

Air Title V Operating Permit (AOP) - Renewal

version 2.8

(Submission #: HQN-N2SQ-180PV, version 1)

Digitally signed by:
CERIS-ND
Date: 2026.06.25 15:40:03 -05:00
Reason: Submission Data
Location: State of North Dakota

Details

Submission ID HQN-N2SQ-180PV

Form Input

Form Instructions

In accordance with 33.1-15-14-04.c. of the North Dakota Air Pollution Control Rules, a Title V permit renewal application must be submitted to the Department at least six months, but no more than eighteen months, prior to the expiration date. Permit renewal applications are incomplete unless all information requested in SFN 52824 is supplied. The current Title V permit will be the baseline reference for a renewal. The requirements (40 CFR 70.5(c) & NDAC 33.1-15-14-06.4.c) to include a citation and description of all applicable requirements and a description of or reference to any applicable test method for determining compliance with each applicable requirement may be met by accomplishing either or both of the following: 1) provide an annotated (red-lined) copy of the current permit indicating all changes needed to reflect the current facility configuration, applicable requirements and test methods; 2) provide a narrative that conveys all changes needed to the current permit to reflect the current facility configuration, all applicable requirements and test methods.

FOR ACID RAIN UNITS ONLY ♦ Submit with the Title V permit renewal application all Acid Rain renewal applications (the Acid Rain Permit Application, the Phase II NOx Compliance Plan, and if applicable, the Phase II NOx Averaging Plan).

When completing the online application, if uploaded files are provided in each section (when indicated), do not include those same files in the General Document Upload/File Upload section. If uploading the application files in the General Document Upload/File Upload section, only fill out the required (asterisked) sections of the online application.

Section A - Permit Information

Permit Number

AOP-28427

Permit Version

6

Issue Date

06/14/2022

Expiration Date

12/31/2026

Permittee

Company Name

Northern Border Pipeline Company

Address

700 Louisiana St

Suite 1300

Houston, TX 77002

United States

Responsible Official**Prefix**

Mr.

First Name

Dane

Last Name

Keplin

Title

Manager, Williston Area

Phone Type**Number****Extension**

Business

7014457400

Email

dane_keplin@tcenergy.com

Address

3790 County Road 83

Mandan, ND 58554

United States

Contact Person for Air Pollution Matters**Prefix**

Ms.

First Name

Hima

Last Name

Draksharam

Title

Environmental Analyst

Phone Type**Number****Extension**

Business

5093245067

Email

hima_draksharam@tcenergy.com

Address

201 W North River Dr

Suite 505

Spokane, WA 99201

United States

Section B (Part 1) - Facility Information**Facility Name**

Northern Border Pipeline Company - Arnegard Compressor Station

Have you added, removed, or made any modifications to equipment since your last operating permit issuance?

Yes

Is this source subject to Title IV Acid Rain regulations?

No

Is this a portable source?

No

Facility Location

2461 136th Ave NW

Arnegard, ND 58835

United States

County

McKenzie

Click the link below to use Google Maps to find the lat/long for a given address

[Google Maps](#)

Facility Location:

47.76990,-103.49980

2461 136th Ave NW, Arnegard, ND

Please download the form linked here, complete it, and upload it to this application using the attachment control below.

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[PERMIT APPLICATION FOR TITLE V PERMIT TO OPERATE \(SFN52858\)](#)

Attach completed form here

D.2. SFN52858 Permit to Operate Form.pdf - 06/17/2026 10:03 AM

Comment

NONE PROVIDED

Section B (Part 2) - Additional Location Information

Legal Description of Facility Site

Qtr Qtr	Qtr	Section	Township	Range
SE	NW	32	150N	100W

Land area at facility site (indicate whether measurement is in acres or sq. ft.)

818064 sq. ft

MSL elevation at facility

2380

Section C - Nature of Business

General Nature of Business

Describe Nature of Business	NAICS Code	SIC Code
Natural Gas Transmission	486210-Pipeline Transportation of Natural Gas	4922-Natural Gas Transmission

Actual Start of Construction Date

NONE PROVIDED

Actual End of Construction Date

NONE PROVIDED

Facility Startup Date

NONE PROVIDED

Section D - Process Equipment Information (1 of 6)

Emission Unit - T01

Emission Unit ID

T01

Emission Unit Description

Solar Titan 130, 22720 HP Natural Gas-Fired Turbine

Emission Point ID

T01

Emission Point Description

T01

Emission Process Description

Natural gas-fired compressor turbine

Emission Unit Status

Existing, no change

Applicable PTCs

PTC Number
ACP-18205

Applicable Federal Air Programs

Program Code
New Source Performance Standards

NSPS Air Program Subparts

Subpart
Subpart KKKK - STATIONARY COMBUSTION TURBINES

Applicable State Regulations

Regulation
33.1-15-12. Standards of Performance for New Stationary Sources.
33.1-15-18. Stack Heights.

Emission Unit form

Download the emission unit form linked here, complete it, and upload it to this application using the attachment control below.

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[EMISSION UNIT FOR TITLE V PERMIT TO OPERATE \(SFN61006\)](#)

Attach Emission Unit Form

[D.3. SFN61006 Emission Unit Form \(T01\).pdf - 06/17/2026 11:41 AM](#)

Comment

The NSPS Air Program Subparts drop down will not allow the selection of Subpart OOOOb as it exceeds the maximum character length allowed. T01 is subject to Subpart OOOOb standards.

Section D - Process Equipment Information (2 of 6)**Emission Unit - T02****Emission Unit ID**

T02

Emission Unit Description

Solar Titan 130, 22720 HP Natural Gas-Fired Turbine

Emission Point ID

T02

Emission Point Description

Stack

Emission Process Description

Natural gas-fired compressor turbine

Emission Unit Status

Existing, no change

Applicable PTCs

PTC Number
ACP-18205

Applicable Federal Air Programs

Program Code
New Source Performance Standards

NSPS Air Program Subparts

Subpart
Subpart KKKK - STATIONARY COMBUSTION TURBINES

Applicable State Regulations

Regulation
33.1-15-12. Standards of Performance for New Stationary Sources.
33.1-15-18. Stack Heights.

Emission Unit form

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[EMISSION UNIT FOR TITLE V PERMIT TO OPERATE \(SFN61006\)](#)

Attach Emission Unit Form

[D.4. SFN61006 Emission Unit Form \(T02\).pdf - 06/17/2026 11:43 AM](#)

Comment

The NSPS Air Program Subparts drop down will not allow the selection of Subpart OOOOb as it exceeds the maximum character length allowed. T02 is subject to Subpart OOOOb standards.

Section D - Process Equipment Information (3 of 6)**Emission Unit - EG2****Emission Unit ID**

EG2

Emission Unit Description

Caterpillar G3512, 1468 HP Emergency Generator

Emission Point ID

EG2

Emission Point Description

Stack

Emission Process Description

Emergency Generator RICE

Emission Unit Status

Existing, no change

Applicable PTCs

PTC Number
ACP-18205

Applicable Federal Air Programs

Program Code
New Source Performance Standards
40 CFR Part 63 Area Sources

NSPS Air Program Subparts

Subpart
Subpart JJJJ - STATIONARY SPARK IGNITION INTERNAL COMBUSTION ENGINES

Area Source MACT Air Program Subparts

Subpart
Subpart ZZZZ - STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES (RICE)

Applicable State Regulations

Regulation
33.1-15-08. Control of Air Pollution from Vehicles and Other Internal Combustion Engines.
33.1-15-03-02. Visible Emissions. Restrictions applicable to new installations and all incinerators.
33.1-15-12. Standards of Performance for New Stationary Sources.
33.1-15-22. Emissions Standards for Hazardous Air Pollutants for Source Categories.
33.1-15-18. Stack Heights.

Emission Unit form

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[EMISSION UNIT FOR TITLE V PERMIT TO OPERATE \(SFN61006\)](#)

Attach Emission Unit Form

D.5. SFN61006 Emission Unit Form (EG2).pdf - 06/17/2026 11:51 AM

Comment

NONE PROVIDED

Section D - Process Equipment Information (4 of 6)**Emission Unit - HE3****Emission Unit ID**

HE3

Emission Unit Description

2.353 MMBTU/HR Fuel Gas Heater

Emission Point ID

HE3

Emission Point Description

Stack

Emission Process Description

Natural gas-fired heater

Emission Unit Status

Existing, no change

Applicable PTCs

PTC Number
ACP-18205

Applicable Federal Air Programs

Program Code

Applicable State Regulations

Regulation
33.1-15-18. Stack Heights.

Emission Unit form

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[EMISSION UNIT FOR TITLE V PERMIT TO OPERATE \(SFN61006\)](#)

Attach Emission Unit Form

D.7. SFN61006 Emission Unit Form (HE3).pdf - 06/17/2026 11:45 AM

Comment

NONE PROVIDED

Section D - Process Equipment Information (5 of 6)**Emission Unit - BLR1****Emission Unit ID**

BLR1

Emission Unit Description

Boiler

Emission Point ID

BLR1

Emission Point Description

Stack

Emission Process Description

Natural gas-fired hot water boiler

Emission Unit Status

Existing, no change

Applicable PTCs

PTC Number
ACP-18205

Applicable Federal Air Programs

Program Code

Applicable State Regulations

Regulation
33.1-15-18. Stack Heights.

Emission Unit form

Download the emission unit form linked here, complete it, and upload it to this application using the attachment control below.

When completing the online application, if uploaded files are provided in each section (when indicated), do not include those same files in the General Document Upload/File Upload section. If uploading the application files in the General Document Upload/File Upload section, only fill out the required (asterisked) sections of the online application.

[EMISSION UNIT FOR TITLE V PERMIT TO OPERATE \(SFN61006\)](#)

Attach Emission Unit Form

[D.6. SFN61006 Emission Unit Form \(BLR1\).pdf - 06/17/2026 11:46 AM](#)

Comment
NONE PROVIDED

Section D - Process Equipment Information (6 of 6)

Emission Unit - CH

Emission Unit ID
CH

Emission Unit Description
Forced Air Heaters

Emission Point ID
CH

Emission Point Description
NONE PROVIDED

Emission Process Description
Natural gas-fired forced air heaters

Emission Unit Status
Existing, no change

Applicable PTCs

PTC Number
ACP-18205

Applicable Federal Air Programs

Program Code

Applicable State Regulations

Regulation

Emission Unit form

Download the emission unit form linked here, complete it, and upload it to this application using the attachment control below.

When completing the online application, if uploaded files are provided in each section (when indicated), do not include those same files in the General Document Upload/File Upload section. If uploading the application files in the General Document Upload/File Upload section, only fill out the required (asterisk) sections of the online application.

[EMISSION UNIT FOR TITLE V PERMIT TO OPERATE \(SFN61006\)](#)

Attach Emission Unit Form

NONE PROVIDED

Comment

NONE PROVIDED

Section E - Control Equipment (1 of 2)

Emission Unit: -'CTRL_EQUIP_DESC'

Control Equipment ID

NONE PROVIDED

Emission units being controlled by this control unit

NONE PROVIDED

Control Equipment Description

NONE PROVIDED

Control equipment form

Download the form linked here, complete it, and upload it to this application using the attachment control below.

When completing the online application, if uploaded files are provided in each section (when indicated), do not include those same files in the General Document Upload/File Upload section. If uploading the application files in the General Document Upload/File Upload section, only fill out the required (asterisk) sections of the online application.

[PERMIT APPLICATION FOR AIR POLLUTION CONTROL EQUIPMENT \(SFN8532\)](#)

Attach Control Equipment Form

NONE PROVIDED

Comment

NONE PROVIDED

Section E - Control Equipment (2 of 2)

Emission Unit: -'CTRL_EQUIP_DESC'

Control Equipment ID

NONE PROVIDED

Emission units being controlled by this control unit

NONE PROVIDED

Control Equipment Description

NONE PROVIDED

Control equipment form

Download the form linked here, complete it, and upload it to this application using the attachment control below.

When completing the online application, if uploaded files are provided in each section (when indicated), do not include those same files in the General Document Upload/File Upload section. If uploading the application files in the General Document Upload/File Upload section, only fill out the required (asterisk) sections of the online application.

[PERMIT APPLICATION FOR AIR POLLUTION CONTROL EQUIPMENT \(SFN8532\)](#)

Attach Control Equipment Form

NONE PROVIDED

Comment

NONE PROVIDED

Section F - Facility-Wide Applicable Regulations and Potential to Emit (PTE)**Applicable Federal Air Programs**

Program Code
New Source Performance Standards
Title V Permits
40 CFR Part 63 Area Sources

NSPS Air Program Subparts

Subpart
Subpart KKKK - STATIONARY COMBUSTION TURBINES
Subpart JJJJ - STATIONARY SPARK IGNITION INTERNAL COMBUSTION ENGINES

Area Source MACT Air Program Subparts

Subpart
Subpart ZZZZ - STATIONARY RECIPROCATING INTERNAL COMBUSTION ENGINES (RICE)

Applicable State Regulations

Regulation
33.1-15-02-04. Ambient air quality standards.
33.1-15-03-03. Visible Emissions. Restrictions applicable to fugitive emissions.
33.1-15-03-01. Visible Emissions. Restrictions applicable to existing installations.
33.1-15-05-02.2. Maximum allowable emission of particulate matter from fuel burning equipment used for indirect heating. Emission Limitations.
33.1-15-06-01.2 Restriction of emissions of sulfur dioxide from use of fuel. Restrictions applicable to fuel burning installations.
33.1-15-12. Standards of Performance for New Stationary Sources.
33.1-15-14-01. Designated Air Contaminant Sources.
33.1-15-16-02. Emissions of Odorous Substances Restricted.
33.1-15-17-02. Restriction of Fugitive Particulate Emissions.
33.1-15-17-04. Restriction of Fugitive Gaseous Emissions.
33.1-15-18. Stack Heights.
33.1-15-19-01. Visibility Protection. General Provisions.
33.1-15-22. Emissions Standards for Hazardous Air Pollutants for Source Categories.
33.1-15-23. Fees.
33.1-15-01. General Provisions.
33.1-15-04-02. Permissible open burning
33.1-15-08. Control of Air Pollution from Vehicles and Other Internal Combustion Engines.
33.1-15-10. Control of Pesticides.
33.1-15-11. Prevention of Air Pollution Emergency Episodes.

Potential to Emit (PTE)

Pollutant	Tons Per Year Without Fugitives	Tons Per Year With Fugitives
NOx	115.98	115.98
CO	158.82	158.82
VOCs	22.20	22.70

Pollutant	Tons Per Year Without Fugitives	Tons Per Year With Fugitives
SO2	9.53	9.53
PM	9.82	9.82
PM10	9.82	9.82
PM2.5	9.82	9.82
Total HAPs	1.74	1.74

Emission Calculations Document Upload

Using the attachment control below, upload emission calculations documents.

When completing the online application, if uploaded files are provided in each section (when indicated), do not include those same files in the General Document Upload/File Upload section. If uploading the application files in the General Document Upload/File Upload section, only fill out the required (asterisked) sections of the online application.

Attach Emission Calculations Documents

Appendix B - NBPL_CS4_Calculations 2026.pdf - 06/11/2026 11:19 PM

Comment

NONE PROVIDED

Section G - Compliance Schedule

Will your facility be in compliance with all applicable requirements effective at the time of permit issuance?

Yes

Will your facility be in compliance with all applicable requirements effective after the time of permit issuance?

Yes

Section H - Flexible Permits

Are you requesting a flexible permit?

No

Section I - Compliance Assurance Monitoring (CAM)

To determine if your facility is subject to CAM, review the information provided at the following link.

[Compliance Assurance Monitoring \(CAM\) Guidance](#)

Is the facility identified in this application in compliance with applicable monitoring and compliance certification requirements?

Yes, the facility IS in compliance with applicable monitoring and compliance certification requirements.

Section K - Redline Permit Upload

Use the attachment control below to upload a redline version of your existing permit document, showing any changes.

When completing the online application, if uploaded files are provided in each section (when indicated), do not include those same files in the General Document Upload/File Upload section. If uploading the application files in the General Document Upload/File Upload section, only fill out the required (asterisked) sections of the online application.

Attach redline version of permit here

Appendix A - Arnegard Regulatory Narrative.pdf - 06/23/2026 12:06 PM

Comment

The attached narrative document conveys all changes needed to the current permit to reflect the current facility configuration, all applicable requirements, and test methods.

Section L - General Document Upload

File Upload

Use the attachment control below to upload any other information necessary for application review, such as plot plans, process diagrams, maps, etc.

When completing the online application, if uploaded files are provided in each section (when indicated), do not include those same files in the General Document Upload/File Upload section. If uploading the application files in the General Document Upload/File Upload section, only fill out the required (asterisked) sections of the online application.

Attachments

[Appendix C - Solar Low Temp Emissions Data.pdf - 06/11/2026 11:17 PM](#)

[Arnegard Cover Letter_with signature.pdf - 06/23/2026 12:03 PM](#)

[2026.06.22 NBPL Arnegard CS Renewal Form SFN52824 - signed.pdf - 06/24/2026 10:39 AM](#)

Comment

NONE PROVIDED

Additional Forms

NONE PROVIDED

Agreements and Signature(s)

Certification Statement

I certify under penalty of law that the enclosed documents and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I also certify that the source(s) identified in this application is/are in compliance with all applicable requirements except those requirements for which a compliance schedule has been submitted in the Compliance Schedule Form or Compliance Schedule Section of the application. I understand that failure to comply with any term of a compliance schedule is considered to be a violation of regulation NDAC 33.1-15-14-06.1.e. The source will continue to comply with the current applicable requirements with which it is in compliance. The source will meet, on a timely basis, any applicable requirement, which becomes effective during the permit term. The source is properly implementing any required risk management plan in accordance with section 112(r) of the federal clean air act, if appropriate.

I certify, as the Responsible Official, that I have read and understood the above requirements and conditions applicable to my source/facility and that the information and attachments provided in this application are true, accurate, and complete to the best of my knowledge." Further, I agree to comply with the provisions of Chapter 23.1-06 of the North Dakota Century Code and all rules and regulations of the Department, or revisions thereof. I also understand a permit is nontransferable and, if granted a permit, I will promptly notify the Department upon sale or legal transfer of this permitted establishment.

Note: This certification must be signed by a "responsible official" as defined in NDAC 33.1-15-14-06.1.

Submission Agreements

- ☒ I am the owner of the account used to perform the electronic submission and signature.
- ☒ I have the authority to submit the data on behalf of the facility I am representing.
- ☒ I agree that providing the account credentials to sign the submission document constitutes an electronic signature equivalent to my written signature.
- ☒ I have reviewed the electronic form being submitted in its entirety, and agree to the validity and accuracy of the information contained within it to the best of my knowledge.

Signed By Hima Bindu Draksharam on 06/25/2026 at 3:38 PM
IT7pNHnWQoTPAFbDqRrM55Zx6jKJdjHa5i+V0SgWeFwgvpIzS5MIQJjXP5ygmW1wbJc0DgNxjFbCl6JZUejbpQ==



**Northern Border
Pipeline Company**

700 Louisiana St, Suite 1300 | Houston | Texas 77002

June 25, 2026

North Dakota Department of Environmental Quality
Division of Air Quality
4201 Normandy Street, 2nd Floor
Bismarck, ND 58503-1324

**Re: Northern Border Pipeline Company
Compressor Station No. 4 (Arnegard)
Title V Renewal Application**

To whom it may concern,

Northern Border Pipeline Company (NBPC) operates Compressor Station No. 4 (Arnegard) in McKenzie County, North Dakota. The facility currently operates under Title V Permit No. AOP-28427 v6.0, issued June 14, 2022, and Permit to Construct No. ACP-18205 v1.0, issued January 30, 2024.

Since the issuance of the most recent Permit to Construct, NBPC has implemented minor changes at the station. The facility remains a Title V major source for nitrogen oxides (NO_x) and carbon monoxide (CO) and an area source for HAPs. In coordination with the North Dakota Department of Environmental Quality (NDDEQ), these changes are being incorporated into the Title V renewal application in lieu of a separate permit modification.

The changes are described in Appendix A – Arnegard Regulatory Narrative and have resulted in increases in NO_x, CO, and VOC emissions, as presented in Appendix B – Potential to Emit Calculations. One such change includes the addition of low-temperature operating hours for the Solar Titan 130 turbines. Emission estimates for these operating conditions, provided by Solar, have been incorporated into the potential to emit analysis. Supporting documentation is included in Appendix C – Solar Titan 130 Low Temperature Emissions Data.

Application forms are not included in this submittal in accordance with the instructions provided in Sections B and L of the CERIS-ND online application portal.

If you have any questions, please contact me at hima_draksharam@tcenergy.com or at (509) 324-5067.

Sincerely,
TC Energy Corporation

Hima Bindu Draksharam
Environmental Analyst



Compressor Station No. 4 (Arnegard) Title V Renewal

Northern Border Pipeline Company

PREPARED FOR



DATE

17 June 2026

REFERENCE

0826645



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2.1.2	40 CFR 60 Subpart KKKKa – Standards of Performance for Stationary Gas Turbines	3
2.1.3	40 CFR 60 Subpart OOOOb – Standards of Performance for Crude Oil and Natural Gas Facilities for which Construction, Modification, or Reconstruction Commenced after December 6, 2022	4

ACRONYMS AND ABBREVIATIONS

Acronym	Description
°F	degrees Fahrenheit
CH ₄	methane
CO	carbon monoxide
CO ₂	carbon dioxide
GWP	Global Warming Potentials
hp	horsepower
MMBtu/hr	million British thermal units per hour
N ₂ O	nitrous oxide
NBPC	Northern Border Pipeline Company
NNDEQ	North Dakota Department of Environmental Quality
NO _x	nitrogen oxides
NSPS	New Source Performance Standards
SIC	Standard Industrial Classification
SO ₂	sulfur dioxide
USEPA	United States Environmental Protection Agency

1. INTRODUCTION

Northern Border Pipeline Company (NBPC) submits this supplement to the North Dakota Department of Environmental Quality (NDDEQ) Title V Renewal Application for the Arnegard Compressor Station located in McKenzie County, North Dakota. This narrative conveys all changes needed to the current permit to reflect the current facility configuration, all applicable requirements and test methods.

The Arnegard Compressor Station currently operates under Title V Permit Number AOP-28427 v6.0 issued on June 14, 2022 and ACP-18205 v1.0 issued on January 30, 2024. The station is currently a Title V major for NO_x and CO and an area source for HAPs.

In 2024, NBPC completed a modernization project at the station that included the installation of two Solar Titan 130 combustion turbines. As a result of that modification, the facility is now subject to applicable federal requirements under 40 CFR Part 60, New Source Performance Standards (NSPS), Subpart KKKK (Standards of Performance for Stationary Combustion Turbines) and Subpart OOOOb (Standards of Performance for Crude Oil and Natural Gas Facilities).

This narrative provides an overview of the applicability of these regulations to the Arnegard Compressor Station and identifies the specific requirements associated with the newly installed equipment. Detailed regulatory obligations are presented in the sections that follow.

Additionally, NBPC has revised the operating conditions for the Solar Titan 130 turbines to better reflect site-specific climatic conditions. Due to the extended periods of low ambient temperatures in McKenzie County, NBPC proposes to incorporate a new operating category, defined as "Very Low Temperature" operations ($-40^{\circ}\text{F} \leq \text{temperature} < -20^{\circ}\text{F}$). A detailed breakdown of the revised operating hours associated with each operating condition is provided in Section 1.2.

Minor updates to the emission calculations for the facilities have been incorporated. Specifically, AP-42's Compilation of Air Pollutant Emissions Factors from Stationary Sources Section 3.2, *Natural Gas-Fired Reciprocating Engines*, and AP-42 Section 1.4, *Natural Gas Combustion*, were updated in October 2024 and April 2026, respectively, and were applied to refine hazardous air pollutant (HAP) emission estimates. In addition, the global warming potential (GWP) values in Table A-1 to Subpart A of 40 CFR Part 98 were updated in January 2025, revising carbon dioxide (CO₂) to 1, methane (CH₄) to 28, and nitrous oxide (N₂O) to 265 (from previous values of 1, 25, and 298, respectively). Updates to fugitive component counts and pneumatic device inventories also resulted in revised estimates of HAP, VOC, and GHG emissions.

As there have been no changes to the process flow diagram, facility plot plan, or manufacturer specifications since the 2024 Permit to Construct was issued, these have not been included with this renewal application. Solar has provided NBPC with emissions data for the new low temperature operating categories for the Solar Titan 130. These estimates have been included as a separate attachment to the application (Appendix C).

1.1 EMISSION UNIT SUMMARY

This facility currently consists of the following equipment:

- 1,200-gallon Condensate Drip Storage Tank (T1)
- 1.45-MMBtu/hr (total) natural gas-fired forced air heaters (CH)

- 2 – 22,720-hp Solar Titan 130 Turbines (T01 and T02)
- 1,468-hp Caterpillar G3512 Emergency Generator RICE (EG2)
- 2.353-MMBtu/hr OGI TERI natural gas-fired fuel gas heater (HE3)
- 4.80-MMBtu/hr Cleaver Brooks natural gas-fired hot water boiler (BLR1)

Additional equipment at the facility consists of fugitive leaks, blowdowns, pigging operations, and pneumatic devices.

1.2 PROCESS DESCRIPTION AND CONTROL TECHNOLOGY ANALYSIS

The Arnegard Compressor Station is a natural gas transmission facility covered by Standard Industrial Classification (SIC) 4922. Pipeline transmission of natural gas requires that the gas be compressed. The Arnegard Compressor Station will receive natural gas via pipeline from an upstream compressor station, compress it using the two Solar Titan 130 Turbines and transmit the gas via pipeline to a downstream station. The potential emissions for the two Solar Titan 130 Turbines were estimated using USEPA AP-42 and manufacturer data from Solar with the following operating conditions:

Operating Condition	Previous Hours	Proposed Hours
Normal Operations (Temp $\geq 0^{\circ}\text{F}$)	8,193.33	7,493.33
Very Low Temperature Operations ($-40^{\circ}\text{F} \leq \text{Temp} < -20^{\circ}\text{F}$)	-	200
Low Temperature Operations ($-20^{\circ}\text{F} \leq \text{Temp} < 0^{\circ}\text{F}$) - PACO	300	800
Low Load Operations ($< 50\%$)	200	200
Startup/Shutdown Operations	66.67	66.67

NBPC has revised the annual operating profile for the two Solar Titan 130 combustion turbines to better reflect expected operating conditions at the Arnegard Compressor Station. These revisions are driven primarily by the climatic conditions in McKenzie County, North Dakota, where extended periods of sub-zero temperatures necessitate operation under distinct temperature-dependent modes.

Historically, turbine operation was categorized into normal operations, low temperature operations, low load operations, and startup/shutdown periods. Under the proposed revision, NBPC is introducing a new operating category, defined as "Very Low Temperature" operations, to more accurately represent turbine operation during extreme cold weather conditions. This operating mode applies when ambient temperatures are greater than or equal to -40°F and less than -20°F . The addition of this category allows NBPC to better allocate operating hours across temperature-dependent modes and more accurately characterize turbine performance, emissions behavior, and control system response during extreme conditions.

2. REGULATORY DISCUSSION

This section outlines the federal regulations that are applicable to the Arnegard Compressor Station as a result of the modernization project and makes an applicability determination for

each rule based on activities conducted at the site and the emissions of regulated air pollutants. This review is presented to supplement and/or add clarification to the information provided in the NDDEQ PTC application forms.

2.1 FEDERAL AIR QUALITY REGULATIONS

2.1.1 40 CFR 60 SUBPART KKKK – Standards of Performance for Stationary Gas Turbines

The USEPA has promulgated NSPS for stationary combustion turbines in 40 CFR 60 Subpart KKKK. Any Solar turbine that has a peak heat input of 10 MMBtu/hr or greater, will be subject to the requirements of Subpart KKKK per 40 CFR §60.4305(a). Sources covered by Subpart KKKK are exempt from the requirements in Subpart GG (the previous combustion turbine NSPS) per 40 CFR §60.4305(b). The subcategory and corresponding NO_x emission standard as established in Table 1 of Subpart KKKK for each of the turbines is presented in the Table below.

Unit	Table 1 Subcategory	Heat Input	NO _x Emission Standard
Solar Titan 130	New turbine firing natural gas	> 50 MMBtu/hr and ≤ 850 MMBtu/hr	25 ppm at 15 percent O ₂ or 150 ng/J of useful output (1.2 lb/MWh)

To demonstrate compliance with this limit, §60.4400(a) requires both an initial (within 180 days of startup or 60 days of achieving full load operation) and annual (not to exceed 14 months from previous test) performance test.

The fuel sulfur limit in Subpart KKKK is 0.060 lb SO₂/MMBtu. Under 40 CFR §60.4365, a source is exempt from monitoring fuel sulfur content if the source burns natural gas that is covered by a purchase or transportation agreement with maximum sulfur content of 20 grains per 100 scf. The permittee's tariff limits the sulfur content to no more than 2 grains per 100 standard cubic feet, therefore, the turbines are exempt from monitoring fuel sulfur content.

The NO_x emission rates and fuel sulfur levels comply with NSPS limits.

2.1.2 40 CFR 60 SUBPART KKKKa – Standards of Performance for Stationary Gas Turbines

NSPS Subpart KKKKa establishes revised emission standards and compliance requirements for the control of NO_x and SO₂ emissions from certain stationary combustion turbines, based on size, utilization, and efficiency, for units that commence construction, modification, or reconstruction after December 13, 2024. The Solar Titan 130 turbines at the facility are not subject to Subpart KKKKa because construction occurred prior to this date.

As part of this application, NBPC proposes modifications to the turbines' low-temperature operating hours (see Section 1.2). However, the definition of "modification" in 40 CFR 60.14(e) explicitly provides that an increase in hours of operation alone does not constitute a modification under 40 CFR Part 60. Therefore, the proposed operational change does not trigger modification status, and the turbines are not considered modified after December 13, 2024. Accordingly, they remain not subject to NSPS Subpart KKKKa.

2.1.3 40 CFR 60 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 requirements for the control of methane, VOC, and SO₂ emissions from affected facilities within the crude oil and natural gas source category that commence construction, modification, or reconstruction after December 6, 2022. A prior modification submitted to NDDEQ in 2023 increased the facility horsepower, triggering applicability under Subpart OOOOb. Accordingly, the turbine-driven centrifugal compressors equipped with dry seal systems are subject to OOOOb. In addition, pneumatic devices and fugitive emission components at the facility are also subject to the requirements of this subpart.

**Northern Border Pipeline Company
Compressor Station No. 4 (Arnegard, North Dakota)
Site Criteria Pollutant Potential-To-Emit Summary**

Site Criteria Pollutant Emission Summary															
Emission Sources	Emission Unit ID	NO _x		CO		VOC		PM ₁₀		SO ₂		HAPs		CO ₂ e	
		(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)	(lb/hr)	(tpy)
Existing Equipment															
Solar Titan 130 Turbine	T01	11.12	48.72	14.64	64.13	2.00	8.75	1.08	4.73	1.08	4.72	0.17	0.74	19,151.58	83,883.93
Solar Titan 130 Turbine	T02	11.12	48.72	14.64	64.13	2.00	8.75	1.08	4.73	1.08	4.72	0.17	0.74	19,151.58	83,883.93
Cat G3512 Emergency Generator	EG2	3.24	0.81	6.47	1.62	3.43	0.86	0.11	0.03	<0.01	0.07	0.79	0.20	1,212.42	303.11
Heater	HE3	0.22	0.95	0.20	0.88	0.12	0.53	0.02	0.07	<0.01	<0.01	<0.01	0.02	275.53	1,206.82
Boiler	BLR1	0.10	0.43	0.03	0.14	<0.01	0.03	0.05	0.22	<0.01	0.01	<0.01	0.04	562.07	2,461.85
Forced Air Heaters	CH	0.13	0.58	0.11	0.49	<0.01	0.03	0.01	0.04	<0.01	<0.01	<0.01	0.01	170.12	745.15
Condensate Drip Tank	T1	-	-	-	-	<0.01	0.01	-	-	-	-	-	-	3.39	14.83
Pigging	-	-	-	-	-	NA	1.17	-	-	-	-	NA	<0.01	NA	2,360.35
Pneumatic Devices	-	-	-	-	-	0.02	0.07	-	-	-	-	NA	<0.01	37.37	163.67
Blowdowns	-	-	-	-	-	NA	1.17	-	-	-	-	NA	<0.01	NA	6,626.10
Fugitives	-	-	-	-	-	NA	0.50	-	-	-	-	NA	<0.01	NA	1,010.14
Existing PTE:		25.92	100.20	36.09	131.38	7.58	21.38	2.35	9.82	2.17	9.53	1.15	1.74	40,564.06	181,649.73

New Hours															
Solar Titan 130 Turbine	T01	12.92	56.61	17.77	77.85	2.09	9.16	1.08	4.73	1.08	4.72	0.17	0.74	19,151.58	83,883.93
Solar Titan 130 Turbine	T02	12.92	56.61	17.77	77.85	2.09	9.16	1.08	4.73	1.08	4.72	0.17	0.74	19,151.58	83,883.93
New PTE:		29.53	115.98	42.36	158.82	7.77	22.20	2.35	9.82	2.17	9.53	1.15	1.74	40,564.06	181,649.73

Change in PTE:		+3.61	+15.78	+6.27	+27.45	+0.18	+0.83	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
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Northern Border Pipeline Company
Compressor Station No. 4 (Arnegard, North Dakota)
Site Hazardous Air Pollutant Potential To Emit Summary

Pollutant	CAS	T01	T02	EG2	HE3	BLR1	CH	T1	Fugitives	Pneumatics	Pigging	Blowdowns	Total
		(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)	(ton/yr)
Acetaldehyde	75-07-0	2.87E-02	2.87E-02	2.30E-02	-	-	-	-	-	-	-	-	0.08
Acrolein	107-02-8	4.59E-03	4.59E-03	1.42E-02	-	-	-	-	-	-	-	-	0.02
Benzene	71-43-2	8.60E-03	8.60E-03	1.21E-03	1.97E-05	4.01E-05	1.21E-05	-	2.66E-08	-	-	-	0.02
Biphenyl	92-52-4	-	-	5.84E-04	-	-	-	-	-	-	-	-	5.84E-04
1,3-Butadiene	106-99-0	3.08E-04	3.08E-04	7.35E-04	-	-	-	-	-	-	-	-	1.35E-03
Carbon Tetrachloride	56-23-5	-	-	1.01E-04	-	-	-	-	-	-	-	-	1.01E-04
Chlorobenzene	108-90-7	-	-	8.37E-05	-	-	-	-	-	-	-	-	8.37E-05
Chloroform	67-66-3	-	-	7.84E-05	-	-	-	-	-	-	-	-	7.84E-05
1,3-Dichloropropene	542-75-6	-	-	7.27E-05	-	-	-	-	-	-	-	-	7.27E-05
Ethylbenzene	100-41-4	2.29E-02	2.29E-02	1.09E-04	-	-	-	-	1.49E-09	-	-	-	0.05
Ethylene Dibromide	106-93-4	-	-	1.22E-04	-	-	-	-	-	-	-	-	1.22E-04
Formaldehyde	50-00-0	5.09E-01	5.09E-01	1.45E-01	7.03E-04	1.43E-03	4.34E-04	-	-	-	-	-	1.17
Methanol	67-56-1	-	-	6.88E-03	-	-	-	-	-	-	-	-	6.88E-03
Methylene Chloride	75-09-2	-	-	5.51E-05	-	-	-	-	-	-	-	-	5.51E-05
n-Hexane	110-54-3	-	-	3.06E-03	1.69E-02	3.44E-02	1.04E-02	-	4.57E-07	-	-	-	0.06
Naphthalene	91-20-3	9.32E-04	9.32E-04	2.05E-04	-	-	-	-	-	-	-	-	2.07E-03
PAH (POM)	NA	1.58E-03	1.58E-03	7.40E-05	-	-	-	-	-	-	-	-	3.23E-03
Phenol	108-95-2	-	-	6.61E-05	-	-	-	-	-	-	-	-	6.61E-05
Propylene Oxide	198-55-0	2.08E-02	2.08E-02	-	-	-	-	-	-	-	-	-	0.04
Styrene	100-42-5	-	-	6.50E-05	-	-	-	-	-	-	-	-	6.50E-05
Toluene	108-88-3	9.32E-02	9.32E-02	1.12E-03	3.19E-05	6.50E-05	1.97E-05	-	2.10E-08	-	-	-	0.19
1,1,2,2-Tetrachloroethane	79-34-5	-	-	1.10E-04	-	-	-	-	-	-	-	-	1.10E-04
2,2,4-Trimethylpentane	540-84-1	-	-	6.88E-04	-	-	-	-	3.57E-08	-	-	-	6.88E-04
Vinyl Chloride	75-01-4	-	-	4.10E-05	-	-	-	-	-	-	-	-	4.10E-05
Xylenes	108-38-3	4.59E-02	4.59E-02	5.06E-04	-	-	-	-	1.20E-08	-	-	-	0.09
Total:		0.74	0.74	0.20	0.02	0.04	0.01	1.76E-10	5.54E-07	8.01E-08	2.37E-07	6.64E-07	1.74

**Northern Border Pipeline Company
 Arnegard Compressor Station
 Solar Titan 130 (T01 and T02)**

Solar Titan 130 (T01 and T02)		
Emissions for All Operating Modes for One Unit		
Pollutant	lb/hr	tons/yr
NOx	12.92	56.61
CO	17.77	77.85
VOC	2.09	9.16
PM / PM ₁₀ / PM _{2.5}	1.08	4.73
SO ₂	1.08	4.72
CO ₂	19,131.96	83,797.97
CH ₄	0.36	1.58
N ₂ O	0.04	0.16
1,3-Butadiene	<0.01	<0.01
Acetaldehyde	<0.01	0.03
Acrolein	<0.01	<0.01
Benzene	<0.01	<0.01
Ethylbenzene	<0.01	0.02
Formaldehyde	0.12	0.51
Naphthalene	<0.01	<0.01
PAH (POM)	<0.01	<0.01
Propylene Oxide	<0.01	0.02
Toluene	0.02	0.09
Xylenes	0.01	0.05
Total HAPs	0.17	0.74
Total CO ₂ e	19,151.58	83,883.93

Solar Titan 130 (T01 and T02)									
Normal Operations (Temp ≥ 0° F)									
Pollutant	Emission Factor	Emission Factor Units	Emission Factor Basis / Source	Heat Value of Natural Gas (Btu/scf)	Rated bhp	BSFC (Btu/hp-hr)	Annual Operating Hours	Max. Hourly Emissions. (lb/hr)	Max. Annual Emissions. (tpy)
NOx	9.56	lb/hr	Manufacturer Data	1,100	22,720	7,204	7,493	9.56	35.82
CO	9.70	lb/hr	Manufacturer Data	1,100	22,720	7,204	7,493	9.70	36.34
VOC	1.11	lb/hr	Manufacturer Data	1,100	22,720	7,204	7,493	1.11	4.16

Solar Titan 130 (T01 and T02)									
Very Low Temperature Operations (Temp < -20° F ≥ -40° F)									
Pollutant	Emission Factor	Emission Factor Units	Emission Factor Basis / Source	Heat Value of Natural Gas (Btu/scf)	Rated bhp	BSFC (Btu/hp-hr)	Annual Operating Hours	Max. Hourly Emissions. (lb/hr)	Max. Annual Emissions. (tpy)
NOx	80.30	lb/hr	Manufacturer Data	1,100	22,720	7,204	200	80.30	8.03
CO	61.10	lb/hr	Manufacturer Data	1,100	22,720	7,204	200	61.10	6.11
VOC	2.32	lb/hr	Manufacturer Data	1,100	22,720	7,204	200	2.32	0.23

Solar Titan 130 (T01 and T02)									
Low Temperature Operations (Temp < 0° F ≥ -20° F) - PACO									
Pollutant	Emission Factor	Emission Factor Units	Emission Factor Basis / Source	Heat Value of Natural Gas (Btu/scf)	Rated bhp	BSFC (Btu/hp-hr)	Annual Operating Hours	Max. Hourly Emissions. (lb/hr)	Max. Annual Emissions. (tpy)
NOx	27.70	lb/hr	Manufacturer Data	1,100	22,720	7,204	800	27.70	11.08
CO	40.00	lb/hr	Manufacturer Data	1,100	22,720	7,204	800	40.00	16.00
VOC	2.28	lb/hr	Manufacturer Data	1,100	22,720	7,204	800	2.28	0.91

Solar Titan 130 (T01 and T02)									
Low Load Operations ¹									
Pollutant	Emission Factor	Emission Factor Units	Emission Factor Basis / Source	Heat Value of Natural Gas (Btu/scf)	Rated bhp	BSFC (Btu/hp-hr)	Annual Operating Hours	Max. Hourly Emissions. (lb/hr)	Max. Annual Emissions. (tpy)
NOx	14.80	lb/hr	Manufacturer Data	1,100	6,816	7,204	200	14.80	1.48
CO	157.00	lb/hr	Manufacturer Data	1,100	6,816	7,204	200	157.00	15.70
VOC	29.60	lb/hr	Manufacturer Data	1,100	6,816	7,204	200	29.60	2.96

Solar Titan 130 (T01 and T02)										
Startup / Shutdown Operations										
Pollutant	Emission Factor	Emission Factor Units	Emission Factor Basis / Source	Heat Value of Natural Gas (Btu/scf)	Rated bhp	BSFC (Btu/hp-hr)	Annual Operating Hours	Events Per year	Max. Hourly Emissions. (lb/hr)	Max. Annual Emissions. (tpy)
NOx	2.00	lb/event	Manufacturer Data	1,100	22,720	7,204	67	200	6.00	0.20
CO	37.00	lb/event	Manufacturer Data	1,100	22,720	7,204	67	200	111.00	3.70
VOC	9.00	lb/event	Manufacturer Data	1,100	22,720	7,204	67	200	27.00	0.90

Solar Titan 130 (T01 and T02)									
All Operation Modes									
Pollutant	Emission Factor	Emission Factor Units	Emission Factor Basis / Source	Heat Value of Natural Gas (Btu/scf)	Rated bhp	BSFC (Btu/hp-hr)	Annual Operating Hours	Max. Hourly Emissions. (lb/hr)	Max. Annual Emissions. (tpy)
PM / PM ₁₀ / PM _{2.5}	6.60E-03	lb/MMBtu	AP-42 Chapter 3.1	1,100	22,720	7,204	8,760	1.08	4.73
SO ₂	6.58E-03	lb/MMBtu	AP-42 Chapter 3.1	1,100	22,720	7,204	8,760	1.08	4.72
CO ₂	116.89	lb/MMBtu	40CFR98 Subpart C	1,100	22,720	7,204	8,760	19,131.96	83,797.97
CH ₄	2.20E-03	lb/MMBtu	40CFR98 Subpart C	1,100	22,720	7,204	8,760	0.36	1.58
N ₂ O	2.20E-04	lb/MMBtu	40CFR98 Subpart C	1,100	22,720	7,204	8,760	0.04	0.16
1,3-Butadiene	4.30E-07	lb/MMBtu	AP-42 Chapter 3.1	1,100	22,720	7,204	8,760	<0.01	<0.01
Acetaldehyde	4.00E-05	lb/MMBtu	AP-42 Chapter 3.1	1,100	22,720	7,204	8,760	<0.01	0.03
Acrolein	6.40E-06	lb/MMBtu	AP-42 Chapter 3.1	1,100	22,720	7,204	8,760	<0.01	<0.01
Benzene	1.20E-05	lb/MMBtu	AP-42 Chapter 3.1	1,100	22,720	7,204	8,760	<0.01	<0.01
Ethylbenzene	3.20E-05	lb/MMBtu	AP-42 Chapter 3.1	1,100	22,720	7,204	8,760	<0.01	0.02
Formaldehyde	7.10E-04	lb/MMBtu	AP-42 Chapter 3.1	1,100	22,720	7,204	8,760	0.12	0.51
Naphthalene	1.30E-06	lb/MMBtu	AP-42 Chapter 3.1	1,100	22,720	7,204	8,760	<0.01	<0.01
PAH (POM)	2.20E-06	lb/MMBtu	AP-42 Chapter 3.1	1,100	22,720	7,204	8,760	<0.01	<0.01
Propylene Oxide	2.90E-05	lb/MMBtu	AP-42 Chapter 3.1	1,100	22,720	7,204	8,760	<0.01	0.02
Toluene	1.30E-04	lb/MMBtu	AP-42 Chapter 3.1	1,100	22,720	7,204	8,760	0.02	0.09
Xylenes	6.40E-05	lb/MMBtu	AP-42 Chapter 3.1	1,100	22,720	7,204	8,760	0.01	0.05
Total HAPs								0.17	0.74
Total CO ₂ e								19,151.58	83,883.93

¹ - Low Load PTE Calculations were based on data from Solar

Notes:

- Only one start up and shutdown cycle will occur in any one hour period.
- Each unit is permitted @ 200 start up and shut down cycles.
- AP-42, Chapter 3.1, Table 3.1-2a - Emission Factors for Criteria Pollutants and Greenhouse Gases from Stationary Gas Turbines (4/00)
- SO₂ emission factor = 0.94S. Tariff cannot exceed 2 grains of total sulfur per 100 ft³. S=0.007 weight percent.
- Emissions supplied from vendor data
- VOC emissions based on 20% of vendor data supplied for unburned hydrocarbons
- AP-42, Chapter 3.1, Table 3.1-3 - Emission Factors for Hazardous Air Pollutants from Natural Gas-Fired Stationary Gas Turbines (4/00)
- Emission factors are from 40 CFR 98, Subpart C, Table C-1 and C-2.
- Value obtained from AP-42, Chapter 3.1, Table 3.1-2a, footnote c
- Fuel throughput = BSFC (BTU/HP-hr) x Power (HP) / Heat Content (BTU/scf)
- Global Warming Potentials obtained from 40 CFR 98, Subpart A, Table A-1

Northern Border Pipeline Company
Arnegard Compressor Station
Caterpillar G3512 Emergency Generator (EG2)

Caterpillar G3512 Emergency Generator (EG2)									
Pollutant	Pre Control Emission Factor	Emission Factor Units	Emission Factor Basis / Source	Heat Value of Natural Gas (Btu/scf)	Rated bhp	BSFC (Btu/hp-hr)	Annual Operating Hours	Max. Hourly Emissions. (lb/hr)	Max. Annual Emissions. (tpy)
VOCs	0.70	g/bhp-hr	Manufacturer Data	1,100	1,468	7,500	500	2.85	0.71
CO	2.00	g/bhp-hr	Manufacturer Data	1,100	1,468	7,500	500	6.47	1.62
NO _x	1.00	g/bhp-hr	Manufacturer Data	1,100	1,468	7,500	500	3.24	0.81
PM Filterable	7.71E-05	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
PM Condensable	9.91E-03	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	0.11	0.03
SO ₂	5.88E-04	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	0.07
CO ₂	110.00	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	1,211.10	302.78
CH ₄	1.00E-03	kg CH ₄ / MMBtu	40 CFR Subpart C	1,100	1,468	7,500	500	0.02	<0.01
N ₂ O	1.00E-04	kg N ₂ O / MMBtu	40 CFR Subpart C	1,100	1,468	7,500	500	<0.01	<0.01
Xylenes	1.84E-04	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
Formaldehyde	5.28E-02	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	0.58	0.15
Benzene	4.40E-04	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
Toluene	4.08E-04	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
Ethylbenzene	3.97E-05	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
n-Hexane	1.11E-03	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	0.01	<0.01
1,1,2,2-Tetrachloroethane	4.00E-05	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
1,3-Butadiene	2.67E-04	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
1,3-Dichloropropene	2.64E-05	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
2-Methylnaphthalene	3.32E-05	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
2,2,4-Trimethylpentane	2.50E-04	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
Acetaldehyde	8.36E-03	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	0.09	0.02
Acrolein	5.14E-03	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	0.06	0.01
Biphenyl	2.12E-04	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
Carbon Tetrachloride	3.67E-05	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
Chlorobenzene	3.04E-05	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
Chloroform	2.85E-05	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
Ethylene Dibromide	4.43E-05	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
Methanol	2.50E-03	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	0.03	<0.01
Methylene Chloride	2.00E-05	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
Naphthalene	7.44E-05	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
PAH (POM)	2.69E-05	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
Phenol	2.40E-05	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
Styrene	2.36E-05	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
Vinyl Chloride	1.49E-05	lb/MMBtu	AP-42 Chapter 3.2	1,100	1,468	7,500	500	<0.01	<0.01
Total HAPs								0.79	0.20
Total CO ₂ e								1,212.42	303.11

Notes:

- Emission rates displayed above represent the max. hourly and max. annual emissions for one 4SLB Caterpillar G3512.
- Greenhouse Gas Emissions are calculated using 40 CFR 98 Subpart C Table C-1 and C-2 emission factors.
- AP-42, Chapter 3.2 Table 3.2 -2 references are from the October 2024 revision.
- Max. Annual Emissions based upon Max. Hourly Emissions @ 500 hr/yr.
- CO₂ equivalency solved for using Global Warming Potentials found in 40CFR98 Table A-1 (Updated January 2025). GWP CO₂=1, GWP CH₄=28, GWP N₂O=265

Example Equations:

Max. Hourly Emission Rate (lb/hr) = Emission Factor (lb/MMBtu) x BSFC (Btu/hp-hr) ÷ 1,000,000 x Engine Rating (bhp)

Max. Hourly Emission Rate (lb/hr) = Emission Factor (g/bhp-hr) x Engine Rating (hp) x (1 lb/453.6 g)

Northern Border Pipeline Company
 Arnegard Compressor Station
 Fuel Gas Heater - OGI TERI (HE3)

Fuel Gas Heater OGI TERI (HE3)								
Pollutant	Emission Factor	Emission Factor Units	Emission Factor Basis / Source	Heater Rating (MMBtu/hr)	Heat Value of Natural Gas (Btu/scf)	Annual Operating Hours	Max. Hourly Emissions. (lb/hr)	Max. Annual Emissions. (tpy)
NO _x	9.20E-02	lb/MMBtu	Manufacturer Data	2.353	1,100	8,760	0.22	0.95
CO	8.50E-02	lb/MMBtu	Manufacturer Data	2.353	1,100	8,760	0.20	0.88
VOCs	5.15E-02	lb/MMBtu	Manufacturer Data	2.353	1,100	8,760	0.12	0.53
PM Filterable	1.90E+00	lb/10 ⁶ scf	AP-42 Chapter 1.4	2.353	1,100	8,760	<0.01	0.02
PM Condensable	5.70E+00	lb/10 ⁶ scf	AP-42 Chapter 1.4	2.353	1,100	8,760	0.01	0.05
SO ₂	6.00E-01	lb/10 ⁶ scf	AP-42 Chapter 1.4	2.353	1,100	8,760	<0.01	<0.01
CO ₂	5.31E+01	kg CO ₂ / MMBtu	40 CFR Subpart C	2.353	1,100	8,760	275.25	1,205.58
CH ₄	1.00E-03	kg CH ₄ / MMBtu	40 CFR Subpart C	2.353	1,100	8,760	<0.01	0.02
N ₂ O	1.00E-04	kg N ₂ O / MMBtu	40 CFR Subpart C	2.353	1,100	8,760	<0.01	<0.01
Hexane	1.80E+00	lb/10 ⁶ scf	AP-42 Chapter 1.4	2.353	1,100	8,760	<0.01	0.02
Formaldehyde	7.50E-02	lb/10 ⁶ scf	AP-42 Chapter 1.4	2.353	1,100	8,760	<0.01	<0.01
Benzene	2.10E-03	lb/10 ⁶ scf	AP-42 Chapter 1.4	2.353	1,100	8,760	<0.01	<0.01
Toluene	3.40E-03	lb/10 ⁶ scf	AP-42 Chapter 1.4	2.353	1,100	8,760	<0.01	<0.01
Pb	5.00E-04	lb/10 ⁶ scf	AP-42 Chapter 1.4	2.353	1,100	8,760	<0.01	<0.01
Total HAPs							<0.01	0.02
Total CO ₂ e							275.53	1,206.82

Notes:

- Greenhouse Gas Emissions are calculated using 40 CFR 98 Subpart C Table C-1 and C-2 emission factors.
- AP-42, Chapter 1.4 references are from the April 2026 revision.
- Max. Annual Emissions based upon Max. Hourly Emissions @ 8,760 hr/yr.
- CO₂ equivalency solved for using Global Warming Potentials found in 40CFR98 Table A-1 (Updated January 2025). GWP CO₂=1, GWP CH₄=28, GWP N₂O=265

Example Equations:

Max. Hourly Emission Rate (lb/hr) = Emission Factor (lb/10⁶ scf) ÷ Heating Value of Natural Gas (Btu/scf) x Boiler Rating (MMBtu/hr)

**Northern Border Pipeline Company
Arnegard Compressor Station
Boiler (BLR1)**

Cleaver Brooks Boiler (BLR1)								
Pollutant	Emission Factor	Emission Factor Units	Emission Factor Basis / Source	Heater Rating (MMBtu/hr)	Heat Value of Natural Gas (Btu/scf)	Annual Operating Hours	Max. Hourly Emissions. (lb/hr)	Max. Annual Emissions. (tpy)
NO _x	9.80E-02	lb/hr	Manufacturer Data	4.80	1,100	8,760	0.10	0.43
CO	3.10E-02	lb/hr	Manufacturer Data	4.80	1,100	8,760	0.03	0.14
VOCs	7.00E-03	lb/hr	Manufacturer Data	4.80	1,100	8,760	<0.01	0.03
PM	2.50E-02	lb/hr	Manufacturer Data	4.80	1,100	8,760	0.03	0.11
PM Condensable	5.70E+00	lb/10 ⁶ scf	AP-42 Chapter 1.4	4.80	1,100	8,760	0.02	0.11
SO ₂	3.00E-03	lb/hr	Manufacturer Data	4.80	1,100	8,760	<0.01	0.01
CO ₂	5.31E+01	kg CO ₂ / MMBtu	40 CFR Subpart C	4.80	1,100	8,760	561.49	2,459.33
CH ₄	1.00E-03	kg CH ₄ / MMBtu	40 CFR Subpart C	4.80	1,100	8,760	0.01	0.05
N ₂ O	1.00E-04	kg N ₂ O / MMBtu	40 CFR Subpart C	4.80	1,100	8,760	<0.01	<0.01
Hexane	1.80E+00	lb/10 ⁶ scf	AP-42 Chapter 1.4	4.80	1,100	8,760	<0.01	0.03
Formaldehyde	7.50E-02	lb/10 ⁶ scf	AP-42 Chapter 1.4	4.80	1,100	8,760	<0.01	<0.01
Benzene	2.10E-03	lb/10 ⁶ scf	AP-42 Chapter 1.4	4.80	1,100	8,760	<0.01	<0.01
Toluene	3.40E-03	lb/10 ⁶ scf	AP-42 Chapter 1.4	4.80	1,100	8,760	<0.01	<0.01
Pb	5.00E-04	lb/10 ⁶ scf	AP-42 Chapter 1.4	4.80	1,100	8,760	<0.01	<0.01
Total HAPs							<0.01	0.04
Total CO ₂ e							562.07	2,461.85

Notes:

- Greenhouse Gas Emissions are calculated using 40 CFR 98 Subpart C Table C-1 and C-2 emission factors.
- AP-42, Chapter 1.4 references are from the April 2026 revision.
- Max. Annual Emissions based upon Max. Hourly Emissions @ 8760 hr/yr.
- CO₂ equivalency solved for using Global Warming Potentials found in 40CFR98 Table A-1 (Updated January 2025). GWP CO₂=1, GWP CH₄=28, GWP N₂O=265

Example Equations:

Max. Hourly Emission Rate (lb/hr) = Emission Factor (lb/10⁶ scf) ÷ Heating Value of Natural Gas (Btu/scf) x Boiler Rating (MMBtu/hr)

Northern Border Pipeline Company
Arnegard Compressor Station
Forced Air Heaters (CH)

Forced Air Heaters (CH)								
Pollutant	Emission Factor	Emission Factor Units	Emission Factor Basis / Source	Heater Rating (MMBtu/hr)	Heat Value of Natural Gas (Btu/scf)	Annual Operating Hours	Max. Hourly Emissions. (lb/hr)	Max. Annual Emissions. (tpy)
NO _x	1.00E+02	lb/10 ⁶ scf	AP-42 Chapter 1.4	1.45	1,100	8,760	0.13	0.58
CO	8.40E+01	lb/10 ⁶ scf	AP-42 Chapter 1.4	1.45	1,100	8,760	0.11	0.49
VOCs	5.50E+00	lb/10 ⁶ scf	AP-42 Chapter 1.4	1.45	1,100	8,760	<0.01	0.03
PM Filterable	1.90E+00	lb/10 ⁶ scf	AP-42 Chapter 1.4	1.45	1,100	8,760	<0.01	0.01
PM Condensable	5.70E+00	lb/10 ⁶ scf	AP-42 Chapter 1.4	1.45	1,100	8,760	<0.01	0.03
SO ₂	6.00E-01	lb/10 ⁶ scf	AP-42 Chapter 1.4	1.45	1,100	8,760	<0.01	<0.01
CO ₂	5.31E+01	kg CO ₂ / MMBtu	40 CFR Subpart C	1.45	1,100	8,760	169.95	744.38
CH ₄	1.00E-03	kg CH ₄ / MMBtu	40 CFR Subpart C	1.45	1,100	8,760	<0.01	0.01
N ₂ O	1.00E-04	kg N ₂ O / MMBtu	40 CFR Subpart C	1.45	1,100	8,760	<0.01	<0.01
Hexane	1.80E+00	lb/10 ⁶ scf	AP-42 Chapter 1.4	1.45	1,100	8,760	<0.01	0.01
Formaldehyde	7.50E-02	lb/10 ⁶ scf	AP-42 Chapter 1.4	1.45	1,100	8,760	<0.01	<0.01
Benzene	2.10E-03	lb/10 ⁶ scf	AP-42 Chapter 1.4	1.45	1,100	8,760	<0.01	<0.01
Toluene	3.40E-03	lb/10 ⁶ scf	AP-42 Chapter 1.4	1.45	1,100	8,760	<0.01	<0.01
Pb	5.00E-04	lb/10 ⁶ scf	AP-42 Chapter 1.4	1.45	1,100	8,760	<0.01	<0.01
Total HAPs							<0.01	0.01
Total CO ₂ e							170.12	745.15

Notes:

- Greenhouse Gas Emissions are calculated using 40 CFR 98 Subpart C Table C-1 and C-2 emission factors.
- AP-42, Chapter 1.4 references are from the April 2026 revision.
- Max. Annual Emissions based upon Max. Hourly Emissions @ 8760 hr/yr.
- CO₂ equivalency solved for using Global Warming Potentials found in 40CFR98 Table A-1 (Updated January 2025). GWP CO₂=1, GWP CH₄=28, GWP N₂O=265

Example Equations:

Max. Hourly Emission Rate (lb/hr) = Emission Factor (lb/10⁶ scf) ÷ Heating Value of Natural Gas (Btu/scf) x Boiler Rating (MMBtu/hr)

Northern Border Pipeline Company
Arnegard Compressor Station
Condensate Drip Tank (T1)

Storage Vessel	Volume (gal)	Volume (bbl)	Annual Turnovers	Annual Volume (bbl)
Condensate Drip Tank (T1)	1,200	28.57	10	285.71

Emission Factor: 97.91 scf/bbl
 North Dakota Department of Health, Division of Air Quality.
 Bakken Pool Oil and Gas Production Facilities. Air Pollution Control Permitting & Compliance Guidance

Storage Tank Vapor Release: 27,974.29 scf/yr

Storage Vessel	Emission Rate									
	Total	CH ₄	CO ₂	CH ₄	CO ₂	CH ₄	CO ₂	CO ₂ e	VOC	HAPs
	scf/yr	scf/yr	scf/yr	lb/yr	lb/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr
Condensate Drip Tank (T1)	27,974.29	24,999.00	221.36	1,058.18	25.67	0.53	0.01	14.83	<0.01	<0.01
							Total:	14.83	<0.01	<0.01

Northern Border Pipeline Company
Arnegard Compressor Station
Pigging Emissions

Number of Launcher/ Recievers	Number of Pigging Events per year	Launcher/ Receiver Volume (ft ³)	Volume ¹ (ft ³ /yr)	Line Pressure (psi)	Total Emission Rate					
					CH ₄ ² (ft ³ /hr)	CH ₄ ³ (lb/hr)	CH ₄ ton/yr	CO ₂ e ton/yr	HAPs ton/yr	VOC ⁴ ton/yr
2	1	1,743	3,486.00	1,435.00	510.32	21.56	94.41	2,360.35	2.37E-07	1.17
Total:					510.32	21.56	94.41	2,360.35	2.37E-07	1.17

Conversion Factors	
lb/kg	2.2
lb/ton	2,000
hr/yr	8,760

1. Based on the average of each line being pigged one time per year.
2. CH₄ emission rate based on 89% volume percent in natural gas.
3. Conversion based on CH₄ density (0.0192 kg/ft³) in 40 CFR 98.233(v), November 25, 2014.
4. Based on a 0.004426 ratio of VOC to methane as calculated from gas composition.

Northern Border Pipeline Company
Arnegard Compressor Station
Pneumatic Devices

Pneumatic Devices																	
Type of Natural Gas Pneumatic Device	Count	Hours	Emission Factor (scf/hr)	CO ₂ (concentration)	CH ₄ (concentration)	CO ₂ (scf)	CH ₄ (scf)	CO ₂ (lb/hr)	CH ₄ (lb/hr)	VOC (lb/hr)	HAPs (lb/hr)	CO ₂ e (lb/hr)	CO ₂ (ton/yr)	CH ₄ (ton/yr)	VOC (ton/yr)	HAPs (ton/yr)	CO ₂ e (ton/yr)
High-Bleed Pneumatic Devices	0	8760	18.2	0.008	0.894	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Intermittent Bleed Pneumatic Devices	15	8760	2.35	0.008	0.894	2,443.46	275,947.71	0.03	1.33	0.02	<0.01	37.37	0.14	5.84	0.07	<0.01	163.67
Low-Bleed Pneumatic Devices	0	8760	1.37	0.008	0.894	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Totals:						2,443.46	275,947.71	0.03	1.33	0.02	<0.01	37.37	0.14	5.84	0.07	<0.01	163.67

Densities per 40 CFR 98.233(v):	
Density of CO ₂ at standard conditions in lb/ft ³	0.11596
Density of CH ₄ at standard conditions in lb/ft ³	0.04233

- Notes:**
- Emission factors from 40 CFR 98 Subpart W Table W-3
 - CH₄ and CO₂ emission rates based on CH₄ and CO₂ in Arnegard natural gas data
 - Conversion based on densities of GHG as provided in 40 CFR 98.233(v)
 - Based on 40 CFR 98 Subpart A Global Warming Potentials
 - Based on a ratio of VOC to methane as calculated from Arnegard gas composition data
 - Based on a ratio of HAPs to methane as calculated from Arnegard gas composition data

**Northern Border Pipeline Company
Arnegard Compressor Station
Blowdown Emissions**

Component	Emission Rate (ton/yr)				
	CH ₄ ¹	CO ₂	CO ₂ e	VOC ²	HAPs ³
Equipment Blowdowns	94.57	2.29	2,366.46	0.4188	2.37E-07
Station Emergency Shutdown	170.22	4.13	4,259.63	0.7539	4.27E-07
Blowdown, Total	264.79	6.42	6,626.10	1.1728	6.64E-07

1. CH₄ emission rates based on CH₄ in annualized Arnegard natural gas data
2. Based on a ratio of VOC to methane as calculated from Arnegard gas composition data
3. Based on a ratio of HAPs to methane as calculated from Arnegard gas composition data

Arnegard Facility Wide Emergency Shutdown (ESD) PTE Emission Calculations

Blowdown Emissions per Event (mscf/event): 3,000.0
Blowdown Events per Year: 3

Parameter	Gas Loss from ESD (mscf/yr)	Gas Loss		Emissions				
		CH ₄ (mscf/yr)	CO ₂ (mscf/yr)	CH ₄ (ton/yr)	CO ₂ (ton/yr)	CO ₂ e (ton/yr)	VOC (ton/yr)	HAPs (ton/yr)
ESD Emissions	9,000.0	8,042.78	71.22	170.22	4.13	4,259.63	0.75	4.27E-07

Notes:
- Gas loss volume based on TC Energy Engineering Department average volumes.

Blowdown PTE Emission Calculations

Unit	Gas Loss (scf/unit)	Annual Number of Blowdowns	Annual Gas Loss (scf/yr)	Gas Loss		Emissions				
				CH ₄ (scf/yr)	CO ₂ (scf/yr)	CH ₄ (ton/yr)	CO ₂ (ton/yr)	CO ₂ e (ton/yr)	VOC (ton/yr)	HAPs (ton/yr)
2 - Solar Titan 130 Turbines	50,000	100	5,000,000	4,468,210	39,565.00	94.57	2.29	2,366.46	0.42	2.37E-07
Total	--	--	5,000,000	4,468,210	39,565.00	94.57	2.29	2,366.46	0.42	2.37E-07

Northern Border Pipeline Company
Arnegard Compressor Station
Equipment Leaks

Component	Number of Components ¹	Estimated Number of Leaking Components ²	Emission Factor ³	Fugitive Emissions														
				Total	CH ₄ ⁴	CO ₂ ⁴	CH ₄ ⁵	CO ₂ ⁵	CO ₂ e ⁶	VOC ⁷	HAPs ⁸	Benzene	Ethylbenzene	n-Hexane	Toluene	Xylenes	2,2,4-Trimethylpntane	
			scf/hr / component	scf/yr	scf/yr	scf/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	ton/yr	
Compressor Service																		
Valves	76	2	14.84	259,997	232,344	2,057	4.92	0.12	123.05	0.06	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Connectors	192	4	5.59	195,874	175,041	1,550	3.70	0.09	92.71	0.05	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Open-Ended Lines	1	1	17.27	151,285	135,195	1,197	2.86	0.07	71.60	0.04	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Pressure Relief Valves	2	1	39.66	347,422	310,471	2,749	6.57	0.16	164.43	0.08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Meters	0	0	19.33	0	0	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Other (Flanges, Pumps)	0	0	4.1	0	0	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Non-Compressor Service ⁹																		
Valves	271	6	6.42	337,435	301,546	2,670	6.38	0.15	159.71	0.08	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Connectors	668	14	5.71	700,274	625,795	5,541	13.24	0.32	331.43	0.16	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Open-Ended Lines	1	1	11.27	98,725	88,225	781	1.87	0.05	46.73	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Pressure Relief Valves	3	1	2.01	17,608	15,735	139	0.33	<0.01	8.33	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Meters	6	1	2.93	25,667	22,937	203	0.49	0.01	12.15	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
Other (Flanges, Pumps)	0	0	4.1	0	0	0	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	
							Total:	40.37	0.98	1,010.14	0.50	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	

Notes:

1. Number of fugitive components per Northern Border Pipeline Arnegard facility inventory data.
2. Estimated number of leaking components at Arnegard utilizing a 2% component leak rate factor throughout the pipeline system obtained from fugitive leak survey results at NBP facilities.
3. Emission factors from 40 CFR 98 Subpart W Table W-3
4. CH₄ and CO₂ emission rates based on 89.36 vol% CH₄ and 0.79 vol% CO₂ in Arnegard natural gas data
5. Conversion based on densities of GHG as provided in 40 CFR 98.233(v)
6. Based on 40 CFR 98 Subpart A Global Warming Potentials
7. Based on VOC to methane as calculated from Arnegard gas composition data
8. Based on HAPs to methane as calculated from Arnegard gas composition data

**Northern Border Pipeline Company
Arnegard Compressor Station
Natural Gas Composition**

Representative Composition of Natural Gas

Natural Gas Composition	Molar Fraction ⁽¹⁾ (mole %)	Molecular Weight (lb/lb-mole)	Weighted Sum (lb/lb-mole)	Weight Fraction (weight %)
Nitrogen	1.32	28.01	0.3686	2.0854
Carbon Dioxide	0.79	44.01	0.3482	1.9700
Methane	89.36	16.04	14.3367	81.1018
Ethane	8.13	30.07	2.4456	13.8344
Propane	0.37	44.10	0.1636	0.9252
i-Butane	0.01	58.12	0.0054	0.0306
n-Butane	0.01	58.12	0.0081	0.0457
i-Pentane	0.00	72.15	0.0004	0.0024
n-Pentane	0.00	72.15	0.0008	0.0045
C ₆₊ Components	0.00	89.09	0.0000	0.0000
Total	100.00	-	17.68	100.00

C ₆₊ HAP Composition ⁽²⁾	Molar Fraction (mole %)	Molecular Weight (lb/lb-mole)	Weighted Sum (lb/lb-mole)	Weight Fraction (weight %)
2,2,4-Trimethylpentane	1.11E-08	114.23	1.27E-08	7.17E-08
Benzene	1.21E-08	78.11	9.45E-09	5.35E-08
Ethylbenzene	5.00E-10	106.17	5.31E-10	3.00E-09
n-Hexane	1.88E-07	86.18	1.62E-07	9.18E-07
Toluene	8.10E-09	92.14	7.46E-09	4.22E-08
Xylenes	4.00E-09	106.17	4.25E-09	2.40E-08
Total HAPs	2.24E-07	-	1.97E-07	1.11E-06

Totals	Mol %	Weight %
Total VOCs	0.40	1.01
Total HAPs	2.24E-07	1.11E-06

Ratios	Mol	Weight
VOC/Methane Ratio	0.0044	1.24E-02
HAPs/Methane Ratio	2.51E-09	1.37E-08
2,2,4-Trimethylpentane /Methane Ratio	1.24E-10	8.84E-10
Benzene/Methane Ratio	1.35E-10	6.59E-10
Ethylbenzene/Methane Ratio	5.60E-12	3.70E-11
n-Hexane/Methane Ratio	2.11E-09	1.13E-08
Toluene/Methane Ratio	9.06E-11	5.21E-10
Xylenes/Methane Ratio	4.48E-11	2.96E-10

Mass Fraction Conversion Data

Compound	Mol Weight (g/mol)	Mass in Gas Sample (g)	Mass Fraction	Mass %
CO2	44.01	34.83	0.0197	1.9703
N2	28.02	36.87	0.0209	2.0861
Methane	16.04	1433.40	0.8110	81.0987
Ethane	30.07	244.56	0.1384	13.8364
Propane	44.09	16.35	0.0093	0.9252
i-Butane	58.12	0.54	0.0003	0.0306
n-Butane	58.12	0.81	0.0005	0.0457
i-Pentane	72.15	0.04	2.45E-05	0.0024
n-Pentane	72.15	0.08	4.49E-05	0.0045
Other hexanes	86.18	8.62E-05	4.88E-08	4.88E-06
n-hexane	86.18	1.62E-05	9.18E-09	9.18E-07
2,2,4 - Trimethylpentane	114.23	1.27E-06	7.17E-10	7.17E-08
Benzene	78.11	9.45E-07	5.35E-10	5.35E-08
Toluene	92.14	7.46E-07	4.22E-10	4.22E-08
Ethylbenzene	106.17	5.31E-08	3.00E-11	3.00E-09
Xylenes	106.17	4.25E-07	2.40E-10	2.40E-08

Notes:

(1) Natural gas analysis obtained from gas chromatograph readings from Northern Border Pipeline Company.

(2) C₆₊ HAP composition molar fractions were derived from the GRI-GLYCALC v4.0 C₆₊ analysis multipliers for the Natural Gas Transmission Industry Segment.

Solar Turbines Emissions Estimates

T130-23502S

Assumptions: nat gas fuel, 2380' elevation, 4/4" inlet/outlet losses

32F						
Load%	NOx (ppm)	NOx (lb/hr)	CO (ppm)	CO (lb/hr)	UHC (ppm)	UHC (lb/hr)
10	43	8.3	2330	275	4540	306
20	46	12.2	1710	276	3030	279
30	46	14.8	800	157	1320	148
40	45	14.5	32	6.3	650	73

ppm = ppmvd@15% O2

FUEL GAS COMPOSITION (VOLUME PERCENT)

LHV (Btu/Scf) = 953.6 SG = 0.6103 W.I. @60F (Btu/Scf) = 1220.7

Gas Fuel Suitability (GFS) # 94429

Methane (CH4)	= 89.3647
Ethane (C2H6)	= 8.1329
Propane (C3H8)	= 0.3709
I-Butane (C4H10)	= 0.0093
N-Butane (C4H10)	= 0.0139
I-Pentane (C5H12)	= 0.0006
N-Pentane (C5H12)	= 0.0004
Carbon Dioxide (CO2)	= 0.7913
Nitrogen (N2)	= 1.3159
Sulfur Dioxide (SO2)	= 0.0001

-20F	No PACO						-20F	PACO installed					
Load%	NOx (ppm)	NOx (lb/hr)	CO (ppm)	CO (lb/hr)	UHC (ppm)	UHC (lb/hr)	Load%	NOx (ppm)	NOx (lb/hr)	CO (ppm)	CO (lb/hr)	UHC (ppm)	UHC (lb/hr)
50	120	57.2	150	43.5	50	8.3	50	42	20.0	100	29.0	50	8.3
100	120	79.0	150	60.0	50	11.4	100	42	27.7	100	40.0	50	11.4

ppm = ppmvd@15% O2

ppm = ppmvd@15% O2

-40F						
Load%	NOx (ppm)	NOx (lb/hr)	CO (ppm)	CO (lb/hr)	UHC (ppm)	UHC (lb/hr)
50	120	57.4	150	43.7	50	8.3
100	120	80.3	150	61.1	50	11.6



TITLE V PERMIT TO OPERATE - RENEWAL APPLICATION

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY

DIVISION OF AIR QUALITY

SFN 52824 (9-2021)

In accordance with 33.1-15-14-04.c. of the North Dakota Air Pollution Control Rules, a Title V permit renewal application must be submitted to the Department at least six months, but no more than eighteen months, prior to the expiration date. Permit renewal applications are incomplete unless all information requested herein is supplied. The current Title V permit will be the baseline reference for this renewal. The requirements (40 CFR 70.5(c) & NDAC 33.1-15-14-06.4.c) to include a citation and description of all applicable requirements and a description of or reference to any applicable test method for determining compliance with each applicable requirement may be met by accomplishing either or both of the following: 1) enclose an annotated (red-lined) copy of the current permit indicating all changes needed to reflect the current facility configuration, applicable requirements and test methods; 2) enclose a narrative that conveys all changes needed to the current permit to reflect the current facility configuration, all applicable requirements and test methods.

FOR ACID RAIN UNITS ONLY – Submit with the Title V permit renewal application all Acid Rain renewal applications (the Acid Rain Permit Application, the Phase II NO_x Compliance Plan, and if applicable, the Phase II NO_x Averaging Plan).

PART 1. GENERAL APPLICATION INFORMATION

Owner's Name	Northern Border Pipeline Company		
Facility Name	Compressor Station No. 4 (Arnegard)		
Name of Person Completing Application	Hima Bindu Draksharam	Phone	509-324-5067
Title	Environmental Analyst	Email	hima_draksharam@tcenergy.com
Current Operating Permit Number	AOP-28427 v6.0		
Expiration Date of Current Operating Permit	12 / 31 / 2026		

PART 2. COMPLIANCE CERTIFICATION

A. Schedule for Submission of Compliance Certifications During the Term of the Permit

Frequency of Submittal Annual	Date Beginning (month/day/year) 02/14/2017
----------------------------------	---

B. Statement of Compliance with Compliance Assurance Monitoring (CAM) and Compliance Certification Requirements

The facility identified in this application is in compliance with applicable monitoring and compliance certification requirements.	
☐	Yes
☐	No - Describe below which requirements are not being met:
☒	CAM not applicable

C. Certification of Compliance with all Applicable Requirements

This certification must be signed by a "responsible official" as defined in NDAC 33.1-15-14-06.1. Forms without a signed certification will be returned as incomplete.

Except for requirements identified in Compliance Schedule and Plan (Section G) of Title V Permit to Operate application forms for which compliance is not achieved, I hereby certify that, based on information and belief formed after reasonable inquiry, the air contaminant source identified in this form is in compliance with all applicable requirements.

Signed



Date

06/22/2026

Typed Name: Dane Keplin

PART 3. STATUS OF SOURCE

Has there been any change to the source since the most recent initial or renewal permit application, minor permit modification, significant modification or administrative permit amendment?

☒ No ☐ Yes

If yes, complete and submit appropriate sections of Title V Permit to Operate application forms.

PART 4. CERTIFICATION OF TRUTH, ACCURACY AND COMPLETENESS

Note: This certification must be signed by a "responsible official" as defined in NDAC 33.1-15-14-06.1. Applications without a signed certification will be returned as incomplete.

I certify under penalty of law that, based on information and belief formed after reasonable inquiry, the statements and information contained in this application are true, accurate and complete.

Name (typed) **Dane Keplin**(Signed) 

Date 06 / 22 / 2026

Telephone Number **701-445-7400**

Send original renewal application to:

North Dakota Department of Environmental Quality
Division of Air Quality
4201 Normandy Street, 2nd Floor
Bismarck, ND 58503-1324
(701)328-5188

Send copy of renewal application to:

Air Program (8P-AR)
Office of Partnerships & Regulatory
Assistance
US EPA Region 8
1595 Wynkoop Street
Denver, CO 80202-1129



PERMIT APPLICATION FOR TITLE V PERMIT TO OPERATE

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY

DIVISION OF AIR QUALITY

SFN 52858 (9-2021)

SECTION A - FACILITY INFORMATION

Name of Firm or Organization Northern Border Pipeline Company				
Responsible Person Dane Keplin				
Title Manager, Williston Area		Telephone Number 701-445-7400		E-mail Address dane_keplin@tcenergy.com
Mailing Address (Street & Number) 3790 County Road 83				
City Mandan		State ND		ZIP Code 58554
Contact Person for Air Pollution Matters Hima Bindu Draksharam				
Title Environmental Analyst		Telephone Number (509) 324 5067		E-mail Address hima_draksharam@tcenergy.com
Mailing Address (Street & Number) 201 W North River Drive, Suite 505				
City Spokane		State WA		ZIP Code 99201
Facility Name Compressor Station No. 4 (Arnegard)				
Facility Address (Street & Number) 2461 136th Ave NW				
City Arnegard		State North Dakota		ZIP Code 58835
County McKenzie	Latitude (decimal degrees) 47.7699		Longitude (decimal degrees) -103.4998	
Legal Description of Facility Site				
Quarter SE1/4	Quarter NW1/4	Section 32	Township 150 North	Range 100 West
Land Area at Facility Site Acres (or) 818,064 Sq. Ft.		MSL Elevation at Facility 2380		

SECTION B - GENERAL NATURE OF BUSINESS

Describe Nature of Business	North American Industry Classification System Code (NAICS)	Standard Industrial Classification Code (SIC)
Natural Gas Transmission	486210	4922

SECTION C - GENERAL PERMIT INFORMATION

Type of Permit to Operate? ☐ Initial ☐ Minor Modification ☒ Significant Modification	
If application is for renewal or revision of an existing Title V permit, please provide the following data:	
Current Permit to Operate Number: AOP 28427 Renewal: ☒ Revision: _____	Current Permit to Operate Expiration Date: 12/31/2026

SECTION D – MINOR PERMIT MODIFICATION

Affected Emission Unit(s): Added: T01, T02, EG2, HE3, BLR1 Removed: CE1, EG1, HE1, HE2	Description of Proposed Change: Added 5 new units and removed 4 units. This change was incorporated in ACP-18205 v1.0 issued on January 30, 2024.
Applicable Requirements (NSPS, PSD, etc.): 40 CFR Part 60, Subpart JJJJ, KKKK, and OOOOb 40 CFR Part 63, Subpart ZZZZ	Net Effect on Source Emissions Emission Unit(s): Facility: Decrease: NOx and CO Increase: VOC, PM, SO2, and HAPs
Are you requesting that minor permit modification procedures be used in accordance with NDAC 33.1-15-14-06.e(1)(a)? ☐ Yes ☒ No	

SECTION E – SOURCE IDENTIFICATION AND CATEGORY OF EACH SOURCE INCLUDED ON THIS PERMIT APPLICATION

[illegible]

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Add additional pages if necessary

SECTION F1 – IDENTIFICATION OF AIR CONTAMINANTS

Check all which are emitted in measurable quantities into the atmosphere from any operation at facility			
☐ Arsenic	☐ Chlorine Compounds	☐ Sulfur Compounds	☐ Radioisotopes
☐ Asbestos	☐ Chromium Compounds	☐ Hydrogen Sulfide	☐ Visible Emissions
☐ Beryllium	☐ Fluoride Compounds	☐ Odors	☐ Particulates (specify)
☐ Cadmium	☒ Volatile Organic Compounds	☒ Carbon Monoxide	☐ Dust
☐ Lead	☐ Other Organic Compounds	☒ Nitrogen Compounds	☐ Silica
☐ Mercury	☐ Greenhouse Gases (CO ₂ e)	☐ Pesticides	☐ Other (specify)
List Specific Compounds:			

SECTION F2 – IDENTIFICATION OF AIR CONTAMINANTS

Has emission unit testing been done at the facility? ☒ Yes ☐ No			
Emission Unit No.	Last Date when a Testing Program was Completed	If Program is Continuous, Give Approximate Testing Frequency	Regulation requiring frequency (NSPS, MACT, Permit Requirement-list permit number)
T01	N/A*		NSPS Subpart KKKK, OOOOb
T02	N/A*		NSPS Subpart KKKK, OOOOb
EG2			NSPS Subpart JJJJ, NESHAP Subpart ZZZZ

Add additional pages if necessary

*T01 and T02 commenced their initial start-up on April 22, 2026 and, as such, have not yet undergone stack testing. Stack testing is scheduled for August 17, 2026, and will be completed no later than October 2026.

SECTION G1 – ADDITIONAL FORMS

Indicate which of the following forms are attached and made part of the application	
☒ Emission Unit Information (SFN 61006)	☐ Flexible Permits (SFN 61007)
☐ Compliance Schedule and Plan (SFN 61008)	☒ Potential To Emit Table

SECTION G2 – OTHER ATTACHMENTS INCLUDED AS PART OF THIS APPLICATION

1.	Regulatory Narrative	4.	
2.	Potential to Emit Calculations	5.	
3.	Low Temperature Emissions Data	6.	

I, the undersigned applicant, am fully aware that statements made in this application and the attached exhibits and statements constitute the application for Permit to Operate Air Contaminant sources from the North Dakota Department of Environmental Quality and certify that the information in this application is true, correct and complete to the best of my knowledge and belief. Further, I agree to comply with the provisions of Chapter 23.1-06 of the North Dakota Century Code and all rules and regulations of the Department, or revisions thereof. I also understand the permit is nontransferable and, if granted a permit, I will promptly notify the Department upon sale or legal transfer of this permitted establishment.

Signature of Applicant	Date
------------------------	------

INSTRUCTIONS

These instructions are intended to assist permit applicants in the completion of the enclosed forms with the degree of accuracy and detail necessary to allow the determination of whether to grant or deny a permit to operate an air contaminant source or modification.

All information included in the application, including maximum estimated emission rates, will be used to make the above determination. The information that is supplied in the application may be used to establish permit conditions. The emission rates provided should be based on the most credible data available. Although AP-42 provides general information, it should not be solely relied on to develop emission rates. Other sources of information that accurately represent the actual conditions that the emission unit will be operated under, such as actual test data or manufacturer's data, may be preferable.

For any air contaminant source or modification described in SFN 52858, SFN 61006 must also be completed and attached for each emission unit. For the facility's compliance schedule, SFN 61008 must be completed and submitted. If the facility requests a flexible permit SFN 61007, must be completed and submitted.

Those existing sources of air contaminants which are proven by the applicant to be designed or controlled so as to operate without emitting air contaminants in violation of air pollution rules and regulations will be granted a permit to operate.

Certain sizes and types of existing or new sources are exempted from the requirement to obtain a permit to continue operating or to construct. These sizes are specified in the instruction sheets for the relevant permit application forms or can be obtained by contacting the Department.

Any information included on the forms, other than emission data, that would divulge production or sales figures or methods, processes or production unique to such person or would otherwise tend to affect adversely the competitive position of such person by revealing trade secrets should be noted by inserting the word "confidential" in the margin next to the appropriate item. Any information, other than production figures, that is requested to be kept in confidence must be justified by a written statement setting forth the reasons for the request. All information not marked confidential will be available for public inspection.

These forms are intended to inform permit applicants of the type of information required in order that a permit to operate or construct be granted. It is not possible to design forms which are ideally suited to every conceivable operation. Permit applicants are encouraged to submit additional supplementary material when it is felt that the completion of these forms does not provide an adequate explanation of the operation.

It will be necessary to refer to the North Dakota Air Pollution Control Rules (Article 33.1-15 NDAC; online at www.legis.nd.gov/information/acdata/html/33.1-15.html), especially those parts which deal with the permit system and those chapters which specify emission limitations for each air contaminant, in order to satisfactorily complete a permit application. Electronic copies of air pollution control permit application forms are available online at www.deq.nd.gov/AQ/forms.aspx. Paper copies of all forms, as well as the rules, are available on request. To cover the costs of printing and postage, the charge for a copy of the North Dakota Air Pollution Control Rules is \$15.00.

Applicants should contact the Department prior to preparation and submittal of an application to determine what additional information will be required for a particular source or modification and the method to be used in performing the analyses.

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of Environmental Quality
Division of Air Quality
4201 Normandy Street, 2nd Floor
Bismarck, ND 58503-1324
(701) 328-5188



EMISSION UNIT FOR TITLE V PERMIT TO OPERATE
NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY
SFN 61006 (3-2019)

SECTION A – EQUIPMENT INFORMATION

Type of Unit or Process (rotary dryer, cupola furnace, crusher, pelletizer, engine, etc.) Stationary Natural Gas-Fired Turbine	Emission Unit Number: T01	Emission Point Number: T01
Make Solar	Model Titan 130	Installation or manufacture date TBD
Capacity (manufacturer's or designer's guaranteed maximum) Nameplate: 23,465 HP, Permitted: 22,720 HP	Operating Capacity (specific units) 163.67 MMBtu/hr	
Brief description of operation of unit or process: Natural gas compression turbine		
Brief description of alternative operating scenario (see Section M1 & M2 to elaborate):		
Alternative Emission Point:		

SECTION B –OPERATING SCHEDULE

Are you agreeing to a limit on the operating schedule for this unit? ☐ Yes ☒ No				
Hours Per Day 24	Days Per Week 7	Weeks Per Year 52	Peak Production Season (if any)	Dates of Annual Shutdown

SECTION C – PRODUCTION RATES (THROUGHPUT LIMITS)

Are you agreeing to a limit on the production for this unit? ☐ Yes ☒ No (If No, show normal operating schedule.)				
Material	Process Time Frame			Specify Units (tons, Btu, Gal., etc)
	Hour	Week	Year	
Natural Gas	0.15	25.00	1299.88	MMscf

SECTION D1 – APPLICABLE REQUIREMENTS

Generally describe all applicable requirements.					
Regulations (i.e. SIP, NESHAP, PSD, NSPS, etc)	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements	Testing Requirements	Applicable Emission Standards (include units)
NSPS Subpart K K K K	Detailed regulatory requirements are provided in Appendix A - Arnegard Regulatory Narrative.				
NSPS Subpart O O O O b					

SECTION D2 – IDENTIFICATION OF AIR CONTAMINANTS

Has emission unit testing been done at the facility? ☐ Yes ☐ No			
Emission Unit ID	Last Date when a Testing Program was Completed	If Program is Continuous, Give Approximate Testing Frequency	Regulation requiring frequency (NSPS, MACT, Permit Requirement-list permit number)
T01			NSPS Subpart KKKK, OOOOb

Add additional pages if necessary

SECTION E – PRODUCTS OF UNIT OR PROCESS

Include all, even those not usable because they do not meet specifications					
Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
Natural Gas	0.15 MMscf/hr	0.15 MMscf/hr	0.15 MMscf/hr	0.15 MMscf/hr	

SECTION F – FUELS USED

Coal (Tons/Yr)	% Sulfur 0.007	% Ash	Oil (Gal/Yr)	% Sulfur	Grade No.
Natural Gas (Thousand CF/Yr) 1,303		LP Gas (Gal/Yr)		Other (Specify)	

SECTION G – STACK PARAMETERS

List each pollutant separately.					
Pollutant (use CAS for HAPs)	Stack Height (ft)	Stack Diameter (ft at top)	Gas Volume (ACFM)	Exit Temp (°F)	Gas Velocity (fps)
NOx	80	0.65	535.2	856	26.9
CO	80	0.65	535.2	856	26.9
VOC	80	0.65	535.2	856	26.9
Stack Base UTM Coordinate X: 103.4998			Stack Base UTM Coordinate Y: 47.7699		

*T01 commenced initial start-up on April 22, 2026 and, as such, has not yet undergone stack testing. Stack testing is scheduled for August 17, 2026, and will be completed no later than October 2026.

SECTION H – ALTERNATIVE STACK PARAMETERS

List each pollutant separately.					
Pollutant (use CAS for HAPs)	Stack Height (ft)	Stack Diameter (ft at top)	Gas Volume (ACFM)	Exit Temp (°F)	Gas Velocity (fps)
Stack Base UTM Coordinate X:			Stack Base UTM Coordinate Y:		

SECTION I – AIR CONTAMINANTS EMITTED

Known or Suspected - Use emission rates after control equipment.			
Pollutant (use CAS for HAPs)	Amount		Basis of Estimate (AP-42, testing, engineering estimate, etc)
	Pounds/Hr	Tons/Yr	
NOx	12.92	56.61	Manufacturer's Specifications
CO	17.77	77.85	Manufacturer's Specifications
VOC	2.09	9.16	Manufacturer's Specifications

SECTION J1 – AIR POLLUTION CONTROL EQUIPMENT

Type: ☐ Cyclone ☐ Multiclone ☐ Baghouse ☐ Electrostatic Precipitator ☐ Wet Scrubber ☐ Spray Dryer ☒ None ☐ Other – Specify:				
Name of Manufacturer		Model Number		Date to Be Installed
Application: ☐ Boiler ☒ Kiln ☐ Engine ☐ Other – Specify:				
Pollutants Removed				
Design Efficiency (%)				

Operating Efficiency (%)				
Describe method used to determine operating efficiency:				

SECTION J2 – GAS CONDITIONS

Gas Conditions	Inlet		Outlet	
Gas Volume (SCFM; 68°F; 14.7 psia)			196.6	
Gas Temperature (°F)			856	
Gas Pressure (in. H ₂ O)				
Gas Velocity (ft/sec)			26.9	
Pollutant Concentration (Specify pollutant and unit of concentration)	Pollutant	Unit of Concentration	Inlet	Outlet
Pressure drop through gas cleaning device (in. H ₂ O)				



EMISSION UNIT FOR TITLE V PERMIT TO OPERATE
NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY
SFN 61006 (3-2019)

SECTION A – EQUIPMENT INFORMATION

Type of Unit or Process (rotary dryer, cupola furnace, crusher, pelletizer, engine, etc.) Stationary Natural Gas-Fired Turbine	Emission Unit Number: T01	Emission Point Number: T01
Make Solar	Model Titan 130	Installation or manufacture date
Capacity (manufacturer's or designer's guaranteed maximum) Nameplate: 23,465 HP, Permitted: 22,720 HP	Operating Capacity (specific units) 163.67 MMBtu/hr	
Brief description of operation of unit or process: Natural gas compression turbine		
Brief description of alternative operating scenario (see Section M1 & M2 to elaborate):		Alternative Emission Point:

SECTION B –OPERATING SCHEDULE

Are you agreeing to a limit on the operating schedule for this unit? ☐ Yes ☐ No				
Hours Per Day 24	Days Per Week 7	Weeks Per Year 52	Peak Production Season (if any)	Dates of Annual Shutdown

SECTION C – PRODUCTION RATES (THROUGHPUT LIMITS)

Are you agreeing to a limit on the production for this unit? ☐ Yes ☒ No (If No, show normal operating schedule.)				
Material	Process Time Frame			Specify Units (tons, Btu, Gal., etc)
	Hour	Week	Year	
Natural Gas	0.15	25.00	1299.88	MMscf

SECTION D1 – APPLICABLE REQUIREMENTS

Generally describe all applicable requirements.					
Regulations (i.e. SIP, NESHAP, PSD, NSPS, etc)	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements	Testing Requirements	Applicable Emission Standards (include units)
NSPS Subpart K K K K	Detailed regulatory requirements are provided in Appendix A - Arnegard Regulatory Narrative.				
NSPS Subpart O O O O b					

SECTION D2 – IDENTIFICATION OF AIR CONTAMINANTS

Has emission unit testing been done at the facility? ☐ Yes ☐ No			
Emission Unit ID	Last Date when a Testing Program was Completed	If Program is Continuous, Give Approximate Testing Frequency	Regulation requiring frequency (NSPS, MACT, Permit Requirement-list permit number)
T01			NSPS Subpart KKKK, OOOOb

Add additional pages if necessary

SECTION E – PRODUCTS OF UNIT OR PROCESS

Include all, even those not usable because they do not meet specifications					
Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
Natural Gas	0.15 MMscf/hr	0.15 MMscf/hr	0.15 MMscf/hr	0.15 MMscf/hr	

SECTION F – FUELS USED

Coal (Tons/Yr)	% Sulfur 0.007	% Ash	Oil (Gal/Yr)	% Sulfur	Grade No.
Natural Gas (Thousand CF/Yr) 1,303		LP Gas (Gal/Yr)		Other (Specify)	

SECTION G – STACK PARAMETERS

List each pollutant separately.					
Pollutant (use CAS for HAPs)	Stack Height (ft)	Stack Diameter (ft at top)	Gas Volume (ACFM)	Exit Temp (°F)	Gas Velocity (fps)
NOx	80	0.65	535.2	856	26.9
CO	80	0.65	535.2	856	26.9
VOC	80	0.65	535.2	856	26.9
Stack Base UTM Coordinate X: 103.4998			Stack Base UTM Coordinate Y: 47.7699		

*T02 commenced initial start-up on April 22, 2026 and, as such, has not yet undergone stack testing. Stack testing is scheduled for August 17, 2026, and will be completed no later than October 2026.

SECTION H – ALTERNATIVE STACK PARAMETERS

List each pollutant separately.					
Pollutant (use CAS for HAPs)	Stack Height (ft)	Stack Diameter (ft at top)	Gas Volume (ACFM)	Exit Temp (°F)	Gas Velocity (fps)
Stack Base UTM Coordinate X:			Stack Base UTM Coordinate Y:		

SECTION I – AIR CONTAMINANTS EMITTED

Known or Suspected - Use emission rates after control equipment.			
Pollutant (use CAS for HAPs)	Amount		Basis of Estimate (AP-42, testing, engineering estimate, etc)
	Pounds/Hr	Tons/Yr	
NOx	12.92	56.61	Manufacturer's Specifications
CO	17.77	77.85	Manufacturer's Specifications
VOC	2.09	9.16	Manufacturer's Specifications

SECTION J1 – AIR POLLUTION CONTROL EQUIPMENT

Type: ☐ Cyclone ☐ Multiclone ☐ Baghouse ☐ Electrostatic Precipitator ☐ Wet Scrubber ☐ Spray Dryer ☒ None ☐ Other – Specify:				
Name of Manufacturer		Model Number		Date to Be Installed
Application: ☐ Boiler ☒ Kiln ☐ Engine ☐ Other – Specify:				
Pollutants Removed				
Design Efficiency (%)				

Operating Efficiency (%)				
Describe method used to determine operating efficiency:				

SECTION J2 – GAS CONDITIONS

Gas Conditions	Inlet		Outlet	
Gas Volume (SCFM; 68°F; 14.7 psia)			196.6	
Gas Temperature (°F)			856	
Gas Pressure (in. H ₂ O)				
Gas Velocity (ft/sec)			26.9	
Pollutant Concentration (Specify pollutant and unit of concentration)	Pollutant	Unit of Concentration	Inlet	Outlet
Pressure drop through gas cleaning device (in. H ₂ O)				



EMISSION UNIT FOR TITLE V PERMIT TO OPERATE
NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY
SFN 61006 (3-2019)

SECTION A – EQUIPMENT INFORMATION

Type of Unit or Process (rotary dryer, cupola furnace, crusher, pelletizer, engine, etc.) Stationary Natural Gas-Fired Turbine	Emission Unit Number: T01	Emission Point Number: T01
Make Solar	Model Titan 130	Installation or manufacture date
Capacity (manufacturer's or designer's guaranteed maximum) Nameplate: 23,465 HP, Permitted: 22,720 HP	Operating Capacity (specific units) 163.67 MMBtu/hr	
Brief description of operation of unit or process: Natural gas compression turbine		
Brief description of alternative operating scenario (see Section M1 & M2 to elaborate):		Alternative Emission Point:

SECTION B –OPERATING SCHEDULE

Are you agreeing to a limit on the operating schedule for this unit? ☐ Yes ☐ No				
Hours Per Day 24	Days Per Week 7	Weeks Per Year 52	Peak Production Season (if any)	Dates of Annual Shutdown

SECTION C – PRODUCTION RATES (THROUGHPUT LIMITS)

Are you agreeing to a limit on the production for this unit? ☐ Yes ☒ No (If No, show normal operating schedule.)				
Material	Process Time Frame			Specify Units (tons, Btu, Gal., etc)
	Hour	Week	Year	
Natural Gas	0.15	25.00	1299.88	MMscf

SECTION D1 – APPLICABLE REQUIREMENTS

Generally describe all applicable requirements.					
Regulations (i.e. SIP, NESHAP, PSD, NSPS, etc)	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements	Testing Requirements	Applicable Emission Standards (include units)
NSPS Subpart KKKK	Detailed regulatory requirements are provided in Appendix A - Arnegard Regulatory Narrative.				
NSPS Subpart OOOOb					

SECTION D2 – IDENTIFICATION OF AIR CONTAMINANTS

Has emission unit testing been done at the facility? ☐ Yes ☐ No			
Emission Unit ID	Last Date when a Testing Program was Completed	If Program is Continuous, Give Approximate Testing Frequency	Regulation requiring frequency (NSPS, MACT, Permit Requirement-list permit number)
T01			NSPS Subpart KKKK, OOOOb

Add additional pages if necessary

SECTION E – PRODUCTS OF UNIT OR PROCESS

Include all, even those not usable because they do not meet specifications					
Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
Natural Gas	0.15 MMscf/hr	0.15 MMscf/hr	0.15 MMscf/hr	0.15 MMscf/hr	

SECTION F – FUELS USED

Coal (Tons/Yr)	% Sulfur 0.007	% Ash	Oil (Gal/Yr)	% Sulfur	Grade No.
Natural Gas (Thousand CF/Yr) 1,303		LP Gas (Gal/Yr)		Other (Specify)	

SECTION G – STACK PARAMETERS

List each pollutant separately.					
Pollutant (use CAS for HAPs)	Stack Height (ft)	Stack Diameter (ft at top)	Gas Volume (ACFM)	Exit Temp (°F)	Gas Velocity (fps)
NOx	80	0.65	535.2	856	26.9
CO	80	0.65	535.2	856	26.9
VOC	80	0.65	535.2	856	26.9
Stack Base UTM Coordinate X: 103.4998			Stack Base UTM Coordinate Y: 47.7699		

SECTION H – ALTERNATIVE STACK PARAMETERS

List each pollutant separately.					
Pollutant (use CAS for HAPs)	Stack Height (ft)	Stack Diameter (ft at top)	Gas Volume (ACFM)	Exit Temp (°F)	Gas Velocity (fps)
Stack Base UTM Coordinate X:			Stack Base UTM Coordinate Y:		

SECTION I – AIR CONTAMINANTS EMITTED

Known or Suspected - Use emission rates after control equipment.			
Pollutant (use CAS for HAPs)	Amount		Basis of Estimate (AP-42, testing, engineering estimate, etc)
	Pounds/Hr	Tons/Yr	
NOx	12.92	56.61	Manufacturer's Specifications
CO	17.77	77.85	Manufacturer's Specifications
VOC	2.09	9.16	Manufacturer's Specifications

SECTION J1 – AIR POLLUTION CONTROL EQUIPMENT

Type: ☐ Cyclone ☐ Multiclone ☐ Baghouse ☐ Electrostatic Precipitator ☐ Wet Scrubber ☐ Spray Dryer ☒ None ☐ Other – Specify:				
Name of Manufacturer		Model Number		Date to Be Installed
Application: ☐ Boiler ☒ Kiln ☐ Engine ☐ Other – Specify:				
Pollutants Removed				
Design Efficiency (%)				

Operating Efficiency (%)				
Describe method used to determine operating efficiency:				

SECTION J2 – GAS CONDITIONS

Gas Conditions	Inlet		Outlet	
Gas Volume (SCFM; 68°F; 14.7 psia)			196.6	
Gas Temperature (°F)			856	
Gas Pressure (in. H ₂ O)				
Gas Velocity (ft/sec)			26.9	
Pollutant Concentration (Specify pollutant and unit of concentration)	Pollutant	Unit of Concentration	Inlet	Outlet
Pressure drop through gas cleaning device (in. H ₂ O)				



EMISSION UNIT FOR TITLE V PERMIT TO OPERATE
NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY
SFN 61006 (3-2019)

SECTION A – EQUIPMENT INFORMATION

Type of Unit or Process (rotary dryer, cupola furnace, crusher, pelletizer, engine, etc.) Stationary Natural Gas-Fired Turbine	Emission Unit Number: T01	Emission Point Number: T01
Make Solar	Model Titan 130	Installation or manufacture date
Capacity (manufacturer's or designer's guaranteed maximum) Nameplate: 23,465 HP, Permitted: 22,720 HP	Operating Capacity (specific units) 163.67 MMBtu/hr	
Brief description of operation of unit or process: Natural gas compression turbine		
Brief description of alternative operating scenario (see Section M1 & M2 to elaborate):		Alternative Emission Point:

SECTION B –OPERATING SCHEDULE

Are you agreeing to a limit on the operating schedule for this unit? ☐ Yes ☐ No				
Hours Per Day 24	Days Per Week 7	Weeks Per Year 52	Peak Production Season (if any)	Dates of Annual Shutdown

SECTION C – PRODUCTION RATES (THROUGHPUT LIMITS)

Are you agreeing to a limit on the production for this unit? ☐ Yes ☒ No (If No, show normal operating schedule.)				
Material	Process Time Frame			Specify Units (tons, Btu, Gal., etc)
	Hour	Week	Year	
Natural Gas	0.15	25.00	1299.88	MMscf

SECTION D1 – APPLICABLE REQUIREMENTS

Generally describe all applicable requirements.					
Regulations (i.e. SIP, NESHAP, PSD, NSPS, etc)	Monitoring Requirements	Recordkeeping Requirements	Reporting Requirements	Testing Requirements	Applicable Emission Standards (include units)
NSPS Subpart K K K K	Detailed regulatory requirements are provided in Appendix A - Arnegard Regulatory Narrative.				
NSPS Subpart O O O O b					

SECTION D2 – IDENTIFICATION OF AIR CONTAMINANTS

Has emission unit testing been done at the facility? ☐ Yes ☐ No			
Emission Unit ID	Last Date when a Testing Program was Completed	If Program is Continuous, Give Approximate Testing Frequency	Regulation requiring frequency (NSPS, MACT, Permit Requirement-list permit number)
T01			NSPS Subpart KKKK, OOOOb

Add additional pages if necessary

SECTION E – PRODUCTS OF UNIT OR PROCESS

Include all, even those not usable because they do not meet specifications					
Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
Natural Gas	0.15 MMscf/hr	0.15 MMscf/hr	0.15 MMscf/hr	0.15 MMscf/hr	

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Coal (Tons/Yr)	% Sulfur 0.007	% Ash	Oil (Gal/Yr)	% Sulfur	Grade No.
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Pollutant (use CAS for HAPs)	Stack Height (ft)	Stack Diameter (ft at top)	Gas Volume (ACFM)	Exit Temp (°F)	Gas Velocity (fps)
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Application: ☐ Boiler ☒ Kiln ☐ Engine ☐ Other – Specify:				
Pollutants Removed				
Design Efficiency (%)				

Operating Efficiency (%)				
Describe method used to determine operating efficiency:				

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