttes Compressor Station 2 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 OOOOa – Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After September 18, 2015, and On or Before December 6, 2022

Subpart OOOOa establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO₂) emissions from affected facilities in the crude oil and natural gas production source category that commence construction, modification, or reconstruction after September 18, 2015, and prior to December 6, 2022.

Applicability and Expected Compliance

The facility compressors, fugitive emissions (EU FUG), and storage vessels (EUs SLOPST, OILST, & WTRST) are considered affected facilities under Subpart OOOOa.

The ten electric-driven (EUs EC-1 through EC-10) compressors are considered affected facilities under Subpart OOOOa. The compressors are expected to comply with the applicable standards for reciprocating compressors under Subpart OOOOa.

The fugitive emissions (EU FUG) components that have a potential to emit VOCs are considered affected facilities under Subpart OOOOa. The facility is expected to comply with the applicable fugitive emissions VOC standards through development and implementation of a leak detection and repair (LDAR) program in compliance with Subpart

OOOOa requirements. The LDAR program, at a minimum, shall require monitoring, reporting, and recordkeeping.

The storage vessels (EUs SLOPST, OILST, & WTRST) are manifolded together, and vapors are routed to the thermal oxidizer (EU TO-1). The NGL handling skid project will decrease emissions from the tank battery to less than 6 tpy of VOC. The storage vessels (EUs SLOPST, OILST, & WTRST) remain affected facilities per 40 CFR 60.5365a(e)(4) and will continue to comply with the applicable requirements.

Subpart OOOOb – Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification or Reconstruction Commenced After December 6, 2022

Subpart OOOOb establishes emission standards and compliance schedules for the control of the pollutant greenhouse gases (GHG). The greenhouse gas standard in this subpart is in the form of a limitation on emissions of methane from affected facilities in the crude oil and natural gas source category that commence construction, modification, or reconstruction after December 6, 2022. This subpart also establishes emission standards and compliance schedules for the control of volatile organic compounds (VOC) and sulfur dioxide (SO₂) emissions from affected facilities in the crude oil and natural gas source category that commence construction, modification, or reconstruction after December 6, 2022.

Applicability and Expected Compliance

The Project does not trigger Subpart OOOOb, and the facility will continue to comply with the applicable requirements of Subpart OOOOa.

- 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.

Applicability and Expected Compliance

The facility does not appear to have any applicable requirements under this chapter.

- 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 and a Permit to Operate 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

synthetic minor source via federally enforceable restrictions limiting the VOC emissions below regulatory applicability thresholds.

The permit must undergo public comment per NDAC 33.1-15-14-02.

Once the facility completes construction and meets the permit to construct requirements, a facility inspection will be performed by the Department. Pending a satisfactory facility inspection, the facility will be issued a permit to operate by the Department.

- 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 Prevention of Significant Deterioration of air quality (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 not classified as a “major stationary source” under 40 CFR 52.21(b)(1)(i)(a) and is therefore only subject to PSD review if emissions of a regulated new source review (NSR) pollutant² exceed 250 tpy (excluding fugitive emissions). The PTE for this facility, as shown in Table 3, is below the 250 tpy threshold and therefore not subject to PSD review.

- 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.

- 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).

² 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\(b\)\(50\)](https://www.ecfr.gov/current/title-40/chapter-I/subchapter-C/part-52/subpart-A/section-52.21#p-52.21(b)(50))

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.

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 affect the concentration of a pollutant in the ambient air. Demonstrations of good engineering practice stack heights must be made available for review.

Applicability and Expected Compliance

The Project does not affect applicability to this chapter, and the facility will continue to comply with the applicable requirements of this chapter.

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 not a new major stationary source and, therefore, the facility is not subject to the requirements of this chapter.

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 they are not an electric utility.

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). Some of the area source standards have not been adopted by the Department and compliance will be determined by the United States Environmental Protection Agency (USEPA) (i.e. 40 CFR 63, Subpart ZZZZ area source provisions have not been adopted by the Department).

Applicability

The facility's potential HAP emissions are less than 10 tons/year of any single HAP and are less than 25 tons/year of any combination of HAPs, so the facility is an area (minor) source of HAPs. As shown in Table 3, total potential HAPs from the facility are approximately 2.1 tons/year.

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

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 HH – National Emission Standards for Hazardous Air Pollutants from Oil and Natural Gas Production Facilities

Subpart HH contains the applicability and designation of the affected source, including definitions, general standards, control equipment requirements, test methods, compliance procedures and demonstrations, and inspection, monitoring and recordkeeping requirements.

Applicability and Expected Compliance

The triethylene glycol (TEG) dehydration unit (EU STILLVNT) is considered an affected facility under this subpart. EU STILLVNT will comply with the applicable requirements of MACT Subpart HH by routing the vapors to the thermal oxidizer (EU TO-1). The Project does not affect applicability to this chapter, and the facility will continue to comply with the applicable requirements of this chapter.

W. NDAC 33.1-15-23 – Fees:

This chapter requires a filing fee of \$325 for 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 permit fee is also applicable.

The applicant has paid the \$325 filing fee and may be required to pay the additional fees associated with the permit 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 not a new source and is not subject to the requirements of this chapter.

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 the Blue Buttes Compressor Station 2 following completion of a 30-day public comment period. The public comment period will run from February 4, 2025, through March 6, 2025.

Update post comment period:

[Reserved]

Date of Draft Analysis: February 3, 2025

Date of Final Analysis: [Reserved]

Analysis By:

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