ONEOK
ROCKIES MIDSTREAM
A SUBSIDIARY OF ONEOK PARTNERS

SUBMITTED ELECTRONICALLY VIA CERIS

August 2, 2024

Mr. Jim Semerad
North Dakota Department of Environmental Quality
Division of Air Quality
4201 Normandy Street, 2nd Floor
Bismarck, ND 58501-1947

ONEOK ROCKIES MIDSTREAM, L.L.C.
NIGHTHAWK COMPRESSOR STATION
PERMIT TO CONSTRUCT

Dear Mr. Semerad,

ONEOK Rockies Midstream, L.L.C. (ORM) proposes to construct the Nighthawk Compressor Station, a new facility in Dunn County. ORM submits this Permit to Construct application to authorize construction of the facility, which will be a minor source for criteria pollutants.

Nighthawk Compressor Station will consist of two (2) 2,750-hp Caterpillar G3608 compressor engines, three (3) 400-bbl condensate tanks, one (1) 400-bbl produced water tanks, one (1) 400-bbl methanol tank, and one (1) process/VOC flare for controlling the condensate tank vapor and process blowdowns. Associated emission sources include condensate truck loading, fugitive emissions and other miscellaneous vents and blowdowns.

If you need additional information or have any questions, please call me at 918-588-7862 or Joshua.Hills@oneok.com.

Sincerely,

Joshua Hills
Environmental Professional

xc: V. Danzeisen/S. Nies/D. Vande Bossche/R. Brown/K. Hanner (.pdf)
Tulsa Environmental Files – Nighthawk Compressor Station – Permit Actions

Permit to Construct

Nighthawk Compressor Station

ONEOK Rockies Midstream, L.L.C.

ONEOK
ROCKIES MIDSTREAM
A SUBSIDIARY OF ONEOK PARTNERS

Submitted to NDDEQ Air Quality Division
August 2024

Introduction

ONEOK Rockies Midstream, L.L.C. (ORM) proposes to construct the Nighthawk Compressor Station, a new facility in Dunn County. ORM submits this Permit to Construct to authorize construction of the facility, which will be a minor source of criteria pollutants.

Facility Equipment

Nighthawk Compressor Station will consist of two (2) 2,750-hp Caterpillar G3608 compressor engines, three (3) 400-bbl condensate tanks, one (1) 400-bbl produced water tank, one (1) 400-bbl methanol tank, and one (1) process/VOC flare for controlling tank emissions and emergency relief venting from all equipment. Associated emission sources include condensate truck loading, fugitive emissions and miscellaneous vents and blowdowns.

Process Description

A pipeline gathering system transports field natural gas from wells through an inlet separator where free liquids are removed and stored in the condensate tanks. Natural gas then passes through a suction header and is routed to the compressors, which boost gas pressure. The compressor units discharge natural gas into a pipeline for transmission. Condensate is transported off-site via tank truck for sales. Emissions from fugitive components and miscellaneous vents and blowdowns also occur at the facility. An emergency flare utilized is to combust compressor blowdowns and for emergency upsets.

Regulatory Applicability

The facility is a natural gas compressor station that falls under the North American Industrial Classification System (NAICS) code 211130 (formerly Standard Industrial Classification (SIC) 1311).

New Source Performance Standards 40 CFR Part 60 Subpart JJJJ, Stationary Spark Ignition Internal Combustion Engines (SI-ICE) promulgates emission standards for all new SI engines ordered after June 12, 2006, and all SI engines modified or reconstructed after June 12, 2006, regardless of size. The specific emission standards (either in g/hp-hr or as a concentration limit) vary based on engine class, engine power rating, lean-burn or rich-burn, fuel type, duty (emergency or non-emergency), and various manufacture dates. The compressor engines were manufactured after July 1, 2010; therefore, are subject to the Stage 2 emissions limitations of this subpart.

New Source Performance Standards 40 CFR Part 60 Subpart OOOO, Crude Oil and Natural Gas Production, Transmission and Distribution, establishes emission standards for the following equipment that commences construction, modification, or reconstruction after August 23, 2011 and on or before September 18, 2015 at crude oil and natural gas production, transmission or distribution facilities:

1. Each single gas well;
2. Single centrifugal compressors using wet seals located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment;
3. Single reciprocating compressors located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment;
4. Single continuous bleed natural gas driven pneumatic controllers with a natural gas bleed rate greater than 6 SCFH, located between the wellhead and the point of custody transfer to the natural gas transmission and storage segment and not located at a natural gas processing plant;
5. Single continuous bleed natural gas driven pneumatic controllers located at a natural gas processing plant;

6. Single storage vessels located in the oil and natural gas production segment, natural gas processing segment, or natural gas transmission and storage segment with the potential for VOC emissions equal to or greater than 6 tons per year;
7. All equipment, except compressors, within a process unit at an onshore natural gas processing plant;
8. Sweetening units located at onshore natural gas processing plants.

All potentially affected equipment is constructed after September 18, 2015 and is not subject to this subpart.

New Source Performance Standards 40 CFR Part 60 Subpart OOOOa, Crude Oil and Natural Gas Facilities, establishes emission standards for the following equipment that commences construction, modification or reconstruction after September 18, 2015 at crude oil and natural gas production, transmission or distribution facilities:

1. Each single oil or gas well that conducts a completion following hydraulic fracturing or refracturing;
2. Single centrifugal compressors using wet seals that are not located at a well site;
3. Single reciprocating compressors not located at a well site;
4. Single continuous bleed natural gas driven pneumatic controllers with a natural gas bleed rate greater than 6 SCFH, not located at a natural gas processing plant;
5. Single continuous bleed natural gas driven pneumatic controllers located at a natural gas processing plant;
6. Single storage vessels with the potential for VOC emissions equal to or greater than 6 tons per year;
7. The group of all equipment within a process unit;
8. The group of fugitive emissions equipment at a compressor station;
9. The group of fugitive emissions equipment at a well site;
10. Sweetening units located at onshore natural gas processing plants;
11. Pneumatic pumps at natural gas processing plants and well sites.

All potentially affected equipment is constructed after December 6, 2022 and is not subject to this subpart.

New Source Performance Standards 40 CFR Part 60 Subpart OOOOb, Crude Oil and Natural Gas Facilities, establishes emission standards for the following equipment that commences construction, modification or reconstruction after December 6, 2022 at crude oil and natural gas facilities:

1. Each single oil or gas well;;
2. Single centrifugal compressors using wet or dry seals that are not located at a well site;
3. Single reciprocating compressors not located at a well site;
4. Each collection of natural gas-driven process controllers at a well site, centralized production facility, onshore natural gas processing plant, or compressor station;
5. Storage vessel batteries with either the potential for VOC emissions equal to or greater than 6 tons per year or the potential for methane emissions equal to or greater than 20 tons per year;
6. The group of all equipment within a process unit at an onshore natural gas processing plant;
7. Sweetening units;
8. The group of all natural gas-driven pumps at a well site, centralized production facility, onshore natural gas processing plant, or compressor station;
9. The group of fugitive emissions equipment at a well site, centralized production facility or compressor station;

Potentially affected equipment includes the reciprocating compressors associated with each of the compressor engines. The condensate and produced water tanks were constructed after December 6, 2022 and are subject to this subpart. The facility meets the definition of a new compressor station and therefore is subject to the leak detection requirements of this subpart.

National Emission Standards for Hazardous Air Pollutants 40 CFR Part 63 Subpart ZZZZ, Reciprocating Internal Combustion Engines (RICE), affects any existing, new or reconstructed stationary RICE located at a major or area source of HAP emissions. Owners and operators of new or reconstructed engines at area sources must meet the requirements of Subpart ZZZZ by complying with either 40 CFR Part 60 Subpart IIII (for CI engines) or 40 CFR Part 60 Subpart JJJJ (for SI engines). Based on emission calculations, this facility is a minor source of HAP. Since the compressor engines are subject to 40 CFR Part 60 Subpart JJJJ, they automatically satisfy the requirements of Subpart ZZZZ by complying with NSPS Subpart JJJJ. There are no further requirements under Subpart ZZZZ for these engines.

PERMIT APPLICATION FOR AIR CONTAMINANT SOURCES

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY
SFN 8516 (9-2021)

SECTION A - FACILITY INFORMATION

Name of Firm or Organization ONEOK Rockies Midstream, L.L.C.		
Applicant's Name Dick Vande Bossche		
Title Vice President, ONEOK Rockies Midstream Operations	Telephone Number (406) 433-8710	E-mail Address dick.vandebossche@oneok.com
Contact Person for Air Pollution Matters Joshua Hills		
Title Environmental Professional	Telephone Number (918) 588-7862	E-mail Address Joshua.Hills@oneok.com
Mailing Address (Street & No.) 100 W. Fifth St.		
City Tulsa	State OK	ZIP Code 74103
Facility Name Nighthawk Compressor Station		
Facility Address (Street & No.)		
City Killdeer	State ND	ZIP Code 58640

County Dunn	Coordinates NAD 83 in Decimal Degrees (to forth decimal degree)	
	Latitude 47.63438100	Longitude -103.08006600

Legal Description of Facility Site

Quarter	Quarter	Section	Township	Range
NW	NW	20	148N	97W

Land Area at Facility Site 10 Acres (or) _____ Sq. Ft.	MSL Elevation at Facility 2214 ft

SECTION B – GENERAL NATURE OF BUSINESS

Describe Nature of Business	North American Industry Classification System Number	Standard Industrial Classification Number (SIC)
Natural Gas Gathering	211130	1311

SECTION C – GENERAL PERMIT INFORMATION

Type of Permit? ☒ Permit to Construct (PTC) ☐ Permit to Operate (PTO)

If application is for a Permit to Construct, please provide the following data:

Planned Start Construction Date	Planned End Construction Date
11/2023	02/2025

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

		Permit to Construct				Minor Source Permit to Operate						
Your Source ID Number	Source or Unit (Equipment, Machines, Devices, Boilers, Processes, Incinerators, Etc.)	New Source	Existing Source Modification	Existing Source Expansion	Existing Source Change of Location	New Source	Existing Source Initial Application	Existing Source After Modification	Existing Source After Expansion	Existing Source After Change of Location	Existing Source After Change of Ownership	Other
C-1	2,750-hp Caterpillar G3608 Engine	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
C-2	2,750-hp Caterpillar G3608 Engine	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
FL-1	Process/VOC Flare	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
TK-1 - TK-3	Three 400-bbl Condensate Tanks	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
WTK-1	One 400-bbl Produced Water Tank	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
MTK-1	One 400-bbl Methanol Tank	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
TL-1	Truck Loading	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
FUG	Fugitive Emissions	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐
BD	Miscellaneous Venting and Blowdowns to Atn	☑	☐	☐	☐	☐	☐	☐	☐	☐	☐	☐

Add additional pages if necessary

SECTION D2 – APPLICABLE REGULATIONS

Source ID No.	Applicable Regulations (NSPS/MACT/NESHAP/etc.)
Facility-wide	NSPS OOOOb (Fugitive Monitoring)
C-1 - C-2	NSPS OOOOb (Compressor Rod Packing)
C-1 - C-2	NSPS JJJJ/NESHAP ZZZZ
TK-1 - TK-3	NSPS OOOOb
FL-1	NSPS OOOOb

SECTION E – TOTAL POTENTIAL EMISSIONS

Pollutant	Amount (Tons Per Year)
NO_x	54.56
CO	64.34
PM	1.81

Pollutant	Amount (Tons Per Year)
PM_{10} (filterable and condensable)	1.81
$PM_{2.5}$ (filterable and condensable)	1.81
SO_2	0.27
VOC	82.79
GHG (as CO_2e)	28002.44
Largest Single HAP	4.25
Total HAPS	8.49

*If performance test results are available for the unit, submit a copy of test with this application. If manufacturer guarantee is used provide spec sheet.

SECTION F1 – ADDITIONAL FORMS

Indicate which of the following forms are attached and made part of the application

■ Air Pollution Control Equipment (SFN 8532)	☐ Fuel Burning Equipment Used for Indirect Heating (SFN 8518)
☐ Construct/Operate Incinerators (SFN 8522)	☐ Hazardous Air Pollutant (HAP) Sources (SFN 8329)
☐ Natural Gas Processing Plants (SFN 11408)	☐ Manufacturing or Processing Equipment (SFN 8520)
☐ Glycol Dehydration Units (SFN 58923)	■ Volatile Organic Compounds Storage Tank (SFN 8535)
■ Flares (SFN 59652)	■ Internal Combustion Engines and Turbines (SFN 8891)
☐ Grain, Feed, and Fertilizer Operations (SFN 8524)	☐ Oil/Gas Production Facility Registration (SFN 14334)

SECTION F2 – OTHER ATTACHMENTS INCLUDED AS PART OF THIS APPLICATION

1.	Process Description and Regulatory Applicability	4.	Emission Calculations
2.	Area Map	5.	Support Documentation
3.	Process Flow Diagram	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(s) to Construct and/or 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	Date
DocuSigned by: Dick Vande Bossche 67B797C4193640F...	8/9/2024

PERMIT APPLICATION FOR INTERNAL COMBUSTION ENGINES AND TURBINES

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY
SFN 8891 (3-2019)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.
- Must include SFN 8516 or SFN 52858

SECTION A – GENERAL INFORMATION

Name of Firm or Organization	Facility Name
ONEOK Rockies Midstream, L.L.C.	Coyote Compressor Station

SECTION B – FACILITY AND UNIT INFORMATION

Source ID Number (From form SFN 8516): C-1 - C-2 (Each)

Type of Unit (check all that apply):

- ■ Stationary Natural Gas-Fired Engine
- ☐ Stationary Diesel and Dual Fuel Engine
- ☐ Stationary Gasoline Engine
- ☐ Stationary Natural Gas-Fired Turbine
- ☐ Emergency Use Only
- ■ Non-Emergency Use
- ☐ Peaking
- ☐ Demand Response
- ☐ Other – Specify:

SECTION C – MANUFACTURER DATA

Make	Model	Date of Manufacture
Caterpillar	G3608 A-4	2024

Reciprocating Internal Combustion Engine

■ Spark Ignition ☐ Compression Ignition

■ 4 Stroke ☐ 2 Stroke ☐ Rich Burn ■ Lean Burn

Maximum Rating (BHP @ rpm)	Operating Capacity (BHP @ rpm)
2,750-HP	2,750-HP

Engine Subject to:
☐ 40 CFR 60, Subpart IIII ■ 40 CFR 60, Subpart JJJJ ■ 40 CFR 63, Subpart ZZZZ
☐ 40 CFR 60, Subpart OOOO ☐ 40 CFR 60, Subpart OOOOa

Turbine — Dry Low Emissions? ☐ Yes ☐ No

Heat Input (MMBtu/hr)	Maximum Rating (HP)	75% Rating (HP)	Efficiency

Turbine Subject to: ☐ 40 CFR 60, Subpart GG ☐ 40 CFR 60, Subpart KKKK

SECTION D – FUELS USED

Natural Gas (10^6 cu ft/year) 147.159	Percent Sulfur	Percent H_2S
Oil (gal/year)	Percent Sulfur	Grade No.
LP Gas (gal/year)	Other – Specify:	

SECTION E – NORMAL OPERATING SCHEDULE

Hours Per Day	Days Per Week	Weeks Per Year	Hours Per Year	Peak Production Season (if any)
24	7	52	8760	

SECTION F – STACK PARAMETERS

Emission Point ID Number		Stack Height Above Ground Level (feet) 30	
Stack Diameter (feet at top) 4.5	Gas Discharged (SCFM) 17,327	Exit Temp (°F) 756	Gas Velocity (FPS) 18.16

SECTION G – EMISSION CONTROL EQUIPMENT

Is any emission control equipment installed on this unit?

☐ No ■ Yes – Complete and attach form SFN 8532

SECTION H – MAXIMUM AIR CONTAMINANTS EMITTED

Pollutant	Maximum Pounds Per Hour	Amount (Tons Per Year)	Basis of Estimate*
NO_x	6.06 (Each)	26.55 (Each)	Manufacturer data
CO	6.85 (Each)	30.01 (Each)	Manufacturer data
PM	0.20 (Each)	0.88 (Each)	AP-42 Table 3.2-2 (7/00)
PM_{10} (filterable and condensable)	0.20 (Each)	0.88 (Each)	AP-42 Table 3.2-2 (7/00)
$PM_{2.5}$ (filterable and condensable)	0.20 (Each)	0.88 (Each)	AP-42 Table 3.2-2 (7/00)
SO_2	0.01 (Each)	0.05 (Each)	AP-42 Table 3.2-2 (7/00)
VOC	3.64 (Each)	15.93 (Each)	Manufacturer data
GHG (as CO_2e)	2,904.89 (Each)	12,723.43 (Each)	40 CFR Tables C-1 and C-2
Largest Single HAP	0.49 (Each)	2.12 (Each)	Formaldehyde: Manufacturer data
Total HAPS	0.60 (Each)	2.64 (Each)	AP-42 Table 3.2-2 (7/00)

* If performance test results are available for the unit, submit a copy of test with this application, if manufacture data used, submit manufacturers specification sheets.

IS THIS UNIT IN COMPLIANCE WITH ALL APPLICABLE AIR POLLUTION RULES AND REGULATIONS?

■ YES ☐ NO

If "NO" a Compliance Schedule (SFN 61008) must be completed and attached.

Attach and label separate sheet(s) if you need more space to explain any system or answers or to provide complete listings of Emissions, Contaminants, or other items.

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of Environmental Quality
Division of Air Quality
918 E Divide Avenue, 2nd Floor
Bismarck, ND 58501-1947
(701) 328-5188

PERMIT APPLICATION FOR AIR POLLUTION CONTROL EQUIPMENT

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY
SFN 8532 (3-2019)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.
- Must also include forms SFN 8516 or SFN 52858

SECTION A – GENERAL INFORMATION

Name of Firm or Organization	Facility Name
ONEOK Rockies Midstream, L.L.C.	Nighthawk Compressor Station
Source ID No. of Equipment being Controlled C-1 - C-2 (Each)	

SECTION B – EQUIPMENT

Type: ☐ Cyclone ☐ Multiclone ☐ Baghouse ☐ Electrostatic Precipitator
☐ Wet Scrubber ☐ Spray Dryer ☐ Flare/Combustor
☒ Other – Specify: Oxidation Catalyst

Name of Manufacturer	Model Number	Date to Be Installed
Miratech	SP-RHSIGA-54-TBD-HSG	TBD

Application:
☐ Boiler ☐ Kiln ☒ Engine ☐ Other – Specify:

Pollutants Removed		CO	CH2O	VOC
Design Efficiency (%)				
Operating Efficiency (%)				

Describe method used to determine operating efficiency:
Data provided by manufacturer

SECTION CD – GAS CONDITIONS

Gas Conditions			Inlet	Outlet
Gas Volume (SCFM; 68°F; 14.7 psia)				
Gas Temperature (°F)				
Gas Pressure (in. H_2O)				
Gas Velocity (ft/sec)				
Pollutant Concentration (Specify Pollutant and Unit of Concentration)	Pollutant	Unit of Concentration		
	NOx	g/hp-hr	1.0	1.0
	CO	g/hp-hr	2.98	1.13
	CH2O	g/hp-hr	0.18	0.08
	VOC	g/hp-hr	0.77	0.60
Pressure Drop Through Gas Cleaning Device (in. H_2O)				

PERMIT APPLICATION FOR VOLATILE ORGANIC COMPOUNDS STORAGE TANK

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY
SFN 8535 (3-2019)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.
- Must include SFN 8516 or SFN 52858

SECTION A – GENERAL INFORMATION

Name of Firm or Organization	Facility Name
ONEOK Rockies Midstream, L.L.C.	Nighthawk Compressor Station

SECTION B – TANK DATA

Source ID Number (From SFN 8516): TK-1

Capacity	Barrels: 400		Gallons: 16,800	
Dimensions	Diameter: 12	Height: 20	Length	Width
Shape	■ Cylindrical	☐ Spherical	☐ Other – Specify:	
Materials of Construction	(i.e., steel)			
Construction	☐ Riveted	■ Welded	☐ Other – Specify:	
Color: Tan				
Condition	■ Good	☐ Fair	☐ Poor	
Status	■ New Construction	☐ Alteration	☐ Existing (Give Date Constructed):	
Type of Tank	■ Fixed Roof ☐ Variable Vapor Space ☐ Pressure (low or high)		☐ External Floating ☐ Internal Floating ☐ Other – Specify:	
Type of Roof	☐ Pan	☐ Double Deck	☐ Pontoon	■ Other – Specify: Cone

Type of Seal	Metallic Shoe Seal	Liquid Mounted Resilient Seal	Vapor Mounted Resilient Seal
	☐ Primary Seal Only ☐ With Rim Mounted Seal ☐ With Shoe Mounted Secondary Seal	☐ Primary Seal Only ☐ With Rim Mounted Seal ☐ With Weather Shield	☐ Primary Seal Only ☐ With Rim Mounted Seal ☐ With Weather Shield

SECTION C – TANK CONTENTS

Name all liquids, vapors, gases, or mixtures of such materials to be stored in the tank.
Give density (lbs per gal) or A.P.I.

Natural gas condensate

SECTION D – VAPOR DISPOSAL

☐ Atmosphere ☐ Vapor Recovery Unit ■ Flare ☐ Enclosed Combustor ☐ Other – Specify:

SECTION E – VAPOR PRESSURE DATA

psia	
Maximum True Vapor Pressure 12.87 psia	Maximum Reid Vapor Pressure

SECTION F – OPERATIONAL DATA

Maximum Filling Rate (barrels per hour or gallons per hour) 200 bbl/hr	Vapor Space Outage (See AP-42, 7.1-92, Equation 1-15)
Average Throughput (barrels per day or gallons per day) 685 bbl/day	Tank Turnovers per Year

SECTION G – SOLUTION STORAGE

If material stored is a solution, supply the following information:	
Name of Solvent	Name of Material Dissolved
Concentration of Material Dissolved (% by weight or % by volume or lbs/gal)	

SECTION H – AIR CONTAMINANATS EMITTED

Pollutant*	Maximum Pounds Per Hour	Tons Per Year	Basis and Calculations for Quantities (Attach separate sheet if needed)
VOC	2.32 (Each)	10.16 (Each)	ProMax Process Simulation
CO2e	5.20 (Each)	22.80 (Each)	ProMax Process Simulation

* Include an estimate of greenhouse gas emissions (CO_2e)

SECTION I – STANDARDS OF PERFORMANCE

Tank subject to: ☐ 40 CFR 60, Subpart K ☐ 40 CFR 60, Subpart Ka ☐ 40 CFR 60, Subpart Kb

☐ 40 CFR 60, Subpart OOOO ■ 40 CFR 60, Subpart OOOOab

Are the standards of performance for new stationary sources; petroleum liquid storage vessels, 40 CFR Part 60, Subparts K, Ka, and Kb, OOOO, OOOOa being adhered to, where applicable?

■ Yes ☐ No – Explain:

Tank will comply with the requirements under OOOOb.

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of Environmental Quality
Division of Air Quality
918 E Divide Avenue, 2nd Floor
Bismarck, ND 58501-1947
(701) 328-5188

PERMIT APPLICATION FOR VOLATILE ORGANIC COMPOUNDS STORAGE TANK

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY
SFN 8535 (3-2019)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.
- Must include SFN 8516 or SFN 52858

SECTION A – GENERAL INFORMATION

Name of Firm or Organization	Facility Name
ONEOK Rockies Midstream, L.L.C.	Nighthawk Compressor Station

SECTION B – TANK DATA

Source ID Number (From SFN 8516)
TK-2 - Tk-3 (Each)

Capacity	Barrels 400		Gallons 16,800	
Dimensions	Diameter 12	Height 20	Length	Width

Shape	■ Cylindrical	☐ Spherical	☐ Other – Specify:
Materials of Construction	(i.e., steel)		
Construction	☐ Riveted	■ Welded	☐ Other – Specify:
Color Tan			
Condition	■ Good	☐ Fair	☐ Poor
Status	■ New Construction	☐ Alteration	☐ Existing (Give Date Constructed):
Type of Tank	■ Fixed Roof ☐ Variable Vapor Space ☐ Pressure (low or high)		☐ External Floating ☐ Internal Floating ☐ Other – Specify:
Type of Roof	☐ Pan	☐ Double Deck	☐ Pontoon ■ Other – Specify: Cone

Type of Seal	Metallic Shoe Seal	Liquid Mounted Resilient Seal	Vapor Mounted Resilient Seal
	☐ Primary Seal Only ☐ With Rim Mounted Seal ☐ With Shoe Mounted Secondary Seal	☐ Primary Seal Only ☐ With Rim Mounted Seal ☐ With Weather Shield	☐ Primary Seal Only ☐ With Rim Mounted Seal ☐ With Weather Shield

SECTION C – TANK CONTENTS

Name all liquids, vapors, gases, or mixtures of such materials to be stored in the tank.
Give density (lbs per gal) or A.P.I.

Natural gas condensate

SECTION D – VAPOR DISPOSAL

☐ Atmosphere ☐ Vapor Recovery Unit ■ Flare ☐ Enclosed Combustor ☐ Other – Specify:

SECTION E – VAPOR PRESSURE DATA

psia	
Maximum True Vapor Pressure 12.87 psia	Maximum Reid Vapor Pressure

SECTION F – OPERATIONAL DATA

Maximum Filling Rate (barrels per hour or gallons per hour) 200 bbl/hr	Vapor Space Outage (See AP-42, 7.1-92, Equation 1-15)
Average Throughput (barrels per day or gallons per day) 685 bbl/day	Tank Turnovers per Year

SECTION G – SOLUTION STORAGE

If material stored is a solution, supply the following information:	
Name of Solvent	Name of Material Dissolved
Concentration of Material Dissolved (% by weight or % by volume or lbs/gal)	

SECTION H – AIR CONTAMINANATS EMITTED

Pollutant*	Maximum Pounds Per Hour	Tons Per Year	Basis and Calculations for Quantities (Attach separate sheet if needed)
VOC	2.32 (Each)	1.37 (Each)	ProMax Process Simulation

* Include an estimate of greenhouse gas emissions (CO_2e)

SECTION I – STANDARDS OF PERFORMANCE

Tank subject to: ☐ 40 CFR 60, Subpart K ☐ 40 CFR 60, Subpart Ka ☐ 40 CFR 60, Subpart Kb

☐ 40 CFR 60, Subpart OOOO ■ 40 CFR 60, Subpart OOOO~~a~~b

Are the standards of performance for new stationary sources; petroleum liquid storage vessels, 40 CFR Part 60, Subparts K, Ka, and Kb, OOOO, OOOOa being adhered to, where applicable?

■ Yes ☐ No – Explain:

Tanks will comply with the requirements under OOOOb.

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of Environmental Quality
Division of Air Quality
918 E Divide Avenue, 2nd Floor
Bismarck, ND 58501-1947
(701) 328-5188

PERMIT APPLICATION FOR VOLATILE ORGANIC COMPOUNDS STORAGE TANK

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY
SFN 8535 (3-2019)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.
- Must include SFN 8516 or SFN 52858

SECTION A – GENERAL INFORMATION

Name of Firm or Organization	Facility Name
ONEOK Rockies Midstream, L.L.C.	Nighthawk Compressor Station

SECTION B – TANK DATA

Source ID Number (From SFN 8516): WTK-1

Capacity	Barrels: 400		Gallons: 16,800	
Dimensions	Diameter: 12	Height: 20	Length	Width
Shape	☒ Cylindrical	☐ Spherical	☐ Other – Specify:	
Materials of Construction	(i.e., steel)			
Construction	☐ Riveted	☒ Welded	☐ Other – Specify:	
Color: Tan				
Condition	☒ Good	☐ Fair	☐ Poor	
Status	☒ New Construction	☐ Alteration	☐ Existing (Give Date Constructed):	
Type of Tank	☒ Fixed Roof ☐ Variable Vapor Space ☐ Pressure (low or high)		☐ External Floating ☐ Internal Floating ☐ Other – Specify:	
Type of Roof	☐ Pan	☐ Double Deck	☐ Pontoon	☒ Other – Specify: Cone

Type of Seal	Metallic Shoe Seal	Liquid Mounted Resilient Seal	Vapor Mounted Resilient Seal
	☐ Primary Seal Only ☐ With Rim Mounted Seal ☐ With Shoe Mounted Secondary Seal	☐ Primary Seal Only ☐ With Rim Mounted Seal ☐ With Weather Shield	☐ Primary Seal Only ☐ With Rim Mounted Seal ☐ With Weather Shield

SECTION C – TANK CONTENTS

Name all liquids, vapors, gases, or mixtures of such materials to be stored in the tank.
Give density (lbs per gal) or A.P.I.

Produced Water - Tanks are assumed to contain 99% produced water and 1% condensate. Therefore, produced water emissions are assumed to be 1% of those calculated for condensate.

SECTION D – VAPOR DISPOSAL

☐ Atmosphere ☐ Vapor Recovery Unit ☒ Flare ☐ Enclosed Combustor ☐ Other – Specify:

SECTION E – VAPOR PRESSURE DATA

psia	
Maximum True Vapor Pressure 12.87 psia	Maximum Reid Vapor Pressure

SECTION F – OPERATIONAL DATA

Maximum Filling Rate (barrels per hour or gallons per hour) 200 bbl/hr	Vapor Space Outage (See AP-42, 7.1-92, Equation 1-15)
Average Throughput (barrels per day or gallons per day) 190 bbl/day	Tank Turnovers per Year

SECTION G – SOLUTION STORAGE

If material stored is a solution, supply the following information:	
Name of Solvent	Name of Material Dissolved
Concentration of Material Dissolved (% by weight or % by volume or lbs/gal)	

SECTION H – AIR CONTAMINANATS EMITTED

Pollutant*	Maximum Pounds Per Hour	Tons Per Year	Basis and Calculations for Quantities (Attach separate sheet if needed)
VOC	0.01	0.04	ProMax Process Simulation
CO2e	0.02	0.10	ProMax Process Simulation

* Include an estimate of greenhouse gas emissions (CO_2e)

SECTION I – STANDARDS OF PERFORMANCE

Tank subject to: ☐ 40 CFR 60, Subpart K ☐ 40 CFR 60, Subpart Ka ☐ 40 CFR 60, Subpart Kb

☐ 40 CFR 60, Subpart OOOO ■ 40 CFR 60, Subpart OOOOab

Are the standards of performance for new stationary sources; petroleum liquid storage vessels, 40 CFR Part 60, Subparts K, Ka, and Kb, OOOO, OOOOa being adhered to, where applicable?

■ Yes ☐ No – Explain:

Tank will comply with the requirements under OOOOb.

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of Environmental Quality
Division of Air Quality
918 E Divide Avenue, 2nd Floor
Bismarck, ND 58501-1947
(701) 328-5188

PERMIT APPLICATION FOR MANUFACTURING OR PROCESSING EQUIPMENT

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY
SFN 8520 (9-2021)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.
- Must include SFN 8516 or SFN 52858

SECTION A – GENERAL INFORMATION

Equipment items operating as a functional unit may be grouped as one application	
Name of Firm or Organization ONEOK Rockies Midstream, L.L.C.	Facility Name Nighthawk Compressor Station

SECTION B – EQUIPMENT INFORMATION

Source ID Number (From SFN 8516) TL-1		
Type of Unit or Process (rotary dryer, cupola furnace, crusher, pelletizer, etc.) Condensate Tank Truck Loading		
Make N/A	Model N/A	Date Installed
Capacity (manufacturer's or designer's guaranteed maximum) 11,038,000 gallons	Operating Capacity (specific units) 10,500,000 gallons	
Brief description of operation of unit or process: Loading operation of the condensate storage tanks at the facility.		

SECTION C – NORMAL OPERATING SCHEDULE

Hours Per Day	Days Per Week	Weeks Per Year	Peak Production Season (if any)	Dates of Annual Shutdown
24	7	52	N/A	N/A

SECTION D – RAW MATERIALS INTRODUCED INTO UNIT OR PROCESS

Include solid fuels such as coke or coal. *Exclude* indirect heat exchangers from this section
For indirect heat exchangers, complete form SFN 8518

Material	Hourly Process Weight (Pounds Per Hour)			Average Annual (Specify Units)	Intermittent Operation Only (Average Hours Per Week)
	Average	Maximum	Minimum		
Condensate	7500	7500	0	10,500,000 gallons	24

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		
Condensate	7500	7500	0	11,038,000 gallons	5

SECTION F – FUELS USED

Coal (Tons/Yr)	% Sulfur	% Ash	Oil (Gal/Yr)	% Sulfur	Grade No.
N/A	N/A	N/A	N/A	N/A	N/A

Natural Gas (Thousand CF/Yr)	LP Gas (Gal/Yr)	Other (Specify)
N/A	N/A	N/A

SECTION G – EMISSION POINTS

List each point separately, number each and locate on attached flow chart

Number	Stack Height (ft)	Stack Diameter (ft at top)	Gas Volume (ACFM)	Exit Temp (°F)	Gas Velocity (fps)
1	N/A	N/A	N/A	N/A	N/A

SECTION H – AIR CONTAMINANTS EMITTED

Known or Suspected - Use same identification number as above

Number	Pollutant	Amount		Basis of Estimate
		Pounds/Hr	Tons/Yr	
1	VOC	4.57	20.00	Representative Sampling
1	HAP	0.24	1.06	Representative Sampling

SECTION I – VOLATILE ORGANIC COMPOUNDS

Are any volatile organic compounds (VOCs) stored on premises? ☐ No ■ Yes – List Below

See 40 CFR 51.100(s) for classes of compounds covered

Material Stored	Size Tank (Gallons)	Vapor Control Device
Condensate	16,800	Flare

SECTION J – ORGANIC SOLVENTS

Are any organic solvents used or produced? ☒ No (None or less than 50 gal/yr) ☐ Yes – List Below

Type	Principal Use	Gallons/Yr Consumed	Gallons/Yr Produced

SECTION K – AIR POLLUTION CONTROL EQUIPMENT

Is any air pollution control equipment installed on this unit or process? ☒ No ☐ Yes
If 'Yes' attach form SFN 8532

SECTION L – MATERIAL STORAGE

Does the input material or product from this process contain finely divided material which could become airborne? ☒ No ☐ Yes

Describe storage methods used:

Storage Piles	Type of Material	Particle Diameter (Avg. or Screen Size)	Pile Size Average Tons	Pile Wetted	Pile Covered

Describe any fugitive dust problems:

Attach additional sheets if needed to explain any answers. Use separate form for each contaminant emitting process

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

PERMIT APPLICATION FOR VOLATILE ORGANIC COMPOUNDS STORAGE TANK

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY
SFN 8535 (3-2019)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.
- Must include SFN 8516 or SFN 52858

SECTION A – GENERAL INFORMATION

Name of Firm or Organization	Facility Name
ONEOK Rockies Midstream, L.L.C.	Nighthawk Compressor Station

SECTION B – TANK DATA

Source ID Number (From SFN 8516): MTK-1

Capacity	Barrels: 400		Gallons: 16,800	
Dimensions	Diameter: 12	Height: 20	Length	Width
Shape	☒ Cylindrical	☐ Spherical	☐ Other – Specify:	
Materials of Construction	(i.e., steel)			
Construction	☐ Riveted	☒ Welded	☐ Other – Specify:	
Color: Tan				
Condition	☒ Good	☐ Fair	☐ Poor	
Status	☒ New Construction	☐ Alteration	☐ Existing (Give Date Constructed):	
Type of Tank	☒ Fixed Roof ☐ Variable Vapor Space ☐ Pressure (low or high)		☐ External Floating ☐ Internal Floating ☐ Other – Specify:	
Type of Roof	☐ Pan	☐ Double Deck	☐ Pontoon	☒ Other – Specify: Cone

Type of Seal	Metallic Shoe Seal	Liquid Mounted Resilient Seal	Vapor Mounted Resilient Seal
	☐ Primary Seal Only ☐ With Rim Mounted Seal ☐ With Shoe Mounted Secondary Seal	☐ Primary Seal Only ☐ With Rim Mounted Seal ☐ With Weather Shield	☐ Primary Seal Only ☐ With Rim Mounted Seal ☐ With Weather Shield

SECTION C – TANK CONTENTS

Name all liquids, vapors, gases, or mixtures of such materials to be stored in the tank.
Give density (lbs per gal) or A.P.I.

Methanol

SECTION D – VAPOR DISPOSAL

☒ Atmosphere ☐ Vapor Recovery Unit ☐ Flare ☐ Enclosed Combustor ☐ Other – Specify:

SECTION E – VAPOR PRESSURE DATA

psia	
Maximum True Vapor Pressure 12.87 psia	Maximum Reid Vapor Pressure

SECTION F – OPERATIONAL DATA

Maximum Filling Rate (barrels per hour or gallons per hour) 0.78 bbl/hr	Vapor Space Outage (See AP-42, 7.1-92, Equation 1-15)
Average Throughput (barrels per day or gallons per day) 18.7 bbl/day	Tank Turnovers per Year

SECTION G – SOLUTION STORAGE

If material stored is a solution, supply the following information:	
Name of Solvent	Name of Material Dissolved
Concentration of Material Dissolved (% by weight or % by volume or lbs/gal)	

SECTION H – AIR CONTAMINANATS EMITTED

Pollutant*	Maximum Pounds Per Hour	Tons Per Year	Basis and Calculations for Quantities (Attach separate sheet if needed)
VOC	0.04	0.17	AP-42

* Include an estimate of greenhouse gas emissions (CO_2e)

SECTION I – STANDARDS OF PERFORMANCE

Tank subject to: ☐ 40 CFR 60, Subpart K ☐ 40 CFR 60, Subpart Ka ☐ 40 CFR 60, Subpart Kb

☐ 40 CFR 60, Subpart OOOO ☐ 40 CFR 60, Subpart OOOOa

Are the standards of performance for new stationary sources; petroleum liquid storage vessels, 40 CFR Part 60, Subparts K, Ka, and Kb, OOOO, OOOOa being adhered to, where applicable?

☐ Yes ■ No – Explain:

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of Environmental Quality
Division of Air Quality
918 E Divide Avenue, 2nd Floor
Bismarck, ND 58501-1947
(701) 328-5188

PERMIT APPLICATION FOR FLARES

NORTH DAKOTA DEPARTMENT OF ENVIRONMENTAL QUALITY
DIVISION OF AIR QUALITY
SFN 59652 (3-2019)

NOTE: READ INSTRUCTIONS BEFORE COMPLETING THIS FORM.
- Must include SFN 8516 or SFN 52858

SECTION A – GENERAL INFORMATION

Name of Firm or Organization	Facility Name
ONEOK Rockies Midstream, L.L.C.	Nighthawk Compressor Station

SECTION B - FLARE INFORMATION

Use: ☐ Emergency ☐ Process ■ Both	Subject to NSPS (40 CFR 60.18) ○ Yes ● No	
Emission Point ID FL-1	Height Above Ground Level (ft.) 50	Diameter at Top (ft.) ~2.5
Flame Monitor: ■ Thermocouple ☐ Infrared ☐ Ultraviolet ☐ Acoustic ☐ Other:		
Ignition: ■ Automatic ■ Continuous Burning Pilot ■ Other: Electric spark igniter		
Average Btu/1000 scf 1,350	Percent H_2S 0.00%	Maximum Hourly Flow Rate to Flare Max of 1.889 MCF per blowdown event
List source ID numbers controlled by this unit, if any: TK-1 - TK-3, WTK-1, Compressor blowdowns at C-1 - C-2		

SECTION C – AIR CONTAMINANTS EMITTED

Pollutant	Amount (Tons Per Year)	Basis of Estimate*
NO_x	1.45	Stream: AP-42 Table 13.5-1 (2/18) / Pilot: AP-42 Table 1.4-1,-2 (7/98)
CO	4.33	Stream: AP-42 Table 13.5-1 (2/18) / Pilot: AP-42 Table 1.4-1,-2 (7/98)
PM	0.05	Pilot: AP-42 Table 1.4-1, -2 (7/98)
PM_{10} (filterable and condensable)	0.05	Pilot: AP-42 Table 1.4-1, -2 (7/98)
$PM_{2.5}$ (filterable and condensable)	0.05	Pilot: AP-42 Table 1.4-1, -2 (7/98)
SO_2	0.16	Stream: Stoichiometric / Pilot: AP-42 Table 1.4-1,-2 (7/98)
VOC	0.31	Stream: Mass Balance / Pilot: AP-42 1.4-1,-2 (7/98)
GHG (as CO_2e)	2,202.71	Stream: 40 CFR 98 and Mass Balance / Pilot: 40 CFR 98
Largest Single HAP	0.01	n-Hexane - Stream: Mass Balance / Pilot AP-42 Table 1.4-1,-2 (7/98)
Total HAPS	0.02	Stream: Mass Balance / Pilot: AP-42 Table 1.4-1,-2 (7/98)

*If performance test results are available for the unit, submit a copy of test with this application. If manufacturer guarantee are used provide spec sheet.

Will flaring of gas comply with applicable Ambient Air Quality Standards?	☑ Yes	☐ No

IS THIS UNIT IN COMPLIANCE WITH ALL APPLICABLE AIR POLLUTION CONTROL RULES AND REGULATIONS?	If "NO" a Compliance Schedule (SFN 61008) must be completed and attached.
☑ YES ☐ NO	

Attach and label separate sheet(s) if you need more space to explain any system or answers or to provide complete listings of Emissions, Contaminants or other items.

SEND COMPLETED APPLICATION AND ALL ATTACHMENTS TO:

North Dakota Department of Environmental Quality
Division of Air Quality
918 E Divide Avenue, 2nd Floor
Bismarck, ND 58501-1947
(701)328-5188

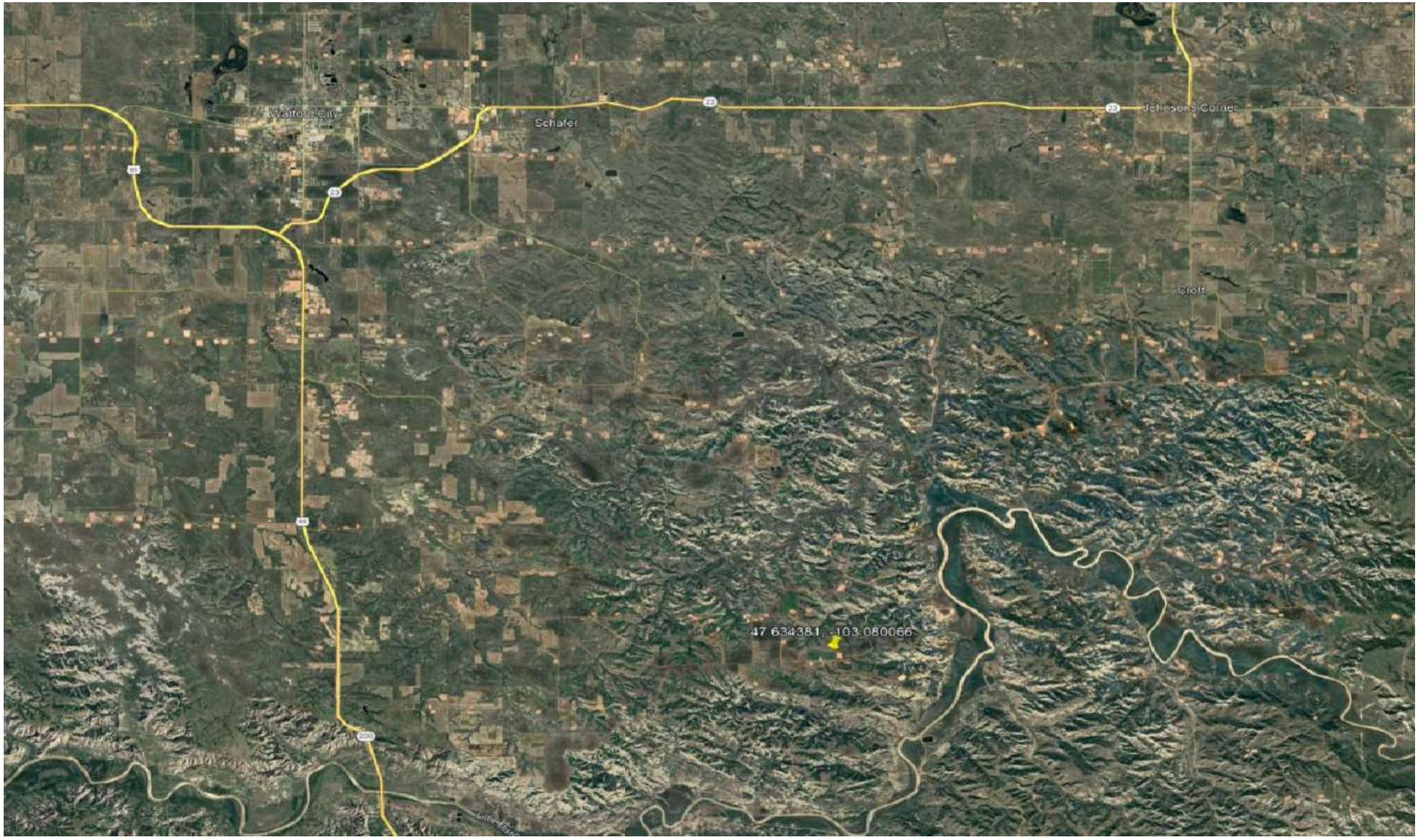
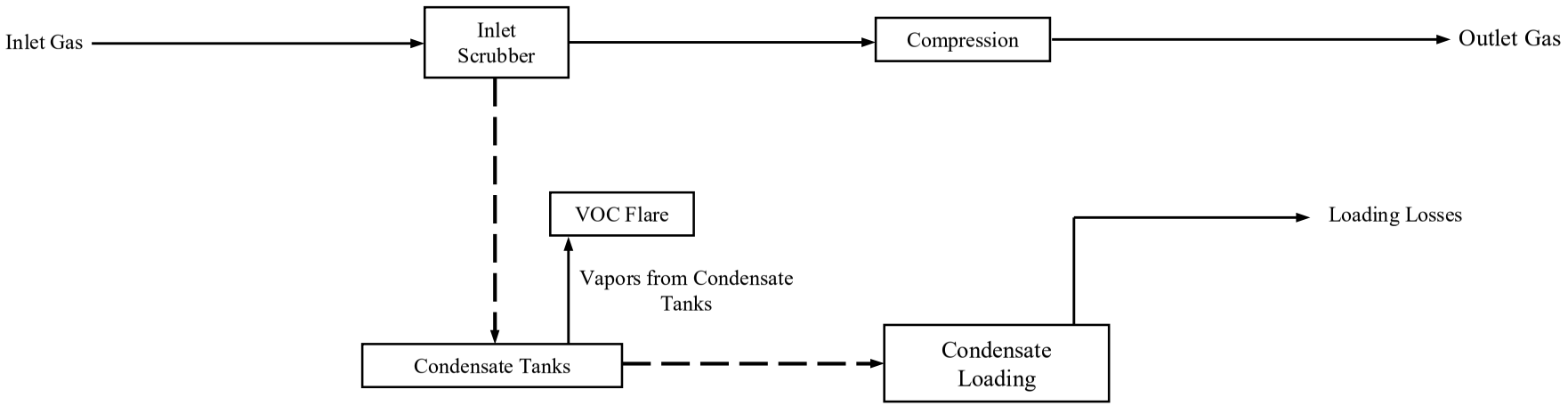


Figure Title: **Area Map**

ONEOK
ROCKIES MIDSTREAM
A SUBSIDIARY OF ONEOK PARTNERS

Figure 1.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Dunn County, ND



Gas/Vapor

Condensate/Water

ORM Nighthawk Compressor Station

Figure 2: Process Flow Diagram

Dunn County, North Dakota

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Facility Emissions Summary - Annual

Unit ID	Description	NOx	CO	VOC	SO_2	PM	HCHO	HAP	CO_2e
		TPY	TPY	TPY	TPY	TPY	TPY	TPY	TPY
C-1	2,750-hp Caterpillar G3608 A-4 Engine	26.55	30.01	15.93	0.05	0.88	2.12	2.64	12,723.43
C-2	2,2750-hp Caterpillar G3608 A-4 Engine	26.55	30.01	15.93	0.05	0.88	2.12	2.64	12,723.43
FL-1	Process/VOC Flare	1.45	4.33	0.31	0.16	0.05	<0.01	0.02	2,202.71
TK-1	400-bbl Condensate Tank	--	--	10.16	--	--	--	0.54	22.80
TK-2	400-bbl Condensate Tank	--	--	1.37	--	--	--	0.07	0.00
TK-3	400-bbl Condensate Tank	--	--	1.37	--	--	--	0.07	0.00
WTK-1	400-bbl Produced Water Tank	--	--	0.04	--	--	--	<0.01	0.10
TL-1	Condensate Truck Loading	--	--	20.00	--	--	--	1.06	0.04
MTK-1	400-bbl Methanol Tank	--	--	0.17	--	--	--	0.17	--
FUG	Fugitive Emissions	--	--	11.71	--	--	--	1.18	185.26
BD	Miscellaneous Venting and Blowdowns to Atmosphere	--	--	5.80	--	--	--	0.11	144.66
	Total =	**54.56**	**64.34**	**82.79**	**0.27**	**1.81**	**4.25**	**8.49**	**28,002.44**

Notes:
1) Tank emissions are routed to the Process/VOC Flare which is a single stack. Unburned VOC and HAP reported at the tanks.
1) Miscellaneous venting and blowdowns to atmosphere include, but are not limited to, miscellaneous planned and unplanned venting to atmosphere from pressure relief valves, startup, shut-down, maintenance, compressor blowdowns, pigging actions, and/or pneumatic controllers.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Facility Emissions Summary - Hourly

Unit ID	Description	NOx	CO	VOC	SO_2	PM	HCHO	HAP	CO_2e
		lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr	lb/hr
C-1	2,750-hp Caterpillar G3608 A-4 Engine	6.06	6.85	3.64	0.01	0.20	0.49	0.60	2,904.89
C-2	2,2750-hp Caterpillar G3608 A-4 Engine	6.06	6.85	3.64	0.01	0.20	0.49	0.60	2,904.89
FL-1	Process/VOC Flare	0.49	1.72	0.94	0.04	0.01	<0.01	0.02	804.48
TK-1	400-bbl Condensate Tank	--	--	2.32	--	--	--	0.12	5.20
TK-2	400-bbl Condensate Tank	--	--	0.31	--	--	--	0.02	0.00
TK-3	400-bbl Condensate Tank	--	--	0.31	--	--	--	0.02	0.00
WTK-1	400-bbl Produced Water Tank	--	--	0.01	--	--	--	<0.01	0.02
TL-1	Condensate Truck Loading	--	--	4.57	--	--	--	0.24	0.01
MTK-1	400-bbl Methanol Tank	--	--	0.04	--	--	--	0.04	--
FUG	Fugitive Emissions	--	--	2.67	--	--	--	0.27	42.30
BD	Miscellaneous Venting and Blowdowns to Atmosphere	--	--	--	--	--	--	--	--
	Total =	**12.62**	**15.43**	**18.45**	**0.06**	**0.41**	**0.97**	**1.93**	**6,661.80**

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Facility Analyses

Component	Molecular Weight	Stream 1 Inlet Gas				Stream 2 Condensate				Stream 3 Flash Gas			
		Mole %	Equiv. Wt. Basis	Weight %	HC Weight %	Mole %	Equiv. Wt. Basis	Weight %	HC Weight %	Mole %	Equiv. Wt. Basis	Weight %	HC Weight %
Hydrogen Sulfide	34.081	0.0000%	0.00	0.00%	-	0.0000%	0.00	0.00%	-	0.0000%	0.00	0.00%	-
Carbon Dioxide	44.010	0.7680%	0.34	1.31%	-	0.0087%	0.00	0.00%	-	0.5400%	0.24	0.57%	-
Nitrogen	28.013	2.4711%	0.69	2.67%	-	0.0005%	0.00	0.00%	-	0.3350%	0.09	0.22%	-
Helium	4.003	0.0000%	0.00	0.00%	-	0.0000%	0.00	0.00%	-	0.0000%	0.00	0.00%	-
Oxygen	31.999	0.0000%	0.00	0.00%	-	0.0000%	0.00	0.00%	-	0.0000%	0.00	0.00%	-
Methane	16.043	58.3969%	9.37	36.18%	37.67%	0.0858%	0.01	0.02%	0.02%	16.1000%	2.58	6.16%	6.21%
Ethane	30.069	20.2914%	6.10	23.56%	24.54%	1.0600%	0.32	0.36%	0.36%	27.3000%	8.21	19.58%	19.74%
Propane	44.096	10.7128%	4.72	18.24%	19.00%	3.9900%	1.76	1.98%	1.98%	27.5000%	12.13	28.93%	29.16%
i-Butane	58.122	1.1679%	0.68	2.62%	2.73%	1.4700%	0.85	0.96%	0.96%	3.6100%	2.10	5.01%	5.05%
n-Butane	58.122	3.6719%	2.13	8.24%	8.58%	7.9600%	4.63	5.19%	5.19%	12.8000%	7.44	17.75%	17.89%
i-Pentane	72.149	0.6731%	0.49	1.88%	1.95%	5.0900%	3.67	4.12%	4.12%	3.1400%	2.27	5.40%	5.45%
n-Pentane	72.149	1.0288%	0.74	2.87%	2.99%	11.6000%	8.37	9.40%	9.40%	5.1400%	3.71	8.85%	8.92%
n-Hexane	86.175	0.1565%	0.13	0.52%	0.54%	21.0000%	18.10	20.32%	20.32%	2.4000%	2.07	4.93%	4.97%
Other Hexanes	86.175	0.4351%	0.37	1.45%	1.51%	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%	0.00%
Heptanes	100.202	0.0820%	0.08	0.32%	0.33%	23.9000%	23.95	26.88%	26.89%	0.7820%	0.78	1.87%	1.88%
Benzene	78.114	0.0168%	0.01	0.05%	0.05%	0.9670%	0.76	0.85%	0.85%	0.1140%	0.09	0.21%	0.21%
Toluene	92.141	0.0130%	0.01	0.05%	0.05%	1.5200%	1.40	1.57%	1.57%	0.0460%	0.04	0.10%	0.10%
Ethylbenzene	106.167	0.0009%	0.00	0.00%	0.00%	0.2740%	0.29	0.33%	0.33%	0.0024%	0.00	0.01%	0.01%
Xylenes	106.167	0.0038%	0.00	0.02%	0.02%	0.8820%	0.94	1.05%	1.05%	0.0059%	0.01	0.01%	0.02%
Octanes	114.229	0.0000%	0.00	0.00%	0.00%	14.6000%	16.68	18.72%	18.72%	0.1330%	0.15	0.36%	0.37%
2,2,4-Trimethylpentane	114.231	0.0084%	0.01	0.04%	0.04%	0.0000%	0.00	0.00%	0.00%	0.0000%	0.00	0.00%	0.00%
Nonanes	128.255	0.0000%	0.00	0.00%	0.00%	4.2800%	5.49	6.16%	6.16%	0.0109%	0.01	0.03%	0.03%
Decanes	142.282	0.0000%	0.00	0.00%	0.00%	1.3120%	1.87	2.10%	2.10%	0.0010%	0.00	0.00%	0.00%
Totals =		99.8984%	25.90	100.00%	100.00%	100.0000%	89.08	100.00%	100.00%	99.9602%	41.92	100.00%	100.00%
Total HC =		24.87	Total VOC =	37.79%		Total HC =	89.08	Total VOC =	99.63%	Total HC =	41.59	Total VOC =	74.05%
Total HAP =		0.70%				Total HAP =		24.11%		Total HAP =		5.31%	

Notes:

1) Representative inlet gas analysis with C6+ estimated per GLYCalc. Condensate and flash gas compositions calculated with ProMax process simulation using representative analysis. (Elm Tree CS, located 6 miles away)

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Estimated Extended Gas Analysis

Component	Production	
	GRI Fraction	Estimated Mole %
Other Hexanes	0.5319	0.4351
n-Hexane	0.1913	0.1565
Heptane	0.1002	0.0820
2,2,4-Trimethylpentane	0.0103	0.0084
Octanes+	0.1241	0.1015
Benzene	0.0205	0.0168
Toluene	0.0159	0.0130
Ethylbenzene	0.0011	0.0009
Xylenes	0.0046	0.0038
Total=		0.8180

C6+ Value From Gas Analysis = 0.8181 mole %

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Engine Information and Manufacturer Emission Factors

Equipment Information		
	C-1	**C-2**
Make	Caterpillar	Caterpillar
Model	G3608 ADEM4	G3608 ADEM4
Design Rating (hp)	2,750	2,750
Fuel Consumption (Btu/hp-hr)	7,327	7,327
Fuel Consumption (scfh)	19,754	19,754
Fuel Consumption (mmBtu/hr)	20.15	20.15
Fuel Consumption (scf/yr)	173,046,500	173,046,500
Fuel Heating Value (Btu/scf)	1,020	1,020
Design Class	4S-LB	4S-LB
Controls	Oxidation Catalyst	Oxidation Catalyst
Operating Hours	8,760	8,760
Stack Height (ft)	30.0	30.0
Stack Diameter (ft)	4.5	4.5
Exhaust Temperature (°F)	756	756
Exhaust Flow (acfm)	17,327	17,327
Exhaust Flow (scfh)	451,414	451,414
Exit Velocity (ft/s)	18.16	18.16

Uncontrolled Emission Factors		
	C-1	**C-2**
NOx (g/hp-hr)	1.00	1.00
CO (g/hp-hr)	2.98	2.98
VOC (g/hp-hr)	1.26	1.26
Formaldehyde (g/hp-hr)	0.18	0.18
CO_2 (g/hp-hr)	474.00	474.00

Control Efficiency		
	C-1	**C-2**
NOx	0.00%	0.00%
CO	75.00%	75.00%
VOC	52.00%	52.00%
Formaldehyde	50.00%	50.00%

Post-Control Emission Factors		
	C-1	**C-2**
NOx (g/hp-hr)	1.00	1.00
CO (g/hp-hr)	1.13	1.13
VOC (g/hp-hr)	0.60	0.60
Formaldehyde (g/hp-hr)	0.08	0.08
CO_2 (g/hp-hr)	478.74	478.74

Notes:
1) Nox emission factors based on JJJJ limitations. CO, VOC, and formaldehyde emission factors based on manufacturer specifications.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Engine AP-42/EPA Emission Factors

Emission Factors	
	4S-LB
SO_2 (lb/mmBtu)	5.88E-04
$PM_{10/2.5}$ (lb/mmBtu)	7.71E-05
PM_{COND} (lb/mmBtu)	9.91E-03
PM_{TOT} (lb/mmBtu)	9.99E-03
Acetaldehyde (lb/mmBtu)	8.36E-03
Acrolein (lb/mmBtu)	5.14E-03
Benzene (lb/mmBtu)	4.40E-04
Ethylbenzene (lb/mmBtu)	3.97E-05
Methanol (lb/mmBtu)	2.50E-03
Toluene (lb/mmBtu)	4.08E-04
Xylenes (lb/mmBtu)	1.84E-04
Other HAP (lb/mmBtu)	2.32E-03
Carbon Dioxide (CO_2) (kg/mmBtu)	5.31E+01
Methane (CH_4) (kg/mmBtu)	1.00E-03
Nitrous Oxide (N_2O) (kg/mmBtu)	1.00E-04

Control Efficiency	
	4S-LB
HAP	70.00%

Post-Control Emission Factors	
	4S-LB
Acetaldehyde (lb/mmBtu)	2.51E-03
Acrolein (lb/mmBtu)	1.54E-03
Benzene (lb/mmBtu)	1.32E-04
Ethylbenzene (lb/mmBtu)	1.19E-05
Methanol (lb/mmBtu)	7.50E-04
Toluene (lb/mmBtu)	1.22E-04
Xylenes (lb/mmBtu)	5.52E-05
Other HAP (lb/mmBtu)	6.97E-04

Notes:

1) Criteria pollutant and hazardous air pollutant emission factors are from AP-42 Table 3.2-2 (7/00). Greenhouse gas emission factors are from 40 CFR Tables C-1 and C-2.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Engine Emissions Calculations

Unit ID: **C-1**

Pollutant	Emission Factor			Capacity			Conversion			Hourly Emissions			Operating Hours		Conversion			Annual Emissions	
NOx	1.00E+00	g/hp-hr	X	2,750	hp	X	0.00220462	lb/gr	=	**6.06**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**26.55**	**TPY**
CO	1.13E+00	g/hp-hr	X	2,750	hp	X	0.00220462	lb/gr	=	**6.85**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**30.01**	**TPY**
VOC	6.00E-01	g/hp-hr	X	2,750	hp	X	0.00220462	lb/gr	=	**3.64**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**15.93**	**TPY**
SO_2	5.88E-04	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**0.01**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**0.05**	**TPY**
$PM_{10/2.5}$	7.71E-05	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**<0.01**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**0.01**	**TPY**
PM_{COND}	9.91E-03	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**0.20**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**0.87**	**TPY**
PM_{TOT}	9.99E-03	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**0.20**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**0.88**	**TPY**
Acetaldehyde	2.51E-03	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**0.05**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**0.22**	**TPY**
Acrolein	1.54E-03	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**0.03**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**0.14**	**TPY**
Benzene	1.32E-04	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**<0.01**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**0.01**	**TPY**
Ethylbenzene	1.19E-05	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**<0.01**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**<0.01**	**TPY**
Formaldehyde	8.00E-02	g/hp-hr	X	2,750	hp	X	0.00220462	lb/gr	=	**0.49**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**2.12**	**TPY**
Methanol	7.50E-04	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**0.02**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**0.07**	**TPY**
Toluene	1.22E-04	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**<0.01**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**0.01**	**TPY**
Xylenes	5.52E-05	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**<0.01**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**<0.01**	**TPY**
Other HAP	6.97E-04	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**0.01**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**0.06**	**TPY**
CO_2	4.79E+02	g/hp-hr	X	2,750.00	hp	X	0.00220462	lb/gr	=	**2,902.46**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**12,712.77**	**TPY**
CH_4	1.00E-03	kg/mmBtu	X	20.15	mmBtu/hr	X	2.20462	lb/kg	=	**0.04**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**0.19**	**TPY**
N_2O	1.00E-04	kg/mmBtu	X	20.15	mmBtu/hr	X	2.20462	lb/kg	=	**<0.01**	**lb/hr**	X	8,760	X	0.0005	ton/lb	=	**0.02**	**TPY**

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Engine Emissions Calculations

Unit ID: **C-2**

Pollutant	Emission Factor			Capacity			Conversion			Hourly Emissions		Operating Hours		Conversion			Annual Emissions	
NOx	1.00E+00	g/hp-hr	X	2,750	hp	X	0.00220462	lb/gr	=	**6.06**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**26.55**	**TPY**
CO	1.13E+00	g/hp-hr	X	2,750	hp	X	0.00220462	lb/gr	=	**6.85**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**30.01**	**TPY**
VOC	6.00E-01	g/hp-hr	X	2,750	hp	X	0.00220462	lb/gr	=	**3.64**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**15.93**	**TPY**
SO_2	5.88E-04	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**0.01**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**0.05**	**TPY**
$PM_{10/2.5}$	7.71E-05	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**<0.01**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**0.01**	**TPY**
PM_{COND}	9.91E-03	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**0.20**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**0.87**	**TPY**
PM_{TOT}	9.99E-03	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**0.20**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**0.88**	**TPY**
Acetaldehyde	2.51E-03	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**0.05**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**0.22**	**TPY**
Acrolein	1.54E-03	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**0.03**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**0.14**	**TPY**
Benzene	1.32E-04	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**<0.01**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**0.01**	**TPY**
Ethylbenzene	1.19E-05	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**<0.01**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**<0.01**	**TPY**
Formaldehyde	8.00E-02	g/hp-hr	X	2,750	hp	X	0.00220462	lb/gr	=	**0.49**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**2.12**	**TPY**
Methanol	7.50E-04	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**0.02**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**0.07**	**TPY**
Toluene	1.22E-04	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**<0.01**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**0.01**	**TPY**
Xylenes	5.52E-05	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**<0.01**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**<0.01**	**TPY**
Other HAP	6.97E-04	lb/mmBtu	X	20.15	mmBtu/hr	X	-	-	=	**0.01**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**0.06**	**TPY**
CO_2	4.79E+02	g/hp-hr	X	2,750.00	hp	X	0.00220462	lb/gr	=	**2,902.46**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**12,712.77**	**TPY**
CH_4	1.00E-03	kg/mmBtu	X	20.15	mmBtu/hr	X	2.20462	lb/kg	=	**0.04**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**0.19**	**TPY**
N_2O	1.00E-04	kg/mmBtu	X	20.15	mmBtu/hr	X	2.20462	lb/kg	=	**<0.01**	**lb/hr**	X 8,760	X	0.0005	ton/lb	=	**0.02**	**TPY**

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Flare Information and Emission Factors

Equipment Information		
	FL-1	**FL-2**
Description	Process Flare	Process Flare
Stream Contents	Miscellanous Blowdowns	VOC Storage Tanks
VOC to Flare (lb/hr)	46.86	97.81
Stream Heat Content (Btu/scf)	1,350	2,187
Stream Net Btu Value (Btu/hr)	2,550,891	2,633,922
Operating Hours	600	8,760
Control Efficiency	98%	98%
Pilot Stream Heat Content (Btu/scf)	1,026	
Pilot Gas Flow Rate (scfh)	1,400.00	
Pilot Gas Capacity (mmBtu/hr)	1.436	
Pilot Operating Hours	8,760	

AP-42/EPA Emission Factors			
	Flare Stream		**Pilot Gas**
NOx (lb/mmBtu)	0.068	**NOx (lb/mmscf)**	100.0
CO (lb/mmBtu)	0.31	**CO (lb/mmscf)**	84.0
VOC	Mass Balance	**VOC (lb/mmscf)**	5.5
SO_2	Stoichiometric	**SO_2 (lb/mmscf)**	0.6
$PM_{10/2.5}$	--	**$PM_{10/2.5}$ (lb/mmscf)**	1.9
PM_{COND}	--	**PM_{COND} (lb/mmscf)**	5.7
PM_{TOT}	--	**PM_{TOT} (lb/mmscf)**	7.6
Formaldehyde	--	**Formaldehyde (lb/mmscf)**	7.50E-02
n-Hexane	Mass Balance	**n-Hexane (lb/mmscf)**	1.80E+00
Benzene	Mass Balance	**Benzene (lb/mmscf)**	2.10E-03
Toluene	Mass Balance	**Toluene (lb/mmscf)**	3.40E-03
Ethylbenzene	Mass Balance	**Ethylbenzene**	--
Xylenes	Mass Balance	**Xylenes**	--
Other HAP	Mass Balance	**Other HAP (lb/mmscf)**	1.90E-03
Carbon Dioxide (CO_2) (kg/mmBtu)	53.06/Mass Balance	**Carbon Dioxide (CO_2) (kg/mmBtu)**	53.06
Methane (CH_4) (kg/mmBtu)	0.001/Mass Balance	**Methane (CH_4) (kg/mmBtu)**	1.00E-03
Nitrous Oxide (N_2O) (kg/mmBtu)	1.00E-04	**Nitrous Oxide (N_2O) (kg/mmBtu)**	1.00E-04

Notes:
1) NOx and CO emission factors (lb/mmBtu), flare stream: AP-42, Table 13.5-1 and 13.5-2 (2/2018). Pilot criteria and HAP emission factors (lb/mmscf): AP-42, Table 1.4-1, -2 (7/98). GHG emission factors (kg/mmBtu): 40 CFR 98.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Flare Emissions Calculations

Unit ID: FL-1

Total: Stream + Pilot

Pollutant	Hourly Emissions		Annual Emissions	
NOx	0.49	lb/hr	1.45	TPY
CO	1.72	lb/hr	4.33	TPY
VOC[1]	0.94	lb/hr	0.31	TPY
SO_2	0.04	lb/hr	0.16	TPY
$PM_{10/2.5}$	<0.01	lb/hr	0.01	TPY
PM_{COND}	0.01	lb/hr	0.03	TPY
PM_{TOT}	0.01	lb/hr	0.05	TPY
Formaldehyde	<0.01	lb/hr	<0.01	TPY
n-Hexane	0.02	lb/hr	0.02	TPY
Benzene	<0.01	lb/hr	<0.01	TPY
Toluene	<0.01	lb/hr	<0.01	TPY
Ethylbenzene	<0.01	lb/hr	<0.01	TPY
Xylenes	<0.01	lb/hr	<0.01	TPY
Other HAP	<0.01	lb/hr	<0.01	TPY
CO_2	776.22	lb/hr	2,175.49	TPY
CH_4	1.11	lb/hr	1.04	TPY
N_2O	<0.01	lb/hr	<0.01	TPY

Stream 1 Emissions

Pollutant	Emission Factor			Capacity			Conversion			Hourly Emissions		Operating Hours		Conversion		Annual Emissions	
NOx	6.80E-02	lb/mmBtu	X	2.55E+00	mmBtu/hr	X	-	-	=	0.17	lb/hr	X 600	X	0.0005	ton/lb	= 0.05	TPY
CO	3.10E-01	lb/mmBtu	X	2.55E+00	mmBtu/hr	X	-	-	=	0.79	lb/hr	X 600	X	0.0005	ton/lb	= 0.24	TPY
VOC	-	-	-	-	-	-	-	-	=	0.94	lb/hr	X 600	X	0.0005	ton/lb	= 0.28	TPY
SO_2	-	-	-	-	-	-	-	-	=	0.00	lb/hr	X 600	X	0.0005	ton/lb	= 0.00	TPY
n-Hexane	-	-	-	-	-	-	-	-	=	0.01	lb/hr	X 600	X	0.0005	ton/lb	= <0.01	TPY
Benzene	-	-	-	-	-	-	-	-	=	<0.01	lb/hr	X 600	X	0.0005	ton/lb	= <0.01	TPY
Toluene	-	-	-	-	-	-	-	-	=	<0.01	lb/hr	X 600	X	0.0005	ton/lb	= <0.01	TPY
Ethylbenzene	-	-	-	-	-	-	-	-	=	<0.01	lb/hr	X 600	X	0.0005	ton/lb	= <0.01	TPY
Xylenes	-	-	-	-	-	-	-	-	=	<0.01	lb/hr	X 600	X	0.0005	ton/lb	= <0.01	TPY
Other HAP	-	-	-	-	-	-	-	-	=	<0.01	lb/hr	X 600	X	0.0005	ton/lb	= <0.01	TPY
CO_2	5.31E+01	kg/mmBtu	X	2.55E+00	mmBtu/hr	X	2.20462	lb/kg	=	298.40	lb/hr	X 600	X	0.0005	ton/lb	= 89.52	TPY
CO_2	-	-	-	-	-	-	-	-	=	1.69	lb/hr	X 600	X	0.0005	ton/lb	= 0.51	TPY
CH_4	1.00E-03	kg/mmBtu	X	2.55E+00	mmBtu/hr	X	2.20462	lb/kg	=	0.01	lb/hr	X 600	X	0.0005	ton/lb	= <0.01	TPY
CH_4	-	-	-	-	-	-	-	-	=	0.93	lb/hr	X 600	X	0.0005	ton/lb	= 0.28	TPY
N_2O	1.00E-04	kg/mmBtu	X	2.55E+00	mmBtu/hr	X	2.20462	lb/kg	=	<0.01	lb/hr	X 600	X	0.0005	ton/lb	= <0.01	TPY

Stream 2 Emissions

Pollutant	Emission Factor			Capacity			Conversion			Hourly Emissions		Operating Hours		Conversion		Annual Emissions	
NOx	6.80E-02	lb/mmBtu	X	2.63E+00	mmBtu/hr	X	-	-	=	0.18	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.78	TPY
CO	3.10E-01	lb/mmBtu	X	2.63E+00	mmBtu/hr	X	-	-	=	0.82	lb/hr	X 8,760	X	0.0005	ton/lb	= 3.58	TPY
SO_2	-	-	-	-	-	-	-	-	=	0.04	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.16	TPY
n-Hexane	-	-	-	-	-	-	-	-	=	0.00	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.00	TPY
Benzene	-	-	-	-	-	-	-	-	=	0.00	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.00	TPY
Toluene	-	-	-	-	-	-	-	-	=	0.00	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.00	TPY
Ethylbenzene	-	-	-	-	-	-	-	-	=	0.00	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.00	TPY
Xylenes	-	-	-	-	-	-	-	-	=	0.00	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.00	TPY
Other HAP	-	-	-	-	-	-	-	-	=	0.00	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.00	TPY
CO_2	5.31E+01	kg/mmBtu	X	2.63E+00	mmBtu/hr	X	2.20462	lb/kg	=	308.11	lb/hr	X 8,760	X	0.0005	ton/lb	= 1,349.52	TPY
CO_2	-	-	-	-	-	-	-	-	=	0.00	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.00	TPY
CH_4	1.00E-03	kg/mmBtu	X	2.63E+00	mmBtu/hr	X	2.20462	lb/kg	=	0.01	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.03	TPY
CH_4	-	-	-	-	-	-	-	-	=	0.16	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.72	TPY
N_2O	1.00E-04	kg/mmBtu	X	2.63E+00	mmBtu/hr	X	2.20462	lb/kg	=	<0.01	lb/hr	X 8,760	X	0.0005	ton/lb	= <0.01	TPY

Pilot Emissions

Pollutant	Emission Factor			Capacity			Conversion			Hourly Emissions		Operating Hours		Conversion		Annual Emissions	
NOx	1.00E+02	lb/mmscf	X	1.40E-03	mmscf/hr	X	-	-	=	0.14	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.61	TPY
CO	8.40E+01	lb/mmscf	X	1.40E-03	mmscf/hr	X	-	-	=	0.12	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.52	TPY
VOC	5.50E+00	lb/mmscf	X	1.40E-03	mmscf/hr	X	-	-	=	0.01	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.03	TPY
SO_2	6.00E-01	lb/mmscf	X	1.40E-03	mmscf/hr	X	-	-	=	<0.01	lb/hr	X 8,760	X	0.0005	ton/lb	= <0.01	TPY
$PM_{10/2.5}$	1.90E+00	lb/mmscf	X	1.40E-03	mmscf/hr	X	-	-	=	<0.01	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.01	TPY
PM_{COND}	5.70E+00	lb/mmscf	X	1.40E-03	mmscf/hr	X	-	-	=	0.01	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.03	TPY
PM_{TOT}	7.60E+00	lb/mmscf	X	1.40E-03	mmscf/hr	X	-	-	=	0.01	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.05	TPY
Formaldehyde	7.50E-02	lb/mmscf	X	1.40E-03	mmscf/hr	X	-	-	=	<0.01	lb/hr	X 8,760	X	0.0005	ton/lb	= <0.01	TPY
n-Hexane	1.80E+00	lb/mmscf	X	1.40E-03	mmscf/hr	X	-	-	=	<0.01	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.01	TPY
Benzene	2.10E-03	lb/mmscf	X	1.40E-03	mmscf/hr	X	-	-	=	<0.01	lb/hr	X 8,760	X	0.0005	ton/lb	= <0.01	TPY
Toluene	3.40E-03	lb/mmscf	X	1.40E-03	mmscf/hr	X	-	-	=	<0.01	lb/hr	X 8,760	X	0.0005	ton/lb	= <0.01	TPY
Other HAP	1.90E-03	lb/mmscf	X	1.40E-03	mmscf/hr	X	-	-	=	<0.01	lb/hr	X 8,760	X	0.0005	ton/lb	= <0.01	TPY
CO_2	5.31E+01	kg/mmBtu	X	1.44E+00	mmBtu/hr	X	2.20462	lb/kg	=	168.03	lb/hr	X 8,760	X	0.0005	ton/lb	= 735.95	TPY
CH_4	1.00E-03	kg/mmBtu	X	1.44E+00	mmBtu/hr	X	2.20462	lb/kg	=	<0.01	lb/hr	X 8,760	X	0.0005	ton/lb	= 0.01	TPY
N_2O	1.00E-04	kg/mmBtu	X	1.44E+00	mmBtu/hr	X	2.20462	lb/kg	=	<0.01	lb/hr	X 8,760	X	0.0005	ton/lb	= <0.01	TPY

1) Tank emissions are routed to the VOC flare. Unburned VOC and HAP reported at the tanks. Pilot and blowdown VOC and HAP reported at the VOC flare.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Flare Emissions Calculations - Flare Stream Analysis

Unit ID: **FL-1**

Component	Molecular Weight	Stream 1 Miscellaneous Vents and Blowdowns		Total Streams Burned in Flare					Net Heating Value	Net Btu Rate
		1.89E+03	scfh	Uncontrolled		scfd	Controlled			
		Mole %	lb/hr	lb/hr	TPY		lb/hr	TPY	Btu/scf	Btu/hr
Water	18.0153	0.000%	0.00	0.00	0.00	0	0.00	0.00	0.00	0
Hydrogen Sulfide	34.081	0.000%	0.00	0.00	0.00	0	0.00	0.00	586.80	0
Carbon Dioxide	44.010	0.768%	1.69	1.69	0.51	349	1.69	0.51	0.00	0
Nitrogen	28.013	2.471%	3.45	3.45	1.04	1,122	3.45	1.04	0.00	0
Helium	4.003	0.000%	0.00	0.00	0.00	0	0.00	0.00	0.00	0
Oxygen	31.999	0.000%	0.00	0.00	0.00	0	0.00	0.00	0.00	0
Methane	16.043	58.397%	46.72	46.72	14.02	26,517	0.93	0.28	909.40	1,004,768
Ethane	30.069	20.291%	30.43	30.43	9.13	9,214	0.61	0.18	1,618.70	621,440
Propane	44.096	10.713%	23.56	23.56	7.07	4,864	0.47	0.14	2,314.90	469,198
i-Butane	58.122	1.168%	3.39	3.39	1.02	530	0.07	0.02	3,000.40	66,299
n-Butane	58.122	3.672%	10.64	10.64	3.19	1,667	0.21	0.06	3,010.80	209,167
i-Pentane	72.149	0.673%	2.42	2.42	0.73	306	0.05	0.01	3,699.00	47,107
n-Pentane	72.149	1.029%	3.70	3.70	1.11	467	0.07	0.02	3,706.90	72,154
n-Hexane	86.175	0.157%	0.67	0.67	0.20	71	0.01	0.00	4,403.80	13,040
Other Hexanes	86.175	0.435%	1.87	1.87	0.56	198	0.04	0.01	4,403.80	36,252
Heptanes	100.202	0.082%	0.41	0.41	0.12	37	0.01	0.00	5,100.00	7,912
Benzene	78.114	0.017%	0.07	0.07	0.02	8	0.00	0.00	3,590.90	1,141
Toluene	92.141	0.013%	0.06	0.06	0.02	6	0.00	0.00	4,273.60	1,051
Ethylbenzene	106.167	0.001%	0.00	0.00	0.00	0	0.00	0.00	4,970.50	85
Xylenes	106.167	0.004%	0.02	0.02	0.01	2	0.00	0.00	4,957.10	356
Octanes	114.229	0.000%	0.00	0.00	0.00	0	0.00	0.00	5,796.00	0
2,2,4-Trimethylpentane	114.231	0.008%	0.05	0.05	0.01	4	0.00	0.00	5,778.80	918
Nonanes	128.255	0.000%	0.00	0.00	0.00	0	0.00	0.00	6,493.20	0
Decanes	142.282	0.000%	0.00	0.00	0.00	0	0.00	0.00	7,189.60	0
Totals =		**99.8984%**	**129.14**	**129.14**	**38.74**	**45,362**	**--**	**--**	**--**	**2,550,891**
Total VOC =		**17.971%**	**46.86**	**46.86**	**14.06**	**--**	**0.94**	**0.28**	**Heat Value (Btu/scf)**	**1,350**
Total HAP =				**0.87**	**0.26**	**--**	**0.02**	**0.01**		
Total H_2S=				**0.00**	**0.00**	**--**	**0.00**	**0.00**		
MW of Stream =						**25.92**				

Notes:
1) Representative inlet gas analysis with C6+ estimated per GLYCalc. Estimated 600 vents or blowdowns at 1.889 MCF and one hour each.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Flare Emissions Calculations - Flare Stream Analysis

Unit ID: FL-1

Component	Molecular Weight	Stream 2 Tank Emissions		Total Streams Burned in Flare					Net Heating Value	Net Btu Rate
		1.21E+03	scfh	Uncontrolled		scfd	Controlled			
		Mole %	lb/hr	lb/hr	TPY		lb/hr	TPY	Btu/scf	Btu/hr
Water	18.0153	0.000%	0.00	0.00	0.00	0	0.00	0.00	0.00	0
Hydrogen Sulfide	34.081	0.000%	0.00	0.00	0.00	0	0.00	0.00	586.80	0
Carbon Dioxide	44.010	0.540%	0.75	0.75	0.23	156	0.75	0.23	0.00	0
Nitrogen	28.013	0.335%	0.30	0.30	0.09	97	0.30	0.09	0.00	0
Helium	4.003	0.000%	0.00	0.00	0.00	0	0.00	0.00	0.00	0
Oxygen	31.999	0.000%	0.00	0.00	0.00	0	0.00	0.00	0.00	0
Methane	16.043	16.100%	8.20	8.20	2.46	4,656	0.16	0.05	909.40	176,428
Ethane	30.069	27.300%	26.07	26.07	7.82	7,895	0.52	0.16	1,618.70	532,496
Propane	44.096	27.500%	38.51	38.51	11.55	7,953	0.77	0.23	2,314.90	767,100
i-Butane	58.122	3.610%	6.66	6.66	2.00	1,044	0.13	0.04	3,000.40	130,519
n-Butane	58.122	12.800%	23.63	23.63	7.09	3,702	0.47	0.14	3,010.80	464,386
i-Pentane	72.149	3.140%	7.20	7.20	2.16	908	0.14	0.04	3,699.00	139,959
n-Pentane	72.149	5.140%	11.78	11.78	3.53	1,486	0.24	0.07	3,706.90	229,594
n-Hexane	86.175	2.400%	6.57	6.57	1.97	694	0.13	0.04	4,403.80	127,358
Other Hexanes	86.175	0.000%	0.00	0.00	0.00	0	0.00	0.00	4,403.80	0
Heptanes	100.202	0.782%	2.49	2.49	0.75	226	0.05	0.01	5,100.00	48,058
Benzene	78.114	0.114%	0.28	0.28	0.08	33	0.01	0.00	3,590.90	4,933
Toluene	92.141	0.046%	0.13	0.13	0.04	13	0.00	0.00	4,273.60	2,369
Ethylbenzene	106.167	0.002%	0.01	0.01	0.00	1	0.00	0.00	4,970.50	143
Xylenes	106.167	0.006%	0.02	0.02	0.01	2	0.00	0.00	4,957.10	354
Octanes	114.229	0.133%	0.48	0.48	0.14	38	0.01	0.00	5,796.00	9,289
2,2,4-Trimethylpentane	114.231	0.000%	0.00	0.00	0.00	0	0.00	0.00	5,778.80	0
Nonanes	128.255	0.011%	0.04	0.04	0.01	3	0.00	0.00	6,493.20	853
Decanes	142.282	0.001%	0.00	0.00	0.00	0	0.00	0.00	7,189.60	84
Totals =		**100.0%**	**133.14**	**133.14**	**39.94**	**28,908**	**--**	**--**	**--**	**2,633,922**
Total VOC =		**55.685%**	**97.81**	**97.81**	**29.34**	**--**	**0.00**	**0.59**	**Heat Value (Btu/scf)**	**2,187**
			Total HAP =	**7.01**	**2.10**	**--**	**0.14**	**0.04**		
			Total H_2S=	**0.00**	**0.00**	**--**	**0.00**	**0.00**		
					MW of Stream =	**41.94**				

Notes:
1) Representative inlet gas analysis with C6+ estimated per GLYCalc. Estimated 600 vents or blowdowns at 1.889 MCF and one hour each.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Tank Information

Equipment Information			
	TK-1	**TK-2, -3**	**WTK-1**
Contents[1]	Condensate	Condensate	Produced Water
Number of Tanks	1	2	1
Capacity (bbl)	400	400	400
Capacity (gal)	16,800	16,800	16,800
Total Throughput (bbl/yr)	250,000	250,000	107,178
Total Throughput (gal/yr)	10,500,000	10,500,000	4,501,476
Per Tank Throughput (bbl/yr)	250,000	250,000	107,178
Per Tank Throughput (gal/yr)	10,500,000	5,250,000	4,501,476
Emission Calculation Method	Process Simulation	Process Simulation	Process Simulation
VOC Tank Working Emission Factor (lb VOC/bbl)[2]	0.352	0.352	0.004
VOC Tank Breathing Losses (lb/yr)[2]	3,823.00	3,823.00	38.23
VOC Tank Flashing Emission Factor (lb VOC/bbl)[2]	2.36	N/A	0.024
CO_2 Tank Flashing Emission Factor (lb CO_2/bbl)[2]	0.022	N/A	0.000
CH_4 Tank Flashing Emission Factor (lb CH_4/bbl)[2]	0.244	N/A	0.002
Control Type	VOC Flare	VOC Flare	VOC Flare
Capture Efficiency[3]	99%	99%	99%
Control Efficiency[3]	98%	98%	98%

Notes:

1) Produced water tanks are assumed to contain 99% produced water and 1% condensate. Therefore, produced water emissions are assumed to be 1% of those calculated for condensate.

2) Working, breathing, and flashing calculated with ProMax process simulation. See attached reports and following tables.

3) Tank emissions are routed to the FL-1 with 99% capture efficiency and 98% control efficiency

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Condensate Tank Emissions Calculations

Unit ID: **TK-1**

Uncontrolled Emissions

Pollutant	Working Losses			Breathing Losses			Flashing Losses			Annual Emissions			Operating Hours			Conversion			Hourly Emissions[1]	
VOC[2]	43.98	TPY	+	1.91	TPY	+	295.00	TPY	=	**340.89**	**TPY**	/	8,760	X	2,000	lb/ton	=	**77.83**	**lb/hr**
n-Hexane	0.70	TPY	+	0.03	TPY	+	4.72	TPY	=	**5.45**	**TPY**	/	8,760	X	2,000	lb/ton	=	**1.25**	**lb/hr**
Benzene	0.40	TPY	+	0.02	TPY	+	2.66	TPY	=	**3.07**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.70**	**lb/hr**
Toluene	0.57	TPY	+	0.02	TPY	+	3.84	TPY	=	**4.43**	**TPY**	/	8,760	X	2,000	lb/ton	=	**1.01**	**lb/hr**
Ethylbenzene	0.04	TPY	+	<0.01	TPY	+	0.30	TPY	=	**0.34**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.08**	**lb/hr**
Xylenes	0.22	TPY	+	0.01	TPY	+	1.48	TPY	=	**1.70**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.39**	**lb/hr**
Other HAP	0.40	TPY	+	0.02	TPY	+	2.66	TPY	=	**3.07**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.70**	**lb/hr**
CO_2[3]	-	TPY	+	-	TPY	+	2.80	TPY	=	**2.80**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.64**	**lb/hr**
CH_4[3]	-	TPY	+	-	TPY	+	30.49	TPY	=	**30.49**	**TPY**	/	8,760	X	2,000	lb/ton	=	**6.96**	**lb/hr**

Controlled Emissions[4]

Pollutant	Working Losses			Breathing Losses			Flashing Losses			Annual Emissions			Operating Hours			Conversion			Hourly Emissions	
VOC	1.31	TPY	+	0.06	TPY	+	8.79	TPY	=	**10.16**	**TPY**	/	8,760	X	2,000	lb/ton	=	**2.32**	**lb/hr**
n-Hexane	0.02	TPY	+	<0.01	TPY	+	0.14	TPY	=	**0.16**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.04**	**lb/hr**
Benzene	0.01	TPY	+	<0.01	TPY	+	0.08	TPY	=	**0.09**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.02**	**lb/hr**
Toluene	0.02	TPY	+	<0.01	TPY	+	0.11	TPY	=	**0.13**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.03**	**lb/hr**
Ethylbenzene	<0.01	TPY	+	<0.01	TPY	+	0.01	TPY	=	**0.01**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Xylenes	0.01	TPY	+	<0.01	TPY	+	0.04	TPY	=	**0.05**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.01**	**lb/hr**
Other HAP	0.01	TPY	+	<0.01	TPY	+	0.08	TPY	=	**0.09**	**TPY**	/	8,760	X	2000	lb/ton	=	**0.02**	**lb/hr**
CO_2	-	TPY	+	-	TPY	+	0.08	TPY	=	**0.08**	**TPY**	/	8,760	X	2000	lb/ton	=	**0.02**	**lb/hr**
CH_4	-	TPY	+	-	TPY	+	0.91	TPY	=	**0.91**	**TPY**	/	8,760	X	2000	lb/ton	=	**0.21**	**lb/hr**

Estimated HAP Composition (% by Weight)[5]

Pollutant	Wt%
n-Hexane	1.600%
Benzene	0.900%
Toluene	1.300%
Ethylbenzene	0.100%
Xylenes	0.500%
Other HAP	0.900%
Total HAP =	**5.300%**

Notes:
1) Due to variable short-term emission rates, average lb/hr based on annual emissions shown for reference only.
2) VOC TPY breathing losses calculated from lb/yr ProMax flash emission results as follows: lb/yr * 1/2000 = TPY. VOC working losses and VOC, CO_2 and CH_4 TPY flashing losses calculated with ProMax flash emission factor as follows: lb/bbl factor * annual bbl throughput * 1/2000 = TPY.

3) Per API Chapter 5: CH_4 and CO_2 emissions from crude storage tanks occur mainly as a result of flashing; working and breathing loss emissions of these gases are very small in production and virtually non-existent in downstream segments. Unless site-specific data indicate otherwise, working and breathing losses are presumed to contain no CH_4 or CO_2 .

4) Condensate tank emissions are routed to the VOC flare with 99% capture efficiency and 99% combustor control efficiency for 98.01% effective control efficiency. ORM requested a federally enforceable limit of 5.99 tons per year per tank by adding the tanks to the North Dakota Tank Registry.

5) HAP composition of tank vapors calculated with representative ProMax process simulation.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Condensate Tank Emissions Calculations

Unit ID: **TK-2 - TK-3**[1] **(EACH)**

Uncontrolled Emissions

Pollutant	Working Losses			Breathing Losses			Flashing Losses			Annual Emissions			Operating Hours		Conversion			Hourly Emissions[2]	
VOC[3]	44.00	TPY	+	1.91	TPY	+	0.00	TPY	=	**45.91**	**TPY**	/	8,760	X	2,000	lb/ton	=	**10.48**	**lb/hr**
n-Hexane	0.70	TPY	+	0.03	TPY	+	0.00	TPY	=	**0.73**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.17**	**lb/hr**
Benzene	0.40	TPY	+	0.02	TPY	+	0.00	TPY	=	**0.41**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.09**	**lb/hr**
Toluene	0.57	TPY	+	0.02	TPY	+	0.00	TPY	=	**0.60**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.14**	**lb/hr**
Ethylbenzene	0.04	TPY	+	<0.01	TPY	+	0.00	TPY	=	**0.05**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.01**	**lb/hr**
Xylenes	0.22	TPY	+	0.01	TPY	+	0.00	TPY	=	**0.23**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.05**	**lb/hr**
Other HAP	0.40	TPY	+	0.02	TPY	+	0.00	TPY	=	**0.41**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.09**	**lb/hr**
CO_2[4]	-	TPY	+	-	TPY	+	0.00	TPY	=	**0.00**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.00**	**lb/hr**
CH_4[4]	-	TPY	+	-	TPY	+	0.00	TPY	=	**0.00**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.00**	**lb/hr**

Controlled Emissions[5]

Pollutant	Working Losses			Breathing Losses			Flashing Losses			Annual Emissions			Operating Hours		Conversion			Hourly Emissions	
VOC	1.31	TPY	+	0.06	TPY	+	0.00	TPY	=	**1.37**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.31**	**lb/hr**
n-Hexane	0.02	TPY	+	<0.01	TPY	+	0.00	TPY	=	**0.02**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Benzene	0.01	TPY	+	<0.01	TPY	+	0.00	TPY	=	**0.01**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Toluene	0.02	TPY	+	<0.01	TPY	+	0.00	TPY	=	**0.02**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Ethylbenzene	<0.01	TPY	+	<0.01	TPY	+	0.00	TPY	=	**<0.01**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Xylenes	0.01	TPY	+	<0.01	TPY	+	0.00	TPY	=	**0.01**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Other HAP	0.01	TPY	+	<0.01	TPY	+	0.00	TPY	=	**0.01**	**TPY**	/	8,760	X	2000	lb/ton	=	**<0.01**	**lb/hr**
CO_2	-	TPY	+	-	TPY	+	0.00	TPY	=	**0.00**	**TPY**	/	8,760	X	2000	lb/ton	=	**0.00**	**lb/hr**
CH_4	-	TPY	+	-	TPY	+	0.00	TPY	=	**0.00**	**TPY**	/	8,760	X	2000	lb/ton	=	**0.00**	**lb/hr**

Estimated HAP Composition (% by Weight)[6]

Pollutant	Wt%
n-Hexane	1.600%
Benzene	0.900%
Toluene	1.300%
Ethylbenzene	0.100%
Xylenes	0.500%
Other HAP	0.900%
Total HAP =	**5.300%**

Notes:

1) The tanks are connected in one series of three tanks; therefore, condensate flows through each tank in each series and only flashes at the inlet to the first tank in each series (TK-1).

2) Due to variable short-term emission rates, average lb/hr based on annual emissions shown for reference only.

3) VOC TPY breathing losses calculated from lb/yr ProMax flash emission results as follows: lb/yr * 1/2000 = TPY. VOC working losses and VOC, CO_2 and CH_4 TPY flashing losses calculated with ProMax flash emission factor as follows: lb/bbl factor * annual bbl throughput * 1/2000 = TPY.

4) Per API Chapter 5: CH_4 and CO_2 emissions from crude storage tanks occur mainly as a result of flashing; working and breathing loss emissions of these gases are very small in production and virtually non-existent in downstream segments. Unless site-specific data indicate otherwise, working and breathing losses are presumed to contain no CH_4 or CO_2 .

5) Condensate tank emissions are routed to the combustor with 98% capture efficiency and 98% control efficiency, for 96.04% effective control efficiency. ORM requested a federally enforceable limit of 5.99 tons per year per tank by adding the tanks to the North Dakota Tank Registry.

6) HAP composition of tank vapors calculated with site-specific ProMax process simulation.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Produced Water Tank Emissions Calculations

Unit ID: WTK-1

Uncontrolled Emissions

Pollutant	Working Losses			Breathing Losses			Flashing Losses			Annual Emissions			Operating Hours			Conversion			Hourly Emissions[1]	
VOC[2]	<0.01	TPY	+	0.02	TPY	+	1.26	TPY	=	**1.28**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.29**	**lb/hr**
n-Hexane	<0.01	TPY	+	<0.01	TPY	+	0.02	TPY	=	**0.02**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Benzene	<0.01	TPY	+	<0.01	TPY	+	0.01	TPY	=	**0.01**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Toluene	<0.01	TPY	+	<0.01	TPY	+	0.02	TPY	=	**0.02**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Ethylbenzene	<0.01	TPY	+	<0.01	TPY	+	<0.01	TPY	=	**<0.01**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Xylenes	<0.01	TPY	+	<0.01	TPY	+	0.01	TPY	=	**0.01**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Other HAP	<0.01	TPY	+	<0.01	TPY	+	0.01	TPY	=	**0.01**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
CO_2[3]	-	TPY	+	-	TPY	+	0.01	TPY	=	**0.01**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
CH_4[3]	-	TPY	+	-	TPY	+	0.13	TPY	=	**0.13**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.03**	**lb/hr**

Controlled Emissions[4]

Pollutant	Working Losses			Breathing Losses			Flashing Losses			Annual Emissions			Operating Hours			Conversion			Hourly Emissions	
VOC	<0.01	TPY	+	<0.01	TPY	+	0.04	TPY	=	**0.04**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.01**	**lb/hr**
n-Hexane	<0.01	TPY	+	<0.01	TPY	+	<0.01	TPY	=	**<0.01**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Benzene	0.00	TPY	+	<0.01	TPY	+	<0.01	TPY	=	**<0.01**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Toluene	<0.01	TPY	+	<0.01	TPY	+	<0.01	TPY	=	**<0.01**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Ethylbenzene	0.00	TPY	+	<0.01	TPY	+	<0.01	TPY	=	**<0.01**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Xylenes	0.00	TPY	+	<0.01	TPY	+	<0.01	TPY	=	**<0.01**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Other HAP	0.00	TPY	+	<0.01	TPY	+	<0.01	TPY	=	**<0.01**	**TPY**	/	8,760	X	2000	lb/ton	=	**<0.01**	**lb/hr**
CO_2	-	TPY	+	-	TPY	+	<0.01	TPY	=	**<0.01**	**TPY**	/	8,760	X	2000	lb/ton	=	**<0.01**	**lb/hr**
CH_4	-	TPY	+	-	TPY	+	<0.01	TPY	=	**<0.01**	**TPY**	/	8,760	X	2000	lb/ton	=	**<0.01**	**lb/hr**

Estimated HAP Composition (% by Weight)[5]

Pollutant	Wt%
n-Hexane	1.600%
Benzene	0.900%
Toluene	1.300%
Ethylbenzene	0.100%
Xylenes	0.500%
Other HAP	0.900%
Total HAP =	**5.300%**

Notes:

1) Due to variable short-term emission rates, average lb/hr based on annual emissions shown for reference only.

2) VOC TPY working and breathing losses calculated from lb/yr TANKS 4.0.9d results as follows: lb/yr * 1/2000 = TPY. VOC TPY flashing losses calculated with ProMax flash emission factor as follows: lb VOC/bbl * annual bbl throughput * 1/2000 = TPY.

3) Per API Chapter 5: CH_4 and CO_2 emissions from crude storage tanks occur mainly as a result of flashing; working and breathing loss emissions of these gases are very small in production and virtually non-existent in downstream segments. Unless site-specific data indicate otherwise, working and breathing losses are presumed to contain no CH_4 or CO_2 .

4) Water tank emissions are routed to the VOC flare with 99% capture efficiency and 99% combustor control efficiency for 98.01% effective control efficiency.

5) HAP composition of tank vapors calculated with site-specific ProMax process simulation.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Truck Loading Information

Equipment Information	
	TL-1
Contents Loaded	Condensate
Fill Method	Submerged
Type of Service	Dedicated
Mode of Operation	Normal
Saturation Factor	0.6
Throughput (1000 gal/yr)	10,500
Throughput (10^6 gal/yr)	10.500
Maximum Loading Rate (gal/hr)	7,500
VOC Emission Factor (lb/bbl)	0.1600
ProMax Flash Gas CH_4 wt%	0.015%
ProMax Flash Gas CO_2 wt%	0.004%
Control Type	None

Notes:
1) Based on vapor analysis of loading operations at nine ORM facilities.

2) API Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Gas Industry, Table 5-12. Emission factor converted as follows: tonne/10^6 gal * 1.10231131 ton/tonne.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Condensate Truck Loading Emissions Calculations

Unit ID: TL-1

Uncontrolled Emissions

Pollutant	Emission Factor			Throughput			Conversion			Annual Emissions			Operating Hours		Conversion			Average Hourly Emissions[1]	
VOC	0.1600	lb/bbl	X	250,000	bbl/yr	X	0.0005	ton/lb	=	**20.00**	**TPY**	/	8,760	X	2,000	lb/ton	=	**4.57**	**lb/hr**
n-Hexane	-	-	-	-	-	-	-	-	=	**0.32**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.07**	**lb/hr**
Benzene	-	-	-	-	-	-	-	-	=	**0.18**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.04**	**lb/hr**
Toluene	-	-	-	-	-	-	-	-	=	**0.26**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.06**	**lb/hr**
Ethylbenzene	-	-	-	-	-	-	-	-	=	**0.02**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
Xylenes	-	-	-	-	-	-	-	-	=	**0.10**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.02**	**lb/hr**
Other HAP	-	-	-	-	-	-	-	-	=	**0.18**	**TPY**	/	8,760	X	2,000	lb/ton	=	**0.04**	**lb/hr**
CO_2	1.00	ton/10^6 gal	X	10.500	10^6 gal/yr	X	0.004%	Wt%	=	**<0.01**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**
CH_4	1.00	ton/10^6 gal	X	10.500	10^6 gal/yr	X	0.015%	Wt%	=	**<0.01**	**TPY**	/	8,760	X	2,000	lb/ton	=	**<0.01**	**lb/hr**

Estimated HAP Composition (% by Weight)[2]

Pollutant	Wt%
n-Hexane	1.600%
Benzene	0.900%
Toluene	1.300%
Ethylbenzene	0.100%
Xylenes	0.500%
Other HAP	0.900%
Total HAP =	**5.300%**

Notes:
1) Due to variable short-term emission rates, average lb/hr rate shown for reference only.
2) See speciated liquids analysis on Facility Analyses page. HAP weight% calculated as % of total hydrocarbons in the sample. All HAP assumed to volatize from liquids for most conservative emissions estimate.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Methanol Tank Information

Equipment Information	
	MTK-1
Contents	Methanol
Number of Tanks	1
Capacity (bbl)	400
Capacity (gal)	16,800
Total Throughput (bbl/yr)	6,811
Total Throughput (gal/yr)	286,062
Per Tank Throughput (bbl/yr)	6,811
Per Tank Throughput (gal/yr)	286,062
ODEQ Calculation Tool Working Losses (lb/yr)[2]	204.60
ODEQ Calculation Tool Breathing Losses (lb/yr)[2]	130.60
Control Type	None

Notes:
1) Working and breathing calculated using ODEQ Calculation Tool. See attached reports and following table.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Methanol Tank Emissions Calculations

Unit ID: **MTK-1**

Uncontrolled Emissions

Pollutant	Working Losses			Breathing Losses			Annual Emissions		Operating Hours		Conversion			Hourly Emissions[1]	
VOC/Methanol [2]	0.10	TPY	+	0.07	TPY	=	**0.17**	**TPY**	/ 8,760	X	2,000	lb/ton	=	**0.04**	**lb/hr**

Notes:
1) Due to variable short-term emission rates, average lb/hr based on annual emissions shown for reference only.
2) VOC TPY working and breathing losses calculated from lb/yr TANKS 4.0.9d results as follows: lb/yr * 1/2000 = TPY.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Fugitive Equipment Data and Emission Factors

Equipment Information - Gas Service							TOC Emissions											
Component	Count[1]		Emission Factor[2]			Control Efficiency		Hourly Emissions		Operating Hours		Conversion			Annual Emissions		
Valves - Gas	750	X	9.92E-03	lb/hr/source	X	75.00%	=	1.86	lb/hr	X	8,760	X	0.0005	ton/lb	=	8.15	TPY
Connectors - Gas	1900	X	4.41E-04	lb/hr/source	X	30.00%	=	0.59	lb/hr	X	8,761	X	0.0005	ton/lb	=	2.57	TPY
Flanges - Gas	1000	X	8.60E-04	lb/hr/source	X	30.00%	=	0.60	lb/hr	X	8,760	X	0.0005	ton/lb	=	2.64	TPY
Relief Valves - Gas	60	X	1.94E-02	lb/hr/source	X	0.00%	=	1.16	lb/hr	X	8,760	X	0.0005	ton/lb	=	5.10	TPY
Compressor Seals - Gas	16	X	1.94E-02	lb/hr/source	X	75.00%	=	0.08	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.34	TPY
Other - Gas	10	X	1.94E-02	lb/hr/source	X	0.00%	=	0.19	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.85	TPY

Equipment Information - Liquid Service							TOC Emissions											
Component	Count[1]		Emission Factor[2]			Control Efficiency		Hourly Emissions		Operating Hours		Conversion			Annual Emissions		
Valves - Light Oil	380	X	5.51E-03	lb/hr/source	X	75.00%	=	0.52	lb/hr	X	8,760	X	0.0005	ton/lb	=	2.29	TPY
Flanges - Light Oil	40	X	2.43E-04	lb/hr/source	X	30.00%	=	0.01	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.03	TPY
Connectors - Light Oil	1,100	X	4.63E-04	lb/hr/source	X	30.00%	=	0.36	lb/hr	X	8,760	X	0.0005	ton/lb	=	1.56	TPY
Pump Seals - Light Oil	2	X	2.87E-02	lb/hr/source	X	75.00%	=	0.01	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.06	TPY
Other - Light Oil	5	X	1.65E-02	lb/hr/source	X	0.00%	=	0.08	lb/hr	X	8,760	X	0.0005	ton/lb	=	0.36	TPY

Notes:
1) Component counts estimated based on similar site.
2) Emission Factor Source: EPA-453/R-95-017. TOC multiplied by pollutant content of streams (weight %) to obtain pollutant emissions.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Fugitive Emissions Calculations

Component	VOC Emissions				CO_2 Emissions				CH_4 Emissions				H_2S Emissions			
Valves - Gas	0.70	lb/hr	3.08	TPY	0.02	lb/hr	0.11	TPY	0.70	lb/hr	3.07	TPY	0.00	lb/hr	0.00	TPY
Connectors - Gas	0.22	lb/hr	0.97	TPY	0.01	lb/hr	0.03	TPY	0.22	lb/hr	0.97	TPY	0.00	lb/hr	0.00	TPY
Flanges - Gas	0.23	lb/hr	1.00	TPY	0.01	lb/hr	0.03	TPY	0.23	lb/hr	0.99	TPY	0.00	lb/hr	0.00	TPY
Relief Valves - Gas	0.44	lb/hr	1.93	TPY	0.02	lb/hr	0.07	TPY	0.44	lb/hr	1.92	TPY	0.00	lb/hr	0.00	TPY
Compressor Seals - Gas	0.03	lb/hr	0.13	TPY	<0.01	lb/hr	<0.01	TPY	0.03	lb/hr	0.13	TPY	0.00	lb/hr	0.00	TPY
Other - Gas	0.07	lb/hr	0.32	TPY	<0.01	lb/hr	0.01	TPY	0.07	lb/hr	0.32	TPY	0.00	lb/hr	0.00	TPY
Valves - Light Oil	0.52	lb/hr	2.28	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	0.00	lb/hr	0.00	TPY
Flanges - Light Oil	0.01	lb/hr	0.03	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	0.00	lb/hr	0.00	TPY
Connectors - Light Oil	0.36	lb/hr	1.56	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	0.00	lb/hr	0.00	TPY
Pump Seals - Light Oil	0.01	lb/hr	0.06	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	0.00	lb/hr	0.00	TPY
Other - Light Oil	0.08	lb/hr	0.36	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	0.00	lb/hr	0.00	TPY
Total	**2.67**	**lb/hr**	**11.71**	**TPY**	**0.06**	**lb/hr**	**0.26**	**TPY**	**1.69**	**lb/hr**	**7.40**	**TPY**	**0.00**	**lb/hr**	**0.00**	**TPY**

Component	n-Hexane Emissions				Benzene Emissions				Toluene Emissions				Ethylbenzene Emissions				Xylene Emissions				2,2,4-Trimethylpentane Emissions			
Valves - Gas	0.01	lb/hr	0.04	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY
Connectors - Gas	<0.01	lb/hr	0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY
Flanges - Gas	<0.01	lb/hr	0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY
Relief Valves - Gas	0.01	lb/hr	0.03	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY
Compressor Seals - Gas	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY
Other - Gas	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY
Valves - Light Oil	0.11	lb/hr	0.47	TPY	<0.01	lb/hr	0.02	TPY	0.01	lb/hr	0.04	TPY	<0.01	lb/hr	0.01	TPY	0.01	lb/hr	0.02	TPY	0.00	lb/hr	0.00	TPY
Flanges - Light Oil	<0.01	lb/hr	0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	0.00	lb/hr	0.00	TPY
Connectors - Light Oil	0.07	lb/hr	0.32	TPY	<0.01	lb/hr	0.01	TPY	0.01	lb/hr	0.02	TPY	<0.01	lb/hr	0.01	TPY	<0.01	lb/hr	0.02	TPY	0.00	lb/hr	0.00	TPY
Pump Seals - Light Oil	<0.01	lb/hr	0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	0.00	lb/hr	0.00	TPY
Other - Light Oil	0.02	lb/hr	0.07	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	0.01	TPY	<0.01	lb/hr	<0.01	TPY	<0.01	lb/hr	<0.01	TPY	0.00	lb/hr	0.00	TPY
Total	**0.22**	**lb/hr**	**0.98**	**TPY**	**0.01**	**lb/hr**	**0.05**	**TPY**	**0.02**	**lb/hr**	**0.08**	**TPY**	**<0.01**	**lb/hr**	**0.01**	**TPY**	**0.01**	**lb/hr**	**0.05**	**TPY**	**<0.01**	**lb/hr**	**0.01**	**TPY**

Notes:
1) TOC from previous table multiplied by pollutant content of streams (weight%) to obtain pollutant emissions. See attached analyses table.

ONEOK Rockies Midstream, L.L.C.
Nighthawk Compressor Station
Miscellaneous Venting and Blowdown Emissions Calculations

Component	Molecular Weight	Stream 1 Inlet Gas	Emissions	
		Mole %	scf/yr[1]	TPY[2]
Hydrogen Sulfide	34.081	0.000%	0	0.00
Carbon Dioxide	44.010	0.768%	3,594	0.21
Nitrogen	28.013	2.471%	11,565	0.43
Helium	4.003	0.000%	0	0.00
Oxygen	31.999	0.000%	0	0.00
Methane	16.043	58.397%	273,297	5.78
Ethane	30.069	20.291%	94,964	3.76
Propane	44.096	10.713%	50,136	2.91
i-Butane	58.122	1.168%	5,466	0.42
n-Butane	58.122	3.672%	17,184	1.32
i-Pentane	72.149	0.673%	3,150	0.30
n-Pentane	72.149	1.029%	4,815	0.46
n-Hexane	86.175	0.157%	732	0.08
Other Hexanes	86.175	0.435%	2,036	0.23
Heptanes	100.202	0.082%	384	0.05
Benzene	78.114	0.017%	79	0.01
Toluene	92.141	0.013%	61	0.01
Ethylbenzene	106.167	0.001%	4	<0.01
Xylenes	106.167	0.004%	18	<0.01
Octanes	114.229	0.000%	0	0.00
2,2,4-Trimethylpentane	114.231	0.008%	39	0.01
Nonanes	128.255	0.000%	0	0.00
Decanes	142.282	0.000%	0	0.00
	Totals =	99.898%	**467,525**	**15.97**
		Total VOC =	**84,104**	**5.80**
		Total HAP =	**933**	**0.11**

Estimated Annual Volume 468,000 scf/yr
Molar volume conversion @60° F and 1 atm: 1 lb/mole = 379.4 scf

Notes:
1) Calculated as follows: Total Losses scf/yr * mol% of component.
2) Calculated as follows: component scf/yr / 379.4 molar volume conversion * MW component / 2000 lb/ton.

Equipment Specification

Proposal Information

Proposal Number:	NC-24-005073 Rev(2)	Date:	**7/25/2024**
Project Reference:	OneOK ND/ 3608		

Engine Information

Engine Make:	CAT	Power Output:	2,750 bhp
Engine Model:	G3608	Exhaust Flow Rate:	32,972 lb/hr
Rated Speed:	1000 RPM	Exhaust Temperature:	756 ° F
Fuel Description:	Natural Gas	Fuel Consumption:	
Hours Of Operation:	8760 Hours per year	O_2:	12%
Load:	100%	H_2O:	15%
Propane:	10.21%		

Emission Data (100% Load)

Emission	Raw Engine Emissions						Target Outlet Emissions						Calculated Reduction
	g/bhp-hr	*tons/yr*	*ppmvd @ 15% O_2*	*ppmvd*	*g/kW-hr*	*lb/MW-hr*	*g/bhp-hr*	*tons/yr*	*ppmvd @ 15% O_2*	*ppmvd*	*g/kW-hr*	*lb/MW-hr*	
NO_x*	*0.5*	13.28	45	68	0.671	1.48	*1*	26.55	90	136	1.341	2.96	
CO	*2.98*	79.13	443	668	3.996	8.81	*1.13*	30.01	168	253	1.515	3.34	62.1%
NMNEHC**	*0.77*	20.45	200	301	1.033	2.28	0.6	15.93	156	235	0.805	1.77	22.1%
CH_2O	*0.18*	4.78	25	38	0.241	0.53	*0.02*	0.53	3	4	0.027	0.06	88.9%

System Specifications

Oxidation (SP-RHSIGA-54-TBD)

Housing Model Number:	SP-RHSIGA-54-TBD-HSG
Element Model Number:	APXP-OX-SB2700-2421-2338-291
Number of Catalyst Elements per Engine:	4
Number of Spare Catalyst Tracks:	2
Maximum Wind Loading:	100 mph
System Pressure Loss:	7 inches of WC (Clean) (18 mBar)
Design Exhaust Flow Rate:	32,972 lb/hr
Design Exhaust Temperature:	756° F
Exhaust Temperature Limits***:	550° F – 1250° F (catalyst inlet); 1350° F (catalyst outlet)

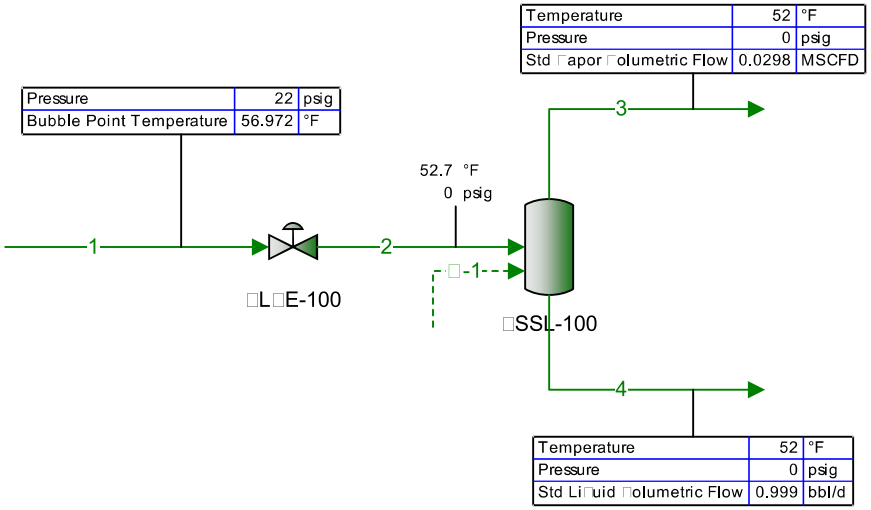
* MW referenced as NO_2

** MW referenced as CH_4. Propane in the exhaust shall not exceed 15% by volume of the NMHC compounds in the exhaust, excluding aldehydes. The 15% (vol.) shall be established on a wet basis, reported on a methane molecular weight basis. The measurement of exhaust NMHC composition shall be based upon EPA method 320 (FTIR), and shall exclude formaldehyde.

*** General catalyst temperature operating range. Performance is based on the Design Exhaust Temperature.

Galaxy – Flash Calc 9/19/2018

Sample Pressure: 22 psig
Sample Temperature: 60 F



Atm Tan□ Losses

Working Losses Factor - 0.3518 lb/d

Breathing Losses Factor -3,823 lb/yr

Flashing Losses Factor - 2.36 lb/d

CO2 Tank Flashing Emission Factor - 0.005395 lb CO2/bbl

CH4 Tank Flashing Emission Factor - 0.2381 lb CH4/bbl

Names	□nits	1	2	3	4
Temperature	°F	57	52.7	52*	52
Pressure	psig	22*	0*	0	0
Mole Fraction □apor	%	0*	3.02	100	0
Molecular Weight	lb/lbmol	90.3	90.3	41.4	91.8
Mass Density	lb/ft□3	42.7	6.46	0.105	43
Mass Flow	lb/h	10	10	0.136	9.9
Molar Flow	lbmol/h	0.111	0.111	0.00328	0.108
Compressibility		0.0136	0.0349	0.985	0.00534
Specific Gravity		0.684		1.43	0.689
Std □apor □olumetric Flow	MMSCFD	0.00101	0.00101	2.98e-05	0.000982
Std Li□uid □olumetric Flow	sgpm	0.0297□	0.0297	0.000562	0.0291
Enthalpy	MMBtu/h	-0.00953	-0.00953	-0.000146	-0.00939

Names	□nits	1	2	3	4
N2(Mole Fraction)	%	0.030001*	0.030001	0.97061	0.0014108
CO2(Mole Fraction)	%	0.0070002*	0.0070002	0.15591	0.002474
C1(Mole Fraction)	%	0.65502*	0.65502	18.876	0.1012
C2(Mole Fraction)	%	1.7811*	1.7811	26.616	1.0262
C3(Mole Fraction)	%	4.1091*	4.1091	24.146	3.5001
iC4(Mole Fraction)	%	1.583*	1.583	3.7436	1.5174
nC4(Mole Fraction)	%	8.1042*	8.1042	12.775	7.9623
iC5(Mole Fraction)	%	6.0012*	6.0012	3.704	6.071
nC5(Mole Fraction)	%	12.923*	12.923	5.754	13.141
C6(Mole Fraction)	%	18.769*	18.769	2.2195	19.272
C7(Mole Fraction)	%	21.629*	21.629	0.72876	22.264
C8(Mole Fraction)	%	14.179*	14.179	0.13362	14.606
C9(Mole Fraction)	%	3.8651*	3.8651	0.010132	3.9823
C11(Mole Fraction)	%	0*	0	0	0
C12(Mole Fraction)	%	0*	0	0	0
Ben□ene(Mole Fraction)	%	1.023*	1.023	0.12295	1.0504
Toluene(Mole Fraction)	%	1.139*	1.139	0.0349	1.1726
Ethylben□ene(Mole Fraction)	%	0.22001*	0.22001	0.0019465	0.22663
o-Xylene(Mole Fraction)	%	1.057*	1.057	0.0071934	1.0889
m-Xylene(Mole Fraction)	%	0*	0	0	0
p-Xylene(Mole Fraction)	%	0*	0	0	0
C10□(Mole Fraction)	%	2.9251*	2.9251	4.2485e-06	3.014